

## **Note on Sample Design and Estimation Procedure of NSS 67<sup>th</sup> Round**

### **1.0 Introduction:**

1.0.1 The National Sample Survey Office (NSSO), Ministry of Statistics and Programme Implementation (MOSPI), Government of India, since its inception in 1950 has been conducting nationwide integrated large scale sample surveys, employing scientific sampling methods, to generate data and statistical indicators on diverse socio-economic aspects.

1.0.2 The sixty-seventh round of NSS is devoted exclusively for collection of data on economic and operational characteristics of unincorporated non-agricultural enterprises in manufacturing, trade and other service sector (excluding construction). The field operations of the survey commenced on 1<sup>st</sup> July 2010 and will continue up to 30<sup>th</sup> June 2011.

1.0.3 Last surveys of enterprises on trade, unorganised manufacturing and service sectors (excluding trade and construction) were conducted during 53<sup>rd</sup> round (January – December 1997) , 62<sup>nd</sup> round (July 2005 – June 2006) and 63<sup>rd</sup> round of NSS (July 2006 – June 2007) respectively. Other enterprise surveys carried out in between were 55<sup>th</sup> round (informal sector enterprises, 1999-2000), 56<sup>th</sup> round (unorganised manufacturing, 2000-2001) and 57<sup>th</sup> round (unorganised service sector excluding trade, finance and construction, 2001 –2002).

### **2 Outline of Survey Programme**

2.1 **Subject Coverage:** The coverage of NSS 67<sup>th</sup> round (July 2010 – June 2011) will be non-agricultural unincorporated enterprises belonging to three sectors viz., Manufacturing, Trade and Other Services.

The present survey covers the following broad categories:

- (a) Manufacturing enterprises excluding those registered under Sections 2m(i) and 2m(ii) of the Factories Act, 1948
- (b) Manufacturing enterprises registered under Section 85 of Factories Act, 1948
- (c) Enterprises engaged in cotton ginning, cleaning and baling (code 01632 of NIC-2008) excluding those registered under Factories Act
- (d) Enterprises manufacturing bidi and cigar excluding those registered under bidi and cigar workers (condition of employment) Act, 1966
- (e) Trading enterprises
- (f) Other Service sector enterprises excluding construction

Ownership categories of enterprises under coverage in (a) to (f) above are:

- (a) Proprietary and partnership enterprises
- (b) Trusts, Self-help groups (SHGs), Non-Profit Institutions (NPIs), etc.

Following ownership categories of enterprises are excluded from the coverage:

- (a) Enterprises which are incorporated i.e. registered under Companies Act, 1956
- (b) Government and public sector enterprises
- (c) Cooperatives

Coverage of the survey in terms of NIC – 2008 codes are given below.

<b>A. <u>NIC 2008 codes under coverage of the survey</u></b>	
Division/ Group	Description
<b>Manufacturing</b>	
10	Manufacture of Food Products
11	Manufacture of Beverages
12	Manufacture of Tobacco Products
13	Manufacture of Textiles
14	Manufacture of Wearing Apparel
15	Manufacture of Leather and Related Products
16	Manufacture of Wood and of Products of Wood and Cork, except Furniture; Manufacture of Articles of Straw and Plaiting Materials
17	Manufacture of Paper and Paper Products
18	Printing and Reproduction of Recorded Media
19	Manufacture of Coke and Refined Petroleum Products
20	Manufacture of Chemicals and Chemical Products
21	Manufacture of Pharmaceuticals, Medicinal Chemical and Botanical Products
22	Manufacture of Rubber And Plastics Products
23	Manufacture of Other Non-Metallic Mineral Products
24	Manufacture of Basic Metals
25	Manufacture of Fabricated Metal Products, except Machinery and Equipment
26	Manufacture of Computer, Electronic and Optical Products

<b>A. <u>NIC 2008 codes under coverage of the survey</u></b>	
Division/ Group	Description
27	Manufacture of Electrical Equipment
28	Manufacture of Machinery and Equipment N.E.C.
29	Manufacture of Motor Vehicles, Trailers and Semi-Trailers
30	Manufacture of Other Transport Equipment
31	Manufacture of Furniture
32	Other Manufacturing
33	Repair And Installation of Machinery and Equipment
01632	Cotton Ginning, Cleaning and Bailing
<b>Trading</b>	
45	Wholesale and Retail Trade and Repair of Motor Vehicles and Motorcycles
46	Wholesale Trade, except of Motor Vehicles and Motorcycles
47	Retail Trade, except of Motor Vehicles and Motorcycles
<b>Other Services</b>	
37	Sewerage
38	Waste collection, treatment and disposal activities; materials recovery
39	Remediation activities and other waste management services
492	Other Land Transport (excluding 49212, 49213)
50	Water Transport
52	Warehousing and Support Activities for Transportation
53	Postal and Courier Activities
55	Accommodation
56	Food and Beverage Service Activities
58	Publishing Activities
59	Motion Picture, Video and Television Programme Production, Sound Recording and Music Publishing Activities
60	Programming and Broadcasting Activities
61	Telecommunications
62	Computer Programming, Consultancy and Related Activities
63	Information Service Activities
643	Trusts, Funds and Other Financial Vehicles (including special code

A. <u>NIC 2008 codes under coverage of the survey</u>	
Division/ Group	Description
	64309)
649	Other Financial Service Activities Except Insurance And Pension Funding Activities (including special code 64929)
65	Insurance, Reinsurance and Pension Funding, except Compulsory Social Security
661	Other Financial Activities (excluding 6611)
662	Activities Auxiliary to Insurance and Pension Funding (excluding 6629)
663	Fund management activities
68	Real Estate Activities
69	Legal and Accounting Activities
70	Activities of head offices; management consultancy activities
71	Architecture and Engineering Activities: Technical testing and Analysis
72	Scientific Research and Development
73	Advertising and Market Research
74	Other Professional, Scientific And Technical Activities
75	Veterinary Activities
771	Renting and leasing of motor vehicles
772	Renting and leasing of personal and household goods
773	Renting and leasing of other machinery, equipment and tangible goods n.e.c.
78	Employment Activities
79	Travel Agency, Tour Operator And Other Reservation Service Activities
80	Security and Investigation Activities
81	Services To Buildings And Landscape Activities
82	Office Administrative, Office Support and Other Business Support Activities
85	Education
86	Human Health Activities
87	Residential Care Activities
88	Social Work Activities Without Accommodation
90	Creative, Arts and Entertainment Activities
91	Libraries, Archives, Museums and Other Cultural Activities

A. <u>NIC 2008 codes under coverage of the survey</u>	
Division/ Group	Description
92	Gambling and Betting Activities ( <i>coverage will be restricted to legal activities only</i> )
93	Sports Activities and Amusement and Recreation Activities
941	Activities of business, employers and professional membership organizations
949	Activities of Other Membership Organisations (excluding 9492 and part of 9491 relating to organisation)
95	Repair Of Computers and Personal and Household Goods
96	Other Personal Service Activities

