Sample Design and Estimation Procedure

1. Introduction

1.1   The Periodic Labour Force Survey (PLFS) is designed to estimate the key employment and unemployment indicators (*viz. Worker Population Ratio, Labour Force Participation Rate, Unemployment Rate*) in the short time interval of three months for the urban areas only in the Current Weekly Status (CWS) as well as to estimate the employment and unemployment indicators in both usual status (ps+ss) and CWS in both rural and urban areas annually. This report contains the estimates of various aspects of employment-unemployment particulars based on the data collected during July 2023-June 2024 in PLFS. The survey covered the whole of the Indian Union *except* the villages in Andaman and Nicobar Islands which remained extremely difficult to access throughout the year.

1.2 Sample Design

1.2.1 Rotational scheme for Periodic Labour Force Survey (PLFS)

A rotational panel sampling design was used in urban areas. The rotational scheme is of two years duration (the present panel of 2 years covers the period *July 2023- June 2025*) to accommodate the changes in the urban frame in the intervening period; in the sense that the sampling frames for both rural and urban areas will remain unchanged for every two-year duration. In this rotational panel scheme each selected household in urban areas was visited four times – in the beginning with first visit schedule and thrice periodically later with revisit schedule. The proposed design aims at generating quarterly estimates of level and change parameters of some important labour force indicators (LFPR, WPR & UR) based on CWS data in urban areas and annual estimates of level parameters based on usual status for both rural and urban areas.

1.2.2 Rotational panel design for urban areas

i.   The rotational panel will be for two years (the present panel of 2 years covers the period *July 2023- June 2025*), where only 25% FSUs of urban annual allocation were covered in the first quarter of first year (Panel P_{41}) of the forth two year panel with detail listing and canvassing of visit 1 Schedule in the selected households; where Pij indicates the panel belonging to jth quarter of the ith two-year period of rotation.

ii.   Another 25% FSUs were covered in the second quarter of first year (Panel P_{42}) for taking up visit 1 Schedule and revisit Schedule were canvassed in the selected households of Panel P_{41}.

iii.   A new panel P_{43} of 25% FSUs was surveyed in third quarter of first year of forth two-year panel with visit 1 Schedule and revisit Schedules were canvassed in the households of panels P_{41} & P_{42}.

iv.   In the fourth quarter of first year of forth two-year panel, households of panels P_{41}, P_{42} & P_{43} were surveyed with revisit Schedule and a new panel P_{44} with 25% FSUs for visit 1 Schedule.

v. At the end of the second year of each two-year duration, updated frame will be used for both rural and urban areas.

1.2.3 **Rural samples**

For rural areas, samples for all the 8 quarters (covering the period July 2023- June 2025) were selected before commencement of survey for each two-year period, while the frame remained same for this duration. In each quarter, only 25% FSUs of annual allocation (as is done in each sub-round of NSS rounds) were covered in rural areas so that independent estimates could be generated for each quarter. For this purpose, quarterly allocation is multiple of 2 for drawing interpenetrating sub-samples. There is no revisit in the rural samples.

1.2.4 The following table gives the rotational panel schemes in tabular format:

	panels for the fourth 2-year period							
	During the four quarters of the seventh year				During the four quarters of the eighth year			
	Qtr1	Qtr2	Qtr3	Qtr4	Qtr1	Qtr2	Qtr3	Qtr4
Urban Panel	P_{41}*	P_{41}	P_{41}	P_{41}	P_{45}*	P_{45}	P_{45}	P_{45}
	P_{38}	P_{42}*	P_{42}	P_{42}	P_{42}	P_{46}*	P_{46}	P_{46}
	P_{37}	P_{38}	P_{43}*	P_{43}	P_{43}	P_{43}	P_{47}*	P_{47}
	P_{36}	P_{37}	P_{38}	P_{44}*	P_{44}	P_{44}	P_{44}	P_{48}*
Rural	R_{41}*	R_{42}*	R_{43}*	R_{44}*	R_{45}*	R_{46}*	R_{47}*	R_{48}*
Note: (i) *Visit 1 schedule will be canvassed (ii) R_{ij}* indicates samples to be covered in rural areas in j^{th} quarter of ith two-year period (iii) Pij indicates the panel belonging to jth quarter of the ith two-year period of rotation								

