

**A**  
**Study of the Cost Of Living Indices of the Inhabitants  
Of Mozia Bheti Village In Jorhat**

**A**  
**Field Work Report Submitted for the Partial Fulfillment of  
Bachelor Degree in Statistics of Dibrugarh University**



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**Jorhat- 785101**

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## ACKNOWLEDGEMENT

I express my sincere gratitude and gratefulness to Ms. Shyamali Dutta, Professor, Department of Statistics of Bahona College of Dibrugarh University for her proper guidance, valuable comments and constructive suggestion throughout the preparation of this dissertation.

I also express my deep sense of gratitude to Dr. Aditi Baruah and Mr. Lalit Kakoty Professor, Department of Statistics of Bahona College of Dibrugarh University for their personal help at field work. I am thankful for my teachers for their kind arrangement of data collection for the village from Mozia bheti and suggestions regarding the problems.

I am thankful to Tishul Saikia and Simanto Baruah, two member of this village, for their valuable help during our data collection.

Date: 29/5/18

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# CONTENTS

CHAPTER ---1	Page No
1.1: Introduction	1
1.2: Definition of Index Number	1-2
1.3: Definition of Relatives	2-3
1.4: The Purpose of Index Number	3
1.5: Selection of the Commodities	3-4
1.6: Selection of Base Year	4-5
1.7: Selection of appropriate weights	5-6
1.8: Data for Index Number	7
1.9: Base shifting of Index Numbers	7-8
1.9.1: Splicing two Index Numbers series	8
1.9.2: Deflating	8-9
1.10: Classification of Index Numbers	9
1.10.1: Uses of Index Numbers	9-10
CHAPTER -----2	
CONSUMER'S PRICE INDEX NUMBER	
2.1 Concept, Definition	11-12
2.2 Steps in the construction of Index Numbers	12-13
2.3 Sources of data information	13-14
CHAPTER ---3	
DATA COLLECTION FOR THE PRESENT STUDY	
3.1 Aim of the field work	15
3.2 The present problem of the field work	16
3.3 Collection of data	16-17
3.4 Collection of the for the field work	17
3.5 A brief note of Mozia Bheti Gaon	17-18

CHAPTER ---4

METHODOLOGY

4.1 Methodology	19-20
4.2 Sources of retail price quotation	20
4.3 Formation for the information of the Index Numbers	20-22
4.4 Comparison of different methods of weighting	22-23
4.5 Analysis and Conclusion	23-28
Conclusion	29

TABLES

QUESTIONNAIRY FORMATE	30-33
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BIBLIOGRAPHY	33
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# **CHAPTER -1**

## **INTRODUCTION**

## 1.1 INTRODUCTION

Index number are the indicators which reflect changes over a specified period of time in prices of different commodities, industrial production, sales imports and exports, cost of living etc. These indicators are of paramount importance to the management personal or any government organization or Industrial Concern for the purpose of reviewing position and planning action if necessary; and in the formulation of executive decisions. They reflect the pulse of an economy and serves indicators of inflationary or deflationary tendencies. The first index number was constructed in the years 1762 by an Italian named Carli to compare the change in the price for the year 1750 with the price level of the year 1500. Thus initially index numbers were designed to study the change in the price level or the purchasing power of money. Just as in Physics and Chemistry barometer measures atmospheric pressure or pressure of gases, so in Economics index numbers measured the pressure of economic behavior and rightly termed as "economic barometers" or 'barometers of economic activity' since a look at some of the production, agricultural production etc. gives a fairly good idea has as to what is happening to the economics of a country. Index numbers are supposed to be barometers which measured the change in the level of phenomena.

## 1.2 Definition, concepts of Index Number:

An index number may be defined as a statistical device to measure the average change in a group of related variables over two different situations. The two different 'situations' may be either two different times or two different places. The group of variables may be the prices of a specified set of commodities, the volumes of production in different sectors of an industry, the marks obtained by a student in different subjects, and so on. Most often we have to face problem of measuring the general changes in the price level of consumer goods i.e. goods or commodities consumed by the people belonging to a particular section of society, say low income group or middle income group or labour class and so on. But these changes are not directly measureable as the price quotations of various commodities are available in different units, e.g. wheat and sugar in Rs. Per quintal, milk, petrol and kerosene oil in Rs. Per liter, cloth in Rs. per meter etc. Further, the prices of some of the commodities may be increasing while those of other may be decreasing during the two periods and the ratio of increase or decrease may be different for different commodities. Index number is statistical device which enable us to arrive at a single representative figure and which gives the general level of the price of the commodities in an extensive. According to Edgeworth "Index Number

show by its variations the changes in a magnitude which is not susceptible either of accurate measurement in itself of direct variation in practice. "

Again it can also be defined as " a device for combining the variation, that have come in a group of related variables over a product of time, with review to obtain a figure that faithfully represents the net results of the change in the constituent variables" (C.V. Gupta")

Index numbers are statistical devices to measure the relative change in the level of phenomenon and those are the numbers which express the values of a variable at any given data called the "given period" as a percentage of the value of that variable at some standard data called the 'based period'. The change may be with respect to time, geographical location or other characteristics such as income, profession etc. The value may be the price of a particular commodity, the value of trend, exports and imports, the national income of a country belonging to particular income group/profession etc. A price index number is a sort of average of individual price relative and it measures the price changes of all the commodities collectivity. Price relatives are the ratio of the price of certain year to the price of some standard year. And Index Numbers are very helpful for measuring the changes which are of paramount importance to the management personnel or a government organization or industrial concern for the purpose of reviewing position and planning action if necessary.

### 1.3 DEFINATION OF RELATIVES

An index number is a sort of average of the relatives it is necessary to define what is meant by Relativities. The price of a commodities in a given expressed as percentage of the price of the some commodity in a specified year is called price relative. If we have  $P_0$  and  $P_1$  as the price of the commodity in the base year and current year respectively then the price relatives or simple index number for each year may be expressed as:

$$P_{01} = \frac{P_1}{P_0} \times 100$$

Where  $P_{01}$  represents price index of the current year based on the base year

$P_1$  = The price of the current year and

$P_0$  =The price of the base year.

