

## Outlier Detection SPSS Output

Outlier Detection SPSS Output  
Concise outlier tables and z score flags

## Descriptives

[OutlierData]

### Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Final grade	649	0	19	11.91	3.231
School absences	649	0	32	3.66	4.641
Student age	649	15	22	16.74	1.218
First period grade	649	0	19	11.40	2.745
Second period grade	649	0	19	11.57	2.914
Valid N (listwise)	649				

## Boxplot and Extreme Value Review

Boxplot and Extreme Value Review  
SPSS Explore output for selected numeric variables

## Explore

### Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Final grade	649	100.0%	0	0.0%	649	100.0%
School absences	649	100.0%	0	0.0%	649	100.0%
Student age	649	100.0%	0	0.0%	649	100.0%
First period grade	649	100.0%	0	0.0%	649	100.0%
Second period grade	649	100.0%	0	0.0%	649	100.0%

### Descriptives

		Statistic	Std. Error	
Final grade	Mean	11.91	.127	
	95% Confidence Interval for Mean	Lower Bound	11.66	
		Upper Bound	12.16	
	5% Trimmed Mean	12.06		
	Median	12.00		
	Variance	10.437		
	Std. Deviation	3.231		
	Minimum	0		
	Maximum	19		
	Range	19		
	Interquartile Range	4		
	Skewness	-.913	.096	
	Kurtosis	2.712	.192	
School absences	Mean	3.66	.182	
	95% Confidence Interval for Mean	Lower Bound	3.30	
		Upper Bound	4.02	
	5% Trimmed Mean	3.09		
	Median	2.00		
	Variance	21.537		
	Std. Deviation	4.641		
	Minimum	0		

Boxplot and Extreme Value Review  
SPSS Explore output for selected numeric variables

**Descriptives**

		Statistic	Std. Error	
	Maximum	32		
	Range	32		
	Interquartile Range	6		
	Skewness	2.021	.096	
	Kurtosis	5.781	.192	
Student age	Mean	16.74	.048	
	95% Confidence Interval for Mean	Lower Bound	16.65	
		Upper Bound	16.84	
	5% Trimmed Mean	16.69		
	Median	17.00		
	Variance	1.484		
	Std. Deviation	1.218		
	Minimum	15		
	Maximum	22		
	Range	7		
	Interquartile Range	2		
	Skewness	.417	.096	
	Kurtosis	.072	.192	
First period grade	Mean	11.40	.108	
	95% Confidence Interval for Mean	Lower Bound	11.19	
		Upper Bound	11.61	
	5% Trimmed Mean	11.39		
	Median	11.00		
	Variance	7.536		
	Std. Deviation	2.745		
	Minimum	0		
	Maximum	19		
	Range	19		
	Interquartile Range	3		
	Skewness	-.003	.096	
	Kurtosis	.037	.192	
Second period grade	Mean	11.57	.114	

Boxplot and Extreme Value Review  
SPSS Explore output for selected numeric variables

**Descriptives**

		Statistic	Std. Error
95% Confidence Interval for Mean	Lower Bound	11.35	
	Upper Bound	11.79	
5% Trimmed Mean		11.60	
Median		11.00	
Variance		8.489	
Std. Deviation		2.914	
Minimum		0	
Maximum		19	
Range		19	
Interquartile Range		3	
Skewness		-.360	.096
Kurtosis		1.662	.192

**Extreme Values**

		Case Number		Value
Final grade	Highest	1	339	19
		2	637	19
		3	114	18
		4	182	18
		5	186	18 <sup>a</sup>
	Lowest	1	641	0
		2	640	0
		3	638	0
		4	627	0
		5	611	0 <sup>b</sup>
School absences	Highest	1	198	32
		2	213	30
		3	257	26
		4	151	24
		5	156	22 <sup>c</sup>

Boxplot and Extreme Value Review  
SPSS Explore output for selected numeric variables

**Extreme Values**

		Case Number	Value
	Lowest	1	643
		2	642
		3	641
		4	640
		5	638
Student age	Highest	1	280
		2	408
		3	414
		4	300
		5	352
	Lowest	1	538
		2	537
		3	536
		4	483
		5	478
First period grade	Highest	1	618
		2	114
		3	333
		4	339
		5	345
	Lowest	1	1
		2	570
		3	568
		4	640
		5	606
Second period grade	Highest	1	339
		2	197
		3	241
		4	333
		5	338

