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Nombre del trabajo: ejercicios

Materia: Bioestadística

PASIÓN POR EDUCAR

Grado: 4to cuatrimestre

Grupo: "B"

Comitán de Domínguez Chiapas a 04 de diciembre de 2020

50 49 25 50 47
 29 46 34 48 25
 20 33 49 40 33
 31 39 43 43 35
 28 23 20 44 31

▷ Rango: $\frac{\text{No. Mayor} - \text{No. Menor}}{\text{No. Intervalos}}$

▷ Rango: $\frac{50 - 20}{6} = \frac{30}{6} = \underline{\underline{5}}$

Intervalo	f_i	% f_i	f_{iA}	% f_{iA}	\bar{x}_i	$f_i \bar{x}_i$
20-25	3	12%	3	12%	22.5	67.5
25-30	4	16%	7	28%	27.5	110
30-35	5	20%	12	48%	32.5	162.5
35-40	2	8%	14	56%	37.5	75
40-45	4	16%	18	72%	42.5	170
45-50	7	28%	25	100%	47.5	332.5

$\sum f_i = 25$

$\bar{x} = \frac{\sum f_i \bar{x}_i}{n} = \frac{917.5}{25} = 36.7$

$\sum f_i \bar{x}_i = 917.5$

\bar{x}_i^2	$f_i \bar{x}_i^2$
506.25	1,518.75
756.25	3,025
1,056.25	5,281.25
1,406.25	2,812.5
1,806.25	7,225
2,256.25	15,793.75

35,656.25

$Me = \frac{Li + \frac{n}{2} - f_{iA-1} \cdot a_i}{f_i}$

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

$Mo = \frac{Li + f_i - f_{i-1} \cdot a_i}{(f_i - f_{i-1}) + (f_i - f_{i+1})}$

$Mo = \frac{45 + 7 - 4}{(7-4) + (7-0)} \cdot 5 = 16.5$

$S^2 = \frac{\sum f_i \bar{x}_i^2 - \frac{(\sum f_i \bar{x}_i)^2}{n}}{n-1}$

$S^2 = \frac{35,656.25 - \frac{(917.5)^2}{25}}{24} = \underline{\underline{82.66}}$

Desviación estándar: $\underline{\underline{9.09}}$

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80 75 71 80 71 44
 38 56 80 42 68 45
 70 40 75 41 53 57
 78 42 66 45 64 58
 55 56 73 56 41 64
 38 67 79 49 49 38

Rango: $\frac{\text{No. Mayor} - \text{No. Menor}}{\text{No. Intervalos}}$

Rango: $\frac{80 - 38}{7} = \frac{42}{7} = \underline{6}$

Intervalo	fi	% fi	fca	% fca	\bar{x}_i	fi \bar{x}_i
38-44	8	22.22%	8	22.22%	41	328
44-50	5	13.88%	13	36.11%	47	235
50-56	3	8.33%	16	44.44%	53	159
56-62	4	11.11%	20	55.55%	59	236
62-68	4	11.11%	24	66.66%	65	260
68-74	5	13.88%	29	80.55%	71	355
74-80	7	19.44%	36	100%	77	539

$\sum f_i = 36$

$\sum f_i \bar{x}_i = 2,112$

$\bar{x} = \frac{\sum f_i \bar{x}_i}{n} = \frac{2,112}{36} = 58.66$

\bar{x}_i^2	$f_i \bar{x}_i^2$
1,681	13,448
2,209	11,045
2,809	8,427
3,481	13,924
4,225	16,900
5,041	25,205
5,929	41,503

$\sum = 130,452$

$Me: L_i + \frac{\frac{n}{2} - f_{ca-1} \cdot a_i}{f_i}$

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

$Me: 56 + \frac{18 - 16}{4} \cdot 6 = \underline{59}$

$Mo: L_i + \frac{f_i - f_{i-1}}{(f_i - f_{i-1}) + (f_i - f_{i+1})} \cdot a_i$

$Mo: 38 + \frac{8 - 0}{(8 - 0) + (8 - 5)} \cdot 6 = \underline{42.36}$

$S^2 = \frac{\sum f_i \bar{x}_i^2 - \frac{(\sum f_i \bar{x}_i)^2}{n}}{n-1}$

$S^2 = \frac{130,452 - \frac{(2,112)^2}{36}}{35} = \underline{187.08}$

Desviación estandar: $\underline{13.67}$

$$q = 1 - p$$

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

$$n = \frac{Npq}{(n-1) + pq}$$

q = Probabilidad que no ocurra un evento

P = Probabilidad que si ocurra un evento

B: Error de estimación

n: Muestra

N: Población

Ejercicio 1

$$N = 45000$$

$$p = 0.5$$

$$q = 1 - 0.5 = \underline{0.5}$$

$$B = 3\% = \underline{0.03}$$

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

$$n = \frac{(45000)(0.5)(0.5)}{(44999)(0.000225) + (0.5)(0.5)} = \underline{1,084.36}$$

Ejercicio 2

$$N = 20000$$

$$p = 72.5\% = 0.725$$

$$q = 1 - 0.725 = 0.275$$

$$B = 5\% = 0.05$$

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

$$n = \frac{(20000)(0.725)(0.275)}{(19999)(0.000625) + (0.725)(0.275)} = \underline{34.007}$$

Ejercicio 3

$$N = 50000$$

$$p = 76\% = 0.76$$

$$q = 1 - 0.76 = 0.24$$

$$B = 4\% = 0.04$$

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

$$n = \frac{(50000)(0.76)(0.24)}{(49999)(0.0004) + (0.76)(0.24)} = \underline{451.887}$$

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Ejercicio 4

$$N = 10000$$

$$P = 0.5$$

$$q = 51\% = 0.05$$

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

$$n = \frac{(10000)(0.5)(0.5)}{(9999)(0.000625) + (0.5)(0.5)} = \underline{\underline{384.652}}$$

Ejercicio 5

$$N = 25000$$

$$P = 55\% = 0.55$$

$$q = 1 - 0.55 = 0.45$$

$$B = 2\% = 0.02$$

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

$$n = \frac{(25000)(0.55)(0.45)}{(24999)(0.0001) + (0.55)(0.45)} = \underline{\underline{225.12}}$$

Ejercicio 6

$$N = 15000$$

$$P = 66\% = 0.66$$

$$q = 1 - 0.66 = 0.34$$

$$B = 3\% = 0.03$$

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

$$n = \frac{(15000)(0.66)(0.34)}{(14999)(0.000225) + (0.66)(0.34)} = \underline{\underline{935.21}}$$

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