

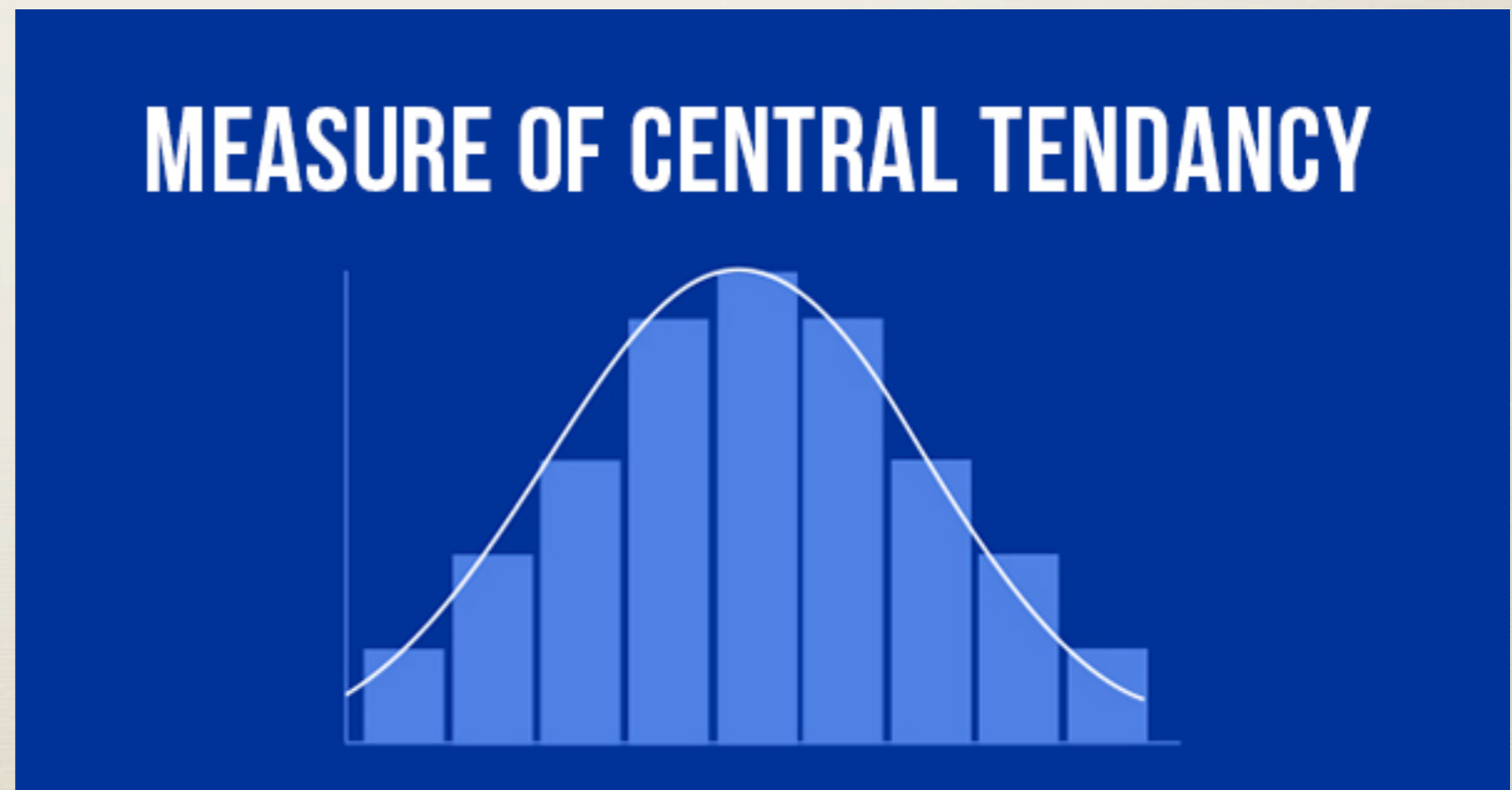
MEASURES OF CENTRAL TENDENCY

Mean, Median, Mode & Range

Central Tendency

- * Central tendency is a way to organize data.
- * There are four measures of central tendency that we will use:

- * Mean
- * Median
- * Mode
- * Range



Mean

- * The mean is the average
- * To calculate the mean we find the total and divide by the number of values:

1, 3, 6, 7, 8

Total: 25

of Values: 5

$$25 / 5 = 5$$

MEAN The mean is the total divided by the number of values.

This table shows the number of eggs laid by some hens each day.


| Mon | Tues | Weds | Thurs | Fri | Sat | Sun |
|-----|------|------|-------|-----|-----|-----|
| 5 | 6 | 2 | 4 | 8 | 1 | 9 |

When people say 'average', they are usually talking about the mean.

The total of these numbers is 35.
There are seven numbers in the table.

So... $35 \div 7 = 5$

The mean of these numbers is 5.



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Median

- * The median is the middle number when all numbers are in order
- * To find the median we first need to put all numbers in order from least to greatest
- * Next, we find the number in the middle!

1, 3, 6, 7, 8

In order

Middle number: 6

MEDIAN

The median is the middle number (when the numbers all in order).

This table shows the points scored in seven basketball games.

| Game 1 | Game 2 | Game 3 | Game 4 | Game 5 | Game 6 | Game 7 |
|--------|--------|--------|--------|--------|--------|--------|
| 15 | 21 | 19 | 20 | 14 | 32 | 16 |

If we put these numbers in order, we get...
14, 15, 16, 19, 20, 21, 32.
The middle number is 19, so the median is 19.

When there are two middle numbers, the median is halfway between them.



Mode

- * The mode is the number that appears the most
- * To find the mode we first need to order the numbers from least to greatest.
- * Next, count to see how many each number occurs

1, 3, 3, 6, 7, 8

Number that appears the most: 3

Range

- * The range is the difference between the largest number and the smallest number.
- * To calculate the range we take the largest number and subtract the smallest number.


1, 3, 6, 7, 8

Largest #: 8

Smallest #: 1

$$8 - 1 = 7$$

range



The range is the difference between the lowest and highest value.

- Find the highest and lowest values.
- Subtract the lowest value from the highest.

2, 2, 3, 5, 5, 7, 8

LowestHighest

$8 - 2 = 6$

The range is 6

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Mean, Median, Mode, and Range

First, arrange the numbers in order by size.

Example: 3, 5, 5, 6, 8, 10, 12

Mean

the average
of the numbers

1. Add the numbers together.
2. Divide by how many numbers were added.

$$3+5+5+6+8+10+12=49$$

$$49 \div 7 = 7$$

The mean is 7.

Median

the middle
number of
a sequence

The median is the middle number when numbers are arranged in order by size.

For an even number of numbers, the median is the average of the two numbers in the middle.

**The middle
number is 6.**

The median is 6.

Mode

the number
that occurs
most often

Find the number(s) that occurs most often in the sequence (there may be more than one).

**There are two 5s
and one of each of
the other numbers.**

The mode is 5.

Range

the difference
between the
lowest and
highest values

Subtract the smallest number from the largest number.

$$12 - 3 = 9$$

The range is 9.

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