

UNIVERSIDAD DEL SURESTE

ING. JORGE ENRIQUE ALBORES

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ESTADISTICA DESCRIPTIVA

EJERCICIOS CUARTILES,
DESILES Y PORCENTILES.

Intervalo	P	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

Posición $K_n/4$

$$Q_k = Li + A \left(\frac{K_n/4 - F_{i-1}}{F_i - F_{i-1}} \right)$$

Cuartiles Q_1, Q_2 y Q_3

Posición $Q_1 = \frac{(1)(67)}{4} = \frac{67}{4} = 16.75$

$F_{i-1} = 8$ $Li = 15$
 $F_i = 20$ $A = 5$

$$Q_1 = 15 + 5 \left(\frac{16.75 - 8}{20 - 8} \right) = 15 \left(\frac{8.75}{12} \right) = 15(3.645) = 18.645$$

Posición $Q_2 = \frac{(2)(67)}{4} = \frac{134}{4} = 33.5$

$F_{i-1} = 33$ $Li = 35$
 $F_i = 43$ $A = 5$

$$Q_2 = 35 + 5 \left(\frac{33.5 - 33}{43 - 33} \right) = 35 + 5 \left(\frac{0.5}{10} \right) = 35 + 0.25 = 35.25$$

Posición $Q_3 = \frac{(3)(67)}{4} = \frac{201}{4} = 50.25$

$F_{i-1} = 43$ $Li = 40$
 $F_i = 52$ $A = 5$

$$Q_3 = 40 + 5 \left(\frac{50.25 - 43}{52 - 43} \right) = 40 + 5 \left(\frac{7.25}{9} \right) = 40 + 4.027$$

$Q_3 = 44.027$

DECILES 2, 4, 6, 8 y 9

$$D_k = Li + A \left(\frac{K_n/10 - F_{i-1}}{F_i - F_{i-1}} \right) \quad \text{Posición} = K_n/10$$

Posición $D_2 = \frac{(2)(67)}{10} = \frac{134}{10} = 13.4$

$F_{i-1} = 8$ $Li = 15$

$F_i = 20$ $A = 5$

$$D_2 = 15 + 5 \left(\frac{13.4 - 8}{20 - 8} \right) = 15 + 5 \left(\frac{5.4}{12} \right) = 15 + 2.25 = 17.25$$

Posición $D_4 = \frac{(4)(67)}{10} = 26.8$

$F_{i-1} = 23$ $Li = 25$

$F_i = 29$ $A = 5$

$$D_4 = 25 + 5 \left(\frac{26.8 - 23}{29 - 23} \right) = 25 + 5 \left(\frac{3.8}{6} \right) = 25 + 3.16 = 28.166$$

Posición $D_6 = \frac{(6)(67)}{10} = \frac{402}{10} = 40.2$

$F_{i-1} = 33$ $Li = 35$

$F_i = 43$ $A = 5$

$$D_6 = 35 + 5 \left(\frac{40.2 - 33}{43 - 33} \right) = 35 + 5 \left(\frac{7.2}{10} \right) = 35 + 3.6 = 38.6$$

Posición $D_8 = \frac{(8)(67)}{10} = 53.6$

$F_{i-1} = 52$ $Li = 45$

$F_i = 60$ $A = 5$

$$D_8 = 45 + 5 \left(\frac{53.6 - 52}{60 - 52} \right) = 45 + 5 \left(\frac{1.6}{8} \right) = 45 + 1 = 46$$

PERCENTIL 9, 55, 69, 72

$$P_k = L_i + A \left(\frac{K_n/100 - F_{i-1}}{F_i - F_{i-1}} \right) \quad \text{Posición } K_n/100$$

Posición $P_9 = \frac{(9)(67)}{100} = 6.03$ $F_{i-1} = 0$ $L_i = 10$
 $F_i = 8$ $A = 5$

$$P_9 = 10 + 5 \left(\frac{6.03 - 0}{8 - 0} \right) = 10 + 5 \left(\frac{6.03}{8} \right) = 10 + 3.76 = 13.76$$

Posición $P_{55} = \frac{(55)(67)}{100} = 36.85$ $F_{i-1} = 33$ $L_i = 35$
 $F_i = 43$ $A = 5$

$$P_{55} = 35 + 5 \left(\frac{36.85 - 33}{43 - 33} \right) = 35 + 5 \left(\frac{3.85}{10} \right) = 36.925$$

Posición $P_{69} = \frac{(69)(67)}{100} = 46.23$

$$P_{69} = 40 + 5 \left(\frac{46.23 - 43}{52 - 43} \right) = 40 + 5 \left(\frac{3.23}{9} \right) = 40 + 1.794$$

$P_{69} = 41.7944$ $F_{i-1} = 43$ $L_i = 40$
 $F_i = 52$ $A = 5$

Posición $P_{72} = \frac{(72)(67)}{100} = 48.24$ $F_{i-1} = 43$ $L_i = 40$
 $F_i = 52$ $A = 5$

$$P_{72} = 40 + 5 \left(\frac{48.24 - 43}{52 - 43} \right) = 40 + 5 \left(\frac{5.24}{9} \right) = 40 + 2.911$$

$P_{72} = 42.911$

Posición $D_9 = \frac{(9)(67)}{10} = 60.3$

$F_{i-1} = 60$ $L_i = 50$

$F_i = 67$ $A = 5$

$$D_9 = 50 + 5 \left(\frac{60.3 - 60}{67 - 60} \right) = 50 + 5 \left(\frac{0.3}{7} \right) = 50 + 0.214 = 50.214$$