



# आवधिक श्रम बल सर्वेक्षण पर रा.सां.आ. समिति की रिपोर्ट

## Report of the NSC Committee on Periodic Labour Force Survey

सांख्यिकी और कार्यक्रम कार्यान्वयन मंत्रालय  
Ministry of Statistics & Programme Implementation

भारत सरकार  
Government of India

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**Report of the NSC Committee  
on  
Periodic Labour Force Survey**

Ministry of Statistics & Programme Implementation  
Government of India

December 2009

# Jawaharlal Nehru University

New Delhi-110067



Dr. Amitabh Kundu  
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The 31<sup>st</sup> December, 2009

Dear Prof. Radhakrishna

Expanding data needs and gaps in the statistical system have surfaced in the forefront of national policy debate for a timely and more informed decision support system and effective policy intervention in a dynamic and volatile socio-economic scenario such as it is in India, currently. One such gap which has attracted the attention of the policy makers, administrators, researchers and the stakeholders in the market, in the context of designing and implementing a strategy of inclusive growth, is the absence of periodic indicators on labour situation. The need has been considered to be of immense importance, particularly in case of the urban centres that reflect inherent instability on a short term basis, which seems to have been accentuated with these centres being linked with the global economy. It was apt on the part of National Statistical Commission (NSC) to consider this issue as of great importance and constitute the Committee for Periodic Labour Force Survey (PLFS) with terms of reference for making detailed proposal to establish a framework for collecting and disseminating monthly/ quarterly labour force data at the national and state levels in respect of urban areas.

The Committee has had detailed deliberation on all the points in the terms of reference and attempted to respond to the requirements through an in-depth examination of the available literature, including the various Committee reports having a bearing on the problem, conceptual issues underlying the existing data system and the capacity constraints of the concerned agencies. The present report, in its five chapters, provides the background, overview of existing concepts and database, findings of other related committees and makes specific recommendations pertaining to the issues on Periodic Labour Force Survey (PLFS), sampling design, estimation procedure, survey instruments, and the logistic details for operationalising the survey.

While submitting the Report, I, on behalf of all the members of the Committee, would like to thank the NSC for entrusting this task to us and express the hope that this Report will facilitate the Government in setting up the system for generating periodic labour force indicators which would fill a critical void in the statistical system in India. I would like to thank all the members of the Committee and special invitees without whose valuable contribution, the Report would not have taken the present shape. The Committee specifically acknowledges the involvement of Dr Rajiv Mehta, Member Secretary of the Committee who worked tirelessly to give the Report its final shape with a sense of dedication and commitment.

With regards,

Yours Sincerely,

  
Amitabh Kundu

Professor R. Radhakrishna,  
Chairman, National Statistical Commission  
New Delhi

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# Report of the NSC Committee on Periodic Labour Force Survey

## *Executive Summary*

- 1. The statistical indicators on labour market are required for planning, policy and decision making at various levels, both within government and outside. The employment and unemployment surveys undertaken by the National Sample Survey Organisation (NSSO) are one of the prime sources of these statistics. These surveys are part of quinquennial household socio-economic survey programme of NSSO since the 27<sup>th</sup> Round (1972-73). The concepts and definitions used in these surveys have been stabilized and refined over the years.*
- 2. The volatility in the economy, particularly in the context of economic integration with rest of the world has implications on the domestic labour market. Such volatility has been noted to be more pronounced in the contemporary economic environment. Consequently, measuring its impact on labour market is considered extremely important particularly in designing policy response. Availability of labour force data at more frequent time intervals is, therefore, considered as the need of the hour. **Accordingly, on the recommendation of the National Statistical Commission (NSC), the Ministry of Statistics and Programme Implementation (MoS&PI) constituted a six-member Committee on Periodic Labour Force Survey (PLFS) under the chairpersonship of Prof. Amitabh Kundu, Member, NSC to develop the survey methodology including the sample design for generating monthly / quarterly labour market data.***
- 3. The terms of reference of the Committee were to prepare a detailed proposal to establish a framework for collecting and disseminating monthly/ quarterly labour force data at the national and state levels in respect of urban areas. The present report of the committee in its five chapters provide the background, review of existing concepts, findings of other related committees, issues on Periodic Labour Force Survey (PLFS), sampling design*

*and estimation procedure, survey instruments, operational aspects and related conceptual issues.*

4. *The critical issues in the context of labour force enquiries pertain to defining the labour force and measuring participation of labour force in different economic activities. The activity participation of the people is not only dynamic but also multidimensional; it varies over regions, age, education, gender, industry and occupational categories. The temporal aspect of participation of labour force is also to be seen in the context of defined time frame considering both usual as well as current perspective.*
5. ***In the conceptual framework of measuring various labour force indicators, persons are classified into various activity categories on the basis of activities pursued by them during specified reference periods. Three reference periods are used in NSS surveys, viz. (i) one year, (ii) one week and (iii) each day of the reference week. Based on these three definitions, three different measures of activity status are arrived at, termed respectively as usual status(US), current weekly status (CWS) and current daily status (CDS). These concepts are compatible with the standards set by the International Labour Organisation (ILO).***
6. *The three basic **indicators of labour market** that are of interest to the planners and users are the labour force participation rate (LFPR), worker population ratio (WPR) and unemployment rate (UR). These indicators are generally constructed by cross classifying the labour force in respect of gender, age, educational level, industry and occupation. The PLFS should be able to generate these key employment and unemployment indicators. **It was decided that the PLFS survey will be independent of the usual survey on employment and unemployment of NSSO although the basic concepts will be similar for reasons of continuity and cross validation.** In the context of the ToR of the committee to establish a framework to collect and disseminate monthly/quarterly labour force data, annual reference period will not be suitable. **For measuring the dynamic behavior of labour force in the short interval of a quarter, the approach of CWS has been considered appropriate and has been incorporated in the design of the schedule for collection and generation of employment and unemployment indicators.***



7. *In countries, conducting similar surveys, the population is so sampled repeatedly that samples for successive occasions have some common observations and overlapping. This facilitates the use of the information collected in the earlier visit and capturing the dynamic behavior of labour force characteristics over time. The procedure of repeating a segment of the sample and collecting information on a set of elements on two or more successive occasions is referred to as 'panel study approach'. Most of the monthly and quarterly surveys use an approach called 'rotation sampling'. In this scheme, some of the elements from the sample for the preceding survey are eliminated and replaced by new elements to form the sample for the current survey. Samples so obtained are called 'overlapping samples'. **The committee recommended adoption of the rotational panel sampling scheme with quarterly periodicity for the PLFS.***
8. *The quarterly labour force survey is expected to release timely results before the end of the next quarter in a sustainable manner. Therefore, it is necessary to put in place various processes such as data collection, transcription, validation, transmission, processing, tabulation and dissemination in a streamlined manner. For this purpose, the integrated organization structure in the form of PLFS Center is recommended for coordination of field work, processing and release of periodic indicators. For releasing results quickly, speedy data processing using IT based system for on/off line data entry and transmission or alternately a computer assisted data collection system with inbuilt primary level data validation has been considered essential.*
9. *The committee recommended a stratified multi-stage design for the periodic labour force survey with the Urban Frame Survey (UFS) blocks as first stage units (FSU) and the households as ultimate stage units (USU). The total sample size recommended for PLFS is 3128 UFS blocks and 12 SSUs (households) per block. This is envisaged to provide the WPR estimates at all India level with 0.5 % RSE, which is considered appropriate for measuring the periodic change in the level parameters.*
10. *The proposed quarterly labour force survey being of the nature of rotational panel survey, will have **two formats of the schedule**, one for collection of data*

during the first visit to the selected households and the other for collection of data during the revisit. Since each household would remain in the sample for a number of periods (quarter), information on some of the classificatory characteristics would not be collected on the revisit. The schedule (Schedule 10.1 for both the first and subsequent visits) is specially structured to collect these information.

11. Identification of a worker will be done based on information collected on hours worked in each day of the last 7 days, instead of collecting information in terms of intensities as done in the usual NSS surveys. This modification will however not change the aggregate assessment of the labour force obtained by adopting CWS.
12. **The PLFS also envisages reporting periodic indicators on labour remuneration.** For this purpose, information on earning from employment will be collected for all categories of workers, i.e., for self-employed, casual workers and regular wage/salaried persons, except for unpaid helpers in household enterprise. For casual workers, earning from work done during the week will be collected. For self-employed and regular wage/salaried persons, earning during the preceding calendar month will be relevant.
13. Before launching a periodic labour force survey with the envisaged scheme of rotational panel for the purpose of collection of data on various indicators of employment-unemployment, it would be necessary to conduct a pilot study. This study would give a better idea of actual canvassing of the schedule of first visit as well as the revisit schedules and the quality of response. The data from the pilot study may also be used to have an idea of the strength of relationship between the two observations taken at two different time points and the efficacy of the schedule design in eliciting the desired information. In this context the usability of the estimation procedure proposed in this report can also be adjudged.
14. **PLFS at a glance:**
  - a. Objectives  
To provide statistical indicators on labour market for urban population and the changes thereof on quarterly basis

b. Operational Framework

*For measuring the dynamic behavior of labour force in the short interval of quarter, the approach of CWS is considered appropriate for PLFS*

*With the objective of providing estimate of both level parameter and change parameter with quarterly periodicity the approach of 'rotational sampling' is recommended*

*To meet the survey objective of timely release of data in a sustainable manner, simplified short schedule is proposed*

*It is recommended to put in place various processes like data collection, transcription, validation, transmission, processing, tabulation and dissemination in a streamlined manner*

*Use of IT for data transcription, transmission is proposed to the extent possible against the usual practice of physical movement of paper schedule to processing agency*

c. Survey design and approach

*A stratified multi-stage design would be adopted with First stage units (FSU) being the latest UFS blocks and ultimate stage units (USU) being households. FSUs will be stratified within a State/region by size class of towns. Each million plus town will be a separate strata. Both FSU and USU will be drawn by SRSWOR*

*Twenty five percent of selected FSUs for a quarter will be rotated in successive quarter to ensure 75% sample units to be common between successive quarters. A sample size of 3128 FSUs per quarter is expected to give estimates of WPR at 0.5% RSEs at All India level which in turn will ensure a reasonably good degree of accuracy of estimated parameters at broad sectoral breakup of the economy*

*A recursive composite estimator for any parameter is proposed by combining the estimate based unmatched sample and linear regression estimate based on matched samples with previous occasion.*

d. Institutionalisation and resources

*It is proposed to set up an integrated organizational structure in the form of PLFS Centre under NSSO.*

*The Nodal PLFS Centre (NPLFSC) at FOD headquarter, New Delhi / Faridabad will be headed by DDG level officer with technical and administrative support team with mandate of coordinating the field work, processing and release of indicators in a time bound manner.*

*Design and software support to NPLFSC is to be provided by SDRD and DPD respectively*

*The organizational and operational framework of PLFS would need the human resource and organizational structure. The analytical approach for assessing the requirement of primary functionaries with composite functional role covering the tasks of data collection, on/offline data entry, validation and transmission for data processing is considered.*

*Operationalisation of Transmission of files at FSU level, coverage check and monitoring of PLFS work at State Capital ROs of FOD needs to be consolidated before transmitting the validated file to NPLFSC.*

e. Proposed PLFS Outcomes

*Quarterly Labour force Indicators (Status and Change)*

*Worker Population Ratio (WPR)*

*Labour Force Participation Rate (LFPR)*

*Unemployment Rate (UR)*

*All India absolute numbers of workers and changes therein subject to availability of reliable estimates of projected population.*

*(All India and state level figures by gender, All India figures by broad industrial and occupational classification)*


*Quarterly indicators of monthly labour remuneration for broad categories of workers (casual labour, regular wage / salary employees and self employed) at all India level.*

## Acknowledgement

The Committee acknowledges, with sincere thanks, the contributions made in the course of deliberations in the various meetings, by Dr. Pronab Sen, Secretary to the Government of India and Chief Statistician of India, Prof. S.P. Mukherjee, Ex-Prof. Calcutta University, Dr. S.S. Bhalla, Ex-member NSC, Prof. Bikas Sinha, Ex-member NSC, Sri S. C. Seddy, DG & CSO, NSSO, , Sri P. Chattopadhyay, Ex-ADG, NSSO, DPD, Dr. A. K. Yogi, Ex-ADG, NSSO, FOD and Sri S. N. Singh, DDG, CPD. The contribution of the officers of NSC Secretariat, SDRD and DPD in facilitating discussion of the meetings of the Committee is also acknowledged. The technical contributions made by Sri P. C. Sarker, DDG, SDRD and Sri Salil Kumar Mukhopadhyay, Joint Director, SDRD in preparation of the report are also gratefully acknowledged.


  
(Prof. Amitabh Kundu)  
Chairman

  
03.12.09  
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Member

  
(J. S. KOCHHER)  
FOR  
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Member

  
(Dr. Rajiv Mehta)  
Member Secretary

1<sup>st</sup> December, 2009

<b>Abbreviation</b>	<b>Full form</b>
ADG	Additional Director General
CC	Compilation Categories
CDS	Current Daily Status
CPD	Co-ordination and Publication Division
CSO	Central Statistical Organisation
CWS	Current Weekly Status
DDG	Deputy Director General
DG & CEO	Director General & Chief Executive Officer
DOS	Department of Statistics
DPD	Data Processing Division
EGS	Employment Guarantee Scheme
EUS	Employment -Unemployment Surveys
FOD	Field Operation Division
FSU	First Stage Unit
GVA	Gross Value Added
ICR	Intelligent Character Reading
ILO	International Labour Organisation
IMF	International Monetary Fund
ISI	Indian Statistical Institute
LFPR	Labour Force Participation Rate
MoS & PI	Ministry of Statistics and Programme Implementation
NAD	National Accounts Division
NCO	National Classification of Occupation
NIC	National Industrial Classification
NPLFSC	Nodal Periodic Labour Force Survey Centre
NREGA	National Rural Employment Guarantee Act
NREP	National Rural Employment Programme
NSSO	National Sample Survey Organisation
NSC	National Statistical Commission
PC	Planning Commission
PLFS	Periodic Labour Force Survey
PPS	Probability Proportional to Size
PS	Principal Status
PU	Proportion of Unemployed
RLEGP	Rural Landless Employment Guarantee Programme
RO	Regional Office
RSE	Relative Standard Errors

<b>Abbreviation</b>	<b>Full form</b>
SDDS	Special Data Dissemination Standards
SDRD	Survey Design and Research Division
SRO	Sub Regional Office
SRS	Simple Random Sampling
SS	Subsidiary Status
SRSWOR	Simple Random Sampling Without Replacement
SSU	Second Stage Unit
TOR	Terms of Reference
UR	Unemployment Rate
US	Usual Status
USU	ultimate stage units
UFS	Urban Frame Survey
WPR	Worker Population Ratio

# Report of the Committee

## Chapter One

### Introduction and Background

#### 1.1 The Context

1.1.1 The employment and unemployment surveys undertaken by the National Sample Survey Organisation (NSSO) are the prime source of statistics on labour force, activity participation of the population and structure of employment and unemployment in the country. The architecture of these surveys provides the measurement of labour force indicators in cross classification of age, sex, education, industry, occupation, time disposition, mobility and wages.

1.1.2 After the initial experimentations for evolving the concepts and methods of various measurements to capture the diverse facets of labour force, the employment and unemployment surveys have become the integral part of quinquennial household socio-economic survey programme of NSSO since the 27<sup>th</sup> Round (1972-73). The concepts and definition adopted therein are primarily based on the recommendations of the Committee of Experts on Unemployment Estimates (Dantwala Committee), setup by the Planning Commission in 1970. Within the established and stabilised framework, the concepts and measurement methods have occasionally been fine tuned and refined to meet users' requirements as well as their harmonisation with international standards.

1.1.3 The behavior of labour market depends on the trend and pattern of the overall economy. The volatility in the economy, both in its inter and intra sectoral linkages as well as in the context of economic integration with rest of the world, is reflected in the labour market. Such volatility, off late, is experienced to be more pronounced in the contemporary economic environment, influenced by global economic meltdown. Given such exigencies, measuring its short and medium term impact on labour market is necessary. Accordingly, the labour force data at more frequent time interval is considered to be the need of the hour.

#### 1.2 The Present Committee

1.2.1 On the recommendation of the National Statistical Commission (NSC), the Ministry of Statistics and Programme Implementation (MoS&PI) constituted a six-member Committee (*vide Office Order no. No. 4(25)/2008-NSC, dated 24<sup>th</sup> February, 2009*) under the chairmanship of Prof. Amitabh Kundu, Member, NSC to develop the survey methodology including the sample design for generating monthly / quarterly labour market data. The composition of the NSC Committee on Periodic Labour Force Survey (PLFS) was as follows:



1.	Prof. Amitabh Kundu, Member, NSC	Chairman
2.	Expert from Indian Statistical Institute, Kolkata	Member
3.	Representative of the Department of Economic Affairs, New Delhi	Member
4.	Representative of the Ministry of Labour, New Delhi	Member
5.	Deputy Director General, NSC Secretariat	Member
6.	Addl. Director General, National Sample Survey Organisation (Survey Design and Research Division), Kolkata	Member Secretary

1.2.2 The broad terms of reference of the Committee (the ToR of the committee is given in Annexure I) was to prepare a detailed proposal to establish a framework to collect and disseminate monthly/quarterly labour force data at the national and state levels in urban areas, inter alia examining the following issues, namely-

- i) survey design, methodology and concepts to be used in the survey;
- ii) the minimum set of items on which data are to be collected in the monthly/quarterly surveys; and
- iii) the mechanism for data collection, processing and dissemination.

1.2.3 The Committee held three meetings on 20.04.2009, 02.05.2009 and 25.05.2009, respectively, to deliberate the issues of coverage of the survey, items of information to be collected, sampling design, estimation procedure and operational aspects. In the process, the Committee also reviewed the existing concepts of measurements of employment and unemployment indicators used in NSS, their compatibility with the international standards, requirement enunciated in the National Commission recommendations and the reports of some of the recent committees on employment and unemployment surveys. The report of the committee was finalized in its special meeting on 1<sup>st</sup> December 2009.