Boxplot and Extreme Value Review  
SPSS Explore output for selected numeric variables

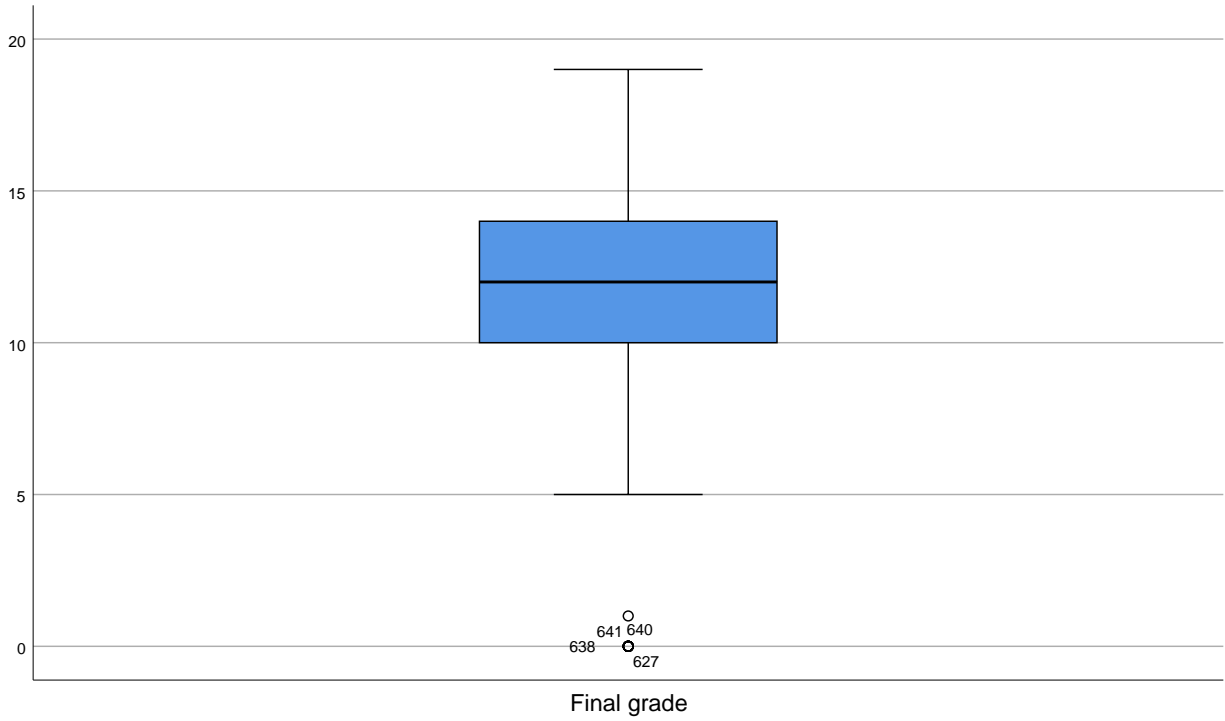
**Extreme Values**

		Case Number	Value
Lowest	1	611	0
	2	606	0
	3	604	0
	4	598	0
	5	568	0 <sup>b</sup>

- a. Only a partial list of cases with the value 18 are shown in the table of upper extremes.
- b. Only a partial list of cases with the value 0 are shown in the table of lower extremes.
- c. Only a partial list of cases with the value 22 are shown in the table of upper extremes.
- d. Only a partial list of cases with the value 20 are shown in the table of upper extremes.
- e. Only a partial list of cases with the value 15 are shown in the table of lower extremes.
- f. Only a partial list of cases with the value 5 are shown in the table of lower extremes.

