

**Host**

**Host**

**Host**

**Host**

## Tolerance Statistic

```
>Warning # 2003.  Command name: TITLE  
>The title given exceeds 60 characters in length.  The first 60 characters wil  
l  
>be used.
```

## Tolerance statistic and VIF through regression collinearity

### Regression

[ToleranceStatisticData] D:\DATA ANALYSIS\B Normality and Assumption Tests\Tolerance Statistic\SPSS\_Output\sav\Tolerance-Statistic-data.sav

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

Model	Variables Entered	Variables Removed	Method
1	health, Medu, goout, absences, famrel, studytime, age, travelttime, failures, G2, Fedu, G1 <sup>b</sup>	.	Enter

a. Dependent Variable: G3

b. All requested variables entered.

#### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.923 <sup>a</sup>	.852	.849	1.254

a. Predictors: (Constant), health, Medu, goout, absences, famrel, studytime, age, travelttime, failures, G2, Fedu, G1

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

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5762.355	12	480.196	305.127	.000 <sup>b</sup>
	Residual	1000.912	636	1.574		
	Total	6763.267	648			

a. Dependent Variable: G3

b. Predictors: (Constant), health, Medu, goout, absences, famrel, studytime, age, travelttime, failures, G2, Fedu, G1

Tolerance statistic and VIF through regression collinearity

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

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
		B	Std. Error	Beta			Tolerance
1	(Constant)	-.310	.826		-.375	.708	
	G1	.146	.037	.124	3.960	.000	.238
	G2	.882	.035	.796	25.448	.000	.238
	studytime	.089	.062	.023	1.435	.152	.912
	failures	-.240	.095	-.044	-2.516	.012	.761
	absences	.022	.011	.032	2.043	.041	.935
	age	.028	.044	.011	.638	.524	.850
	Medu	-.035	.059	-.012	-.589	.556	.549
	Fedu	.033	.059	.011	.550	.583	.568
	traveltime	.084	.069	.019	1.212	.226	.913
	famrel	-.032	.053	-.009	-.602	.547	.955
	goout	-.045	.043	-.016	-1.045	.297	.958
	health	-.049	.035	-.022	-1.410	.159	.966

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

Model		Collinearity Statistics
		VIF
1	(Constant)	
	G1	4.195
	G2	4.201
	studytime	1.097
	failures	1.314
	absences	1.069
	age	1.176
	Medu	1.822
	Fedu	1.762
	traveltime	1.096
	famrel	1.047
	goout	1.044
	health	1.035

a. Dependent Variable: G3

Tolerance statistic and VIF through regression collinearity

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

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	G1	G2	studytime
1	1	10.511	1.000	.00	.00	.00	.00
	2	.949	3.328	.00	.00	.00	.00
	3	.580	4.256	.00	.00	.00	.00
	4	.280	6.130	.00	.00	.00	.00
	5	.164	8.011	.00	.00	.00	.53
	6	.153	8.289	.00	.00	.00	.00
	7	.122	9.280	.00	.00	.00	.02
	8	.092	10.688	.00	.03	.04	.40
	9	.061	13.152	.00	.00	.00	.00
	10	.055	13.868	.00	.03	.02	.00
	11	.024	21.098	.05	.02	.03	.04
	12	.008	37.036	.00	.86	.88	.00
	13	.002	70.884	.95	.06	.02	.00

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

Model	Dimension	Variance Proportions						
		failures	absences	age	Medu	Fedu	traveltime	famrel
1	1	.00	.00	.00	.00	.00	.00	.00
	2	.60	.04	.00	.00	.00	.00	.00
	3	.10	.87	.00	.00	.00	.00	.00
	4	.07	.00	.00	.09	.11	.22	.00
	5	.03	.02	.00	.01	.04	.09	.00
	6	.00	.00	.00	.03	.04	.30	.01
	7	.00	.01	.00	.01	.03	.22	.01
	8	.02	.00	.00	.00	.05	.02	.03
	9	.00	.00	.00	.85	.72	.01	.00
	10	.02	.00	.00	.00	.01	.02	.69
	11	.11	.04	.08	.01	.00	.11	.24
	12	.00	.00	.00	.00	.00	.00	.01
	13	.04	.00	.91	.00	.01	.02	.02

Tolerance statistic and VIF through regression collinearity

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

Model	Dimension	Variance Proportions	
		goout	health
1	1	.00	.00
	2	.00	.00
	3	.00	.00
	4	.01	.00
	5	.03	.09
	6	.00	.54
	7	.61	.12
	8	.18	.07
	9	.00	.00
	10	.09	.09
	11	.08	.07
	12	.00	.01
	13	.00	.01

