Abdullah Gul University

Math-301 (Probability & Statistics)

Fall 2022, QUIZ - I

Name & Surname:
ID Number:

Q 1. (100 pt.)

The measurements in the table below were recorded for the drying time, in hours, of a certain brand of latex paint. Assume that the measurements are a simple random sample. Under that assumption;

a. What is the sample size for the sample below? (30 pt)
b. Calculate the sample mean value. (30 pt)
c. Calculate the sample median measurement. (30 pt)
d. Compute the 20% trimmed mean value. (10 pt)

3.4	2.5	4.8	2.9	3.6
2.8	3.3	5.6	3.7	2.8
4.4	4.0	5.2	3.0	4.8

SOLUTION:

a. Sample size = 3x5 = 15

b. Mean = $\mu = \frac{3.4+2.5+4.8+2.9+3.6+2.8+3.3+5.6+3.7+2.8+4.4+4+5.2+3+4.8}{sample\ size} = \frac{56.8}{15} \approx 3.79$

c. First, let us sort the measurements as below;

2.5	2.8	2.8	2.9	3.0
3.3	3.4	3.6	3.7	4.0
4.4	4.8	4.8	5.2	5.6

Then, the sample size is an odd number, so:
Median = $m = x_{(n+1)/2} = 3.6$

d. Again, let us sort the measurements as below;

~~2.5~~	~~2.8~~	~~2.8~~	2.9	3.0
3.3	3.4	3.6	3.7	4.0
4.4	4.8	~~4.8~~	~~5.2~~	~~5.6~~

In order to eliminate the largest 20% and smallest 20% from the total measurements, eliminate the values of a total of 3 (=15x20%) samllest values (2.5, 2.8, and 2.8) and the values of a total of 3 (=15x20%) largest values (4.8, 5.2, and 5.6) from the table. Then\ let us calculate the 20% trimmed mean value:

Mean-tr(20%) = $\mu = \frac{2.9+3+3.3+3.4+3.6+3.7+4+4.4+4.8}{new\ sample\ size} = \frac{33.1}{9} \approx 3.68$