#### 1.4 THE PURPOSE OF INDEX NUMBER

An index number which is properly designed for a purpose can be most useful and powerful tool otherwise it can be equally misleading and dangerous. Thus the first and foremost problem is to determine the purpose of index number without which it is not possible to follow the steps in its construction. So the purpose for which the index number being constructed should be clearly stated. For instance if we want to construct an index number for measuring the change in the general price level, we have to take the wholesale price of finished products, mineral products etc. Similarly, the retail prices of consumer goods and the costs of services like electricity charges form the basis for the construction of a cost of living index number.

#### 1.5 SELECTION OF COMMODITIES:

Having defined the purpose of index number we should select only those commodities which are relevant to the Index. For example, if the purpose of an Index is to measure the cost of living of a particular group and due care should be taken not to include other things which are not consumed by the particular group of the people.

The best solution to the problem of selection of item for any index is – (i) to split the whole (relevant) group of commodities into various homogeneous sub-groups like cereals, milk and milk products, clothing, iron fuel and steel etc. So that the price movement of various commodities within any sub-group follows almost the same and (ii) to select an adequate number of representative items from each sub-group. A representative commodity should possess the following two characteristics:

- a) It should be representative of the tastes, habits, customs and necessities of the people to whom the Index Number relates. If such commodities are selected are not representative of the test, habit and customs of the society, the conclusions derived from their study would never be representative and would not be correctly applicable to the problem for whom it is meant.
- b) It should be stable and preferably should be standardized. If a commodity is not stable in quality it is unfit for inclusion in the index number. The reason is that an index number is meant to measure the change in the level of the same commodities week after week or month after month or period after

period. Comparison of the relative price level is possible only if the quality of the commodity does not change much.

### 1.6 SELECTION OF THE BASE YEAR

The period with which the comparison of the relative changes in the level of phenomenon is made is termed as base period and the index for the period is always taken as 100. There are two methods by which base period can be selected. They are-

(i) Fixed base method

(ii) Chain base method

(i) Fixed base method: In this method the base period is fixed. A particular year is generally chosen arbitrarily and the price at the subsequent years are expressed as relatives of the prices at the base year.

(a) The base period should be a normal one. The period that is selected as base should be normal i.e. it should be free from abnormalities like wars, earthquakes, booms, depression etc. However, at times it is really difficult to select a year which is normal in all respects a year which is normal in one respect may be abnormal in another. To solve this problem an average of number of years, 3 and 4 (preferably covering one complete cycle) may be taken as the base. The process of averaging will reduce the effect of extremes. Thus the average of the period from 1980 to 1982 may be considered normal, whereas no individual year in that span can be considered normal.

(b) The base year should not be far from the given year because due to dynamic pace of events these days, distant base period is likely to be entirely different from the given period.

The quantities of many commodities change with the lapse of time. This may be due to the changing of consumption pattern of the people. Again if the base period is too far some commodities available in the base year may not be found in the current years.

(ii) Chain base method: In this method there is no fixed base period. The year immediately preceding the one for which price relatives have to be calculated is assumed as the base year.

The chief advantage of this method is that the price relatives of a year can be compared with the price of the immediately preceding year. Sometimes it is necessary or, desirable to drop a commodity from an index to add a new commodity, to substitute are

commodity for another which involve also a change of weight. These adjustments involve an application of the chain Index. Another advantage of this method is that it is possible to delete old items which are no more important or, to include new items in the index number as we desire. This is because of the fact that the index of any one year is related only to the year just proceeding it and changes occurring in neighboring periods are never so great as to impair comparability. Thus, if the list of commodities needs frequent change the chain base method is preferable to the method fixed base.

### 1.7 SELECTION OF APPROPRIATE WEIGHTS:

Generally, various items commodities, say, wheat, rice, kerosene, clothing etc. included in the Index are not of equal importance, proper weights should be attached to them to take into account their relative importance. For instance, in constructing a whole sale price index number for India 'rice should have greater importance than tobacco. So we must consider the problem of weighting the different commodities included in the Index number according to their importance. On the relation of weights to the purpose of Index Mitchell says as follows:

"If rational weighting is worth striving after then with what methods shall the weights of different commodities be arrived at that depends upon the object of the investigation. I for example, the aim be to measure changes in the cost of living and the data be retail quotations of Consumer's commodities then the proportionate expenditure upon the different articles as represented by collection of family budgets make appropriate weights. If the aim is to study changes in the money incomes of farmers then the data should be farm prices and the weights should be proportionate to the total money receipt from the several products. If the aim be to constructed a business barometer the data should be prices from the most representative wholesale markets. The list should be confined to commodities whose prices are most sensitive to changes in business prospects and least to change from other causes and the weights be logically adjusted to the relative faithfulness with which the quotations included reflect business conditions. There are many methods of weighting such as:

(a) Family budget method or weighted relatives method.

(b) Aggregate expenditure method or aggregative method.

(a) Family budget method: In the family budget method of a large number of people are carefully studied and the aggregate expenditure of the average family on various items is estimated and

these values are used as weights. Current Year's prices are converted into price relatives on the basis of base years' prices and these price relatives are multiplied by the respective values

of the commodities in the base years. The total of these products is divided by the sum of the values (or weights) and the resulting figure is the desired index number symbolically,

$$\text{Current year's Index number} = \frac{\sum IV}{\sum V}$$

Where I stands for the current year's price relative V for the values of the base year.

(b) Aggregate-expenditure method: In this method the quantities of commodities consumed by the particular group in the base year are estimated and these figures or their proportions are used as weights. Then the total expenditure on each commodity for each year is calculated. The price of the current year multiplies by the quantity or weight of the base year. These products are added. Similarly for the base year total expenditure on each commodity is calculated by multiplying the quantity consumed by its price in the base year. These products are also totaled. The total expenditure of the current year is divided by the total expenditure of the base year and the resulting figure is multiplied by 100 to get the desired index number.