a. Dependent Variable: G3

Predictor correlation matrix for tolerance interpretation

**Correlations**

		G1	G2	studytime	failures	absences	age
G1	Pearson Correlation	1	.865**	.261**	-.384**	-.147**	-.174**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	649	649	649	649	649	649
G2	Pearson Correlation	.865**	1	.240**	-.386**	-.125**	-.107**
	Sig. (2-tailed)	.000		.000	.000	.001	.006
	N	649	649	649	649	649	649
studytime	Pearson Correlation	.261**	.240**	1	-.147**	-.118**	-.008
	Sig. (2-tailed)	.000	.000		.000	.003	.831
	N	649	649	649	649	649	649
failures	Pearson Correlation	-.384**	-.386**	-.147**	1	.123**	.320**
	Sig. (2-tailed)	.000	.000	.000		.002	.000
	N	649	649	649	649	649	649
absences	Pearson Correlation	-.147**	-.125**	-.118**	.123**	1	.150**
	Sig. (2-tailed)	.000	.001	.003	.002		.000
	N	649	649	649	649	649	649
age	Pearson Correlation	-.174**	-.107**	-.008	.320**	.150**	1
	Sig. (2-tailed)	.000	.006	.831	.000	.000	
	N	649	649	649	649	649	649
Medu	Pearson Correlation	.260**	.264**	.097*	-.172**	-.009	-.108**
	Sig. (2-tailed)	.000	.000	.013	.000	.827	.006
	N	649	649	649	649	649	649
Fedu	Pearson Correlation	.218**	.225**	.050	-.166**	.030	-.121**
	Sig. (2-tailed)	.000	.000	.200	.000	.448	.002
	N	649	649	649	649	649	649
traveltime	Pearson Correlation	-.154**	-.154**	-.063	.098*	-.008	.034
	Sig. (2-tailed)	.000	.000	.108	.013	.836	.380
	N	649	649	649	649	649	649
famrel	Pearson Correlation	.049	.090*	-.004	-.063	-.090*	-.021
	Sig. (2-tailed)	.214	.022	.916	.111	.023	.601
	N	649	649	649	649	649	649

Predictor correlation matrix for tolerance interpretation

**Correlations**

		Medu	Fedu	traveltime	famrel	goout	health
G1	Pearson Correlation	.260**	.218**	-.154**	.049	-.074	-.052
	Sig. (2-tailed)	.000	.000	.000	.214	.059	.189
	N	649	649	649	649	649	649
G2	Pearson Correlation	.264**	.225**	-.154**	.090*	-.079*	-.082*
	Sig. (2-tailed)	.000	.000	.000	.022	.043	.036
	N	649	649	649	649	649	649
studytime	Pearson Correlation	.097*	.050	-.063	-.004	-.075	-.056
	Sig. (2-tailed)	.013	.200	.108	.916	.055	.151
	N	649	649	649	649	649	649
failures	Pearson Correlation	-.172**	-.166**	.098*	-.063	.045	.036
	Sig. (2-tailed)	.000	.000	.013	.111	.251	.365
	N	649	649	649	649	649	649
absences	Pearson Correlation	-.009	.030	-.008	-.090*	.085*	-.030
	Sig. (2-tailed)	.827	.448	.836	.023	.030	.442
	N	649	649	649	649	649	649
age	Pearson Correlation	-.108**	-.121**	.034	-.021	.113**	-.009
	Sig. (2-tailed)	.006	.002	.380	.601	.004	.824
	N	649	649	649	649	649	649
Medu	Pearson Correlation	1	.647**	-.265**	.024	.010	.005
	Sig. (2-tailed)		.000	.000	.535	.808	.907
	N	649	649	649	649	649	649
Fedu	Pearson Correlation	.647**	1	-.208**	.020	.028	.045
	Sig. (2-tailed)	.000		.000	.606	.481	.253
	N	649	649	649	649	649	649
traveltime	Pearson Correlation	-.265**	-.208**	1	-.010	.057	-.048
	Sig. (2-tailed)	.000	.000		.809	.144	.220
	N	649	649	649	649	649	649
famrel	Pearson Correlation	.024	.020	-.010	1	.090*	.110**
	Sig. (2-tailed)	.535	.606	.809		.022	.005
	N	649	649	649	649	649	649

Predictor correlation matrix for tolerance interpretation

**Correlations**

		G1	G2	studytime	failures	absences	age
goout	Pearson Correlation	-.074	-.079*	-.075	.045	.085*	.113**
	Sig. (2-tailed)	.059	.043	.055	.251	.030	.004
	N	649	649	649	649	649	649
health	Pearson Correlation	-.052	-.082*	-.056	.036	-.030	-.009
	Sig. (2-tailed)	.189	.036	.151	.365	.442	.824
	N	649	649	649	649	649	649

**Correlations**

		Medu	Fedu	traveltime	famrel	goout	health
goout	Pearson Correlation	.010	.028	.057	.090*	1	-.016
	Sig. (2-tailed)	.808	.481	.144	.022		.689
	N	649	649	649	649	649	649
health	Pearson Correlation	.005	.045	-.048	.110**	-.016	1
	Sig. (2-tailed)	.907	.253	.220	.005	.689	
	N	649	649	649	649	649	649

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

\* . Correlation is significant at the 0.05 level (2-tailed).

Predictor descriptive statistics

**Descriptives**

**Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
G1	649	0	19	11.40	2.745
G2	649	0	19	11.57	2.914
studytime	649	1	4	1.93	.830
failures	649	0	3	.22	.593
absences	649	0	32	3.66	4.641
age	649	15	22	16.74	1.218
Medu	649	0	4	2.51	1.135
Fedu	649	0	4	2.31	1.100
traveltime	649	1	4	1.57	.749
famrel	649	1	5	3.93	.956
goout	649	1	5	3.18	1.176
health	649	1	5	3.54	1.446
Valid N (listwise)	649				

## Tolerance interpretation guide

### List

The variables are listed in the following order:

LINE 1: school sex age address famsize Pstatus Medu Fedu Mjob Fjob

LINE 2: reason guardian traveltime studytime failures schoolsup famsup paid  
activities nursery higher

LINE 3: internet romantic famrel freetime goout Dalc Walc health absences G1  
G2 G3

## Tolerance interpretation guide

school:	GP	F	18 U	GT3	A	4
4 at_home		teacher				
reason:	course		mother		2	2
	no	no	yes	yes		0 yes
internet:	no	no	4	3	4	1
	3	4	0	11	11	1

Number of cases read: 1      Number of cases listed: 1