STATE UNIVERSITY OF MEDICINE AND PHARMACY "NICOLAE TESTEMITANU“
DEPARTMENT of
MANAGEMENT AND PSYCHOLOGY

Presentation of the results of Scientific Research.

Rules for Writing Scientific Articles and Abstracts.

Larisa Spinei
d.h.ş.m., profesor universitar

PRESENTATION OF STATISTICAL DATA

The presentation of the statistical information is done through

- Statistical series
- Statistical tables
- Graphic representations

STATISTICAL SERIES

- **Time statistical series**
- **Space / territorial statistical series**
- **Distribution of statistical series**

STATISTICAL SERIES

BENEFITS

- Grouping and sorting of data
- Records in relation to a certain criterion (time, territory)
- It is the basis for calculating derivative indicators
- Can highlight the trend phenomenon

TYPES OF TABLES

FOR DIDACTIC PURPOSE WE DEOSE 3 TYPES OF TABLES:

- **dichotomous classification tables**
- **frequency distribution tables**
- **correlation tables**

DICHOTOMIC TABLE

TABLE 1.

Distribution of students from community X in year Y by genders, place of residence and presence or absence of dental caries

TOTAL	GENDER		PLACE OF RESIDENCE		DENTAL CARE	
500	M	300	R	200	P	150
					A	50
			U	100	P	60
					A	40
	W	200	R	150	P	100
					A	50
			U	50	P	30
					A	20

TABLE OF FREQUENCY

TABLE 2.

Distribution by gender and groups of patients with HT from locality X in year Y

No	Gender	Total	types groups of HT			
			160-169,9	**170-179,9**	**180-189,9**	**200-209,9**
1	**Total**	**50**	**28**	**15**	**7**	**-**
2	**men**	**32**	**20**	**8**	**4**	**...**
3	**women**	**18**	**8**	**7**	**3**	**-**

TABLES OF CORRELATION

TABLE 3.

Distribution of patients with HTA according to age groups and values of TA

age groups	TA values			
	160-169,9	**170-179,9**	**180-189,9**	**200-209,9**
40-44	5			
45-47		10		
50-54			15	
55-59				20

Types of tables

- Simple
- Complex
  - group
  - mixed

SIMPLE TABLE

STAGE of HTA	NO. OF PATIENTS
I	
II	
III	
TOTAL	

GROUP TABLES

STAGE of HTA	GENDER		THE AGE (years)					TOTAL
	M	W	up to 20	20-29	30-39	40-49	50 and over	
I								
II								
III								
TOTAL								

Mixed TABLES

STAGE of HTA	THE AGE (years)								TOTAL
	> 30		30-39		40-49		50 <		
	M	F	M	F	M	F	M	F	
I									
II									
III									
TOTAL									

RULES OF BUILDING TABLES

A. The tables should be simple

- 2 or 3 small tables are preferred to a single large table which contains many details or variables
- Generally It can be read easily maximum 3 variables

RULES OF BUILDING TABLES

B. The tables must be self explanatory

- The tables must be self explanatory
- Each row and column must be concisely and clearly labeled
- It must be mentioned the specific units for thepresented data

RULES OF BUILDING TABLES

B. The tables must be self explanatory

- The title of the table should be clear, concise and on the subject. It must answer to the questions: What? When? Where?
- The TOTAL number must appear in any table
- In the small tables it is not necessary to draw vertical lines which separats the columns

RULES OF BUILDING TABLES
(continuation)

C. the Title

It is usually separated from the body of the table by lines or spaces

D. If the data are not original, their source should be mentioned in the footnote

Example

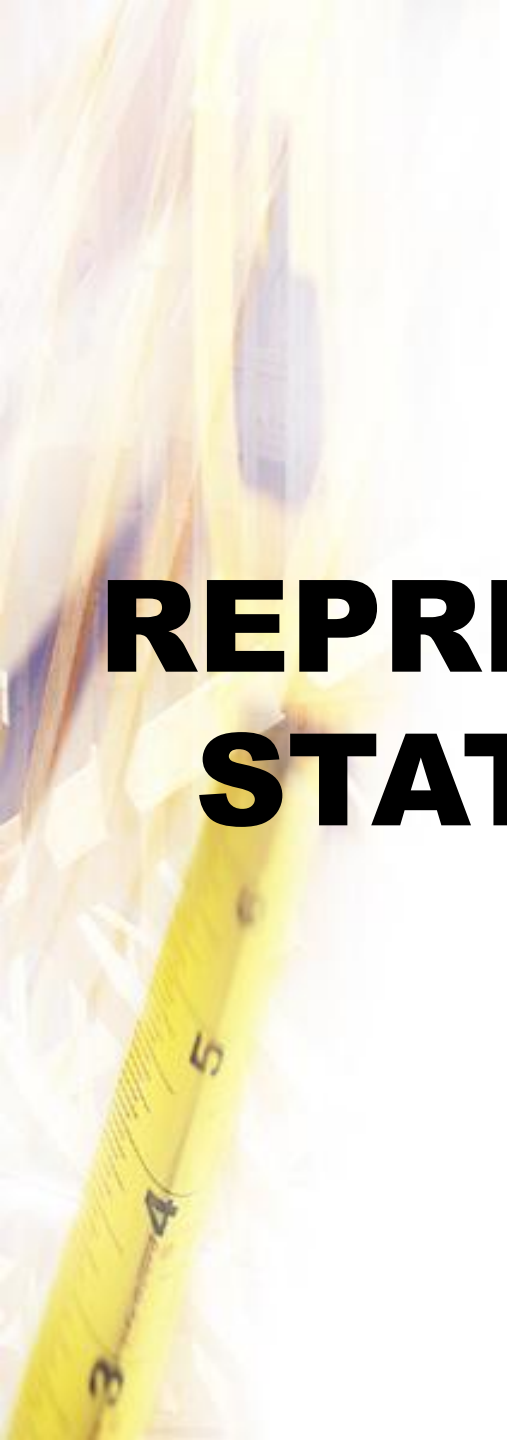
Table no 1.

General mortality of the population in the Republic of Moldova by sex during 1999-2005

(la 100 mii locuitori)*

	1999	2000	2001	2002	2003	2004	2005
amb.sexe	1133,0	1132,8	1103,8	1155,4	1192,6	1156,4	1243,2
bărbați	1224,5	1214,8	1188,3	1240,1	1270,1	1261,6	1368,2
femei	1050,6	1057,6	1026,1	1077,5	1121,3	1059,6	1139,1

*** ANSP**



GRAPHIC REPRESENTATION OF STATISTICAL DATA

The graphical representation makes it possible to understand the studied phenomena
(birth rate, morbidity, mortality)

through different signs - symbols
(*lines, figures, points ...)*

The graphs are used to show:

- **Phenomenon Dynamics**
- **Comparison of indicators that refer to the same time, but in different phenomenon (N., M., M.)**
- **Structure of the studied phenomenon**

The graphs are used to show:

- The dependence between different indicators
- The degree of dissemination of a certain phenomenon
- The control over the achievement of the planned objectives

The role of the graph

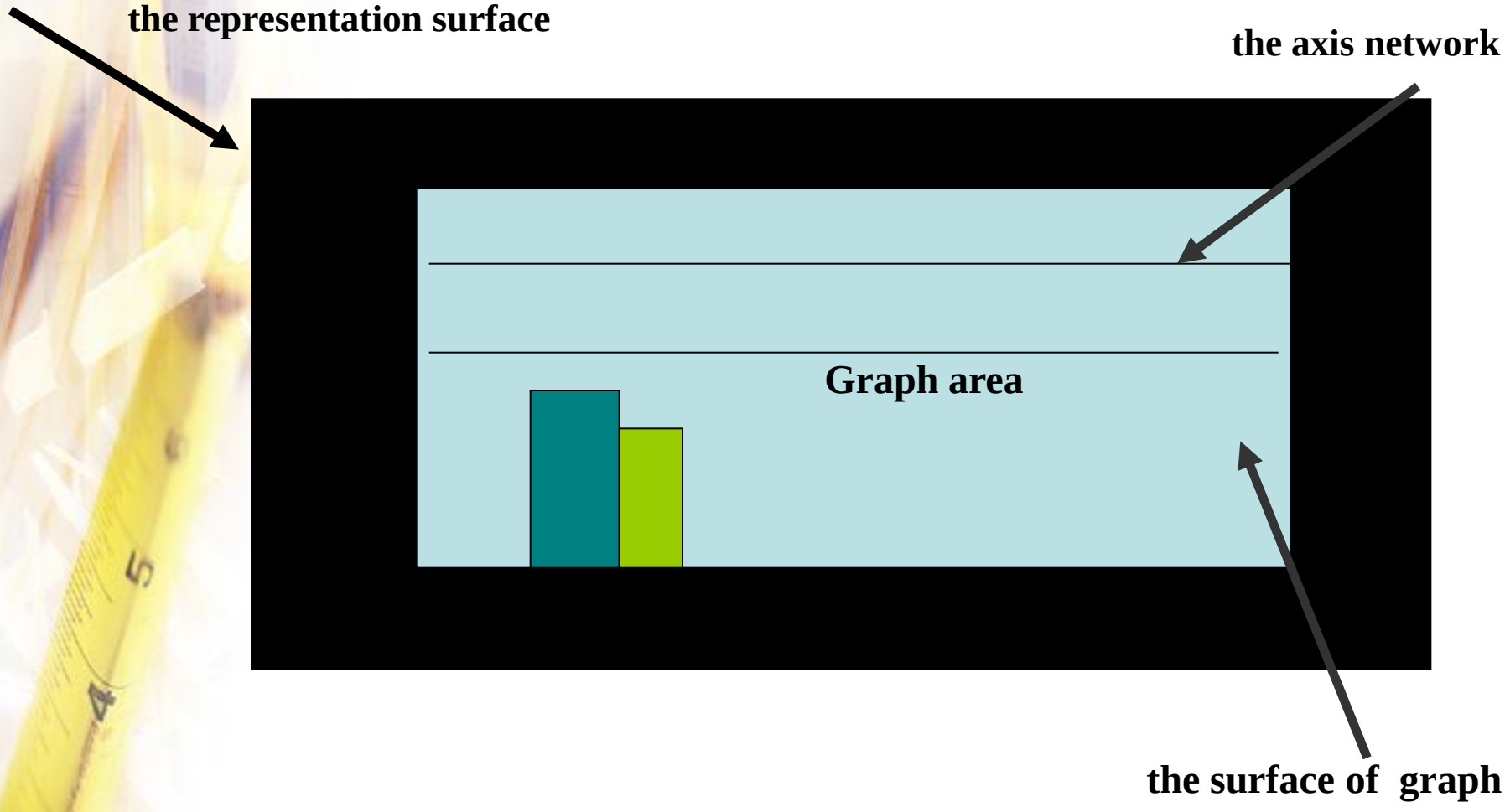
- **to guide the user in selection of the important information from the statistical report**

- **to develop and explain further ideas**

The role of the graph

- to help the user to look in-depth the presented problem in the statistical report
- to encourage the comparison and analysis of the information

Fig. 1. The main components of a graph.