### **1.3 Contents of the Report**

1.3.1 This report contains five chapters and nine annexures including the present chapter giving its introduction and background. The second chapter reviews the existing concepts and findings of other related committees. Chapter three details the conceptual and operational issues considered by the committee. The sampling design, estimation procedure, sample size, survey resource requirement and outcome of PLFS are discussed in the chapter four. The final chapter deals with the issues related to the proposed PLFS Schedule of enquiry. Annexure I contains the composition and ToR of the Committee. The detailed concepts and definitions regarding economic activity, detailed activity statuses, different classifications of workers, etc., followed in NSS are given in Annexure II. Annexure III outlines the observations and recommendations of the Committee on Annual Estimates of Employment and Unemployment to meet the requirement of Planning Commission. In Annexure IV some key employment and unemployment indicators and their RSEs from past surveys have been presented. The methodology used for deriving optimum sample size is given in Annexure V. In Annexure VI the list of

major states in India as per Population Census 2001 is presented. The draft schedules (both the schedule for first visit and for revisit) are given in Annexure VII. In Annexure VIII, State-wise allocation of sample size (first stage units), as per proposed rotational design is presented and the allocation of sample size (first stage units - FSUs) for each stratum is given in Annexure IX.

## Chapter Two

### Review of Existing Concepts, other Related Committee Works and some Results from Past NSS Surveys

#### 2.1 Concepts used in normal NSS surveys on employment and unemployment

2.1.1 In NSS surveys, persons are classified into various activity categories on the basis of activities pursued by them during certain specified reference periods. Three reference periods are used in NSS surveys, viz. (i) one year, (ii) one week and (iii) each day of the reference week. Based on these three periods, three different measures of activity status are arrived at. The activity status determined on the basis of the reference period of 1 year is known as the usual activity status (US) of a person, that determined on the basis of a reference period of 1 week is known as the current weekly status (CWS) of the person and the activity status determined on the basis of the engagement on each day during the reference week is known as the current daily status (CDS) of the person.

2.1.2 *Usual activity status:* The usual activity status relates to the activity status of a person during the reference period of 365 days preceding the date of survey. The activity status on which a person spent relatively longer time (major time criterion) during the 365 days preceding the date of survey is considered the *usual principal activity status* of the person. To decide the usual principal activity of a person, a person is first categorised as belonging to the labour force or not, during the reference period **on the basis of major time criterion**. Persons, thus, adjudged as not belonging to the labour force are assigned the broad activity status 'neither working nor available for work'. For the persons belonging to the labour force, the broad activity status of either 'working' or 'not working but seeking and/ or available for work' is then ascertained again on the basis of the relatively longer time spent in the labour force during the 365 days preceding the date of survey. Within the broad activity status so determined, the detailed activity status category of a person pursuing more than one such activity is determined again on the basis of the relatively longer time spent.

2.1.3 *Usual subsidiary status:* In the usual status approach, besides principal status, information in respect of subsidiary economic status of an individual is also collected in employment and unemployment surveys. A person, if pursued some economic activity for 30 days or more during the reference period of 365 days preceding the date of survey is considered to have subsidiary economic activity. The status in which such economic activity is pursued is the subsidiary economic activity status of the person. In case of multiple subsidiary economic activities, the major activity and status based on the relatively longer time spent criterion is considered. A person is considered as a worker in the usual status, if he is engaged in economic activities in either the principal status or in the subsidiary status or in both the statuses. Those who are engaged in economic activity

in the principal status, the classificatory characteristics in usual status, such as, activity status, industry, occupation, etc., are determined only on the basis of usual principal activity, irrespective of their engagement in subsidiary economic activity. However, those who have only subsidiary economic activities, the classificatory characteristics in the usual status relate to the subsidiary economic activity.

2.1.4 *Current weekly activity status*: The current weekly activity status of a person is the activity status obtaining for a person during a reference period of 7 days preceding the date of survey. It is decided **on the basis of a certain priority cum major time criterion**. According to the priority criterion, the status of 'working' gets priority over the status of 'not working but seeking or available for work', which in turn gets priority over the status of 'neither working nor available for work'. *A person is considered working (or employed) if he/ she, while pursuing any economic activity, had worked for at least one hour on at least one day during the 7 days preceding the date of survey.* A person is considered 'seeking or available for work (or unemployed)' if during the reference week no economic activity was pursued by the person but he/ she made efforts to get work or had been available for work any time during the reference week though not actively seeking work in the belief that no work was available. A person who had neither worked nor was available for work any time during the reference week, is considered to be engaged in non-economic activities (or not in labour force). Having decided the broad current weekly activity status of a person on the basis of 'priority' criterion, the detailed current weekly activity status is again decided **on the basis of 'major time' criterion if a person is pursuing multiple economic activities.**

2.1.5 *Current daily activity status*: The current daily activity status for a person is determined on the basis of his/ her activity status on each day of the reference week **using a priority-cum-major time criterion** (day to day labour time disposition). The current daily status of a person is determined using the following criteria:

- i) Each day of the reference week is looked upon as comprising of either two 'half days' or a 'full day' for assigning the activity status.
- ii) A person is considered 'working' (employed) for the entire day if he/ she had worked for 4 hours or more during the day.
- iii) If the person had worked for *1 hour or more but less than 4 hours*, he/ she is considered 'working' (employed) for half-day and 'seeking or available for work' (unemployed) or 'neither seeking nor available for work' (not in labour force) for the other half of the day depending on whether he was seeking/ available for work or not.
- iv) If a person was not engaged in 'work' even for 1 hour on a day but was seeking/ available for work even for 4 hours or more, he/ she is considered

'unemployed' for the entire day. But if he/ she was 'seeking/ available for work' for more than 1 hour and less than 4 hours only, he/ she is considered 'unemployed' for half day and 'not in labour force' for the other half of the day.

- v) A person who neither had any 'work' to do nor was available for 'work' even for half a day was considered 'not in labour force' for the entire day and is assigned one or two of the detailed non-economic activity status depending upon the activities pursued by him/ her during the reference day.
- vi) It may be noted that while assigning intensity, an intensity of 1.0 was given against an activity which is done for 'full day' and 0.5, if it is done for 'half day'.

2.1.6 The detailed concepts and definitions regarding economic activity, detailed activity statuses, different classifications of workers, etc., followed in NSS are given in Annexure II.

## 2.2 Concepts used in International Labour Organisation (ILO) guidelines

2.2.1 The ILO guidelines distinguish two measures of the economically active population:

- (a) Currently active population (or labour force), measured in relation to a short reference period such as **one week or one day**, and
- (b) Usually active population, measured in relation to **a long reference period such as a year**.

2.2.2 ILO Definition: The currently active population, or the labour force, comprises all persons above a specified minimum age who, during a specified brief period of **one day or one week**, fulfill the requirements for inclusion among the employed or the unemployed.

To measure the number of persons employed, employment is broadly defined in the labour force framework. For operational purposes, the international guidelines indicate that...

'...the notion of "some work" should be interpreted as **work for at least one hour** during the reference period.'

2.2.3 Thus, all the three measures (usual activity status, current daily activity status and current weekly activity status) used in NSS labour force surveys are recognised measures of the ILO and alternative estimates are available for compatibility with various approaches in ILO framework.

2.2.4 It can be seen that approaches of current and daily status adopted by NSSO is compatible with definitional profile of approaches adopted in ILO. In this context The

National Commission recommendations (xviii, para. 9.4.34, Vol II) were also found to be in sync with the present practice followed in normal NSS surveys. The National Commission in its recommendations (xviii, para. 9.4.34, Vol II) sought: “*The NSSO classifies an individual who worked for an hour on any day of the reference week as worker by weekly status. To study the intensity of unemployment (or employment) during the reference week, NSSO should publish data on distribution of persons by, number of days at work and total intensity of work during the reference week.*”

## **2.3 Earlier Initiatives**

### **2.3.1 Committee on Quarterly Estimates of Employment and Unemployment to meet the requirement of SDDS:**

2.3.1.1 According to the Special Data Dissemination Standards (SDDS) established by the International Monetary Fund, the then Department of Statistics (DOS) in 1996 was given the responsibility of co-ordination of real sector data comprising national accounts and indices on production, labour market and prices for the country. It was decided that the Government of India would be subscribing to the SDDS, and for that purpose, the Ministry of Statistics and Programme Implementation (MoS&PI) constituted a Group under the chairmanship of Deputy Director General (DDG) of Survey Design and Research Division (SDRD) to develop the survey methodology including the sample design for generating quarterly labour force data under the SDDS

2.3.1.2 The requirement of SDDS on labour force data was quarterly estimates of (i) employment and unemployment and (ii) wage rate. The labour market data for SDDS was required to be generated with a time lag not exceeding a quarter. While studying the feasibility of generating quarterly estimates of employment and unemployment indicators, the Group also examined the requirement for compilation of national accounts. The data on workforce by activity category are used for compilation of national accounts. Owing to the absence of annual workforce data, the benchmark estimates of GVA for a number of activities worked out for the base year were extrapolated using growth rate implicit in estimates of two consecutive quinquennial employment-unemployment surveys. The Group noted that compilation of national accounts would be greatly benefited if surveys could be instituted to generate regular estimates of workforce for the specified activity-groups.

2.3.1.3 Keeping in view the requirements of SDDS mainly study was undertaken to see whether, with the prevalent methodology, it was possible to generate reliable estimates of employment and unemployment on a quarterly basis from NSS data. However, as a part of this exercise, the study also aimed at examining whether the NSS surveys are able to generate annual estimates of workforce for the specified activity-groups reliably that may be required for compilation of national accounts.

2.3.1.4 The study based on the results of earlier NSS rounds on Employment and Unemployment surveys inferred that the series of estimates on same characteristics over time is generally used for measuring either trends and pattern or changes between pairs of time points. The changes were measured in terms of differences between or ratios of corresponding estimates. A time series of survey estimates was commonly used to study the seasonal variations also. The estimates were sometimes combined for estimating averages for longer duration. Besides, each estimate of the series might be used on its own merit. With this perspective, the study attempted to set appropriate standards of reliability of the estimates for different purposes. Finally, the study suggested suitable survey methodology for obtaining the quarterly estimates of employment and unemployment indicators with desired level of precision and requirement of resources for carrying out the survey independently.

2.3.1.5 The Group examined the effect of increase of sample size (both first stage and second stage units) on the quality of the estimates and optimum sample size (in terms of number of first stage units and number of second stage units per first stage unit) for the cost factors with respect to the sample design. Also, alternative methodologies employed for monthly/quarterly labour force surveys in other countries were reviewed for effecting necessary modifications in the present survey methodology. Lastly, on the basis of the study, a few suggestions were also made with a view to improving the quality of quarterly estimates of employment and unemployment in the future.

2.3.1.6 The Group considered the main indicators of employment-unemployment, namely, worker-population ratio (WPR), proportion of unemployed (PU) and labour force participation rate (LFPR) classified by sex, age and by rural and urban residence. The analysis was mainly confined to the estimates at the all-India level. The assessment of the reliability of the estimates was done by examining the magnitudes of the *relative standard errors* (rse) of the estimates. The quarterly estimates (CWS) of WPRs for all age-groups and activity-groups combined were found to be *quite reliable* in general, even for the annual series of surveys, in the sense that rse's of the estimates were found to be within 5 per cent (except for females according to the 46<sup>th</sup> round). However, the quarterly estimates of WPRs according to CWS as well as US were found unreliable for the age-groups 0-14 and 60 & above for both males and females in rural and urban India. For the other age-groups, the quarterly estimates of WPRs were reliable except for urban females. The estimates of WPRs by sex or sector (rural/urban) obtained from the whole round data are found to be reliable for the major states, but not so for the smaller states and union territories. The estimates of PUs obtained from the whole round data are found not reliable at the state level.

2.3.1.7 The study on change in the quarterly (i.e., sub-round wise) estimates as per the CWS revealed the presence of seasonality in the estimates of WPRs between the two time points (quarters). However, the annual surveys failed to capture this seasonality presumably due to the limitation of sample size.

2.3.1.8 The Group also reviewed the **Country Practices** and the use of Rotation Sampling in labour force enquiries. It was noted that all the countries were following the current weekly status approach for measuring the employment and unemployment indicators as recommended by the ILO. For estimation of rates of employment and unemployment, labour-force surveys were conducted monthly or quarterly basis in a number of countries. In surveys of some countries, use 'rotation sampling'. According to the 'Designing Household Survey Samples: Practical Guidelines' (United Nations, 2005), while employing the sample rotation in repeat surveys, either the rotation of first stage units or the households is advised.

2.3.1.9 Accordingly, on sample design, the Group recommended the adoption of rotational panel survey for its distinct advantage in terms of reduction in sampling variance of the associated survey estimates. For this purpose separate schedules of enquiry i.e., listing as well as detailed schedule needed to be framed. The Group also recommended that a very short schedule by retaining only such essential items of information required for SDDS was to be designed. To optimize on the resource requirements, it was advised to integrate the survey on household consumer expenditure suitably with this scheme. The estimate of change in the level of living might be obtained even more precisely through the rotational sampling scheme.

2.3.1.10 It was also recommended that provisions for separate resources at every stage of survey operations have to be made to meet the time target. It was further recommended that an Expert Group may be formed to look into various aspects of the survey methodology including the survey operations to be adopted for this purpose.

### **2.3.2 Committee on Annual Estimates of Employment and Unemployment as per the request of Planning Commission:**

2.3.2.1 In the mean time, the Planning Commission (PC) made a proposal to the Ministry of Statistics and Program Implementation to carry out annual surveys on employment and unemployment to assess achievements in creating job opportunities against the targets. The proposal suggested to provide the estimates of employment and unemployment indicators on current daily status basis and to provide the estimates of indicators at six monthly intervals, with a minimum time lag. Subsequently, they also suggested measuring the employment generated through the National Rural Employment Guarantee Act (NREGA). It was envisaged that the set of estimates to be obtained from the NSS should be capable of measuring the annual change in respect of estimates.

2.3.2.2 While considering all the issues together, the Governing Council observed that rotational design was likely to bring in more efficiency in measuring changes in indicators. As desired by the Council, a committee for an Independent Survey on Employment and Unemployment taking experts from ISI, Planning Commission, NAD



(CSO) and Heads from all the divisions of NSSO was constituted by MOS&PI and its terms and conditions was mainly to look into the technical aspects for integrating various issues, the technical aspects for carrying out an independent survey on Employment – Unemployment to generate quarterly, half yearly or annual estimates of Employment – Unemployment, generation of Work Participation Rates (WPR) by status of employment according to the current daily status (CDS) on an annual basis as required by the Planning Commission, feasibility of measuring employment through Employment Guarantee Scheme and generation of quarterly estimates of employment-unemployment as envisaged under the Special Data Dissemination Standards (SDDS). This Committee submitted its report to the Ministry in November 2008. The observations and recommendations of the Committee are given in Annexure-III. The Ministry, in turn, submitted the report to the National Statistical Commission (NSC) for consideration.

2.3.2.3 Amongst the recommendations of the committee, pertinent was the recognition to distinct requirement of SDDS and Annual Survey and its bearing on choice of indicators and survey approach. For annual survey, the committee did not favour panel survey.

## **2.4 An Analysis of Quarterly estimates and their RSEs**

2.4.1 It may be noted that the proposed quarterly labour force survey would bring out estimates of various key indicators pertaining to employment and unemployment by current weekly status approach. In this respect it is worthwhile to present various key indicators of key employment and unemployment indicators and their RSEs from past surveys. In Tables at Annexure-IV the quarterly and whole round estimates of worker population ratio (WPR), proportion unemployed (PU) and labour force participation rates (LFPR) in CWS and the corresponding RSEs are presented for the quinquennial rounds 38<sup>th</sup>, 43<sup>rd</sup>, , 50<sup>th</sup> and 55<sup>th</sup> rounds respectively, in respect of the urban sector. Estimates WPR, PU and UR and their RSEs for NSS 61<sup>st</sup> round are also presented, RSE of WPR and LFPR for the quarters at all India level in respect of quinquennial rounds are generally less than 1 per cent for the males and total population. However for females, the RSE hovers around 5 per cent and in some quarter, as high as 7 per cent, indicating lesser reliability of estimates. This is largely due to lesser incidence of women in the labour force and resultant lower representation in the sample. Correspondingly, the estimates of proportion of unemployment (PU) are generally having very high RSE. This phenomenon has been acknowledged by the earlier committees as well. The smaller sample sizes allotted for each quarter in the quinquennial rounds as well as the design adopted in such rounds are factors for relatively lesser reliability of the estimates. However, if the sample size in PLFS is enhanced and a suitable rotational design is adopted, the reliability of the quarterly estimates of “change parameters” can be improved upon.

## Chapter Three

### Periodic Labour Force Survey: Conceptual and Operational Framework

#### 3.1 Domain of the PLFS

3.1.1 The basic objective of the periodic labour force survey is generation of quarterly labour force data for its dissemination. Unlike the usual NSSO survey on employment and unemployment that primarily generates the estimates of “level parameters”, in turn measuring the employment / unemployment status on the specified reference period, the PLFS would also be enabling to estimate the “change parameters” as well, that is the essence of measuring dynamics in the labour market. As per the ToR, the estimates are to be provided **only for the urban areas** of the states and of Indian Union. The urban domain of the survey implies the employment status of the people in the households residing in urban area. It would not capture the total employment scenario in urban areas to the extent that persons from rural household commute and work in cities and towns would not be within the survey domain. It was decided that the PLFS survey will be independent of the usual survey on employment and unemployment of NSSO although the basic concepts will be similar for some sort of continuity and cross validation.

