

Instituto Privado Mixto

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Carrera: Administración de Empresas

Grado: Cuarto

Curso: Estadística

Trabajo: Actividad #8 IV Bloque

Ciclo Escolar: 2,021

ACTIVIDAD #8

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

1. Ordene los datos

Punteos obtenidos en un examen de Estudios sociales por 41 alumnos

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			

2. K

$$\begin{aligned}
 K &= 1 + 3.322 \log(n) \\
 K &= 1 + 3.322 \log(41) \\
 K &= 1 + 3.322 (1.61278) \\
 K &= 1 + 5.36 \\
 K &= 6.36
 \end{aligned}$$

3. R

$$\begin{aligned}
 R &= D_{ma} - D_{me} + 1 \\
 R &= 99 - 45 + 1 \\
 R &= 54 + 1 \\
 R &= 55
 \end{aligned}$$

4. I

$$I = \frac{R}{K} \qquad I = \frac{55}{6.36}$$

$$I = 8.65$$

$$I = 9$$



5. Media aritmética, Mediana y Moda

Punteos obtenidos en un examen de Estudios Sociales por 41 alumnos

K	LA	Lri	Lrs	Xs	f	fa	fxs
1	45 - 53	44.5	53.5	49	5	5	245
2	54 - 62	53.5	62.5	58	11	16	638
3	63 - 71	62.5	71.5	67	9	25	603
4	72 - 80	71.5	80.5	76	14	39	1,064
5	81 - 89	80.5	89.5	85	1	40	85
6	90 - 98	89.5	98.5	94	0	40	0
7	99 - 107	98.5	107.5	103	1	41	103

$$\Sigma fxs = 2,738$$

- Media aritmética

$$\bar{X} = \frac{\Sigma fxs}{N}$$

$$\bar{X} = \frac{2,738}{41} = 66.78$$



- Mediana

$$Md = Lri + \left(\frac{\frac{N}{2} - faa}{f} \right) i$$

$$\frac{41}{2} = 20.5$$

$$Md = 62.5 + \left(\frac{20.5 - 16}{9} \right) 9$$

$$Md = 62.5 + \left(\frac{4.5}{9} \right) 9$$

$$Md = 62.5 + (0.5) 9$$

$$Md = 62.5 + 4.5$$

$$Md = 67$$



- Moda

$$Mo = Lri + \left(\frac{\Delta_1}{\Delta_1 + \Delta_2} \right) i$$

$$\Delta_1 = 14 - 9 = 5$$

$$\Delta_2 = 14 - 1 = 13$$

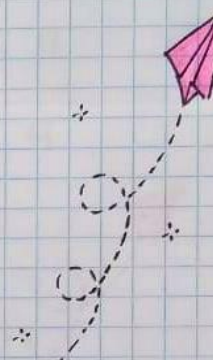
$$Mo = 71.5 + \left(\frac{5}{5 + 13} \right) 9$$

$$Mo = 71.5 + \left(\frac{5}{18} \right) 9$$

$$Mo = 71.5 + (0.28) 9$$

$$Mo = 71.5 + 2.52$$

$$Mo = 74.02$$



6. Cuartiles 1 y 3

$$Q1 = Lri + \left(\frac{N/4 - f_{aa}}{f} \right) i$$

$$\frac{41}{4} = 10.25$$

$$Q1 = 53.5 + \left(\frac{10.25 - 5}{11} \right) 9$$

$$Q1 = 53.5 + \left(\frac{5.25}{11} \right) 9$$

$$Q1 = 53.5 + (0.48) 9$$

$$Q1 = 53.5 + 4.32$$

$$Q1 = 57.82$$



$$Q3 = L_{ri} + \left(\frac{3N/4 - f_{aa}}{f} \right) i$$

$$\frac{3 \times 41}{4} = 30.75$$

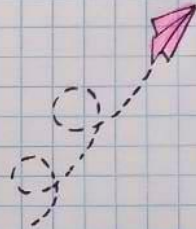
$$Q3 = 71.5 + \left(\frac{30.75 - 25}{14} \right) 9$$

