



Support to the State Social Protection Fund on the introduction of funded element within the insurance-pension system, establishment of non-state pension funds and development of legal framework for regulating their activity
Twinning Project AZ/13/ENP/SO/24



ANNEX 67

Introduction in Statistics



Gesellschaft für
Versicherungswissenschaft
und -gestaltung e.V.



Main purpose

To acquire statistical methodology and its application in the analysis of the economical processes and facts which are vital aspects in policy making process

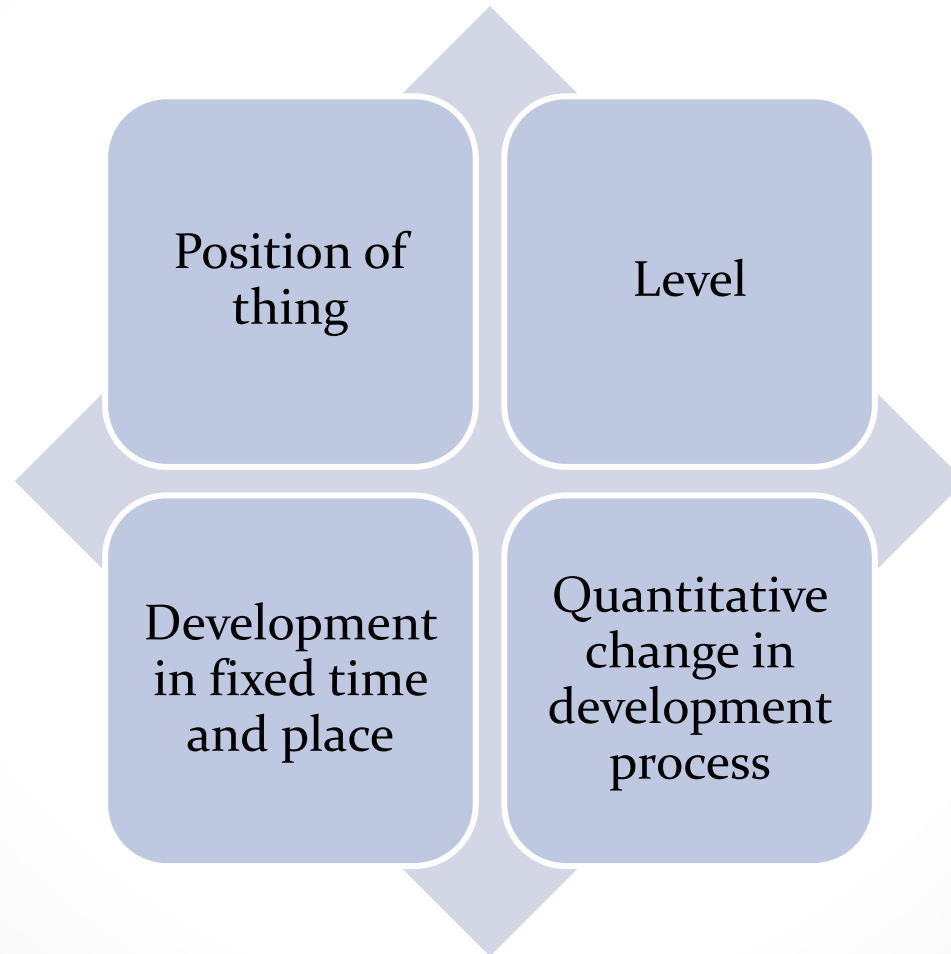
Statistics = “status” – definite position of things

Practical
operation branch
*obtain statistical
data and process,
analyse it in the
level of company,
sector, region and
country*

Science
*theoretical
methods and
statements*

Statistical data
*surveys,
collections, press
publications*

Statistical data describe



Publishing
statistical
indicator
must be
indicated:

What kind of fact is inquired

Time

Place

unit of measure

Example:

There were 1 277 053 pensioners in Azerbaijan in 2014.

Fact – number of pensioners;

Time – 2014

Place - Azerbaijan;

Unit – pensioners (people).

History of Statistics

Firs
statistical
sources

Ancient Chine

Ancient Rome

Egypt

History of Statistics

Since IX century - development of trade, industry, agriculture

Necessity of more detailed data: raw material, production capacity, goods sale in market, employment etc.

Science establishment in the middle of XVII century. Two directions:

- Descriptive statistics (description of political situation and achievements, Germany)
- Mathematical statistics (based on calculations of economical facts and conformity)

In the beginning of XIX the *statistically-mathematical* direction (Belgium).

