

Report on Socio-Economic Disparities  
in  
Madhya Pradesh

Working Paper I

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## Forward

Poverty Monitoring and Policy Support Unit is bringing out its first working paper entitled “Socio Economic Disparities in Madhya Pradesh” based on data of State Sample of 61<sup>st</sup> round of NSS (July 2004-June 2005). This is first time in the state that an attempt has been made to analyze the data of State sample of NSS of any round.

On the basis of analysis of data, present report covers various aspects such as Distribution of households and population by socio-economic classes, Distribution of households by type of households, Distribution of households by type of land owned, Distribution of households by social groups and type of fuel used, Distributions of households by primary source of energy for cooking or lighting, Reach of various programmes, Holding of various type of ration cards, Distribution of households by MPCE classes, Average monthly per capita expenditure and inequality among different socio groups in consumption etc, are presented for the State of Madhya Pradesh. This paper reveals the disparities among various socio economic categories of households. Gini Coefficient which is the indicator of inequality for different socio – economic categories has been presented in the paper. In addition, Average Poverty Gap, Poverty Gap Index and Squared Poverty Gap Index for different MPCE classes by Socio-Groups have worked out and presented.

I hope that this paper may serve as input to policy makers for developing policies for alleviating poverty and its implementation in more effective way.

I hope that in future PMPSU will come up with more working papers on the issues which concern most to the public of state.

I wish, PMPSU will work with its sincerity and devotion for the progress of state and achieve its aim for which it has been set up.

**Mangesh Tyagi**  
**Advisor SPC,M.P.**  
**& Nodal Officer PMPSU CELL**

## Executive Summary

The purpose of analysis of State Sample is to provide insight on some of issues to the policy makers, planners and implementers, which require to be attended to reduce disparity and inequalities.

This is first time in the state that State Sample of any NSS round has been analysed. It is first initiative of PMPSUS. More detailed work has been planned for year to come.

The major findings of present study are:

➤ **Distribution of households and Population by socio-economic classification:**

Scheduled tribes households' accounts for 19.94 percent of total household and around 17.77 percent of households belonging to scheduled castes are there in the state. Other Backward Classes accounted for 38.91 percent of households are highest in state. Other households are slightly less than one fourth of total households.

➤ **Type of Households:**

In urban area 44.19 % household earning income from self-employment, 32.61 % from salaries/regular wages, 17.18 % earn their livelihood by working as casual labour and 6.02 % from other activities. Among self employed households the representation is more of OBC and others as compare to their population while in case of salary earning households the representation of ST and others is more. In case of SC and OBC their representation is less by 4.5 and 5 percentage points than their proportion in population respectively.

In Rural areas, 76.31 % of households earning their livelihood from agricultural activities, which includes 29.03 % households who are working as agricultural labourers in rural area of the state. 11.73 % of total households come under Self Employed-non agriculture category. Among self employed in agriculture households the presentation is more of OBC and others as compare to their population. It is also true for self employed in non agriculture.

➤ **Use of Primary Source of Energy:**

➤ **Cooking:**

It is observed that in urban areas of the state, during 2004-05, 58.1 % of households were using LPG as fuel, 37.4 % using firewood, 2.1 % using kerosene and 2.0 % using dung cake for cooking. The LPG users accounts for 42.6 % among ST households, 28.3 % among SC households, 55.2 % among OBC households and 72.8 % among other households. Majority of households of Scheduled tribes and Castes, firewood and chips are major source of fuel for cooking. Among total LPG users, 3.4 % belonged to ST category, 7.4 % to SC, 35.7 % to OBC and others accounted for 53.6 percent showing disproportionate distribution of better fuel to their respective population.

In rural areas, penetration of use of LPG for cooking is found to be low at 3.95 percent. Fuel wood is widely used for cooking by 93.43 % of rural households though use of dung cake is limited to 2.51 percent of households. The reason for use of firewood by large proportion of all social groups is availability of fire wood from nearby forests. Among firewood user households 65% are accounted by ST and OBC households. In case of LPG users 79.4 % are others and OBC households. Majority of dung cake users' households belong to OBC and others category of households.

➤ **Lighting:**

Electricity is the major source for lighting in both urban and rural area of the state. 88.48 % of households are using electricity for lighting in the state. In urban area user households accounts for 97 % of total households while for rural area it is 83.4 percent. The access to electricity is almost equitable to all socio groups irrespective of their place of residence. Marginal distortion in case ST and SC is observed in both urban and rural area.

➤ **Access to Various Programmes**

State sample of 61<sup>st</sup> Round of NSSO reveals that Food for Work programme could reach to 1.0 % of households, Annapoorna 0.5 % households, ICDS 5.7 % and Midday Meal could reach 30.37 percent of households in the state. Midday Meal could reach 35 percent of households in rural area while in urban it was able to reach 13.5 % of households. It is also observed that programme could reach ST, SC and OBC relatively more than state average reach.

➤ **Ration Card Holding:**

To provide subsidized food grain to the subjects belonging to poor section of the society, Food and Civil Supply Department had issued different type of ration cards namely, Antodaya card, BPL card and other cards.

In state around 73 % of urban households, 83 % of rural households and overall 80% of the households own ration card. Among social groups, highest proportion of SC households (85.4 %) was holding ration cards in the state. It is true for both urban and rural areas. In urban areas, it is followed by Others (73.5 %), OBC (71 %) and lowest proportion of household owning ration card was ST with 68.3 %. In case of rural, after SC households second highest proportion is observed for OBC household (83.7 %) followed by ST with 81.2 % and 79.9 % of other households owned ration card.

The proportion of different types of ration card among card holders revealed that Antodaya Card meant for the poorest among poor, accounts for merely 1.3 percent of the ration card holders and BPL card holders accounted for 25.2 percent while remaining households owned other cards in the state.

➤ **Expenditure Pattern and Inequality**

➤ **Monthly Per Capita Expenditure:**

Instead of 12 MPCE classes adopted by NSSO, for the present study four MPCE classes have been formed by clubbing, in urban areas monthly per capita expenditure classes adopted are less than Rs. 485, Rs. 485-930 and more than Rs. 930 which work out to less than Rs.16.16, 24.33 and more than Rs.31 per capita par day. For rural area these classes are less than Rs. 455, Rs. 455-890 and more than Rs. 890 which work out to less than Rs.15.16, 22.43 and more than Rs.30 per capita par day.

➤ **Urban Area:**

Analysis reveals that in urban areas there were 24.5 percent of total households with MPCE less than Rs. 485. 28.1 % of households having MPCE more than Rs. 930 while remaining 47.4 % of households having MPCE in range of Rs. 485 to Rs. 930. Among SC households, the proportion of households with MPCE more than Rs.930 is lowest at 12.1 % followed by ST with 13.8 % and OBC with 21.1 %. It shows that majority of SC households (87.9 %) are incurring consumer expenditure less than Rs. 24 per capita per day on an average basis. The proportion of similar households in ST and OBC categories are 86.2 % and 78.9 % respectively. Among other households such households constitute for 58.5 % of total households.

Results reveal that around three fourth of total households with MPCE less than Rs. 485 belong to OBC and ST categories. The distribution of households in MPCE class of Rs. 485 to Rs. 930 shows that to large extent is same as their proportion in total population. Highest category of MPCE (i.e. more than Rs. 930) is dominated by “Other Households”. It shows that significantly good proportion of SC, OBC and ST are relatively not better off than other households.

ST households belonging to MPCE category of Rs. 485-930 are spending more than (on an average basis) households of other socio groups and all households. OBC households are spending more as compare to (on an average basis) other socio groups in lower and higher MPCE classes. Households of Lower MPCE class of less than Rs. 485 are spending less than one fourth of their respective counter parts in higher MPCE class except in case of SC households who are spending 29 percent and ST households who are spending 21 percent of their counterparts in higher MPCE class. ST households of lower MPCE class are spending less than half than their counter parts in next higher MPCE class of Rs. 485 to Rs. 930.

➤ **Rural Areas:**

There were 44.5 percent of total households with MPCE less than Rs. 455. Merely 7.9 % of households having MPCE more than Rs. 890 while remaining 47.6 % of households having MPCE in range of Rs. 455 to Rs. 890. Among other households, the proportion of households with MPCE more than Rs.890 is highest at 17.1 % followed by OBC with 9.3 % and ST with 3.2 %. It also reveals that majority of SC households (97.8 %) are incurring consumer expenditure less than Rs. 22.43 per capita per day on an average basis.

ST and SC households are spending less than average spending of all households irrespective of MPCE class. OBC and Other households are spending more as compare to all households put together. Households of Lower MPCE class of less than Rs. 455 are spending around one third of their counter parts in higher MPCE class and 60 % of those in middle MPCE class of Rs. 455 to Rs. 890 irrespective of social class. This table also reveals that in rural areas among SC and ST households intake is below the state average.

The proportion of households for different consumption levels have similar pattern or not. To analyse this aspect, in urban area the consumption level assumed are below Rs300, Rs. 350, Rs. 400, Rs450, Rs. 500, Rs. 550 and Rs. 600 while in rural areas first four level have been considered. This analysis will reveal that an increment in consumption level by Rs.50 what proportion of total households get included. In other word, these households can be treated as target group which can be moved from one category of consumption class to another by some

interventions comparatively of smaller magnitude than moving all the households belonging to lower MPCE class for which interventions of larger magnitudes are required. Details are in main paper.

Average Poverty Gap, Inequality among different Socio Groups and Poverty Gap Index for different MPCE classes by Socio-Groups have worked out and presented in main paper.

## Introduction

The NSSO conducts regular consumer expenditure surveys as part of its “rounds”, each round normally of a year’s duration and covering more than one subject of study. The surveys are conducted through household interviews, using a random sample of households covering practically the entire geographical area of the country. Each State also conducts the same survey with equal sample known as STATE SAMPLE.

This is first time, an attempt is made to analyses the State Sample of the data collected in any NSS round in the state. The present report is based State sample for which data was collected through the 61<sup>st</sup> round of NSS (July 2004-June 2005). On the basis of analysis of data, present report covers various aspects such as Distribution of households and population by socio-economic classes, Distribution of households by type of households, Distribution of households by type of land owned, Distribution of households by social groups and type of fuel used, Distributions of households by primary source of energy for cooking or lighting, Reach of various programmes, Holding of various type of ration cards, distribution of households by MPCE classes, average monthly per capita expenditure and inequality among different socio groups in consumption etc, are presented for the State of Madhya Pradesh. All the results are presented separately for rural and urban households.

### Some details of the survey:

Madhya Pradesh participated in the survey: a “State sample” was surveyed by State Government officials of National Sample Survey Division of Directorate of Economic and Statistics. For rural Madhya Pradesh, 384 villages formed the State sample for this round. Of these, 383 villages were ultimately surveyed. In the urban sector, the allocation for the state sample was 208 blocks, of which 206 were surveyed. This report is based on the estimates obtained from the State sample alone.

Table 1 shows the number of villages and urban blocks allotted for survey and the numbers actually surveyed, and the number of households in which the consumer expenditure schedule, “Schedule 1.0”, was canvassed.

Table 1: Number of villages/blocks allotted and surveyed for Schedule 1.0 and number of households and persons surveyed: Madhya Pradesh State Sample

No. of villages		No. of blocks		Sample households		Sample persons	
Allotted	Surveyed	Allotted	Surveyed	Rural	Urban	Rural	Urban
<b>384</b>	<b>383</b>	<b>208</b>	<b>206</b>	<b>3830</b>	<b>2060</b>	<b>21540</b>	<b>10421</b>



## **Concepts and Definitions**

### **Household:**

A group of persons normally living together and taking food from a common kitchen constitutes a household. The word "normally" means that temporary visitors are excluded but temporary stay-aways are included. Thus, a son or daughter residing in a hostel for studies is excluded from the household of his/her parents, but a resident employee or resident domestic servant or paying guest (but not just a tenant in the house) is included in the employer/host's household. "Living together" is usually given more importance than "sharing food from a common kitchen" in drawing the boundaries of a household in case the two criteria are in conflict; however, in the special case of a person taking food with his family but sleeping elsewhere (say, in a shop or a different house) due to space shortage, the household formed by such a person's family members is taken to include the person also. Each inmate of a mess, hotel, boarding and lodging house, hostel, etc. is considered as a single-member household except that a family living in a hotel (say) is considered as one household only; the same applies to residential staff of such establishments.

### **Household size:**

The size of a household is the total number of persons in the household.

### **Household consumer expenditure:**

The expenditure incurred by a household on domestic consumption during the reference period is the household's consumer expenditure. Household consumer expenditure is the total of the monetary values of consumption of various groups of items, namely (i) food, pan (betel leaves), tobacco, intoxicants and fuel & light, (ii) clothing and footwear and (iii) miscellaneous goods and services and durable articles.

For groups (i) and (ii), the total value of consumption is derived by aggregating the monetary value of goods actually consumed during the reference period. An item of clothing and footwear would be considered to have been consumed if it is brought into maiden or first use during the reference period. The consumption may be out of (a) purchases made in cash or credit during the reference period or earlier; (b) home-grown stock; (c) receipts in exchange of goods and services; (d) any other receipt like gift, charity, borrowing and (e) free collection. Home produce is evaluated at the ex farm or ex factory rate. For evaluating the consumption of the items of group (iii), i.e., items categorised as miscellaneous goods and services and durable articles, a different approach is followed. In this case, the expenditure made during the reference period for the purchase or acquisition of goods and services is considered as consumption.