#### 3.2 Choice of Indicators

3.2.1 The three basic indicators of labour market that are of interest to the planners and users are the labour force participation rate (LFPR), worker population ratio (WPR) and unemployment rate (UR). These indicators are generally examined by cross classifying them in respect of gender, age, educational level, industry and occupation. The period labour force survey should be able to generate these key employment and unemployment indicators at all India and State levels. The PLFS indicators of WPR and LFPR at all India level to be derived in broad industry classification and occupation classification at respective one digit level.

3.2.2 The indicators of WPR, LFPR and UR are essentially the ratio estimates and are provided as such in the results of normal NSS surveys on Employments and Unemployment. However, it is felt, the outcome of PLFS is to provide the change in the status on quarterly basis and it may be equally meaningful to generate absolute magnitude of the change in the status. Subject to the availability of official projected population for urban areas ( source: Registrar General of India) , such absolute numbers can also be derived, using PLFS indicators on quarterly basis.

3.2.3 The labour market intelligence also envisages to capture, not only the volatility of employment but also the volatility of labour remunerations. There are limitations in compiling this information for different activity status viz casual workers, regular wage

employess and self employed persons and compositing the same. Within the constraints, the PLFS would attempt to provide some indicators on monthly labour remuneration separately for the three categories.

### **3.3 Choice of Reference Period**

3.3.1 As stated in Chapter 2, there are two broad reference periods adopted status in the labour force surveys for determination of the activity status. One, on the basis of the reference period of 1 year that is known as the usual activity status (US) of a person, Second, on the basis of a reference period of 1 week determining the current weekly status (CWS) of the person and the on the basis of each day of the reference week determining the current daily status (CDS) of the person. In the context of the ToR of the committee to establish a framework to collect and disseminate monthly/quarterly labour force data, annual reference period will not be relevant. For measuring the dynamic behavior of labour force in the short interval of a quarter, the approach of CWS is considered appropriate and has been incorporated in the design of the schedule for collection and generation of employment and unemployment indicators.

### **3.4 Periodicity of Survey**

3.4.1 For estimation of rates of employment and unemployment and changes thereof, labour force surveys are conducted monthly or quarterly in a number of countries. For conduction of similar surveys, the population is so sampled repeatedly that samples for successive occasions have some elements in common and continuity. This facilitates to use the information contained in earlier occasions for capturing the dynamic behavior of labour force characteristics over time. The procedure of repeating the entire sample and measuring the study variables on the set of elements on two or more successive occasions is referred to as 'panel studies'. Instead of repeating the entire sample, most of the monthly and quarterly surveys use an approach called 'rotation sampling'. In this sampling scheme, some of the elements from the sample for the preceding survey are eliminated and replaced by new elements to form the sample for the current survey. Samples so obtained are called 'overlapping or matched samples'. Considering that the scheme of rotational panel sampling design would be adopted for the PLFS, the rotational scheme with the quarterly periodicity has been suggested and discussed in subsequent section.

### **3.5 Operational and organisational aspect**

3.5.1 The quarterly labour force surveys are expected to release results before the end of the next quarter. To meet the survey objective of timely release of data in a sustainable manner it is necessary to put in place various processes such as data collection, transcription, validation, transmission, processing, tabulation and dissemination in a streamlined manner. Since the PLFS is proposed to be a panel survey requiring visit to the same household on a number of occasions (visits), from the point of operational convenience, it is desirable to carry out the survey with specially earmarked investigators. This is to ensure continuation and improvement of the rapport established with the

informant. Out-sourcing the total data collection responsibility to one or a number of outside agencies is not recommended as this is likely to introduce agency biases in the estimates resulting in non-comparability over time and space. Moreover, the PLFS is expected to be carried out as a regular exercise. In that situation, the arrangement of long term contract with an agency may not be feasible. Further, any intermittent change of agency would require training and orientation of field staff. This may have qualitative repercussions on the time series of indicators to be generated by PLFS. The actual field work may be entrusted to the Field Operations Division (FOD) of NSSO, to be undertaken by FOD with specially recruited field staff with composite tasks of data collection, on/offline data entry, validation and transmission for data processing. For this purpose it is recommended to set up a Nodal PLFS Centre (NPLFSC) under NSSO.

3.5.2 The task of data entry, validation and transmission would be done at the Sub-regional Office (SRO) level/ Regional Office (RO) level of FOD with a compatible set-up for undertaking this job. The final validation and tabulation would be centralized under a Nodal PLFS Centre.

3.5.3 As stated above, one of the essential requirements of PLFS operations is to coordinate field operations, processing and report release in a time bound manner so that quarterly estimates are released within a month. For this purpose, the integrated organization structure in the form of PLFS Center will be necessary. An organizational framework for operationalising PLFS is illustrated in figure 1.

3.5.4 NPLFSC may function for coordination of field work, processing and release of periodic indicators. The design and software development support to NPLFSC to be provided by SDRD and DPD respectively. NPLFSC to be headed by a DDG level officer with technical and administrative support team. The integrated organization structure of NPLFSC is essential pre requisite of release the indicators before the end of next quarter.

3.5.5 *Use of IT for data collection, transcription and transmission:* For speedy data processing with the aim of releasing results quickly, it may be necessary to use the computer assisted system. For use of ICR technology, the structure of the Schedule is to be made ICR technology compatible. Considering the decentralized system of data capturing at SRO/RO level and smaller number of schedules at each of these centers, putting in place ICR technology is not cost effective. Moreover, the Schedules proposed for PLFS are shorter and part of the information in the schedule is repeated during subsequent visits and hence the ICR technology is not effective mechanism to capture data. In this scenario, it would be possible to have on/off line data entry and transmission or alternately use a computer assisted data collection system. Such a system will have primary level data validation inbuilt into it. Since data will be transmitted to the NPLFSC in electronic media and there will be no physical movement of the paper schedules, it is essential that major validation is carried out before transmission from field and the clean data is received at the nodal PLFS centre and processed quickly.

### 3.6 Proposed PLFS Outcomes

3.6.1 To meet the primary objective of PLFS to disseminate the indicators on the dynamic behavior of labour force in the short time interval of three months, its outcome is envisaged to be as follows:

#### 3.6.2 *Quarterly Labour force Indicators (Status and Change)*

Worker Population Ratio (WPR)

Labour Force Participation Rate (LFPR)

Unemployment Rate (UR)

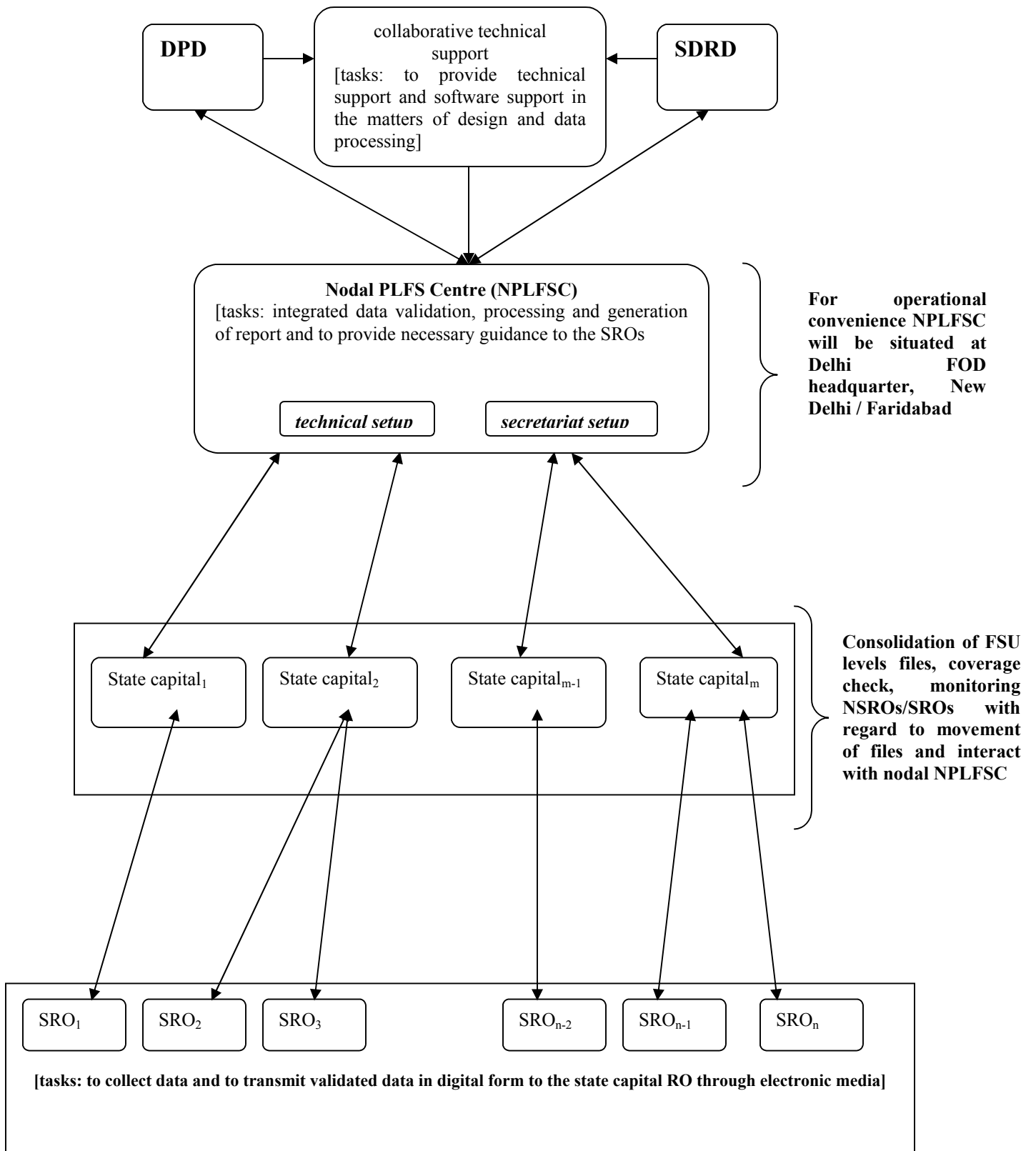
All India absolute numbers of workers and changes therein subject to availability of reliable estimates of projected population.

(All India and State level figures by gender, All India broad industrial and occupational classification)

3.6.3 *Quarterly indicators of monthly labour remuneration* for broad categories of workers (casual labour, regular wage / salary employees and self employed) at all India level.

Figure 1

**Suggested organisational Framework for NPLFSC**



## Chapter Four

### Sampling Design, Estimation Procedure and Sample Size

**4.1.0** The primary objective of PLFS is to measure the dynamics in labour force participation and employment status in the short time interval of three months. The conventional labour force surveys conducted by NSS in its regular rounds provide estimates of level parameters. However, to meet the objective of PLFS, measurement of change parameters becomes necessary. For estimating the change parameters, it is best to retain the sampling units over the quarters, to the extent possible. However, if the same sample is repeated, the average estimate of the parameters combining quarters will have higher variance if the units have positive correlation, which is expected for the key parameters of employment and unemployment, like WPR, UR etc. Alternatively, if a new sample is selected on each occasion, the estimate of the change parameters will have higher variance compared to the variance of the estimate derived by repeating the sample. To strike a balance, retaining a part of the sample in each quarter is considered appropriate. The approach of survey for PLFS has been proposed accordingly. It is decided to select a panel survey with appropriate arrangements of rotation of sampling units. There is need to balance operational feasibility against the theoretical validity, in deciding the extent of overlap in the samples in successive quarters.

**4.1.1 Different rotation schemes:** Since rotational panel survey is proposed for PLFS, it is essential that the survey with the initial selections of panels is continued for a fixed period of time to facilitate study the level and pattern of the parameters over that time period. Since urban frame survey (UFS) blocks will be used for the drawing the FSUs, which is updated every five years, initial selection of the panels need to be replaced every five years. This is essential as, over a period of five years, the structure and composition of the existing UFS blocks will undergo change and new blocks will be carved out due to urbanization. Thus, with the objective of retaining the same panel for a period of five years, three types of rotations schemes can be explored for implementing PLFS, viz., i) rotation of FSUs only, ii) rotation of second stage units only and iii) rotating both the first stage and second stages units. The advantages and operational feasibility of each of these three schemes of rotation are discussed below:

**4.1.1.1 Rotation of FSUs only:** Replacement of one fourth of the FSUs every quarter. This means that 75% households will be common between two successive visits. This has the obvious advantage that it ensures 25% rotation of the SSUs in each occasion for the entire period that the PLFS is intended to be continued with the selected sub-samples. Moreover, since a sample of 12 households is to be surveyed in each FSU, without any further selection of SSUs from these FSUs, the problem that is likely to emerge due to small FSUs will get reduced. To keep the equal proportion of matched households between quarters, it is required to rotate both the FSUs and the households at the same

time point. The desired aim of 25% rotation of the households in each quarter can be attained by rotation of 25% of FSUs only in each quarter. Rotation of FSUs will also provide cross-sectional information over the quarter. In this scheme, estimation of the unmatched portion, along with variance, which is pre-requisite for estimation of the subsequent quarters, will be easier.

**4.1.1.2 Rotation of second stage units only:** The FSUs are fixed, but the households within the FSU are rotated. In this case it is to be ensured that the FSU is sufficiently large that adequate households are available during the period of the survey. Since the PLFS with the initial selection of FSUs is to be continued for a period of 5 years, to make the rotation scheme operational, 23 sub-samples, each of size 3 SSUs are required. Formation of 23 sub-sample of SSUs will not be much problem in case of larger FSUs, However, In case of smaller FSUs, clustering is required with larger FSUs. This is to be done at the selection stage itself. To make such clustering meaningful, information of geographical contiguity of the UFS blocks is required which is not available in the frame. Even if, such information is collected and available in the frame, it will be a herculean task to make use of such information, covering over 4 lakh UFS blocks, for clustering and is almost impracticable to implement. This scheme though ensures cross sectional change over time for the selected FSUs due to rotation of SSUs but fails to provide cross sectional change over geographical space. Though this is cost effective as no new listing of FSUs are required but operationally inconvenient and fails to provide better cross-sectional change compared to the scheme given in Para. 4.1.1.1.

**4.1.1.3 Rotating both the first stage and second stages units:** The FSUs selected on the first occasion will remain in the sample for a period of 1 year. After the first year year, say, 50% of the FSUs would be rotated with a new sample of FSUs and so on. This scheme would require that in each stratum the total number of FSUs to be surveyed during the entire survey period are selected in the form of several independent sub-samples. In the first year, the FSUs in sub-sample 1 and sub-sample 2 would be surveyed. In the next year, the FSUs in sub-sample 1 may be replaced with the FSUs in sub-sample 3, and so on. Since each FSU would remain in the sample for 2 years, for effecting 25% rotation of households, it is necessary to draw 11 groups of households of size 3 each from each FSU. In quarter 1, the 4 groups of 3 households each would be surveyed. In the second quarter, the first group of households would be replaced with a new group and so on. Thus, the envisaged scheme of household rotation requires that in the selected FSUs there is a minimum number of SSUs to select 11 distinct groups of size 3 each. The procedure for dealing with smaller size FSUs is outlined in para. 4.1.1.2. One disadvantage of this scheme is that, for smaller stratum it may be necessary to reintroduce the already dropped FSUs. Another disadvantage is that in this rotation scheme at the end of year 1/year 2/ and so on, the envisaged plan of 75% retention of SSUs cannot be ensured, due to rotation of FSUs at different time points. At the end of first year (i.e., in quarter 5) there will be 37.5% matched SSUs, while for other quarters (quarter 1 to



quarter 4), 75% of the SSUs will be matched. Thus it is not appropriate rotation scheme for PLFS.

4.1.1.4 From the alternative rotation schemes discussed in paras. 4.1.1.1 to 4.1.1.3 it is observed that the rotation scheme discussed in para. 4.1.1.1 (i.e., rotation of FSUs only) has distinct advantage over the other schemes discussed and may be adopted in PLFS.

## 4.2 Sampling Design

4.2.1 Outline of sample design: A stratified multi-stage design would be adopted for the periodic labour force survey. The first stage units (FSU) are the Urban Frame Survey (UFS) blocks. The ultimate stage units (USU) are households. As in usual NSS rounds, in case of large one intermediate stage unit, called sub-block will be formed.

4.2.2 Sampling Frame for First Stage Units: The list of latest available Urban Frame Survey (UFS) blocks would be considered as the sampling frame.

4.2.3 Stratification: The PLFS in the present form does not envisage generating district level estimates and the objective is to generate state level results. Accordingly, strata would be formed within each NSS region on the basis of size class of towns as per Population Census 2001. The tentative stratum numbers and their composition (within each region) would be 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 2 lakhs
stratum 3 :	all towns with population 2 lakhs or more but less than 10 lakhs
stratum 4, 5, 6,... :	each city with population 10 lakhs or more as per latest Population Census

4.2.4 Total sample size (FSUs): 3128 FSUs would be allotted to the different States and U.T.s in proportion to population as per Census 2001 subject to a minimum allocation to each state/UT. Within each sector of a State/ U.T., the respective sample size would be allocated to the different strata in proportion to the population of the stratum as per Census 2001. Allocations at stratum level will be adjusted to a multiple of 8 with a minimum sample size of 8.

4.2.5 **Allocation and selection of first stage units:** FSUs would be selected, from the latest available UFS frame, with Simple Random Sampling without replacement (SRSWOR). Within each stratum, samples will be drawn in the form of two independent sub-samples. In the proposed sampling design, towns within a state-region will be stratified based on size class of population (see para. 4.2.3). A maximum of 6 stratum will be formed within a region (in case of Maharashtra, the 'coastal' region has three million plus cities). To implement the rotational scheme, 4 groups of sample FSUs of

equal size (each multiple of size 2 corresponding to sub-sample 1 and sub-sample 2) needs to be drawn, randomly without replacement in each quarter for each stratum, and 1 group will get replaced in the subsequent quarters. Entire selection for five years (3128 FSU initially and 19 groups of 782 FSUs each) will be made in one go at the start of the survey. Thus, to continue the survey for 20 quarters, 23 (4+19) groups are to be selected at the beginning of the survey. Thus, a minimum of 46 UFS blocks are to be drawn from each stratum to implement the rotation scheme.