B. <u>NIC 2008 codes outside the coverage of the survey</u>	
1. All codes under sections:	
A (Agriculture, forestry and fishing excluding 01632);	
B (Mining and quarrying );	
D (Electricity, gas, steam and air conditioning supply);	
F (Construction);	
O (Public administration and defence; compulsory social security);	
T (Activities of households as employers; undifferentiated goods and services producing activities of households for own use);	
U (Activities of extraterritorial organizations and bodies).	
2. Codes: 36, 491, 49212, 49213, 493, 51, 641, 642, 6611, 774, 942, 9491(organisations only), 9492	

**2.2 Geographical coverage:** The coverage of the survey is the whole of the Indian Union *except* (i) interior villages of Nagaland situated beyond five kilometres of the bus route and (ii) villages in Andaman and Nicobar Islands which remain inaccessible throughout the year.

Leh (Ladakh) and Kargil districts of Jammu & Kashmir do not have any separate sample first-stage units (FSUs) for 'central sample'. For these two districts, sample FSUs drawn as 'state sample' are also treated as central sample. The state directorate of economics and statistics (DES) will provide a copy of the filled-in schedules to Data Processing Division of NSSO for processing.

**2.3 Period of survey and work programme:** The period of survey is of one year duration starting on 1<sup>st</sup> July 2010 and ending on 30<sup>th</sup> June 2011. The survey period of this round is divided into four sub-rounds of three months' duration each as follows:

- sub-round 1 : July - September 2010  
 sub-round 2 : October - December 2010  
 sub-round 3 : January - March 2011  
 sub-round 4 : April - June 2011

In each of these four sub-rounds equal number of sample first stage units (FSUs) i.e. villages/ blocks are allotted for survey with a view to ensuring uniform spread of sample FSUs over the entire survey period. *Because of the arduous field conditions, this restriction is not be strictly enforced in Andaman and Nicobar Islands, Lakshadweep and rural areas of Arunachal Pradesh and Nagaland.*

**2.4 Schedules of enquiry:** During this round, the following schedules of enquiry are being canvassed:

- Schedule 0.0 : list of households and non-agricultural enterprises  
 Schedule 2.34 : unincorporated non-agricultural enterprises  
 (excluding construction )

**2.5 Participation of States:** In this round all the States and Union Territories except Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli and Lakshadweep are participating. The following is the matching pattern of the participating States/ UTs.

Nagaland (U)	: triple
J & K , Manipur	: double
Maharashtra (U)	: one and half
Gujarat	: equal
Kerala	: one and half
Remaining States/ UTs	: equal

### 3 Sample Design

**3.1 Outline of sample design:** A stratified multi-stage design has been adopted for the 67<sup>th</sup> round survey. The first stage units (FSU) are the census villages (Panchayat wards in case of Kerala) in the rural sector and Urban Frame Survey (UFS) blocks in the urban sector. The ultimate stage units (USU) are enterprises in both the sectors. In case of large FSUs, one intermediate stage of sampling is the selection of three hamlet-groups (hgs)/ sub-blocks (sbs) from each large rural/ urban FSU.

#### 3.2 Sampling frame to be used for selection of first stage units

Census 2001 list of villages has been used as the sampling frame for **rural areas**. Auxiliary information such as number of enterprises, number of workers, type of enterprises, activities

of enterprises, etc. available from EC-2005 frame were used for stratification, sub-stratification and selection of enterprises.

In Kerala, list of panchayat wards as per Census 2001 was used as frame since list of such wards is not available as per EC 2005 frame.

In the urban sector, EC-2005 frame was used for 26 cities with population more than a million as per census 2001. Although Mumbai is a million plus city, EC-2005 frame could not be used for Mumbai because of identification problem for IV unit/blocks in the EC for the city. For other cities/towns (including Mumbai), UFS frame (2002-07 phase or latest available phase prior to 2002-07 if it is not available) was used.

**3.3 Stratification:** Each district is a basic stratum in both rural and urban areas. However, in case of urban, each city with population of 1 million or more as per Census 2001 forms a separate stratum and all other cities/towns of a district are grouped to form another stratum.

#### 3.4 Sub-stratification:

(i) Rural: There are three sub-strata in the rural sector:

- (1) Villages with at least 5 establishments (NDE/DE) under coverage in the manufacturing sector as per EC-2005 information;
- (2) Remaining villages having at least 5 NDE/DE under coverage in the services sector including trade as per EC-2005 information;
- (3) Remaining villages of the stratum.

For the State(s) where EC-2005 information cannot be used as auxiliary information for stratification/sub-stratification due to limitations of EC 2005 frame, each district is sub-stratified into 'r/4' sub-strata with a sample allocation of 4 per sub-stratum where 'r' is the sample allocation for the district/stratum. The sub-strata is formed by arranging the villages in terms of population so that total population of each sub-stratum is approximately the same.

(ii) Urban, Million plus cities (excluding Mumbai) :

For each stratum / million plus city, **20 sub-strata** are formed as under:

- |                |   |
|----------------|---|
| Sub-stratum 1: | Blocks with one or more establishment in insurance & pension funding;     |
| Sub-stratum 2: | Remaining blocks with one or more establishment in storage & warehousing; |
| Sub-stratum 3: | Remaining blocks with one or more establishment in                        |

- accommodation;
- Sub-strata 4-8: Remaining blocks with one or more establishment in broad activities of manufacturing (as per SSS formation discussed subsequently under para 3.9);
- Sub-strata 9-12: Remaining blocks with one or more establishment in broad activities of trade (as per SSS formation in para 3.9);
- Sub-strata 13-19: Remaining blocks with one or more establishment in broad activities of other services (as per SSS formation in para 3.9) excluding the activities covered under sub-strata 1-3.
- Sub-strata 20: All remaining blocks of the stratum.

(iii) Urban, Other cities and towns (including Mumbai): Two sub-strata are formed:

- Sub-stratum 1: UFS block types: Bazaar area (BA)/ Industrial area (IA)/ Hospital area/ (HA)/ Slum area (SA) which are likely to contain relatively higher number of enterprises;
- Sub-stratum 2: Remaining UFS blocks of the stratum.

If the number of FSUs in the frame of a rural or urban sub-stratum was found to be less than 8, then separate sub-stratum was not formed and it was merged with the adjacent sub-stratum.

There is only one town (Leh) in Leh district and one town (Kargil) in Kargil district of J & K. These two towns are out of UFS coverage. These are treated as sub-stratum 2 and the entire town is treated as one FSU.