It is pertinent to mention here that the consumer expenditure of a household on food items relates to the actual consumption by the members of the household and also by the guests during ceremonies or otherwise. To avoid double counting, transfer payments like charity, loan advance, etc. made by the household are not considered as consumption for items of groups (i) and (ii), since transfer receipts of these items have been taken into account. However, the item "cooked meals" is an exception to the rule. Meals prepared in the household kitchen and provided to the employees and/or others would automatically get included in domestic consumption of employer (payer) household. There is a practical difficulty of estimating the quantities and values of individual items used for preparing the meals served to employees or others. Thus, to avoid double counting, cooked meals received as perquisites from employer household or as gift or charity are not recorded in the recipient household. As a general principle, cooked meals purchased from the market for consumption of the members and for guests and employees will also be recorded in the purchaser household.

This procedure of recording cooked meals served to others in the expenditure of the serving households only leads to bias-free estimates of average per capita consumption as well as total consumer expenditure. However, donors of free cooked meals are likely to be concentrated at the upper end of the per capita expenditure range and the corresponding proportion of recipients at the lower end of the same scale. Consequently, the derived nutrition intakes may get inflated for the rich (net donors) and understated for the poor (net recipients). This point has to be kept in mind while interpreting the NSS consumer expenditure data for any studies relating to the nutritional status of households.

**Value of consumption:**

Consumption out of purchase is evaluated at the purchase price. Consumption out of home produce is evaluated at ex farm or ex factory rate. Value of consumption out of gifts, loans, free collections, and goods received in exchange of goods and services is imputed at the rate of average local retail prices prevailing during the reference period.

**Monthly per capita consumer expenditure (MPCE):**

For a household, this is the total consumer expenditure over all items divided by its size and expressed on a per month (30 days) basis. A person's MPCE is understood as that of the household to which he or she belongs.

**Reference periods:**

The reference periods used for collection of consumption data for different groups of items are given below:

Item	Reference period
of consumption	
clothing, footwear, education, medical care (institutional) and durable goods	"last 30 days" and "last 365 days"
(Infrequent-expenditure Categories)	
all other items (viz all food, pan, tobacco & intoxicants, fuel and light, miscellaneous goods and services including non-institutional medical care, rents and taxes)	last 30 days

Note that for items of infrequent-expenditure categories, two estimates of aggregate or per capita consumption are possible, one based on 'last 30 days' expenditure and the other on 'last 365 days' expenditure. In this report, 'last 30 days' data on items of all categories have been used to build up the estimates of household MPCE used for classification of households.

**MPCE class:**

The MPCE classes are normally revised during quinquennial surveys of Consumer Expenditure. Usually, 12 MPCE classes are formed from a table giving estimated cumulative percentage frequency distribution of persons by MPCE for each sector separately. The upper limits of these classes correspond broadly to 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95% and 100% of the population. The class limits are given below:

MPCE classes in Rs.					
S. No.	Rural	Urban	S. No.	Rural	Urban
1	0 – 235	0 - 335	7	455 – 510	790 - 930
2	235 – 270	335- 395	8	510 – 580	930- 1100
3	270 – 320	395 - 485	9	580 – 690	1100- 1380
4	320 – 365	485- 580	10	690– 890	1380 - 1880
5	365– 410	580 - 675	11	890 – 1155	1880 - 2540
6	410 – 455	675 - 790	12	1155+	2540+

**Household type:**

Rural households were classified into five types and urban households into four types on the basis of the occupations pursued by the household members. The five types of rural households are: self-employed in non-agriculture, agricultural labour, other labour, self-employed in agriculture, and other households. The four types of urban households are: self-employed, regular wage / salary earner, casual labour, and other households.

**The “Type” of a household was determined as follows:**

**Rural:**

A household was classified as “agricultural labour”, if its income during the last 365 days preceding the date of survey from that source was 50% or more of its total income. The same criterion was followed to classify a household as “self-employed in agriculture”. A household was classified as “self-employed in non-agriculture” if its income from that source was greater than that from rural labour as well as that from all other gainful sources put together. If a household was not one of these three types but its income from total rural labour was greater than that from all self-employment and from other gainful sources, it was classified as “other labour”. The remaining households were classified as “other households”.

**Urban:**

A household was classified as “self-employed”, “regular wage or salary earning”, or “casual labour”, according to the major sources of its income from “gainful employment” during the 365 days preceding the date of survey. A household not having any income from gainful employment was classified under “others”.

**Social Group:** There are in all four social groups, namely, scheduled caste (SC), scheduled tribe (ST), other backward class (OBC) and Others. Those who did not come under any one of the first three social groups were assigned to ‘Others’ meant to cover all other categories. In case different members of a household belonged to different social groups, the group to which the head of the household belonged was considered as the ‘social group’ of the household.

**Source of energy for cooking:**

The source of energy used by a household during the last 30 days preceding the date of survey has been ascertained and collected in the survey. The type of sources are as follow coke/ coal, firewood and chips, LPG , gobar gas, dung cake, charcoal , kerosene, electricity and others.

If a household used more than one of the above sources then the one having major use has been assigned to the household. The term used for this source is primary source of energy for cooking.

**Source of energy for lighting:**

Like source of energy for cooking, the source of energy for lighting used by households during the last 30 days preceding the date of survey has been ascertained and collected in the survey. The different types of sources are kerosene, other oil, gas, candle, electricity and others. If a household used more than one of the above sources for lighting then the one having major use has been assigned to the household. The term used for this source is primary source of energy for lighting.

The report gives information on the primary source of energy separately for cooking and lighting used by the households. It ignores the sources other than the primary sources used by the households.

In addition, data has been collected from the households regarding holding of various type of ration cards and whether households has been benefited by programmes like Mid Day Meal, ICDS etc.

### **Sample Design**

A stratified multi-stage design has been adopted for the 61<sup>st</sup> round survey. The first stage units (FSU) are the 2001 census villages in the rural sector and Urban Frame Survey (UFS) blocks in the urban sector. The ultimate stage units (USU) are households in both the sectors. In the case of large villages/blocks requiring hamlet-group (hg)/sub-block (sb) formation, one intermediate stage is the selection of two hgs/sbs from each FSU. The sample of villages and urban blocks for state sample has been selected by NSSO. The estimation procedure as provided by NSSO is used. Details of sample design and estimation procedure is given in annexure, which is being reproduced from NSSO Report Number 508.

## General Profile of Households and Disparity in Madhya Pradesh

### Socio- economic Classification:

Scheduled tribes households' accounts for 19.94 percent of total household and around 17.77 percent of households belonging to scheduled castes are there in the state. Other Backward Classes accounted for 38.91 percent of households are highest in state. Other households (not belonging to scheduled tribe, scheduled caste and OBC categories) are slightly less than one fourth of total households.

The concentration of scheduled tribe and scheduled caste is more in rural area while OBC are almost equally concentrated in rural and urban areas of the state. Others are more in urban areas in percentage term. Distribution of households and population by socio-economic classification is presented in figure 1 and Table 1.

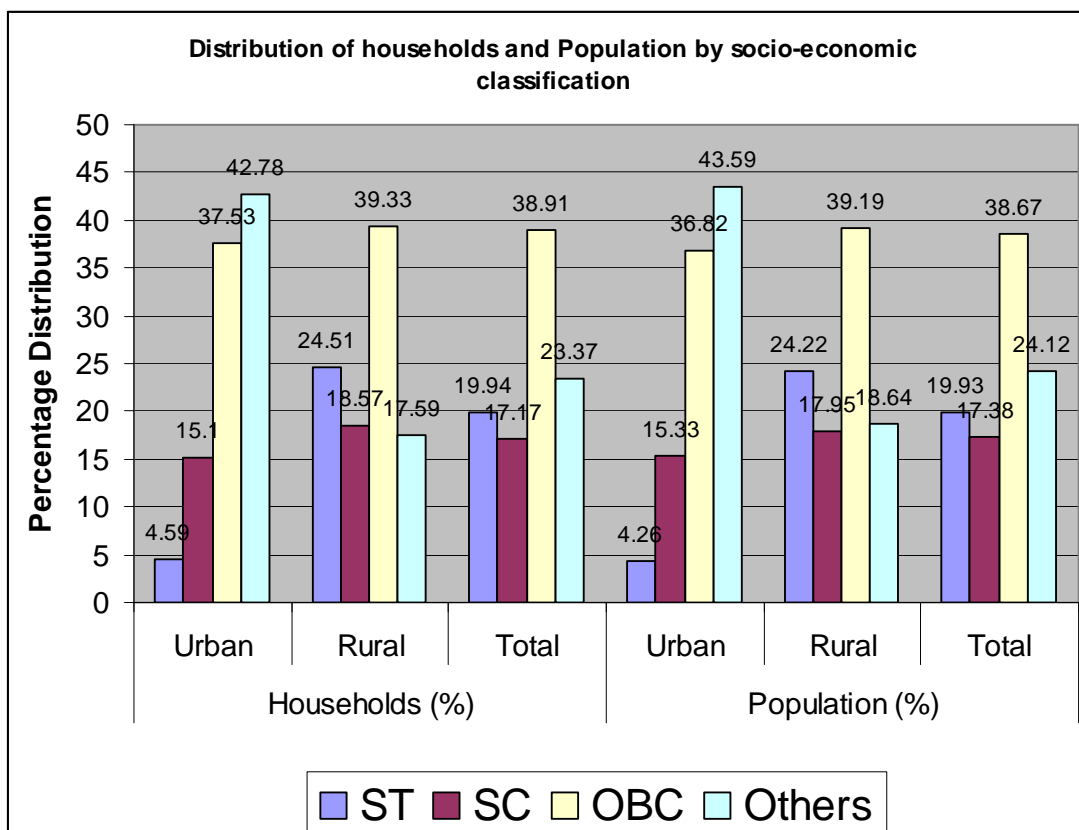


Table 1: Distribution of households and Population by socio-economic classification

Socio-economic Classification	Households (%)			Population (%)		
	Urban	Rural	Total	Urban	Rural	Total
ST	4.59	24.51	19.94	4.26	24.22	19.93
SC	15.10	18.57	17.17	15.33	17.95	17.38
OBC	37.53	39.33	38.91	36.82	39.19	38.67
Others	42.78	17.59	23.37	43.59	18.64	24.12
All	100.00	100.00	100.00	100.00	100.00	100.00

**Type of Households:**

The households have been classified based on type of activity undertaken by head of household for earning such as self-employed, regular wage/salary earning, casual labour and others in urban area while in rural area the classification is slightly different, the classification adopted in rural area is self-employed-non agriculture, agriculture labour, other labour, self-employed in agriculture and others. Survey results revealed that in urban area 44.19 % household earning income from self-employment, 32.61 % from salaries/regular wages, 17.18 % earn their livelihood by working as casual labour and 6.02 % from other activities.

Figure 2:

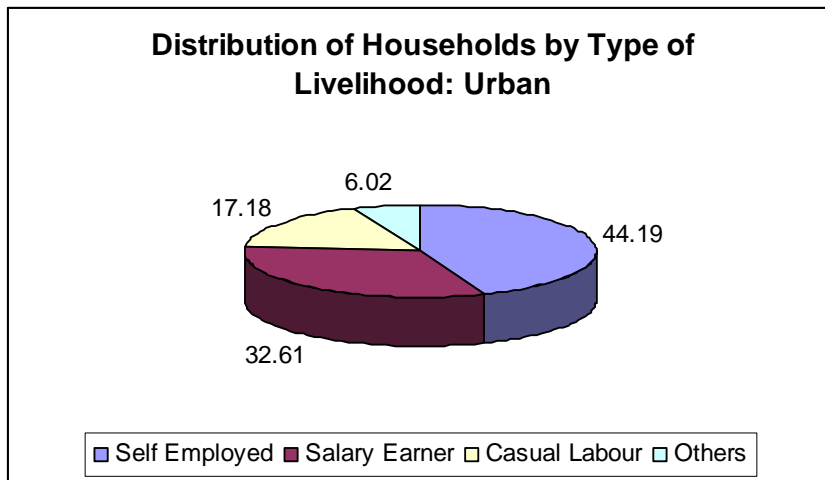




Table 2: Distribution of households by Type of Households: Urban (in %)

Type of Households	Urban
Self Employed	44.19
Salary Earner	32.61
Casual Labour	17.18
Others	6.02
All	100.00

It is observed that among self employed households the representation is more of OBC and others as compare to their population while in case of salary earning households the representation of ST and others is more. In case of SC and OBC their representation is less by 4.5 and 5 percentage points than their proportion in population respectively.