The surface of the graph

- **It is an imagined surface that contains the entire graphic including the title and explanatory texts**

- **The representation surface normally is not marked in any way**

The surface of the graph includes:

- Title of the chart / graph
- Vertical axis "Y"
- The label assigned to the "Y" axis (no deaths at 1000 n/v)
- Maximum value (25)
- Value of scale (0 5 10 .....25)
- The marking that indicates the limit between the values of the scale
- Minimum value (0)
- Horizontal axis "X" (countries)
- The surface of the graph
- Curves, columns, etc.
- The legend
- Source

The Surface of the graph

- **The surface is occupied by the graph without title, scale values etc.**

- **The ratio of "Y" to "X" is**
- **Y: X = 1,0 : 1,6 or 3 : 5**

The graph area

It is an imaginary area that contains the actual drawing *(columns, strips, curves, etc.).*

The axis network

- **Horizontal and vertical axes**
- **The axis network allows to read the graph more easily**

The Text

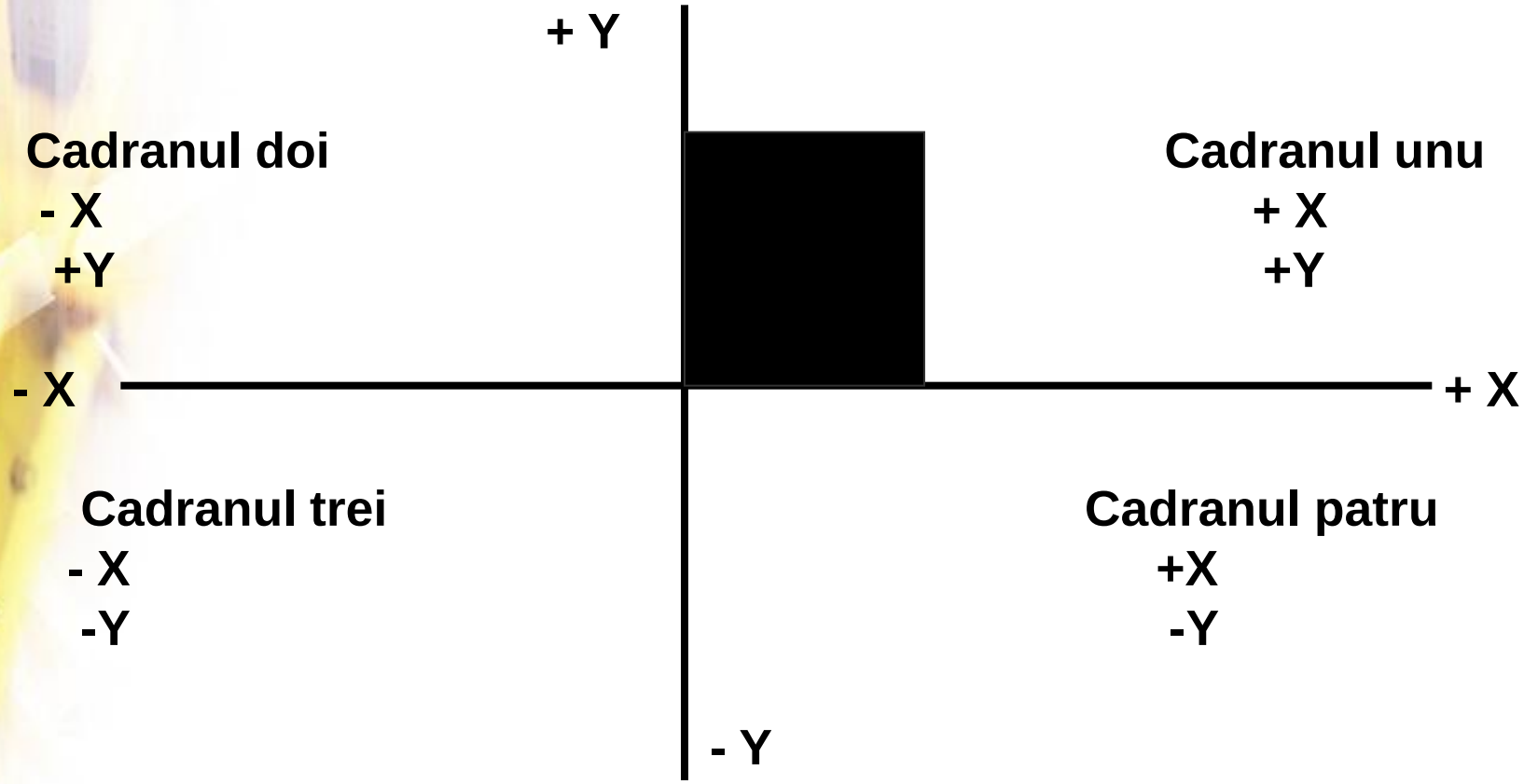
All the information needed for understanding the chart must be included in the representation surface

The Basic TECHNIQUES of Building a Graphic

- **The basic element from which a graph is started is the coordinate system**

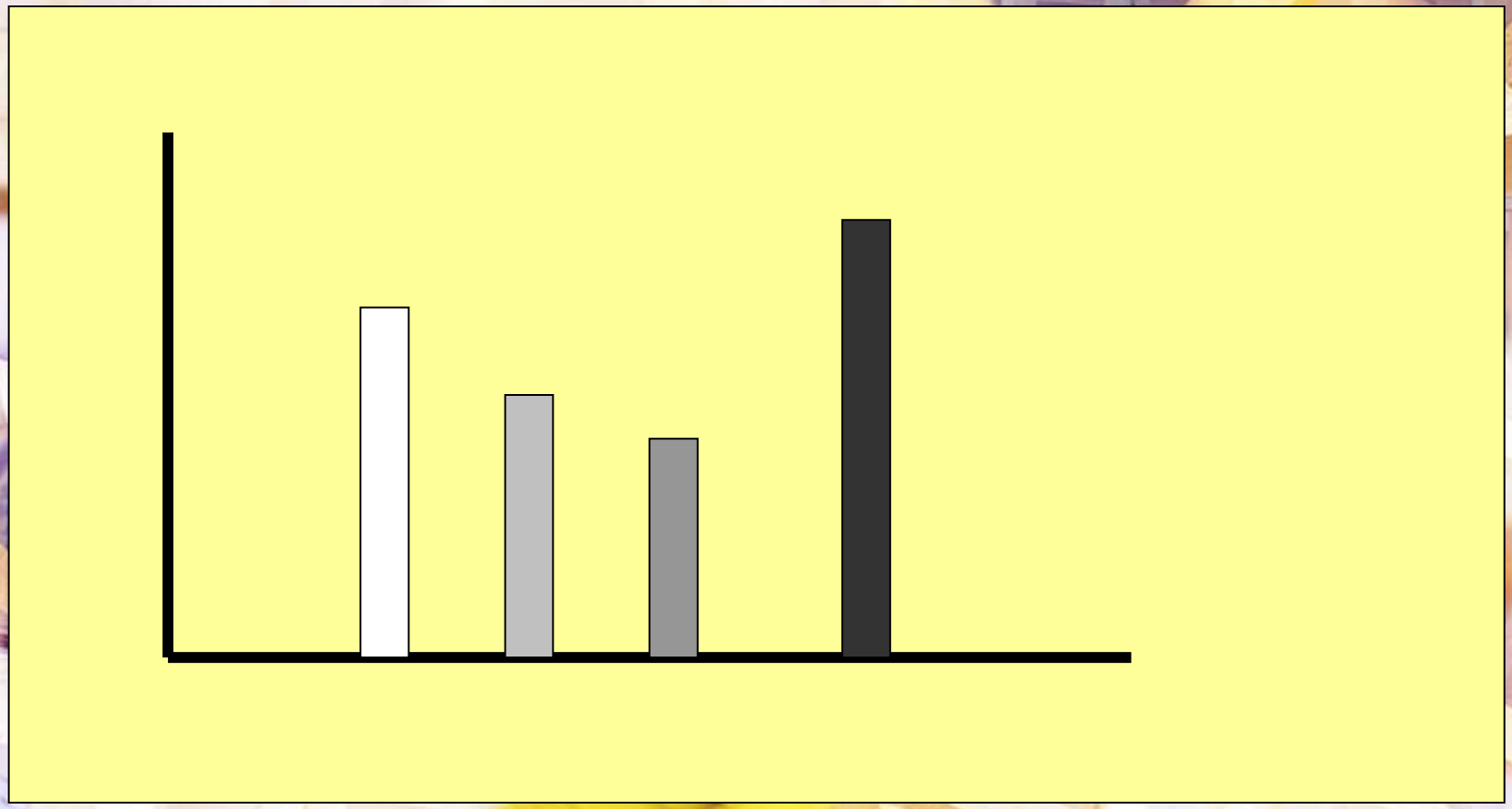
- **This coordinate system divides the plan into four quadrants**

The Basic TECHNIQUES of Building a Graphic

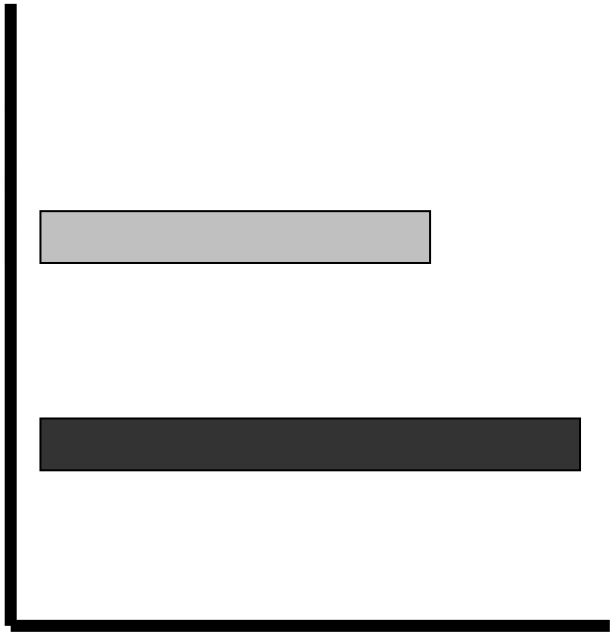


- **Traditionally, the straight vertical axis is called the ordinate ("Y" axis) and the right horizontal axis-abscissa ("X" axis).**

Horizontal axes are used for vertical bars.