Science of Statistics

- **Research object**

socially-economical overall **thing**; quantitative conformities of processes in particular circumstances and places.

- **Do not research:** *separate case, single, rare thing*
- **research:** *multiple things, things of all society (migration, employment, etc.); natural resources*
- **Objects:** *not thing, bet numeral value*
- Statistics does not **create** value or position, **but ascertain and analyze.**

Science of Statistics

- Research object= **statistical cluster.**
- Element of cluster= **unit of statistical cluster**
- Joint quality of cluster unit = **characteristic**
- characteristic of process, phenomenon (number) = **statistical indicator**

Example

There were 1 277 053 pensioners in Azerbaijan in 2014 hereof 791 263 old age pensioners

Statistical cluster– pensioners

unit of statistical cluster– pensioner

indication – age, gender, pension amount, insurance period etc.

statistical indicator– 791 263 old age pensioners

Statistical method

- Statistics research thing, it`s relations, changes, development directions
- 3 phases of statistical research:
 - Initial data collection;
 - initial data processing, collection, grouping;
 - Findings Analyzing and interpretation.

Statistical organizations

- In Azerbaijan - **The State Statistical Committee of the Republic of Azerbaijan**
- **International In Europe - Eurostat**
- **United Nations Statistical commission**
- **Statistical Office of United Nations Secretariat**
- **Monitory Fund**
- **World Bank**
- **Other research organizations** (marketing and public opinion, sociological surveys, questionnaires)

Statistical organizations

Main tasks

- based on internationally recognised methods collect and analyse information on:
 - Economical, demographical and social processes
 - environment
- Publish information accessible for society

Statistics must be based on 6 principles:

- objectivity
- credibility
- Usefulness
- efficiency
- confidentiality
- transparency

Data collection

Statistical observation - the systematic noting and recording of events, behaviours, and objects in the society (economical, demographical etc.)

Organizational forms of observation

Statistical surveys

Specially organized
observations

Registers

Statistical surveys

- **Determining data needs**
- **Studying of sources**
- **Verification of methodology**
- **Defining of survey results**

Characteristic
features of
surveys

Conformed by state statistical
institutions

Compulsory character — should be
submitted in definite time

Obtain validity of the law

Obtain a documentary ground

Specially organized observations



To obtain data, which are not in surveys

Data observation is made by special single order

Statistical organizations, sociological and marketing centers

Registers

- Register observation – uninterrupted statistical observation of sustainable processes
 - Fixed beginning
 - Development stage
 - Fixed finish

Main issues in Register maintenance

- When the unit of cluster should be included or excluded from register?
- What kind of information should be kept?
- From which sources data should be taken?
- How often information should be updated and added?

Forms of
observation

Monographic

Main file

Inquire form

Sample

Supervisory

Statistical grouping

- Statistical combination – observed data collection, grouping, creation of tables to carry out analyse and projection of researched process of thing
- Grouping – distribution or unification of observed cluster units in definet parts by the substantial feature

Main tasks of grouping:

- Create socially-economical types of thing;
- Research structure of social things and its changes;
- Ascertain und describe coherency between things or different features of things

Following
forms of
grouping:

Typological

Structural

Analytic

Combined

Second grouping

Typological

- Main task – divide qualitative homogeneous key types from many characterizes who characters researched things
- broadly used in economical and social research (social grouping of employed persons etc.)

Structural

- Gives an opportunity to inquire content of qualitative homogeneous cluster by a numeral or attributive feature and to follow its changes

Analytic

- Characters and discover connection between different things

Combined

- Groups are made by two or more characteristics. These are arranged by interconnection

- Second grouping - new groups are developed based on previous grouping using initial information
- Classification – object clusters arranging in groups, classes, categories by according to their common characteristics

Classification by
characteristics

Descriptive

Quantitative

Data presentation

- Statistical data should be reflected so that it could be easy used
- There are 3 forms of data reflection:
 - Include in the text;
 - Include in the table;
 - Distribute in graphs

Tabular Data presentation

Compering with textual information tabular form is more effective - system of rows and columns where statistical information is placed in definite order and interconnection

Table has:

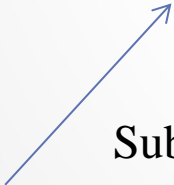
- **Subject** – what is researched and described by numeral value
- **Predicate**– indicator, which describes the subject of table (created in observation, as the result of registered data counting and generalization.

