CHAPTER IV

DESIGN OF THE STUDY

In this chapter we present our methodology and approach to the problem underlying the study. This will include the sampling procedure and the technique adopted for collecting the data, the concepts and the variables used in the analysis and the statistical procedures adopted. In recent years considerable attention has been paid to the conduct of surveys for economic and social purposes, and the methodology to be followed in conducting such surveys form the subject matter of several books.[1] However many of the techniques suggested can be applied only by survey projects involving a large team and backed by commensurate budget provision. A United Nations handbook lists for instance :

---

[1] See for instance Morris H. Hansen, W.N. Hurwitz and W.G. Madow, Sample Survey Methods and Theory, New York : Wiley, 1953.

> In household surveys some of the possible devices for selecting samples are : (a) using area sampling, i.e. selecting areas and enumerating all the households in these areas, (b) using list sampling, i.e. selecting households from a list of addresses or register of population, (c) using a combination of the two, i.e. first selecting the areas and then the households from the lists of households in the selected areas, (d) using as unit of selection a housing unit, (e) using aerial survey maps, and (f) using special types of units of selection such as wells, as in the case of household surveys of migrant population.[2]

Census type enumeration is done as a preliminary procedure by NSS organization too ; it further employs the technique of interpenetrating samples in order to have a check on sampling bias, but it is obvious that most of these are impracticable in the case of surveys undertaken by individuals. In the present study, every effort was made to reduce sampling errors by means of personal contact with the respondents. Many of the respondents randomly selected were approached through the mediation of friends and acquaintances known to both the respondents and the investigator. This greatly helped in establishing good rapport with the respondents and thus in getting reliable data.

Sampling Frame

The population with which the present study is concerned consisted of the high income households living in the city

[2] UN Handbook of Household Surveys, A Practical Guide for Inquiries on Levels of Living (Provisional Edition), New York, 1964, p.116.

of Baroda (excluding the suburb Jawaharnagar). In order to draw the sample it was necessary to know the percentage of affluent households in the different localities of Baroda City. The Income Tax Department refused to disclose any information. It was then thought to use the list of car owners of Baroda and the telephone directory as proxy. This idea too had to be given up since the official records did not list private vehicle owners separately. Scooters, autorickshaws, government and company owned vehicles were all mixed up. In the case of the telephone directory the majority of users fell in the category of private firms or professionals such as doctors. In view of these facts an indirect method of assessing the economic status of the different localities was hit upon. For this purpose the annual house tax paid was taken as an indicator. The records show the annual housetax collected for each building in summary form, the ranges starting from ' upto Rs. 300 ' and going upto Rs.15000 and over.' The total number of buildings paying an annual tax of over Rs. 3501 in the different wards served as basis for fixing the percentage number of sample households to be drawn from each ward. The following table given the final figures arrived at.

Table :4.1: Distribution of Number of Buildings Paying Housetax in the Different Wards

Wards	Total No. of Buildings	No.of Buildings paying over Rs. 3501 annual tax	Percentage	Desired No. of Sample Households
Dabajipura	7516	711	18.67	56
Wadi	7913	353	9.33	28
Sayajigunj	8268	1403	37.67	113
Fatehpura	5566	172	4.67	14
City *	5512	285	7.33	22
Raopura	7156	853	22.33	67
Total	41931	3777	100.00	300

(* One ward has been designated 'City' covering certain central parts of Baroda city.)

The Sampling Technique

Having decided the size of the sub-samples from the different wards random number tables were used to select tenements from the ward lists. In view of the limitations on finance, time and energy it was decided to include two or maximum three households from a tenement chosen, if it happened to house four households or more, provided however

that the income criterion was satisfied.

Collection of Data

Interview Schedule and Questionnaire :

An interview schedule was prepared for collecting background information at the time of meeting the respondents. (Vide Appendix I). The second part of the instrument consisted of a questionnaire which was prepared after going through the instruments adopted by NSS and others mentioned in the literature. (Vide Appendix I , Part II). Originally the questionnaire contained detailed queries regarding wealth, income as well as food and non-food items of expenditure. The prepared questionnaire was tried out on a few respondents to have an idea of the time taken and the reactions of the respondents. The questionnaire underwent several revisions and pre-tests so that a golden mean could be struck between the convenience of the respondents on the one hand and the data requirements of the research work on the other.