$$Q3 = 71.5 + \left(\frac{5.75}{14} \right) 9$$

$$Q3 = 71.5 + (0.41) 9$$

$$Q3 = 71.5 + 3.69$$

$$Q3 = 75.19$$



7. Deciles 3 y 7

$$D3 = L_{ri} + \left(\frac{N3}{10} - f_{aa} \right) i$$

$$\frac{41 \times 3}{10} = 12.3$$

$$D3 = 53.5 + \left(\frac{12.3 - 5}{11} \right) 9$$

$$D3 = 53.5 + \left(\frac{7.3}{11} \right) 9$$

$$D3 = 53.5 + (0.66) 9$$

$$D3 = 53.5 + 5.94$$

$$D3 = 59.44$$



$$D7 = Lri + \left(\frac{\frac{N7}{10} - f_{aa}}{f} \right) i$$

$$\frac{41 \times 7}{10} = 28.7$$

$$D7 = 71.5 + \left(\frac{28.7 - 25}{14} \right) 9$$

$$D7 = 71.5 + \left(\frac{3.7}{14} \right) 9$$

$$D7 = 71.5 + (0.26) 9$$

$$D7 = 71.5 + 2.34$$

$$D7 = 73.84$$



8. Percentiles 75 y 90

$$P75 = Lri + \left(\frac{\frac{N75}{100} - f_{aa}}{f} \right) i$$

$$\frac{41 \times 75}{100} = 30.75$$

$$P75 = 71.5 + \left(\frac{30.75 - 25}{14} \right) 9$$

$$P75 = 71.5 + \left(\frac{5.75}{14} \right) 9$$

$$P75 = 71.5 + (0.41) 9$$

$$P75 = 71.5 + 3.69$$

$$P75 = 75.19$$



$$P_{90} = L_{ri} + \left(\frac{\frac{N_{90}}{100} - f_{aa}}{f} \right) i$$

$$\frac{41 \times 90}{100} = 36.9$$

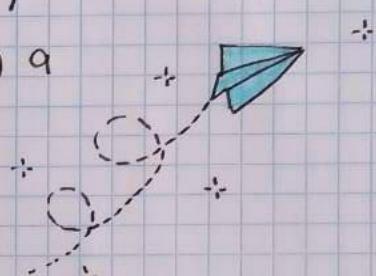
$$P_{90} = 71.5 + \left(\frac{36.9 - 25}{14} \right) 9$$

$$P_{90} = 71.5 + \left(\frac{11.9}{14} \right) 9$$

$$P_{90} = 71.5 + (0.85) 9$$

$$P_{90} = 71.5 + 7.65$$

$$P_{90} = 79.15$$



9. Desviación Media Estándar y Coeficiente de Variación o dispersión

LA	f	Xs	fxs	ldl	f dl	(xs - $\bar{x}$) ²	f(xs - $\bar{x}$) ²
45-53	5	49	245	17.78	88.9	316.13	1,580.65
54-62	11	58	638	8.78	96.58	77.09	847.99
63-71	9	67	603	0.22	1.98	0.05	0.45
72-80	14	76	1,064	9.22	129.08	85.01	1,190.14
81-89	1	85	85	18.22	18.22	331.97	331.97
90-98	0	94	0	27.22	0	740.93	0
99-107	1	103	103	36.22	36.22	1,311.89	1,311.89
			2,738	370.98		5,263.09	

$$\bar{x} = \frac{\sum f x_s}{N}$$

$$\bar{x} = \frac{2,738}{41} = 66.78$$

$$DM = \frac{\sum f |dl|}{N}$$

$$DM = \frac{370.98}{41} = 9.05$$

$$S = \sqrt{\frac{\sum f (x_s - \bar{x})^2}{N}}$$

$$S = \sqrt{\frac{5,263.09}{41}}$$

$$S = \sqrt{128.37}$$

$$S = 11.33$$

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

$$V = \frac{11.33}{66.78} \times 100 = 16.97\%$$

La media es bastante representativa

10. Construya un diagrama de sectores

Punteos obtenidos en un examen de Estudios sociales por 41 alumnos

LA	F	Fr	Lri	Lrs	Xs	Grados	%
45 - 53	5	0.1220	44.5	53.5	49	44	12.20
54 - 62	11	0.2683	53.5	62.5	58	97	26.83
63 - 71	9	0.2195	62.5	71.5	67	79	21.95
72 - 80	14	0.3415	71.5	80.5	76	123	34.15
81 - 89	1	0.0244	80.5	89.5	85	9	2.44
90 - 98	0	0	89.5	98.5	94	0	0
99 - 107	1	0.0244	98.5	107.5	103	9	2.44

Diagrama de sectores, punteos obtenidos en un examen de Estudios sociales por 41 alumnos

