

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	$s = \sqrt{s^2}$	=SMODCH.VÝBĚR.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 (see below), one can approximately determine how far the numbers in the set ar
 The standard deviation is the most widely used measure of variability.

1	1	1	2	2	3	4	4
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the arithmetic mean.

each other.

deviation signals great mutual differences.

the distance from the average, or how far the values of the random variable are from the mean.

4	4	5
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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

$$k = \text{Round}(3,3 \cdot \log_{10}(n)) + 1$$

calculations

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



istogram.

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 histogram

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

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calculations

n:
number of class
max:
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the width of the class



m.

Measures of central tendency

Mode:	\hat{x}	=MODE.SNGL
Median:	\tilde{x}	=MEDIAN
Population mean:	$\mu = \frac{1}{N} \cdot \sum_{i=1}^N x_i$	=AVERAGEA
Sample mean:	$\bar{x} = \frac{1}{n} \cdot \sum_{i=1}^n x_i$	=AVERAGEA
Geometric mean	$\bar{x}_g = \sqrt[n]{x_1 \cdot x_2 \cdot \dots \cdot x_n}$	=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	$\sigma = \sqrt{\sigma^2}$	=SMODCH.P
Sample standard deviation	$s = \sqrt{s^2}$	=SMODCH.VÝBĚR.S

Nástroje → Analýza dat → Popisná statistika

Frequency histogram

Sturges rule $k = \text{Round}(3,3 \cdot \log_{10}(n)) + 1$

Nástroje → Analýza dat → Histogram