



MATERIA; ESTADISTICA DESCRIPTIVA

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20 DE JUNIO DEL 2020



Estadística Descriptiva

Percentil
40, 57, 78

Posición $P_{40} = (40)(48)/100 = 19.2$

$$F_i = 24 \quad L_i = 45$$

$$F_{i-1} = 12 \quad A = 10$$

$$P_{40} = 45 + 10 \left(\frac{19.2 - 12}{24 - 12} \right)$$

$$P_{40} = 45 + 10 \left(\frac{7.2}{12} \right) = 45 + 6$$

$$P_{40} = 51$$

Posición $P_{57} = (57)(48)/100 = 27.36$

$$P_{57} = 55 + 10 \left(\frac{27.36 - 24}{32 - 24} \right) = 55 + 10 \left(\frac{3.36}{8} \right)$$

$$P_{57} = 59.2$$

Posición $P_{78} = (78)(48)/100 = 37.44$

$$P_{78} = 65 + 10 \left(\frac{37.44 - 32}{39 - 32} \right) = 65 + 10 \left(\frac{5.44}{7} \right)$$

$$P_{78} = 72.77$$

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Datos	f_i	F_i
25-35	4	4
35-45	4	12
45-55	12	24
55-65	4	32
65-75	7	39
75-85	3	42
85-95	6	48

$$F_{i-1} = 32 \quad L_i = 65$$

$$F_i = 39 \quad A = 10$$

$$\text{Posición } Q_1 = (1)(48)/4 = 12$$

$$Q_1 = 25 \quad Q_1 = 45$$

$$\text{Posición } Q_2 = (2)(48)/4 = 24$$

$$Q_2 = 55$$

$$\text{Posición } Q_3 = (3)(48)/4 = 36$$

$$Q_3 = 65 + 10 \left(\frac{36 - 32}{39 - 32} \right)$$

$$Q_3 = 65 + 10 \left(\frac{4}{7} \right) = 65 + (10 \times 4) \div 7$$

$$Q_3 = 70.41$$

$$\text{Posición } D_3 = (3)(48)/10 = 14.4$$

$$D_3 = 45 + 10 \left(\frac{14.4 - 12}{24 - 12} \right) = 45 + 10 \left(\frac{2.4}{12} \right) = 57$$

$$\text{Posición } D_7 = (7)(48)/10 = 33.6$$

$$D_7 = 65 + 10 \left(\frac{33.6 - 32}{39 - 32} \right) = 65 + 10 \left(\frac{1.6}{7} \right) = 67.29$$

$$\text{Posición } D_9 = (9)(48)/10 = 43.2$$

$$D_9 = 85 + 10 \left(\frac{43.2 - 42}{48 - 42} \right) = 85 + 10 \left(\frac{1.2}{6} \right)$$

$$D_9 = 85 + 2 = 87$$

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Datos	P_i	$P_{i,c}$	mc	$f_i \cdot mc$	P_r	$P_{i,r}$
15-35	8	8	25	200	0.166	16.6
35-55	4	12	45	180	0.083	8.3
55-75	12	24	65	780	0.25	25
75-95	8	32	85	680	0.166	16.6
95-115	7	39	105	735	0.145	14.5
115-135	3	42	125	375	0.062	6.2
135-155	6	48	145	870	0.125	12.5

Promedio

$$\bar{x} = \frac{\sum mc \cdot P_i}{N} = \frac{200 + 180 + 780 + 680 + 735 + 375 + 870}{48}$$

Promedio = 79.58

Mediana

$$M = Li + \left(\frac{\frac{N}{2} - (F_{i-1})}{f_i} \right) \cdot A$$

$$M = 55 + \frac{(24 - 12)}{12} \cdot 20$$

$$M = 55 + (1) \cdot (20)$$

M = 70

Moda

$$M_o = Li + \left(\frac{f_i}{(f_{i-1}) + (f_{i+1}))} \right) \cdot A$$

$$M_o = 55 + \left(\frac{12}{12 + 8} \right) \cdot 20$$

$$M_o = 55 + 13.33$$

M_o = 68.33

Percentil 70

$$P_{70} = \frac{N \cdot 70}{100} = 33.6 \leq F$$

$$P_{70} = Li + \left(\frac{\frac{N \cdot 70}{100} - P_{i-1}}{f_i} \right) \cdot A$$

$$P_{70} = 95 + \left(\frac{33.6 - 32}{7} \right) \cdot 20$$

$$P_{70} = 95 + \left(\frac{1.6}{7} \right) \cdot 20$$

P₇₀ = 99.57

Q3

$$Q_3 = (N) / (75) / 100$$

$$Q_3 = (48) / (75) / 100$$

$$Q_3 = 36$$

$$Q_3 = Li + \left(\frac{P_3 - (P_{i-1})}{f_i} \right) \cdot A$$

$$Q_3 = 95 + \left(\frac{36 - 39}{7} \right) \cdot 20$$

Q₃ = 106.42

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