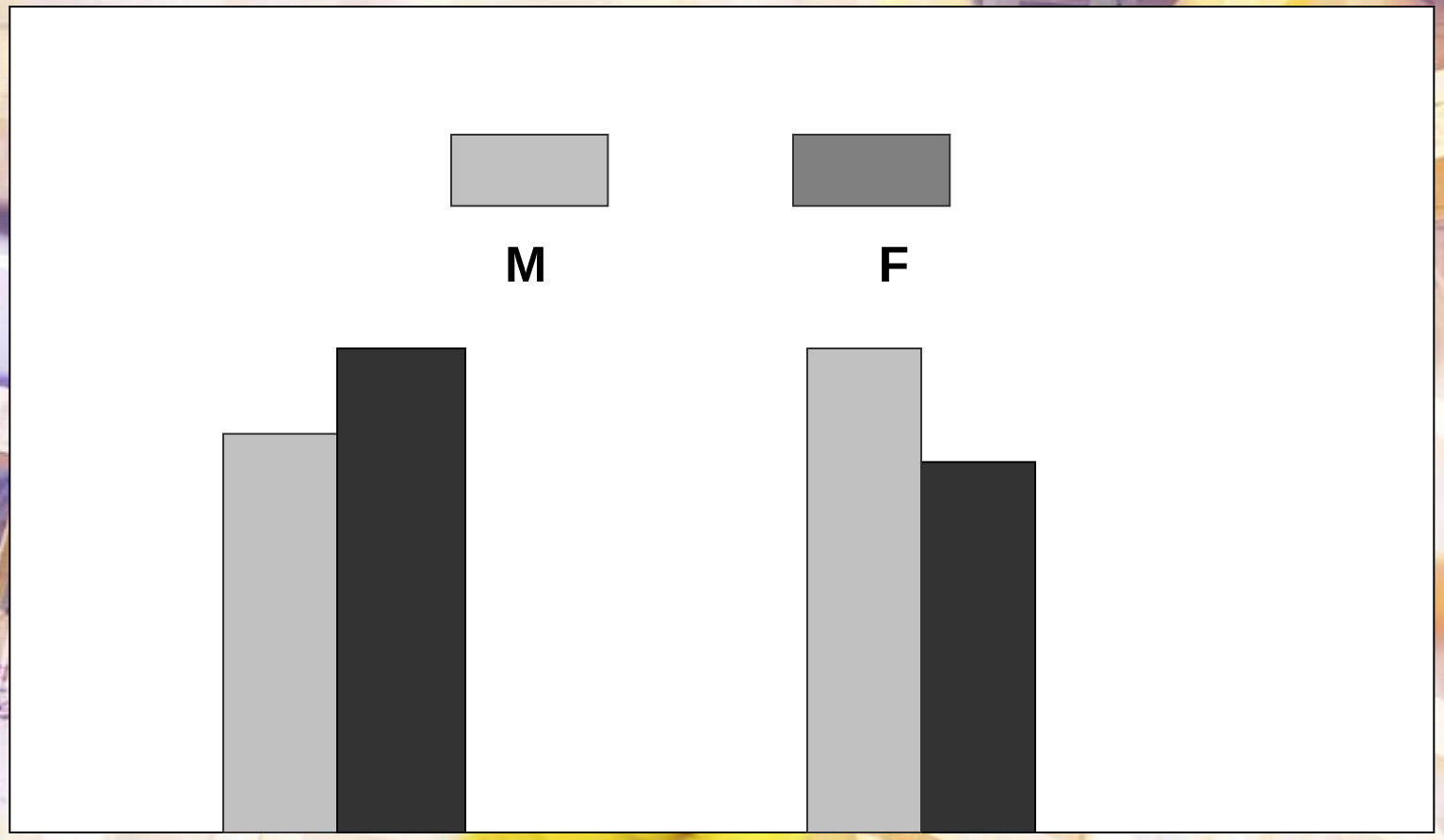


Vertical axes-through horizontal bars

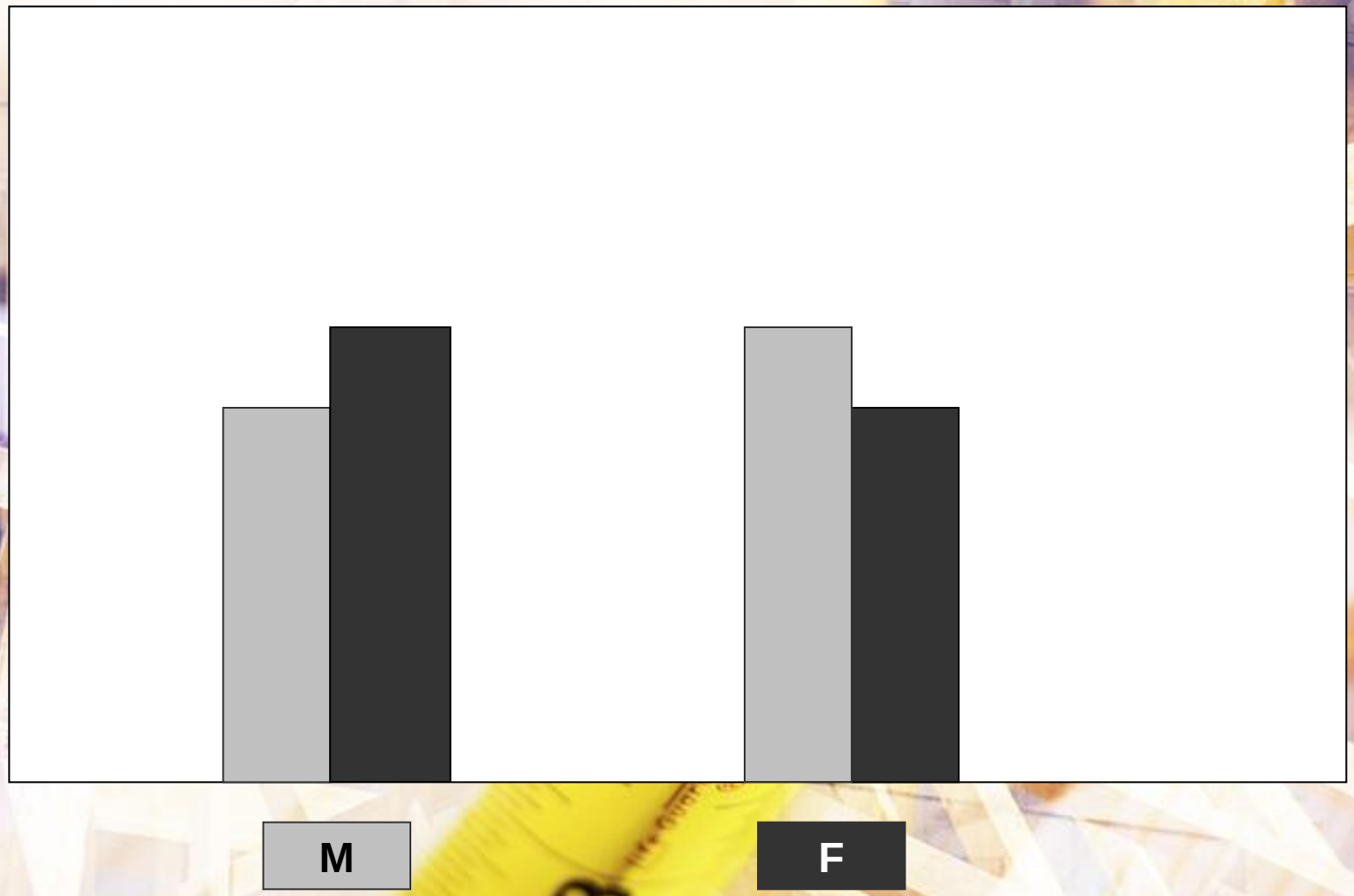


The legend

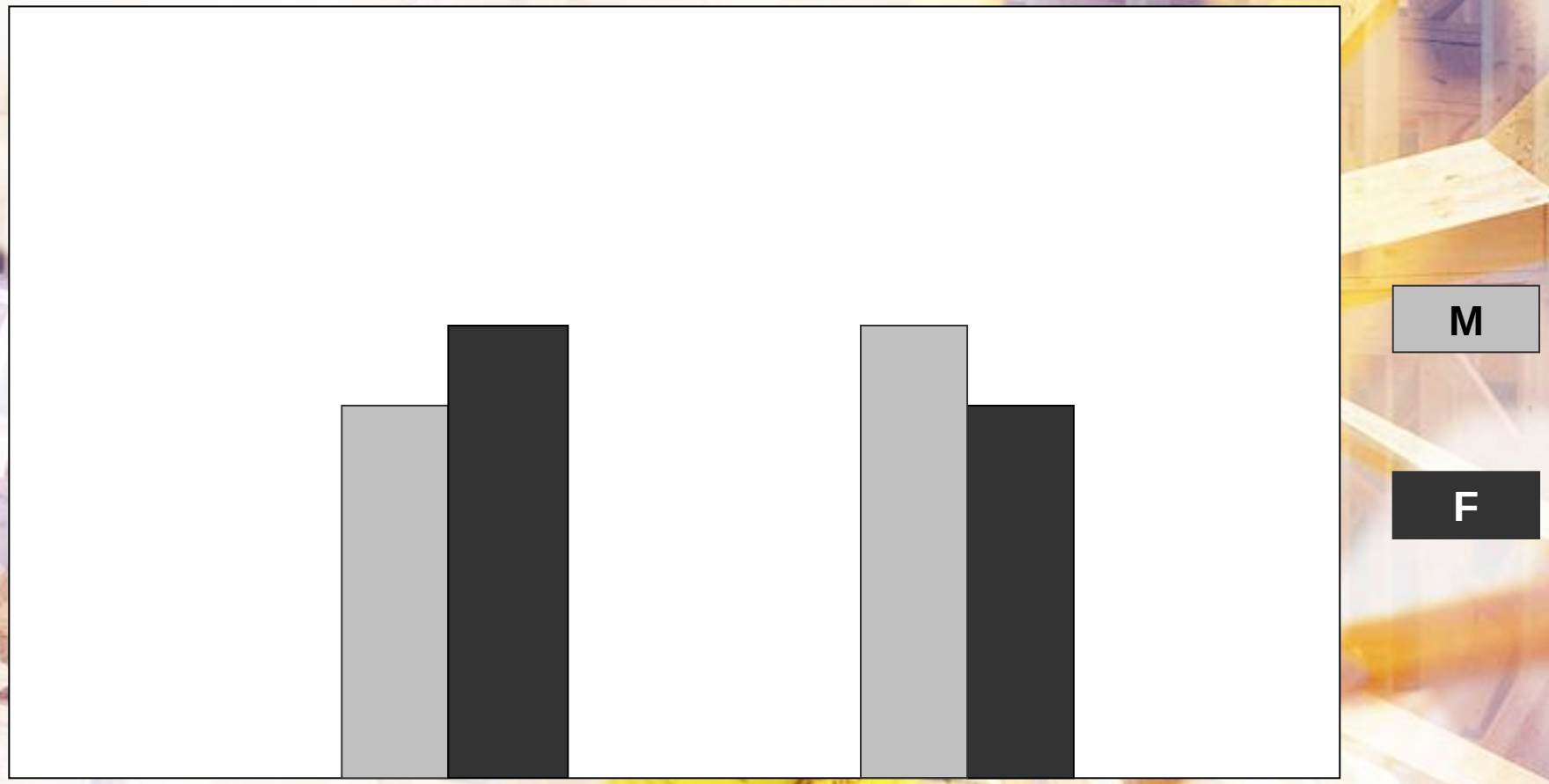
Bars * in the surface of the graph



BARS * below the graph

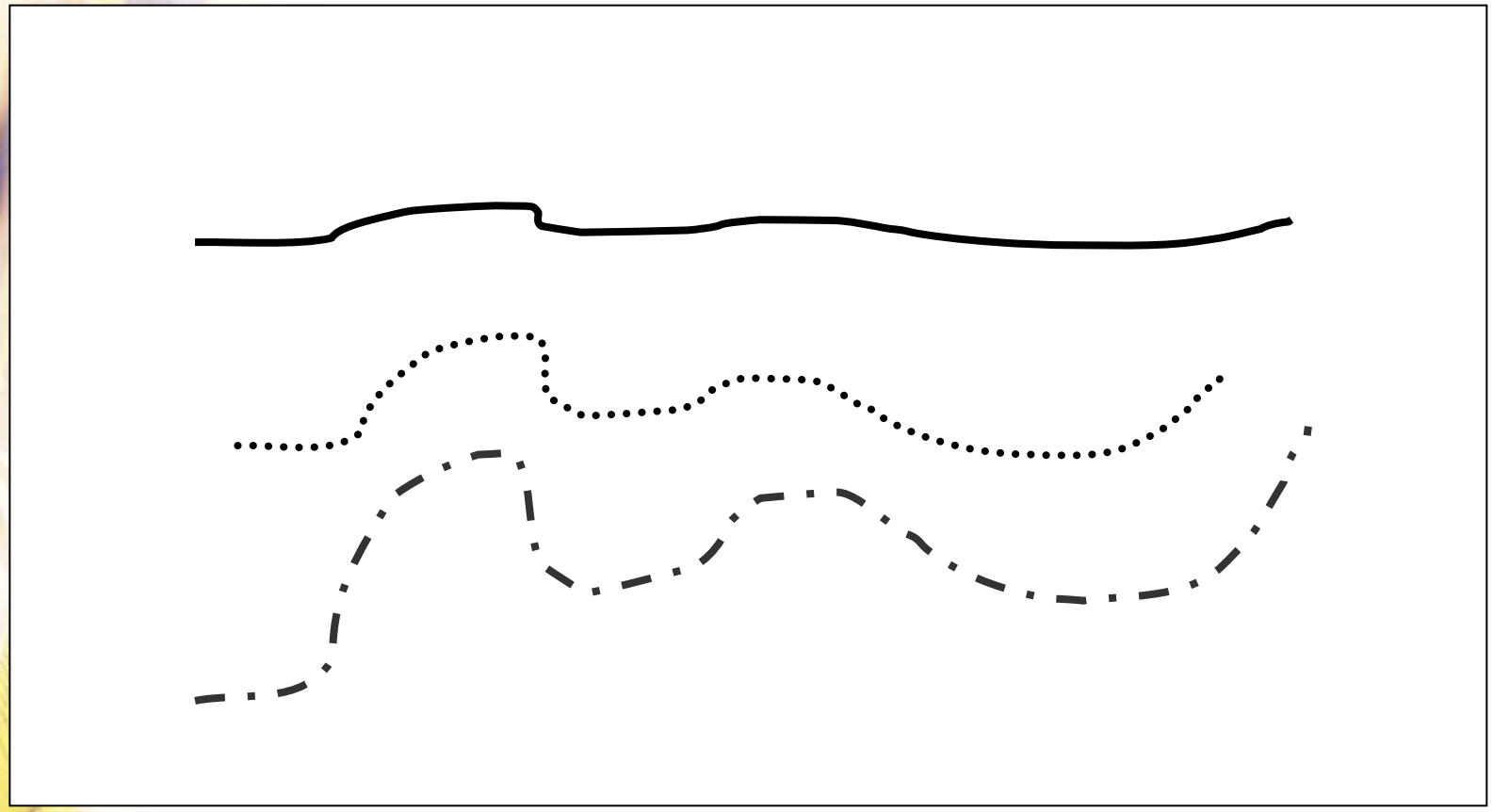


BARS * lateral, the right side of the chart



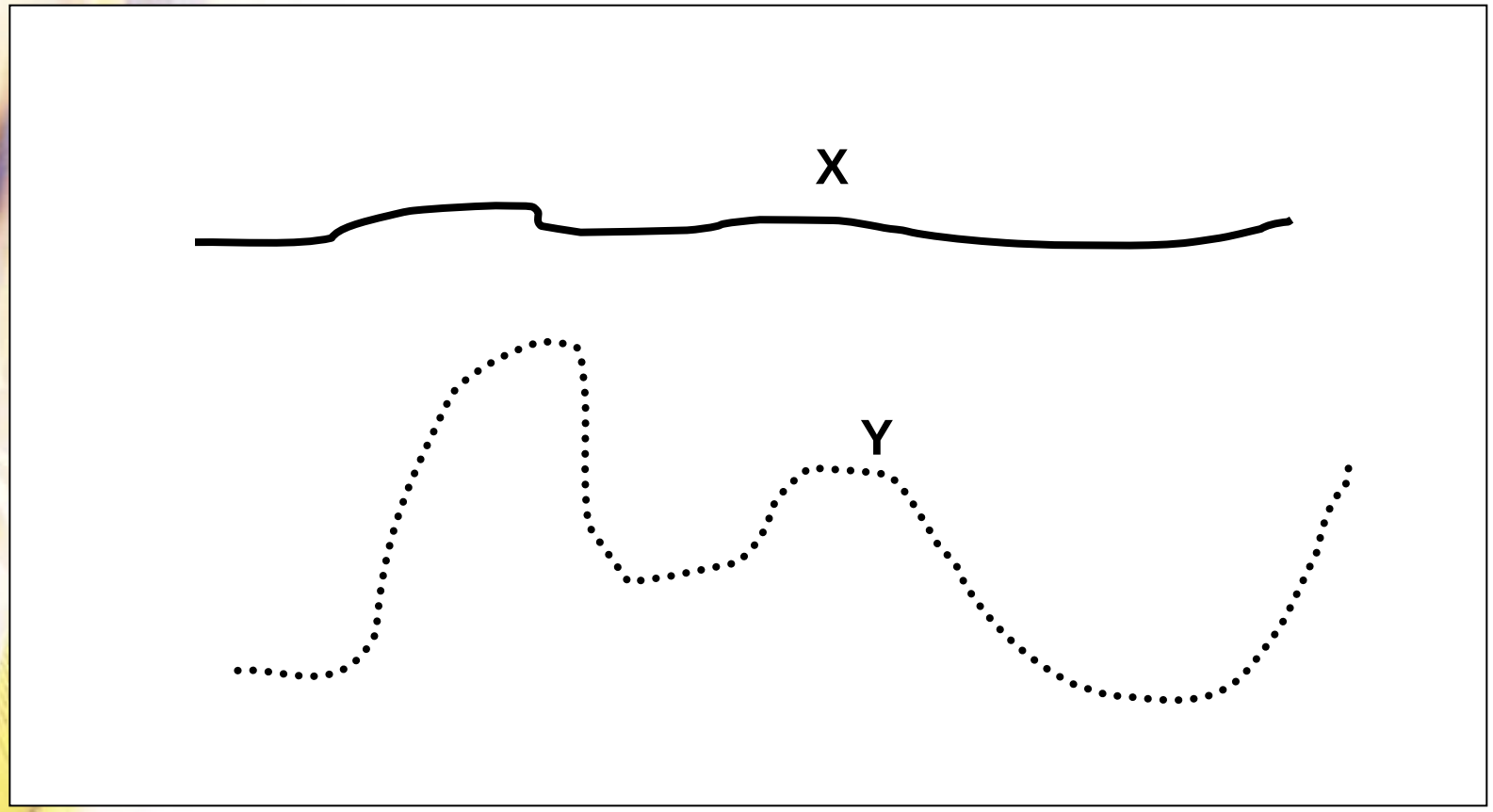
CURVES

* on the right side (when there are 3-4 curves)



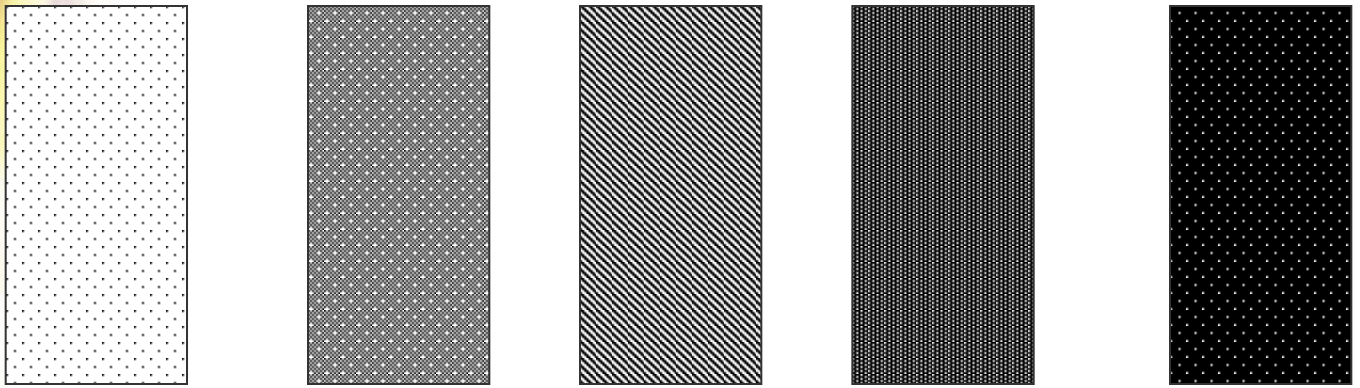