### 3.5 Total Sample size (FSUs):

A sample of 16000 FSUs for central sample and 18248 FSUs for state sample have been allocated at all-India level. Allocations for the State/UTs and sectors for central and state samples are given in Table 1 of the Appendices.

### 3.6 Allocation of total sample FSUs:

(i) All-India allocation over States:

All-India sample size (FSUs) have been allocated to different State/UTs taking into account the minimum allocations required for a State/UT and the proportion of non-agricultural workers as per EC-2005 in the State/UT.

(ii) State/UT allocation over rural/urban sectors: State/UT sample sizes have been allocated to rural and urban sectors of the State/UT in proportion to number of non-agricultural workers as per EC-2005 with the constraint that urban

allocation should not be too high compared to rural allocation and both rural and urban allocations were in multiples of 8.

- (iii) State × sector allocation over strata: Stratum allocations of State/UT sample sizes for each sector have been made in proportion to number of non-agricultural workers as per EC-2005. For the States/UTs where census 2001 frame was used in the rural sector, allocations to strata was made in proportion to population as per census.
- (iv) Stratum allocation over sub-strata: Allocations to sub-strata was made:
  - (a) In proportion to number of non-agricultural workers under coverage as per EC-2005 in rural sector as well as in million plus cities (after assuming the number as 1 for those villages/blocks where number of non-agricultural workers is 0);
  - (b) In proportion to number of blocks with a double weight to sub-stratum 1 for other than million plus cities.

Minimum allocation for a sub-stratum was 4.

### 3.7 Selection of FSUs:

(a) Rural & million plus cities: From each sub-stratum, required number of sample villages/blocks have been selected by probability proportional to size with replacement (PPSWR), size being the number of total non-agricultural workers under coverage in the village/block as per EC-2005.

For the State(s) where EC-2005 information cannot be used as auxiliary information for selection of FSUs due to limitations of EC 2005 frame, size for PPSWR selection have been the population of the village as per Census 2001.

(b) Urban (other than million plus cities): From each sub-stratum FSUs were selected by using Simple Random Sampling Without Replacement (SRSWOR). However, for Leh and Kargil towns, each town was selected 4 times, once in each sub-round.

Both rural and urban samples have been drawn in the form of two independent sub-samples and equal number of samples has been allocated among the four sub rounds.

### 3.8 Formation of segment 9 and selection of hamlet-groups/ sub-blocks

3.8.1 **Formation of Segment 9**: Having determined the boundaries of the sample FSU, all non-agricultural enterprises having 20 or more workers in the entire FSU and having operated at least one day during last 365 days preceding the day of survey (hereinafter to be

called as ‘big enterprises’) are listed and all the *eligible units under coverage* are surveyed. All the listed big units (whether under coverage or not) constitute segment 9. All *eligible enterprises under coverage* are to be surveyed in segment 9.

**3.8.2 Criterion for hamlet-group/ sub-block formation:** Having constituted segment 9 as stated above, it is to be determined whether listing will be done in the whole sample FSU or not. For this, approximate present population (P) and approximate total number of non-agricultural enterprises (E) for the whole FSU is ascertained first from knowledgeable persons. Depending upon the values of ‘P’ and ‘E’, it will be divided into a suitable number (say, D) of ‘hamlet-groups’ in the rural sector and ‘sub-blocks’ in the urban sector as stated below. Final value of ‘D’ is the higher of the two values ‘P’ and ‘E’ based on the dual criteria.

Population/enterprise dual criteria			
population (P)	no. of hgs/ sbs to be formed	no. of non-agricultural enterprises (E)	no. of hgs/ sbs to be formed
less than 1200	1	less than 120	1
1200 - 1599	4	120 - 159	4
1600 - 1999	5	160 - 199	5
2000 - 2399	6	200 - 239	6
and so on	...	and so on	...

While considering enterprise criteria, segment 9 enterprises, if any, is excluded from the count of ‘E’, if possible.

For rural areas of Himachal Pradesh, Sikkim, Uttarakhand (except four districts Dehradun (P), Nainital (P), Hardwar and Udham Singh Nagar), Poonch, Rajouri, Udampur, Doda, Leh (Ladakh), Kargil districts of Jammu and Kashmir and Idukki district of Kerala, the number of hamlet-groups to be formed are as follows:

Population/enterprise dual criteria			
population (P)	no. of hgs/ sbs to be formed	no. of non-agricultural enterprises (E)	no. of hgs/ sbs to be formed
less than 600	1	less than 120	1
600 - 799	4	120 - 159	4
800 - 899	5	160 - 199	5
1000 - 1199	6	200 - 239	6
and so on	...	and so on	...

### 3.8.3 Formation and selection of hamlet-groups/ sub-blocks:

In case hamlet-groups/ sub-blocks are to be formed in the sample FSU, the same should be done either by more or less equalizing population or by equalising number of non-agricultural enterprises. If the criterion for deciding the value of 'D' is population, then hg/sb may be formed by equalising population. On the other hand, if enterprise criterion has been used for deciding 'D', then equalise the number of non-agricultural enterprises to form 'D' number of hg/sb. If the value of 'D' is same for both population and enterprise criteria, then hg/sb may be formed by equalising population.

**3.8.4 Segments 1 & 2:** Two segments (in addition to segment 9 already formed) are selected from a large FSU wherever hamlet-groups/ sub-blocks have been formed in the following manner – Segment 1 is the hg/sb having maximum number of establishments under the coverage Two more hg's/sb's are chosen by SRSWOR and combined to form Segment 2.

Listing and selection of the enterprises are done independently in the two selected segments. The FSUs without hg/ sb formation is treated as sample segment number 1.

### 3.9 Formation of Second Stage Strata and allocation of enterprises for schedule 2.34:

A maximum of nineteen (19) second-stage strata (SSS) are formed within each sample FSU. Composition of various SSS is as under:

- (i) 5 SSS considering various broad manufacturing groups are formed in each segment for **Manufacturing sector Establishments:** (1) **SSS 1** - Food products, Beverage and Tobacco Products, (2) **SSS 2** - Textiles, Leather, etc. and Cotton ginning, cleaning and baling, (3) **SSS 3** - Wood and wood products, paper and paper products, printing and publishing etc & Furniture, (4) **SSS 4** - Petroleum Products, chemicals, rubber, metals, metal products, machinery and equipments, etc., and (5) **SSS 5** – remaining manufacturing activities.
- (ii) 4 SSS are formed in each segment for **Trade sector Establishments:** **SSS 6** comprises the activities of commission agents. Excluding the activities of commission agents, three more SSS are formed. They are as follows: **SSS 7** - Trade and repair of motor vehicles and motor cycles; **SSS 8** – other wholesale trade and **SSS 9** – other retail trade.
- (iii) 7 SSS are formed in each segment for **Service sector Establishments (other than trade)** corresponding to the following broad activities: **SSS 10** – Accommodation & food service, **SSS 11** - Transport, storage, information & communication, **SSS 12** - Financial & insurance activities, **SSS 13** - Real Estate and Renting and Business Activities, **SSS 14** - Education, **SSS 15** – Human health & Social work, and **SSS 16** - Other services.