Figure:

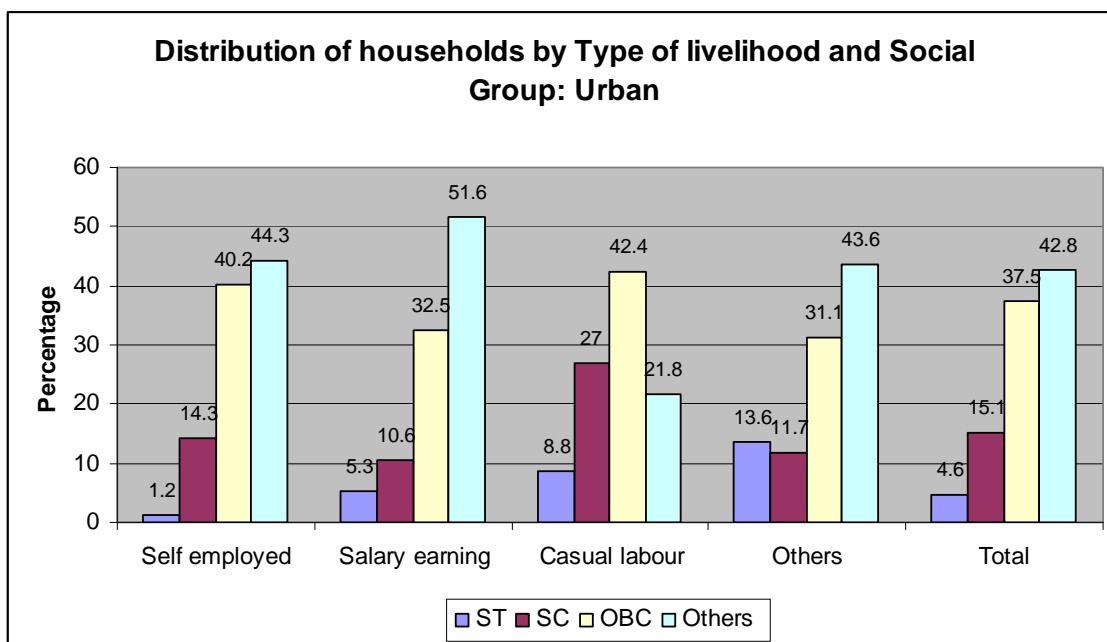


Table -3: Distribution of households by Type of Household and Social Group: Urban (in %)

Type of Households	Self employed	Salary earning	Casual labour	Others	Total
Social Group					
ST	1.2	5.3	8.8	13.6	4.6
SC	14.3	10.6	27.0	11.7	15.1
OBC	40.2	32.5	42.4	31.1	37.5
Others	44.3	51.6	21.8	43.6	42.8
Total	100.0	100.0	100.0	100.0	100.0

It is found that more than 60 % of household are engaged in self employment and salary profession among SC, OBC and other category of households. Self employment is prominent among these categories. In case of ST, salary earner households constitute bigger chunk followed by households working as casual labour. In the state 32.6 % of households earn their bread and butter from salary, which is second largest occupation after self employed in urban areas.

Table 4: Distribution of households by Social Group and Type of Household: Urban (in %)

Type of Households Social Group	Self employed	Salary earning	Casual labour	Others	Total
ST	11.9	37.6	32.8	17.8	100.0
SC	41.8	22.8	30.8	4.7	100.0
OBC	47.3	28.3	19.4	5.0	100.0
Others	45.8	39.3	8.7	6.1	100.0
Total	44.2	32.6	17.2	6.0	100.0

Survey reveals that 76.31 % of households earning their livelihood from agricultural activities, which includes 29.03 % households who are working as agricultural labourers in rural area of the state. 11.73 % of total households come under Self Employed-non agriculture category.

Figure 3:

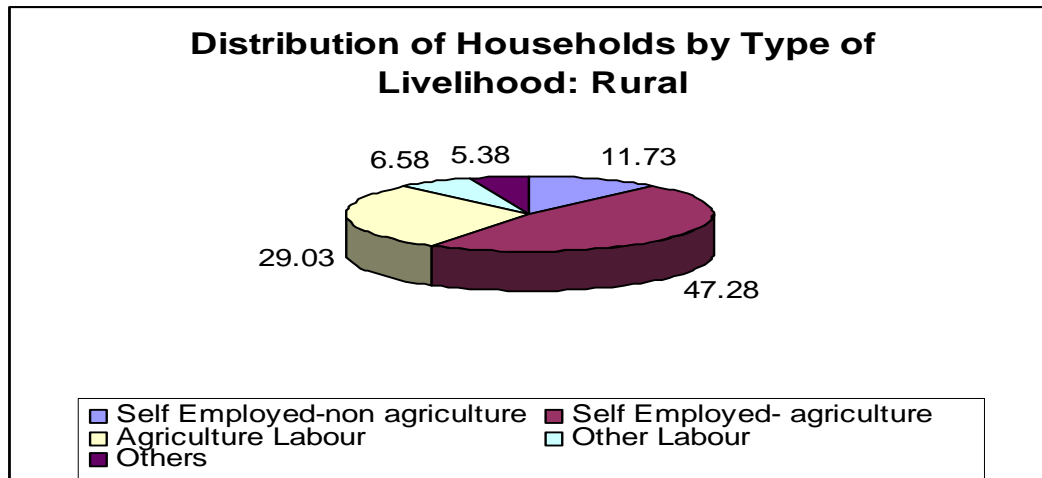


Table 5: Distribution of households by Type of Households: Rural (in %)

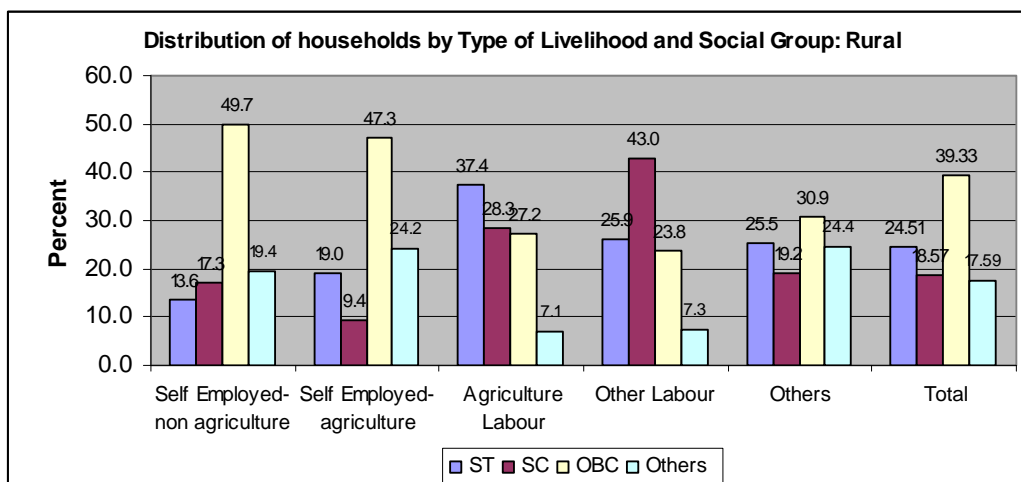
Type of Households	Rural
Self Employed-non agriculture	11.73
Self Employed- agriculture	47.28
Agriculture Labour	29.03
Other Labour	6.58
Others	5.38
All	100.00

It is observed that among self employed in agriculture households the presentation is more of OBC and others as compare to their population. It is also true for self employed in non agriculture. Scheduled tribe and scheduled caste households' forms major chunk of labour force engaged in agriculture and other labour. A detail of participation by activity and social group is presented in Table 6.

Table 6: Distribution of households by Type of Household and Social Group: Rural (in %)

Type of Households Social Group	Self Employed- non agriculture	Self Employed- agriculture	Agriculture Labour	Other Labour	Others	Total
ST	13.63	19.03	37.37	25.92	25.45	24.51
SC	17.29	9.44	28.28	43.04	19.20	18.57
OBC	49.68	47.30	27.23	23.78	30.92	39.33
Others	19.40	24.23	7.13	7.26	24.43	17.59
Total	100.00	100.00	100.00	100.00	100.00	100.00

Figure:



It is observed that 65 % and 57 % of household from others and OBC group are occupied as self employed in agriculture. Around 44 % of ST and SC are working as agricultural labour in rural areas. The majority of the households depend upon cultivation and agricultural labour. 80.93 % of ST households, 76.98 % of OBC, 76.88 % of other households and 68.35 % of SC households are engaged in cultivation and agricultural labour respectively. A relative higher proportion as compare to over all, OBC and Others are engaged in self employed non agricultural activities. Details are presented in Table 7.

Table 7: Distribution of households by Social Group and Type of Household: Rural (in %)

Type of Households Social Group	Self Employed- non agriculture	Self Employed- agriculture	Agriculture Labour	Other Labour	Others	Total
ST	6.52	36.69	44.24	6.96	5.58	100.0
SC	10.93	24.04	44.21	15.26	5.56	100.0
OBC	14.82	56.88	20.10	3.98	4.23	100.0
Others	12.94	65.12	11.76	2.72	7.47	100.0
Total	11.73	47.28	29.03	6.58	5.38	100.0

**Land ownership:**

A question on type of land owned by the household has been asked, that may be homestead, homestead and other land and only other land. The analysis revealed that 85.4 percent of urban households owned homestead or homestead and other land, which mean that these households owned houses. Remaining 1.5 percent households owned only other land and 13.1 % did not owned any type of land, thus these households do not their own house. In case of rural area, 61.9 percent owned homestead and other land and merely 0.3 % owned only other land. This mean 62.2 percent of rural households have land to cultivate. 1.08 % of household did not owned any type of land, thus may be considered as not owning house. Remaining 36.7 % owned homestead land but no land to cultivate. In the state 95.5 percent of households own land that may be homestead, homestead & other land or other land. Merely 4.4 percent of households did not own any type of land. Table 8 provides the details.

Figure:

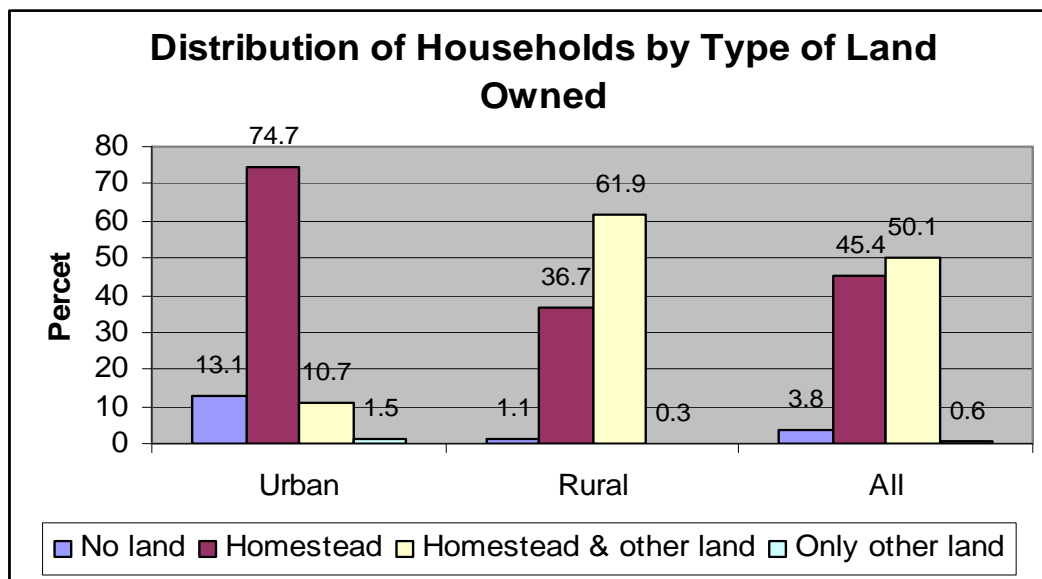


Table 8: Distribution of Households by Type of Land Owned (in %)

Type of Land Owned	Urban	Rural	All
No land	13.1	1.1	3.8
Homestead	74.7	36.7	45.4
Homestead & other land	10.7	61.9	50.1
Only other land	1.5	0.3	0.6
All	100.0	100.0	100.0

Among various socio groups, in urban area relatively higher proportion of ST and SC households have reported of not owning land. In rural areas, SC and other households have reported higher proportion than overall proportion of not owning land. Among all households irrespective of their place of stay, shows that higher proportion of other households do not possess any land followed by SC and OBC. Details are presented in Table 9.

Table 9: Distribution of Households owning different Type of Land by Socio Groups (in %)

Type of Land Owned Social Group	No land	Homestead	Homestead & other land	Only other land	All
Urban					
ST	17.9	73.5	8.2	0.5	100.0
SC	14.2	77.5	5.9	2.4	100.0
OBC	12.7	69.9	15.1	2.4	100.0
Others	12.5	78.1	8.8	0.6	100.0
Total	13.1	74.7	10.7	1.5	100.0
Rural					
ST	0.6	44.1	54.7	0.6	100.0
SC	1.7	53.9	44.1	0.3	100.0
OBC	1.0	30.1	68.8	0.1	100.0
Others	1.2	23.2	75.3	0.3	100.0
Total	1.1	36.7	61.9	0.3	100.0
All					
ST	1.5	45.6	52.3	0.6	100.0
SC	4.2	58.5	36.7	0.7	100.0
OBC	3.6	38.9	56.9	0.6	100.0
Others	6.0	46.2	47.4	0.4	100.0
Total	3.8	45.4	50.1	0.6	100.0

Among various classes of type of land owned by various socio groups, shows that in case of homestead land, the ownership distribution among ST and SC is almost equal to their share in total households in urban area. While, OBC's of urban area, have lower share in ownership of homestead land than their share in total households. In rural areas, SC and ST have larger share in ownership of homestead land than their share in total households. In case of ownership of homestead and other land OBC and Others ST have larger share in ownership than their share in total households. Other land is

reported to be owned by higher proportion of ST and others households as compare to their share in population. Though, the area owned is not being considered in this exercise, disparity in ownership of land (irrespective of area owned) among various socio groups has been found. Details are presented in Table 10.