Symbolically,

$$\text{current year's Index number} = \frac{\sum p_1 q_0}{\sum p_0 q_0} \times 100$$

Where  $P_1$  and  $P_0$  stand for the price of the current year and base year.

### 1.8 Data for index number:

The data, usually the set of prices and of quantities consumed of the selected commodities for different periods, places etc., constitute the raw material for the construction of Index numbers. The data should be collected from reliable sources such as standard trade journals, official publications, periodical special reports from the procedures, exporters etc. or through field agency. The principles of data collection viz. accuracy, comparability, sample

representatives and adequacy should be borne in mind. For example, for the construction of retail price index number, the price quotations for an adequate number of commodities should be obtained from super bazars, fair price shops, departmental stores etc. and not from wholesale dealers.

Makers of price Index numbers take great pains to collect the necessary data in each period for all commodities included in the index number. The price of a commodity at a particular period of time will vary from one market to another and also for different grades. So we are to collect prices of a commodity from a number of representative markets for a few important grades of the commodity. In this case of wholesale price index numbers we are to collect Wholesale prices of commodities and for cost of living index numbers retail prices are required.

### 1.9 BASE SHIFTING OF INDEX NUMBER:

Very often it comes necessary to Index number. Base shifting means the changing of the given base period (year) of a series of Index Numbers and recasting them into a new series based on some recent new base period. This step is quite often necessary under the following situations;

(i) When the base year is too old and is too far away from the current year it is unsuitable of meaningful comparisons.

(ii) If we want to compare series of Index numbers with different base periods, comparisons would be meaningful only if the two index numbers have a common base period.

Base shifting requires the recompilation of the entire series of the Index Numbers with the new base. However, this is a very difficult and time consuming Job. A relatively much simple

though approximate method consists in taking the index number of the base year as 100 and then expressing the given series of Index Numbers as a percentage of the Index Number of the time period selected as the new base year. Thus, the series of Index Numbers recast with a new base is obtained by the formula

Recast Index No. of any year

$$= \frac{\text{Old index no. of year}}{\text{Index no. of new base year}} \times 100$$

$$= \left\{ \frac{100}{\text{Index no. the new base year}} \right\} \times (\text{Old index no. of the year})$$

In other words, the new series of Index numbers is obtained by multiplying the old index numbers with a common factor:

$$= \frac{100}{\text{Index no. of the new base year}}$$

### 1.10 SPILICING TWO INDEX NUMBER SERIES:

It is usually found that in course of time some articles included in the Index numbers series may go out of the Market new ones may come in. Their relative importance may also change. When these changes become sufficiently important their inclusion in the index number becomes necessary. As a consequence the old series of index number is discontinued and a new series is constructed with the year of discontinuation of the first as base. This means that we now have two series of index numbers for the same phenomenon one of them coming up to the year from which the other begin. Thus index numbers contained in two series are not directly comparable for the simple reason that they are prepared on different bases. In order to face late the comparison these two series are spiced together.

Multiple the various indices of the new series by the index number of the last year in the old series and divide the result so obtained by 100.

### 1.11 DEFLATING:

Deflating means "Making allowance for the effect of changing price levels". The *increase* in the prices of consumer goods for a class of people over a period of years means a *reduction* in the purchasing power for the class. For example the increase in price of a particular commodity from Rs.x in the base year 'a' to Rs.2x in the year implies that in 'b' a person can buy only half the amount of the commodity with Rs. x which he was spending on it in 'a'- Thus the purchasing power of a rupee only 50 paisa in 'b' as compared to "a"-

The idea of "the purchasing power of money" or "a measure of the real income for a class of people is obtained on deflating the wage series by dividing each item by an approximate price index e.g. the cost of living index. The real wages so obtained may be converted into index number if desirable.

More precisely

$$\text{real wage} = \frac{\text{Money or nominal wages}}{\text{Price index}} \times 100$$

The real income is also known as deflated income. This technique is extensively used to deflate value series of value indices, rupee, sales, and income wages and so on.

### 1.12 CLASSIFICATION OF INDEX NUMBER:

Index Numbers may be classified in terms of the variables that they are intended to measure. In business the different group of variables in the measurement of which Index number techniques are commonly used are (i) price (ii) quantity (iii) value (iv) business activity. Thus we have index of wholesale prices, Index of consumer prices, Index of Industrial output, Index of value of exports and Index of business activity.

#### 1.12.1 USES OF INDEX NUMBER: :

Through originally designed to study the general level of prices of accordingly purchasing power of money, today Index Numbers are extensively used for a variety of purposes in economics, business management etc. and for quantitative data relating to production, consumption, profits, personnel phenomenon for two periods, places etc. The main uses of Index Numbers can be summarized as follows:

##### 1. Index Number as Economic Barometers:

If we keep in mind the various uses of Index Numbers as discussed above we will arrive at the inevitable conclusion that Index numbers measure the pulse of an economy and act as barometers to find the ups and downs in the general economic condition of a country. Indices of prices, output, foreign exchange, reserves, bank, deposits etc. Throw light on the variation in the level of business activity of a country and these indices can be combined into a composite Index which could be act as an economic barometer. Just as a barometer measures the atmospheric pressure, Index numbers are helpful in measuring the pressure of economy and business behavior on the economy of a country.

##### 2. Index Numbers help in studying trends and tendencies:

Since the Index numbers study the relative changes in the level of a phenomenon at different periods of time, they are especially useful for the study of the general trend for a

group phenomenon in a time series data. The indices of output industrial and agricultural production) volume of trade, import and export etc., are extremely useful for studying the changes in the level of phenomenon due to the various components of a time series secular trend, seasonal and cyclical variations and irregular components and reflect upon the general trend of production and business activity. As a measure of average change in extensive group. The Index Numbers can be used to forecast future events.