Data Collection - Period of Reference - Period of Survey :

After finalisation of the instrument the respondents were contacted according to the sample list of households randomly selected. The wards were visited in cyclical

order allocating to each ward two days so that right from the beginning the responses received were well distributed over the whole city.

The collection of data occupied the period from July to December 1975. During the months of September, October, November the majority of responses were received. During the period mentioned above not only was the general price level stable but price of important food items such as rice, wheat, oil and sugar also remained stable. A household was taken into the sample only if the persons concerned were impressed by the seriousness of the study and were readily willing to provide as accurate information as possible. The total number of actual and useful responses received was one hundred and eightyfive. Table 4.2 shows the targetted sample figures and the actual figures from each ward.

Table : 4.2: Frequency Distribution of Households from the Different Wards

Wards	Desired Number	Actual Number
Sabajipura	22	16
Wadi	14	7
Sayajigunj	56	40
Fatehpura	28	15
City	113	69
Raopura	69	38
Total	300	185

It was decided to stop the survey at the end of December 1975 as a state of emergency was declared.

The entries with regard to the saving portion under non-food items were generally filled up by the male head of the household, rest of the items, in consultation with the wife. In Gujarat State well-to-do households customarily stock many food items for the whole year. Hence it was decided to have one year reference period for items : rice, wheat, other cereals and pulses, while for the remaining items respondents were asked to specify monthly expenditure.

Definition of Concepts and Variables used in the Study

The United Nations Handbook on Household Surveys presents clear arguments for taking the household as the ultimate unit of enumeration rather than the family. They justify its use on ' several theoretical grounds including the recognized need for national and international statistical comparability, efficiency of field operation, and flexibility of results.'[3] Population censuses, which frequently form the sampling frame in many surveys, take the household as the unit of enumeration. Problems raised by kinship groups when the family is taken as the unit do not arise in the case of the household as unit. Further the household as unit will

---

[3]United Nations, Handbook of Household Surveys, op.cit., pp. 11, ff.

offer greater coverage and wider variety, while in the case of the family the coverage will be much restricted and accordingly the scope and nature of the findings will also be restricted.

Household

The household has been operationally defined in various ways in literature. Cochrane and Bell[4] emphasize the decision-making aspect in their definition of a household. A household has also been defined as ' people living together and supported by the common pool of income.'[5]

According to the UN Household Survey : ' A multi-person household is a group of two or more persons who combine to occupy the whole or part of a housing unit and to provide themselves with food or other essentials for living. The group may pool their incomes and have a common budget to a greater or lesser extent. The group may be composed of related persons only, or of unrelated persons or of a combination of both, as for example, a family with servants who live with them.'[6] The general criteria to be used are common housekeeping arrangements, sharing the principal meals and

---

[4] W.W.Cochrane and C.S.Bell, The Economics of Consumption, New York : McGraw Hill, 1956, ch.2.

[5] Marguerite L.Burk, Consumption Economics, New York : Wiley, 1968, p.100.

[6] UN Handbook, op.cit., p.10.

having common arrangements for meeting basic needs. Gupta defines a household as a group of persons usually living together and taking principal meals from a common kitchen. Boarding houses and hostels are excluded as institutional households by him.[7]

The application of the definition in practice is not really simple on account of which words such as ' may ' and ' usually ' figure in such definitions. For the purpose of our study the household has been defined as a group of household members living under one roof. Any person who takes principal meals with the household for atleast sixteen days in a month is considered to be a member of the household.[8]

Family Structure - Joint / Nuclear :

If any household member in a multi-person household did not belong to the immediate family of the head of the household (i.e. related to the head of the household by blood as wife, son or daughter) then the household was taken as a joint - family household, in all other cases as nuclear.

Head of the Household :

In the case of nuclear families where both spouses were alive the male member was considered the head of the household

[7] Devendra B. Gupta, Consumption Patterns in India, Bombay : Tata McGraw Hill, 1973, p.16.

[8] The Sixteen Days Reference Figures in NSS Surveys and is used as criterion by Devendra B. Gupta also, op.cit., p.16.

irrespective of the fact whether he was the chief earning member and whether the wife participated in the decision-making processes of the family with equal authority. Where one spouse was deceased the surviving spouse was deemed the head whether earning or not. In the case of joint families the oldest male member of the family group (say, grandfather or elder brother) was considered the head of the household if he was still actively engaged in his profession. In case the grandfather had retired from his profession then the son was considered the head of the family.