- (iv) 3 SSS are formed in each segment for own account enterprises (OAEs) as follows: **SSS 17** – OAEs in Manufacturing, **SSS 18** – OAEs in Trade, and **SSS 19** – OAEs in Other services.

NIC 2008 codes grouped under each SSS are listed in the following table:

<b>SSS number</b>	<b>NIC 2008 Codes</b>	<b>Description of major activities</b>
<b>A. Establishments</b>		
<b>A.1 Manufacturing</b>		
1	10 – 12	Food products, Beverages and Tobacco products
2	01632, 13 – 15	Cotton ginning, cleaning and bailing, Textiles, Wearing Apparel, Leather and Leather products
3	16 – 18, 31, 32	Wood and wood products, paper and paper products, printing etc.
4	19 – 25, 27, 28, 33	Petroleum Products, Chemicals, Pharmaceuticals, Rubber, Plastics, Metals, Metal products, machinery and equipments etc.
5	26, 29, 30	Remaining manufacturing activities
<b>A.2 Trade</b>		
6	461	Commission agents for wholesale trade
7	45	Trade and repair of motor vehicles and motorcycles
8	462, 463, 464, 465, 466, 469	Other wholesale trade
9	47	Other retail trade

<b>SSS number</b>	<b>NIC 2008 Codes</b>	<b>Description of major activities</b>
<b>A.3 Other Services</b>		
10	55, 56	Accommodation and food service activities
11	49211, 49219, 4922, 4923, 50, 52, 53, 58 – 63	Transport, Storage, Information and Communication
12	64300, 64309 (SHG), 6491, 64920, 64929 (activity of money lenders), 6499, 65, 6612, 6619, 662, 663	Financial and Insurance activities
13	68, 69, 70 – 75, 771, 772, 773, 78 – 82	Real Estate, Professional, Scientific and Technical, Rental & Leasing activities
14	85	Education
15	86 – 88	Human Health and Social work
16	37 – 39, 90 – 93, 941, 9491, 9499, 95, 96	Other personal services
<b>B. OAEs : Manufacturing, Trade and Other Services</b>		
17	01632, 10 – 33	Manufacturing
18	45 – 47	Trade
19	37 – 39, 49211, 49219, 4922, 4923, 50, 52 – 63, 64300, 64309, 6491, 64920, 64929, 6499, 65, 6612, 6619, 662, 663, 68, 69, 70 – 75, 771, 772, 773, 78 – 82, 85 – 93, 941, 9491, 9499, 95, 96	Other Services
<b>NICs not under coverage</b>		
Sections: A, B, D, F, O, T, U, Codes: 36, 491, 49212, 49213, 493, 51, 641, 642, 6611, 774, 942, 9491(organisations only), 9492		

### 3.10 Selection of enterprises

3.10.1 The **number of enterprises to be selected** for survey (excluding segment 9) from each FSU × segment × SSS is given below:

enterprise type	sector	SSS number	number of enterprises to be surveyed	
			without hg/ sb formation	with hg/ sb formation (for each segment)
establishments	manufacturing	1	2	1
		2	2	1
		3	2	1
		4	2	1
		5	2	1
		<b>sub-total</b>	<b>10</b>	<b>5</b>
	trade	6	2	1
		7	2	1
		8	2	1
		9	2	1
		<b>sub-total</b>	<b>8</b>	<b>4</b>
	services	10	2	1
		11	2	1
		12	2	1
		13	2	1
		14	2	1
15		2	1	
16		2	1	
	<b>sub-total</b>	<b>14</b>	<b>7</b>	
OAEs	manufacturing	17	4	2
	trade	18	4	2
	services	19	4	2
	<b>sub-total</b>	<b>12</b>	<b>6</b>	

**It may be noted that from each segment × SSS, at least one enterprise must be surveyed if there are some enterprises in the corresponding frame. In other words, as per the notations used in blocks 5a and 5b of schedule 0.0,  $e > 0$  if  $E > 0$  for each FSU × segment × SSS.**

3.10.2 In addition to the above, **all the eligible enterprises of segment 9 will be surveyed.**

3.10.3 **Selection of Enterprises:** Sample enterprises from each SSS are selected by SRSWOR.

However, **all the establishments in the frame will be selected** for a broad category of establishments (manufacturing/trade/other services) in the following situations:

- (i) All the manufacturing establishments if total number of establishments in manufacturing SSSs is less than or equal to 10 considering both the segments 1 & 2
- (ii) All the trading establishments if total number of establishments in trading SSSs is less than or equal to 8 considering both the segments 1 & 2
- (iii) All the 'other service sector' establishments if total number of establishments in other services SSSs is less than or equal to 14 considering both the segments 1 & 2.

3.11 Brief descriptions of different types of service sector enterprises under the coverage of the survey are given below. NIC – 2008 book may be consulted for detailed list of all activities.

NIC-2008		coverage of survey
code	activity	
37	SEWERAGE	The operation and maintenance of sewer systems; Collecting and transporting of human or industrial waste water or rain water by means of sewerage networks, collectors, tanks and other means of transport (sewage vehicles etc.); Treatment of waste water or sewer by means of physical, chemical or biological processes
38	WASTE COLLECTION, TREATMENT AND DISPOSAL ACTIVITIES; MATERIALS RECOVERY	Collection of non-hazardous waste; Collection of hazardous waste; Treatment and disposal of non-hazardous waste; Treatment and disposal of hazardous waste; Materials recovery
39	REMEDIATION ACTIVITIES AND OTHER WASTE MANAGEMENT SERVICES	Remediation activities and other waste management services. This includes cleanup of contaminated buildings and sites, soil, surface or ground water and other specialized pollution-control activities.
492	OTHER LAND TRANSPORT (excluding Urban or suburban tramways [49212] and Urban or suburban underground or elevated rillways [49213] )	Urban or suburban passenger bus transport ; Long-distance bus services; Charters, excursions and other occasional coach services; Rental of private cars with driver; Taxi operation; Operation of school buses and buses for transport of employees; Passenger transport by man- or animal-drawn vehicles; Motorised road freight transport; Non-motorised road freight transport.
50	WATER TRANSPORT	Sea and coastal ferry service; Sea and coastal water cruise, water taxis and other sight-seeing boats; Sea and coastal long distance

