
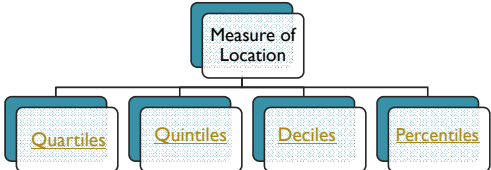



Measure of Location

Presented by:
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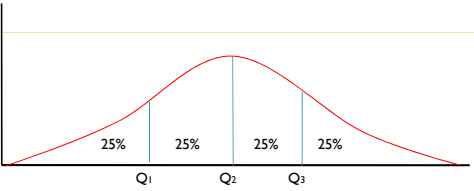



Framework

Quartiles

- Split the distributions in to 4 same different parts


Deciding Quartiles

Ungrouped data

- Short the data
$$Q_x = \frac{(n+1)}{4}$$
- Example:

2	2	4	5	6	6	8
X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇

 - Q₁ is "the first" X value = (7+1)/4 = X₂
X₂ = 2, conclude Q₁ = 2
 - Q₂ is "the second" X value = (7+1)/4 = X₄
X₄ = 5, conclude Q₂ = 5
 - Q₃ is "the third" X value = (7+1)/4 = X₆
X₆ = 6, conclude Q₃ = 6




Deciding Quartiles (count.)

Grouped data

- Decided the range = $\frac{x}{4}$
- Decide the quartiles

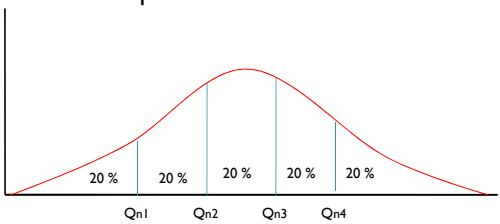

$$Q_x = L_{Q_n} + \left(\frac{\frac{x}{4}n - F_{L_{Q_n}}}{f_{Q_n}} \right) i$$

$x = 1, 2, 3$



Quintiles

- Split the distributions in to 5 same different parts

Deciding Quintiles

Ungrouped data

- Shorting the data $Q_{n_x} = \frac{(n+1)}{5}$
- Example:
4,5 5 5 6 6 6,5 8 8 8,5 10
X₁ X₂ X₃ X₄ X₅ X₆ X₇ X₈ X₉ X₁₀
- Q_{n1} is "the first" X value = (9+1)/5 = X₄
X₄ = 6, conclude Q_{n1} = 6
- Q_{n2} is "the second" X value = (9+1)/5 = X₈
X₈ = 8, conclude Q_{n2} = 8
- Q_{n3} is "the third" X value = (9+1)/5 = X₁₂
X₁₂ = 11, conclude Q_{n3} = 11
- Q_{n4} is "the fourth" X value = (9+1)/5 = X₁₅
X₁₅ = 15, conclude Q_{n4} = 15

Deciding Quintiles (count.)

Grouped data

- Decided the range = $\frac{x}{5}n$
- Decide the quintiles

$$Q_{n_x} = L_{Q_{n_x}} + \left(\frac{\frac{x}{5}n - F_{L_{Q_{n_x}}}}{f_{Q_{n_x}}} \right) i$$

$x = 1,2,3,4$

Deciles

- Split the distributions in to 10 same different parts

Deciding Deciles

Ungrouped data

- Shorting the data $D_x = \frac{(n+1)}{10}$

Grouped data

- Decided the range = $\frac{x}{10}n$
- Decide the quintiles

$$D_x = L_{D_x} + \left(\frac{\frac{x}{10}n - F_{L_{D_x}}}{f_{D_x}} \right) i \quad x = 1,2,3,4,5,6,7,8,9,10$$

Percentiles

- Split the distributions in to 100 same different parts

Deciding Percentiles

- First percentile (P₁) is a value in a distribution that limit 1 percent of frequency on the top of distributions from 99 percent on the below distribution
- 99th percentile (P₉₉) is a value in a distribution that limit 1 percent of frequency on the top of distributions from 99 percent on the below distribution

Ungrouped data

- Shorting the data $P_x = \frac{(n+1)}{100}$

Deciding Percentiles (cont.)

Grouped data

- Decided the range = $\frac{x}{100}n$
- Decide the percentiles

$$R_x = L_{F_x} + \left(\frac{\frac{x}{100}n - F_{L_{F_x}}}{f_{R_x}} \right) t$$

$$x = 1, 2, 3, \dots, 99$$