1.2.5 It is seen from the above table that one panel of urban sample FSUs is in the sample for 4 quarters and the selected households in an FSU is surveyed for the successive periods during which the FSU remains in the sample. Selected households are visited 4 times for canvassing the detailed schedule of enquiry of the PLFS (Schedule 10.4: Employment and Unemployment). These visits are termed as first visit and revisit. For this, two formats of the detailed schedule of enquiry have been devised viz., Schedule 10.4: Employment and Unemployment (First Visit) and Schedule 10.4: Employment and Unemployment (Revisit).

To implement the rotational scheme in urban areas, when a panel appears for the first time in any quarter with 25% of annual allocation, listing and selection of households was done in all the selected FSUs in that panel. The first visit schedule was canvassed in the selected households. The selected FSUs/households were revisited in the subsequent three quarters as the panel will remain in the sample for four quarters. During the revisit, listing and selection of households will not be done afresh. Only the households selected during first visit was revisited for canvassing revisit schedule. At the time of revisit if any sample household was not found, same was treated as casualty. If any sample household was split, then, among the split households available in the FSU/Sub-block, the household where the head/senior most member of the erstwhile household

was available was covered. In the PLFS scheme, each selected household of urban FSUs only was visited four times, one in each quarter.

1.2.6 **Outline of the design**: A stratified multi-stage design was adopted. The first stage units (FSU) were the latest available Urban Frame Survey (UFS) blocks in urban areas and 2011 Population Census villages (Panchayat wards for Kerala) in rural areas. The ultimate stage units (USU) were households. In the case of large FSUs one intermediate stage unit, called hamlet group/sub-block, was formed.

1.2.7 **Sampling Frame for First Stage Units**: The list of latest available Urban Frame Survey (UFS) blocks was considered as the urban sampling frame. List of 2011 Population Census villages (Panchayat wards for Kerala) constituted the rural sampling frame. Since the duration of rotational panel is of two-year, the urban sampling frame once updated incorporating the changes made in the current phase of UFS will remain unchanged for two years. Similarly the rural sampling frame with changes, if any, for urbanisation of village(s) will remain unchanged for two years. After completion of every two-year period, the frames will be updated for incorporating the changes likely to occur during this period. When next Population Census details will be available, the new frame will be used only when UFS blocks for all newly declared Census Towns and Statutory Towns are available for preparation of sampling frame, as the new list of census villages will not include those villages which will be considered as urban areas.

1.2.8 **Stratification**: In urban areas strata were formed within each NSS region on the basis of size class of towns as per Population Census 2011. The stratum numbers and their composition (within each region) are as follows:

stratum 1 :	all towns with population less than 50,000
stratum 2 :	all towns with population 50,000 or more but less than 3 lakhs
stratum 3 :	all towns with population 3 lakhs or more but less than 15 lakhs
stratum 4, 5, 6,... :	each city with population 15 lakhs or more

The rural areas of each NSS region constituted rural stratum.

1.2.9 **Sub-Stratification: Urban:** In urban areas there was no sub-stratification.

1.2.10 **Sub-Stratification: Rural:** 'r/8' sub-strata were formed in each rural stratum, if 'r' was the annual sample size allocated for a rural stratum. The villages within a stratum as per frame were first arranged in ascending order of population. Then sub-strata 1 to 'r/8' were demarcated in such a way that each sub-stratum comprised a group of villages of the arranged frame and had more or less equal population.

1.2.11 *Total sample size (FSUs):* 12,800 FSUs (7,016 villages and 5,784 UFS blocks) are being covered annually at all-India level. State/UT wise allocation of sample FSUs are given in Table D1 at the end of this write-up.

1.2.11.1 State/UT level sample size was allocated between two sectors in proportion to population as per Census 2011 with double weightage to urban sector in general. Within each sector of a State/UT, the respective sample size was allocated to the different strata (in the case of urban areas) and strata/ sub-strata (in the case of rural areas) in proportion to the population as per Census 2011. Urban allocations at stratum level were adjusted to multiples of 8 with a minimum sample size of 8 (for 4 panels, each of size multiple of 2). Rural allocation for each stratum was also multiple of 8 with minimum sample size of 8 (for 4 quarters, each of size 2).