Tabular Data presentation

Number of old age pensioners in Azerbaijan and Latvia
2012 – 2014

Country	2012	2013	2014
Azerbaijan	812 771	800 547	791 263
Latvia			

Subject



Predicate



Statistical tables

Depending
on subject:

Simple tables

Group tables

Combined tables

Statistical tables

Simple table

Amount of the minimum pensions
allocated in the country

From the 1st Y January 2008	60 manat
From the 1st September 2008	75 manat
From the 1st September 2010	85 manat
From the 1st September 2013	100 manat

Statistical tables

- Group table – subject is simple group of reflected thing (by one feature)

Pension amount by the type of pension

Amount of pension	Old age	disability	survivors
A	1	2	3

Statistical tables

- **Combined table** – subject is combined group, which simultaneously is performed by 2 or more features

Average amount of fixed monthly pensions of employed and unemployed pensioners (at the beginning of year, manat)

	2012			2013			2014		
	Total	of which:		Total	of which:		Total	of which:	
		employed	unemployed		employed	unemployed		employed	unemployed
Average amount of fixed monthly pensions -total	145.1	157.5	143.7	152.0	170.4	150.0	170.5	189.5	168.3
oldage pension	160.1	166.7	159.1	168.5	183.0	166.4	187.8	203.9	185.4
disability pension	126.1	112.7	127.1	129.8	111.6	131.1	148.4	125.0	150.1
loss of family head for long service	101.0	189.9	100.6	109.2	257.5	108.8	126.2	280.0	125.8
social pensions

Main rules for table creation

- Should not be too long and difficult
- Title should display main content, time period, territory, unit of measure
- Logical order of rows and columns

Main rules for table creation

If there is no figure in the table box, there must be used other symbol:

- If the thing is not observed, in the box is used symbol (-)
- If the thing is observed, but the value is less than half of unit zero or 2 zeros are used (o; o,o)
- If the thing is observed, but the data regarding it is missing or they are doubtful is used(...)
- If some of boxes logically is not possible to fulfil is used(×)
- If data are precise, (♦) is put near

Main rules for table creation

In all table or in row identical accuracy should be used

For example 0,1 or 0,01

If in the rows with the numbers expressed by several figures greater accuracy is demanded, it is useful to separate millions from thousands and so on

example, 7 650 978, or 7'650'978.

Graphical description

- To get more complete and demonstrative view on researched processes and things statistical graphs are created

Statistical graphs/charts

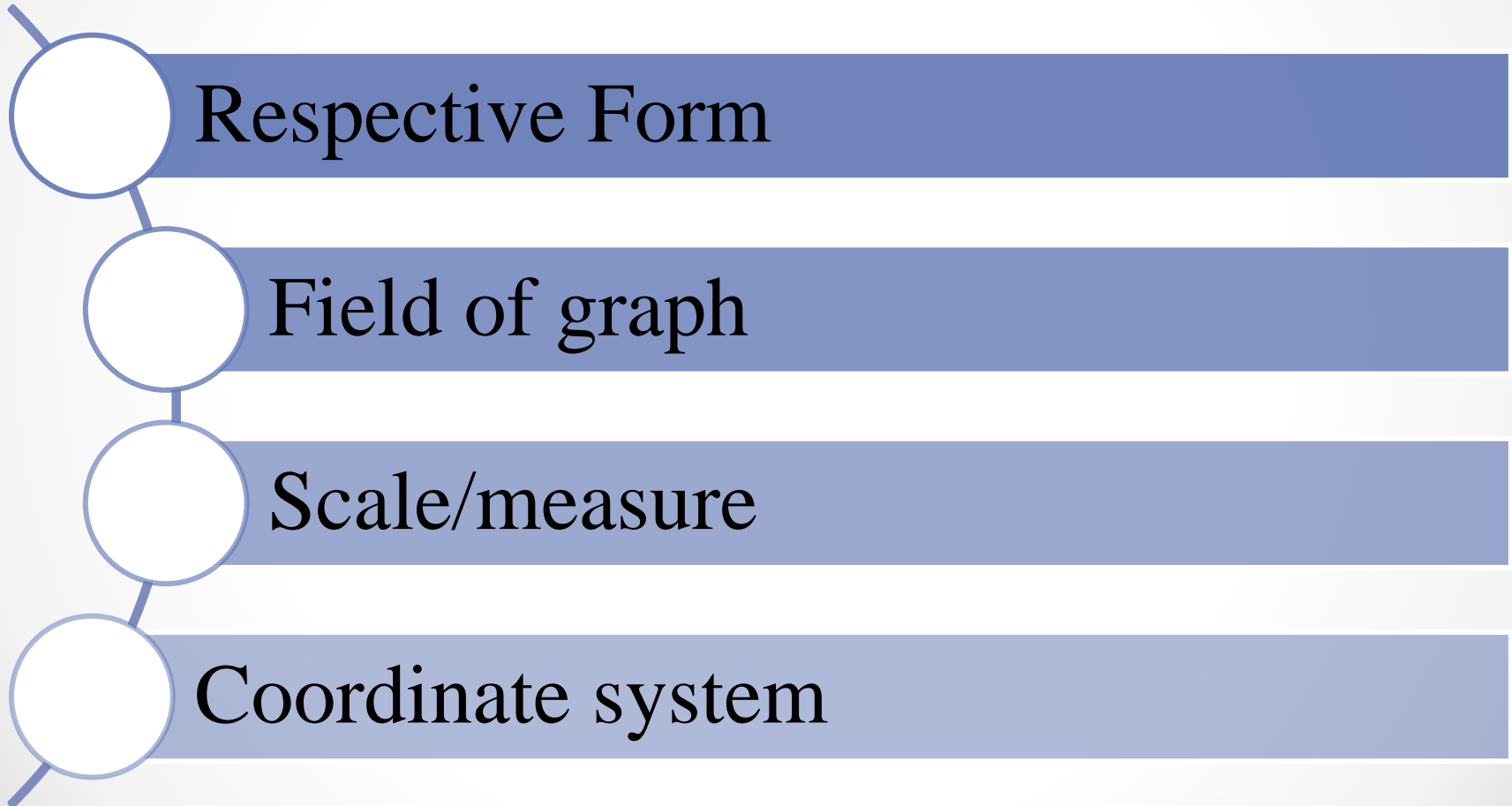
Sequel or supplement of statistical tables

