

MAT-203:00010

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1. The Life Ladder variable is a unit used by the U.N. to measure life quality, in which, the ladder steps represent the how people feel about their everyday lives. The ladder ranges from 0 – 10 where the zeroth step means that the person is feeling that their life is at the worst possible state while the highest step or the tenth step means that the person is feeling that their life is at the best possible state.

The Positive Affect variable represents the measure of positive things or activities that the person had done or felt the day before. The value is an average of three different values, smile and laughter, occurrences of positive attitudes or feelings and amount of positive activities done by the person.

2. The instruction summarizes the raw CSV data by calculating the total, mean, quartiles and the min-max values for any numerical data categories, such as: Life Ladder, Log GDP per capita, Social Support, and so on.
3. According to the Life Ladder, the happiest country in the world is Denmark with the Life Ladder measure of 7.699 and the unhappiest country is Afghanistan with the Life Ladder measure of 1.446.
4. The median of the healthy life expectancy at birth is 66.3 years
5. The first quartile of the negative affect is 0.231
6.
 - a.

	Value
Q1	4.6125
Q2	5.42
Q3	6.3215

b.

	Value	Robust
Median	5.42	1
Mean	5.46	0
Geometric Mean	5.34	0
Harmonic Mean	5.20	0
Trimmed Mean	5.46	1
Interquartile Mean	5.44	1
Winsorized Mean	5.46	1

Robust statistics have similar values to each other with only ± 2 difference the median, trimmed, interquartile and winsorized mean while non-robust statistics are more varied in their values.

c.

	Value	Bias Corrected	Robust
s1	1.154	1.161	0
s2	1.159		0
Range	6.253	-	0
IQR	1.873	1.388	1
MAD	0.813	1.205	1
AAD	0.962	1.207	1

Robust statistics (IQR, MAD, and AAD) values show a big difference after the data biases have been corrected along with how their data become more similar and close, meanwhile, the non-robust statistics (specifically: deviations) show small differences after data biases have been corrected.

d.

	Value
g_1	-0.6037
G_1	-0.6113

These two statistics both show a small negative skew in the Life Ladders data set.

e.

	Value	Excess kurtosis
g_2	3.0748	0.0748
G_2	3.1292	0.1292

All of these values have a positive kurtosis, however, the excess kurtosis is more close to a normal distribution.

7. Country name: Türkiye – Subregion: Western Asia – Variable: Freedom to make life choices

a.

	Value
Q1	0.881
Q2	0.926
Q3	0.947

b.

	Value	Robust
Median	0.926	1
Mean	0.891	0
Geometric Mean	0.887	0
Harmonic Mean	0.881	0
Trimmed Mean	0.891	1
Interquartile Mean	0.916	1
Winsorized Mean	0.891	1

In this case, Robust statistics still shows a similar values with the trimmed mean and winsorized mean having the same value.

c.

	Value	Bias Corrected	Robust
s1	0.087	0.098	0
s2	0.094		0
Range	0.27	-	0
IQR	0.066	0.049	1
MAD	0.035	0.052	1
AAD	0.065	0.081	1

Robust statistics show a significant shift in their values after correcting data biases.

d.

	Value
g_1	-1.4801
G_1	-1.9184

This set of data still shows a negative skew.

e.

	Value	Excess kurtosis
g_2	3.9011	0.9011
G_2	6.9626	3.9626