CURVES

* **above them: when the curves are visibly distinct and do not intersect**

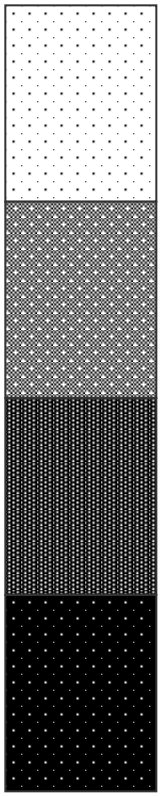


Hatchings

4 or 5 types of hatching



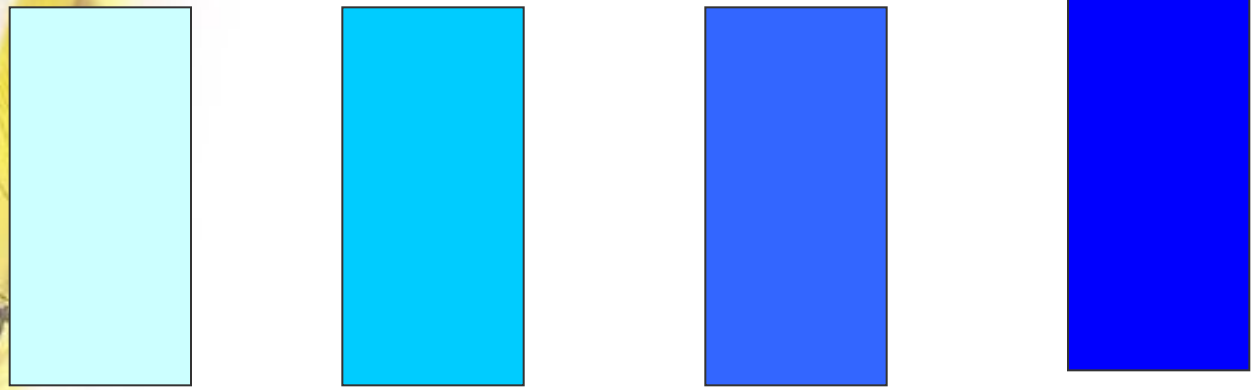
Gradual accentuation of the intensity of the hatchings starting from the top of the graph to the bottom

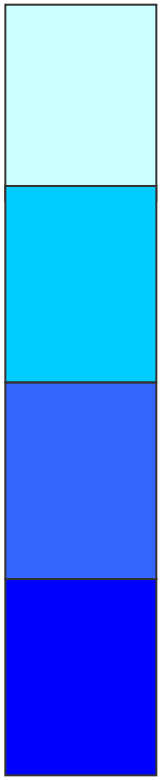


COLORS

4 or 5 shades

The shades must be arranged from the lightest to the darkest.