4.2.5.1 An exercise was carried out, based on the existing UFS frame, comprising of 446631 UFS blocks and considering population of Census 2001. It was observed that, Manipur state region number 142 contains only 17 UFS blocks for stratum 1 (population less than 50000), Lakshadweep has 35 UFS blocks and A. N Islands has 30 UFS blocks in stratum 1. Considering smaller number of UFS blocks, the groups for these three states may be rotated annually instead of quarterly. State-wise allocation of FSUs is presented in Annexure VIII and stratum-wise allocation of the FSUs is given in Annexure-IX.

4.2.6 Treatment of FSUs with number of households less than a minimum number: It may be noted that in case I of the rotation scheme, discussed in para 4.1.1, 75% of the second stage units would be retained on any subsequent occasion (quarter) in the selected FSU and the selected FUSs would remain in the sample for two consecutive years. This would require that in the selected FSU there are at least a minimum number of second stage units (households) so that the rotation scheme can be applied in the selected FSU. However, the sample FSUs selected by SRSWOR can have FSUs with less than the minimum number of households required for rotation. To obviate this problem, the FSUs with less than the minimum number of households can be clustered with the nearby FSUs having requisite number of households for rotation before the selection of FSUs. Alternatively, if in the selected FSU there is less than minimum number of second stage units, the FSU could be merged with the nearest non selected FSU with requisite number of households from the same stratum and at the listing stage, additional information on number of households, for each of these two FSUs may be recorded for adjustment of the weights for estimation.

4.2.7. Selection of households: It may be noted that no second stage stratification of the households would be made. From each FSU the sample households would be selected by SRSWOR.

### **4.3 Outline of the Estimation Formula for PLFS**

4.3.1 The choice of the estimate on occasion  $h$ : The general problem of the replacement has been studied by Yates (1960) and Patterson (1950), with respect to both current estimates and estimates of change. This scheme of rotational panel sampling states that on occasion  $h$ , parts of the sample are matched with occasion  $h-1$ , parts of the sample will match with occasion  $h-2$  and so on. In attempting to improve the current estimate, one

might try a multiple regression involving all matching to previous occasions. However, it may be noted that since the correlation  $\rho$  is also a variable over space and time.

4.3.2 Procedure to treat the attribute type data as variable data type: The event of activity participation of the subject is to be seen as a binary one at the stage of its classification as worker or non-worker. In the employment and unemployment surveys, information about various characteristics, like whether employed, industry, occupation, etc., are collected from the individual household members. This results in attribute type data and the formulation of estimation procedure for rotational sampling using the attribute type data becomes complicated. However, all these characteristics can be viewed as observed at the household level, though information is collected at person level, such as number of employed persons in the household, number of persons in different statuses of employment, number of persons in the household in a particular industry, occupation, number of unemployed persons, number of etc. This will obviate the difficulty of viewing the employment and unemployment characteristics as attributes.

#### 4.4 Estimation formula

4.4.1 Under the rotation scheme, discussed above, a simple estimation formula (see Cochran) has been proposed below. However, the committee suggested to set up a small expert group to look into different aspects of estimation.

Notation:

$\bar{y}_{hu}$  = mean of unmatched portion on occasion  $h$

$\bar{y}_{hm}$  = mean of matched portion on occasion  $h$

$\bar{y}_h$  = mean of whole sample portion on occasion  $h$

on  $h^{th}$  occasion let  $m$  and  $u$  be the numbers of units that are matched and unmatched, respectively, with the  $(h-1)^{th}$  occasion

The unmatched and matched portions of the  $h^{th}$  sample provide two independent estimates  $\bar{y}_{hu}'$ ,  $\bar{y}_{hm}'$  of  $\bar{Y}_h$  as shown in Table 1.

Table 1: Independent estimates of $\bar{Y}_h$ from the unmatched and matched portions	
estimate	variance
Unmatched: $\bar{y}_{hu}' = \bar{y}_{hu}$	$\frac{S^2}{u} = \frac{1}{W_{hu}}$
Matched: $\bar{y}_{hm}' = \bar{y}_{hm} + b(\bar{y}'_{h-1} - \bar{y}_{h-1m})$	$\frac{S^2(1-\rho^2)}{m} + \rho^2 v(\bar{y}'_{h-1}) = \frac{1}{W_{hm}}$

In matched portion we use a double-sampling regression estimate. The best combined estimate of  $\bar{Y}_h$  is found by weighing the two independent estimates inversely as their variances. If  $W_{hu}$  and  $W_{hm}$  are the inverse variances, this estimate is

$$\bar{y}_h' = \phi_h \bar{y}_{hu}' + (1 - \phi_h) \bar{y}_{hm}'$$

where

$$\phi_h = \frac{W_{hu}}{W_{hu} + W_{hm}}$$

This gives the variance of  $\bar{y}_h'$  as

$$V(\bar{y}_h') = \frac{1}{W_{hu} + W_{hm}}$$

4.4.2 It may be noted that above estimation of PLFS indicators are composite of matched and unmatched samples with primary focus on estimation of change parameters. The matched sample estimates in turn are the linear estimates regressed with the preceding observations. The NSS samples for quinquennial rounds on the other hand are independent cross section samples and their estimates are design based to measure the level parameters.

#### 4.5 Determination of Sample Size

4.5.1 It may be noted that the estimates using multiple regression based on matching samples on several occasions may result in some loss of precision as the correlation usually decreases as the time interval between the occasions is increased, but the loss of precision, as Cochran has demonstrated (see Table 2), will seldom be great. Cochran has also demonstrated the effect of the proportion matched on  $V(\hat{y}'_t)$  and on  $V(\hat{d}_1)$  for different values of correlation coefficient and those are given in Table 3. In practice, the value of  $\rho$  will not be known exactly and will differ from characteristics to characteristics. However a simple compromise value can always be chosen.

Table 2: Optimum % matched and variances

T	% matched 100 P				<i>gain in precision</i> = $n * V(\hat{y}'_t) / S^2$			
	$\rho =$				$\rho =$			
	0.7	0.8	0.9	0.95	0.7	0.8	0.9	0.95
2	42	38	30	24	0.857	0.800	0.718	0.656
3	49	47	42	36	0.837	0.762	0.646	0.556
4	50	49	47	43	0.834	0.753	0.622	0.515
5	50	50	49	46	0.833	0.751	0.613	0.495
$\infty$	50	50	50	50	0.833	0.750	0.607	0.476

Table 3: Effect of proportion matched on  $V(\hat{y}'_t)$  and  $V(\hat{y}'_t - \hat{y}'_{t-1})$

t	$n*V(\hat{y}'_t)/S^2$								$n*V(\hat{y}'_t - \hat{y}'_{t-1})/S^2$							
	$\rho =$								$\rho =$							
	0.7		0.8		0.9		0.95		0.7		0.8		0.9		0.95	
	$\frac{1}{2}^*$	$\frac{3}{4}^*$	$\frac{1}{2}^*$	$\frac{3}{4}^*$	$\frac{1}{2}^*$	$\frac{3}{4}^*$	$\frac{1}{2}^*$	$\frac{3}{4}^*$	$\frac{1}{2}^*$	$\frac{3}{4}^*$	$\frac{1}{2}^*$	$\frac{3}{4}^*$	$\frac{1}{2}^*$	$\frac{3}{4}^*$	$\frac{1}{2}^*$	$\frac{3}{4}^*$
2	0.88	0.91	0.82	0.88	0.75	0.84	0.71	0.82	0.397	0.79	0.78	0.60	0.58	0.40	0.47	0.30
3	0.86	0.88	0.77	0.83	0.66	0.76	0.60	0.72	0.94	0.77	0.74	0.58	0.53	0.39	0.43	0.29
4	0.85	0.87	0.76	0.81	0.63	0.72	0.56	0.66	0.93	0.77	0.73	0.57	0.52	0.38	0.41	0.28
5	0.85	0.87	0.75	0.80	0.62	0.69	0.54	0.62	0.93	0.76	0.72	0.57	0.51	0.38	0.41	0.28
$\infty$	0.85	0.87	0.75	0.79	0.62	0.67	0.53	0.58	0.93	0.76	0.72	0.57	0.51	0.37	0.40	0.28

\* value of P = proportion matched or retained

4.5.2 It is apparent, from Tables 2 and 3 that the technique of Rotation Sampling can increase the precision of change parameters and also the level parameters in the long run. In other words, the desired degree of reliability can be achieved by the technique of rotational panel sampling with a relatively smaller sample size than required under the present methodology used in NSS. As seen from Table 2, optimum choice of P, i.e. proportion of units retained in the subsequent occasions depends, among other things on the value of  $\rho$ , i.e. correlation coefficient between two observations on the same sampling unit taken on two successive occasions. Once the value of  $\rho$  is known, optimum proportion of matched samples and the sample sizes can be worked out for the required levels of precision. It can be seen from Table 3, that for value of  $\rho = 0.8$ , under 50% retention, the same level of precision can be obtained with 0.72% of the sample size required in the present methodology. Thus, with the known value of  $\rho$  and the value of proportion retained, the sample size required for the proposed PLFS can be obtained.

4.5.3 The values of  $\rho$ , i.e., correlation coefficient in respect of work status (worker or non-worker), according to US (PS+SS) and CWS, between two successive occasions (sub-rounds) have been obtained from the 55<sup>th</sup> round survey and are given in Table 4. It is

Table 4: Correlation coefficient of work status between two successive occasions

all-India		
Category	US (PS+SS)	CWS
(1)	(2)	(3)
rural male	0.912	0.808
rural female	0.865	0.671
urban male	0.939	0.915
urban female	0.876	0.811

found that correlation coefficient is quite high – ranges between 0.7 to 0.9 in CWS and is around 0.9 in US (PS+SS). Here we consider the correlation coefficient for CWS only since the estimates of various employment and unemployment indicators are required for periodic labour force survey in CWS approach. It may be noted that in the scheme of panel rotation, it suggested for 75% retention of the second stage units (SSU) on any subsequent occasion. Moreover, 50% of the selected FSUs will be rotated every year and will be replaced with a new set of selected FSUs. This is operationally more convenient, in the sense that the listing of the selected FSUs for selection and survey of the households need to be done

only once. However, as seen from Table 2 above, in sampling on more than one occasion the optimum percent matched by the fourth occasion is close to 50% for all values of  $\rho$ . A trade off between operational convenience of retaining 75% of the SSU and 50% of FSU and the theoretical justification of retaining 50% of the SSUs has been made and the sample size has been determining on the basis of 50% retention of the SSUs.

4.5.4 Table 3 reveals that the technique of Rotation Sampling can increase the precision of change parameters as well as the level parameters in the long run. In other words, the desired degree of reliability can be achieved by this technique with a relatively smaller sample size than required under the present methodology. The values of  $\rho$ , i.e., correlation coefficient in respect of work status (worker or non-worker), according to CWS, between two successive occasions (sub-rounds) have been obtained from the 55<sup>th</sup> round survey and are given in Table 4. It is found that correlation coefficient is quite high – ranges between 0.7 to 0.9 in CWS. To determine the sample size requirement for the rotational sampling design, we assume the value of  $\rho = 0.8$  (this is justified from the data presented in Table 4). With this value of  $\rho$ , the variance of change parameters under 50% proportion retained samples is only about 72% of that of non-overlapping samples, i.e., the same level of precision can be achieved by using 72% of the sample size required in the present methodology (see Table 3).

4.5.5 The Committee considered the requirement of optimal sample size and primary human resources for the PLFS. A detailed note on approach and methodology for the same is at Annexure V. While determining the optimal sample size the committee examined the costs of the survey under the present condition in respect of functional divisions of the NSSO. The costs associated with the collection and processing of data have been considered for determination of sample size for providing all-India level estimates and for the major states.

4.5.6 As inferred from the Table A9 of Annexure V in order to attain 0.5% RSE of the all India person WPR of the urban sector, optimum second stage units to be surveyed is 12. The sample size has been determined on the basis of 50% retention of the sampling units. Under the assumption of value of that  $\rho = 0.8$  with 50% retention, the sample required for rotation scheme is 0.72% of the sample size required in the present methodology. Thus, for 0.5% RSE of the person WPR at the all Indian level for the urban sector, the sample number of FSUs will be 3079. However, the constraint of allocating a minimum of 8 FSUs per stratum, number of sample FSUs is adjusted to 3128. For the rotation scheme suggested in this report, there could be a possibility of enhancing the sample size of 3128 FUSs with same amount of resources. However, 3128 FSUs may be taken up for survey, in the initial phases and depending on the workload/field condition and experience gathered subsequently, exploration for upward revision of the number of FSUs may be considered later. This sample size would also enable the all India estimates

of lead parameters in respect of broad sectoral breakup of the economy at the order of 5% rse.

4.5.7 As stated earlier, the allocation is in the multiple of eight to enable 25% rotation, maintaining the sub-sampling in the design. As discussed in para 4.2.5, in the rotational scheme, a fresh sample of 782 FSUs for each quarter will be inducted and the oldest sample of 782 FSUs will be phased out. It may be seen from the state wise and stratum wise allocation plan of 3128 FSUs given in Annexure VIII, some of the NSS regions are very small states and union territories (e.g. some North East States and Islands like Andaman and Nicobar and Lakshadweep) and do not have large enough urban domain. While operationalising PLFS, a view can be taken to merge some of the small stratum in to larger geographically contiguous stratum.

#### **4.6 Resource Requirement**

4.6.1 The analytical approach (see Annexure V) for assessing the requirement of primary field functionaries with composite functional role of data collection, on/off line data entry, validation and transmission of data was considered by the committee, taking note of essentiality of release of PLFS results in prompt and time bound manner. For undertaking the PLFS, the resource requirement in terms of manpower to provide quarterly estimate of worker population ratio (WPR) for male and female combined with 0.5% RSE's with envisaged sample size of nearly 3128 FSUs is given in Table A8 and Table A9 of Annexure V.

## Chapter Five

### Some conceptual issues related to the Schedule

#### 5.1 Structure of the Schedule

5.1.1 The proposed quarterly labour force survey will be of the nature of rotational panel survey. Consequently, there will be two parts in the schedule, one for collection of data during the first visit to the selected household and the other for collection of data during the revisit. Since each household would remain in the sample for a number of periods (quarters), some of the classificatory characteristics would not be collected on the revisit. Broadly these are: household characteristics, such as household type, religion, social group, etc. Similarly, information on the demographic particulars of the household members, such as age, sex, relation to head, marital status, educational level, etc., would also be collected only in the first visit.

5.1.2 The proposed structure of the schedule is as follows:

<b>Block No.</b>	<b>Description (in the sequence)</b>
Block 0	Descriptive identification of sample household
Block 1	Identification of sample household
Block 2	Particulars of field operation
Block 6	Remarks by investigator
Block 7	Comments by supervisory officer
Block 3	Household characteristics
Block 4	Demographic and usual activity particulars of household members
Block 5	Current weekly activity particulars for persons of age 15 years and above, who are household members as on the date of survey during the week ended on.....

5.1.3 The Schedule 10.1, designed to collect information in both the first visit and revisit) is given in Annexure VII. It may be noted that the Schedule has two versions - one to be canvassed in the first visit and the other in subsequent visits. Structurally the design of these two versions of the schedule are same. The following points regarding the structures of the schedules for the first visit and revisit may be noted:

- i) The identification blocks (blocks 0 and 1) will be filled up in all the visits to the SSU and the structures of these two blocks are the same for all the visits.



- ii) The details in block 3 will be filled up in only visit 1 to the selected SSU. However, since item 1 (household size) is a transfer entry from block 4, it will be filled up in all the visits.
- iii) The details of the household members in block 4 will be filled up only in visit 1. In the subsequent visits, information regarding status of the erstwhile household members will be collected on the date of revisit to ascertain whether the erstwhile member is a member on the date of revisit as well. For the erstwhile household members who are also found to be member on the date of revisit, demographic particulars will not be collected again. However, for the new household members, the demographic particulars will be filled up only once.
- iv) Block 5 will be filled up for all the current members of the household. Thus, in the first visit to the household, this block will be filled up for all the members listed and in the subsequent visit to the household, this will be filled up for all the current members of the household.

## **5.2 Some important points for filling up block 5 on any occasion**

- i) In item 3, information will be collected on whether worked for at least 1 hour during the last 7 days. It may be noted that those who have actually worked for at least one hour as well as those who had work and expected to work but did not actually work would be considered as worker as per current weekly status (CWS).
- ii) For persons who have worked for at least 1 hour during the last 7 days, the information on the hours worked would be collected in items 4.1 to 4.7. However, hours worked will exclude paid annual leave, paid public holidays, paid sick leave, etc., during which the person will be considered to be in employment (worker) although he/she may not be working. For those who had work and expected to work but abstained from work due to some reasons, entry of 'hours worked' may be reported as '0'.
- iii) For every person, information on the industry and occupation of work (2-digit code of NIC and 2-digit code of NCO) would be collected at the most for two weekly activity status. Activities would be differentiated at *status x 2-digit level of NIC*.
- iv) The two activities on which information would be collected are termed as 'major activity' and '2<sup>nd</sup> major activity'. The major activity would be decided on the basis of time spent.