### 3. Index numbers helps in formulating decisions and policies:

Index Number of the data relating to prices, production, profits, imports and exports, personnel and financial matters are indispensable formulation of executive decisions. For example, the cost of living index numbers are used by the government and the industrial and business concerns for the regulation of dearness allowance grant of bonuses to the workers so as to enable them to meet the increased cost of living from time to time. Although Index numbers are now widely used to study the general economy and business conditions of the society, they are also applied with advantage for any organization in efficient planning and by sociologists (Population indices) Psychologists (I.Q's) health and educational authorities etc. for formulating and revising their policies from time to time.

**CHAPTER -2**  
**CONSUMER'S PRICE INDEX**  
**NUMBER**

## 2. CONSUMER'S PRICE INDEX NUMBER:

### 2.1 CONCEPT, DEFINITIONS:

Consumer price index number was formerly known as 'cost of living index'. But the change in the name was made in accordance with international recommendations and the growing practices in other countries. According the Sixth International Conference of Labour statisticians recommended the term 'cost of living index to be replaced by term consumer price index' or 'Retailprice Index'.

Consumer price Index number are designed to measure by means of appropriate weighting the average increase or decrease in the cost of maintaining a given standard of living from year to year. It should, be understood that the consumer price indices measure changes in the cost of living of worker due to changes in the retail price only. The measurement of changes in the cost of living due to change in the living standards are not included the usual concept of the consumer price Index. The necessity of cost of living Index numbers arises on account of the fact that wholesale price index numbers measure the variations only in the general level of price. These variations do not throw light on the effects of rise and fall of prices on the cost of living of different classes of people in a society.

Cost of living Index numbers are constructed to study the effect of changes in the prices of a basket of goods and services on the purchasing power of a particular class of people. It measures the relative change in the amount of money required to produce equivalent satisfaction under two different situations.

Change in the consumer price of an individual between two periods means the change in his money income which will be necessary for his to maintain the same standard of living in both periods.

The cost of living index number should cover the food, Clothing, fuel and lighting and miscellaneous groups. Each group should include a representative sample of the items of consumption. A separate index number is to be publishes for each of the major groups and a general index for al1 the groups combined. In calculating this index, weights are to be used proportional to the relative importance in consumption of item in a group and also of the different groups. A group index is a weighted average of the price relatives of the different item of the group, the weights being proportional to their consumption expenditure. The general index is, in its turn, the weighted average of the group indices, the weights being proportional to the consumption expenditure on the different groups. This is found by means of a family budget enquiry.

The main function of a consumer price index is to serve as a measure of change in retail prices of a specified quantity of goods and services. But such indices are useful in

many other ways. They help in wage negotiations and dearness allowance adjustments etc. Such indices can be making use in training wage policy, price policy, rent control, taxation and general economy policies. Changes in the purchasing power of money and real income can be measured, and markets for particular kinds of goods and services can be analyses with the help of these indices.

Different groups of people consume different types of commodities. The relative importance of various commodities thus 1s different in case of different types of people. Generally, cost of living index their as urban, rural, city or country to country.

## **2.2 STEPS IN THE CONSTRUCTION OF COST OF LIVING INDEX NUMBER:**

(a) Scope and coverage: It is absolutely essential to decide clearly the class of people for whom the index is meant, i.e. whether it relates to industrial workers, teachers, officers, etc. The scope of the index must be clearly defined. For example, when we talk of teachers, we are referring to primary teacher's middle class teachers etc. or to all the teachers taken together. Along with the class of people it is also necessary to decide the geographical area covered by the Index.

(b) Family Budget Enquiry: Once the scope of the Index is clearly defined. The next step is to conduct a family budget enquiry covering the population group for whom the index is to be designed. The object of conducting a family budget enquiry is to determine the amount that an average family of the group included in the index spends on different items of consumption., While conducting such an enquiry, therefore, the quantities of commodities consumed and their prices are taken into account. The consumption pattern can thus be easily ascertained. It is necessary that the family budget enquiry amongst the class of people to whom the Index series is applicable should be conducted during the base period. The sixth international Conference of Labour statisticians held in Geneva in 1946 suggested that the period of enquiry of the family budgets and the base period should be identical as far as possible.

The enquiry is conducted on a random basis. By applying lottery method some families are selected from the total number and their family budgets are scrutinized in detail. The items on which the money is spent are classified into certain well accepted groups, namely:

- (i) Food
- (ii) Clothing
- (iii) Fuel and lighting
- (iv) Miscellaneous.

Each of these groups is further divided into sub-groups. For example, the broad group 'food' may be divided into wheat, rice, pulses, sugar etc. The commodities included are those which are generally consumed by people for whom the index is meant. Through family budget enquiry an average budget is prepared which is the standard budget for that class of people while constructing the index only such commodities should be included as are not subject to wide variations in quality or to wide seasonal alterations in supply and for which regular and comparable quotations of prices can be obtained.

(e) Obtaining Price quotations the collection of retail prices is a very important and at the same time, very tedious and difficult task because such prices may vary from place to place, shop to shop and person to person price quotations should be Obtained from the localities in which the class of people concerned reside or from where the usually make their purchases.

### **2.3 SOURCES OF DATA INFORMATION:**

The sources of information of data may either be primary or secondary. A source is said to be primary when the investigator himself or, his representations conduct an enquiry in the area of Survey. The common methods for primary sources are -

- (a) Direct personal investigation
- (b) Indirect oral investigation
- (c) By schedule and questionnaires
- (d) By local reports.

The sources is said to be secondary if the investigator collects the data from some another person's record. Secondary data may be published or, unpublished. The sources of published data are:

- (a) Official publications of central, State and the Local Govt.
- (b) Official publications of the foreign governments or internal bodies like the United Nations Organizations and its subsidiary bodies.
- (c) Reports and publications of trade associations, Chambers of Commerce, Banks, C-operative Societies, Stock exchanges and trade Union etc.
- (d) Reports submitted by economists, research scholars, University bureaus and various other educations etc.

The sources of unpublished data are valid and much material may be found with scholars and research workers, trade associations, chambers of commences, labour bureaus etc. Many enquires of a private nature are conducted by these bodies and these findings are not published.