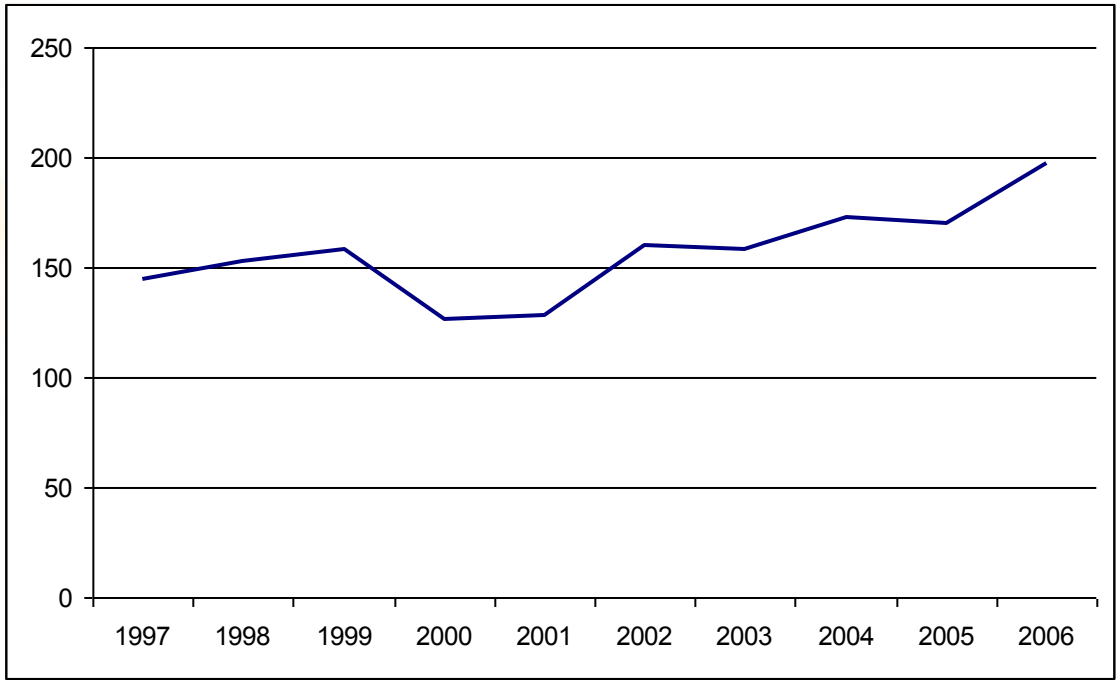
COLORS

- **They must be applied economically**
- **It is recommended to use a single color with different shades of it**

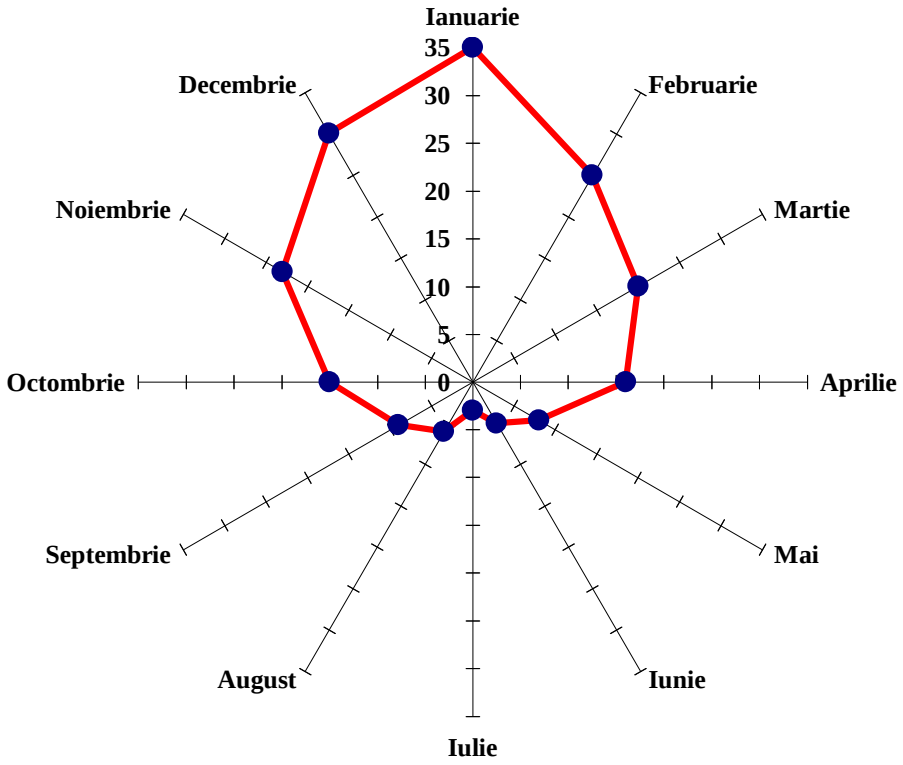
Types of graphics

- With rectangular coordinates
  - With the arithmetic scale
  - With the semilogarithmic, logarithmic scale
- With polar coordinates
  - Histogram
  - Scatter diagram
- Special

The incidence of gastrointestinal tract diseases at adults in the Republic of Moldova, 1997-2006 (per 10,000 inhabitants)

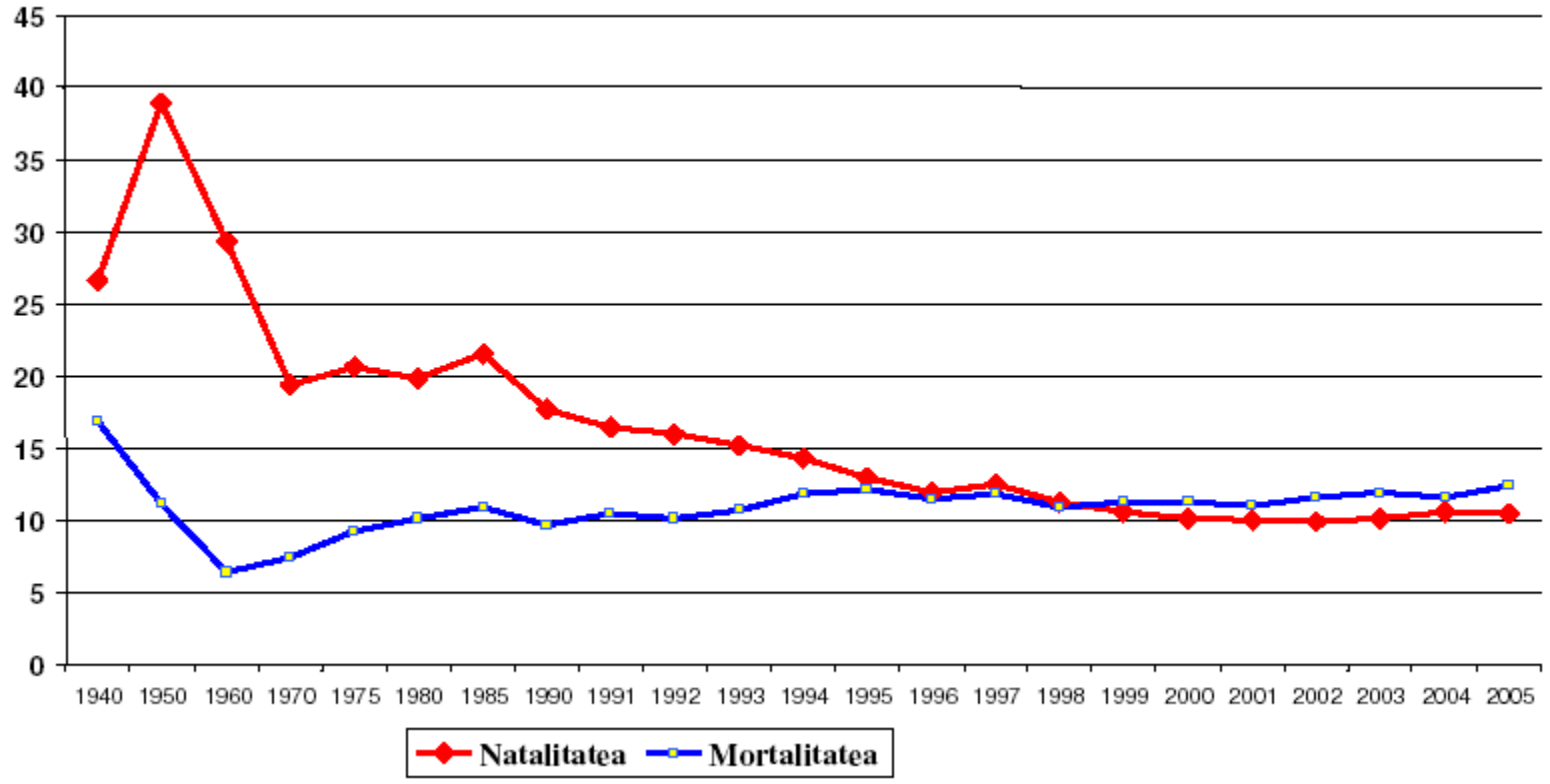


Number of IRVA cases at children in locality N during 2006



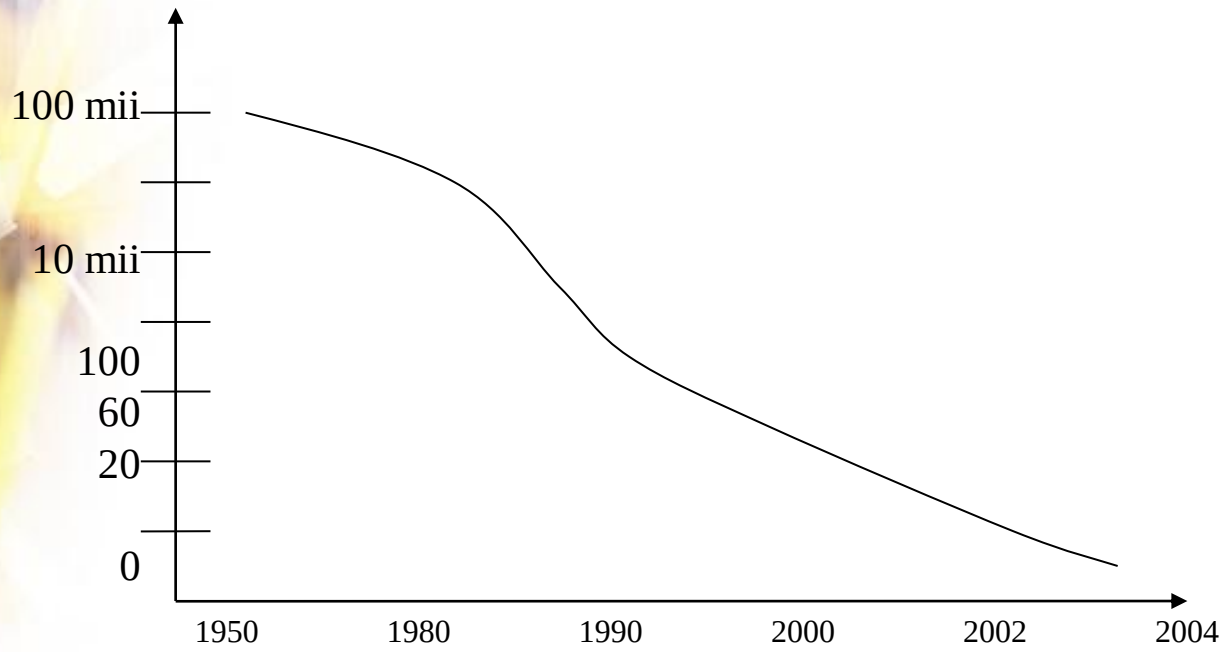
With rectangular coordinates (semilogarithmic)