Table 10: Distribution of Households by Type of Land Owned (in %)

Type of Land Owned Social Group	No land	Homestead	Homestead & other land	Only land	other	All
Urban						
ST	6.3	4.5	3.5	1.4		4.6
SC	16.4	15.7	8.3	24.1		15.1
OBC	36.5	35.1	52.8	58.5		37.5
Others	40.9	44.7	35.3	16.0		42.8
Total	100.0	100.0	100.0	100.0		100.0
Rural						
ST	12.6	29.4	21.7	50.7		24.5
SC	29.8	27.2	13.2	18.4		18.6
OBC	37.6	32.3	43.7	13.1		39.3
Others	20.0	11.1	21.4	17.8		17.6
Total	100.0	100.0	100.0	100.0		100.0
All						
ST	7.6	20.0	20.8	20.9		19.9
SC	19.3	22.9	13.0	21.9		17.8
OBC	36.7	33.3	44.1	40.5		38.9
Others	36.3	23.8	22.1	16.7		23.4
Total	100.0	100.0	100.0	100.0		100.0

### Use of Primary Source of Energy

#### Cooking:

It is observed that in urban areas of the state, during 2004-05, 58.1 % of households were using LPG as fuel, 37.4 % using firewood, 2.1 % using kerosene and 2.0 % using dung cake for cooking. The LPG users accounts for 42.6 % among ST households, 28.3 % among SC households, 55.2 % among OBC households and 72.8 % among other households. Majority of households of Scheduled tribes and Castes, firewood and chips are major source of fuel for cooking. Almost two fifth of OBC households are dependent on fire wood and almost equal number of households (around 2.5 % of total households) are using Dung cake and Kerosene for cooking purposes. A small proportion of households (0.1%) reported of no cooking arrangement.

Table 11: Distribution of households by Social Group and Type of fuel used: Urban (in %)

Type of fuel used Social Group	Coke/ Coal	Firewood & Chips	LPG	Dung Cake	Kerosene	No Cooking Arrangement	All
ST	0.6	54.7	42.6	1.2	0.5	0.4	100
SC	0.6	67.9	28.3	1.4	1.7	0.2	100
OBC	0.3	39.2	55.2	2.7	2.5	0.0	100
Others	0.2	23.2	72.8	1.7	2.1	0.0	100
Total	0.3	37.4	58.1	2.0	2.1	0.1	100

Among total LPG users, 3.4 % belonged to ST category, 7.4 % to SC, 35.7 % to OBC and others accounted for 53.6 percent showing disproportionate distribution of better fuel to their respective population. Among small proportion of households (0.1%) who reported of no cooking arrangement, SC and ST accounted for 77 percent.

Table 12: Distribution of households by Type of Fuel used and Social Group: Urban (in %)

Type of fuel used Social Group	Coke/ Coal	Firewood & Chips	LPG	Dung Cake	Kerosene	No Cooking Arrangement	All
ST	8.8	6.7	3.4	2.7	1.0	31.7	4.6
SC	28.6	27.4	7.4	10.2	11.8	45.4	15.1
OBC	38.0	39.4	35.7	50.9	44.4	3.4	37.5
Others	24.7	26.5	53.6	36.2	42.7	19.5	42.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

In rural areas, penetration of use of LPG for cooking is found to be low at 3.95 percent. Fuel wood is widely used for cooking by 93.43 % of rural households though use of dung cake is limited to 2.51 percent of households. The reason for use of firewood by large proportion of all social groups is availability of fire wood from nearby forests. Coke and coal is being used by 0.05 % of households mainly ST households, Kerosene by 0.08 % households mainly OBC households and merely 0.05 percent reported of no cooking arrangement which are ST households. Details are provided in Table 13.

Table 13: Distribution of households by Social Group and Type of fuel used: Rural (in %)

Type of fuel used Social Group	Firewood & Chips	LPG	Bio-gas	Dung Cake	Other fuels	All
ST	97.57	2.05	0.07	0.00	0.32	100
SC	96.73	1.67	0.00	1.60	0.00	100
OBC	93.44	3.07	0.62	2.67	0.20	100
Others	84.17	10.97	0.17	4.58	0.12	100
Total	93.43	3.95	0.29	2.15	0.18	100

Among firewood user households 65% are accounted by ST and OBC households. In case of LPG users 79.4 % are others and OBC households. Majority of dung cake users' households belong to OBC and others category of households. Details are given in Table 14.

Table 14: Distribution of households by Type of Fuel used and Social Group: Rural (in %)

Type of fuel used	Fire Wood & Chips	LPG	Bio-gas	Dung Cake	Other fuel	All
ST	25.6	12.7	5.5	0.0	44.5	24.5
SC	19.2	7.9	0.0	13.8	0.0	18.6
OBC	39.3	30.6	84.0	48.8	44.0	39.3
Others	15.8	48.8	10.5	37.4	11.6	17.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

### Lighting:

Electricity is the major source for lighting in both urban and rural area of the state. 88.48 % of households are using electricity for lighting in the state. In urban area user households accounts for 97 % of total households while for rural area it is 83.4 percent. Kerosene is also used for this purpose. A very small proportion of households are using other sources of energy for lighting such as gas and other oils. Thus is important to see whether the access to electricity is equitable or not. The Table 15 shows that the access to electricity is almost equitable to all socio groups irrespective of their place of residence. Marginal distortion in case ST and SC in both urban and rural area is observed.

Table 15: Distribution of households using electricity for lighting by Social Group: (in %)

Social Groups	Urban		Rural		All	
	Using electricity	Percent of Total Households	Using electricity	Percent of Total Households	Using electricity	Percent of Total Households
ST	4.1	4.6	23.8	24.5	18.7	19.9
SC	14.4	15.1	17.4	18.6	16.6	17.8
OBC	37.7	37.5	40.2	39.3	39.5	38.9
Others	43.8	42.8	18.6	17.6	25.1	23.4
All	100.0	100.0	100.0	100.0	100.0	100.0

### Access to Various Programmes

There are different schemes to benefit the people of the state such as Food for Work, Annapoorna, ICDS and Midday Meal in addition to this public distribution system also exists and under this different type of ration cards (i.e. Antodaya, BPL and Others) are issued to households as per their



entitlement. An attempt is made to study the extent the reach of these programmes to the households in the state.

State sample of 61<sup>st</sup> Round of NSSO reveals that Food for Work programme could reach to 1.0 % of households, Annapoorna 0.5 % households, ICDS 5.7 % and Midday Meal could reach 30.37 percent of households in the state. Midday Meal could reach 35 percent of households in rural area while in urban it was able to reach 13.5 % of households. It is also observed that programme could reach ST, SC and OBC relatively more than state average reach. It is evident from Table 16 that programme have targeted poor section of the society though with thin coverage. The percentage of beneficiary households for each social group for urban and rural area is also presented below in Table 16.

Table 16: Reach of various programme by Social Groups (in %)

Social Groups	All (Urban+Rural)			
	Food for work	Annapoorna	ICDS	Midday Meal
ST	2.0	0.4	6.0	38.96
SC	1.3	1.5	6.2	34.91
OBC	0.9	0.3	6.3	30.65
Others	0.1	0.1	4.2	19.11
All	1.0	0.5	5.7	30.37

Table 16 continued

Social Groups	Urban				Rural			
	Food for work	Annapoorna	ICDS	Midday Meal	Food for work	Annapoorna	ICDS	Midday Meal
ST	1.19	0.00	1.07	7.60	2.0	0.4	6.3	40.7
SC	0.42	1.42	1.11	27.96	1.5	1.5	7.4	36.6
OBC	0.30	0.08	2.06	17.16	1.0	0.3	7.5	34.5
Others	0.09	0.01	0.15	5.82	0.2	0.2	7.1	28.7
All	0.27	0.25	1.05	13.50	1.2	0.5	7.1	35.4

Under Food for Work programme, it is observed that among total beneficiaries 96.9 % households were from ST, SC and OBC category. Under Annapoorna Yojana, of the total benefited households 56.4 % were SC, followed by 22.9 % OBC and 15.6 % ST. Of the total who have availed the services of ICDS, 42.8 % were OBC, followed by 21.0 % ST and 19.2 % SC. Midday Meal programme, which has higher reach among the programmes under consideration, have 39.3 % of its beneficiaries from OBC, 25.6 % from ST and 20.4 % from SC categories. The benefits are distributed more in favour of poor section of the society. It is more or less true for urban and rural areas by programme. The details are given in Table 17.

Table 17: Distribution of Beneficiaries by various programme and Social Groups (in %)

Social Groups	All (Urban+Rural)			
	Food for work	Annapoorna	ICDS	Midday Meal
ST	39.6	15.6	21.0	25.6
SC	22.6	56.4	19.2	20.4
OBC	34.6	22.9	42.8	39.3
Others	3.1	5.1	17.1	14.7
All	100.0	100.0	100.0	100.0

Table 17 continued

Social Groups	Urban				Rural			
	Food for work	Annapoorna	ICDS	Midday Meal	Food for work	Annapoorna	ICDS	Midday Meal
ST	20.13	0.00	4.68	3.2	2.59	17.8	21.7	28.2
SC	23.21	86.54	15.93	28.9	31.26	52.3	19.3	19.2
OBC	42.22	12.03	73.37	50.3	47.70	24.4	41.4	38.3
Others	14.44	1.42	6.03	17.6	18.45	5.6	17.5	14.3
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

#### Ration Card Holding:

To provide subsidized food grain to the subjects belonging to poor section of the society, Food and Civil Supply Department had issued different type of ration cards namely, Antodaya card, BPL card and other cards. In some states, there are white, yellow and blue cards. In present context, Antodaya card, BPL card and other card are being considered.

Survey results revealed that in state around 73 % of urban households, 83 % of rural households and overall 80% of the households own ration card. Among social groups, highest proportion of SC households (85.4 %) was holding ration cards in the state. It is true for both urban and rural areas. In urban areas, it is followed by Others (73.5 %), OBC (71 %) and lowest proportion of household owning ration card was ST with 68.3 %. In case of rural, after SC households second highest proportion is observed for OBC household (83.7 %) followed by ST with 81.2 % and 79.9 % of other households owned ration card. Proportion of Households holding Ration Card by social groups is presented below in Table 18.

Table 18: Proportion of Households holding Ration Card (in %)

Social Group	Urban	Rural	All
ST	69.3	81.2	80.6
SC	76.6	87.5	85.4
OBC	71.2	83.7	81.0
Others	73.5	79.9	77.2
All	72.9	83.1	80.8

An attempt is made to study the pattern of holding of different type of ration cards among ration card holders. The over all distribution of ration cards among different social groups is almost evenly distributed according to their population. The proportion of different type of ration cards among card holders revealed that Antodaya card meant for the poorest among poor, accounts for merely 1.3 percent of the ration card holders and BPL card holders accounted for 25.2 percent while remaining households owned other cards in the state. Percentage Distribution of cards by type for urban and rural areas is also shown in Table 19. The holding of different type of ration cards is not evenly distributed among groups because of the entitlements depends upon economic criterion. Among BPL cards holder in urban areas, more than 65 % of BPL cards holder belongs to OBC and SC. In rural areas, 90 % of BPL cards are held by other than Other households. In case of Antodaya Card, 99.4 % of total cards are held by SC, ST and OBC in descending order while in urban areas 87 % of total cards are owned by others, SC and ST. A detail distribution of different type of ration cards by social classes is exhibited in Table 19. The pattern is found to be in line with the belief that SC, ST and OBC's constitute major chunk of poor population. The distribution of all type of cards among social classes is evenly distributed to large extent irrespective of area of residence.

**Table 19: Distribution of Different type of Ration Cards by Social Group (in %)**

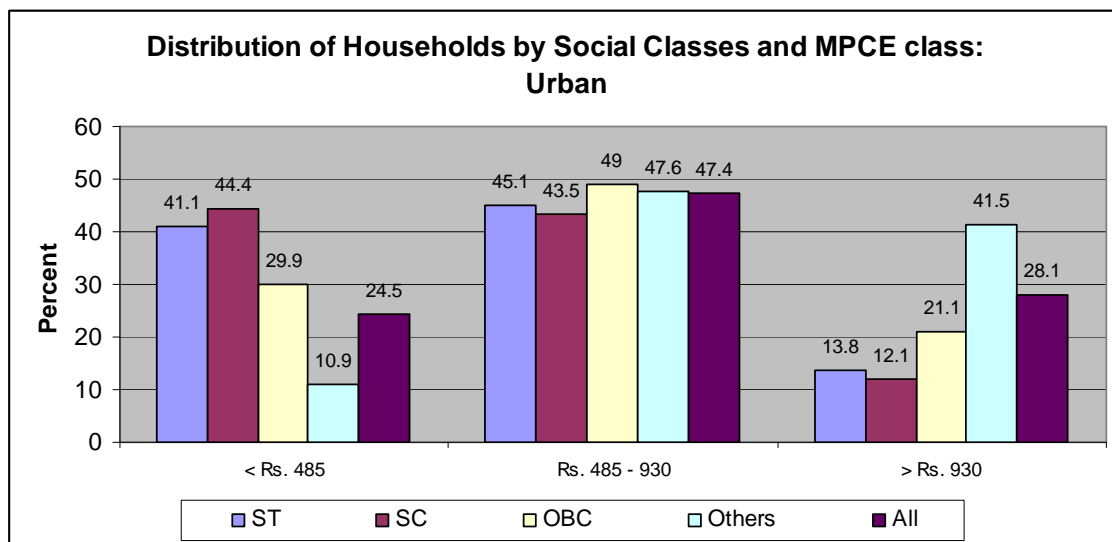
Social Group	Antodaya	BPL	other	All Type of cards
<b>Urban</b>				
ST	23.7	6.4	3.9	4.4
SC	27.1	33.3	12.5	15.9
OBC	19.9	32.0	37.6	36.6
Others	29.4	28.3	46.0	43.1
All	100.0	100.0	100.0	100.0
Percentage Distribution of cards	0.5	15.7	83.8	100.0
<b>Rural</b>				
ST	32.5	33.7	20.0	24.0
SC	45.8	28.8	15.4	19.5
OBC	21.0	29.4	44.0	39.6
Others	0.6	8.1	20.7	16.9
All	100.0	100.0	100.0	100.0
Percentage Distribution of cards	1.5	27.6	70.9	100.0
<b>Total</b>				
ST	31.8	30.2	16.2	19.9
SC	44.4	29.4	14.7	18.8
OBC	20.9	29.7	42.5	39.0
Others	2.9	10.7	26.6	22.3
All	100.0	100.0	100.0	100.0
Percentage Distribution of cards	1.3	25.2	73.5	100.0

## Expenditure Pattern and Inequality

### Monthly Per Capita Expenditure:

The purpose of present analysis is not to estimate the extent of poverty prevailing in the state as per 61<sup>st</sup> Round of NSSO based on state sample. An attempt is made to study the relative position of various social groups assuming different level of MPCE. Instead of 12 MPCE classes adopted by NSSO, for the present study four MPCE classes have been formed by clubbing, in urban areas monthly per capita expenditure classes adopted are less than Rs. 485, Rs. 485-930 and more than Rs. 930 which work out to less than Rs.16.16, 24.33 and more than Rs.31 per capita par day. For rural area these classes are less than Rs. 455, Rs. 455-890 and more than Rs. 890 which work out to less than Rs.15.16, 22.43 and more than Rs.30 per capita par day.