Displays things, which are not noted in tables

Displays tendencies and interconnection

Time saving

Requests for statistical charts



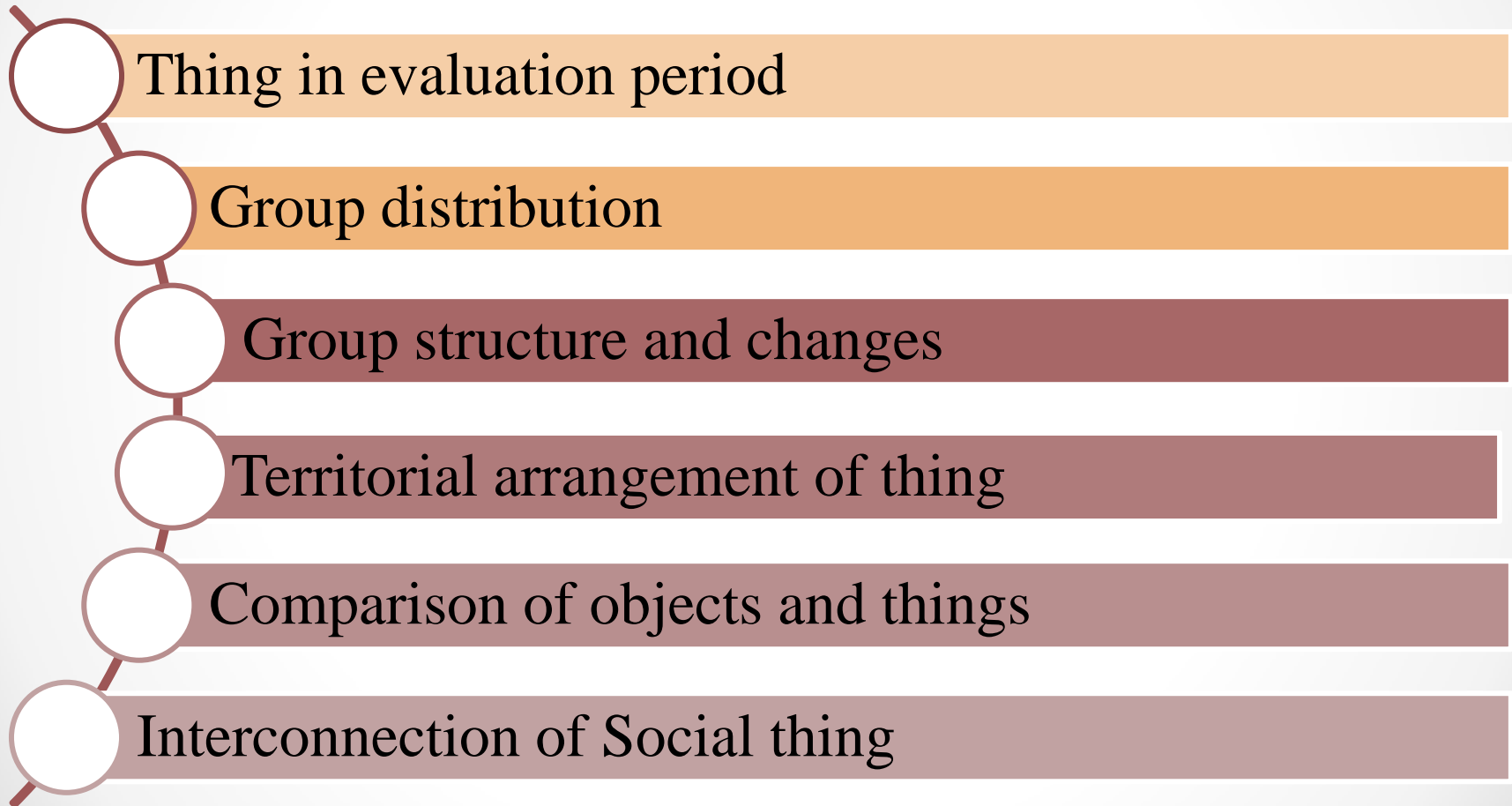
Statistical charts

By content

By structure

Statistical charts

Content – task of analysis



Statistical graphs - forms

Diagrams

Cartograms

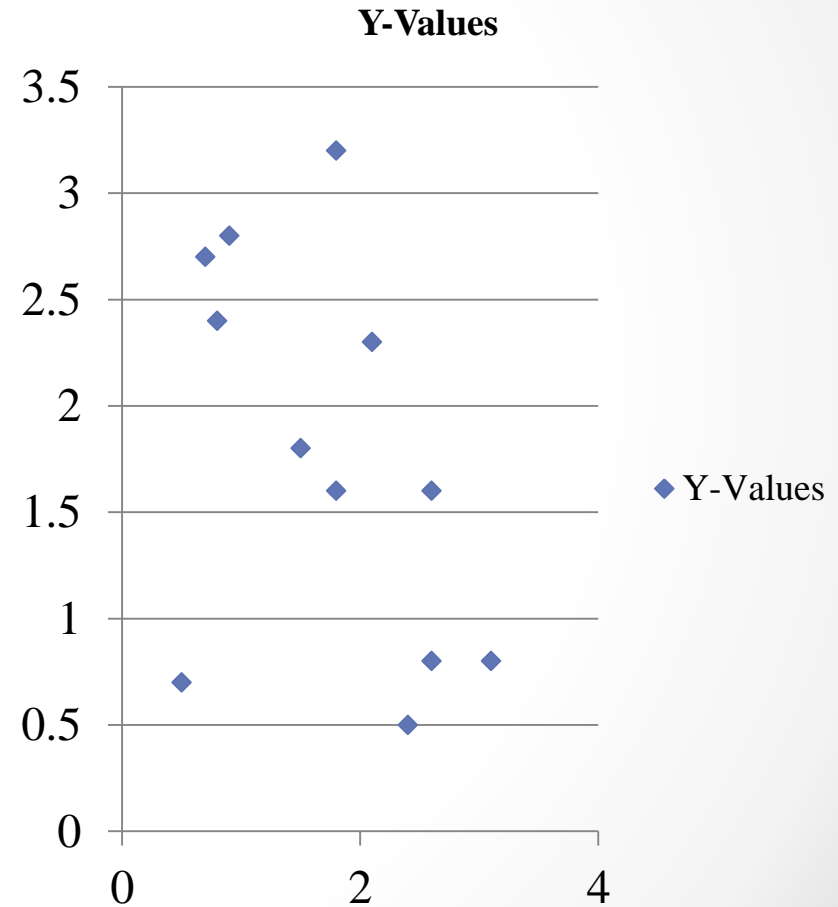