Birth and mortality dynamics in the Republic of Moldova during 1947-2005 (per 1000 inhabitants)

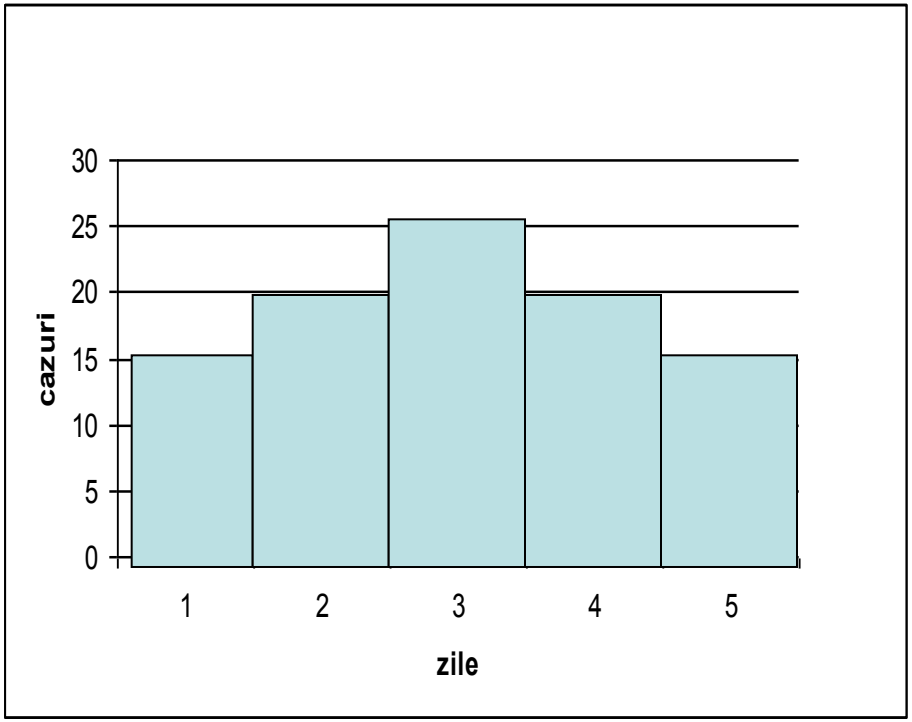


With rectangular coordinates (logarithmic)

The incidence of chickenpox in country X, during 1950-2004 (per 100,000 inhabitants)



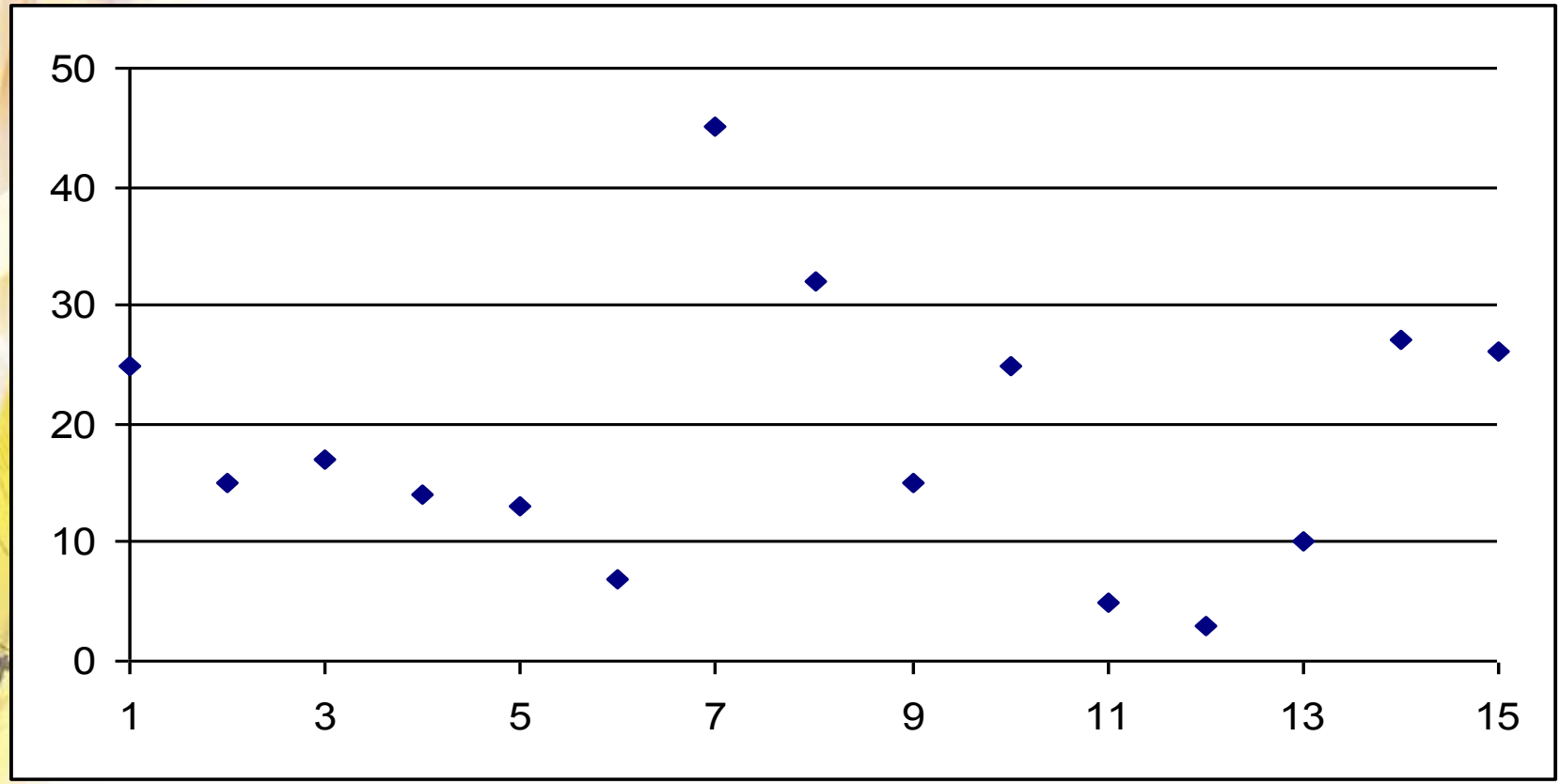
Histogram



- **Histogram – is a representation by adjacent bars of the frequency distribution**
- **The scale of the variable categories is represented on the "X" axis by equal distances (days)**
- **The frequency scale is represented on the "Y" axis and is divided into cells: □ - 5 cases**

Scatter diagram

The average duration of hospitalization in the ENT section in hospital X, 2006



SPECIAL GRAPHICS

Diagrams are methods of presenting statistical information with symbols

TYPES OF DIAGRAMS

- **Diagrams based on lengths**
- **- with bars (vertical, horizontal)**

  - Pictographs

  Proportion diagrams

  - with proportional bars

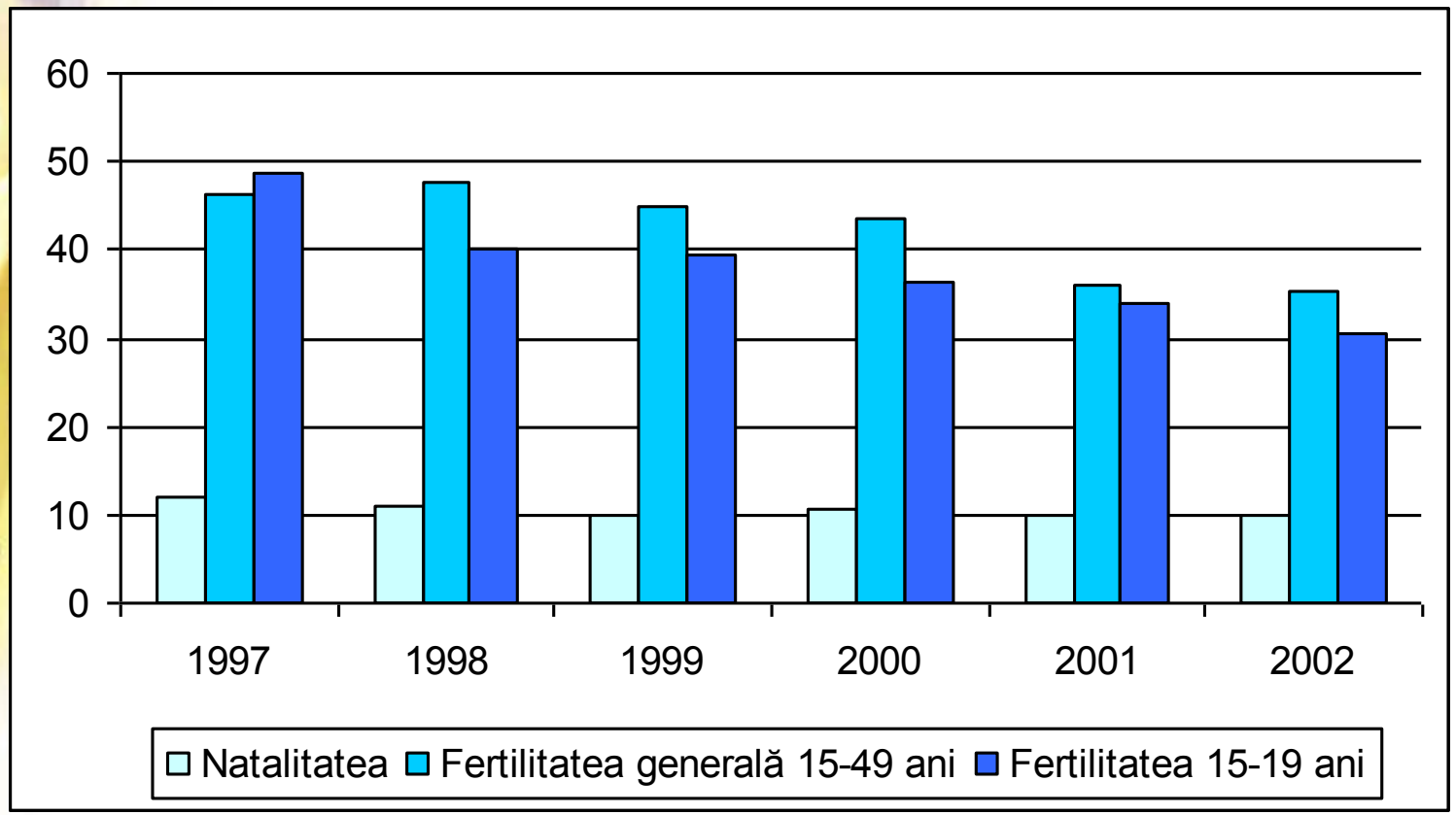
  - with disks

Diagrams with geographical coordinates

- **Special Diagrams**

Bar diagrams

Birth rates and general fertility, mortality of the age group 15-19 years in the Republic of Moldova, during 1997-2002 (‰)