Results based on this analysis reveals that in urban areas there were 24.5 percent of total households with MPCE less than Rs. 485. 28.1 % of households having MPCE more than Rs. 930 while remaining 47.4 % of households having MPCE in range of Rs. 485 to Rs. 930. It is observed that among SC households, the proportion of households with MPCE more than Rs.930 is lowest at 12.1 % followed by ST with 13.8 % and OBC with 21.1 %. It shows that majority of SC households (87.9 %) are incurring consumer expenditure less than Rs. 24 per capita per day on an average basis. The proportion of similar households in ST and OBC categories are 86.2 % and 78.9 % respectively. Among other households such households constitute for 58.5 % of total households. Details are presented in Table 20.



**Table 20: Distribution of Households by Social Classes and MPCE class: Urban**

MPCE Class Social Class	< Rs. 485	Rs. 485 - 930	> Rs. 930	All
ST	41.1	45.1	13.8	100.0
SC	44.4	43.5	12.1	100.0
OBC	29.9	49.0	21.1	100.0
Others	10.9	47.6	41.5	100.0
All	24.5	47.4	28.1	100.0

It is equally important to know that in each MPCE class who the major constituents are. Table 21 gives the distribution of households within each MPCE class. It reveals that around three fourth of total households with MPCE less than Rs. 485 belong to OBC and ST categories. The distribution of households in MPCE class of Rs. 485 to Rs. 930 shows that to large extent is same as their proportion in total population. Highest category of MPCE (i.e. more than Rs. 930) is dominated by “Other Households”. It shows that significantly good proportion of SC, OBC and ST are relatively not better off than other households.

**Table 21: Distribution of Households by Social Classes and MPCE class: Urban**

MPCE Class Social Class	< Rs. 485	Rs. 485 - 930	> Rs. 930	All
ST	7.7	4.4	2.3	4.6
SC	27.4	13.8	6.5	15.1
OBC	45.8	38.8	28.2	37.5
Others	19.1	43.0	63.1	42.8
All	100.0	100.0	100.0	100.0

The other parameter to be studied is the average per capita consumer expenditure per day so that intake differential if any can be highlighted. Table 22 reveals, that ST households belonging to MPCE category of Rs. 485-930 are spending more than (on an average basis) households of other socio groups and all households. OBC households are spending more as compare to (on an average basis) other socio groups in lower and higher MPCE classes. This table also reveals that in urban areas SC households are consuming less than their counterparts in each category of MPCE class except the lower MPCE class where their average consumption is higher than that of ST households. Households of Lower MPCE class of less than Rs. 485 are spending less than one fourth of their respective counter parts in higher MPCE class except in case of SC households who are spending 29 percent and ST households who are spending 21 percent of their counterparts in higher MPCE class. ST households of lower MPCE class are spending less than half than their counter parts in next higher MPCE class of Rs. 485 to Rs. 930 while for other socio groups it varies between 56 to 59 percent. It is observed that average spending per day per person is higher in case of other households with Rs. 30.84 followed by OBC households (Rs. 24.15 ), ST households (Rs. 20.77) and least is for SC

households with Rs. 18.75 per capita per day. Households of MPCE class of less than Rs. 485 are spending little more than half of average spending of all the households of same socio group except Other households who are spending slightly less than half of the average spending of all other households.

**Table 22: Average Per Capita Per Day Expenditure by Social Classes and MPCE class: Urban**  
(in Rs. 0.00)

MPCE Class Social Class	< Rs. 485	Rs. 485 - 930	> Rs. 930	All
ST	11.17	23.90	52.06	20.77
SC	12.20	20.63	41.43	18.75
OBC	13.00	22.05	50.05	24.15
Others	12.72	22.66	50.28	30.84
All	12.59	22.21	49.69	26.10

Results based on this analysis reveals that in rural areas there were 44.5 percent of total households with MPCE less than Rs. 455. Merely 7.9 % of households having MPCE more than Rs. 890 while remaining 47.6 % of households having MPCE in range of Rs. 455 to Rs. 890. It is observed that among other households, the proportion of households with MPCE more than Rs.890 is highest at 17.1 % followed by OBC with 9.3 % and ST with 3.2 %. It also reveals that majority of SC households (97.8 %) are incurring consumer expenditure less than Rs. 22.43 per capita per day on an average basis. The proportion of similar households in ST and OBC categories are 96.8 % and 90.7 % respectively. Among other households such households constitute for 83.9 % of total households. Thus large proportion of rural households are living in much worse conditions as compare to urban households. Details are presented in Table 23.

**Table 23: Distribution of Households by Social Classes and MPCE class: Rural** (in %)

MPCE Class Social Class	< Rs. 455	Rs. 455 - 890	> Rs. 890	All
ST	59.8	37.0	3.2	100
SC	62.7	35.1	2.2	100
OBC	36.8	53.9	9.3	100
Others	21.3	61.6	17.1	100
All	44.5	47.6	7.9	100

Table 24 gives the distribution of households within each MPCE class. It reveals that around two third of total households with MPCE less than Rs. 455 belong to OBC and ST categories. The distribution of households by MPCE classes shows that households are not equitably distributed according to their proportion in total population thus showing the disparity.

**Table 24: Distribution of Households by Social Classes and MPCE class: Rural (in %)**

MPCE Class Social Class	< Rs. 455	Rs. 455 - 890	> Rs. 890	All
ST	32.9	19.1	9.9	24.5
SC	26.2	13.7	5.1	18.6
OBC	32.5	44.5	46.6	39.3
Others	8.4	22.7	38.4	17.6
All	100.0	100.0	100.0	100.0

The other parameter to be studied is the average per capita consumer expenditure per day so that intake differential if any can be highlighted. Table 25 reveals that ST and SC households are spending less than average spending of all households irrespective of MPCE class. OBC and Other households are spending more as compare to all households put together. Households of Lower MPCE class of less than Rs. 455 are spending around one third of their counter parts in higher MPCE class and 60 % of those in middle MPCE class of Rs. 455 to Rs. 890 irrespective of social class. This table also reveals that in rural areas among SC and ST households intake is below the state average.

**Table 25: Average Per Capita Per Day Expenditure by Social Classes and MPCE class: Rural (in Rs. 0.00)**

MPCE Class Social Class	< Rs. 455	Rs. 455 - 890	> Rs. 890	All
ST	11.52	18.60	35.01	14.25
SC	11.75	19.76	33.63	14.71
OBC	12.19	20.32	37.71	18.47
Others	12.58	21.12	38.56	21.66
All	11.89	20.15	37.71	17.37

Now question arises whether among different social groups, the proportion of households for different consumption levels have similar pattern or not. To analyse this aspect, in urban area the consumption level assumed are below Rs300, Rs. 350, Rs. 400, Rs450, Rs. 500, Rs. 550 and Rs. 600 while in rural areas first four level have been considered. This analysis will reveal that an increment in consumption level by Rs.50 what proportion of total households get included. In other word, these households can be treated as target group which can be moved from one category of consumption class to another by some interventions comparatively of smaller magnitude than moving all the households belonging to lower MPCE class for which interventions of larger magnitudes are required.

Table 26 reveals that 19.28 % of ST population in the urban areas has MPCE less than Rs. 300 while 10.690% of SC population has same level of MPCE. In case of OBC and Others merely 1.62 % of their population has MPCE less than Rs. 300. In case one considers MPCE classes less than Rs. 450 and more than Rs. 450, then different scenario emerge, which shows that the higher proportion of ST

population as compare to other socio groups is living with less than Rs. 450 monthly per capita expenditure. While among those who are living with more than Rs. 450 monthly per capita expenditure, higher percentage of SC population as compare to other socio groups is covered under such category. In Figure 1 an attempt is made to reveal that with increment of Rs. 50 in MPCE class the proportion of household get added through relative height of bar for different classes and socio groups. This chart reveals that with each additional increase of Rs. 50 in MPCE relatively higher proportion of population is affected. In case of ST population considerably high proportion of population moved from MPCE level of Rs.400 to Rs. 450. While in case of OBC population such movement of population is observed at slower pace in number of MPCE classes.

Table 26: Proportion of Population/Households below MPCE: Urban MPCE classes

Social Group	MPCE less than						
	300	350	400	450	500	550	600
ST							
Population (%)	19.28	29.72	33.06	43.17	46.88	50.54	51.39
Households (%)	14.69	23.58	27.10	38.20	41.10	44.71	45.45
SC							
Population (%)	10.69	18.21	28.75	40.04	51.54	59.12	68.02
Households (%)	10.00	16.66	26.91	38.48	48.09	54.25	63.65
OBC							
Population (%)	1.62	7.17	17.43	26.68	34.46	44.16	52.66
Households (%)	1.60	6.67	15.30	24.80	31.86	40.18	47.89
Others							
Population (%)	2.23	3.46	7.02	10.56	15.13	23.20	27.96
Households (%)	2.07	3.14	6.23	9.34	12.42	18.09	21.72
All							
Population (%)	4.10	8.21	15.29	22.40	29.19	37.59	44.20
Households (%)	3.73	7.45	13.71	20.86	26.42	33.06	38.96



**Figure 1**

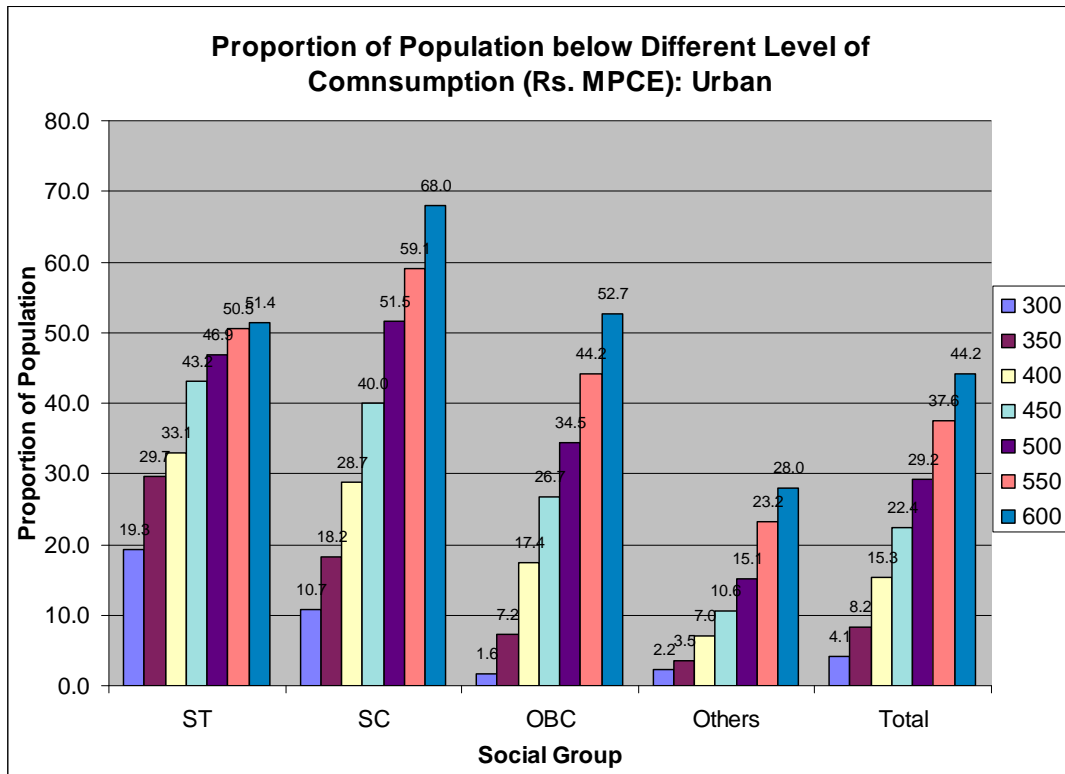
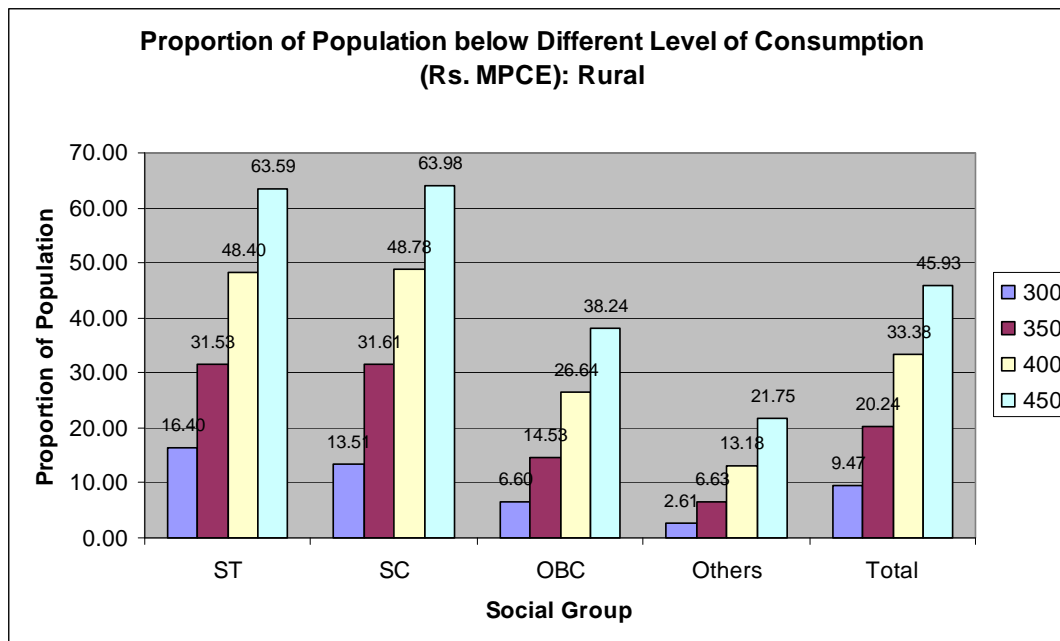


