

Name :- M-Faizari
Roll no :- 13636
Paper :- Biostatistics

Q No :- 2

Mean Consumption Fresh vegetables for

$$\text{Mean} = \frac{204 + 259 + 266 + 317}{4}$$

$$= \frac{1046}{4}$$

$$= 261.5 \text{ grama per day.}$$

Mean consumption of fruits for. ~~Mean~~

$$\text{Mean} = \frac{31 + 45 + 69 + 105}{4}$$

$$= \frac{250}{4}$$

$$= 62.5 \text{ per gram.}$$

Women

Mean consumption of vegetables for

$$\text{Women} = \frac{178 + 235 + 266 + 304}{4}$$

$$= \frac{983}{4}$$

245.75 grams per day

Mean consumption of fruits for

$$\text{Women} = \frac{28 + 46 + 70 + 121}{4}$$

$$\frac{265}{4}$$

= 66.25 grams per day

Mean consumption of rice for

$$\text{Women} = \frac{315 + 276 + 243 + 220}{4}$$

$$= \frac{1054}{4}$$

= 263.5 grams per day.

Mean consumption of Rice for

$$\text{Mean:- } \frac{367 + 337 + 269 + 246}{4}$$

$$= \frac{1219}{4}$$

$$= 304.75 \text{ grams per day.}$$

Mean consumption of fish for men

$$\frac{23 + 28 + 31 + 44}{4}$$

$$= \frac{126}{4}$$

$$= 31.5 \text{ grams per day}$$

Mean consumption of Meat for

$$\text{Men} = \frac{70 + 61 + 69 + 77}{4}$$

$$= \frac{277}{4}$$

$$= 69.25 \text{ grams per day.}$$

Q No 2:-

The given data is as follows

Classes	f
20-24	01
25-29	03
30-34	05
35-39	05
40-44	02
45-49	00
50-54	00
55-59	01

Now in order to compute the required terms we proceed as below.

Class	f	x	C.B	C.f	fx	x ²	fx ²	log x	$\frac{fx}{f}$	$\frac{fx \log x}{f}$	$\frac{x - \bar{x}}$	$f(x - \bar{x})$
20-24	01	22	19.5-24.5	1	22	484	484	1.34	1.34	0.05	14.8	14.8
25-29	03	27	24.5-29.5	4	81	729	2187	1.43	4.29	0.11	9.8	29.4
30-34	05	32	29.5-34.5	9	160	1024	5120	1.51	7.53	0.16	4.8	24
35-39	05	37	34.5-39.5	14	210	1369	8820	1.57	12.55	0.22	0.2	1.6
40-44	05	42	39.5-44.5	19	94	2209	4418	1.62	8.12	0.12	5.2	26
45-49	02	47	44.5-49.5	21	00	2209	00	1.67	3.34	0.04	10.2	20.4
50-54	00	52	49.5-54.5	23	57	3249	3249	1.72	00	00	15.2	00
55-59	01	57	54.5-59.5	25				1.76	1.76	0.02	20.2	20.2
					920		35230		38.93	0.72		136.4
Σ	25											

$$\textcircled{1} A.M = \frac{\Sigma fx}{\Sigma f} = \frac{920}{25} = 36.80 \text{ Ans}$$

$$\textcircled{2} G.M = A \cdot \log \left[\frac{\Sigma f \log x}{\Sigma f} \right] = A \cdot \log \left[\frac{38.93}{25} \right]$$

$$G.M = 36.07 \text{ Ans}$$

$$(3) H.M = \frac{\Sigma f}{\Sigma\left(\frac{f}{x}\right)} = \frac{25}{0.71} = 34.72 \text{ Ans}$$

$$(4) \text{Median} = L + \frac{1}{f} \left(\frac{n}{2} - cf \right)$$

Now 1st of all we have to calculate the Median class by using the following formula.

i.e. Median class = size of $\left(\frac{n+1}{2}\right)$ the item

Where $n = 25$

\therefore Median class = size of $\left(\frac{25+1}{2}\right)$ the item

Median class = size of "13th" item

Median class = 34.5 — 39.5

$$\therefore \text{Median} = 34.5 + \frac{0.5}{0.8} \left(\frac{25}{2} - 0.9 \right)$$

$$\text{Median} = 34.5 + 0.63 (3.5)$$

$$\text{Median} = 34.5 + 2.21$$

$$\text{Median} = 36.71 \text{ Ans}$$

$$(5) \text{Mode} = L + \frac{f_m - f_0}{2f_m - f_0 - f_1} \times h$$

$$\therefore \text{Mode} = 34.5 + \frac{0.8 - 0.5}{2(0.8) - 0.5} \times 5$$

$$\text{Mode} = 34.5 + \frac{0.3}{0.6} \times 5$$

$$\begin{aligned} \text{Mode} &= 34.5 + 2.50 \\ &= 37 \text{ Ans.} \end{aligned}$$

⑥ Quantiles.

$$Q_i = L + \frac{1}{f} \left(\frac{n \times i}{4} - c.f \right)$$

$$\textcircled{1} Q_1 = L + \frac{1}{f} \left(\frac{n \times 1}{4} - c.f \right)$$