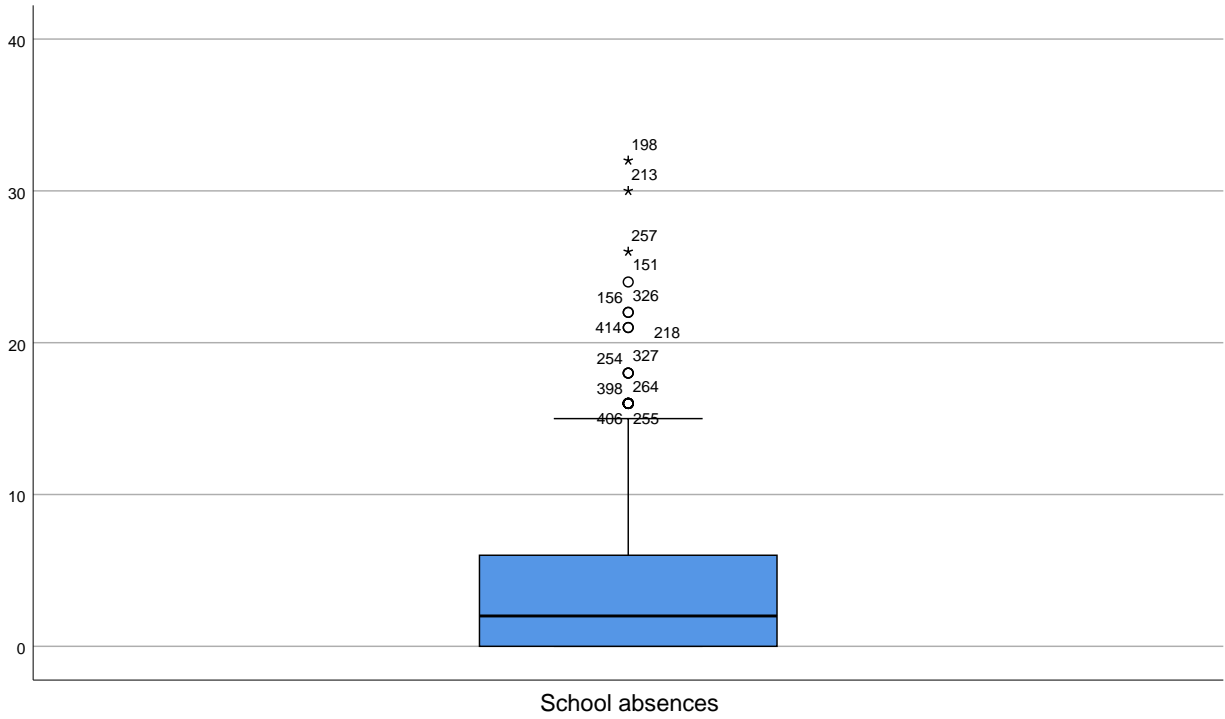
**Final grade**

Boxplot and Extreme Value Review  
SPSS Explore output for selected numeric variables