**CHAPTER - 3**

**DATA COLLECTION FOR THE  
PRESENT STUDY**

### 3. DATA COLLECTION FOR THE PRESENT STUDY

#### 3.1 AIM OF THE FIELD WORK:

The study of almost all branches of science is incomplete without some practical knowledge. Statistics is also such a branch of science and the students of statistics have to acquire theoretical as well as practical knowledge during their study. So practical knowledge has the greater importance in our real life. We can take it for granted that our knowledge in our classroom is not complete if it is not well supplemented by practical works. This field work sharpens our knowledge in the subject and gives us a clear concept about it.

Direct investigation is the best way to collect data for analysis. Specially for the computation of consumer's price index number we need to talk with different kinds of people from different localities at the time of data collection.

The result of an experiment depends not less on the representativeness of the data for a particular purpose of the study than on the analysis in performing a statistical experiment. We have to look for the data so that they are the most appropriate and suitable for that particular experiment. This is the main problem of field work. Several factors have to be taken into account which may have some or other effect on the purpose of study.

Lacking some of the necessary information an experimentalist cannot arrive at a correct result rather he will arrive at an erroneous and obscured result. So, without experience of acquiring collection of data a student of Statistics cannot claim to be complete of the subject, and field work is that which gives the student a chance of acquiring such an experience.

So, in view of great importance of the field work, the department of Statistics, Bahona College has introduced field work in B.Sc syllabus. Our present study is a very modest one undertaken with a very limited and constrained scope of time and resources coupled with inexperienced knowledge but attempt has been made towards the fulfillment of the objective of field work as mentioned above.

### 3.2 The Present Problem in Field Work:

The field work which is assigned to me is a problem of index number under the head of "A study of the cost of living index of the inhabitants of a Mozia Bheti village in Jorhat"- An Analysis of consumer price Index Number.

### 3.3 Collection of Data:

Statistics are a set of numerical data. In fact only numerical data constitute statistics. This means that the phenomenon under study must be capable of quantitative measurement. Thus the raw material of Statistics always originates from the operation of counting (enumeration) or measurement. For any statistical enquiry, whether it is in business, economic or social sciences, the basic problem is to collect facts and figures relating to particular phenomenon under study. The person who conducts the statistical enquiry by counting or measuring the characteristics under study for further statistical analyses is known as investigator. Ideally an investigator should be trained properly to make him an efficient statistician. But in practice, this is not always or even usually done. The persons from whom the information is collected are known as respondents and the items on which the measurements are taken are called the statistical units. The process of counting or enumeration or measurement together with the systematic recording of results is called the collection of statistical data. The entire structure of the statistical analysis for any enquiry is based upon systematic collection of data.

There are two types of statistical data one is primary and other is secondary. Primary data are those which are collected for the first time by the investigators, or enumerators. Secondary data are those that have already been collected by other and which are usually available in journals, magazines, or research and government publications. Primary data are in the shape of raw materials to which statistical methods are applied for the purpose of analysis and interpretations. Secondary data are usually in the shape of finished products since they have been treated statistically in some form or the other. After statistical treatment primary data lose their original shape and become secondary data. Data which are secondary in the hand of one may be primary for the others. Statistics of agricultural production are secondary data for the agriculture departments, but for the purpose of calculation of national income these data are primary.

The nature of collection of my data is primary.

### 3.4 Collection of Data For The Field Work:

It is necessary and interesting to know something about the place of data collection. The Departmental management committee generally selects new places in every year for the purpose of field work. This year the selected place is (Mozia Bheti Gaon, Borbheti) General and OBC cast village under Jorhat District. Accordingly, we the final year students of the department proceeded to Bor Bheti on the 23<sup>rd</sup> Feb. 2018 with Dr. AditiBaruah, Ms. Shyamali Dutta and Mr. LalitKakoty Professor of our Department. First we met SrimontaSaikia one of the villagers of the village Mozia Bheti and shown to them necessary documents for my identification. He was cleared with the document and allowed to collect data for his village. There are forty (40) household in that village. After completing the collection of data for the village we returned to Bahona College at 4.00pm.

### 3.5 A Brief Note on the Village:

The Mozia Bheti village is a part of PachimSarucharai Gram Panchayat of the village of Borbheti. The village is situated in the western site of Jorhat town. The distance from the Jorhat town to village is about 20 km. The village is thickly populated.

The area of village is about 123.6 hectares. In the eastern site of the village is GharpholiaGaon, in the western site the Borbheti Temple. In the northern site bank of river Bhogdoi River and Malowkhat Gaon, in the southern site Delhi public school, Kathonibari Gaon.

The main communication of the village to the town is AT road. The system of communication is also good and uses tempo, magic bicycle and other thing also.

There are about 65 houses in the village and we have selected 40 household randomly and found 53 male and 60 female population. All the villagers are Assamese. Most of the people of the village belong to the lower class and some of them are middle class.

Although the main occupation of the villagers is cultivations, some villagers are engaged in other occupation viz. govt. service, carpenters and others are business for maintaining their families. Some of the women and girls are experienced in handloom and they came make their essential cloths sadars, gamochas etc. Both men and women work in their paddy field and produced monsuri, sali, bora and other crops. The agriculture system is old and depends upon bullock.

The village observed "BIHU" regularly. There are one Namghar in the village where the religious function "Nam and Bhauna" are observed yearly. Moreover the villagers also observed the birth and death anniversary of the two great man of Assam "Sankardeva" and "Madhabdeva". All the social and religious matters are discussed in the 'Namghar' through a managing committee with the full co-operation of the village.

The people of this village are simple and innocent. There are two types of people living there. Some are neat and clean and some are non –systematic. The type of the village is semi-pacca, pacca and kassa. All these are maintained in order for the citizens.

