Week Three Statistics Assignment   Dannetta Sparks

3A

For the following set of scores, compute the range, the unbiased and the biased standard deviations, and the variance. Do the exercise by hand:

Range =   39

Mean =   79.9

Unbiased Standard deviation   13.10

Biased Standard deviation   12.42

Unbiased estimate of the Variance   171.6

Biased Estimate of the Variance   154.49

Consider a set X of numbers

94, 86, 72, 69, 93, 79, 55, 88, 70, 93

Total Numbers =10

        Range =h-l: = 94-55. R= 39

Range= 39

        Mean = Sum of X values / N (Number of values)

Mean (Average) =799/10   79.9

To find the unbiased estimate of the variance,

        Subtract the mean from each of the values =

[(94 – 79.9) ^{2} +(86 – 79.9) ^{2} + (72-79.9) ^{2} +(69-79.9)^2 +(93-79.9)^2 +(79-79.9) ^{2} +(55-79.79) ^{2} + (88-79.9) ^{2} +(70-79.9) +(93-79.9)

        Square all the answers you have got from subtraction.

14.10 ^{2}, 6.09^2, 7.90^2, 10.90^2, 13.10^2, .90^2, 24.90^2, 8.09^2, 9.90^2, 13.10^2

        Add all the squared numbers and divide the sum by n-1 or 5145/9

198.81 + 37.21+ 62.41+ 118.81+ 171.61+ 0.81+ 620.01+ 65.61 + 98.01 +   171.61=   1545

                    n   n-1   **171.66**

Unbiased estimate of the variance= 171.66

The Biased Estimate =154.5

Divide the sum of squares by n =1545/10 =154.45

198.81 + 37.21+ 62.41+ 118.81+ 171.61+ 0.81+ 620.01+ 65.61 + 98.01 +   171.61= **1545**

        n   10   **154.45**

Unbiased Standard deviation= variance $\sqrt{171.66=}$ 13.10

Biased Standard deviation = the square root of biased estimate= $\sqrt{154.45}$ 12.42
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**WEEK THREE ASSIGNMENTS   DANNETTA SPARKS
3B**

6. For each of the following, indicate whether you would use a pie, line, or bar chart and

why.

a.   The proportion of freshmen, sophomores, juniors, and seniors in a particular
          university.

I would use a pie chart here because I want to show the proportion of each level of

students in the universit . A pie chart is used to show the proportion of an item that

makes up a series of data points (Salkind. 2017. p. 70).
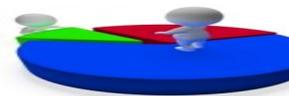
b.   Change in temperature over a 24-hour period.

I would use a line chart here to show the change in the temperature over 24 hours

because I want to show a trend over 24 hours and a line chart is used to show a trend in

the data at equal intervals, such as a trend over time. (P. 70).

C.	Number of applicants for four different jobs.

I would use the <u>bar chart</u> because although a bar or column chart is used to compare the frequencies of different categories with one another, in the bar chart categories are organized horizontally on the x-axis, and values are shown vertically on the y-axis (P. 69). In the column chart, which is identical to the bar chart, except that the categories are organized on the y-axis (which is the vertical one), and values are shown on the x-axis (the horizontal one).

d.	Percentage of test takers who passed.

I would use <u>a pie chart</u> here because I want to show the categories of test-takers in proportion to each other so, a pie chart is used to show the proportion pf an item that makes up a series of data points (p. 70).

e.	Number of scores in each of 10 categories.

I would use a <u>bar chart</u> here because it is used to compare the frequencies of different categories with one another (p. 69).

References

Salkind, N. J. (2017). Statistics for People Who (Think They) Hate Statistics

SAGE. Thousand Oaks, CA