

Tema:

# Cuartiles, Deciles, Percentiles



- NOMBRE DEL ALUMNO: ROSA CECILIA MENDEZ JIMENEZ
- NOMBRE DEL DOCENTE: JORGE ERIQUE ALBORES
- CARRERA: CONTADURIA Y FINANZAS
- CUATRIMESTRE: 3°
- MATERIA: ESTADISTICA DESCRIPTIVA

Cuartiles  
1, 2, 3

Intervalo		
10-15	8	8
15-20	12	20
20-25	3	23
25-30	6	29
30-35	4	33
35-40	10	43
40-45	9	52
45-50	8	60
50-55	7	67

$$Q_k = L_i + A \left( \frac{\frac{kn}{4} - F_{i-1}}{F_i - F_{i-1}} \right) \quad \text{Posición } \frac{kn}{4}$$

①  $Q_1 \rightarrow \frac{1 \times 67}{4} = 16.75$  posición

$$F_{i-1} = 8 \quad L_i = 15$$

$$F_i = 20 \quad A = L_s - L_i = 5$$

$$Q_1 = 15 + 5 \left( \frac{16.75 - 8}{20 - 8} \right)$$

$$Q_1 = 15 + 5 \left( \frac{8.75}{12} \right)$$

$$Q_1 = 15 + 5 (0.72916)$$

$$Q_1 = 15 + 3.6458$$

$$Q_1 = 18.6458$$

②  $Q_2 \rightarrow \frac{2 \times 67}{4} = 33.5$

$$F_{i-1} = 33 \quad L_i = 35$$

$$F_i = 43 \quad A = L_s - L_i = 5$$

$$Q_2 = 35 + 5 \left( \frac{33.5 - 33}{43 - 33} \right)$$

$$Q_2 = 35 + 5 \left( \frac{0.5}{10} \right)$$

$$Q_2 = 35 + 5 \cdot 0.05$$

$$Q_2 = 35 + 0.25$$

$$Q_2 = 35.25$$

③  $Q_3 \Rightarrow \frac{3 \times 67}{4} = 50.25$

$$F_{i-1} = 43 \quad L_i = 40$$

$$F_i = 52 \quad A = L_s - L_i = 5$$

$$Q_3 = 40 + 5 \left( \frac{50.25 - 43}{52 - 43} \right)$$

$$Q_3 = 40 + 5 \left( \frac{7.25}{9} \right)$$

$$Q_3 = 40 + 5 \cdot 0.805$$

$$Q_3 = 40 + 4.025$$

$$Q_3 = 44.025$$

## Deciles 2, 4, 6, 8, 9

$$D_k = L_i + A \left( \frac{\frac{kn}{10} - F_{i-1}}{F_i - F_{i-1}} \right) \quad \text{posición } \frac{kn}{10}$$

Intervalo	F	F
10-15	8	8
15-20	12	20
20-25	3	23
25-30	6	29
30-35	4	33
35-40	10	43
40-45	9	52
45-50	8	60
50-55	7	67

$$\textcircled{1} D_2 \rightarrow \frac{2 \times 67}{10} = 13.4$$

$$F_{i-1} = 8 \quad L_i = 15$$

$$F_i = 20 \quad A = L_s - L_i = 5$$

$$D_2 = 15 + 5 \left( \frac{13.4 - 8}{20 - 8} \right)$$

$$D_2 = 15 + 5 \left( \frac{5.4}{12} \right)$$

$$D_2 = 15 + 2.25$$

$$D_2 = 17.25$$

$$\textcircled{2} D_4 \rightarrow \frac{4 \times 67}{10} = 26.8$$

$$F_{i-1} = 23 \quad L_i = 25$$

$$F_i = 29 \quad A = L_s - L_i = 5$$

$$D_4 = 25 + 5 \left( \frac{26.8 - 23}{29 - 23} \right)$$

$$D_4 = 25 + 5 \left( \frac{3.8}{6} \right)$$

$$D_4 = 25 + 3.1667$$

$$D_4 = 28.1667$$

$$\textcircled{3} D_6 \rightarrow \frac{6 \times 67}{10} = 40.2$$

$$F_{i-1} = 33 \quad L_i = 35$$

$$F_i = 43 \quad A = L_s - L_i = 5$$

$$D_6 = 35 + 5 \left( \frac{40.2 - 33}{43 - 33} \right)$$

$$D_6 = 35 + 5 \left( \frac{7.2}{10} \right)$$

$$D_6 = 35 + 3.75$$

$$D_6 = 38.75$$

$$\textcircled{4} D_8 \rightarrow \frac{8 \times 67}{10} = 53.6$$

$$F_{i-1} = 52$$

$$L_i = 45$$

$$F_i = 60$$

$$A = L_5 - L_i = 5$$

$$D_8 = 45 + 5 \left( \frac{53.6 - 52}{60 - 52} \right)$$

$$D_8 = 45 + 5 \left( \frac{1.6}{8} \right)$$

$$D_8 = 45 + 1$$

$$D_8 = 46$$

$$\textcircled{5} D_9 \rightarrow \frac{9 \times 67}{10} = 60.3$$

$$F_{i-1} = 60$$

$$L_i = 50$$

$$F_i = 67$$

$$A = L_5 - L_i = 5$$

$$D_9 = 50 + 5 \left( \frac{60.3 - 60}{67 - 60} \right)$$

$$D_9 = 50 + 5 \left( \frac{0.3}{7} \right)$$

$$D_9 = 50 + 0.214285$$

$$D_9 = 50.214285$$

Percentil 9, 55, 69, 72.

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10-15	8	8
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30-35	4	33
35-40	10	43
40-45	9	52
45-50	8	60
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$$P_k = L_i + A \left( \frac{\frac{kn}{100} - F_{i-1}}{F_i - F_{i-1}} \right) \text{ Posición } \frac{kn}{100}$$

$$\textcircled{1} P_9 \rightarrow \frac{9 \times 67}{100} = 6.03 \rightarrow \text{Indefinido.}$$

$$\textcircled{2} P_{55} \rightarrow \frac{55 \times 67}{100} = 36.85$$

$$F_{i-1} = 33 \quad L_i = 35$$

$$F_i = 43 \quad A = 5$$

$$P_{55} = 35 + 5 \left( \frac{36.85 - 33}{43 - 33} \right)$$

$$P_{55} = 35 + 5 \left( \frac{3.85}{10} \right)$$

$$P_{55} = 35 + 1.925$$

$$P_{55} = 36.925$$

$$\textcircled{3} P_{69} \rightarrow \frac{69 \times 67}{100} = 46.23$$

$$F_{i-1} = 43 \quad L_i = 40$$

$$F_i = 52 \quad A = 5$$

$$P_{69} = 40 + 5 \left( \frac{46.23 - 43}{52 - 43} \right)$$

$$P_{69} = 40 + 5 \left( \frac{3.23}{9} \right)$$

$$P_{69} = 40 + 1.794$$

$$P_{69} = 41.794$$

$$\textcircled{4} P_{72} \rightarrow \frac{72 \times 67}{100} = 48.24$$

$$F_{i-1} = 43 \quad L_i = 40$$

$$F_i = 52 \quad A = 5$$

$$P_{72} = 40 + 5 \left( \frac{48.24 - 43}{52 - 43} \right)$$

$$P_{72} = 40 + 5 \left( \frac{5.24}{9} \right)$$

$$P_{72} = 40 + 2.91$$

$$P_{72} = 42.91$$