Madan Bhandari Memorial College

Sampling Distribution and Estimation

Lab: 1

Project 1.2: For Ungrouped Data

OBJECT:

ENTER THE FOLLOWING VALUES IN SPSS AND CALCULATE MEAN, S.D, RANGES, MODE, MEDIAN

WEIGHTS: 25, 35, 45, 55, 65, 75

WORKING EXPRESSIONS:

We have,

i. Mean (X) = $\frac{\sum x}{n}$

ii. Median (Md) = $\frac{n+1}{2}$

iii. Standard Deviation (S.D.) = $\sqrt{\frac{\sum(X-X)2}{n}}$

iv. Range = max – min

v. Mode = maximum repetition of data

vi. Standard error (S.E.) = $\frac{S.D.}{\sqrt{n}}$

Note: Where $\sum x$ represents the sum of all the items in the dataset and n represent the number of items in the given dataset.

CALCULATION:

From SPSS,

MEAN, S.D, RANGES, MODE, MEDIAN FROM THE GIVEN DATA IS SHOWN THROUGH THE TABLE

Statistics

Weights

N	Valid	6
	Missing	0
Mean		49.83

Std. Error of Mean	7.705
Median	50.00
Mode	25[a]
Std. Deviation	18.872
Variance	356.167
Range	50
Minimum	25
Maximum	75

RESULT:

From the above table, the following results were obtained:

I. Mean = 49.83

II. Median = 50.00

III. Standard Deviation = 18.872

IV. Range = 50

V. Mode = 25 (Multiple modes exists. The smallest value is shown)

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Project 1.2: For Ungrouped Data

OBJECT:

ENTER THE FOLLOWING VALUES IN SPSS AND CALCULATE MEAN, S.D, RANGES, MODE, MEDIAN

WEIGHT	MID VALUE	FREQUENCY
20-30	25	4
30-40	35	6
40-50	45	7
50-60	55	21
60-70	65	23
70-80	75	2

WORKING EXPRESSIONS:

We have,

i. Mean (X) = $\frac{\sum x}{n}$

ii. Median (Md) = $\frac{n+1}{2}$

iii. Standard Deviation (S.D.) = $\sqrt{\frac{\sum(X-X)2}{n}}$

iv. Range = max – min

v. Mode = maximum repetition of data

vi. Standard error (S.E.) = $\frac{S.D.}{\sqrt{n}}$

Note: Where $\sum x$ represents the sum of all the items in the dataset and n represent the number of items in the given dataset.

CACLUCATION:

From SPSS,

Statistics

Mid_value

N	Valid	63
	Missing	0
Mean		54.37
Median		55.00
Mode		65
Std. Deviation		12.556
Range		50

RESULT:

From the SPSS output table, the following results are obtained:

i. Mean = 54.37
ii. Median = 55.00
iii. Mode = 65
iv. Standard Deviation (S.D) = 12.556
v. Range = 50

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Sampling Distribution and Estimation

Lab: 1

Project 1.4: CONFIDENCE INTERVAL FOR POPULATION MEAN μ, (σ UNKNOWN AND LARGE n)

OBJECT:

ENTER THE FOLLOWING VALUES IN SPSS AND CREAT A CONFIDENCE INTERVAL ASSUMING NORMAL DISTRUBUTION

LENGTH: 125, 120, 121, 123, 122, 130, 124, 122, 120, 122, 118, 119, 123, 124, 122, 124, 121, 122, 138, 149, 123, 128, 122. 130. 120, 122, 124, 134, 137, 128, 122, 121, 125, 120, 132, 130, 128, 130, 122, 124

WORKING EXPRESSIONS:

i. Mean (X) = $\frac{\sum x}{n}$

ii. Median (Md) = $\frac{n+1}{2}$

iii. Standard Deviation (S.D.) = $\sqrt{\frac{\sum(X-\bar{X})2}{n}}$

iv. Range = max – min

v. Mode = maximum repetition of data

vi. Standard error (S.E.) = $\frac{S.D.}{\sqrt{n}}$

vii. Confidence Interval (C.I.)= $\bar{X} \pm Z\frac{S.D.}{\sqrt{n}}$

Note: Where $\sum x$ represents the sum of all the items in the dataset and n represent the number of items in the given dataset.

CALCULATION:

From SPSS, the confidence interval after entering the given value in SPSS is:

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Length	128.879	39	.000	125.275	123.31	127.24

CONCLUSION:

Using SPSS, the confidence interval of the given data is 125.275, 127.4