# **CHAPTER-4**

## **METHODOLOGY**

#### 4. METHODOLOGY AND ANALYSIS OF SURVY DATA:

##### 4.1 METHODOLOGY:

The present study based on cast of living Index Number covering the Mozia Bheti village populations. The distance of the village is about 20 K.M. from the Jorhat town. The people of this village use simple cloths. Mostly they lived what they produces i.e. vegetables, rice, milk, fruits and meat etc. They rarely used modern equipment. For example, the people uses Dhoties, Mekhela Chadar as their dresses and firewood for cooking and some people also use gas and stove for cooking.

There are 65 households in the village and most of them are of the middle class and some are belonging to high class. 40 households were selected randomly. Data were collected from the head of the each household. In the absence of the head data were collected from the other senior member of the household. Relevant data of the survey were collected with the help of a well-structured questionnaire. The questionnaire contained cultivated and non-cultivated land, demographical information and family status, consumption of food etc. Some of the merits of sample survey are ---

- i. Data are obtained from each and every unit of the population.
- ii. The results obtained are likely to be more representative, accurate and reliable.
- iii. It is appropriate of obtaining information on rare events such as areas under some crops and yield thereof, the number of persons of certain age groups, their distribution by sex, by educational level of people etc.
- iv. Data of a complete enumeration census can be widely exploited as a basis for various surveys.

We were visited all of the forty households one after another. In my survey 2013 is taken as base year and 2018 as current year. Thus I collected my essential data from the village. The sample data so collected were used in calculating the consumer's price Index number of the Mozia Bheti village. I showed my sincerity and honest to the peoples during the course of data collection.

The data collected for this purpose in primary in nature. The schedule for collecting data is attached at the end of the field report.

## 4.2 SOURCES OF RETAIL PRICES QUOTATION:

The price quotation for the year 2013 and 2018 for Mozia Bheti village is also collected from the retail prices shop of their village and Jorhat town. There is no any shop which can supply all the essential commodities to the villagers. But there is one fairly shop under, co-operative society which supply only rice, sugar and kerosene oil to the villagers. Therefore the people have to buy their necessary commodities form town. As many statistician written that the price quotation of the consumer's price index number should be obtained from the shops, markets where the particular group of people use to consume, the price quotations obtained from town will be most reliable one for the computation of the consumers price index numbers of the people of Mozia Bheti village.

## 4.3 FORMULATION FOR THE COMPUTATION OF INDEX NUMBER:

The following are simple but useful ways of calculating index numbers-

Simple (unweight) Aggregate Method:

This method consists in expressing aggregate of price in any year as a percentage of this aggregate in the last year. Thus price (or quantity) index for the  $i^{th}$  year ( $i=1,2,3,\dots,k$ ) as compared to the base year ( $i=0$ ) is given by:-

$$P_{01} = \frac{\sum P_1}{\sum P_0} \times 100$$

$$Q_{01} = \frac{\sum q_1}{\sum q_0} \times 100$$

Here,  $p_1$  = price of the current year

$q_0$  = price of the base year

$q_1$  = Quantity of the current year

$q_0$  = Quantity of the base year

The drawback of this method is that the price of various commodities may be in different units e.g. milks in terms of liters, cloths in term of meter, rice, dal etc. in terms of kilogram. No consideration is given to the relative important of the commodities.

This index is based on the assumption that the various items and their prices are quoted in the same unit. If the unit of measurement is different for different items, the index shall produce vastly divergent results.

### The Simple Average of Price Relatives:

This method consists of finding price relatives and then averaging them.

A price relative is obtained by expressing the price of each commodity in the base year. The next step is to average these price relatives of each given time period. The averages so obtained would be the indices for respective given periods.

For purpose of averaging any one of the average mean, median, geometric mean or harmonic mean may be used.

In practical statistical work, however it is most commonly used for reasons of simplicity.

Algebraically, mean of relatives=

$$\frac{\frac{P_1}{P_0} \times 100 + \frac{P_1''}{P_0} \times 100 + \dots + \frac{P_1^n}{P_0} \times 100}{N}$$

Here,  $P_1$  = represents the price of the current year

$P_0$  = represents the price of the base year

$N$  = represents the number of commodities included in the Index.

Thus, expressed in the form of a formula, Mean and relatives=

$$= \frac{\sum \left\{ \frac{P_1}{P_0} \times 100 \right\}}{N}$$

Simple average of relative's method is not influenced by units (k.g., quintal) in which price are quoted or, by largeness or smallness of a price quotation.

### Weighted Average Method:

This method provides for the different commodities to exert their influence in the index number by assigning appropriate weights to each. The weighted system will truly reflected the importance of each commodity. Usually the quantities consumed, sold or marketed in the

base year, the given year or some tropical years are used as weights. The price of the current year is multiplied by the quantity or weight of any one of the years above. These productions are added. Similarly for the base year total expenditure on each commodity is calculated by multiplying the quantity consumed by each price in the base year. These productions are also totaled. The total expenditure of the current year is divided by the total expenditure of the base year and resulting figure is multiplied by 100 to get desired index number.

Let  $W_j$  (quantity consumed) is the weight associated price index is given by-

$$P_{01} = \frac{\sum P_1 W_j}{\sum P_0 W_j} \times 100 \dots \dots \dots (A)$$

By using different types of weights, a number of formulas had been developed.

1. Laspeyre's price index : If we take  $W_j = Q_0$  in (A) i.e. if the based year quantities are taken as weights then Laspeyre's aggregative price index is given by-

$$P_{01}^{La} = \frac{\sum p_1 q_0}{\sum p_0 q_0} \times 100$$

2. Paasche's price index: By taking given your quantities as weight i.e.  $W_j = Q_1$  in (A) we get the Paasche's formula as

$$P_{01}^{Pa} = \frac{\sum p_1 q_1}{\sum p_0 q_1} \times 100$$

3. Marshall and Edgeworth's index number:

$$I_{01} = \frac{\sum p_1 q_0 + \sum p_1 q_1}{\sum p_0 q_0 + \sum p_0 q_1} \times 100$$

4. Bowley's ideal index number:

$$I_{01} = \frac{1}{2} \sqrt{\frac{\sum p_1 q_0 + \sum p_1 q_1}{\sum p_0 q_0 + \sum p_0 q_1}} \times 100$$

5. Weighted Average of Price Relative Method:

$$I_{01} = \frac{\sum Iw}{\sum w} \times 100$$

Where  $I = \frac{\sum p_1}{\sum p_0} \times 100$

#### 6. Fisher's Index Number:

$$I_{01} = \sqrt{\frac{\sum p_1 q_0 + \sum p_0 q_1}{\sum p_0 q_0 + \sum p_1 q_1}} \times 100$$

This Fisher's formula is regarded as 'ideal' formula, because this formula satisfied both time reversal test and the factor reversal test.