NIC-2008		coverage of survey
code	activity	
		water transport; Sea and coastal freight water transport; River ferry service; River cruise, water taxi, boat services; Long distance river water transport; transport of freight via rivers, canals, lakes and other inland waterways, including inside harbours and ports.
52	WAREHOUSING AND SUPPORT ACTIVITIES FOR TRANSPORTATION	Warehousing and storage. Includes cold storage, storage and warehousing of general merchandise, furniture, automobiles, gas and oil, chemicals, textiles etc. Also included is storage of goods in foreign trade zones; Service activities incidental to land transportation; Service activities incidental to water transportation; Cargo handling incidental to land transport; Cargo handling incidental to water transport; Activities of travel agents; Activities of shipping cargo agents; Activities of movers and packers; Weighing of goods.
53	POSTAL AND COURIER ACTIVITIES	All enterprises providing postal services, <i>not owned by government, Public Sector undertakings and local bodies</i> will be covered.  This will include courier services.
55	ACCOMMODATION	Hotels and Motels, inns, resorts providing short term lodging facilities; includes accommodation in house boats; Provision of short term lodging facilities to members of a particular organisation such as company guest houses & similar establishments; Provision of accommodation in campgrounds, trailer parks, recreational camps and fishing and hunting camps for short stay visitors, provision of space and facilities for recreational vehicles, accommodation provided by mountain shelters; Accommodation provided by student residences, school dormitories; Worker hostels and boarding houses.  Dharamshala type lodging places, private guest/rest houses, tourist lodges etc. which provide short-stay accommodation are to be covered under hotels <i>provided they are run by private individuals/organisations</i> .  <i>However similar facilities if provided by Govt./PSU/Local body/Statutory bodies (e.g. ISI, IIT, Universities etc.) are excluded from the purview of the coverage of this survey.</i>  <b>[A hotel is an enterprise that provides lodging services with or without arrangements for meals, other prepared food and refreshments.]</b>

NIC-2008		coverage of survey
code	activity	
56	FOOD AND BEVERAGE SERVICE ACTIVITIES	<p>Restaurants; Bars with or without restaurants; Cafeterias, fast-food restaurants and other food preparation in market stalls; Ice cream mobile vendors, mobile food carts; Restaurant and bar activities connected to transportation, when carried out by separate units; Event catering; Activities of food service contractors (e.g. for transportation companies); Operation of canteens or (e.g. for factories, offices, hospitals or schools) on a concession basis (<i>but departmental canteens run by government will be excluded</i>); Tea/coffee shops; Fruit juice bars; Mobile beverage vendors</p> <p><b>[A restaurant generally provides eating and drinking services where prepared meals, food and refreshments and other snacks are sold for immediate consumption without any provision for lodging. ]</b></p>
58	PUBLISHING ACTIVITIES	<p>Publishing of books, brochures, leaflets and similar publications, including publishing encyclopedias (including on CD-ROM); Publishing of atlases, maps and charts; Publishing of audio books; Publishing of directories and mailing lists; Publishing of newspapers, journals and periodicals; On-line publishing of statistics and other information; Publishing of operating systems and system software; Publishing of computer games for all platforms</p>
59	MOTION PICTURE, VIDEO AND TELEVISION PROGRAMME PRODUCTION, SOUND RECORDING AND MUSIC PUBLISHING ACTIVITIES	<p>Production of motion picture, Video production, Production of television programmes or television commercials; Post production activities of motion picture, Post production activities of television programmes or television commercials; Post production activities of video production; Distribution of Motion picture, video tapes, CDs, DVDs and Distribution of television programme; Motion picture or video tape projection in cinemas, in the open air or in other projection facilities; Activities of cine-clubs; Activities of sound recording in studio or elsewhere; Activities of music publishing.</p>
60	PROGRAMMING AND BROADCASTING ACTIVITIES	<p>Radio broadcasting; Television programming and broadcasting activities. The broadcasting can be performed using different technologies, over-the-air, via satellite, via a cable network or via internet;</p>
61	TELECOMMUNICATIONS	<p>Activities of basic telecom services: telephone, telex and telegraph (includes the activities of STD/ISD booths); Maintenance of telecom network; Activities of the cable operators; Activities of providing internet access by the operator of the wired infrastructure; Activities of internet access by the operator of the wireless infrastructure; Activities of maintaining and operating paging, cellur and other</p>

NIC-2008		coverage of survey
code	activity	
		tetecommunication networks; Activities of other wireless telecommunications activities; Activity of internet access by the operator of the satellite infrastructure; Other satellite telecommunications activities; Specialized telecommunications applications, such as satellite tracking, communications telemetry, and radar station operations, operation of satellite terminal station, internet access over networks such as dial-up internet access etc.
62	COMPUTER PROGRAMMING, CONSULTANCY AND RELATED ACTIVITIES	Writing, modifying, testing of computer program to meet the needs of a particular client; Web-page designing; Providing software support and maintenance to the clients; Installation of computer system, and train and support the users of the system and providing hardware support including planning and designing of computer systems that integrate computer hardware, software and communication technologies; Software installation; Computer disaster recovery.
63	INFORMATION SERVICE ACTIVITIES	Data processing activities including report writing; Web hosting activities; Providing general time-share mainframe facilities to clients; Providing data entry services; Operation of web sites that use a search engine to generate and maintain extensive databases of internet addresses and content in an easily searchable format; Operation of other websites that act as portals to the internet, such as media sites providing periodically updated content; News agency activities; Telephone based information services; Activities of cyber café.
643	TRUSTS, FUNDS AND OTHER FINANCIAL VEHICLES	This class includes legal entities organized to pool securities or other financial assets, without managing, on behalf of shareholders or beneficiaries. The portfolios are customized to achieve specific investment characteristics such as diversification, risk, rate of return, and price volatility. These entities earn interest, dividends, and other property income, but have little or no employment and no revenue from the sale of services.  <b>Self-Help Groups engaged predominantly in financial intermediation will be given a special code 64309.</b>
649	OTHER FINANCIAL SERVICE ACTIVITIES EXCEPT INSURANCE AND PENSION FUNDING ACTIVITIES	Financial leasing; Financial service activities primarily concerned with making loans by institutions not involved in monetary intermediation (such as venture capital companies, industrial banks, investment clubs), where the granting of credit can take a variety of forms, such as loans, mortgages, credit cards etc.; other financial service activities primarily concerned with distributing funds other than by making loans; Activities of hire - purchase financing,