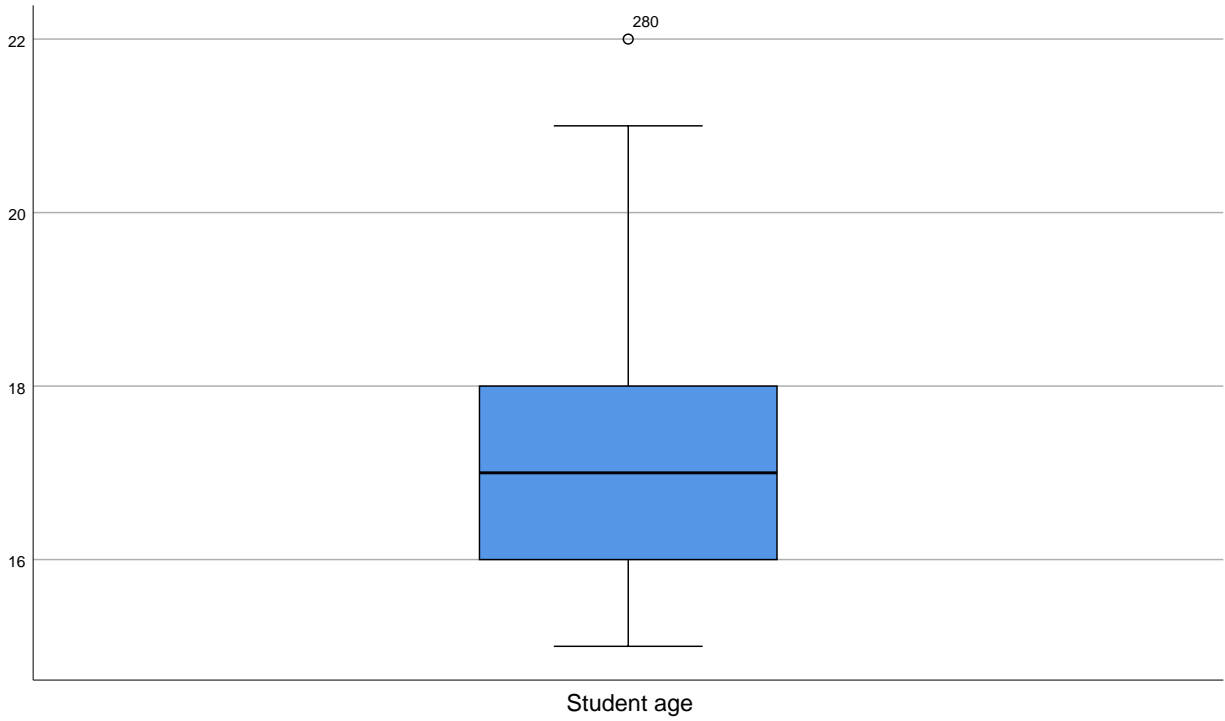
**School absences**

Boxplot and Extreme Value Review  
SPSS Explore output for selected numeric variables



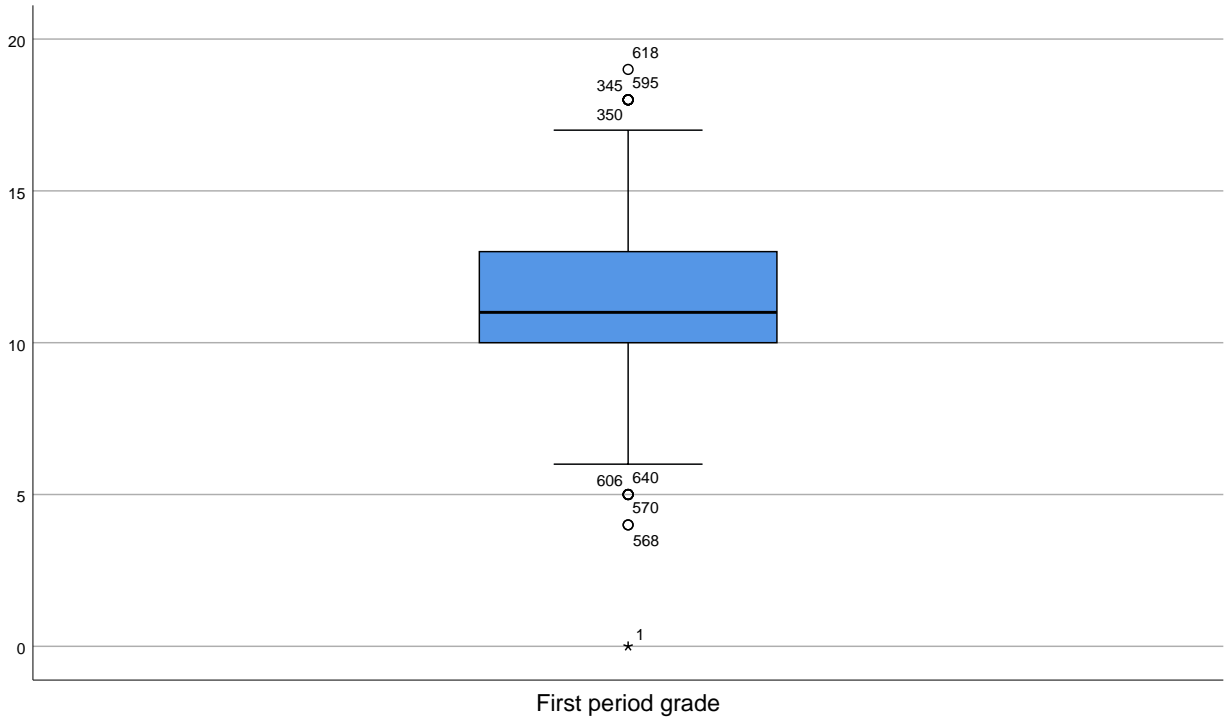
**Student age**

Boxplot and Extreme Value Review  
SPSS Explore output for selected numeric variables