The formulae considered above are for the price Index numbers. By interchanging the prices ( $P_1$ ) and quantities ( $Q_1$ ) in the above formulae we get the corresponding formulae for the calculation of quantity index numbers which will reflect the change in the volume of quantity or production. Thus for example,

$$Q_{01}^{La} = \frac{\sum Q_1 P_0}{\sum Q_0 P_0} \times 100$$

$$Q_{01}^{Pa} = \frac{\sum Q_1 P_1}{\sum Q_0 P_1} \times 100$$

$$Q_{01}^{ME} = \frac{\sum Q_1 (P_1 + P_0)}{\sum Q_0 (P_1 + P_0)} \times 100$$

#### 4.4 COMPARISON OF DIFFERENT METHODS OF WEIGHTING

If the quantity of each commodity marketed or consumed changed from year to year in the same proportion of the result would be identical irrespective of the period to which the weights referred. But when this is not so and the relative importance of different commodities changes due in part to changes in this relates the result would get influenced by these selection of the period from which the weights are drawn.

Under the Laspeyres Method, when base year quantities are used as weights, the Index has in a sense an upward bias. This is because there is assumption in this method that the same quantities are purchased in the given year as were done in the base year irrespective of the fact that the price in the given year have changed. Ordinarily there is a likelihood that if the price of a commodity has risen in the given period the quantity purchased would be less and vice-versa. Since the aspect is not considered under this method greater weight is assigned to those commodities where prices have gone up and as such the resultant index is likely to have an upward bias.

When given year quantities are used as weights (Paasche's) the resultant index has a downward bias. This is because underweight is given to the commodities that have declined in price. Besides this, certain new problem arises in using given year weights.

1. Since the weights change with each given year the base year figures have to be respected each time. This means that for work is required under this method than with base year quantities as weights.

2. Since the quantities used as weights change with each year, index numbers for different years are not comparable.

3. Marshall Edge worth method: This is a compromise formula and has no bias in any known direction, but there again because of the shifting weights there shall be no comparability among the index number for different years.

4. Fisher's ideal formula: In numbers collected according to this method also suffer from the lack of comparability.

#### **4.5 ANALYSIS:**

In this chapter the calculations of consumer price Index Numbers of the populations mentioned above are being shown.

The consumer price Index Members of the population with base year 2016 is calculated. TABLE NO.I (a) and I(b) show the calculation of Index Number of the Mozia Bhethi village for the year 2018 with base year 2013. Then the above calculation we get the cost of living Index numbers of the scheduled caste village.

TABLE NO. 1

Calculation of cost of living index number of Mozia Bheti Gaon for the year 2018 with the base year 2013 by family budget method.

Sl No.	Items	Units	$q_0$	$p_0$	$p_1$	$I = P_1 / p_0 \times 100$	$p_0 q_0 = V$	IV
1	Rice	Kg.	1784	12.00	24.00	200	21408	4281600
2	Pulses	Kg.	90.7	50.00	120.00	240	4535	1088400
3	Vegetable	Kg.	365	10.00	20.00	200	3650	730000
4	Meat/Fish	Kg.	216	200.00	350.00	175	43200	7560000
5	Egg	Plt.	40	4.00	7.00	175	160	28000
6	Milk	Ltr.	89.8	20.00	40.00	200	1796	359200
7	Suger/Gur	Kg.	55	20.00	50.00	250	1100	275000
8	Edible oil	Ltr.	250	60.00	90.00	150	15000	2250000
9	Electricity	Rs.	300	150.00	250.00	166.67	45000	7500150
10	Fuel	Rs.	5000	55.00	75.00	136.36	275000	37499000
11	Entertainment	Rs.	1000	300.00	400.00	133.34	300000	40002000
12	Beverage	Rs.	300	100	300	300	30000	9000000
13	Clothing	Rs.	1000	500.00	1000	200	500000	500000
14	School	Rs.	200	150.00	500.00	333.34	30000	30000
15	Health	Rs.	1000	400.00	500.00	125	400000	400000
16	Miscellaneous	Rs.	2000	1000	2000	200	2000000	2000000

Calculation for table 1----

We have  $I = \frac{\sum IV}{\sum V} \dots\dots\dots(1)$

Where  $I = \frac{p_1}{p_0} \times 100$

And  $V = p_0 q_0$

Where  $p_0$  and  $p_1$  are the price of the items in the base year 2013 and the current year 2018 respectively and  $q_0$  is the quantity of the commodities in the base year.

