

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	$R = \max x_i - \min x_i$		
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.

re 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

33,7	56,3	10,97	45,1
57,05	39,9	50,12	59,5
9,97	62,5	20,15	42,2
75,93	21,5	9,96	34,4
48,67	36,1	63,75	18,6
35,26	17,8	32,76	68,1
11,49	82,7	53,91	39,7
5,97	30,1	15	79
21,25	50,1	41,72	27,2
94,86	19,9	25,01	51,5

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

calculations
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or cla
It is d
gene:

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



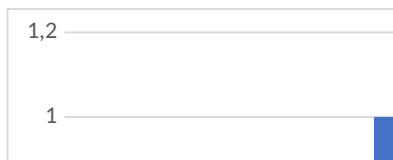
of classes and construct a

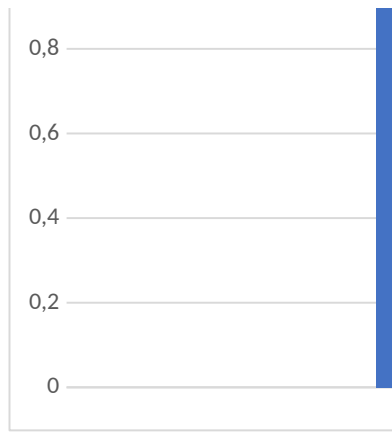
class
(5;20>
(20;35>
(35;50>
(50;65>
(65;80>
(80;95>

ers rule

es' Rule is a statistical form
esses for a histogram or frec
efined as

rally used for smaller datas








a frequency histogram.

the upper limit of the class	frequency

Formula used to determine the optimal number of bins for a frequency distribution, based on the total number of observations (30–200 points) and normally distributed data.





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ervations

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

Task: Divide the data into an appropriate number of classes and const

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

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

calculations

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

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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	$\sigma = \sqrt{\sigma^2}$	STDEV.P
Sample standard deviation	$s = \sqrt{s^2}$	STDEV.S

Data → Data Analysis → Descriptive Statistics

Frequency histogram

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

Data → Data Analysis → Histogram