- v) For those who are classified as ‘regular wage/salaried persons’ in their major activity status (primary activity status), information may be collected on the type of enterprise in which they were working. The following categorization of the enterprise may be used for collection of data: central government, state government/local bodies, public sector, private companies and others. It may be noted that central government would mean the government department of the central government. An enterprise, which is wholly owned/ run/managed by central government, would be classified as public sector. An enterprise, which is wholly owned/ run/managed by State governments, quasi-government, institutions, local bodies like universities, education boards, municipalities, etc. would be classified as state government/local bodies. Private companies are those which whose ownership is private. The rest would be classified as others.
- vi) Information on income from employment would be collected in the following manner:
- a. Those who had reported casual work activities during the week either in the major activity or 2<sup>nd</sup> major activity, earning considering all the casual work activities may be collected for the last 7 days of the week.
  - b. Those who had reported regular wage/salaried work activities during the week either in as the major activity or 2<sup>nd</sup> major activity, earning for the regular wage/salaried work activities may be collected for the preceding calendar month.
  - c. The difficulties of collection of information on earning of the self-employed persons, through one/two questions, were discussed in detail and it was decided that though it is not possible to accurately collect this information, nevertheless, an attempt may be made to collect net earning from self-employment activities on an experimental basis. Those who had reported self-employment work activities during the week either in the major activity or 2<sup>nd</sup> major activity, (excluding unpaid family workers), net earning from self-employment work activities may be collected for the preceding calendar month. For those who are working as unpaid helpers in the household enterprises earning may be recorded as ‘0’.

### **5.3 Need for Pilot Study**

Before launching a periodic labour force survey with the envisaged scheme of rotational panel for the purpose of collection of data on various indicators of employment-unemployment, it is necessary to conduct a pilot study. The pilot study is proposed to

have a better idea of the actual canvassing time for the schedule of first visit as well as the revisit schedules and the quality of response to the items for the subsequent visits to the household. The data from the pilot study may also be used to have an idea of the strength of relationship between the two observations taken at two different time points and the efficacy of the schedule design in eliciting desired information. In this context the usability of the estimation procedure proposed in this report can also be adjudged.

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**ToR of the Present Committee**

On the basis of the recommendations of the National Statistical Commission(NSC), a Committee on periodic labour force surveys is constituted vide Ministry of Statistics and Programme Implementation Office Order no. F.No.4(25)/2008-NSC dated 24<sup>th</sup> February, 2009. The composition of the Committee is as follows:

1. Prof. Amitabh Kundu, Member, NSC	Chairman
2. Expert from Indian Statistical Institute, Kolkata	Member
3. Representative of the Department of Economic Affairs, New Delhi	Member
4. Representative of the Ministry of Labour, New Delhi	Member
5. Deputy Director General, NSC Secretariat	Member
6. Addl. Director General, National Sample Survey Organisation (Survey Design and Research Division), Kolkata	Member Secretary

The broad terms of reference the Committee are as follows:

Preparing a detailed proposal to establish a framework to collect and disseminate monthly/quarterly labour force data at the national and state levels in urban areas, inter alia examining the following issues, namely-

- i) survey design, methodology and concepts to be used in the survey;
- ii) the minimum set of items on which data are to be collected in the monthly/quarterly surveys; and
- iii) the mechanism for data collection, processing and dissemination.

### Concepts and Definitions regarding economic activity, detailed activity statuses, different classifications of workers, etc., followed in NSS

**Economic activity:** The entire spectrum of human activity falls into two categories: economic activity and non-economic activity. Any activity that results in production of goods and services that adds value to national product is considered as an economic activity. The economic activities have two parts - market activities and non-market activities. Market activities are those that involve remuneration to those who perform it i.e., activity performed for pay or profit. Such activities include production of all goods and services for market including those of government services, etc. Non-market activities are those involving the production of primary commodities for own consumption and own account production of fixed assets.

The full spectrum of economic activities as defined in the UN System of National Accounts is not covered in the definition adopted for the Employment and Unemployment surveys of NSSO. Production of any goods for own consumption is considered as economic activity by UN System of National Accounts but production of only primary goods for own consumption is considered as economic activity by NSSO. While the former includes activities like own account processing of primary products among other things, in the NSS surveys, processing of primary products for own consumption is not considered as economic activity.

The term 'economic activity' in the Employment and Unemployment survey of NSSO included:

(i) all the market activities described above, i.e., the activities performed for pay or profit which result in production of goods and services for exchange,

(ii) of the non-market activities,

(a) all the activities relating to the primary sector (i.e. **industry Divisions 01 to 14 of NIC-2004**) which result in production (including free collection of uncultivated crops, forestry, firewood, hunting, fishing, mining, quarrying, etc.) of primary goods for own consumption

and

(b) the activities relating to the own-account production of fixed assets. Own account production of fixed assets includes construction of own houses, roads, wells, etc., and of machinery, tools, etc., for household enterprise and also construction of any private or community facilities free of charge. A person may be engaged in own account construction in the capacity of either a labour or a supervisor.

It may be noted that in NSS surveys, the activities like prostitution, begging, etc., which may result in earnings, by convention, is not be considered as economic activities. Prior to 61<sup>st</sup>

round, activities under 'smuggling' were also kept outside the economic activity. In 61<sup>st</sup> round of NSS, activity status of a person was judged irrespective of the situation whether such activity was carried out illegally in the form of smuggling or not.

**Activity status:** It is the activity situation in which a person is found during a reference period, which concerns with the person's participation in economic and non-economic activities. According to this, a person is found in one or a combination of the following three statuses during a reference period:

- (i) Working or being engaged in economic activity (work),
- (ii) Being not engaged in economic activity (work) and either making tangible efforts to seek 'work' or being available for 'work' if the 'work' is available and
- (iii) Being not engaged in any economic activity (work) and also not available for 'work'.

Activity statuses, as mentioned in (i) & (ii) above, are associated with 'being in labour force' and the last with 'not being in the labour force'. Within the labour force, activity status (i) is associated with 'employment' and that of (ii) with 'unemployment'. The three broad activity statuses are further sub-divided into several detailed activity categories. These are stated below:

*(i) working or being engaged in economic activity (employed):*

- (a) worked in household enterprise (self-employed) as an own-account worker
- (b) worked in household enterprise (self-employed) as an employer
- (c) worked in household enterprise (self-employed) as 'helper'
- (d) worked as regular salaried/wage employee
- (e) worked as casual wage labour in public works
- (f) worked as casual wage labour in other types of works
- (g) did not work due to sickness though there was work in household enterprise
- (h) did not work due to other reasons though there was work in household enterprise
- (i) did not work due to sickness but had regular salaried/ wage employment
- (j) did not work due to other reasons but had regular salaried/wage employment

*(ii) not working but seeking or available for work (unemployed) :*

- (a) sought work
- (b) did not seek but was available for work

*(iii) not working and also not available for work (not in labour force) :*

- (a) attended educational institution
- (b) attended domestic duties only
- (c) attended domestic duties and was also engaged in free collection of goods, tailoring, weaving, etc. for household use
- (d) recipients of rent, pension, remittance, etc.
- (e) not able to work due to disability

- (f) prostitutes
- (g) others
- (h) did not work due to sickness (for casual workers only).

The various constituents of 'workers', 'unemployed', 'labour force', 'out of labour force' are as explained below:

(a) **Workers (or employed):** Persons who are engaged in any economic activity or who, despite their attachment to economic activity, have abstained from work for reasons of illness, injury or other physical disability, bad weather, festivals, social or religious functions or other contingencies necessitating temporary absence from work constitute workers. Unpaid helpers who assist in the operation of an economic activity in the household farm or non-farm activities are also considered as workers. All the workers are assigned one of the detailed activity statuses under the broad activity category 'working or being engaged in economic activity'.

(b) **Seeking or available for work (or unemployed):** Persons, who owing to lack of work, had not worked but either sought work through employment exchanges, intermediaries, friends or relatives or by making applications to prospective employers or expressed their willingness or availability for work *under the prevailing condition of work and remuneration* are considered as those who are 'seeking or available for work' (or unemployed).

(c) **Labour force:** Persons who are either 'working' (or employed) or 'seeking or available for work' (or unemployed) during the reference period together constitute the labour force.

(d) **Out of labour force:** Persons who are neither 'working' and at the same time nor 'seeking or available for work' for various reasons during the reference period are considered to be 'out of labour force'. The persons under this category are students, those engaged in domestic duties, rentiers, pensioners, recipients of remittances, those living on alms, infirm or disabled persons, too young or too old persons, prostitutes, etc. and casual labourers not working due to sickness.

It may be noted that workers have been further categorized as *self-employed, regular salaried/wage employee and casual wage labour*. These categories are defined below:

**Self-employed:** Persons who operate their own farm or non-farm enterprises or are engaged independently in a profession or trade on own-account or with one or a few partners are self-employed in household enterprises. The essential feature of the self-employed is that they have *autonomy* (i.e., regarding how, where and when to produce) and *economic independence* (i.e., regarding market, scale of operation and money) for carrying out operation. The fee or remuneration received by them consists of two parts - the share of their labour and profit of the enterprise. In other words, their remuneration is determined wholly or mainly by sales or profits of the goods or services which are produced.

The self-employed persons are again categorised into the following three groups:



- (i) **own-account workers:** They are the self-employed who operate their enterprises on their own account or with one or a few partners and who during the reference period by and large, run their enterprise without hiring any labour. They may, however, have unpaid helpers to assist them in the activity of the enterprise.
- (ii) **employers:** The self-employed persons who work on their own account or with one or a few partners and by and large run their enterprise by hiring labour are the employers, and
- (iii) **helpers in household enterprise:** The helpers are a category of self-employed persons mostly family members who keep themselves engaged in their household enterprises, working full or part time and do not receive any regular salary or wages in return for the work performed. They do not run the household enterprise on their own but assist the related person living in the same household in running the household enterprise.

**Regular salaried/wage employee:** Persons working in others' farm or non-farm enterprises (both household and non-household) and getting in return salary or wages on a regular basis (and not on the basis of daily or periodic renewal of work contract) are the regular salaried/wage employees. *The category not only includes persons getting time wage but also persons receiving piece wage or salary and paid apprentices, both full time and part-time.*

**Casual wage labour:** A person casually engaged in others' farm or non-farm enterprises (both household and non-household) and getting in return wage according to the terms of the daily or periodic work contract is a casual wage labour. Usually, in the rural areas, a type of casual labourers can be seen who normally engage themselves in 'public works' activities. *'Public works'* are those activities, which are sponsored by Government or local bodies for construction of roads, bunds, digging of ponds, etc. as 'test relief' measures (like flood relief, drought relief, famine relief, etc.) and also employment generation scheme under poverty alleviation programmes (NREP, RLEGP, etc.).

**Labour Force Participation Rate:** It is defined as the number of persons/person-days in the labour force per thousand persons/person-days.

**Worker Population Ratio:** It is defined as the number of persons/person-days employed per thousand persons/person-days.

**Proportion Unemployed:** It is defined as the number of persons/person-days unemployed per thousand persons/person-days.

**Unemployment rate:** It is defined as the number of persons/person-days unemployed per thousand persons/person-days in the labour force (which includes both the employed and unemployed).

### **The observations and recommendations of the Committee on Annual Estimates of Employment and Unemployment to meet the requirement of Planning Commission**

1. The committee had several meetings to deliberate on the issues keeping in view the data requirements of SDDS, PC and data on workforce by activity category for compilation of national accounts. While examining the main findings of the Group, the committee also deliberated upon the issue of measuring employment generated through NREGA. The Committee considered the main indicators of employment-unemployment, namely, worker-population ratio (WPR), proportion of unemployed (PU), labour force participation rate (LFPR) and unemployment rate (UR) classified by sex and by rural and urban residence in usual status (US), current weekly status (CWS) and current daily status (CDS) approaches. The analysis was mainly confined to the estimates at the all-India level. The assessment of the reliability of the estimates was done by examining the magnitudes of the *relative standard errors* (RSE) of the estimates.

#### 2 Trends in Estimates

2.1 In general, no definite trend was observed in the estimates of WPR and PU as per current weekly status (CWS) over the periods 1990-91 to 2004-05 based on whole round data. In fact, the observation in respect of the trend in estimates did not differ anyway as was noted by the Group on SDDS when the results based on NSS 60<sup>th</sup> and 61<sup>st</sup> rounds were placed in the series.

#### 2.3 Reliability of the Estimates

2.3.1 At the all-India level, the estimates of WPR's (in CWS) were found to be *quite reliable* in general in the sense that RSE's of the estimates are found to be within 5 per cent. The RSE's based on NSS 50<sup>th</sup>, 55<sup>th</sup> and 61<sup>st</sup> rounds were more or less of the same order and were found to be much lower as compared to other rounds in both rural and urban areas.

2.3.2 The estimates PUs, at the all-India level (in CWS), based on the annual surveys in the 46<sup>th</sup> and 47<sup>th</sup> rounds were *not reliable* because the RSE's of the estimates were quite large. The estimate of PU based on quinquennial round surveys was found to be quite reliable (RSE: 3 to 5 per cent) for both males and females, except in the case of NSS 55<sup>th</sup> round where the RSE of the estimates for rural females was about 15 per cent. Again, the magnitude of RSE of the estimates based on NSS 60<sup>th</sup> round was very close to that of the quinquennial round surveys.

2.3.3 The estimates of WPRs according to the usual status were reliable (RSE less than 5 per cent) for each of the rounds. As regards the PUs, the reliability of estimates of proportions were less for the 46<sup>th</sup> and 47<sup>th</sup> round surveys (RSE: 8 to 18 per cent for males and 13 to 28 per cent for females) but it improved for the 50<sup>th</sup>, 55<sup>th</sup>, 60<sup>th</sup> and 61<sup>st</sup> round surveys (RSE within 3 to 5

per cent for males except for 60th round urban male where it is 7 per cent and within 8 per cent for females).

2.3.4 According to the CDS the estimates of WPRs were found to be more reliable (RSE: less than 5 per cent) for the 60<sup>th</sup> and 61<sup>st</sup> rounds but the estimates of PUs, were reliable for males for these two rounds (RSE: within 5 per cent), and were fairly reliable for females (RSE: within 7 per cent).

2.3.5 In the 61<sup>st</sup> round, the RSEs of the estimate of the parameters, in general, was higher in the US approach than that in the CWS approach, and was also higher in the CWS approach than that in the CDS approach. Again, RSEs of the estimate of PUs and URs in all the three approaches were very close. Further, RSEs of the estimate of PUs in CWS approach were considerably higher than that of URs in the CDS approach.

## 2.4 Observations of the Committee

2.4.1 Parameters such as WPRs and PUs were required to be measured in the CWS approach for meeting the requirement of SDDS, and WPRs and URs were to be measured in the CDS approach for meeting the requirement of PC. Thus, so far as the estimates and its RSEs at the all India are concerned, the survey of employment and unemployment with a given sample size was expected to produce, in general, superior estimates of URs than that of PUs for any domain. In other words, the sample size that is sufficient for estimating PUs would expectedly be sufficient for estimating URs too. In some cases, if there were some differences in the sample size estimated based on PUs and URs, those were expected to be marginal.

## 2.5 Determination of Sample Size

2.5.1 While determining the optimal sample size, the committee examined the costs of the survey under the present condition in respect of all the four Divisions of the NSSO. The committee was of the opinion that there was no direct cost involvement for the Co-ordination and Publication Division (CPD) and the Survey Design and Research Division (SDRD) of NSSO, so far as the collection, validation and processing of the data were concerned.

## 2.6 Sample Size for All-India

2.6.1 To obtain the estimates of PUs for females within 11% of RSE, the second-stage sample sizes ( $m_0$ ) per FSU were found to be 6 for the rural sample and 8 for the urban sample and, the first-stage sample sizes ( $n_0$ ) were found to be 2028 for the rural sample and 1100 for urban sample.

## 2.7 Sample Size for States/UTs

2.7.1 The total number of FSUs required for estimating the PUs with 10% RSE's, separately for each State/UT for the combined sexes, were around 33,439 and 7,211 for the rural and urban areas, respectively.

## 2.8 Resource Requirement for FOD

2.8.1 To provide the estimate of female PU (CWS) at 11% RSE, the required number of investigators (including 10 per cent leave reserve) was 112 for annual all India estimate and 447 for quarterly all India estimate. The corresponding requirement of superintendent was around 37 and 149, respectively. Similarly the requirement of senior superintendent was 12 and 50, respectively.

## 2.9 Resource Requirement for DPD

2.9.1 To provide the estimates of female PU (CWS) with 11% RSE's, the total number of processing personnel (including 10 percent leave reserve) required were around 44 and 176, for providing yearly and quarterly all India estimates, respectively.

## 2.10 Recommendations

2.10.1 The Committee recommended that an independent survey needed to be carried out for meeting the quarterly and annual requirements of SDDS and Planning Commission. However it recommended that in the present field conditions, the rotational panel survey, although technically sound for measuring level and change over time, might not be appropriate as the estimates would be subject to large non-sampling errors.

2.10.2 The committee examined the feasibility of measuring employment generated through EGS, with a fair degree of reliability. It was noted that the National Rural Employment Guarantee Act, which started in 2005, was implemented gradually in the country. As a result, the feasibility of capturing the event of public participation in NREGA was seriously constrained based on the NSS data collected prior to 2005. The Committee was of the view that the next quinquennial round of Employment and Unemployment in the context of development in the NREGA implementation might provide further inputs for taking decision of this specific TOR.

2.10.3 The committee examined the analysis done by the SDDS Group in respect of the estimate of workers for the compilation categories required for national account and observed that even for the quinquennial round, the estimates of proportions were not reliable separately for all the industry sections. In order to get the reliable estimates of proportion of workers for group of industry sections, or for the compilation categories (CCs), further meaningful re-grouping of industries was necessary.

2.10.4 For providing estimate of yearly female (PU) at 10% level of R.S.E. at state level, a total of 66328 FSUs (with 6 SSUs) and 44331 FSUs (with 8 SSUs) will have to be surveyed in rural and urban sectors respectively. With this precision level, for undertaking the survey in the field, the requirement of the investigators, superintendents and sr. superintendents will be 3990, 1330 and 443 respectively. The corresponding requirement of processing personnel will be 1583. The requirement of SDDS, being the national level parameters, would be derivable from the envisaged sample size for the proposed annual survey.