Thus from the above table we get,

$$\sum V = 3670849$$

$$\sum IV = 710654350$$

From (1) we get

$$\begin{aligned} I &= \frac{\sum IV}{\sum V} \\ &= \frac{710654350}{3670849} \\ &= 193.59 \end{aligned}$$

TABLE NO. 2

Calculation of cost of living index number of Mozia Bheti Gaon for the year 2018 with the base year 2013 by family budget method:

Sl. No.	Items	Units	$q_0$	$q_1$	$p_0$	$p_1$	$p_0 q_0$	$P_1 q_0$	$P_0 q_1$	$P_1 q_1$
1	Rice	Kg.	1784	2100	12.00	24.00	21408	42816	25200	50400
2	Pulses	Kg.	90.7	106	50.00	120.00	4535	10884	5300	12720
3	Vegetable	Kg.	365	380	10.00	20.00	3650	7300	3800	7600
4	Meat/Fish	Kg.	216	250	200.00	350.00	43200	75600	50000	87500
5	Egg	Plt.	40	50	4.00	7.00	160	280	200	350
6	Milk	Ltr.	89.8	95	20.00	40.00	1796	3596	1900	3800
7	Suger/Gur	Kg.	55	60	20.00	50.00	1100	2750	1200	3000
8	Edible oil	Ltr.	250	289	60.00	90.00	15000	22500	17340	26010
9	Electricity	Rs.	300	350	150.00	250.00	45000	75000	52500	87500
10	Fuel	Rs.	5000	6000	55.00	75.00	275000	375000	330000	450000
11	Entertainment	Rs.	1000	2000	300.00	400.00	300000	400000	600000	800000
12	Beverage	Rs.	300	300	100	300	30000	90000	30000	90000
13	Clothing	Rs.	1000	1500	500.00	1000	500000	1000000	450000	1500000
14	School	Rs.	200	250	150.00	500.00	30000	100000	37500	125000
15	Health	Rs.	1000	1500	400.00	500.00	400000	500000	600000	750000
16	Miscellaneous	Rs.	2000	2400	1000	2000	2000000	4000000	2400000	4800000

Calculation of Table No. 2 :----

Calculation:--

1) Laspeyre's formula is given by-

$$I^{La} = \frac{\sum p_1 q_0}{\sum p_0 q_0} \times 100$$

2) Paasche's formula is given by-

$$I^{Pa} = \frac{\sum p_1 q_1}{\sum p_0 q_1} \times 100$$

3) Marshall and Edgeworth's formula is given by-

$$I^{Ma} = \frac{\sum p_1 q_0 + \sum p_1 q_1}{\sum p_0 q_0 + \sum p_0 q_1} \times 100$$

4) Fisher's formula is given by-

$$I^{Fa} = \sqrt{\frac{\sum p_1 q_0 + \sum p_1 q_1}{\sum p_0 q_0 + \sum p_0 q_1}} \times 100$$

Where  $p_0$  and  $p_1$  are the prices of the items consumed by the people in the specific section in the year 2013 and 2018 respectively and  $q_0$  and  $q_1$  are the quantity of the items consumed by the people in the year 2013 and 2018

From the above table we have—

$$\sum p_0 q_0 = 3670849$$

$$\sum p_1 q_0 = 7105726$$

$$\sum p_0 q_1 = 4577940$$

$$\sum p_1 q_1 = 8793880$$

From (1) we get,

$$I^{La} = \frac{\sum p_1 q_0}{\sum p_0 q_0} \times 100$$

$$= \frac{7105726}{3670849} \times 100$$

$$= 193.38$$

$$I^{Pa} = \frac{\sum p_1 q_1}{\sum p_0 q_1} \times 100$$

$$= \frac{8793880}{4577940} \times 100$$

$$= 193.69$$

$$I^{Ma} = \frac{\sum p_1 q_0 + \sum p_1 q_1}{\sum p_0 q_0 + \sum p_0 q_1} \times 100$$

$$= \frac{7105726 + 8793880}{3670849 + 4577940} \times 100$$

$$= 193.45$$

$$I^{Fa} = \sqrt{\frac{\sum p_1 q_0 + \sum p_1 q_1}{\sum p_0 q_0 + \sum p_0 q_1}} \times 100$$

$$= \sqrt{\frac{7105726 + 8793880}{3670849 + 4577940}} \times 100$$

$$= 193.69$$

Thus the consumer price index numbers of Mozia Bheti village for the year 2018 with base year 2013 is found to be 193.69

## CONCLUSION

Cost of living Index Number for the population of Mozia Bheti Village is calculated by using different formulae. The Index Number is calculated for the year 2018 with base year 2013. It is found that the cost of living Index Number in the year 2018 for Mozia Bheti Village is 193.69 on the basis of 2013. Hence we can conclude that the price index for the year 2018 of Mozia Bheti Village is increased by 93.6% compared to the base year 2013.

## QUESTIONNAIRE FORMAT :-

Department of Statistics

Bahona College

Jorhat, Assam.

Date:-

Field Work Schedule:

1. Name of the Village :
2. Head of the household :
3. Type of house :
4. Family Structure :
5. Caste , Tribe and Religion :
6. Land Holding :

Cultivated	Uncultivated	Water covered Land	Total

7. Yield (in quantity per year)

Food grain	Cash crops	Milk	Meat/Fish/Egg	Cloth Weaving	Miscellaneous

8. Livestock :

Livestock	Nos.	Establishment Cost	Loan (if any)	Use for domestic/ commercial	Earning
1. Cow					
2. Buffalos					
3. Bullocks					
4. Fowls					

### 9. Status of the Family member:

Name of family members	Father/Mother	Sex M/F	Age	Do You use social media. Fb/whatsapp/ Insta/hike etc	Which network operat or you use	Marital Status	Highest Degree with year	Occupation	Monthly earning	Ailment Nature & frequency common serious
								Status Ins. Pres.		
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										

### 10(a). Demographical Information:

Name of Mother	Year of Birth with Sex			Family planning adapted (if any)
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	

10(b): No. of deaths in last ten years:

Name	Sex	Year of death	Cause of death

11. Health and Sanitation:

1. Domestic environment :
2. Drainage and garbage system :
3. Lavatory and Urinal :
4. Source of drinking water :
5. Location of cowshed/pawl try shed :
6. Type of treatments followed :

12. Economic Condition:

- i. Modern outfits :
- ii. Modes of Transportation

13. Consumption:

Sl. No	Items	Quantities	Price
1. Rice			
2. Pulses			
3. Vegetable			
4. Meat/Fish			
5. Egg			
6. Milk			
7. Sugar/ Gur			
8. Edible oil, Ghee, Butter			
9. Light			
10. Fuel			
11. Entertainment			
12. Beverage			
13. Clothing			

14. School			
15. Health			
16. Electricity			
17. Miscellaneous			

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