Median

A statistical measure that determines the middle value of a dataset listed in ascending order

The "Hotshot" Sales Executive

Kurt works as a sales manager at vsellhomes.com. In the monthly sales review, Kurt reports that he will achieve his quarterly target of $1M.

Kurt claims his average deal size is $100,000 and he has 10 deals in his pipeline. Kurt's boss Ross is very delighted with his numbers.

At the end of quarter, even after closing 8 deals Kurt fails to meet his target number and falls short by more than $500,000.

Discussion

Why did Kurt fail to achieve his quarterly target?

With 10 deals in pipeline and with average deal size of $100,000 and converting 7 of those deals, how did he fail?

The Reality of the "Hotshot" Salesman

- Average deal size in pipeline

  = $100,000

- Deal #10 is of significantly higher value than all the other deals and impacts the average calculation

- Median = $55,000 more realistic measure

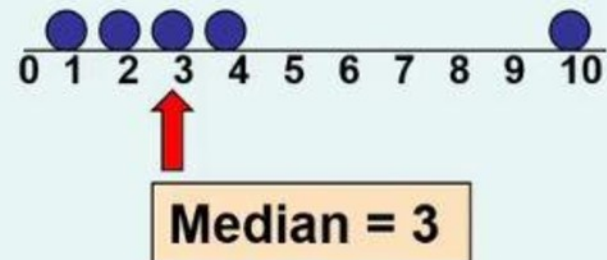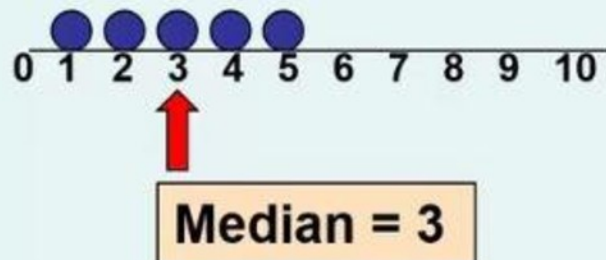| Deal #	Deal Value	Deal Status
1	70,000	Open
2	50,000	Closed
3	55,000	Closed
4	60,000	Closed
5	55,000	Closed
6	50,000	Closed
7	50,000	Closed
8	60,000	Closed
9	50,000	Closed
10	5,00,000	Open

Median is less susceptible to the influence of outliers.

Measures of Central Tendency:
The Median

- In an ordered array, the **median** is the "middle" number (50% above, 50% below)

Median = 3

Median = 3

- **Not** affected by extreme values (outliers)

Measures of Central Tendency: Locating the Median

- First arrange the values in *numerical order* (smallest to largest) to find the **median**:

$$\text{Median position} = \frac{n+1}{2} \text{ position in the ordered data}$$

- If the number of values is odd, the median is the middle number

- If the number of values is even, the median is the average of the two middle numbers

*Note that $\frac{n+1}{2}$ is not the *value* of the median, only the ***position*** of the median in the ranked data.

Median

The middle value

Example: 1, 2, 3, 4, 5

Median = 3

Median

Example: 1, 2, 3, 4, 5, 6

Two middle scores: 3, 4

To find the median, take the average of the two middle scores: $(3+4)/2 = 3.5$

Median = 3.5

Median

<u>Odd N</u>: When there are an odd number of values, the median is the middle score

(1, 2, 3, 4, 5; N=5) median = 3

<u>Even N</u>: When there are an even number of values, the median is equal to the average of the two middle scores

(1, 2, 3, 4, 5, 6; N=6) median = 3.5