

INSTITUTO PRIVADO RAFAEL ARÉVALO MARTÍNEZ

Nombre:

Katherin Jimena Muñoz Salazar

Grado:

4to. Administración de Empresas

Catedrático:

Josue Estrada

Curso:

Estadística

TAREA 8

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v.j.m.j.ch. 3/11/2021

Instrucciones: Agregue las columnas que hacen falta y calcule lo siguiente.

1. Ordene los datos
2. Calcular k
3. Calcular R
4. Calcular i
5. Media aritmética, Mediana y Moda
6. Cuartiles 1 y 3
7. Percentiles 75 y 90
8. Deciles 3 y 7
9. Desviación Media, Estándar y Coeficiente de variación o dispersión.

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v.j.m.g. chv = 3/11/2021

Puntajes obtenidos en un examen de Estudios Sociales por 41 alumnos.

45	50	72	60	60	80	46	69	75	61
45	55	73	60	60	83	67	74	76	61
50	69	73	60	79	99	67	75	78	61
50	72	74	60	80	65	68	75	60	63
63									

Datos Ordenados

45	45	50	50	50	55	60	60	60	60
60	60	60	61	61	61	63	63	65	66
67	67	68	69	69	72	72	73	73	74
74	75	75	75	76	78	79	80	80	83
99									

Calcular $K =$

$$K = 1 + 3.322 \cdot \log(n)$$

$$K = 1 + 3.322 \cdot \log(41)$$

$$K = 1 + 3.322 \cdot (1.61278)$$

$$K = 1 + 5.36$$

$$K = 6.36$$

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Calcular Rango $Dma - Dme + 1$

$$R = 99 - 45 + 1$$

$$R = 54 + 1$$

$$R = 55$$

Calcular Intervalo

$$i = \frac{R}{K}$$

$$i = 8$$

$$i = \frac{55}{6.36}$$

$$i = 8.65$$

TABLA DE DATOS CON INTERVALOS

K	L-A	Lri	Lrs	xs	F	fa	fxs	$ d = (xs - \bar{x})$	F d	$(xs - \bar{x})^2$
1	45-52	44.5	52.5	48.5	5	5	242.5	17.56	87.8	308.35
2	53-60	52.5	60.5	56.5	8	13	452	9.56	76.48	91.39
3	61-68	60.5	68.5	64.5	10	23	645	1.56	15.6	2.43
4	69-76	68.5	76.5	72.5	12	35	870	6.44	77.28	41.47
5	77-84	76.5	84.5	80.5	5	40	402.5	14.44	72.2	208.51
6	85-92	84.5	92.5	88.5	0	40	0	22.44	0	503.55
7	93-100	92.5	100.5	96.5	1	41	96.5	30.44	30.44	926.59

41

2,708.5

359.8

$f(xs - \bar{x})^2$

1541.45

24.3

1,042.55

926.59

31.12

497.64

0

4,763.95

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$$\textcircled{1} \bar{x} = \frac{\sum f x_i}{N} = \frac{2,708.5}{41} = 66.0611 \quad \left. \vphantom{\frac{2,708.5}{41}} \right\} \text{Media Aritmética}$$

$$\begin{aligned} \textcircled{2} Md &= L_{ri} + \left(\frac{N/2 - f_{aa}}{f} \right) i \\ Md &= 68.5 + \left(\frac{20.5 - 23}{12} \right) 8 \\ Md &= 68.5 + (0.21) 8 \\ Md &= 68.5 + 1.68 \\ Md &= 70.1811 \end{aligned} \quad \left. \vphantom{\frac{20.5 - 23}{12}} \right\} \text{Mediana}$$

$$\begin{aligned} \textcircled{3} Mo &= L_{ri} + \left(\frac{\Delta_1}{\Delta_1 + \Delta_2} \right) i \\ \Delta_1 &= 12 - 10 = 2 \\ \Delta_2 &= 12 - 5 = 7 \\ Mo &= 68.5 + \left(\frac{2}{2+7} \right) 8 \\ Mo &= 68.5 + \left(\frac{2}{9} \right) 8 \\ Mo &= 68.5 + (0.22) 8 \\ Mo &= 68.5 + 1.76 \\ Mo &= 70.2611 \end{aligned} \quad \left. \vphantom{\frac{2}{9}} \right\} \text{Moda}$$