Table 27 reveals that 16.40 % of ST population in the rural areas has MPCE less than Rs. 300 while 13.51% of SC population has same level of MPCE. In case of OBC and Others only 6.60 % and 2.61 % of their population has MPCE less than Rs. 300. The higher proportion of SC and SC population is found for all MPCE classes under consideration as compare to OBC and Others. In Figure 2 reveals that with each additional increase of Rs. 50 in MPCE relatively higher proportion of population is affected. In case of ST and SC population considerably high proportion of population moved from first MPCE level to the level of Rs.350 to Rs. 450. While in case of OBC population such movement of population is observed is smaller in number of MPCE classes. This exercise can be used to target specifically identified group of population through various programmes meant for eradication of poverty. Even this analysis may help the planner to set the targets at various level to achieve pre set overall goals.

Table 27: Proportion of Population/Households below MPCE: Rural MPCE classes

Social Group	MPCE less than			
	300	350	400	450
ST				
Population (%)	16.40	31.53	48.40	63.59
Households (%)	14.24	27.18	43.89	58.05
SC				
Population (%)	13.51	31.61	48.78	63.98
Households (%)	13.22	30.46	47.14	61.42
OBC				
Population (%)	6.60	14.53	26.64	38.24
Households (%)	5.81	13.50	25.00	35.71
Other				
Population (%)	2.61	6.63	13.18	21.75
Households (%)	2.00	4.81	11.60	19.64
All				
Population (%)	9.47	20.24	33.38	45.93
Households (%)	8.58	18.47	31.39	43.13

Figure 2:



Now targeting a particular category with given parameter keeping oneself within the limit of available resources can be done easily provided one know how much amount is required to uplift the population from one category to another. For this purpose average poverty gap has been calculated for each MPCE class for Urban and Rural population by social groups and is presented in Tables 28 and Table 29. The relative expenditure to bring all the households with MPCE less than Rs. 450 to next MPCE

class will be more in rural areas than urban areas. Relative expenditure will be more for ST, SC and others households of urban areas.

Table 28: Average Poverty Gap: Urban

(Amount required in bringing above present MPCE Class to Next Higher MPCE Class)

Social Groups	Amount required to bring above present MPCE Class to Next Higher MPCE Class (Rs. Per month)						
	300	350	400	450	500	550	600
ST							
Per person	6.03	10.31	17.39	21.51	28.90	35.82	44.55
Per household	37.29	61.18	99.92	114.52	155.25	190.73	237.26
SC							
Per person	6.53	10.93	14.02	18.31	22.18	27.87	32.41
Per household	35.97	61.62	77.29	98.27	122.60	156.66	178.64
OBC							
Per person	9.39	7.35	9.20	13.69	18.88	22.95	27.67
Per household	47.27	39.34	52.21	73.41	101.79	125.68	151.57
Other							
Per person	4.64	10.14	11.15	14.65	16.87	17.70	21.37
Per household	25.82	57.83	64.93	85.69	106.39	117.49	142.33
All							
Per person	6.29	9.54	11.73	15.80	20.01	23.46	27.88
Per household	35.07	30.28	66.44	86.14	112.25	135.48	160.63

Table 29: Average Poverty Gap: Rural

(Amount required in bringing above present MPCE Class to Next Higher MPCE Class)

Social Groups	Amount required to bring above present MPCE Class to Next Higher MPCE Class (Rs. Per month)			
	300	350	400	450
<b>ST</b>				
Per person	8.81	10.80	14.02	18.02
Per household	53.85	66.48	82.00	104.74
<b>SC</b>				
Per person	8.09	10.00	13.99	18.73
Per household	42.91	53.92	75.18	101.34
<b>OBC</b>				
Per person	4.38	8.05	10.85	14.92
Per household	26.64	46.33	61.87	85.52
<b>Other</b>				
Per person	2.98	5.58	8.74	11.79
Per household	22.14	43.75	56.51	74.31
<b>All</b>				
Per person	7.12	9.48	12.63	16.64
Per household	42.18	55.80	72.14	95.15

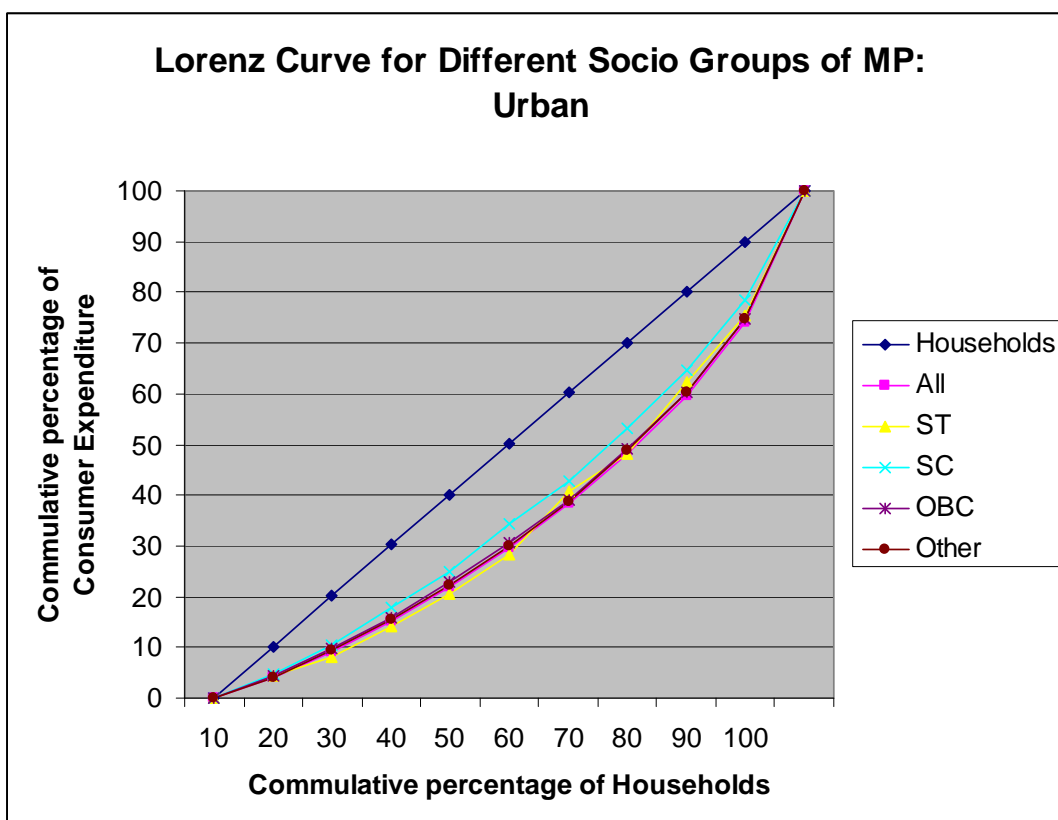
**Inequality among different Socio Groups:**

In above paragraphs, we have observed there are disparities/ inequalities of various types among socio groups. The Gini Coefficient, which is commonly used as indicator of inequality, has been calculated, based on consumer expenditure data available from state sample of 61<sup>st</sup> round of NSSO survey, presented by socio groups to assess the extent of overall inequality and in which social group the extent of inequality is relatively more. The relatively more inequality exists among Scheduled Tribes living in urban area of the state which is highest among all socio groups and even more than over all. Least inequality is found among SC households as evident from table and Figure 3.

**Table 30: Gini Coefficient by Socio Groups: Urban MP**

Socio Groups	Gini Coefficient
ST	0.3066
SC	0.2411
OBC	0.2877
Others	0.2936
All	0.3012

**Figure3: Lorenz Curve for Different Socio Groups in MP: Urban**

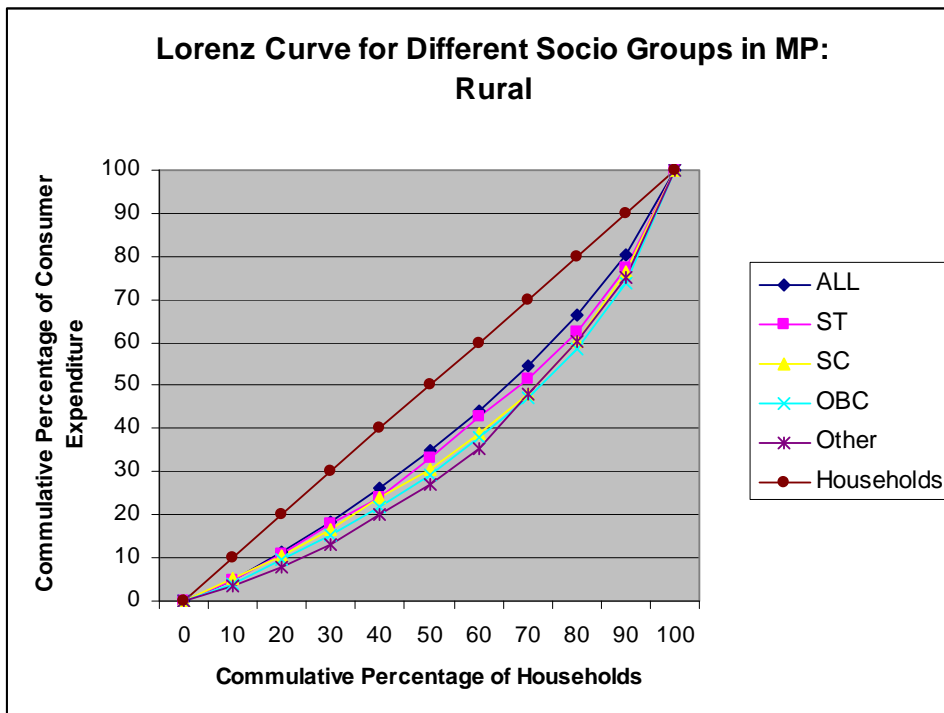


The Gini Coefficient, for rural area of state shows that inequality is less than urban and inequality is more among other households followed by OBC and SC. Least inequality is found among ST households as evident from table 31 and Figure 4.

**Table 31: Gini Coefficient by Socio Groups in MP : Rural**

Socio Groups	Gini Coefficient
ST	0.2515
SC	0.278
OBC	0.3047
Others	0.3247
All	0.2178

Figure 4: Lorenz Curve for Different Socio Groups in MP: Rural



Other indicators such as poverty gap index and squared poverty gap index for various MPCE Classes are presented below separately for Urban and Rural area separately.