NIC-2008		coverage of survey
code	activity	
		housing finance companies, commercial loan companies, other credit activities including pawn shops.  <b>A money lender whether registered under Money Lender's Act or not will be under coverage. Activity of money lenders has been given a special code 64929.</b>
65	INSURANCE, REINSURANCE AND PENSION FUNDING, EXCEPT COMPULSORY SOCIAL SECURITY	Life insurance; insurance services other than life insurance such as accident and fire insurance, health insurance, travel insurance, property insurance, motor, marine, aviation and transport insurance, pecuniary loss and liability insurance; Reinsurance (activities of assuming all or part of the risk associated with existing insurance policies originally underwritten by other insurance carriers); Pension funding (legal entities i.e. funds, plans and/or programmes organized to provide retirement income benefits exclusively for the sponsor's employees or members. This includes pension plans with defined benefits, as well as individual plans where benefits are simply defined through member's contribution).
661	OTHER FINANCIAL ACTIVITIES (excluding Administration of financial markets [6611] )	Activities auxiliary to financial service activities, except insurance and pension funding. This includes the operation and supervision of financial markets other than by public authorities, such as commodity contracts exchanges, futures commodity contracts exchanges, securities exchanges, stock exchanges, stock or commodity options exchanges; dealing in financial markets on behalf of others (e.g. stock broking) and related activities, securities brokerage, commodity contracts brokerage, foreign exchange services, etc.; activities of investment advisors, mortgage advisors and brokers, financial transaction processing and settlement activities, trustee, fiduciary and custody services on a fee or contract basis.
662	ACTIVITIES AUXILIARY TO INSURANCE AND PENSION FUNDING (excluding Other activities auxiliary to insurance and pension funding [6629] )	Activities auxiliary to insurance and pension funding. This includes the provision of administration services of insurance, such as assessing and settling insurance claims; activities of insurance agents and brokers;
68	REAL ESTATE ACTIVITIES (Excluding operating of self-owned residential	Real estate activities with own or leased property and Real estate activities on a fee or contract basis. This class includes buying, selling, operating of self-owned or leased real estate (excluding operation of self-owned residential buildings) , providing of homes and furnished or unfurnished flats or apartments for more permanent use,

NIC-2008		coverage of survey
code	activity	
	buildings)	typically on a monthly or annual basis, development of building projects for own operation, i.e. for renting of space in these buildings, subdividing real estate into lots, without land improvement, operation of residential mobile home sites; the provision of real estate activities on a fee or contract basis including real estate related services such as, activities of real estate agents and brokers, intermediation in buying, selling and renting of real estate on a fee or contract basis, management of real estate on a fee or contract basis, appraisal services for real estate, real estate escrow agents.
69	LEGAL AND ACCOUNTING ACTIVITIES	Legal activities; Accounting, bookkeeping and auditing activities; Tax consultancy.
70	MANAGEMENT CONSULTANCY ACTIVITIES	Activities of head offices; management consultancy activities
71	ARCHITECTURE AND ENGINEERING ACTIVITIES: TECHNICAL TESTING AND ANALYSIS	Architectural and engineering activities and related technical consultancy, technical testing and analysis. This class includes architectural consulting activities, machinery, industrial process control and industrial plant design, engineering design and consulting activities for, geophysical, geologic and seismic surveying, geodetic surveying activities; performance of physical, chemical and other analytical testing of all types of materials and products, certification of products, including consumer goods, motor vehicles, aircraft, pressurized containers, nuclear plants etc. periodic road-safety testing of motor vehicles, testing with use of models or mock-ups (e.g. of aircraft, ships, dams etc.), operation of police laboratories.
72	SCIENTIFIC RESEARCH AND DEVELOPMENT	Research and experimental development on natural sciences, engineering, social sciences and humanities.
73	ADVERTISING AND MARKET RESEARCH	Advertising, market research and public opinion polling. This class includes the provision of a full range of advertising services (i.e. through in-house capabilities or subcontracting), including advice, creative services, production of advertising material, media planning, and buying; investigation into market potential, acceptance and familiarity of products and buying habits of consumers for the purpose of sales promotion and development of new products, including statistical analyses of the results, investigation into collective opinions of the public about political, economic and social issues and statistical analysis thereof.
74	OTHER PROFESSIONAL,	Fashion design related to textiles, wearing apparel, shoes, jewelry, furniture and other fashion goods as well as other personal or

NIC-2008		coverage of survey
code	activity	
	SCIENTIFIC AND TECHNICAL ACTIVITIES	household goods; activities of interior decorators; services of graphic designers; photographic activities (commercial and consumer photograph production; photographic film processing; activities of photojournalists; microfilming of documents); business brokerage activities; patent brokerage activities; weather forecasting activities; security consulting, etc.
75	VETERINARY ACTIVITIES	These activities include the provision of animal health care and control activities for farm animals or pet animals. These activities are carried out by qualified veterinarians in veterinary hospitals. It also includes animal ambulance activities.
771	RENTING AND LEASING OF MOTOR VEHICLES	Renting and operational leasing of passenger cars (without drivers), trucks, utility trailers and recreational vehicles.
772	RENTING AND LEASING OF PERSONAL AND HOUSEHOLD GOODS	Renting and leasing of recreational and sports goods; Renting of video tapes and disks; Renting of tent, furniture, pottery and glass, kitchen and tableware, utensils, household electrical and electronic equipments etc.; Renting of books, journals and magazines; Renting of jewellery, musical instruments, scenery and costumes; Renting of textiles, wearing apparel, footwear, sleeping bag, rucksack, household goods;
773	RENTING AND LEASING OF OTHER MACHINERY, EQUIPMENT AND TANGIBLE GOODS N.E.C.	Renting and leasing of other machinery, equipment and tangible goods n.e.c.
78	EMPLOYMENT ACTIVITIES	Activities of employment placement agencies; Temporary employment agency activities; Human resources provision and management of human resources functions;
79	TRAVEL AGENCY, TOUR OPERATOR AND OTHER RESERVATION SERVICE ACTIVITIES	Travel agency activities; Tour operator activities; activities of tourist guides; activities of marketing and promoting of services for visitors by providing information and assistance to organizations to locate accommodation, convention centers and entertainment venues and other travel-related reservation services (including for transportation, hotels, rest restaurants, car rentals, entertainment and sport).
80	SECURITY AND INVESTIGATION ACTIVITIES	Private security activities; Security systems service activities; Investigation activities
81	SERVICES TO	Combined facilities support activities (this class includes the units