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$$Q_1 = L_{ri} + \left(\frac{N/4 - f_{aa}}{f} \right) i$$

$$Q_1 = 68.5 + \left(\frac{10.25 - 23}{12} \right) 8$$

$$Q_1 = 68.5 + \left(\frac{-12.75}{12} \right) 8$$

$$Q_1 = 68.5 + (-1.06) 8$$

$$Q_1 = 68.5 + 8.48$$

$$Q_1 = \underline{\underline{76.98}}$$

Cartil 1

$$Q_3 = L_{ri} + \left(\frac{3N/4 - f_{aa}}{f} \right) i$$

$$Q_3 = 76.5 + \left(\frac{30.75 - 35}{5} \right) 8$$

$$Q_3 = 76.5 + \left(\frac{-4.25}{5} \right) 8$$

$$Q_3 = 76.5 + (-0.85) 8$$

$$Q_3 = 76.5 + 6.80$$

$$Q_3 = \underline{\underline{83.30}}$$

Cartil 3

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$$D_3 = Lr_i + \left(\frac{N_3/10 - f_{aa}}{f} \right) i$$

$$D_3 = 60.5 + \left(\frac{12.3 - 13}{10} \right) 8$$

$$D_3 = 60.5 + \left(\frac{0.7}{10} \right) 8$$

$$D_3 = 60.5 + (0.07) 8$$

$$D_3 = 60.5 + 0.56$$

$$D_3 = \underline{61.06} //$$

Decil 3

$$D_7 = Lr_i + \left(\frac{N_7/10 - f_{aa}}{f} \right) i$$

$$D_7 = 68.5 + \left(\frac{28.7 - 23}{12} \right) 8$$

$$D_7 = 68.5 + \left(\frac{5.7}{12} \right) 8$$

$$D_7 = 68.5 + (0.48) 8$$

$$D_7 = 68.5 + 3.84$$

$$D_7 = \underline{72.34} //$$

Decil 7

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$$P_{75} = Lr_i + \left(\frac{N_{75} / 100 - f_{a9}}{f} \right) i$$

$$P_{75} = \left(\frac{41 \times 75}{100} \right)$$

$$P_{75} = 76.5 + \left(\frac{30.75 - 35}{5} \right) 8$$

$$P_{75} = 76.5 + \left(\frac{4.75}{5} \right) 8$$

$$P_{75} = 76.5 + (0.85) 8$$

$$P_{75} = 76.5 + 6.8$$

$$P_{75} = \underline{\underline{83.3}}$$

Percentil 75

$$P_{90} = Lr_i + \left(\frac{N_{90} / 100 - f_{a9}}{f} \right) i$$

$$P_{90} = \left(\frac{41 \times 90}{100} \right)$$

$$P_{90} = 84.5 + \left(\frac{36.9 - 40}{5} \right) 8$$

$$P_{90} = 84.5 + \left(\frac{3.1}{5} \right) 8$$

$$P_{90} = 84.5 + (3.1) 8$$

$$P_{90} = 84.5 + 24.8$$

$$P_{90} = 109.3$$

Percentil 90

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V. J. M. Cho 31/11/2021

$$DM = \frac{359.8}{41} = \underline{8.781}$$

$$S = \sqrt{\frac{4763.95}{41}}$$

$$S = \sqrt{116.19}$$

$$S = \underline{10.781}$$

$$V = \frac{S}{x} \times 100$$

$$V = \frac{10.78}{66.06} \times 100 = \underline{16.32\%}$$

* La media es muy representativa.