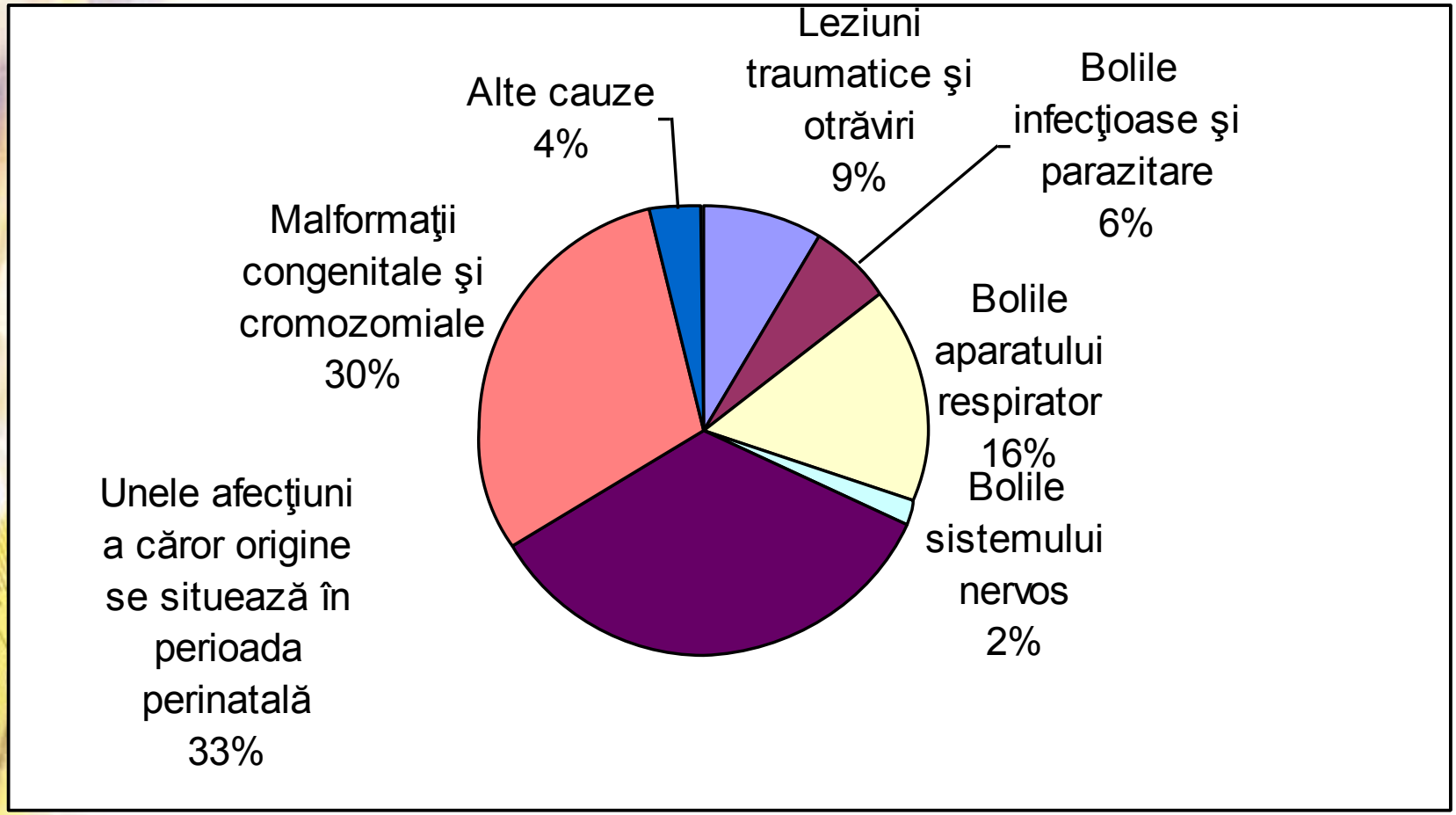
Pictographs

a. 2000

a. 2006

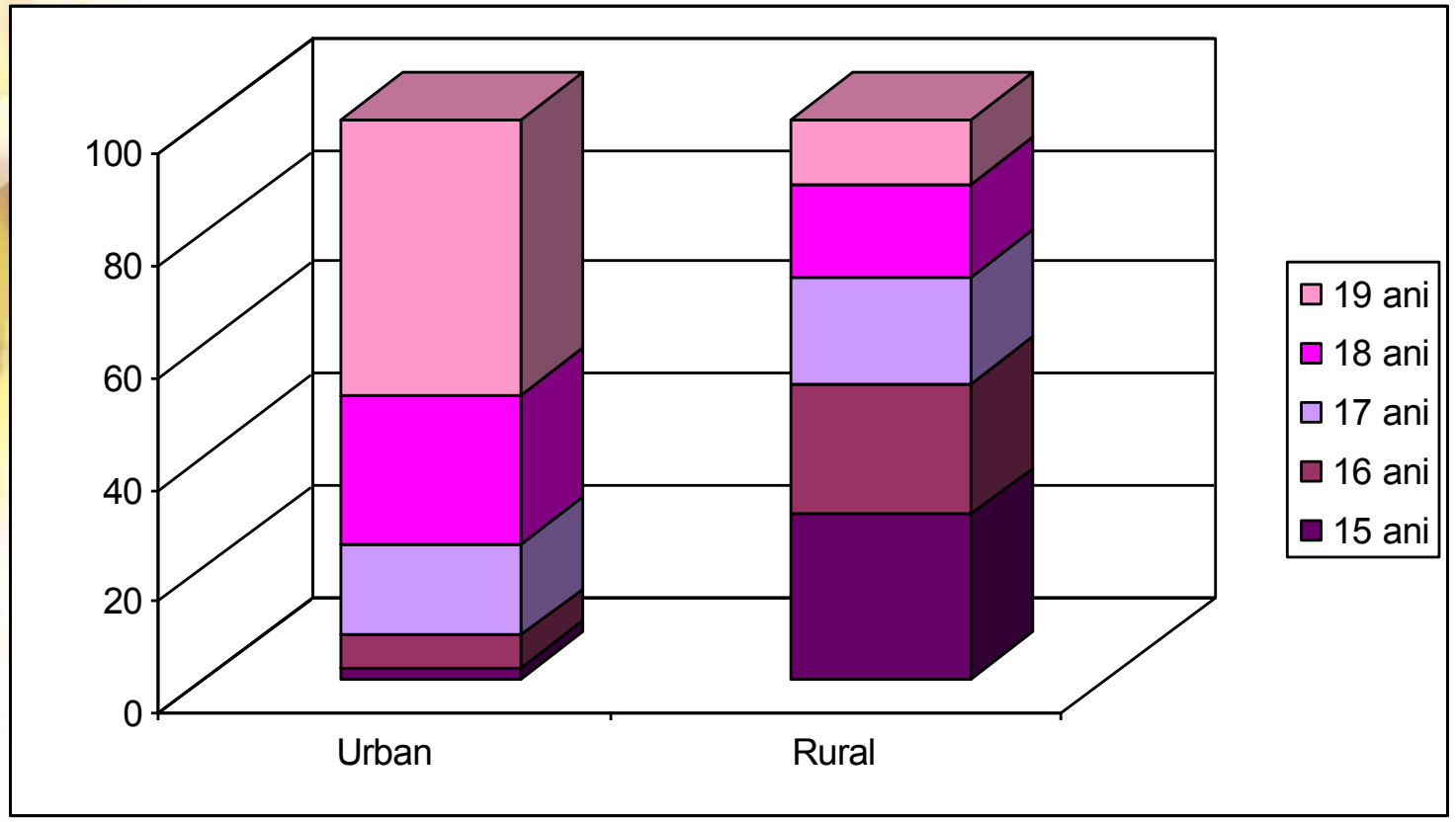
Proportions Diagram with disks

Structure of infant mortality by causes in the Republic of Moldova, 2005 (%)



Proportions Diagram with disks

The structure of birth of different age groups and the environment of residence (%)



Classification of the Republic of Moldova districts according to the cerebral motor infirmity level in year X (per 1000 children)