1.2.11.2 It may be noted that quarterly allocation of FSUs was same for an NSS state-region although 25% of the urban FSUs rotate over the quarters according to the rotational scheme. However, quarterly allocation of urban FSUs for FOD regions and FOD sub-regions may vary over the quarters since new FSUs entering the sample according to the rotational scheme may or may not belong to the same FOD region or FOD sub-region.

1.2.12 *Selection of first stage units***:** Urban FSUs were selected by probability proportional to size with replacement (PPSWR) scheme, size being the number of households in the UFS block. Samples for a panel within each stratum were drawn in the form of two independent sub-samples. To implement the rotational scheme, 4 groups of sample FSUs of equal size (each multiple of size 2, half for each of sub-sample 1 and sub-sample 2) were drawn randomly. In the rural areas, samples for a stratum/sub-stratum were drawn randomly in the form of two independent sub-samples with probability proportional to size with replacement (PPSWR) scheme, size being the population of the village and equal number of samples were allocated among the four quarters.

1.2.13 *Formation of hamlet-group/ sub-block***:** After identification of the boundaries of the FSU, it was determined whether listing to be done in the whole sample FSU or not. In case the population of the selected FSU was found to be 1200 or more, it was divided into a suitable number (say, D) of 'hamlet-groups' in the rural sector and 'sub-blocks' in the urban sector by more or less equalising the population as stated below.

approximate present population of the sample FSU	no. of hg's/sb's to be formed
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, Andaman & Nicobar Islands, Uttarakhand (except four districts Dehradun, Nainital, Hardwar and Udham Singh Nagar), Punch, Rajouri, Udhampur, Reasi, Doda, Kishtwar, Ramban, Ladakh and Idukki district of Kerala, the number of hamlet-groups were formed as follows:

approximate present population of the sample village	no. of hg's to be formed

less than 600 (no hamlet-groups)	1
600 to 899	3
900 to 1199	4
1200 to 1499	5
1500 to 1799	6
………..and so on	

1.2.14 *Formation and selection of hamlet-groups/ sub-blocks***:** In case hamlet-groups/ sub-blocks were formed in the sample FSU, the same was done by more or less equalizing population. Two hamlet-groups (hg)/ sub-blocks (sb) were selected from a large FSU wherever hamlet-groups/ sub-blocks will be formed in the following manner – one hg/ sb with maximum percentage share of population was selected and termed as hg/ sb '1'; one more hg/ sb was selected from the remaining hg's/ sb's by simple random sampling (SRS) and was termed as hg/ sb '2'. Listing and selection of the households was done independently in the two selected hamlet-groups/ sub-blocks. The FSUs without hg/ sb formation was treated as sample hg/ sb number '1'. If more than one hg/ sb had same maximum percentage share of population, the one among them which listed first was treated as hg/ sb '1'. Listing and selection of the households was done independently in the two selected hg's/sb's.

1.2.15 *Formation of second stage strata and allocation of households:* Second stage stratification (SSS) in each FSU/hg/sb was done based on the number of members in each household who had completed secondary level of education. In urban FSUs 4 SSS while in rural FSUs 3 SSS were formed. Details are given in the following table.

composition of SSS (rural)	SSS	number of members	number of households to be surveyed	
			FSU without hg formation	FSU with hg formation (for each hg)
number of members in the household having level of general education as secondary (10th standard) or above	SSS 1	2 or more	2	1
	SSS 2	1	4	2
	SSS 3	0	2	1
TOTAL			**8**	

composition of SSS (urban)	SSS	number of members	number of households to be surveyed	
			FSU without sb formation	FSU with sb formation (for each sb)
number of members in the household having level of general education as secondary (10th standard) or above	SSS 1	3 or more	2	1
	SSS 2	2	2	1
	SSS 3	1	2	1
	SSS 4	0	2	1
TOTAL			**8**	

1.2.16 *Selection of households***:** From each SSS the sample households were selected by SRSWOR.

