No.Lista: 11
TAREA: 1

# Universidad Autonoma de México
# Facultad de Ingeniería
# Examen diagnostico

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Estadistica
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CALCULAR LA DESVIACIÓN MEDIA PARA DNA Y DA

PARA DNA

SABEMOS

$$DM = \frac{1}{n}\sum_{i=1}^{n} |X_i - \bar{X}|$$

OBTENIENDO $\bar{X}$

$$\bar{X} = \frac{1}{50}(30+30+31+36+40+\ldots+77+79+79+80+82)$$

$$\bar{X} = 58.7$$

$$DM = \frac{1}{50}[(30-58.7)+(30-58.7)+(31-58.7)+(36-58.7)+(40-58.7)+\ldots+(77-58.7)+(79-58.7)+(79-58.7)+(80-58.7)+(82-58.7)]$$

$$DM = 12.244$$

PARA DA

$$DM = \frac{1}{n}\sum_{i=1}^{m} |X_i - \bar{X}| f_i$$

OBTENEMOS $\bar{X}$

$$\bar{X} = \frac{1}{50}[(32.5)(4)+(40.5)(5)+(48.5)(9)+(56.5)(8)+(64.5)(8)+(72.5)(10)+(80.5)(6)]$$

$$\bar{X} = 58.9$$

$$DM = \frac{1}{50}[(32.5-58.9)(4)+(40.5-58.9)(5)+(48.5-58.9)(9)+(56.5-58.9)(8)+(64.5-58.9)(8)+(72.5-58.9)(10)+(80.5-58.9)(6)]$$

$$DM = 12.416$$

CALCULAR LA DESVIACIÓN MEDIANA Dmd

PARA DNA

$$Dmd = \frac{1}{n}\sum_{i=1}^{n} |X_i - \tilde{X}|$$

OBTENEMOS $\tilde{X}$

ORDENAMOS LOS DATOS

30 30 31 36 40 41 42 43 44 45
45 46 48 49 49 49 49 51 53 55
56 56 56 59 60 60 62 63 64 64
64 66 67 67 69 69 70 71 72 72
73 73 76 76 77 77 79 79 80 82

COMO EL NÚMERO DE VALORES ES PAR, ENTONCES, SE TOMAN LOS DOS VALORES CENTRADOS

$$\frac{\tilde{X}_{25}+\tilde{X}_{26}}{2} = \frac{60+60}{2} = 60$$

$$\Rightarrow$$

$$Dmd = \frac{1}{50}[(30-60)+(30-60)+(31-60)+(36-60)+(40-60)+\ldots+(77-60)+(79-60)+(79-60)+(80-60)+(82-60)]$$

$$Dmd = 12.18$$

PARA DA.

$$Dmd = \frac{1}{n}\sum_{i=1}^{m} |x_i - \tilde{x}| f_i$$

OBTENEMOS $\tilde{x}$

BUSCAMOS MEDIANTE INTERPOLACIÓN $n/2 \Rightarrow 50/2 = 25$

| LR | $f_i$ |
|---|---|
| 28.5 - 36.5 | 4 |
| 36.5 - 44.5 | 9 |
| 44.5 - 52.5 | 18 |
| 52.5 - 60.5 | 26 |

$f_i$ ↓

| $\Rightarrow$ FRONTERA | $f_i$ |
|---|---|
| $y_1 = 52.5$ | 18 |
| $y = \tilde{x}$ | 25 |
| $y_2 = 60.5$ | 26 |

$\Rightarrow$

$$y = \left(\frac{25-18}{26-18}\right)(60.5 - 52.5) + 52.5$$

$$y = 59.5$$

$$\Rightarrow \tilde{x} = 59.5$$

$$Dmd = \frac{1}{50}[(32.5 - 59.5)(4) + (40.5 - 59.5)(5) + (48 - 59.5)(9) + (56.5 - 59.5)(8) + (64.5 - 59.5)(8) + (72.5 - 59.5)(10) + (80.5 - 59.5)(6)]$$

$$Dmd = 12.44$$