

Sources of Data

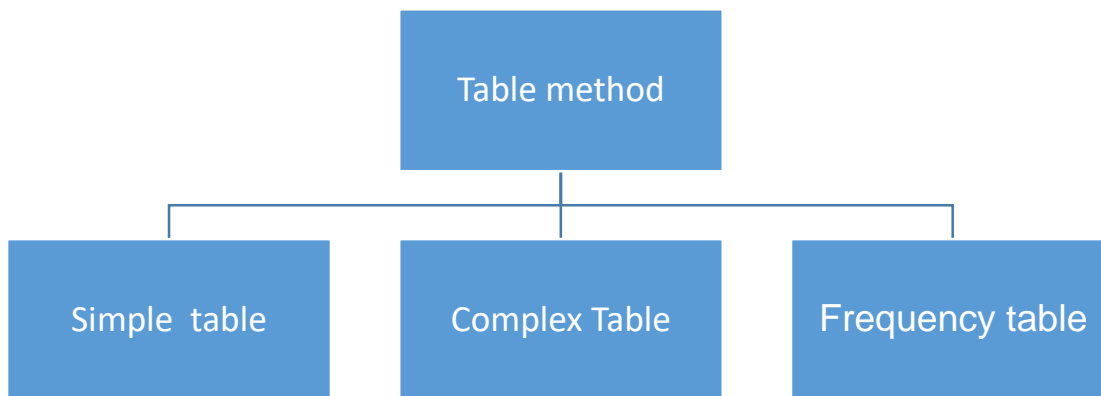
- 1- Historical sources.
- 2- Field sources.

Methods of Data Collection

- 1- Observation Method.
- 2- Self-recording Method.
- 3- Interviewing Method.
- 4- Telephone Method.
- 5- Internet Method.

Methods of Data presentation

1. Table Method



1-Simple table: it is a table which contains one character only, like...

Gender	No. of students
Male	43
Female	22

2-Complex table: It is a table which contains more than one property or character for forest trees.

3-Frequency table: It is a most important type of table due to its widely use in different sciences.

Steps for preparing frequency table:

(1) Limiting the number of classes: For limiting the number of classes are three methods:

First method: Sturge's method

$$\text{No. of classes} = 1 + 3.322 \log N$$

N = no. of observations (individuals of data)

Second method: Yule's method

$$\text{No. of classes} = 2.5 * \sqrt[4]{N}$$

Third method: Approximate method

In this method the no. of classes must be (5) or more.

(2) Limiting classes length (width)

$$\text{Class length} = (\text{Range} / \text{no of classes})$$

$$\text{Range} = \text{Max. value} - \text{Min. value}$$

(3) Limiting the frequency for each class.

Frequency: The number of times which a certain category is repeats.

Type of Classes:

1- Real classes

2- Unreal classes

1. Real classes: In case of real classes the upper limit of the 1st class is equal to the lower limit of the 2nd class and so on ...
2. Unreal classes: In case of unreal classes the upper limit of the 1st class is smaller than the lower limit of the 2nd class and so on ...

<u>Real class</u>	<u>Unreal class</u>	<u>Unrealclass</u>
5-10	0-10	5-10
10-15	11-21	11-15
15-20	22-32	16-20

Note:

- 1- the first class maybe open if we have a very small value.
- 2- The last class maybe open a large number.
- 3- Both, first and last classes may be open.

<u>Class</u>	<u>Class midpoint</u>
50-100	$(50+100)/2= 75$
100-150	125
150-200	175
200-250	225
250-300	275

$$\text{class midpoint} = \frac{\text{upper limit} + \text{lower limit}}{2}$$

Class length = (upper limit - lower limit), for real classes.

Class length = (upper limit - lower limit) + 1, for unreal classes.

Class length = the different between the value of two class midpoint.

Class length = 2nd class midpoint - 1st class midpoint

Class Midpoint + $\frac{1}{2}$ class length = upper limit

Class Midpoint - $\frac{1}{2}$ class length = lower limit

Example: The following data represent the growth radius of fungi (mm) for 40 samples.

Summarizing data in a frequency table.

60, 30, 70, 80, 71, 84, 50, 66, 25, 57, 70, 60, 50, 53, 70, 61, 52, 79, 39, 50, 72, 58, 64, 68, 43, 70, 96, 73, 46, 41, 45, 50, 60, 52, 80, 86, 48, 41, 39, 67.

No. of classes = $1 + 3.322 \log N$

$$= 1 + 3.322 \log 40$$

$$= 1 + 5.322 = 6.3 \approx 6$$

Range = max. value - min. value = $96 - 25 = 71$

Class length = (Range /no of classes)

Class length = $71/6 \approx 12$

Then organizing the frequency table as follows:

Classes	Frequency(F)	Relative frequency	%Frequency
25-37	2	2/40	(2/40)*100
37-49	8	8/40	(8/100)*100
49-61	12	12/40	(12/40)*100
61-73	11	11/40	(11/40)*100
73-85	5	5/40	(5/40)*100
85-97	2	2/40	(21/40)*100
	$\sum F = 40$	$\sum R F = 40/40=1$	$\sum \% F = 100\%$

Cumulative Frequency:

There are two types of cumulative frequency:
 (1) Less than frequency, it start with zero and it's end with $\sum f=N$.
 (2) More than frequency, it start with $\sum f$ and the end point (class) is zero.

Steps for calculating:

- Preparing frequency table from the raw data.
- Convert normal frequency to cumulative frequency.

Less than frequency class

Less than 20
 = = 30
 = = 40
 = = 50
 = = 60
 70 or less

More than frequency class

More than 20
 = = 30
 = = 40
 = = 50
 = = 60
 more than 70