Measures of central tendency

Mean:	$\bar{x} = \frac{1}{n} \cdot \sum_{i=1}^{n} x_i$	=AVERAGEA	
Mode:	the most frequent value	=MODE.SNGL	
Median:	middle value	=MEDIAN	

Measures of variability

Sample variance	$s^2 = \frac{1}{n-1} \sum_{i=1}^{n} (x_i - \bar{x})^2$	=VAR.S	
Sample Standard deviation	$s = \sqrt{s^2}$	=STDEV.S	
Range	R=max xi - min xi		
Variation coefficient	$v_x = \frac{s_x}{\bar{x}}$		

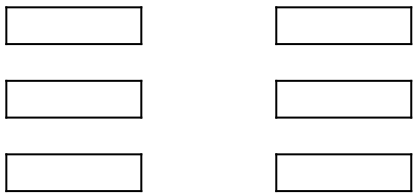
Variance represents one of the most important characteristics of variability.
It takes into account all the values from the statistical set and is based on the distance of the values from t

The standard deviation tells us how much the typical cases in the set of numbers under study differ from e
If it is small, the elements of the set are mostly similar to each other, and on the contrary, a large standard
Using the 1σ and 2σ rules, one can approximately determine how far the numbers in the set are from the a
The standard deviation is the most widely used measure of variability.

Kurtosis: The measure of the "tailedness" of the data.
Kurtosis is a statistical measure that describes the shape of a data distribution, specifically how the tails (
When we say kurtosis is a measure of the "tailedness" of the data, we are referring to how heavy or light

Skewness: The measure of asymmetry in the data distribution.

1	**1**	**1**	**2**	**2**	**3**	**4**	**4**



he arithmetic mean.

ach other.
deviation signals great mutual differences.
verage, or how far the values of the random variable are from the mean.

(extreme values) of the distribution compare to a normal distribution.
the tails are in comparison to a normal distribution.

4	**4**	5

Revenues in the department store (in thousands)

Task: Divide the data into an appropriate number of classes and construct a frequency h

33,7	56,32	10,97	45,09
57,05	39,89	50,12	59,49
9,97	62,54	20,15	42,16
75,93	21,47	9,96	34,42
48,67	36,05	63,75	18,56
35,26	17,76	32,76	68,1
11,49	82,7	53,91	39,73
5,97	30,06	15	79,01
21,25	50,1	41,72	27,18
94,86	19,92	25,01	51,45

$$k = Round(3{,}3.\log\_10(n)) + 1$$

calculations

n:
number of class
max:
min:
variation range
the width of the class

ıistogram.

class	the upper limit of the class	frequency
(5;20>		
(20;35>		
(35;50>		
(50;65>		
(65;80>		
(80;95>		

Amount of barrels of oil taken by individual companies (in thousands)

Task: Divide the data into an appropriate number of classes and construct a frequency histogra

11	15	17	13	8
16	18	14	18	10
7	2	10	12	17
20	16	9	9	11
15	22	15	6	21
14	14	13	19	6
3	21	16	21	17
10	13	17	17	13
19	6	23	11	18
12	12	20	8	15
13	1	11	16	9
22	9	18	19	16
9	15	5	6	7
11	15	8	25	14
17	10	15	10	12
11	7	20	15	5
10	18	14	4	19
5	13	7	20	9
12	8	10	13	15
4	12	1	15	14

$$k=Round(3{,}3.\log\_10(\ n))+1$$

calculations

n:
number of class
max:
min:
variation range
the width of the class

am.

Measures of central tendency

Mode:	$\hat{x}$	=MODE.SNGL
Median:	$\tilde{x}$	=MEDIAN
Population mean:	$\mu = \frac{1}{N} . \sum_{i=1}^{N} x_i$	=AVERAGEA
Sample mean:	$\bar{x} = \frac{1}{n} . \sum_{i=1}^{n} x_i$	=AVERAGEA
Geometric mean	$\bar{x}_g = \sqrt[n]{x_1 . x_2 \dots . x_n}$	=GEOMEAN

Measures of variability

Range:	R=max x_i - min x_i	
Population variance	$\sigma^2 = \frac{1}{N} \sum_{i=1}^{N} (x_i - \mu)^2$	=VAR.P
Sample variance	$s^2 = \frac{1}{n-1} \sum_{i=1}^{n} (x_i - \bar{x})^2$	=VAR.S
Population standard deviation	$\sigma = \sqrt{\sigma^2}$	=STDEV.P
Sample standard deviation	$s = \sqrt{s^2}$	=STDEV.S

Data → Data Analysis → Descriptive Statistics

Frequency histogram

Sturgers rule $k = Round(3{,}3 . \log\_10(n)) + 1$

Data → Data Analysis → Histogram