2. **Estimation Procedure**

2.1 **Subscripts**

s = subscript for s-th stratum

t = subscript for t-th sub-stratum (**for rural only**)

r = panel number (**for urban only**)

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, 3 (for rural) or 1, 2, 3, 4 (for urban)]

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 FSU

D* = 0 if D = 1

= (D – 1) for FSUs with D > 1

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

z = size of sample village/UFS block used for selection

n = number of sample FSUs surveyed including 'uninhabited' and 'zero cases' but excluding casualty for a particular sub-sample and stratum/sub-stratum/panel

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

h = number of households surveyed in a second-stage stratum of an FSU / hamlet-group or 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,

$y_{srmidjk}$ = observed value of the characteristic y for the kth household in the jth second stage stratum of the dth hg/ sb (d = 1, 2) of the ith **urban FSU** belonging to the mth sub-sample of the rth panel of sth stratum

$y_{stmidjk}$ = observed value of the characteristic y for the kth household in the jth second stage stratum of the dth hg/ sb (d = 1, 2) of the ith **rural FSU** belonging to the mth sub-sample of the tth sub-stratum of sth stratum

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

3. **Formulae for Quarterly Estimates of Aggregates for a particular stratum × panel × sub-sample of the urban sector from Schedule 10.4:**

3.1 The estimate for a **stratum × panel × sub-sample** is obtained as follows:

$$\hat{Y}_{srm} = \frac{Z_s}{n_{sm}} \sum_{i=1}^{n_{sm}} \frac{1}{z_{srmi}} \left[\sum_{j=1}^{4} \frac{H_{srmi1j}}{h_{srmi1j}} \sum_{k=1}^{h_{smi1j}} y_{srmi1jk} + D^*_{srmi} \sum_{j=1}^{4} \frac{H_{srmi2j}}{h_{srmi2j}} \sum_{k=1}^{h_{smi2j}} y_{srmi2jk} \right]$$

3.2 The estimate for aggregates for a particular **stratum × panel** based on two sub-samples is obtained as:

$$\hat{Y}_{sr} = \frac{1}{2} \sum_{m=1}^{2} \hat{Y}_{srm}$$

3.3 The estimate for aggregates for a particular stratum based on **'r' panels** and two sub-samples is obtained as:

$$\hat{Y}_s = \frac{1}{r} \sum_{r} \hat{Y}_{sr} \text{ , r} = 1, 2, 3, 4$$

(r will be '4' from fourth quarter and r may be less than '4' till third quarter)

3.4 From fourth quarter onwards, estimate for aggregates for a particular stratum based on all the 4 panels and two sub-samples is generated as:

$$\hat{Y}_s = \frac{1}{4} \sum_{r=1}^{4} \hat{Y}_{sr}$$

3.5 Estimate of an aggregate character for a State is obtained by summing the stratum estimates as follows:

$$\hat{Y} = \sum_{s} \hat{Y}_s$$

3.6 Let $\hat{Y}$ and $\hat{X}$ be the estimates of the aggregates Y and X for two characteristics y and x respectively at the State/ UT/ all-India level. Estimate of a ratio $R = \dfrac{Y}{X}$ at State level is obtained as the ratio of aggregates of two characters at State levels: $\hat{R} = \dfrac{\hat{Y}}{\hat{X}}$

3.7 The estimates of change over the quarters was measured by the simple difference between the estimates of aggregates or ratios of the corresponding quarters.

3.8 **Estimates of Error**: The estimated variances of the above estimates is as follows:

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

$$Va\hat{r}(\hat{Y}) = \sum_{s} \sum_{r=1}^{4} Va\hat{r}\left(\frac{1}{4} \hat{Y}_{sr} \right) = \frac{1}{16} \sum_{r=1}^{4} \sum_{s} Va\hat{r}(\hat{Y}_{sr}) \text{ where}$$

$$Va\hat{r}(\hat{Y}_{sr}) = \frac{1}{4} (\hat{Y}_{sr1} - \hat{Y}_{sr2})^2 \text{, where } \hat{Y}_{sr1} \text{ and } \hat{Y}_{sr2} \text{ are the estimates for sub-sample 1}$$

and sub-sample 2 respectively for stratum 's' and panel 'r'.

