Chapter 2: One-variable statistical series

A.2.1 Count, Frequency, Percentage:

a. Partial Count (ni):

Corresponds to the number of individuals in the class or the count of how many times that value appears.

ni: the number of individuals who have the same xi, is called partial count of xi.

Example 11 :

A survey carried out in a village concerns the number of dependent children per family. We note X the number of children, the results are given by this table:

xi	0	1	2	3	4	5	6
ni(Count)	33	17	43	62	28	38	29

We have: P: all families, i: a family, X : Number of children per family

In this example, 28 is the number of families that have 4 children.

b. Cumulative count (N):

This is the total number of individuals in the population, it corresponds to the sum of all partial counts.

$$N = n1 + n2 + n3 + \cdots .. + ni = \sum_{i=1}^{k} ni$$

In the previous example (11), we have $N = 250$

c. Partial Frequency (fi):

It represents the ratio of the count (ni) by the total count (N). $fi = \frac{ni}{N}$ $0 < fi \leq 1$

xi	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**N**
ni (Count)	33	17	43	62	28	38	29	**250**

fi (Frequency)	$\frac{33}{250}$ 0,132	$\frac{17}{250}$ 0,068	$\frac{43}{250}$ 0,172	$\frac{62}{250}$ 0,248	$\frac{28}{250}$ 0,112	$\frac{38}{250}$ 0,152	$\frac{29}{250}$ 0,116	$\frac{\mathbf{250}}{\mathbf{250}}$ **1**

We take the previous example:

d. Cumulative Frequency (Fi):

For each value xi, we set by definition $Fi = f1 + f2 + f3 + \cdots \ldots \ldots + fi$

$$\sum_{i=1}^{k} fi = \sum_{i=1}^{k} \frac{ni}{N} = \frac{1}{N}\sum_{i=1}^{k} ni = 1$$

For i = 1, The cumulative frequency of order 1 is F1 = f1.

For i = 2, The cumulative frequency increasing of order 2 is F2 = f1 + f2.

e. Percentage:

We can replace fi by **fi × 100** which then represents a percentage.

Ex: f1=0,132, f1%=0,132*100=13,2%

***Example 12*:**

The number of boys in two hundred apartments with four rooms has been recorded. The following table was obtained:

- Calculate frequencies and cumulative frequencies.

xi	0	1	2	3	4	Total
ni	8	42	67	70	13	N=200
fi	0.04	0.21	0.335	0.35	0.065	F=1
fi%	4%	21%	33.5%	35%	6.5%	100%
Fi =∑fi	0.04	0.25	0.585	0.935	1	

f. Statistical tables:

The statistical table of a discrete variable will be:

Xi (Variable)	**x1**	**x2**	**x3**	**x4**	**x5**
ni (Counts)	n1	n2	n3	n4	n5
fi (Frequencies)	f1	f2	f3	f4	f5

The statistical table of a continuous variable will be:

Classes	**[a-b[**	**[b-c[**	**[c-d[**	**[d-e[**	**[e-f]**
ni (Counts)	n1	n2	n3	n4	n5
fi (Frequencies)	f1	f2	f3	f4	f5

Remark: By convention, the upper bound of a class is excluded from this class, except for the last class it is always closed.