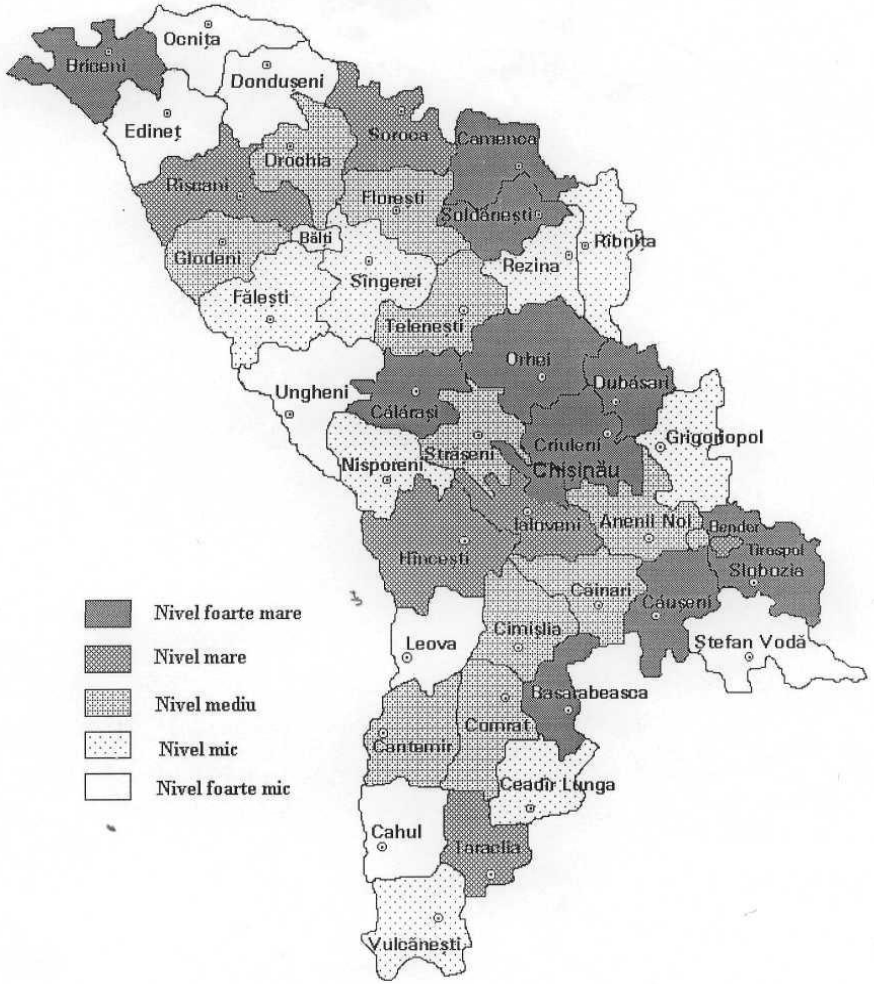
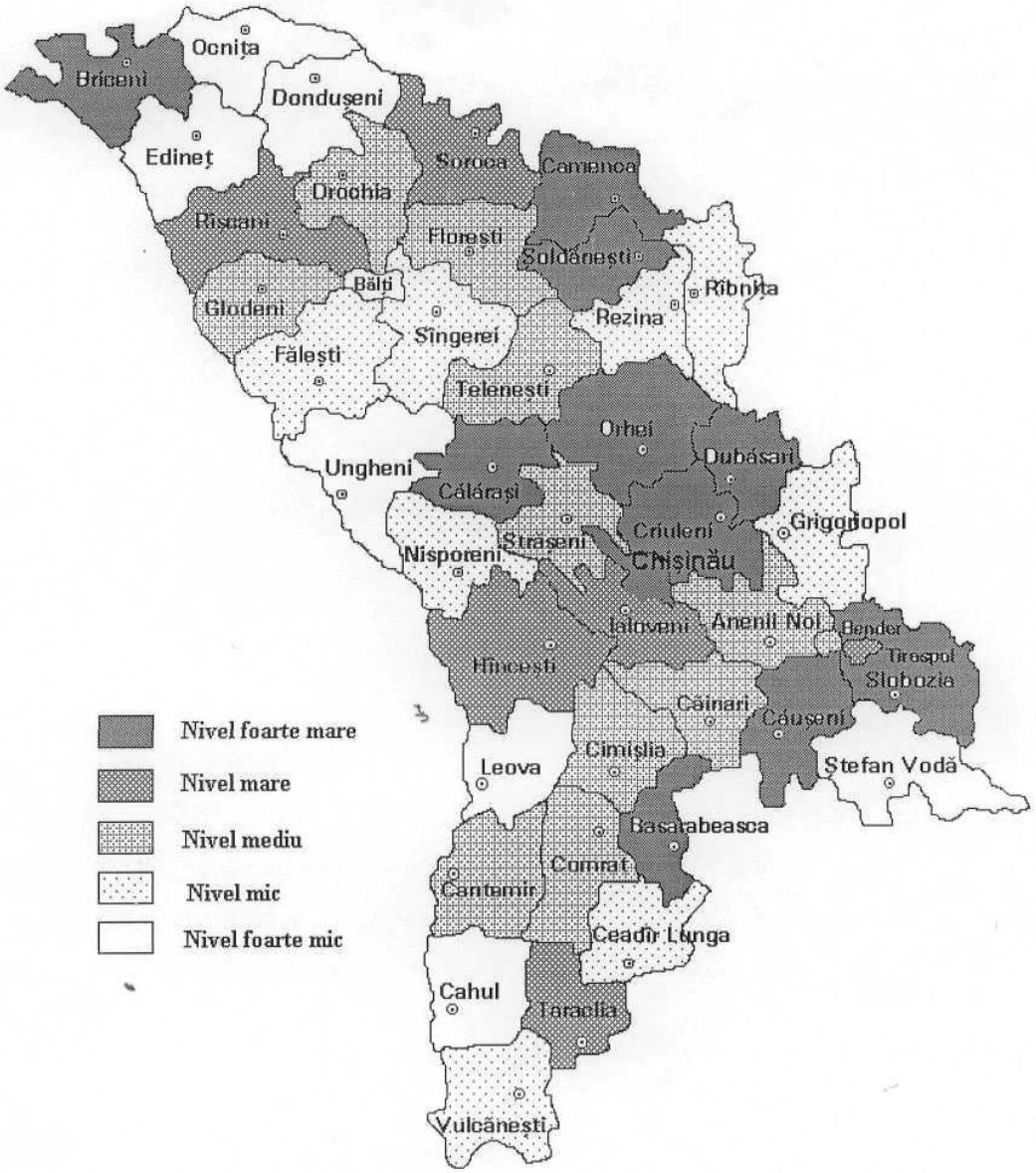


Diagram with geographical coordinates


Ocnița
Briceni
Dondușeni
Edineț
Soroca
Camenca
Drochia
Rîșcani
Florești
Șoldănești
Ribnița
Bălți
Glodeni
Rezina
Sîngerei
Fălești
Telenești
Orhei
Dubăsari
Ungheni
Călărași
Grigoriopol
Criuleni
Străseni
Nisporeni
Chișinău
Ialoveni
Anenii Noi
Bender
Tiraspol
Hîncești
Slobozia
Căinari
Căușeni
Cimișlia
Leova
Ștefan Vodă
Basarabeasca
Cantemir
Comrat
Ceadîr Lunga
Cahul
Taraclia
Vulcănești
Nivel foarte mare
Nivel mare
Nivel mediu
Nivel mic
Nivel foarte mic

WRITING A SCIENTIFIC RESEARCH ARTICLE

Scientific research articles provide a method for scientists to communicate with other scientists about the results of their research. A standard format is used for these articles, in which the author presents the research in an orderly, logical manner. This doesn't necessarily reflect the order in which you did or thought about the work.

ARTICLE format is:

- **TITLE**
- **AUTHORS**
- **ABSTRACT**
- **INTRODUCTION**
- **MATERIALS AND METHODS**
- **RESULTS**
- **TABLES AND GRAPHS**
- **ACKNOWLEDGMENTS**

- **REFERENCES** *(LITERATURE CITED)*

TITLE

- Make your title specific enough to describe the contents of the paper, but not so technical that only specialists will understand. The title should be appropriate for the intended audience.
- The title usually describes the subject matter of the article: "*Effect of Smoking on Academic Performance*"
- Sometimes a title that summarizes the results is more effective: "*Students Who Smoke Get Lower Grades*""

AUTHORS

1. The person who did the work and wrote the paper is generally listed as the first author of a research paper.

2. For published articles, other people who made substantial contributions to the work are also listed as authors. Ask your mentor's permission before including his/her name as co-author.

ABSTRACT (1)

An abstract, or summary, is published together with a research article, giving the reader a "preview" of what's to come. Such abstracts may also be published separately in bibliographical sources, such as Biologic al Abstracts. They allow other scientists to quickly scan the large scientific literature, and decide which articles they want to read in depth. The abstract should be a little less technical than the article itself; you don't want to dissuade your potential audience from reading your paper.

ABSTRACT (2)

- Your abstract should be one paragraph, of 100-250 words, which summarizes the purpose, methods, results and conclusions of the paper.

ABSTRACT (3)

- It is not easy to include all this information in just a few words. Start by writing a summary that includes whatever you think is important, and then gradually prune it down to size by removing unnecessary words, while still retaini ng the necessary concepts.
- Don't use abbreviations or citations in the abstract. It should be able to stand alone without any footnotes.

INTRODUCTION

- *What question did you ask in your experiment? Why is it interesting?*
- *The introduction summarizes the relevant literature so that the reader will understand why you were interested in the question you asked. One to fo ur paragraphs should be enough. End with a sentence explaining the specific question you asked in this experiment.*

MATERIALS AND METHODS (1)

1. How did you answer this question? There should be enough information here to allow another scientist to repeat your experiment. Look at other papers that have been published in your field to get some idea of what is included in this section.

2. If you had a complicated protocol, it may helpful to include a diagram, table or flowchart to explain the methods you used.

.

MATERIALS AND METHODS (2)

3. Do not put results in this section. You may, however, include preliminary results that were used to design the main experiment that you are reporting on. ("In a preliminary study, I observed the owls for one week, and found that 73 % of their locomotor activity occurred during the night, and so I conducted all subsequent experiments between 11 pm and 6 am.")

4. Mention relevant ethical considerations. If you used human subjects, did they consent to participate. If you used animals, what measures did you take to minimize pain?

RESULTS (1)

1. This is where you present the results you've gotten. Use graphs and tables if appropriate, but also summarize your main findings in the text. Do NOT discuss the results or speculate as to why something happened; t hat goes in the Discussion.

2. You don't necessarily have to include all the data you've gotten during the semester. This isn't a diary.

RESULTS (2)

3. Use appropriate methods of showing data. Don't try to manipulate the data to make it look like you did more than you actually did.

"The drug cured 1/3 of the infected mice, another 1/3 were not affected, and the third mouse got away."

TABLES AND GRAPHS

1. If you present your data in a table or graph, include a title describing what's in the table ("*Enzyme activity at various temperatures*", not "*My results*".) For graphs, you should also label the x and y axes.

2. Don't use a table or graph just to be "fancy". If you can summarize the information in one sentence, then a table or graph is not necessary.

DISCUSSION

1. Highlight the most significant results, but don't just repeat what you've written in the Results section. *How do these results relate to the original question? Do the data support your hypothesis? Are your results consistent with what other investigators have reported? If your results were unexpected, try to explain why. Is there another way to interpret your results? What further research would be necessary to answer the questions raised by your results? How do y our results fit into the big picture?*

End with a one-sentence summary of your **CONCLUSION**, emphasizing why it is relevant.

ACKNOWLEDGMENTS

This section is optional. You can thank those who either helped with the experiments, or made other important contributions, such as discussing the protocol, commenting on the manuscript, or buying you pizza.

REFERENCES *(LITERATURE CITED)*

There are several possible ways to organize this section. Here is one commonly used way:

- In the text, cite the literature in the appropriate places:

1. Scarlet (1990) thought that the gene was present only in yeast, but it has since been identified in the platypus (Indigo and Mauve, 1994) and wombat (Magenta, et al., 1995).

- In the References section list citations in alphabetical order.

1. Indigo, A. C., and Mauve, B. E. 1994. Queer place for qwerty: gene isolation from the platypus. Science 275, 1213-1214.

2. Magenta, S. T., Sepia, X., and Turquoise, U. 1995. Wombat genetics. In: Widiculous Wombats, Violet, Q., ed. New York: Columbia University Press. p 123-145.

3.Scarlet, S.L. 1990. Isolation of qwerty gene from S. cerevisae. Journal of Unusual Results 36, 26-31.

EDIT YOUR PAPER ! ! !

"In my writing, I average about ten pages a day. Unfortunately, they're all the same page."

Michael Alley, The Craft of Scientific Writing

BIBLIOGRAPHY:

Rules for Writing Scientific Articles and Abstracts.

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3136027/
- https://www.wiley.com/network/researchers/preparing-your-article/how-to-write-a-scientific-abstract
- https://wordvice.com/how-to-write-a-research-paper-abstract/
- http://www.columbia.edu/cu/biology/ug/research/paper.html
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3789163/

- https://www.painphysicianjournal.com/current/pdf?article=Nzk3&journal=32
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5415750/
- https://www.painphysicianjournal.com/current/pdf?article=OTY1&journal=40