Table 32: Poverty Gap Index for different MPCE classes by Socio-Groups: Urban

Socio groups	MPCE <=300	MPCE <=350	MPCE <=400	MPCE <=450	MPCE <=500	MPCE <=550	MPCE <=600
ST							
Population (%)	0.39	0.88	1.44	2.06	2.71	3.29	3.82
Households (%)	1.83	4.12	6.77	9.72	12.76	15.50	17.97
SC							
Population (%)	0.23	0.57	1.01	1.63	2.29	3.00	3.67
Households (%)	1.20	2.93	5.20	8.40	11.79	15.45	18.95
OBC							
Population (%)	0.05	0.15	0.40	0.81	1.30	1.84	2.43
Households (%)	0.25	0.75	2.00	4.04	6.49	9.18	12.10
Other							
Population (%)	0.03	0.10	0.20	0.34	0.51	0.75	1.00
Households (%)	0.18	0.52	1.01	1.78	2.64	3.86	5.15
All							
Population (%)	0.09	0.22	0.45	0.79	1.17	1.60	2.05
Households (%)	0.44	1.14	2.28	3.99	5.93	8.14	10.43

Table 33: Squared Poverty Gap Index for different MPCE classes by Socio-Groups: Urban

Socio groups	MPCE <=300	MPCE <=350	MPCE <=400	MPCE <=450	MPCE <=500	MPCE <=550	MPCE <=600
ST							
Population	1.75	4.08	8.57	13.89	19.76	25.78	31.68
Households	5.67	19.21	40.36	65.40	93.09	121.40	149.22
SC							
Population	0.70	2.63	5.94	10.45	15.97	22.43	29.57
Households	3.63	13.58	30.62	53.87	82.38	115.69	152.52
OBC							
Population	0.15	0.43	1.21	2.97	6.06	10.28	15.54
Households	0.74	2.14	6.04	14.81	30.20	51.22	77.41
Other							
Population	0.10	0.66	1.57	2.84	4.39	6.32	8.76
Households	0.54	3.41	8.13	14.68	22.70	32.70	45.31
All							
Population	0.26	1.02	2.41	4.52	7.44	11.08	15.42
Households	1.32	5.20	12.22	22.97	37.76	56.25	78.31

Table 34: Poverty Gap Index for different MPCE classes by Socio-Groups: Rural

Social Groups	MPCE <=300	MPCE <=350	MPCE <=400	MPCE <=450
ST				
Population (%)	0.48	0.97	1.70	2.55
Households (%)	2.56	5.16	9.00	13.51
SC				
Population (%)	0.36	0.90	1.71	2.66
Households (%)	1.89	4.69	8.86	13.83
OBC				
Population (%)	0.10	0.33	0.72	1.27
Households (%)	0.52	1.79	3.87	6.79
Other				
Population (%)	0.03	0.11	0.29	0.57
Households (%)	0.15	0.60	1.64	3.24
All				
Population (%)	0.22	0.55	1.05	1.70
Households (%)	1.21	2.95	5.66	9.12

Table 34: Squared Poverty Gap Index for different MPCE classes by Socio-Groups: Rural

Social Groups	MPCE <=300	MPCE <=350	MPCE <=400	MPCE <=450
ST				
Population	6.15	12.97	23.77	38.33
Households	32.63	68.83	126.13	203.40
SC				
Population	3.75	9.33	19.81	34.81
Households	19.46	48.46	102.91	180.77
OBC				
Population	0.70	2.67	6.83	13.45
Households	3.75	14.30	36.55	71.96
Other				
Population	0.12	0.72	2.16	4.84
Households	0.68	4.11	12.30	27.56
All				
Population	2.46	6.00	12.39	21.70
Households	13.20	32.22	66.57	116.57



## **Annexure Sample Design**

**Outline of sample design:** A stratified multi-stage design has been adopted for the 61<sup>st</sup> round survey. The first stage units (FSU) are the 2001 census villages in the rural sector and Urban Frame Survey (UFS) blocks in the urban sector. The ultimate stage units (USU) are households in both the sectors. In the case of large villages/blocks requiring hamlet-group (hg)/sub-block (sb) formation, one intermediate stage is the selection of two hgs/sbs from each FSU.

**Sampling Frame for First Stage Units:** *For the rural sector*, the list of 2001 census villages (panchayat wards for Kerala) constitutes the sampling frame. *For the urban sector*, the list of latest available Urban Frame Survey (UFS) blocks has been considered as the sampling frame.

**Stratification:** Within each district of a State/UT, two basic strata have been formed: i) rural stratum comprising of all rural areas of the district and (ii) urban stratum comprising of all the urban areas of the district. However, if there are one or more towns with population 10 lakhs or more as per population census 2001 in a district, each of them will also form a separate basic stratum and the remaining urban areas of the district will be considered as another basic stratum. There are 27 towns with population 10 lakhs or more at all-India level as per census 2001.

### **Sub-stratification:**

**Rural sector:** If 'r' be the sample size allocated for a rural stratum, the number of sub-strata formed is ' $r/2$ '. The villages within a district as per frame have been first arranged in ascending order of population. Then sub-strata 1 to ' $r/2$ ' have been demarcated in such a way that each sub-stratum comprises a group of villages of the arranged frame and has more or less equal population.

**Urban sector:** If 'u' be the sample size for a urban stratum, ' $u/2$ ' number of sub-strata have been formed. The towns within a district, except those with population 10 lakhs or more, have been first arranged in ascending order of population. Next, UFS blocks of each town have been arranged by IV unit no.  $\times$  block no. in ascending order. From this arranged frame

of UFS blocks of all the towns, 'u/2' number of sub-strata has been formed in such a way that each sub-stratum has more or less equal number of UFS blocks.

For towns with population 10 lakhs or more, the urban blocks have been first arranged by IV unit no. × block no. in ascending order. Then 'u/2' number of sub-strata has been formed in such a way that each sub-stratum has more or less equal number of blocks.

**Total sample size (FSUs):** 12784 FSUs have been allocated at all-India level on the basis of investigator strength in different States/UTs for central sample and 14992 for state sample.

**Allocation of total sample to States and UTs:** The total number of sample FSUs is allocated to the States and UTs in proportion to population as per census 2001 subject to the availability of investigators ensuring more or less uniform work-load.

**Allocation of State/UT level sample to rural and urban sectors:** State/UT level sample size is allocated between two sectors in proportion to population as per *census 2001* with 1.5 weightage to urban sector subject to the restriction that urban sample size for bigger states like Maharashtra, Tamil Nadu etc. should not exceed the rural sample size. A minimum of 8 FSUs has been allocated to each state/UT separately for rural and urban areas.

**Allocation to strata:** Within each sector of a State/UT, the respective sample size is allocated to the different strata in proportion to the stratum population as per census 2001. Allocations at stratum level have been adjusted to a multiple of 4 with a minimum sample size of 4.

**Selection of FSUs:** Two FSUs have been selected from each sub-stratum of a district of rural sector with Probability Proportional to Size With Replacement (PPSWR), size being the population as per Population Census 2001. For urban sector, two FSUs have been selected from each sub-stratum by using Simple Random Sampling Without Replacement (SRSWOR). Within each sub-stratum, samples have been drawn in the form of two independent sub-samples in both the rural and urban sectors.

### **Selection of hamlet-groups/sub-blocks/households - important steps**

**Criterion for hamlet-group/sub-block formation:** Large villages/blocks having approximate present population of 1200 or more will be divided into a suitable number (say, D) of ‘hamlet-groups’ in the rural sector and ‘sub-blocks’ in the urban sector as stated below.

approximate present population of the sample village/block	no. of hgs/sbs to be formed (D)
less than 1200 (no hamlet-groups/sub-blocks)	1
1200 to 1799	3
1800 to 2399	4
2400 to 2999	5
3000 to 3599	6
.....and so on	

For rural areas of Himachal Pradesh, Sikkim and Poonch, Rajouri, Udhampur, Doda districts of Jammu and Kashmir and Idukki district of Kerala, the number of hamlet-groups formed is as follows.

approximate present population of the sample village	no. of hgs to be formed
less than 600 (no hamlet-groups)	1
600 to 899	3
900 to 1199	4
1200 to 1499	5
.....and so on	

Two hamlet-groups/sub-blocks are selected from a large village/UFS block wherever hamlet-groups/sub-blocks have been formed, by SRSWOR. Listing and selection of the households are done independently in the two selected hamlet-groups/sub-blocks. In case

hamlet-groups/sub-blocks are to be formed in the sample FSU, the same would be done by more or less equalizing population.

### **Formation of Second Stage Strata and allocation of households**

For both Schedule 1.0 and Schedule 10, households listed in the selected village/block/ hamlet-groups/sub-blocks are stratified into three second stage strata (SSS) as given below.

**Rural:** The three second-stage-strata (SSS) in the rural sector are formed in the following order:

- SSS 1: relatively affluent households
- SSS 2: from the remaining households, households having principal earning from non- agricultural activity
- SSS 3: other households

**Urban:** In the urban sector, the three second-stage strata (SSS) are formed as under:

Two cut-off points, say 'A' and 'B', based on MPCE of NSS 55<sup>th</sup> round, have been determined at **NSS Region level** in such a way that top 10% of households have MPCE more than 'A' and bottom 30% have MPCE less than 'B'. Then three second-stage-strata (SSS) are formed in the urban sector in the following order:

- SSS 1: households with MPCE more than A (i.e.  $MPCE > A$ )
- SSS 2: households with MPCE equal to or less than A but equal to or more than B (i.e.  $B \leq MPCE \leq A$ )
- SSS 3: households with MPCE less than B (i.e.  $MPCE < B$ )

The number of households to be surveyed in each FSU is 10 for each of the schedules 1.0 and 10. Composition of SSS with number of households to be surveyed for both schedule 1.0 and schedule 10 are as follows:

SSS	composition of SSS	no. of hhs to be surveyed	
		without hg/sb formation	with hg/sb formation (for each hg/sb)
<b>rural</b>			
SSS 1:	<i>relatively affluent households</i>	2	1
SSS 2:	of the rest, households having principal earning from non- agricultural activity	4	2
SSS 3:	other households	4	2

<b>urban</b>			
SSS 1:	Households with MPCE > A	2	1
SSS 2:	other households with MPCE equal to or less than A but equal to or more than B ( i.e. $B \leq MPCE \leq A$ )	4	2
SSS 3:	Households with MPCE less than B	4	2

**Selection of households for Schedules 1.0 and 10:** From each SSS the sample households for both the schedules are selected by SRSWOR. If a household is selected both for schedule 1.0 and schedule 10, only schedule 1.0 would be canvassed in that household and the sample household for schedule 10 would be replaced by next household in the frame for schedule 10.

## Estimation Procedure

### Notations:

s = subscript for s-th stratum

t = subscript for t-th sub-stratum

m = subscript for sub-sample (m = 1, 2)

i = subscript for i-th FSU [village (panchayat ward) / block]

d = subscript for a hamlet-group/sub-block (d = 1, 2)

j = subscript for j-th second stage stratum in an FSU/ hg/sb (j = 1, 2 or 3)

k = subscript for k-th sample household under a particular second stage stratum within an FSU/ hg/sb

D = total number of hg's/sb's formed in the sample village (panchayat ward) / block

$D^* = 1$  if  $D = 1$

=  $D / 2$  for FSUs with  $D > 1$

N = total number of FSUs in any urban sub-stratum

Z = total size of a rural sub-stratum (= sum of sizes for all the FSUs of a rural sub-stratum )

z = size of sample village used for selection.

n = number of sample village / block surveyed including zero cases but excluding casualty for a particular sub-sample and sub-stratum.

H = total number of households listed in a second-stage stratum of a village/block/hamlet-group/sub-block of sample FSU

h = number of households surveyed in a second-stage stratum of a village/block/hamlet-group/sub-block of sample FSU

x, y = observed value of characteristics x, y under estimation

$\hat{X}$  ,  $\hat{Y}$  = estimate of population total X, Y for the characteristics x, y

Under the above symbols,

$y_{stmidjk}$  = observed value of the characteristic y for the k-th household in the j-th second stage stratum of the d-th hg/sb (d = 1, 2) of the i-th FSU belonging to the m-th sub-sample for the t-th sub-stratum of s-th stratum;

However, for ease of understanding, a few symbols have been suppressed in following paragraphs where they are obvious.

**Formulae for Estimation of Aggregates for a particular sub-sample and stratum in Rural / Urban sector:**

**Schedule 0.0:**

**Rural:**

Estimation formula for a sub-stratum:

- (i) For estimating the number of households possessing a characteristic:

$$\hat{Y} = \frac{Z}{n} \sum_{i=1}^n \frac{1}{z_i} D_i^* [y_{i1} + y_{i2}]$$

where  $y_{i1}$ ,  $y_{i2}$  are the total number of households possessing the characteristic y in hg's 1 & 2 of the i-th FSU respectively.

- ii) For estimating the number of villages possessing a characteristic:

$$\hat{Y} = \frac{Z}{n} \sum_{i=1}^n \frac{1}{z_i} y_i$$

where  $y_i$  is taken as 1 for sample villages possessing the characteristic and 0 otherwise.

**Urban:**

Estimation formula for a sub-stratum:

- (i) For estimating the number of households possessing a characteristic:

$$\hat{Y} = \frac{N}{n} \sum_{i=1}^n D_i^* [y_{i1} + y_{i2}] ,$$

where  $y_{i1}$  and  $y_{i2}$  are the totals of observed values for the characteristic  $y$  belonging to sub-blocks 1 and 2 respectively, of the  $i$ -th FSU.

### Schedules 1.0 / 10:

#### Rural:

Estimation formula for a sub-stratum:

(i) For households selected in  $j$ -th second stage stratum:

$$\hat{Y}_j = \frac{Z}{n_j} \sum_{i=1}^{n_j} \frac{1}{z_i} D_i^* \left[ \frac{H_{i1j}}{h_{i1j}} \sum_{k=1}^{h_{i1j}} y_{i1jk} + \frac{H_{i2j}}{h_{i2j}} \sum_{k=1}^{h_{i2j}} y_{i2jk} \right]$$

(ii) For all selected households:

$$\hat{Y} = \sum_j \hat{Y}_j$$

#### Urban:

Estimation formula for a sub-stratum:

(i) For households selected in  $j$ -th second stage stratum:

$$\hat{Y}_j = \frac{N}{n_j} \sum_{i=1}^{n_j} D_i^* \left[ \frac{H_{i1j}}{h_{i1j}} \sum_{k=1}^{h_{i1j}} y_{i1jk} + \frac{H_{i2j}}{h_{i2j}} \sum_{k=1}^{h_{i2j}} y_{i2jk} \right]$$



(ii) For all selected households:

$$\hat{Y} = \sum_j \hat{Y}_j$$

**Estimate for a stratum:**

$$\hat{Y}_s = \sum_t \hat{Y}_{st}$$

**Overall Estimate for Aggregates:**

Overall estimate for aggregates for a stratum ( $\hat{Y}_s$ ) based on two sub-samples is obtained as:

$$\hat{Y}_s = \frac{1}{2} \sum_{m=1}^2 \hat{Y}_{sm}$$

**Overall Estimate of Aggregates at State/UT/all-India level:**

The overall estimate  $\hat{Y}$  at the State/ UT/ all-India level is obtained by summing the stratum estimates  $\hat{Y}_s$  over all strata belonging to the State/ UT/ all-India.

