

## Types of data

Data is divided into four main types:

- Time series data
- Cross-sectional Data
- Pooled Cross Sections
- Panel or Longitudinal Data

### **Time Series Data**

It means that a series or time series is a succession of observed values of a random phenomenon arranged over time. Mathematically, we say that the independent variable of time is one of the most important of these time series.

$y = f(t)$ , that is meant,  $y$  is a function of time  $t$ ,

Examples of time series data include the following:

The annual volume of strawberry exports from a city.

Average rainfall in a city annually.

The number of unemployed people annually.

The monthly sales volume of a commodity.

Patients attending psychiatric clinics monthly.

The number of units required to produce a specific commodity per week.

The daily closing price of a bank's share in a city.

Reading the patient's temperature in an hour for one day.

Example:

The following table represents data related to the amount of demand for fish (tons), the price of fish, the price of meat, and income measured (in thousand dinars), for the period 1980-2013.

income	price of fish	price of meat	amount of demand for fish	Year
1600	15	25	12	1980
1730	17	32	15	1981
⋮	⋮	⋮	⋮	⋮
2700	55	43	17	2012
2960	57	52	21	2013

### **Cross-Sectional Data**

Its meant that is the data that is taken about a variable or phenomenon at a specific point in time, and this type of data is commonly used in all field studies. Cross-sectional data thus illustrate the extent to which the value of a variable changes from one individual to another at the same point in time. Examples of cross-sectional data include the following:

- Income data for a sample of consumers at a specific point in time.
- Monthly consumption of essential goods for a group of families.
- The national income of a group of countries in the world in a particular year.

Example:

The following table represents data for a sample of 300 employees in a company in the year 2013, related to monthly salary (in thousand dinars), number of years of education (in years), experience (in years), marital status (1 = married, 0 = other), and gender. (1=male, 0=female).

Gender	marital status	experience	education	monthly salary	i
0	1	3	16	275	.1
1	0	6	18	420	.2
1	0	7	12	157	.3
1	1	2	18	327	.4
⋮	⋮	⋮	⋮	⋮	⋮
0	0	4	18	385	.29
0	1	5	14	214	.30

### Pooled Cross Sections

This type of data contain a mixture of time series data and cross-sectional data, as they provide data on different groups of items across a time series.

Examples of this type of data include:

Study of income for different groups of families over the past ten years.

Studying the monthly consumption of different groups of households during the first six months of the past.

Example:

No. baths	No. Rooms	Area	Price	Year	i
2	4	180	30500	2005	1
1	2	145	27000	2005	2
⋮	⋮	⋮	⋮		⋮
2	3	160	28500	2005	150
3	4	175	65000	2013	151
1	2	152	47000	2013	152
⋮	⋮	⋮	⋮		⋮
2	3	165	52000	2013	330

### Panel or Longitudinal Data

This type of data contain a mixture of time series data and cross-sectional data, as they provide data on a group of items across a time series. That is, it contains a time series for each cross-sectional data for each individual in the sample under study.

Example:

Facilities	Investments	Deposits	Profits	Year	Bank
65	72	70	5	2005	1
65	78	80	4	2013	1
70	95	90	4.5	2005	2
92	90	120	3.5	2013	2
	⋮		⋮		⋮
120	170	140	5	2005	15
78	780	500	6	2013	15