Income :

Income in the questionnaire related to net disposable income (gross income from all sources less income tax, wealth tax and other direct taxes).

For analysis of data total monthly expenditure of the household has been taken as proxy for the variable income (Net disposable income). The findings relating to total expenditure of the household are therefore held valid for income as explanatory variable.

Wealth of the Household :

Under this term was covered the net assets of the family (liquid and physical assets at current market value).

Family Size :

Considerable importance has been attached in literature to this variable.[9] Scales have been devised for giving suitable weights to the members of the family according to age and sex.[10] One method is to take for adult males 1 unit, females .9, (Adult being all persons above 14 years of age), children between 4 - 14, 0.6 and below 4 years .4, these units being used for food items only. Brown and Deaton have raised a few pertinent questions regarding the validity of this approach.[11] Though we can of course say that the overall maintenance expenditure for children will be less than for an adult, the following standpoint has merit : ' in general no recommendation for any specific scale of expenditure on consumption is proposed. It is recommended however that each study should state the scale used and in addition give the sex and age composition of the families covered in its survey.'[12] For the purpose of our study children under the age of fifteen have been considered as .5 adult unit, while those of fifteen and above have been treated each as 1 adult unit.

Male
Female

---

[9] See for instance N. Sreenivasa Iyengar, 'Economies of Scale in Household Consumption,' The Indian Economic Journal, Vol. XV, No. 4, July-Sept., 1967, pp. 465-477.

[10] See Zimmerman, Consumption and Standard of Living, New York: Van Nostrand, 1936. Chapter XVI, for description of the different scales used to determine family size.

[11] A.C. Brown and A. Deaton point out that the scales are based on desired nutritional norms and secondly a logical consequence of the approach would be that different scales must be adopted for different commodities. Vide : 'Surveys in Applied Economics: Models of Consumer Behaviour,' Economic Journal, 82(1972), pp. 1145-1236.

[12] I.L.O. Methods of Family Living Studies, Geneva 1949, p. 30.

Educational Qualifications of the Housewife

For testing the influence of the educational level of the housewife this variable was classified as low education and high education. Housewives with graduate or post-graduate degree were considered as belonging to the high education group, while those with unfinished collegiate education or less including housewives with no schooling were put in the low education group.

Occupation

Three categories of occupation were considered for testing the relationship between consumption pattern and occupation.

(i) Self-employed persons (businessmen, lawyers, doctors)

(ii) Employed persons of managerial level (office executives, engineers, scientists, teachers)

(iii) Clerical and related (clerical service in private firms and government).

Regional Factor

In relation to food (especially in the consumption of rice and wheat) one could expect striking regional variations. As India is divided into regions on a linguistic basis, the households were divided into two groups, the rice sector (South and East comprising the languages Tamil, Telugu,

Kanarese, Malayalam, Konkan and Bengali) and the wheat sector (North and West comprising the remaining linguistic groups).

Dietary Habit

Households which prepared meat, fish, and fowl (occasionally or often) were considered as non-vegetarian, and the others vegetarian. Some workers have used a third category termed 'eggarian', but in our study 'eggarians' have been classed as vegetarians.

Major Commodity Groups

I Food :

Cereals and Pulses : Rice, wheat, other food grains (maida, jowar, bajra,maize, barley, small millets, ragi, udad dal, mung dal, channa dal, kesar dal).

Fats and Oils : Oil (mustard, groundnut, gingely), ghee, butter.

Milk and Milk products : Milk, curd, cheese, [illegible], lassi (yogurt).

Non-vegetarian : Meat, fish, fowl

Fruits and Vegetables

Sugar : Gur, other sweetening agents

Miscellaneous : Other delicacies, bread, beverages and sweets, processed food, salt, pickles, jam and jellies, pan etc, tobacco and liquor, eating outside.

While testing data egg was grouped with milk.

II Non-food :

Rent : House rent, maintenance and housetax, other rents.

Utilities and Telephone : Gas, fuel, lighting, telephone.

Clothing and Footwear : (including household furnishings, raincoat, umbrella etc.)

Intellectual Activities : School fees, library, newspapers, books.

Insurance : Payments towards insurance, GPF and recurring deposits.

