



Statistics Ex 7.3 Q13

Answer :

Let the assumed mean be $A = 50$ and $h = 10$.

Class interval :	Mid value (x_i) :	frequency: (f_i)	$d_i = x_i - A$ $= x_i - 50$	$u_i = \frac{1}{h}(d_i)$ $= \frac{1}{10}(d_i)$	$f_i u_i$
25-35	30	6	-20	-2	-12
35-45	40	10	-10	-1	-10
45-55	50	8	0	0	0
55-65	60	12	10	1	12
65-75	70	4	20	2	8
		$\sum f_i = 40$			$\sum f_i u_i = -2$

We know that mean, $\bar{X} = A + h \left(\frac{1}{N} \sum f_i u_i \right)$

Now, we have $N = \sum f_i = 40$, $\sum f_i u_i = -2$, $h = 10$ and $A = 50$.

Putting the values in the above formula, we have

$$\begin{aligned}
 \bar{X} &= A + h \left(\frac{1}{N} \sum f_i u_i \right) \\
 &= 50 + 10 \left(\frac{1}{40} \times (-2) \right) \\
 &= 50 - \frac{20}{40} \\
 &= 50 - 0.5 \\
 &= 49.5
 \end{aligned}$$

Hence, the mean is 49.5.

Statistics Ex 7.3 Q14

Answer :

The given series is an inclusive series. Firstly, make it an exclusive series.

Class Interval	Mid-Value(x_i)	Frequency(f_i)	$d_i = x_i - A$ $= x_i - 42$	$u_i = \frac{d_i}{h} = \frac{d_i}{5}$	$f_i u_i$
24.5–29.5	27	14	–15	–3	–42
29.5–34.5	32	22	–10	–2	–44
34.5–39.5	37	16	–5	–1	–16
39.5–44.5	A = 42	6	0	0	0
44.5–49.5	47	5	5	1	5
49.5–54.5	52	3	10	2	6
54.5–59.5	57	4	15	3	12
		$\sum f_i = 70$			$\sum f_i u_i = -79$

Let the assumed mean be $A = 42$ and $h = 5$.

We know that mean, $\bar{X} = A + h \left(\frac{1}{N} \sum f_i u_i \right)$

Now, we have $N = \sum f_i = 70$, $\sum f_i u_i = -79$, $h = 5$ and $A = 42$.

Putting the values in the above formula, we have

$$\begin{aligned}\bar{X} &= A + h \left(\frac{1}{N} \sum f_i u_i \right) \\ &= 42 + 5 \left(\frac{1}{70} \times (-79) \right) \\ &= 42 - \frac{395}{70} \\ &= 42 - 5.6438 \\ &= 36.3571\end{aligned}$$

Hence, the mean is 36.357.

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