3.8.2 For ratio $\hat{R}$:

$$M\hat{S}E(\hat{R}) = \frac{1}{4\hat{X}^2} \sum_s \left[\left(\hat{Y}_{s1} - \hat{Y}_{s2}\right)^2 + \hat{R}^2 \left(\hat{X}_{s1} - \hat{X}_{s2}\right)^2 - 2\hat{R}\left(\hat{Y}_{s1} - \hat{Y}_{s2}\right)\left(\hat{X}_{s1} - \hat{X}_{s2}\right) \right]$$

where $\quad \hat{Y}_{s1} = \dfrac{1}{4} \sum_{r=1}^{4} \hat{Y}_{sr1} \quad$ and $\quad \hat{Y}_{s2} = \dfrac{1}{4} \sum_{r=1}^{4} \hat{Y}_{sr2}$;

$$\hat{X}_{s1} = \frac{1}{4} \sum_{r=1}^{4} \hat{X}_{sr1} \quad \text{and} \quad \hat{X}_{s2} = \frac{1}{4} \sum_{r=1}^{4} \hat{X}_{sr2}$$

3.9 Estimates of Relative Standard Error (RSE):

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

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

4. Formulae for Annual Estimates of Aggregates for a particular sub-sample and stratum × sub-stratum in the rural/urban sector from Schedule 10.4:

4.1 For rural:

4.1.1 For rural areas, annual estimates of aggregates are obtained from the data collected in four quarters.

(i) For j^{th} second-stage stratum of a stratum × sub-stratum, for a particular sub-sample:

$$\hat{Y}_{stmj} = \frac{Z_{st}}{n_j} \sum_{i=1}^{n_j} \frac{1}{z_{stmi}} \left[\frac{H_{stmi1j}}{h_{stmi1j}} \sum_{k=1}^{h_{stmi1j}} y_{stmi1jk} + D^*_{stmi} \times \frac{H_{stmi2j}}{h_{stmi2j}} \sum_{k=1}^{h_{stmi2j}} y_{stmi2jk} \right]$$

(ii) For all second-stage strata combined:

$$\hat{Y}_{stm} = \sum_j \hat{Y}_{jstm}$$

4.1.2 Estimate for aggregates for a sub-stratum:

Estimate for aggregates for a sub-stratum ($\hat{Y}_{st}$) based on two sub-samples in a sub-stratum is obtained as:

$$\hat{Y}_{st} = \frac{1}{2} \sum_{m=1}^{2} \hat{Y}_{stm}$$

4.1.3 Estimate for aggregates for a stratum:

Estimate for a stratum ($\hat{Y}_s$) is obtained as

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

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

The 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.

4.1.5 Estimates of Ratios:

Let $\hat{Y}$ and $\hat{X}$ be the estimates 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 $(R = \dfrac{Y}{X})$ will be obtained as $\hat{R} = \dfrac{\hat{Y}}{\hat{X}}$

4.1.6 Estimates of Error: The estimated variances of the above estimates are as follows:

4.1.6.1 For aggregate $\hat{Y}$:

$$V\hat{a}r(\hat{Y}) = \sum_s V\hat{a}r(\hat{Y}_s) = \sum_s \sum_t V\hat{a}r(\hat{Y}_{st}) \text{ where } V\hat{a}r(\hat{Y}_{st}) \text{ is given by}$$

$V\hat{a}r(\hat{Y}_{st}) = \dfrac{1}{4}(\hat{Y}_{st1} - \hat{Y}_{st2})^2$, 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'.

4.1.6.2 For ratio $\hat{R}$:

$$M\hat{S}E(\hat{R}) = \dfrac{1}{4\hat{X}^2} \sum_s \sum_t \left[(\hat{Y}_{st1} - \hat{Y}_{st2})^2 + \hat{R}^2(\hat{X}_{st1} - \hat{X}_{st2})^2 - 2\hat{R}(\hat{Y}_{st1} - \hat{Y}_{st2})(\hat{X}_{st1} - \hat{X}_{st2}) \right]$$

4.1.6.3 Estimates of Relative Standard Error (RSE):

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

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

4.2 **For urban:**

4.2.1 Considering first visit schedules for each of the four panels of four quarters, annual estimates of aggregates for a **particular sub-sample and stratum** is obtained for urban areas. For rural areas, annual estimates of aggregates is obtained from the data collected in four quarters.