2.10.5 For providing estimate of yearly female (WPR) at 5% level of R.S.E. at the state level, a total of 10368 FSUs (with 6 SSUs) and 12632 FSUs (with 9 SSUs) will have to be surveyed in rural and urban sectors, respectively. For quarterly estimates, the corresponding requirement would be 41472 FSUs ( with 6 SSUs) and 50528 FSUs ( with 9 SSUs).

2.10.6 The Committee was of the view that it would not be possible to collect data on employment and unemployment survey through contract investigators/officials. They emphasized that before the survey could be taken up on a regular basis, the regular staff for FOD, DPD and other Divisions of NSSO should be deployed.

2.10.7 The Committee also felt that with the experience of conducting annual survey on employment and unemployment for 2 to 3 years and examining the quality of the indicators obtained from the survey a decision might be taken then whether the quarterly estimates of employment and unemployment indicators could be generated or not for SDDS purpose.

Some key employment and unemployment indicators and their RSEs from past surveys

Annexure IV

Table A1 (U): Quarterly estimates of worker population ratio in current weekly status and their relative standard errors: 38th to 55th round

round (year)	estimate / r.s.e	quarters of agricultural year (July-June)				whole round	sample size
		1st	2nd	3rd	4th		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>URBAN</b>							
<b>Male</b>							
38 (1983)	estimate r.s.e.	489 1.04	498 0.79	495 0.94	491 1.04	493 0.49	53876
43 (87-88)	estimate r.s.e.	487 0.83	491 0.74	491 0.82	499 0.74	492 0.37	56385
50 (93-94)	estimate r.s.e (%)	514 0.90	506 1.00	506 0.85	518 0.86	511 0.41	55925
55 (99-00)	estimate r.s.e (%)	507 1.04	507 0.94	501 0.96	522 0.48	509 0.50	59980
<b>Female</b>							
38 (1983)	estimate r.s.e.	112 4.19	123 3.49	121 3.11	115 3.76	119 1.63	11302
43 (87-88)	estimate r.s.e.	126 3.56	120 2.83	112 3.56	117 3.38	119 1.60	12176
50 (93-94)	estimate r.s.e (%)	153 3.18	136 2.89	135 2.73	134 3.09	139 1.55	14050
55 (99-00)	estimate r.s.e (%)	134 7.15	123 1.69	133 2.92	120 4.03	128 2.38	14020
<b>Person</b>							
38 (1983)	estimate r.s.e.	309 1.35	320 0.98	318 1.03	312 1.22	315 0.56	65178
43 (87-88)	estimate r.s.e.	316 0.94	313 0.75	311 1.02	316 0.88	314 0.45	68561
50 (93-94)	estimate r.s.e (%)	343 0.99	330 1.08	332 0.99	334 0.98	335 0.50	69975
55 (99-00)	estimate r.s.e (%)	327 1.94	323 1.07	327 1.38	330 1.17	327 0.53	74000

Table A2 (U): Quarterly estimates of proportion of unemployed in current weekly status and their relative standard errors: 38th to 55th round

							<b>URBAN</b>
round	estimate	quarters of agricultural year (July-June)				whole	sample
(year)	/ r.s.e	1st	2nd	3rd	4th	round	size
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Male</b>							
38	estimate	37	35	35	36	35	3805
(1983)	r.s.e.	6.11	5.90	5.44	7.68	2.56	
43	estimate	43	37	31	32	35	3987
(87-88)	r.s.e.	4.05	5.15	5.22	4.94	2.58	
50	estimate	33	30	26	23	28	2989
(93-94)	r.s.e (%)	4.73	6.22	6.03	6.89	2.82	
55	estimate	32	30	31	29	31	3568
(99-00)	r.s.e (%)	4.06	1.91	5.29	3.06	3.13	
<b>Female</b>							
38	estimate	10	7	12	11	10	1012
(1983)	r.s.e.	11.23	11.68	11.62	8.74	5.15	
43	estimate	14	11	10	12	12	1282
(87-88)	r.s.e.	8.34	8.62	8.93	8.36	3.96	
50	estimate	17	13	11	12	13	1312
(93-94)	r.s.e (%)	7.58	10.87	12.38	12.66	5.11	
55	estimate	13	10	8	9	10	1282
(99-00)	r.s.e (%)	10.53	12.98	15.21	10.68	6.77	
<b>Person</b>							
38	estimate	24	22	24	24	23	4817
(1983)	r.s.e.	5.63	5.44	5.88	6.71	2.49	
43	estimate	29	25	21	22	24	5269
(87-88)	r.s.e.	3.65	4.62	4.93	4.59	2.27	
50	estimate	25	22	19	18	21	4301
(93-94)	r.s.e (%)	4.35	5.88	5.56	6.38	2.54	
55	estimate	23	21	20	19	21	4850
(99-00)	r.s.e (%)	4.60	2.67	5.61	4.15	0.73	

Table A3 (U): Quarterly estimates of labour-force participation rate in current weekly status and their relative standard errors: 38th to 55th round

							<b>URBAN</b>
round	estimate	quarters of agricultural year (July-June)				whole	sample
(year)	/ r.s.e	1st	2nd	3rd	4th	round	size
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Male</b>							
38	estimate	526	534	529	527	528	57681
(1983)	r.s.e.	0.93	0.74	0.89	0.83	0.45	
43	estimate	530	528	521	531	528	60372
(87-88)	r.s.e.	0.77	0.71	0.73	0.72	0.36	
50	estimate	547	536	532	541	539	58914
(93-94)	r.s.e (%)	0.81	0.86	0.81	0.77	0.37	
55	estimate	540	537	532	550	540	63548
(99-00)	r.s.e (%)	0.85	0.89	0.88	0.45	0.45	
<b>Female</b>							
38	estimate	121	130	132	126	128	12314
(1983)	r.s.e.	3.99	3.33	3.10	3.45	1.56	
43	estimate	141	131	122	130	131	13458
(87-88)	r.s.e.	3.36	2.72	3.39	3.21	1.53	
50	estimate	170	148	146	146	152	15362
(93-94)	r.s.e (%)	2.90	2.69	2.70	2.92	1.43	
55	estimate	147	133	141	129	138	15302
(99-00)	r.s.e (%)	6.22	1.89	2.42	3.98	2.22	
<b>Persons</b>							
38	estimate	333	342	341	336	338	69995
(1983)	r.s.e.	1.28	0.89	1.01	1.00	0.53	
43	estimate	345	338	332	338	338	73830
(87-88)	r.s.e.	0.92	0.77	0.92	0.86	0.43	
50	estimate	368	352	351	352	355	74276
(93-94)	r.s.e (%)	0.87	1.00	0.91	0.91	0.47	
55	estimate	350	344	348	349	348	78850
(99-00)	r.s.e (%)	1.37	0.87	1.29	1.13	0.47	



Table A4: WPR, PU, UR along with their RSEs in different approaches for different category of persons in NSS 61<sup>st</sup> round

All India						
category of persons	estimate			RSE of estimate		
	PS+SS	CWS	CDS	PS+SS	CWS	CDS
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			<b>WPR</b>			
rural male	546	524	488	0.3	0.3	0.3
rural female	327	275	216	0.6	0.7	0.8
rural persons	439	402	355	0.3	0.3	0.3
urban male	549	537	519	0.5	0.5	0.5
urban female	166	152	133	1.7	1.7	1.8
urban persons	365	353	334	0.5	0.5	0.5
			<b>PU</b>			
rural male	9	21	42	3.3	2.8	1.7
rural female	6	12	21	5.0	4.0	2.6
rural persons	7	16	32	3.2	2.6	1.6
urban male	22	30	42	4.1	3.4	2.8
urban female	12	15	18	5.6	5.2	4.7
urban persons	17	23	30	3.5	3.0	2.6
			<b>UR</b>			
rural male	16	38	80	3.3	2.7	1.7
rural female	18	42	87	5.1	4.0	2.6
rural persons	17	39	82	3.2	2.6	1.6
urban male	38	52	75	4.1	3.4	2.8
urban female	69	90	116	5.4	4.8	4.2
urban persons	45	60	83	3.4	2.9	2.5

## Optimum Sample Size and Human Resources Requirement for PLFS

### Approach and Methodology Used

#### 1. Data Used

1.1 The data pertaining to NSS 50<sup>th</sup> round have been analysed, for which the stagewise variances are readily available, to determine the optimal sample size for the estimates of level as well as the change parameters to keep the RSE's within a given level.

#### 2. Problems in Obtaining Stage-wise Variances from NSS Data

2.1 A stratified two-stage sample design is used for the Employment-Unemployment Surveys (EUS) of NSSO. Determination of optimum, i.e., most economical sample sizes, involves analysis of the sampling variance into components corresponding to the two stages of sampling. The variances of the employment & unemployment rates (WPRs and PUs) have been estimated by Sankaranarayanan (1979; 1978) for the EUS's of the 27<sup>th</sup> and 32<sup>nd</sup> rounds of NSSO. However, no attempt to estimate the stage-components of variances was made in these papers. The *design effect* (Deff) estimated from the 50<sup>th</sup> round data is given in Table A5

Table A5: Design effect ( $D^2$ ) for different parameters estimated from

indicators	NSS 50 <sup>th</sup> round data					
	Deff. ( $D^2$ )					
	rural			urban		
	male	female	person	male	female	person
(1)	(2)	(3)	(4)	(5)	(6)	(7)
WPR	1.63	3.46	2.46	1.92	3.85	2.62
PU	3.13	4.05	4.27	2.50	3.41	2.88
LFPR	1.50	3.51	2.44	1.75	3.64	2.53

separately for WPRs, PUs and LFPRs cross-classified by sex and sector. The only available estimates of stage-components of variance of NSS estimates pertain to consumer expenditure estimates (Sharma and Rao, 1980).

2.2 Estimation of stage-components of variance of NSS estimates has certain problems to which the available theory does not provide unique solution. For selection of rural sample, NSSO generally used a *systematic* sampling at both the stages. The sample of the first stage units is, however, drawn in the form of two independent *sub-samples*. This makes estimation of the total variance possible for the NSS estimates. The problem of stage-component of variance lies in the selection at the second stage. In each selected FSU, only one *systematic* sample of the SSU's is drawn. From a *systematic* sample, it is not possible to give an *unbiased*, or even *consistent*, estimator of the second-stage variance by any standard technique (Wolter, 1985).

2.3 Sharma & Rao (1980) have used a biased estimator for the second stage component of the design variance. First, they computed the total variance using the *sub-sample* estimates. For the second-stage component, they regarded the *systematic* sample as an SRS and used SRS formula, which led to overestimation of the second-stage component. The first stage

component of the variance was obtained as the difference between the total and second-stage variances.

2.4 Kish (1965) has suggested a useful device for overcoming this problem. Using *design effect* (Deff) estimated from the past data, he demonstrated the possibility of estimating the variance components to a good approximation, even when *systematic*, *stratified* or other complex designs are employed. Ready applicability of this method has made it popular among the practical samplers.

This method too is not applicable to NSS estimates of employment and unemployment rates. The measure of homogeneity, used in this method, relates only to the ultimate sampling unit forming the clusters. In the EUSs of NSSO, the second stage (ultimate) sampling units are households but the observational units are the individuals of a household. Thus, use of this method in determination of optimum sample sizes is limited to cases where the intended multistage sample clustering is able to provide the relevant measure of homogeneity, which is estimated from the *design effect* (Foreman, 1991).

### 3 Underlying Assumptions for Measurement of Stage-wise Variances from NSS Data

3.1 For this study, the stage-components of design variance have been estimated by a method specifically devised for the NSS estimates. It is applied to the 50<sup>th</sup> round data, for which a second-stage sample size of 10 households was used. The estimates of stage-components of the variance so obtained can be used for a priori estimation of variance of the future EUSs.

These estimates of stage-components of variance have been used to determine the optimum sample sizes at the two stages so as to restrict the total variance within a desired limit. The assumptions made in the process are given below with their justifications in brief:

i) *Assumption 1*: The variance of an estimate  $\hat{Y}$  can be expressed as

$$V(\hat{Y}) = \frac{A_1}{n} + \frac{A_2}{mn}$$

where  $n$  is the size of the first-stage sample and  $m$  is the (fixed) size of the second stage sample.

Strictly speaking, this holds good only for *with replacement* sampling schemes at both the stages. As the *systematic* sampling designs are used for sample selection in NSSO, the above expression can only be regarded as an approximation. It does not include any term for bias resulting from *systematic* selection. The actual estimates of RSE's (i.e., obtained by using independent sub-samples) and the one computed from the sub-round RSE's are given in Table A6 for LFPR and PU separately for rural and urban sectors of all-India. The computed RSE's (shown in cols. 4 & 6) have been worked out under the assumption that the total variance is inversely proportional to the number of FSUs in the sample.

The actually estimated and computed RSE's, as seen from the table, are much more close for the rural than the urban. The closeness between the two sets of RSE's suggests that the

selection of the FSUs may be regarded as a *with replacement* sample, even though they were actually selected by a *PPS systematic sampling* scheme.

For second-stage component of the variance in the above expression, there is no direct evidence in its favour. However, since the study is limited to categorical data and since a geographical order is followed for listing and subsequent selection of households, the *systematic* selection of the SSUs can be regarded as stratified sample with proportionate allocation. In that case, the expression of  $V(\hat{Y})$  given above will be valid.

ii) *Assumption 2*: The proposed survey will be conducted with a fixed size of the SSUs per FSU.

iii) *Assumption 3*: Allocation of FSUs to different strata will be proportional to census population of a stratum, as in the 50<sup>th</sup> round.

iv) *Assumption 4*: Stratification of households into affluent and non-affluent households will also be followed in the proposed surveys. Allocation to the second stage strata will be according to the same principle as in the 50<sup>th</sup> round.

v) *Assumption 5*: There is an insignificant correlation between the sub-round estimates. This, too, is a valid assumption. The sets of RSE's in Table A6 would not have been close otherwise.

vi) *Assumption 6*: The ordering of FSUs in the sampling frame will not be altered.

vii) *Assumption 7*: The principles of ordering and listing of households will remain unchanged.

**Table A6: Comparison between RSE's actually estimated from whole rounds and RSE's for whole rounds computed from sub-round RSE's**

sex	round no.	rural		urban	
		actually estimated r.s.e	r.s.e computed from subround r.s.e's	actually estimated r.s.e	r.s.e computed from subround r.s.e's
(1)	(2)	(3)	(4)	(5)	(6)
<b>Labour Force Participation Rate (LFPR)</b>					
<b>Male</b>	47	0.70	0.70	1.11	1.03
	49	0.60	0.50	0.84	0.78
	50	0.26	0.26	0.37	0.41
<b>Female</b>	47	1.60	1.60	4.69	4.21
	49	1.56	1.56	3.39	3.31
	50	0.73	0.76	1.43	1.40
<b>Person</b>	47	0.69	0.72	1.39	1.31
	49	0.67	0.66	0.95	0.36
	50	0.31	0.32	0.47	0.46
<b>Proportion Unemployed (PU)</b>					
<b>Male</b>	47	7.97	7.92	8.51	8.50
	49	8.33	8.51	6.40	6.33
	50	3.24	3.23	2.82	2.98
<b>Female</b>	47	15.43	14.65	20.81	19.15
	49	19.31	21.11	18.23	13.29
	50	5.39	5.17	5.11	5.44
<b>Person</b>	47	7.51	7.25	8.39	7.81
	49	8.87	9.19	6.29	6.10
	50	3.14	3.16	2.54	2.77

#### 4. Method of Estimating Stage-wise variances

4.1 First, the second-stage sample of 10 households of each FSU has been partitioned systematically into two-half samples drawn separately from each stratum. Thus, four replicates with 5 households from each FSU were formed from the two independent sub-samples. These replicates were assumed to be independent. The exercise has been restricted to two fixed half-samples of second-stage units for each sub-sample of FSUs. This is done for two reasons, viz., (a) making limited use of resources for this part of the study, and (b) the four replicates that were possible to be formed were found to be sufficient, as the estimates and RSE's from all the replicates varied within a very small range (see Table A7). The RSE's were then computed from the four replicates (of second stage half samples) following the same method as for the whole sample, i.e., by using sum of squares of difference of sub-sample estimates at the stratum level.

Second, each of the variance estimates obtained from the half samples being unbiased (to the extent variance estimators of ratio mean are), the simple average of the four variance estimates was used to represent the sampling variance of a sample consisting of n FSUs and m/2 SSUs per FSU.

Third, the difference between the average of half-sample variance estimates (VH) and the variance estimate of the whole sample (VT) was taken as an (unbiased) estimation of the second-stage component of the design variance,  $\frac{A_2}{mn}$ .

**Table A7: A comparison between half-sample variances and whole sample variances and estimated unit variance ratio ( $A_1/A_2$ )**

sex	activity status	half-sample variance				average	whole sample variance	$A_1/A_2$
		h.s. 1	h.s.2	h.s. 3	h.s. 4			
<b>RURAL</b>								
<b>Male</b>	WPR	36680	38310	38892	38600	38121	22106	0.038
	PU	3834	3639	4822	4076	4093	2687	0.091
	LFPR	36787	36519	34842	34589	35684	20227	0.031
<b>Female</b>	WPR	51058	51893	51893	53959	52201	39331	0.206
	PU	2796	2389	2942	2146	2568	1859	0.162
	LFPR	52859	52478	53750	57241	54082	40594	0.201
<b>Person</b>	WPR	23568	24580	24825	24702	24419	16631	0.114
	PU	2168	1744	2444	1744	2025	1420	0.135
	LFPR	23691	23578	24989	23578	23959	16631	0.127
<b>URBAN</b>								
<b>Male</b>	WPR	67652	62941	87498	71161	72313	43894	0.054
	PU	10088	8930	11925	12357	10825	6235	0.036
	LFPR	72092	61703	78557	61931	68571	39772	0.038
<b>Female</b>	WPR	77707	81567	56497	62101	69468	46419	0.101
	PU	7074	6178	6517	6413	6546	4413	0.107
	LFPR	78036	81659	59888	66858	71610	47245	0.094
<b>Person</b>	WPR	44012	42009	38833	37978	40708	28056	0.122
	PU	4928	3894	5652	4629	4776	2845	0.047
	LFPR							

Since,

$$V_T = \frac{A_1}{n} + \frac{A_2}{mn} \quad \text{and}$$

$$V_H = \frac{A_1}{n} + \frac{2A_2}{mn},$$

$$V_H - V_T = \frac{A_2}{mn}$$

Again,  $2V_T - V_H = \frac{A_1}{n}$  was taken as an estimate of the first-stage component of the design variance. The ratio between the unit variances  $A_1/A_2$  was derived from the estimates of the stage-components of variance.