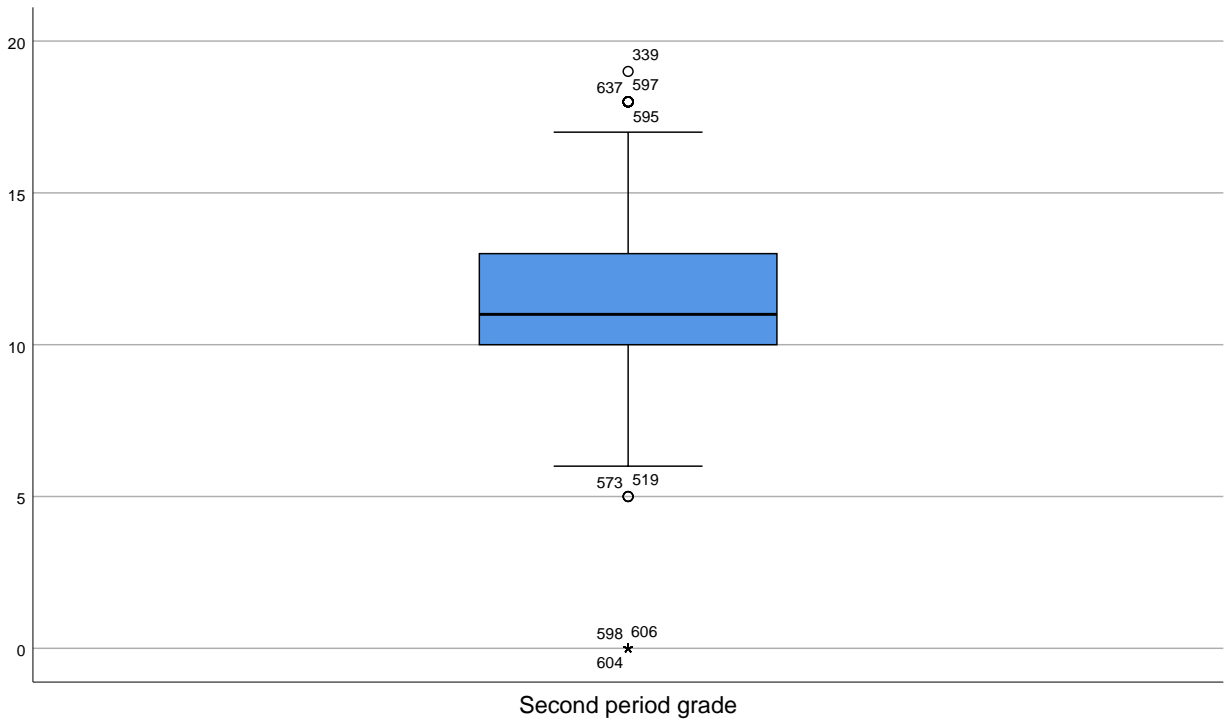
**First period grade**

Boxplot and Extreme Value Review  
SPSS Explore output for selected numeric variables



**Second period grade**

Boxplot and Extreme Value Review  
SPSS Explore output for selected numeric variables



## Z Score Outlier Counts

Z Score Outlier Counts  
Flags use absolute z score greater than 3

**Frequencies**

**Statistics**

		Absolute z score greater than 3 for G3	Absolute z score greater than 3 for absences	Absolute z score greater than 3 for age	Absolute z score greater than 3 for G1	Absolute z score greater than 3 for G2
N	Valid	649	649	649	649	649
	Missing	0	0	0	0	0

**Statistics**

		Potential outlier in any selected variable
N	Valid	649
	Missing	0

**Frequency Table**

**Absolute z score greater than 3 for G3**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not flagged	633	97.5	97.5	97.5
	Flagged	16	2.5	2.5	100.0
	Total	649	100.0	100.0	

**Absolute z score greater than 3 for absences**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not flagged	638	98.3	98.3	98.3
	Flagged	11	1.7	1.7	100.0
	Total	649	100.0	100.0	

Z Score Outlier Counts  
Flags use absolute z score greater than 3

**Absolute z score greater than 3 for age**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not flagged	646	99.5	99.5	99.5
	Flagged	3	.5	.5	100.0
	Total	649	100.0	100.0	

**Absolute z score greater than 3 for G1**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not flagged	648	99.8	99.8	99.8
	Flagged	1	.2	.2	100.0
	Total	649	100.0	100.0	