Conveyance (Taxi fares, travel maintenance etc.)

Domestic Servants : Male and female servants, children's nurse, cook, driver, gardener, watchman etc.

Statistical Methods Employed

The standard statistical measures such as mean and standard deviation have been used to describe the demographic and socio-economic characteristics of the sampled households as well as the expenditures on different items of food and non-food. The consumption pattern of the entire sample has been described in terms of percentages of total outlay on food and non-food, as well as in terms of absolute values in rupees.

The sample has been divided into three groups I, II and III, on the basis of total expenditure of the households

(Rs. 650 - 1850 p.m., Rs. 1850 - 3050 p.m. and over Rs. 3050 p.m. respectively). These groups may be designated as 'less effluent', 'moderately affluent' and 'highly affluent'. The expenditure on various items for these three groups have been tested to assess the influence of income (total expenditure as proxy) on the outlay on different items or categories of food and non-food. Difference in means test using pooled variance has been employed to find out whether the mean expenditure on any commodity between two groups showed any significant difference. Analysis of variance and t tests have been employed to test the relationship between :

(i) region of origin and consumption of rice and wheat,

(ii) dietary habit (veg. / non-veg.) and total expenditure on food.

(iii) educational level of housewife and the consumption of cereals and pulses, proteins and vitamin-rich foods, etc.

(iv) occupation of the head of the household and
(a) expenditure on major food commodity groups,
(b) non-food items : conveyance, rent, clothing and footwear, insurance.

Models Fitted

The relationship between per capita monthly aggregate expenditure of the household (proxy for income) and per

capita expenditure on certain individual goods and services has been tested separately for the three expenditure groups namely, Rs. 650 - 1850, p.m., Rs. 1850 - 3050 p.m. and over Rs. 3050 p.m. using linear regression model :

$Y = a + b.X + u$, where Y represents the expenditure per capita per month on the commodity, X the per capita aggregate expenditure of the household, and u the stochastic term.

With the entire sample (185 households) per capita monthly expenditures on certain groups of commodities have been regressed on per capita aggregate monthly expenditure of the household. The models fitted were :

$$Y = a + b.Y + u \qquad \text{(linear)}$$

$$\text{Log } Y = a + b.\text{Log } X + u \qquad \text{(double - log)}$$

To assess the influence of age of the head of the household, family size, wealth and income (aggregate expenditure of the household as proxy) multiple regression has been employed with the data on 185 households, with respect to monthly expenditures on selected group of food and non-food items, namely :

Total Food	Total Non-food
Cereals and Pulses (Rice, Wheat, dal etc.)	Rent (including other rents, maintenance)
Fats (ghee, butter, oil)	Utilities (gas, fuel, electricity, telephones)
Milk (Milk, Milk products, Eggs),	Clothing and Footwear,
Fruits and Vegetables,	Intellectual activities (School fees, library-newspapers, tuitions),
Sugar,	Insurance,
	Conveyance,
	Domestic Servants,

Step(-) regression has been used with the models:

$$\text{I} \quad F = b_o + b_1.T + u$$

$$\text{II} \quad F = b_o + b_1.T + b_2.S + u$$

$$\text{III} \quad F = b_o + b_1.T + b_2.S + b_3A + u$$

$$\text{IV} \quad F = b_o + b_1.T + b_2.S + b_3A + b_4.W + u$$

Where F represents Total Monthly Expenditure on Food, e.g.

T represents Total Expenditure of the household on both food and non-food,

S Family size,

A Age of the head of the household in years, and

W Health of the household.

do you have really data? The sequence of the explanatory variables of course differed with the different dependent variables).

Alternative form tried similarly step-wise was :

$$\text{Log } F = b_o + b_1 \text{Log } T + b_2 \text{Log } S + b_3 \text{Log } A + b_4 \text{Log } W + u \quad \text{(double log)}$$

For all the regression coefficients the standard error and t-values have been calculated so that the effect of inclusion of the variables at the various steps could be judged properly.

The design of the study is thus oriented towards realising the three prime objectives of the present investigation, namely, to determine the consumption pattern of affluent households in the city of Baroda, to identify the determinants of consumption of this group and finally to estimate by means of suitable econometric models the parameters of the consumption function pertaining to this significant stratum of the society. In the next chapter we describe the demographic and socio-economic characteristics of the sample households.