Statistical
picture

Statistical charts – diagrams

- Scatter
- Line
- Bar
- Figure
- Histograms

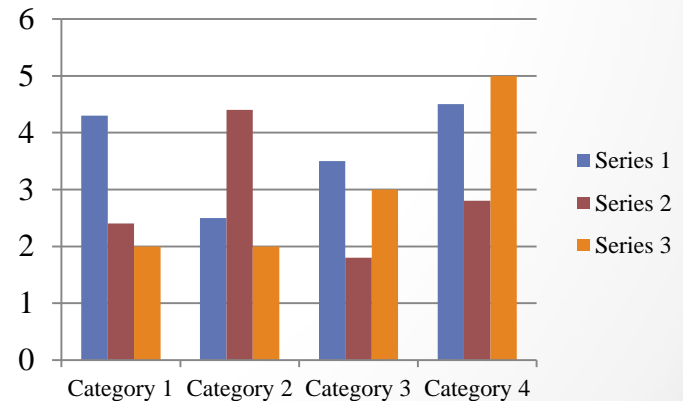
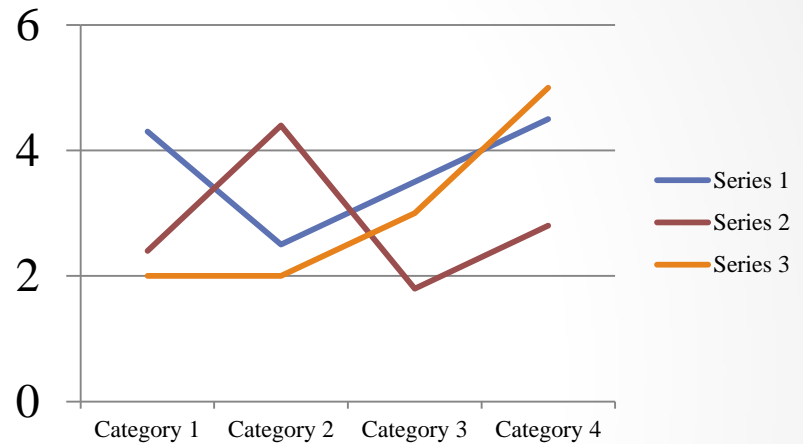
Statistical charts - Scatter

- Point = amount of things
- to show the relationship between two variables

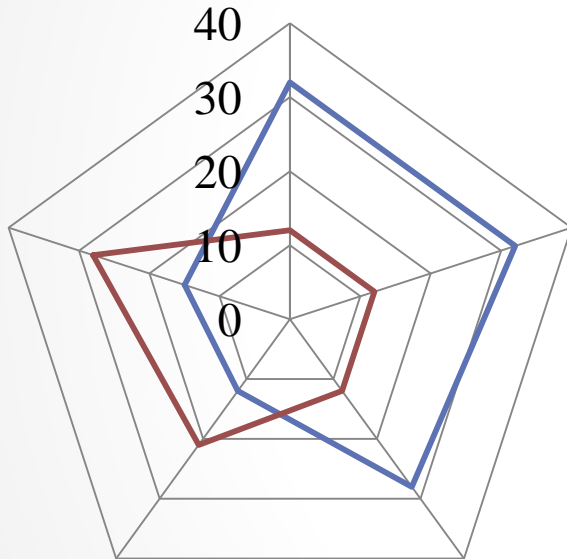


Statistical charts - Lines