First of all we have to calculate the Quartile class

\therefore Quartile class = size of $\frac{i(n+1)}{4}$ the item

\therefore class containing $Q_1 =$ size of $\frac{1(25+1)}{4}$ the item

class containing $Q_1 =$ size of 7th item

class containing $Q_1 = 29.5 - 34.5$

$$Q_1 = L + \frac{1}{f} \left(\frac{n \times 1}{4} - c.f \right)$$

$$Q_1 = 29.5 + \frac{0.5}{0.5} \left(\frac{25 \times 1}{4} - 0.4 \right)$$

$$\textcircled{2} \underline{Q_1 = 29.5 + 1(2.25) = 31.75 \text{ Ans.}}$$

$Q_2 =$ 2nd Quartile = Median

and Median is already calculated

which is 36.71

$$\therefore Q_2 = 36.71 \text{ Ans}$$

$$Q_3 = L + \frac{l}{f} \left(\frac{n \times 3}{4} - c.f \right)$$

Now 1st of all we have to compute the class having Q_3

\therefore Class containing $Q_3 =$ size of $\frac{3(n+1)}{4}$

Class containing $Q_3 =$ size of $\frac{3(25+1)}{4}$ the item

Class containing $Q_3 =$ size of 20th item

Class containing $Q_3 = 39.5 - 44.5$

$$Q_3 = L + \frac{l}{f} \left(\frac{n \times 3}{4} - c.f \right)$$

$$Q_3 = 39.5 + \frac{5}{05} \left(\frac{25 \times 3}{4} - 17 \right)$$

$$Q_3 = 39.5 + 1 (1.75)$$

(41.25) Ans.

7) Deciles:

$$D_i = L + \frac{l}{f} \left(\frac{n \times i}{10} - c.f \right)$$

$$\text{Now } D_1 = L + \frac{l}{f} \left(\frac{n \times 1}{10} - c.f \right)$$

First of all we have to compute the Decile class.

\therefore Class containing $D_1 =$ size of $\frac{1(n+1)}{10}$ the item

= class containing $D_1 =$ size of $\frac{1(25+1)}{10}$ the item
containing $D_1 = 3rd$ item

0- Class containing $D_1 = 24.5 - 29.5$

Now

$$D_1 = L + \frac{f}{f} \left(\frac{n+1}{10} - (f) \right)$$

$$D_1 = 24.5 + \frac{05}{03} \left(\frac{25+1}{10} - 01 \right)$$

$$D_1 = 24.5 + 2.50 = \underline{27} \text{ Ans}$$

②

$$D_2 = L + \frac{f}{f} \left(\frac{n+2}{10} - (f) \right)$$

Decile class = size of $\frac{2(n+1)}{10}$ the item

⇒ class containing $D_2 =$ size of $\frac{2(25+1)}{10}$ the item

∴ class containing $D_2 =$ size of 5th item

⇒ class containing $D_2 = 29.5 - 34.5$

∴ $D_2 = 29.5 + \frac{05}{05} \left(\frac{25+2}{10} - 04 \right)$

$$D_2 = 29.5 + 1 (1)$$

$$\text{Ans} = 30.5$$

$$(3) D_3 = L + \frac{1}{f} \left(\frac{n \times 3}{10} - C.f \right) \text{ Now}$$

Class containing $D_3 =$ size of $\frac{3(n+1)}{10}$ the item

Class containing $D_3 =$ size of $\frac{3(25+1)}{10}$ the item

Class containing $D_3 =$ size of 8th item

Class containing $D_3 = 29.5 - 34.5$

Now

$$(4) D_3 = L + \frac{f}{f} \left(\frac{n \times 3}{10} - C.f \right)$$

Where $L = 29.5$, $l = 05$, $f = 05$

$n = 25$ $C.f = 04$

$$\therefore D_3 = 29.5 + \frac{05}{05} \left(\frac{25 \times 3}{10} - 04 \right)$$

$$D_3 = 29.5 + 1 (3.50) = 33$$

$$D_3 = \underline{\underline{33}} \text{ Ans}$$

(A) The purpose of Census:-

The purpose of a Census is to enumerate, and collect data every member of a population.

The Census is a Snapshot whereas various administrative records span continuous time and would have to be analyzed, with some difficulty, to get a spot figure for a particular date.

(b) It differs from records held by government departments in that it aims to be completed where government department records will not. Also it addresses particular questions.

(e.g. language, spoken, religion, which government records are unlikely to contain.)

And participation in the Census is a legal requirement.

(C) A participation rate of 94% is high.

And to that extent might be regarded as giving very good information when compared with others are ~~unlikely to contain~~ data.

However the nature of the missing 6% is an issue. These people are likely to be untypical of the 94% who participate.

e.g.:- estimating the homeless rate from the 94% reached would be very inaccurate.

(6) Since 'Jedi Knight' is not in real sense a religion.

This indicates that people do not always take the census seriously.

This may therefore doubt on the accuracy of other response they give.

It may be indicate contempt for a distrust of government and the collection of data by government agencies.

For example, the 2011 census quantified the decline in Christianity and the rise in Islam; these are likely to be real phenomena.

(e) Conducting the census online in 2021 will present problems for excluded groups, those without internet access or with internet capability such as those is poverty and the old.

(f) there may be additional concerns about security of information when it is supplied online. Additional information held by government agencies is unlikely to be complete. Record matching in combining databases is a notorious problem.