**Estimates of Ratios:**

Let  $\hat{Y}$  and  $\hat{X}$  be the overall estimate of the aggregates Y and X for two characteristics y and x respectively at the State/ UT/ all-India level.

Then the combined ratio estimate ( $\hat{R}$ ) of the ratio ( $R = \frac{Y}{X}$ ) will be obtained as

$$\hat{R} = \frac{\hat{Y}}{\hat{X}}.$$

**Estimates of Error:** The estimated variances of the above estimates will be as follows:

**For aggregate  $\hat{Y}$ :**

$$V\hat{a}r(\hat{Y}) = \sum_s V\hat{a}r(\hat{Y}_s)$$

where  $V\hat{a}r(\hat{Y}_s)$  are as given below.

For strata with PPSWR selection at first stage:

$$V\hat{a}r_{ppswr}(\hat{Y}_s) = \left[ \sum_t \frac{1}{n_{st}(n_{st}-1)} \sum_{i=1}^{n_{st}} \left( \frac{Z_{sti}\hat{Y}_{sti}}{Z_{sti}} - \hat{Y}_{st} \right)^2 \right],$$

where 
$$\hat{Y}_{sti} = \sum_j Y_{stij},$$

$$\hat{Y}_{stij} = D_{sti}^* \left[ \frac{H_{i1j}}{h_{i1j}} \sum_{k=1}^{h_{i1j}} y_{i1jk} + \frac{H_{i2j}}{h_{i2j}} \sum_{k=1}^{h_{i2j}} y_{i2jk} \right]$$

For strata with SRSWOR selection at first stage:

$$V\hat{a}r_{srswor}(\hat{Y}_s) = \sum_t \frac{1}{4} (\hat{Y}_{st1} - \hat{Y}_{st2})^2,$$

where  $\hat{Y}_{st1}$  and  $\hat{Y}_{st2}$  are the estimates for sub-sample 1 and sub-sample 2 respectively for stratum 's' and sub-stratum 't'.

**For ratio  $\hat{R}$ :**

$$M\hat{S}E(\hat{R}) = \frac{1}{(\hat{X})^2} \left[ \sum_s M\hat{S}E_s(\hat{R}) + \sum_{s'} M\hat{S}E_{s'}(\hat{R}) \right]$$

where s, s' indicate respectively the strata with PPSWR and SRSWOR selection at first stage.

For strata with PPSWR selection at first stage:

$$M\hat{S}E_s(\hat{R}) = \sum_t \frac{1}{n_{st}(n_{st}-1)} \sum_{i=1}^{n_{st}} \left[ \frac{Z_{sti}}{Z_{sti}} (\hat{Y}_{sti} - \hat{R}\hat{X}_{sti}) - (\hat{Y}_{st} - \hat{R}\hat{X}_{st}) \right]^2$$

where

$$\hat{Y}_{sti} = \sum_j \hat{Y}_{stij} , \quad \hat{X}_{sti} = \sum_j \hat{X}_{stij} ,$$

$$\hat{Y}_{stij} = D_{sti}^* \left[ \frac{H_{i1j}}{h_{i1j}} \sum_{k=1}^{h_{i1j}} y_{i1jk} + \frac{H_{i2j}}{h_{i2j}} \sum_{k=1}^{h_{i2j}} y_{i2jk} \right] ,$$

$$\hat{X}_{stij} = D_{sti}^* \left[ \frac{H_{i1j}}{h_{i1j}} \sum_{k=1}^{h_{i1j}} x_{i1jk} + \frac{H_{i2j}}{h_{i2j}} \sum_{k=1}^{h_{i2j}} x_{i2jk} \right]$$

For strata with SRSWOR selection at first stage:

$$M\hat{S}E_{s'}(\hat{R}) = \sum_t \frac{1}{4} \left[ \left( \hat{Y}_{s't1} - \hat{Y}_{s't2} \right)^2 + \hat{R}^2 \left( \hat{X}_{s't1} - \hat{X}_{s't2} \right)^2 - 2\hat{R} \left( \hat{Y}_{s't1} - \hat{Y}_{s't2} \right) \left( \hat{X}_{s't1} - \hat{X}_{s't2} \right) \right]$$

where  $\hat{Y}_{s't1}$  and  $\hat{Y}_{s't2}$  are the estimates for sub-sample 1 and sub-sample 2 respectively for stratum 's' and sub-stratum 't'.

**Estimates of RSE:**

$$R\hat{S}E(\hat{Y}) = \frac{\sqrt{V\hat{a}r(\hat{Y})}}{\hat{Y}} \times 100$$

$$R\hat{S}E(\hat{R}) = \frac{\sqrt{M\hat{S}E(\hat{R})}}{\hat{R}} \times 100$$

**Multipliers:**

The formulae for multipliers for a sub-sample and schedule type are given below:

sch type	sub-stratum	formula for multipliers	
		hg / sb 1	hg / sb 2
0.0	Rural	$\frac{Z_{st}}{n_{stm}} \times \frac{1}{z_{stmi}} \times D_{stmi}^*$	$\frac{Z_{st}}{n_{stm}} \times \frac{1}{z_{stmi}} \times D_{stmi}^*$

sch type	sub-stratum	formula for multipliers	
		hg / sb 1	hg / sb 2
	Urban	$\frac{N_{st}}{n_{stm}} D_{stmi}^*$	$\frac{N_{st}}{n_{stm}} D_{stmi}^*$
1.0 / 10	rural	$\frac{Z_{st}}{n_{stmj}} \times \frac{1}{z_{stmi}} \times D_{stmi}^* \times \frac{H_{stmi1j}}{h_{stmi1j}}$ j = 1, 2, 3	$\frac{Z_{st}}{n_{stmj}} \times \frac{1}{z_{stmi}} \times D_{stmi}^* \times \frac{H_{stmi2j}}{h_{stmi2j}}$ j = 1, 2, 3
	Urban	$\frac{N_{st}}{n_{stmj}} \times D_{stmi}^* \times \frac{H_{stmi1j}}{h_{stmi1j}}$ , j = 1, 2, 3	$\frac{N_{st}}{n_{stmj}} \times D_{stmi}^* \times \frac{H_{stmi2j}}{h_{stmi2j}}$ , j = 1, 2, 3

- Note: (i) For estimating any characteristic for any domain not specifically considered in sample design, indicator variable may be used.
- (ii) Multipliers have to be computed on the basis of information available in the listing schedule irrespective of any misclassification observed between the listing schedule and detailed enquiry schedule.
- (iii) For estimating number of villages possessing a characteristics,  $D_{stmi}^* = 1$  in the relevant multipliers and there will be only one multiplier for the village.

#### **Treatment for zero cases, casualty cases etc.:**

While counting the number of FSUs surveyed ( $n_{stm}$ ) in a sub-stratum, all the FSUs with survey codes 1 to 6 in schedule 0.0 will be considered. In addition, if no SSU is available in the frame for a particular schedule then also that FSU will be treated as surveyed in respect of that schedule. However, if the SSUs of a particular schedule type are available in the frame of the FSU but none of these could be surveyed then that FSU has to be treated as casualty and it will not be treated as surveyed in respect of that schedule.

*Casualty cases:* FSUs with survey code 7 as per schedule 0.0 are treated as casualties. In addition to this, an FSU, although surveyed, may have to be treated as casualty for a particular schedule type and a particular *second stage stratum* as given in the following para:

FSUs with survey codes 1 and 4 as per schedule 0.0 having number of households in the frame of j-th second stage stratum greater than 0 but number of households surveyed according to data file, considering both hg/sb together, as nil (i.e.  $H_{i1j} + H_{i2j} > 0$  but  $h_{i1j} + h_{i2j} = 0$ ) will be taken as casualties for j-th second stage stratum.

*All the FSUs with survey codes 1 to 6 as per schedule 0.0 minus the number of casualties as identified above will be taken as the number of surveyed FSUs ( $n_{stmj}$ ) for that sub-stratum  $\times$  second stage stratum.*

When casualty for j-th second stage stratum occurs for a particular hg/sb but not for the other hg/sb, the FSU will not be treated as casualty but some adjustments in the value of H for the other hg/sb will be done as follows:

(i) Suppose for hg/sb 1,  $H_{i1j} > 0$  but  $h_{i1j} = 0$  while for hg/sb 2,  $H_{i2j} > 0$  and  $h_{i2j} > 0$ . In that case  $D_i^* \times H_{i2j}$  will be replaced by  $D_i^* \times (H_{i1j} + H_{i2j})$  in the formula for multiplier of hg/sb 2.

(ii) Suppose for hg/sb 1,  $H_{i1j} > 0$  and  $h_{i1j} > 0$  while for hg/sb 2,  $H_{i2j} > 0$  but  $h_{i2j} = 0$ . In that case  $D_i^* \times H_{i1j}$  will be replaced by  $D_i^* \times (H_{i1j} + H_{i2j})$  in the formula for multiplier of hg/sb 1.

It may be noted that  $n_{stmj}$  would be same for hg/sb 1 & 2 of an FSU.

### **Treatment in cases of void second-stage strata/sub-strata /strata/NSS region at FSU or household level**

A sub-stratum may be void because of the casualty of all the FSUs belonging to the sub-stratum. This may occur in one sub-sample or in both the sub-samples. If it relates to only one sub-sample, then estimate for the void sub-stratum may be replaced with the estimate as obtained from the other sub-sample for the same sub-stratum.

When a sub-stratum is void in both the sub-samples, the following procedure is recommended:

*Case(I): Sub-stratum void cases at FSU levels (i.e. all FSUs having survey code 7):*

- i) If a rural sub-stratum is void then it may be merged with a sub-stratum having the next higher population size class of villages within the same district. Sub-stratum 1 may be merged with sub-stratum 2, sub-stratum 2 with sub-stratum 3 and so on. If last sub-stratum is void, it will be merged with the previous sub-stratum.
- (ii) If an urban sub-stratum is void then it may be merged with the sub-stratum with next higher number within the same district/stratum i.e. Sub-stratum 1 may be merged with sub-stratum 2, sub-stratum 2 with sub-stratum 3 and so on. If last sub-stratum is void, it will be merged with the previous sub-stratum.
- iii) If all the sub-strata in a district are void, it may be excluded from the coverage of the survey. The state level estimates will be based on the estimates of districts for which estimates are available and remarks to that effect may be added in appropriate places.

*Case (II): Stratum void case at second stage stratum level (i.e. all the FSUs are casualties for a particular second stage stratum):*

An FSU may be a casualty for a particular *second stage stratum* although survey code is not 7. If all the FSUs of a sub-stratum become casualties in this manner for a particular *second stage stratum*, the sub-stratum will become void. In such cases, sub-strata will be merged with other sub-strata for all the second stage strata as in *Case (I) above*.

However, if whole district/stratum becomes void in this manner for a particular second stage stratum, adjustment for this type of stratum void case may be done according to the following guidelines.

The adjustment will be made involving other strata (within NSS region) of the State/U.T. Suppose A, B, C and D are the four strata in the State/UT/Region and stratum C is void for j-th *second stage stratum*. If  $\hat{Y}_{aj}$ ,  $\hat{Y}_{bj}$  and  $\hat{Y}_{dj}$  are the aggregate estimates for the strata A, B and D respectively, then the estimate  $\hat{Y}_{cj}$  for stratum C

may be obtained as  $\left( \frac{\hat{Y}_{aj} + \hat{Y}_{bj} + \hat{Y}_{dj}}{Z_a + Z_b + Z_d} \times Z_c \right)$  where  $Z_a, Z_b, Z_c$  and  $Z_d$  are the sizes of strata A, B, C and D respectively.

**Reference to the values of  $Z_{st}, N_{st}, n_{st}, z_{sti}, D_{sti}, D^*_{sti}, H_{sti1j}, h_{sti1j}, H_{sti2j}, h_{sti2j}$ :**

- (a) Values of  $Z_{st}, N_{st}$  and allotted  $n_{st}$  for the whole round are provided for rural sector and urban sectors.
- (b)  $n_{st}$  should not be taken from the tables. The values of  $n_{stm}$  for each sub-sample are to be obtained following the guidelines given in para 7 above. It includes uninhibited and zero cases but excludes casualty cases.
- (c) The value of  $z_{sti}$  is to be taken from the column of sample list under the heading “frame population”. Value of  $D_{sti}$  are to be taken from item 16 of block 1, sch 0.0.  $D^*_{sti}$  is to be calculated from the value of  $D_{sti}$ .
- (d) Values of  $H_{sti1j}, H_{sti2j}$  are to be taken from col.(5), block 6 of sch 0.0 for respective hg/sb.
- (e) The value of  $h_{sti1j}$  and  $h_{sti2j}$  should not be taken from col (9), block 6 of sch.0.0. The figures should be obtained by counting the number of households in the data file excluding the casualty households.