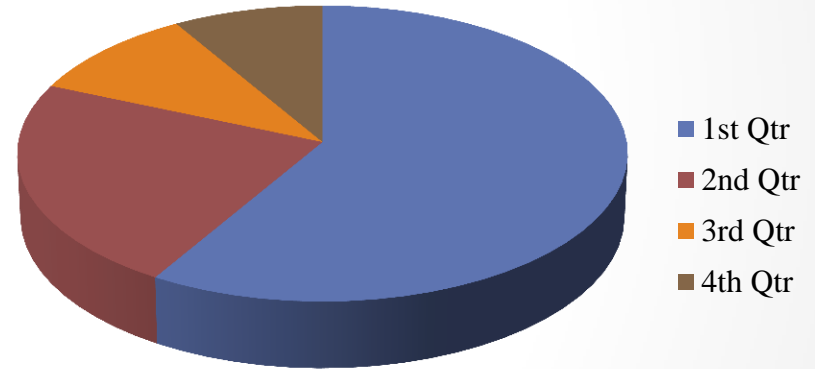
- Dynamics
- Variation
- Implementation
- Interconnection



Statistical charts – radiogram, figures



— Series 1
— Series 2



■ 1st Qtr
■ 2nd Qtr
■ 3rd Qtr
■ 4th Qtr

Statistical graphs – cartogram, statistical picture

- Display geographical changes
- Statistical pictures – to popularize statistical data

