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Jose Alejandro Villagran Perez Rango 50-20/6=5

Intervalo	F _i	%F _i	%F _{ia}	\bar{x}_i	F _{ia}	F _i · \bar{x}_i	\bar{x}_i^2	F _i · \bar{x}_i^2	
20-25	3	12	12	22.5	3	67.5	506.25	1518.75	$\sum c_i = 25$
25-30	4	16	28	27.5	7	110	756.25	3025	$\sum F_i \bar{x}_i = 907.5$
30-35	5	20	48	32.5	12	162.5	1056.25	5281.25	$\sum F_i \bar{x}_i^2 = 35656.25$
35-40	2	8	56	37.5	14	75	1406.25	2812.5	
40-45	4	16	72	42.5	18	170	1806.25	7225	
45-50	7	28	100	47.5	25	322.5	2236.25	15793.75	

$$\text{Media } (\bar{x} = \frac{\sum F_i \bar{x}_i}{n}) = \frac{907.5}{25} = 36.3$$

$$\text{Media } (me = L_i + \frac{\frac{n}{2} - F_{i-1} \cdot a_i}{F_i}) \cdot \frac{n}{2} = \frac{25}{2} = 12.5$$

$$me = 35 + \frac{12.5 - 12}{2} \cdot 5 = 36.25$$

$$s = \sqrt{113.08}$$

$$s = 10.63$$

$$\text{Moda } (mo = \frac{L_i + F_i - F_{i-1}}{F_i - F_{i-1} + F_i - F_{i+1}} \cdot a_i) \quad mo = \frac{5 + 7 - 4}{(7-4) + (7+0)} \cdot 5 = 46.5$$

$$\text{Varianza } (s^2 = \frac{\sum F_i \bar{x}_i^2 - (\sum F_i \bar{x}_i)^2}{n-1}) \quad s^2 = \frac{35656.25 - \frac{(907.5)^2}{25}}{24} = \frac{2714}{24} = 113.08$$

Rango = N.M - N menor / No intervalos = $\frac{80-36}{7} = 6$

Intervalo	F _i	%F _i	F _i ·a	%F _i ·a	\bar{x}_i	F _i · \bar{x}_i	\bar{x}_i^2	F _i · \bar{x}_i^2	
38-44	8	22.22	8	22.22	41	328	1681	13448	
44-50	5	13.88	13	36.11	47	235	2209	11045	$\Sigma F_i = 36$
50-56	3	8.33	16	44.44	53	159	2809	8427	$\Sigma F_i \cdot \bar{x}_i = 2132$
56-62	4	11.11	20	55.55	59	236	3481	13924	$\Sigma F_i \cdot \bar{x}_i^2 = 130952$
62-68	4	11.11	24	66.66	65	260	4225	16900	
68-74	5	13.88	29	80.95	71	355	5041	25205	
74-80	7	19.44	36	100	77	539	5929	4503	

Media ($\bar{x} = \frac{\Sigma F_i \cdot \bar{x}_i}{n}$) $\bar{x} = \frac{2132}{36} = 59.22$

Moda = $L_i + \frac{F_i - F_{i-1}}{F_i - F_{i-1} + F_i - F_{i+1}} \cdot a_i$

Mediana ($Me = L_i + \frac{\frac{n}{2} - F_{i-1}}{F_i} \cdot a_i$)

$Mo = \frac{38 + 8 - 0.6}{(8-0) + (8-5)} = 42.36$

$\frac{n}{2} = \frac{36}{2} = 18$

Varianza $S^2 = \frac{\Sigma F_i \cdot \bar{x}_i^2 - (\frac{\Sigma F_i \cdot \bar{x}_i}{n})^2}{n-1}$

$Me = \frac{56 + 18 - 16}{4} = 6$

$S^2 = \frac{130952 - (\frac{2132}{36})^2}{35} = 134.00$

$Me = \frac{56 + 2}{4} = 6$

$SS = 134 \cdot 35 = 11.57$

$Me = 59$

Jose Villagrán

$$\textcircled{1} N = 45,000$$

$$P = 0.5$$

$$q = 1 - P = 1 - 0.5 = 0.5$$

$$B = 3\% = 0.03$$

$$D = \frac{B^2}{4} = \frac{(0.03)^2}{4} = 0.000225$$

$$n = \frac{N \cdot P \cdot q}{(n-1)D + P \cdot q}$$

$$n = \frac{45000 (0.5)(0.5)}{(44999) + (0.5)(0.000225)} = 1084.36$$

$$n = 1085$$

$$\textcircled{2} N = 20,000$$

$$P = 72.5\% = 0.725$$

$$q = 1 - 0.725 = 0.275$$

$$B = 5\% = 0.05$$

$$D = \frac{B^2}{4} = \frac{(0.05)^2}{4} = 0.000625$$

$$n = \frac{N \cdot P \cdot q}{(n-1)D + P \cdot q}$$

$$n = \frac{20000 (0.725)(0.275)}{19999(0.000625) + 0.725(0.275)} = 314$$

$$n = 314$$

Jose Villagran

③ $N = 50,000$

$P = 76\% = 0.76$

$q = 1 - P = 1 - 0.76 = 0.24$

$D = 4\% = 0.04$

$n = \frac{N \cdot P \cdot q}{(N-1)D + P \cdot q}$

$D = \frac{B^2}{4}$

$B = \frac{(0.04)^2}{4} = 0.0004$

$n = \frac{50000(0.76)(0.24)}{49999(0.0004) + (0.76)(0.24)} = 451.88$

$n = 452$

④ $N = 10,000$

$P = 0.5$

$q = 1 - P = 1 - 0.5 = 0.5$

$B = 5\% = 0.05$

$n = \frac{N \cdot P \cdot q}{(N-1)D + P \cdot q}$

$D = \frac{B^2}{4}$

$B = \frac{(0.05)^2}{4} = 0.000625$

$n = \frac{10000(0.5)(0.5)}{9999(0.000625) + (0.5)(0.5)} = 384.65$

$n = 385$

⑤ $N = 25,000$

$P = 55\% = 0.55$

$q = 1 - P = 1 - 0.55 = 0.45$

$B = 2\% = 0.02$

$n = \frac{N \cdot P \cdot q}{(N-1)D + P \cdot q}$

$D = \frac{B^2}{4}$

$B = \frac{(0.02)^2}{4} = 0.0001$

$n = \frac{25000(0.55)(0.45)}{24999(0.0001) + (0.55)(0.45)} = 2252.12$

$n = 2253$

⑥ $N = 15,000$

$P = 66\% = 0.66$

$q = 1 - P = 1 - 0.66 = 0.34$

$B = 3\% = 0.03$

$n = \frac{N \cdot P \cdot q}{(N-1)D + P \cdot q}$

$D = \frac{B^2}{4} = 0.000225$

$B = \frac{(0.03)^2}{4} = 0.000225$

$n = \frac{15000(0.66)(0.34)}{14999(0.000225) + (0.66)(0.34)} =$

$= 986.21$