(i) For j[th] second-stage stratum of a stratum, for a particular sub-sample:

$$\hat{Y}_{smj} = \frac{Z_s}{n_j} \sum_{i=1}^{n_j} \frac{1}{z_{smi}} \left[\frac{H_{smi1j}}{h_{smi1j}} \sum_{k=1}^{h_{smi1j}} y_{smi1jk} + D_{smi}^* \times \frac{H_{smi2j}}{h_{smi2j}} \sum_{k=1}^{h_{smi2j}} y_{smi2jk} \right]$$

(ii) For all second-stage strata combined:

$$\hat{Y}_{sm} = \sum_{j} \hat{Y}_{jsm}$$

4.2.2 Estimate for Aggregates for a stratum:

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

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

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

The 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.

4.2.4 Estimates of Ratios:

Let $\hat{Y}$ and $\hat{X}$ be the estimates 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 ($R = \frac{Y}{X}$) is obtained as $\hat{R} = \frac{\hat{Y}}{\hat{X}}$

4.2.5 Estimates of Error: The estimated variances of the above estimates is as follows:

4.2.5.1 For aggregate $\hat{Y}$:

$$Var(\hat{Y}) = \sum_s Var(\hat{Y}_s) \quad \text{where } Var(\hat{Y}_s) \text{ is given by}$$

$$Var(\hat{Y}_s) = \frac{1}{4} (\hat{Y}_{s1} - \hat{Y}_{s2})^2, \text{ where } \hat{Y}_{s1} \text{ and } \hat{Y}_{s2} \text{ are the estimates for sub-sample 1 and sub-sample 2}$$

respectively for stratum 's'.

4.2.5.2 For ratio $\hat{R}$:

$$M\hat{S}E(\hat{R}) = \frac{1}{4\hat{X}^2} \sum_s \left[(\hat{Y}_{s1} - \hat{Y}_{s2})^2 + \hat{R}^2 (\hat{X}_{s1} - \hat{X}_{s2})^2 - 2\hat{R}(\hat{Y}_{s1} - \hat{Y}_{s2})(\hat{X}_{s1} - \hat{X}_{s2}) \right]$$

4.2.5.3 Estimates of Relative Standard Error (RSE):

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

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

Table D1: Allocation of sample villages and blocks for PLFS

State/UT	number of sample villages/blocks		
	total	rural	urban
(1)	(2)	(3)	(4)
Andhra Pradesh	496	272	224
Arunachal Pradesh	216	136	80
Assam	440	328	112
Bihar	568	400	168
Chhattisgarh	280	176	104
Delhi	128	8	120
Goa	56	24	32
Gujarat	440	208	232
Haryana	328	168	160
Himachal Pradesh	256	208	48
Jharkhand	344	208	136
Karnataka	520	224	296
Kerala	568	264	304
Madhya Pradesh	584	336	248
Maharashtra	1,008	448	560
Manipur	320	160	160
Meghalaya	160	104	56
Mizoram	192	64	128
Nagaland	128	72	56
Odisha	496	360	136
Punjab	400	192	208
Rajasthan	528	312	216
Sikkim	96	56	40
Tamil Nadu	832	392	440
Telangana	360	160	200
Tripura	232	152	80
Uttarakhand	216	120	96
Uttar Pradesh	1,136	728	408
West Bengal	800	424	376
Andaman & N. Island	64	32	32
Chandigarh(*)	48	0	48
Dadra & Nagar Haveli & Daman & Diu	40	16	24
Jammu & Kashmir	392	224	168
Ladakh	32	16	16
Lakshadweep	24	8	16
Puducherry	72	16	56
all-India	**12,800**	**7,016**	**5,784**

- In Chandigarh all rural areas are converted into Urban area.