Fourth, the cost per sample FSU ( $C_1$ ) and cost per sample SSU ( $C_2$ ), in this context, could be approximated in terms of investigator-time requirements.

Fifth, the optimum size of the second stage samples ( $m_o$ ) per FSU were computed for each employment -unemployment rates separately for each unit-cost ratio as follows

$$m_o = \sqrt{\frac{C_1 A_2}{C_2 A_1}}$$

Sixth, for each  $m_o$  so obtained the optimum size ( $n_o$ ) of the first stage sample for each employment-unemployment rate is worked out as follows:

$$n_o = \frac{A_1 + \frac{A_2}{m_o}}{V_o}$$

Where  $V_o$  is the square of product of the desired level of RSE and the value of the rate, as estimated from the 50<sup>th</sup> round.

## 5. Procedure for Estimating Indicators at State Level

5.1 For obtaining the optimal sample size for the states, the ratio of stage-wise variances ( $A_1/A_2$ ) for each state has not been calculated separately as done for all-India. This has been purposively avoided, as the procedure will lead to a situation where the number of second stage units to be surveyed in a FSU will be different for different states and for rural and urban sectors also – causing operational problems in the field. Instead, the ratios of stage-wise variances ( $A_1/A_2$ ) by sex and sector for the states have been assumed to be of the order of all-India estimates for the indicators considered. In other words, the optimal values of second-stage ( $m_o$ ) sample per FSU to be surveyed for the states are assumed to be the same as that of all-India. This assumption is crude and the sample size obtained under this assumption may provide some broad idea about the requirement of sample size at the state level. Taking that

into consideration, the optimal values of first-stage ( $n_0$ ) sample size have been obtained for different unit cost ratios ( $C_1/C_2$ ) and different levels of RSE's for the rates of employment and unemployment separately for the male and female population of rural and urban sectors of states and UTs.

## 6. Determination of Optimal sample Size and Human Resources

6.1 The schedules for the first visit and the revisit (see Annexure VII) have been prepared to collect minimum data to satisfy the requirement of PLFS. Considering the small schedule the

Table A8: Different values of  $C_1^*$  and  $C_2^{**}$  in respect of data collection and data processing

division	sector	$C_1$	$C_2$
(1)	(2)	(3)	(4)
FOD (data collection)	urban	4.5	1/6
DPD (data processing)	urban	0.4	0.1

Note\*: *mandays required to collect/process data of a listing schedule*

\*\**: mandays required to collect/process data of a detailed schedule*

workload of data collection and processing in respect of the first stage units ( $C_1$ ) and the second stage units ( $C_2$ ) have been decided for the field work and data processing. The values of  $C_1$  and  $C_2$  are given in Table A8.

6.2 Keeping in view the broad objectives, above mentioned requirements, the required number of FSUs at the first stage and at the

ultimate stage (households) has been obtained. The Table A9 gives the various alternatives and strategy for operationalising the rotational scheme. The sample sizes given in Table A9 is for obtained the estimates of the parameters with desired degree of accuracy in the present methodology followed in NSSO. The requirement of sample size for major states is given in Table A9.1, at the end of this Annexure. The list of the major states is given in Annexure VI.

6.3 It may be seen from Table A9 that, under the present methodology followed in NSSO, for estimating PUs quarterly with 10% RSEs for the urban sectors of 21 major states and India would require 4,245 number of UFS blocks to be surveyed quarterly with 20 number of households per block. The number of FSUs will come down to 1,886 number of UFS blocks for estimating PUs quarterly with 15% RSEs. Obviously, with the 4,245 UFS blocks surveyed quarterly, WPRs for the urban sector of the major states could be estimated with much lower RSEs than even 5%. Interesting to note that this sample size would be able to provide gender specific estimates of PUs for urban India with 5% RSEs. It may be noted that with this sample size, the WPR can be estimated at 0.5% of RSE (for which requirement of FSU is 4277) which in turn will ensure a reasonably good degree of accuracy of the change parameter. Moreover, the distribution of workers at 2-digit level of NIC can be estimated with reasonable degree of accuracy with this sample size.

6.4 Table A9 also shows that to attain 0.5% RSE of the all India person WPR of the urban sector, optimum second stage units to be surveyed is 12. The sample size has been determined on the basis of 50% retention of the sampling units. Under the assumption of value of that  $\rho = 0.8$  with 50% retention, the sample required for rotation scheme is 0.72% of the sample size required in the present methodology. Thus, for 0.5% RSE of the person WPR at the all Indian

level for the urban sector, the sample number of FSUs will be 3079. However, the constraint of allocating a minimum of 8 FSUs per stratum, number of sample FSUs is adjusted to 3128. For the rotation scheme suggested in this report, there could be a possibility of enhancing the sample size of 3128 FUSs with same amount of resources. However, 3128 FSUs may be taken up for survey, in the initial phases and depending on the workload/field condition and experience gathered subsequently, exploration for upward revision of the number of FSUs may be considered later. This sample size would also enable the all India estimates of lead parameters in respect of broad sectoral breakup of the economy at the order of 5% rse.

Table A9: Domain, choice of indicator (s), level of RSE, required sample size and resource requirement

domain	Indicator	level of RSE (%)	optimum sample size		
			in the present design		rotational design
(1)	(2)	(3)	SSU	FSU	FSU
urban areas only	female WPR	5	13	392	282
	person WPR	5	12	43	31
	person WPR	1	12	1069	770
	person WPR*	0.5	12	4277	3079
	female PU	5	13	4317	3108
	female PU	10	13	1079	777
urban areas of major states	female WPR	5	13	9367	6744
	person WPR	5	12	809	582
	person WPR	1	12	20235	14569
	female PU	10	13	27418	19741
	female PU	15	13	12186	8774
	person PU	10	20	4245	3056
	person PU	15	20	1886	1358

Note: 1: State level results have been presented in Table A9.1.

\*: Since a minimum of 8 FSUs is to be allotted in each stratum, the FSU requirement is adjusted to 3128.

6.5 As stated earlier, the allocation is in the multiple of eight to enable 25% rotation, maintaining the sub-sampling in the design. As discussed in para 4.2.5, in the rotational scheme, a fresh sample of 782 FSUs for each quarter will be inducted and the oldest sample of 782 FSUs will be phased out. It may be seen from the state wise and stratum wise allocation plan of 3128 FSUs given in Annexure VIII, some of the NSS regions are very small states and union territories (e.g. some North East States and Islands like Andaman and Nicobar and Lakshdweep) and do not have large enough urban domain. While operationalising PLFS, a view can be taken to merge some of the small stratum in to larger geographically contiguous stratum.

## 7. Resource Requirement

7.1 For undertaking the survey, the resource requirement in terms of manpower to provide quarterly estimate of worker population ratio (WPR) for male and female combined with 0.5% RSE's has been given in Table A9, for which nearly 3128 FSUs are required. The requirement has been calculated in terms of Investigator for data collection and data processing personnel.



7.2 It may be noted that in the proposed PLFS survey, possibility of collecting data through telephonic interview is a feasible option. This may reduce the possibility of actual visit to the sample household. Keeping this in view as well as practical advantages, likely to be derived, by visiting the same household on a number of occasions of, it has been considered that about 50 *active* investigator-days would be available for fieldwork per investigator in a quarter. This apart, a provision of 10% leave reserve, as per Government of India rules, has been kept in all the cases. For undertaking the survey, it has been estimated that for ensuring all India level estimate of WPR (CWS) at 0.5% level of RSE, and keeping in view the framework of organizational and operational structure of PLFS, the human resource requirement would be about 400 (equivalent to 320 for field work and 80 relating to data entry, validation and processing). Envisaging digital flow of data, the investigators role would need to be appropriately defined.

Table A9.1: Number of optimum first-stage units (n0) calculated based on CWS data of NSS 50th round keeping RSE's within desired level for different unit-cost ratios (C1/C2) 18.38 separately for each State/UT in the present design

urban													
state/ u.t (no. of FSUs surveyed in the 50 <sup>th</sup> round)	number of FSUs in the frame	WPR						PU					
		1%		5%		10%			15%				
		male	female	person	male	female	person	male	female	person	male	female	person
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Andhra Pradesh (367)	27204	323	7931	1202	13	317	48	375	1022	238	166	454	106
Assam (88)	3815	187	9430	894	7	377	36	153	408	182	68	181	81
Bihar (216)	10134	208	17129	340	8	685	14	159	1524	208	71	677	92
Chhattisgarh (80)*	5379	506	16964	1173	20	679	47	254	1378	262	113	612	116
Gujarat (240)	25785	846	13552	1215	34	542	49	280	1730	310	125	769	138
Haryana (72)	8804	528	7912	29	21	316	1	372	164	268	165	73	119
Himachal Pradesh (40)	755	196	15181	2277	8	607	91	91	594	48	40	264	21
Jammu & Kashmir (53)	2215	194	17904	716	8	716	29	31	677	59	14	301	26
Jharkhand (104)*	6785	895	23489	2017	36	940	81	289	3239	302	128	1439	134
Karnataka (248)	23403	178	11579	518	7	463	21	196	886	279	87	394	124
Kerala 184	11419	732	5191	1380	29	208	55	111	517	99	49	230	44
Madhya Pradesh (326)	22397	277	4454	368	11	178	15	112	910	102	50	404	46
Maharashtra (559)	58373	674	4621	587	27	185	23	214	997	151	95	443	67
Orissa (104)	7353	653	3517	522	26	141	21	222	451	202	98	200	90
Punjab (198)	11967	184	15050	569	7	602	23	144	3609	119	64	1604	53
Rajasthan (184)	18233	400	6303	522	16	252	21	415	4150	495	185	1845	220
Tamil Nadu (408)	34685	441	8432	1843	18	337	74	156	355	126	70	158	56
Uttarakhand (76)*	2951	692	14116	1411	28	565	56	217	502	151	96	223	67
Uttar Pradesh (443)	51318	619	18484	1066	25	739	43	324	3736	428	144	1660	190
West Bengal (336)	33065	490	11510	1437	20	460	57	48	482	54	21	214	24
Delhi (112)	18210	62	1432	150	2	57	6	378	88	163	198	39	72
<b>major states (4435) **</b>	<b>384250</b>	9286	234180	20235	371	9367	809	4541	27418	4245	2048	12186	1886
<b>India</b>	<b>390913</b>	555	9795	1069	22	392	43	218	1079	201			

Note: \*: The figures for the states of Chhattisgarh, Jharkhand and Uttarakhand have been calculated by considering the estimate and RSE of NSS 61<sup>st</sup> round. The number of blocks surveyed/in the frame refer to the blocks surveyed/were in the frame in NSS 61<sup>st</sup> round.

\*\* it includes the sample sizes of the states of Chhattisgarh, Jharkhand and Uttarakhand

Table A9.1: Number of optimum first-stage units ( $n_0$ ) calculated based on CWS data of NSS 50<sup>th</sup> round keeping RSE's within desired level for different unit-cost ratios ( $C_1/C_2$ ) 18.38 separately for each State/UT for rotational design

urban

state/ u.t (no. of FSUs surveyed in the 50 <sup>th</sup> round)	number of FSUs in the frame	WPR						PU					
		1%			5%			10%			15%		
		male	female	person	male	female	person	male	female	person	male	female	person
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Andhra Pradesh (367)	27204	233	5710	865	9	228	35	270	736	171	120	327	76
Assam (88)	3815	135	6790	644	5	271	26	110	294	131	49	130	58
Bihar (216)	10134	150	12333	245	6	493	10	114	1097	150	51	487	66
Chhattisgarh (80)*	5379	364	12214	845	14	489	34	183	992	189	81	441	84
Gujarat (240)	25785	609	9757	875	24	390	35	202	1246	223	90	554	99
Haryana (72)	8804	380	5697	21	15	228	1	268	118	193	119	53	86
Himachal Pradesh (40)	755	141	10930	1639	6	437	66	66	428	35	29	190	15
Jammu & Kashmir (53)	2215	140	12891	516	6	516	21	22	487	42	10	217	19
Jharkhand (104)*	6785	644	16912	1452	26	677	58	208	2332	217	92	1036	96
Karnataka (248)	23403	128	8337	373	5	333	15	141	638	201	63	284	89
Kerala 184	11419	527	3738	994	21	150	40	80	372	71	35	166	32
Madhya Pradesh (326)	22397	199	3207	265	8	128	11	81	655	73	36	291	33
Maharashtra (559)	58373	485	3327	423	19	133	17	154	718	109	68	319	48
Orissa (104)	7353	470	2532	376	19	102	15	160	325	145	71	144	65
Punjab (198)	11967	132	10836	410	5	433	17	104	2598	86	46	1155	38
Rajasthan (184)	18233	288	4538	376	12	181	15	299	2988	356	133	1328	158
Tamil Nadu (408)	34685	318	6071	1327	13	243	53	112	256	91	50	114	40
Uttarakhand (76)*	2951	498	10164	1016	20	407	40	156	361	109	69	161	48
Uttar Pradesh (443)	51318	446	13308	768	18	532	31	233	2690	308	104	1195	137
West Bengal (336)	33065	353	8287	1035	14	331	41	35	347	39	15	154	17
Delhi (112)	18210	45	1031	108	1	41	4	272	63	117	143	28	52
<b>major states (4435) **</b>	<b>384250</b>	6686	168610	14569	267	6744	582	3270	19741	3056	1475	8774	1358
<b>India</b>	<b>390913</b>	400	7052	770	16	282	31	157	777	145			

Note: \*: The figures for the states of Chhattisgarh, Jharkhand and Uttarakhand have been calculated by considering the estimate and RSE of NSS 61<sup>st</sup> round. The number of blocks surveyed/in the frame refer to the blocks surveyed/ were in the frame in NSS 61<sup>st</sup> round.

\*\* it includes the sample sizes of the states of Chhattisgarh, Jharkhand and Uttarakhand

**List of Major states**

The major states are those with population one crore<sup>1</sup> or more as per population census 2001 in respect of rural or urban sector separately.

As per this criteria, there are 21 major states in the urban areas.

The major states are:

Andhra Pradesh,  
Assam,  
Bihar,  
Chhattisgarh,  
Delhi,  
Gujarat,  
Haryana,  
Himachal Pradesh,  
Jammu & Kashmir,  
Jharkhand,  
Karnataka,  
Kerala,  
Madhya Pradesh,  
Maharashtra,  
Orissa,  
Punjab,  
Rajasthan,  
Tamil Nadu,  
Uttar Pradesh,  
Uttaranchal,  
West Bengal

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<sup>1</sup> 10 million = 1 crore

**GOVERNMENT OF INDIA  
NATIONAL SAMPLE SURVEY ORGANISATION  
SOCIO-ECONOMIC SURVEY  
PERIODIC LABOUR FORCE SURVEY (URBAN)**

**SCHEDULE 10.1: EMPLOYMENT AND UNEMPLOYMENT  
(FIRST VISIT)**

[0] descriptive identification of sample household	
1. state/u.t:	5. ward /inv. unit /block:
2. district:	6. name of head of household:
3. tehsil/town * :	7. name of informant:
4. house number (as in listing schedule)	

[1] identification of sample household								
item no.	item	code			item no.	item	code	
1.	srl. no. of sample block				9.	FOD sub - region		
2.	schedule number	1	0	1	10.	sample hg/sb number (1/2)		
3.	state - region				11.	sample household number		
4.	district				12.	srl. no. of informant (as in col. 1, block 4)		
5.	stratum number				13.	response code		
6.	quarter and year** (in format)	Q	YYYY		14.	survey code		
7.	month of survey (code)				15.	visit no.		<b>1</b>
8.	panel number (sub – sample)				16.	telephone number	16.1 mobile	
							16.2 land line	

**Codes for Block 1**

item 6: **quarter:** Jan to Mar-1, Apr to Jun-2, Jul to Sep-3, Oct to Dec-4.

item 7: **month of survey** Jan-01, Feb-02, Mar-03, Apr-04, May-05, Jun-06, Jul-07, Aug-08, Sep-09, Oct-10, Nov-11, Dec-12.

item 15: **response code:** informant : co-operative and capable-1, co-operative but not capable-2, busy-3, reluctant-4, others-9.

item 16: **survey code:** household surveyed -1, casualty-2.