NIC-2008		coverage of survey
code	activity	
	BUILDINGS AND LANDSCAPE ACTIVITIES	that typically provide a combination of services, such as general interior cleaning, maintenance, trash disposal, laundry and related services. They provide operating staff to carry out these support activities); General cleaning of buildings; Cleaning of trains buses, planes etc.; Cleaning of industrial machinery; Other building and industrial cleaning activities; Landscape care and maintenance service activities.
82	OFFICE ADMINISTRATIVE, OFFICE SUPPORT AND OTHER BUSINESS SUPPORT ACTIVITIES	Combined office administrative service activities (this class includes the provision of a combination of day to day office administrative services, such as reception, financial planning, billing and record keeping, personnel and mail services etc. for others on a contract or fee basis); Photocopying, duplicating and blueprinting services; Document preparation, typing, word processing and desktop publishing services; Other specialised office support services activities; Activities of call centres; Organization of conventions and trade shows ; Activities of collection agencies and credit bureaus; Packaging activities, etc.
85	EDUCATION	<p>Pre-Primary education, Primary education; General secondary education (includes Senior/Higher secondary education); Technical and vocational secondary education; Higher education; Sports and recreation education; Cultural education; Academic tutoring services; Professional examination review courses; Flying school; Professional and non-professional motor driving school; Educational support services.</p> <p><b>All Govt. or Govt.- aided educational institutions will be outside the survey coverage. Educational institutions where salaries of the teachers/ staffs are funded fully by the Government will be considered as Govt. aided educational institution.</b></p> <p>All private educational institutions will be covered whether or not recognised. This will include management training institutes, computer training centres, nursing schools, schools of music, drama, dance, fine arts, modelling, fashion designing, yoga and physical education and general coaching centres (e.g. for various competitive examinations) etc. are to be covered. This will also include adult education centers.</p>
86	HUMAN HEALTH ACTIVITIES	Hospital activities; Medical and dental practice activities; Activities of Ayurveda, Unani, homeopath practitioners; Activities of nurses, masseurs, physiotherapists or other para-medical practitioners; Activities of independent diagnostic/pathological laboratories;

NIC-2008		coverage of survey
code	activity	
		<p>Activities of independent blood banks; independent ambulance Activities.</p> <p><b>All enterprises engaged in health and medical services <i>other than those owned by government, public sector undertakings, local bodies</i> will be covered, irrespective of the system of medicine.</b></p> <p>All private dispensaries, clinics and consultation chambers run by doctors will be covered. An employed doctor and para-medical person doing private practice will be covered and his/her private practice alone will be considered as an enterprise.</p>
87	RESIDENTIAL CARE ACTIVITIES	Nursing care facilities (homes for the elderly with nursing care, convalescent homes, rest homes with nursing care); Residential care activities for mental retardation, mental health and substance abuse; Residential care activities for the elderly and disabled; Activities provided on a round-the-clock basis directed to provide social assistance to children and special categories of persons with some limits on ability for self-care, but where medical treatment or education are not important elements such as orphanages, children's boarding homes and hostels, temporary homeless shelters, institutions that take care of unmarried mothers and their children.
88	SOCIAL WORK ACTIVITIES WITHOUT ACCOMMODATION	Social work activities without accommodation for the elderly and disabled; Social counseling, welfare, refugee, referral and similar services which are delivered to individuals and families in their homes or elsewhere and carried out by government offices or by private organizations, disaster relief organizations and national or local self-help organizations and by specialists providing counselling services such as child day-care activities, community and neighbourhood activities, charitable activities like fund-raising or other supporting activities aimed at social work.
90	CREATIVE, ARTS AND ENTERTAINMENT ACTIVITIES	Dramatic arts, music and other arts activities. This class includes Stage production and related activities; Operation of concert and theatre halls and other arts facilities; Activities of sculptors, painters, cartoonists, engravers, etchers etc.; Activities of individual writers for all subjects including fictional writing, technical writing etc.; Activities of independent journalists; Activities of restoring of works of art such as paintings etc.
91	LIBRARIES, ARCHIVES, MUSEUMS AND	Library and archives activities; Museums activities and operation of historical sites and buildings; Botanical and zoological gardens and nature reserves activities.

NIC-2008		coverage of survey
code	activity	
	OTHER CULTURAL ACTIVITIES	
92	GAMBLING AND BETTING ACTIVITIES	Wholesale and retail sale of lottery tickets; Other gambling and betting activities.  However, there may be certain gambling/ betting activities that are illegal and clandestine in nature. These activities are out of coverage for the present survey.
93	SPORTS ACTIVITIES AND AMUSEMENT AND RECREATION ACTIVITIES	Operation of sports facilities; Activities of sports clubs; Other sports activities; Activities of amusement parks and theme parks.
941	ACTIVITIES OF BUSINESS, EMPLOYERS AND PROFESSIONAL MEMBERSHIP ORGANIZATIONS	Activities of chambers of commerce, guilds and similar organisations, federations of such organizations ; activities of associations of writers, painters, lawyers, doctors, journalists and other similar organizations.
949	ACTIVITIES OF OTHER MEMBERSHIP ORGANISATIONS	Activities of other membership organizations, such as religious organizations, will be covered only if it relates to activities other than organizational activities. Thus, activities of religious organizations providing services directly to worshippers in churches, mosques, temples, synagogues or other places, activities of organizations furnishing monastery and convent services, religious retreat activities will be excluded.  However, individuals such as <i>purohits</i> who provide services directly to worshippers will only be covered.  Activities of political organizations will not be covered.  Activities of rotary clubs, student associations, war veterans' associations, book clubs, philatelic clubs, associations of minority groups, and the activities of other similar associations / organizations will be included.
95	REPAIR OF COMPUTERS AND PERSONAL AND HOUSEHOLD GOODS	Repair and maintenance of computer and peripheral equipment; Repair and maintenance of automated terminals like automatic teller machines, point-of-sale (POS) terminals, not mechanically operated; Repair and maintenance of communication equipment like cordless telephones, cellular phones, fax machines, commercial TV and video cameras etc. Repair and maintenance of consumer electronics; Repair and servicing of household appliances ( refrigerators, stoves, washing machines, clothes dryers, room air conditioners, etc. ); Repair and

NIC-2008		coverage of survey
code	activity	
		servicing of home and garden equipment such lawn mowers, edgers, trimmers etc.; Repair of footwear and leather goods; Repair of furniture and home furnishings; Repair of bicycles; Repair and alteration of clothing; Repair and alteration of jewellery; Repair of watches, clocks and their parts; Repair of musical instruments; Repair of other personal and household goods.
96	OTHER PERSONAL SERVICE ACTIVITIES	Washing and (dry-) cleaning of textile and fur products; Hairdressing and other beauty treatment; Funeral and related activities; Social activities such as escort services, marriage bureaus; Pet care services such as boarding, grooming and training pets etc.; Shoe shiners, porters, valet car parkers etc.; Coin-operated personal service machines such as photo booths, weighing machines, blood pressure checking machines etc.; Activities of sauna and steam baths, massage salons etc.; Astrological and spiritualists' activities; <i>Activities of aaya, dhai, governess, baby sitter etc. (however, those employed in private households are classified under NIC 97 and are excluded from coverage)</i> ; General household maintenance activities like grooming of the floor, dusting, cleaning of utensils etc.
<p>Persons providing services to the households, for example cooks, tutors, etc., by visiting the houses of the employer (service produced within the households and consumed by the households on a regular basis) are not be considered as enterprise. However, if these types of persons provide services to enterprises/institutions other than private households, they are treated as enterprises. Similarly, if some persons provide legal, accounting or similar services to different enterprises on a fee basis, they are treated as running own account enterprise.</p>		
<p>If any enterprise under coverage is run by religious/ political/other membership organizations with at least one worker hired for the services it provides then that enterprise is covered under respective NIC code of that activity.</p>		