**Absolute z score greater than 3 for G2**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not flagged	642	98.9	98.9	98.9
	Flagged	7	1.1	1.1	100.0
	Total	649	100.0	100.0	

**Potential outlier in any selected variable**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not flagged	619	95.4	95.4	95.4
	Flagged	30	4.6	4.6	100.0
	Total	649	100.0	100.0	

## Flagged Outlier Cases

Flagged Outlier Cases  
Rows flagged by at least one selected z score rule

**List**

Flagged Outlier Cases  
 Rows flagged by at least one selected z score rule

school	sex	absences			outlier_			z_age
		z_G1	z_G2	z_G3	G1	G2	G3	
GP	F		18	4	0	11	11	1.0309
		.0734	-4.1523	-.1957	-.2804	1.00		
GP	F		15	24	9	8	9	-1.4319
		4.3830	-.8739	-1.2253	-.8995	1.00		
GP	M		17	22	9	7	6	.2100
		3.9521	-.8739	-1.5685	-1.8281	1.00		
GP	M		18	0	11	9	0	1.0309
		-.7886	-.1454	-.8821	-3.6853	1.00		
GP	M		16	0	10	10	1	-.6110
		-.7886	-.5096	-.5389	-3.3758	1.00		
GP	F		17	32	14	13	14	.2100
		6.1069	.9474	.4908	.6482	1.00		
GP	F		17	30	14	15	16	.2100
		5.6759	.9474	1.1772	1.2672	1.00		
GP	F		17	21	13	13	13	.2100
		3.7366	.5832	.4908	.3386	1.00		
GP	F		18	18	10	10	10	1.0309
		3.0901	-.5096	-.5389	-.5900	1.00		
GP	M		18	26	7	8	8	1.0309
		4.8140	-1.6024	-1.2253	-1.2090	1.00		
GP	M		22	12	7	8	5	4.3146
		1.7972	-1.6024	-1.2253	-2.1376	1.00		
GP	M		17	22	11	11	10	.2100
		3.9521	-.1454	-.1957	-.5900	1.00		
GP	M		17	18	13	13	13	.2100
		3.0901	.5832	.4908	.3386	1.00		
GP	F		17	18	10	12	14	.2100
		3.0901	-.5096	.1475	.6482	1.00		
GP	F		21	0	9	12	12	3.4937
		-.7886	-.8739	.1475	.0291	1.00		

Flagged Outlier Cases  
 Rows flagged by at least one selected z score rule

GP	M	21	21	9	10	10	3.4937
3.7366	-.8739	-.5389	-.5900	1.00			
MS	M	16	0	7	0	0	-.6110
-.7886	-1.6024	-3.9710	-3.6853	1.00			
MS	M	16	0	8	7	0	-.6110
-.7886	-1.2382	-1.5685	-3.6853	1.00			
MS	M	17	0	7	0	0	.2100
-.7886	-1.6024	-3.9710	-3.6853	1.00			
MS	M	18	0	4	0	0	1.0309
-.7886	-2.6952	-3.9710	-3.6853	1.00			
MS	F	18	0	8	6	0	1.0309
-.7886	-1.2382	-1.9117	-3.6853	1.00			
MS	F	17	0	8	8	0	.2100
-.7886	-1.2382	-1.2253	-3.6853	1.00			
MS	F	18	0	9	0	0	1.0309
-.7886	-.8739	-3.9710	-3.6853	1.00			
MS	F	18	0	5	0	0	1.0309
-.7886	-2.3309	-3.9710	-3.6853	1.00			
MS	F	19	0	5	0	0	1.8518
-.7886	-2.3309	-3.9710	-3.6853	1.00			
MS	F	19	0	8	0	0	1.8518
-.7886	-1.2382	-3.9710	-3.6853	1.00			
MS	F	18	0	7	5	0	1.0309
-.7886	-1.6024	-2.2549	-3.6853	1.00			
MS	M	18	0	7	7	0	1.0309
-.7886	-1.6024	-1.5685	-3.6853	1.00			
MS	M	19	0	5	8	0	1.8518
-.7886	-2.3309	-1.2253	-3.6853	1.00			
MS	M	18	0	7	7	0	1.0309
-.7886	-1.6024	-1.5685	-3.6853	1.00			

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