\* tick mark (√) may be put in the appropriate place

\*\* entry for the quarter of the survey may be made in the first cell and the year of survey in the second cell in the format given

<b>[2] particulars of field operation</b>										
srl. no.	item	investigator						supervisor		
(1)	(2)	(3)						(4)		
1.	i) name (block letters)									
	ii) code									
2.	date(s) of :	DD	MM	YY	DD	MM	YY			
	(i) survey/ inspection									
	(ii) receipt									
	(iii) scrutiny									
	(iv) despatch									
3.	number of additional sheets attached									
4.	total time taken to canvass Schedule 10.1 (in minutes)									
5.	signature									

<b>[6] remarks by investigator</b>

<b>[7] comments by supervisors</b>

<b>[3] household characteristics</b>		
1.	household size	
2.	household type (code)	
3.	religion (code)	
4.	social group (code)	
5.	condition of structure of the dwelling unit (good – 1, satisfactory – 2, bad – 3)	
6.	whether the household has electricity for domestic use? (yes-1, no-2)	
7.	major source of drinking water (code)	
8.	type of latrine (code)	
9.	monthly hh. consumer expenditure (Rs)	

### **Codes for Block 3**

*item 2: household type: for urban areas: self-employed-1, regular wage/salary earning-2, casual labour-3, others-9.*

*item 3: religion: Hinduism -1, Islam -2, Christianity -3, Sikhism -4, Jainism -5, Buddhism -6, Zoroastrianism -7, others -9.*

*item 4: social group: scheduled tribe-1, scheduled caste-2, other backward class-3, others-9.*

*item 7: major source of drinking water: bottled water-01, tap-02, tube well/ hand pump-03, well: protected-04, unprotected -05; tank/pond (reserved for drinking)-06, other tank/pond -07, river/canal/lake-08, spring-10, harvested rainwater-11, others-19.*

*item 8: type of latrine: service-1, pit-2, septic tank/flush-3, not known-4, other latrine-9*





item 12: **type of enterprise:** central government-1, state government/local bodies-2, public sector- 3, private companies-4, others-5.

[5] current weekly activity particulars for persons of age 15 years and above during the week ended on.....										
DD MM YYYY										
srl. no.	items	details of weekly activity particulars of the persons								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1.	srl. no. of member (as in col. 1, block 4)									
2.	age ( years ) (as in col. 5, block 4)									
3.	whether worked for at least 1 hour during last 7 days ( <i>code</i> )									
<b>for 1 or 2 in item 3, fill up items 4.1 to 4.7 and 5 to 17, otherwise fill up item 16</b>										
4.1	hours worked on 7 <sup>th</sup> day									
4.2	hours worked on 6 <sup>th</sup> day									
4.3	hours worked on 5 <sup>th</sup> day									
4.4	hours worked on 4 <sup>th</sup> day									
4.5	hours worked on 3 <sup>rd</sup> day									
4.6	hours worked on 2 <sup>nd</sup> day									
4.7	hours worked on 1 <sup>st</sup> day									
<b>5</b>	<b>total hours worked during the week (<i>sum of the entries in items 4.1 to 4.7</i>)</b>									
6.	weekly activity status corresponding to the major activity ( <i>code</i> )									
7.	weekly industry (2-digit code of NIC-2004) corresponding to the major activity									
8.	weekly occupation (2-digit code of NCO-2004) corresponding major activity									
9.	weekly activity status corresponding to the 2 <sup>nd</sup> major activity ( <i>code</i> )									
10.	weekly industry (2-digit code of NIC-2004) corresponding to the 2 <sup>nd</sup> major activity									
11.	weekly occupation (2-digit code of NCO-2004) corresponding 2 <sup>nd</sup> major activity									
12.	<b>if entry 31/71 in item 6, type of enterprise (code)</b>									
13.	<b>if entry 41 or 51 in col. 6/9, earning (received/receivable) during the week in the capacity of <i>casual labour</i> (Rs.)</b>									
14.	<b>if entry 31/71 in item 6/9, earnings (received/receivable) during the preceding calendar month in the capacity of <i>regular wage/salaried employee</i> (Rs.)</b>									
15.	<b>if entry 11, 12, 61 in col. 6/9, net income during the preceding calendar month from self-employment activity (Rs.)</b>									
16.	<b>for entry 3 in item 3, whether sought/available for work for at least 1 hour on any day during the week (<i>yes--1, no-2</i>)</b>									
Note: 1. For code 2 in item 3, entry may be made as 0 for the items 4.1 to 4.7.										

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SOCIO-ECONOMIC SURVEY  
PERIODIC LABOUR FORCE SURVEY (URBAN)**

**SCHEDULE 10.1: EMPLOYMENT AND UNEMPLOYMENT  
(REVISIT)**

[0] descriptive identification of sample household	
1. state/u.t:	5. ward /inv. unit /block:
2. district:	6. name of head of household:
3. tehsil/town * :	7. name of informant:
4. house number (as in listing schedule)	

[1] identification of sample household									
item no.	item	code			item no.	item	code		
1.	srl. no. of sample village / block				9.	FOD sub - region			
2.	schedule number	1	0	1	10.	sample hg/sb number (1/2)			
3.	state - region				11.	sample household number			
4.	district				12.	srl. no. of informant (as in col. 1, block 4)			
5.	stratum number				13.	response code			
6.	quarter and year** (in format)	Q	YYYY		14.	survey code			
7.	month of survey (code)				15.	visit no.			
8.	panel number (sub – sample)				16.	telephone number	16.1	mobile	
							16.2	land line	

**Codes for Block 1**

item 6: **quarter:** Jan to Mar-1, Apr to Jun-2, Jul to Sep-3, Oct to Dec-4.

item 7: **month of survey** Jan-01, Feb-02, Mar-03, Apr-04, May-05, Jun-06, Jul-07, Aug-08, Sep-09,  
Oct-10, Nov-11, Dec-12.

item 15: **response code:** informant : co-operative and capable-1, co-operative but not capable-2, busy-3, reluctant-4,  
others-9.

item 16: **survey code:** household surveyed -1, casualty-2.

\* tick mark (√) may be put in the appropriate place

\*\* entry for the quarter of the survey may be made in the first cell and the year of survey in the second cell in the format given

<b>[2] particulars of field operation</b>										
srl. no.	item	investigator			supervisor					
(1)	(2)	(3)			(4)					
1.	i) name (block letters)									
	ii) code									
2.	date(s) of :	DD	MM	YY	DD	MM	YY			
	(i) survey/ inspection									
	(ii) receipt									
	(iii) scrutiny									
	(iv) despatch									
3.	number of additional sheets attached									
4.	total time taken to canvass Schedule 10.1 (in minutes)									
5.	signature									

<b>[6] remarks by investigator</b>

<b>[7] comments by supervisors</b>

<b>[3] household characteristics</b>		
1.	household size	
2.	household type (code)	
3.	religion (code)	
4.	social group (code)	
5.	condition of structure of the dwelling unit (good – 1, satisfactory – 2, bad – 3)	
6.	whether the household has electricity for domestic use? (yes-1, no-2)	
7.	major source of drinking water (code)	
8.	type of latrine (code)	
9.	monthly hh. consumer expenditure (Rs)	

### **Codes for Block 3**

*item 2: household type: for urban areas: self-employed-1, regular wage/salary earning-2, casual labour-3, others-9.*

*item 3: religion: Hinduism -1, Islam -2, Christianity -3, Sikhism -4, Jainism -5, Buddhism -6, Zoroastrianism -7, others -9.*

*item 4: social group: scheduled tribe-1, scheduled caste-2, other backward class-3, others-9.*

*item 7: major source of drinking water: bottled water-01, tap-02, tube well/ hand pump-03, well: protected-04, unprotected -05; tank/pond (reserved for drinking)-06, other tank/pond -07, river/canal/lake-08, spring-10, harvested rainwater-11, others-19.*

*item 8: type of latrine: service-1, pit-2, septic tank/flush-3, not known-4, other latrine-9*



item 12: **type of enterprise:** central government-1, state government/local bodies-2, public sector- 3, private companies-4, others-5.

[5] current weekly activity particulars for persons of age 15 years and above, who are household members as on the date of survey (i.e., for those with codes 1, 2 or 3 in col. 3 of block 4) during the week ended on.....										
DD MM YYYY										
srl. no.	items	details of weekly activity particulars of the persons								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1.	srl. no. of member (as in col. 1, block 4)									
2.	age ( years ) (as in col. 5, block 4)									
3.	whether worked for at least 1 hour during last 7 days ( <i>code</i> )									
<b>for 1 or 2 in item 3, fill up items 4.1 to 4.7 and 5 to 17, otherwise fill up item 16</b>										
4.1	hours worked on 7 <sup>th</sup> day									
4.2	hours worked on 6 <sup>th</sup> day									
4.3	hours worked on 5 <sup>th</sup> day									
4.4	hours worked on 4 <sup>th</sup> day									
4.5	hours worked on 3 <sup>rd</sup> day									
4.6	hours worked on 2 <sup>nd</sup> day									
4.7	hours worked on 1 <sup>st</sup> day									
<b>5</b>	<b>total hours worked during the week (<i>sum of the entries in items 4.1 to 4.7</i>)</b>									
6.	weekly activity status corresponding to the major activity ( <i>code</i> )									
7.	weekly industry (2-digit code of NIC-2004) corresponding to the major activity									
8.	weekly occupation (2-digit code of NCO-2004) corresponding major activity									
9.	weekly activity status corresponding to the 2 <sup>nd</sup> major activity ( <i>code</i> )									
10.	weekly industry (2-digit code of NIC-2004) corresponding to the 2 <sup>nd</sup> major activity									
11.	weekly occupation (2-digit code of NCO-2004) corresponding 2 <sup>nd</sup> major activity									
12.	<b>if entry 31/71 in item 6, type of enterprise (<i>code</i>)</b>									
13.	<b>if entry 41 or 51 in col. 6/9, earning (received/receivable) during the week in the capacity of <i>casual labour</i> (Rs.)</b>									
14.	<b>if entry 31/71 in item 6/9, earnings (received/receivable) during the preceding calendar month in the capacity of <i>regular wage/salaried employee</i> (Rs.)</b>									
15.	<b>if entry 11, 12, 61 in col. 6/9, net income during the preceding calendar month from self-employment activity (Rs.)</b>									
16.	<b>for entry 3 in item 3, whether sought/available for work for at least 1 hour on any day during the week (<i>yes--1, no-2</i>)</b>									
Note: 1. For code 2 in item 3, entry may be made as 0 for the items 4.1 to 4.7.										

## Annexure VIII

State X stratum wise allocation of UFS blocks							
st name	str1	str2	str3	str4	str5	str6	all stratum
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
JAMMU & KASHMIR	24	24	16				64
HIMACHAL PRADESH	16	8					24
PUNJAB	16	24	24	16			80
CHANDIGARH			8				8
UTTARANCHAL	8	8	8				24
HARYANA	16	24	24	8			72
DELHI	8	16	8	96			128
RAJASTHAN	40	40	48	16			144
UTTAR PRADESH	96	72	88	56	24		336
BIHAR	24	32	16	16			88
SIKKIM	8						8
ARUNACHAL PRADESH	8						8
NAGALAND	8	8					16
MANIPUR	16		8				24
MIZORAM	8		8				16
TRIPURA	8	8					16
MEGHALAYA	8	8					16
ASSAM	32	32	8				72
WEST BENGAL	48	64	56	48			216
JHARKHAND	24	24	24				72
ORISSA	24	24	24				72
CHATTISGARH	24	24	16				64
MADHYA PRADESH	48	48	40	32			168
GUJRAT	40	56	24	48	24		192
DAMAN & DIU	8						8
D & N HAVELI	8						8
MAHARASTRA	64	48	88	136	40	16	392
ANDHRA PRADESH	40	64	72	32			208
KARNATAKA	40	48	56	32			176
GOA	8	8					16
LAKSHADWEEP	8						8
KERALA	24	16	32				72
TAMIL NADU	120	64	48	40			272
PONDICHERRY	8	8	8				24
A & N ISLANDS	8	8					16
<b>all-India</b>	<b>888</b>	<b>808</b>	<b>752</b>	<b>576</b>	<b>88</b>	<b>16</b>	<b>3128</b>

## Annexure IX

## State region x stratum-wise allocation of UFS blocks for each quarter

State name	NSS state-region code	total population	str1	str2	str3	str4	str5	str6	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<b>all-India</b>	<b>ALL</b>	<b>285869408</b>	<b>888</b>	<b>808</b>	<b>752</b>	<b>576</b>	<b>88</b>	<b>16</b>	<b>3128</b>
JAMMU & KASHMIR	011		8	8	8				24
JAMMU & KASHMIR	012		8	8					16
JAMMU & KASHMIR	013		8	8	8				24
JAMMU & KASHMIR	ALL	2455930	24	24	16				64
HIMACHAL PRADESH	021		8						8
HIMACHAL PRADESH	022		8	8					16
HIMACHAL PRADESH	ALL	595573	16	8					24
PUNJAB	031		8	8	16				32
PUNJAB	032		8	16	8	16			48
PUNJAB	ALL	8239650	16	24	24	16			80
CHANDIGARH	041				8				8
CHANDIGARH	ALL	808515			8				8
UTTARANCHAL	051		8	8	8				24
UTTARANCHAL	ALL	2169246	8	8	8				24
HARYANA	061		8	16	16	8			48
HARYANA	062		8	8	8				24
HARYANA	ALL	6065987	16	24	24	8			72
DELHI	071		8	16	8	96			128
DELHI	ALL	12888974	8	16	8	96			128
RAJASTHAN	081		8	8	16				32
RAJASTHAN	082		8	8	8	16			40
RAJASTHAN	083		8	8	8				24
RAJASTHAN	084		8	8	8				24
RAJASTHAN	085		8	8	8				24
RAJASTHAN	ALL	13214348	40	40	48	16			144
UTTAR PRADESH	091		16	16	32	8			72
UTTAR PRADESH	092		16	16		24	24		80
UTTAR PRADESH	093		24	16	16	8			64
UTTAR PRADESH	094		8	8	8				24
UTTAR PRADESH	095		32	16	32	16			96
UTTAR PRADESH	ALL	34537857	96	72	88	56	24		336
BIHAR	101		8	16	8				32
BIHAR	102		16	16	8	16			56
BIHAR	ALL	8681720	24	32	16	16			88
SIKKIM	111		8						8
SIKKIM	ALL	59870	8						8
ARUNACHAL PRADESH	121		8						8
ARUNACHAL PRADESH	ALL	227881	8						8
NAGALAND	131		8	8					16



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## State region x stratum-wise allocation of UFS blocks for each quarter

State name	NSS state-region code	total population	str1	str2	str3	str4	str5	str6	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
NAGALAND	ALL	342787	8	8					16
MANIPUR	141		8		8				16
MANIPUR	142		8						8
MANIPUR	ALL	585864	16		8				24
MIZORAM	151		8		8				16
MIZORAM	ALL	441006	8		8				16
TRIPURA	161		8	8					16
TRIPURA	ALL	545750	8	8					16
MEGHALAYA	171		8	8					16
MEGHALAYA	ALL	453528	8	8					16
ASSAM	181		8	8					16
ASSAM	182		8	8	8				24
ASSAM	183		8	8					16
ASSAM	184		8	8					16
ASSAM	ALL	3439178	32	32	8				72
WEST BENGAL	191		8	8	8				24
WEST BENGAL	192		8	16					24
WEST BENGAL	193		8	16	32	40			96
WEST BENGAL	194		16	16	16	8			56
WEST BENGAL	195		8	8					16
WEST BENGAL	ALL	22410056	48	64	56	48			216
JHARKHAND	201		8	8	16				32
JHARKHAND	202		16	16	8				40
JHARKHAND	ALL	5992836	24	24	24				72
ORISSA	211		8	8	8				24
ORISSA	212		8	8	8				24
ORISSA	213		8	8	8				24
ORISSA	ALL	5517154	24	24	24				72
CHATTISGARH	221		8	8					16
CHATTISGARH	222		8	8	16				32
CHATTISGARH	223		8	8					16
CHATTISGARH	ALL	4188448	24	24	16				64
MADHYA PRADESH	231		8	8	8				24
MADHYA PRADESH	232		8	8	8	16			40
MADHYA PRADESH	233		8	8	8	16			40
MADHYA PRADESH	234		8	8	8				24
MADHYA PRADESH	235		8	8					16
MADHYA PRADESH	236		8	8	8				24
MADHYA PRADESH	ALL	15961012	48	48	40	32			168
GUJRAT	241		8	8		16	24		56
GUJRAT	242		8	16		32			56
GUJRAT	243		8	8					16

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## State region x stratum-wise allocation of UFS blocks for each quarter

State name	NSS state-region code	total population	str1	str2	str3	str4	str5	str6	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GUJRAT	244		8	8					16
GUJRAT	245		8	16	24				48
GUJRAT	ALL	18907205	40	56	24	48	24		192
DAMAN & DIU	251		8						8
DAMAN & DIU	ALL	57348	8						8
D & N HAVELI	261		8						8
D & N HAVELI	ALL	50463	8						8
MAHARASTRA	271		8	8	24	104	16	16	176
MAHARASTRA	272		16	8	24	8	24		80
MAHARASTRA	273		8	8	8	8			32
MAHARASTRA	274		8	8	16				32
MAHARASTRA	275		16	8	8	16			48
MAHARASTRA	276		8	8	8				24
MAHARASTRA	ALL	41093571	64	48	88	136	40	16	392
ANDHRA PRADESH	281		8	8	24				40
ANDHRA PRADESH	282		8	16	16				40
ANDHRA PRADESH	283		8	16	16	32			72
ANDHRA PRADESH	284		8	8	8				24
ANDHRA PRADESH	285		8	16	8				32
ANDHRA PRADESH	ALL	20807296	40	64	72	32			208
KARNATAKA	291		8	8	8				24
KARNATAKA	292		8	8	8				24
KARNATAKA	293		8	16	16	32			72
KARNATAKA	294		16	16	24				56
KARNATAKA	ALL	17927029	40	48	56	32			176
GOA	301		8	8					16
GOA	ALL	670577	8	8					16
LAKSHADWEEP	311		8						8
LAKSHADWEEP	ALL	26967	8						8
KERALA	321		8	8	8				24
KERALA	322		16	8	24				48
KERALA	ALL	8257875	24	16	32				72
TAMIL NADU	331		32	24	8	40			104
TAMIL NADU	332		16	8	8				32
TAMIL NADU	333		40	16	16				72
TAMIL NADU	334		32	16	16				64
TAMIL NADU	ALL	27483090	120	64	48	40			272
PONDICHERRY	341		8	8	8				24
PONDICHERRY	ALL	648619	8	8	8				24
A & N ISLANDS	351		8	8					16
A & N ISLANDS	ALL	116198	8	8					16