## 4. Estimation Procedure

### 4.1 Notations:

s = subscript for s-th stratum

t = subscript for t-th sub-stratum

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

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

d = subscript for a segment (d = 1, 2, 9)

j = subscript for j-th second stage stratum in an FSU/ segment [ j = 1, 2, 3, ....., 19]

k = subscript for k-th sample enterprise under a particular second stage stratum within an FSU/ segment

D = total number of hg's/ sb's formed in the sample FSU

$D^* = 0$  if  $D = 1$

$= (D - 1)/2$  for FSUs with  $D > 1$

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

Z = total size of a sub-stratum (= sum of sizes for all the FSUs of a sub-stratum) belonging to either rural sector or urban million plus cities excluding Mumbai

z = size used for selection of sample FSU belonging to either rural sector or urban million plus cities excluding Mumbai

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

E = total number of enterprises listed in a second-stage stratum of an FSU / segment of sample FSU

e = number of enterprises surveyed in a second-stage stratum of an FSU / segment of sample FSU

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

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

Under the above symbols,

$y_{stmidjk}$  = observed value of the characteristic y for the k-th enterprise in the j-th second stage stratum of the d-th segment (d = 1, 2, 9) of the i-th FSU belonging to the m-th sub-sample for the t-th sub-stratum of s-th stratum.

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

**4.2 Formulae for Estimation of Aggregates for a particular sub-sample and stratum / sub-stratum:**

**4.2.1 Schedule 0.0:**

**4.2.1.1 Rural:**

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

$$\hat{Y} = \frac{Z}{n} \sum_{i=1}^n \frac{1}{z_i} \left[ y_{i9} + y_{i1} + D_i^* \times y_{i2} \right]$$

where  $y_{i9}$ ,  $y_{i1}$ ,  $y_{i2}$  are the total number of enterprises possessing the characteristic  $y$  in segments 9, 1 & 2 of the  $i$ -th FSU respectively.

(ii) For estimating the number of villages in a sub-stratum possessing a characteristic:

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

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

**4.2.1.2 Urban:**

(a) Estimation formula for a sub-stratum of million plus cities (excluding Mumbai):

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

$$\hat{Y} = \frac{Z}{n} \sum_{i=1}^n \frac{1}{z_i} \left[ y_{i9} + y_{i1} + D_i^* \times y_{i2} \right]$$

where  $y_{i9}$ ,  $y_{i1}$ ,  $y_{i2}$  are the total number of enterprises possessing the characteristic  $y$  in segments 9, 1 & 2 of the  $i$ -th FSU respectively.

(b) Estimation formula for a sub-stratum of other strata:

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

$$\hat{Y} = \frac{N}{n} \sum_{i=1}^n \left[ y_{i9} + y_{i1} + D_i^* \times y_{i2} \right]$$

where  $y_{i9}$ ,  $y_{i1}$ ,  $y_{i2}$  are the total number of enterprises possessing the characteristic  $y$  in segments 9, 1 & 2 of the  $i$ -th FSU respectively.

**Note:** *There are only one FSU each in the districts Leh (Leh town) and Kargil (Kargil town) of J & K. Both of these have been selected and repeated in each of the sub-rounds. Thus, for these two stratum  $\times$  sub-stratum,  $N = 1$  in the above formula and  $n$  will be the number of FSUs actually surveyed including repetitions ( $n = 4$  for the whole round and  $n = 2$  for a sub-sample of the whole round assuming no casualty) for each of the two districts.*

#### 4.2.2 Schedules 2.34:

##### 4.2.2.1 Rural:

Estimation formula for a sub-stratum:

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

$$\hat{Y}_j = \frac{Z}{n_j} \sum_{i=1}^{n_j} \frac{1}{z_i} \left[ \sum_{k=1}^{e_{i9j}} y_{i9jk} + \frac{E_{i1j}}{e_{i1j}} \sum_{k=1}^{e_{i1j}} y_{i1jk} + D_i^* \times \frac{E_{i2j}}{e_{i2j}} \sum_{k=1}^{e_{i2j}} y_{i2jk} \right]$$

(ii) For all selected enterprises:

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

##### 4.2.2.2 Urban:

(a) Estimation formula for a sub-stratum of million plus cities (except Mumbai):

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

$$\hat{Y}_j = \frac{Z}{n_j} \sum_{i=1}^{n_j} \frac{1}{z_i} \left[ \sum_{k=1}^{e_{i9j}} y_{i9jk} + \frac{E_{i1j}}{e_{i1j}} \sum_{k=1}^{e_{i1j}} y_{i1jk} + D_i^* \times \frac{E_{i2j}}{e_{i2j}} \sum_{k=1}^{e_{i2j}} y_{i2jk} \right]$$

(ii) For all selected enterprises:

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

(b) Estimation formula for a sub-stratum of other strata:

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

$$\hat{Y}_j = \frac{N}{n_j} \sum_{i=1}^{n_j} \left[ \sum_{k=1}^{e_{i9j}} y_{i9jk} + \frac{E_{i1j}}{e_{i1j}} \sum_{k=1}^{e_{i1j}} y_{i1jk} + D_i^* \times \frac{E_{i2j}}{e_{i2j}} \sum_{k=1}^{e_{i2j}} y_{i2jk} \right]$$

(ii) For all selected enterprises:

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

**Note:** For segment 9, an adjustment may be necessary if  $E \neq e$  for a second-stage stratum due to casualty at the detailed enquiry stage. In that case, contribution of segment 9 (i.e.  $\sum_{k=1}^{e_{i9j}} y_{i9jk}$ ) in the

above formulae may be replaced by  $\frac{E_{i9j}}{e_{i9j}} \sum_{k=1}^{e_{i9j}} y_{i9jk}$ , where  $E_{i9j}$  = (number of enterprises in the frame of of segment 9 for j-th SSS of i-th FSU as per column (4) block 6a of schedule 0.0) and  $e_{i9j}$  = (number of enterprises actually surveyed for segment 9 of j-th SSS of i-th FSU)

$E_{i9j} = e_{i9j}$  if there is no casualty.

Note: As mentioned earlier in section 4.2.1.2,  $N = 1$  in the above formula in the case of Leh and Kargil districts of J & K.

#### 4.2.3 Estimate for a stratum:

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

#### 4.3 Overall Estimate for Aggregates:

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

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

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

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

#### 4.5 Estimates of Ratios:

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

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

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

##### 4.6.1 For aggregate $\hat{Y}$ :

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

$V\hat{a}r(\hat{Y}_{st}) = \frac{1}{4}(\hat{Y}_{st1} - \hat{Y}_{st2})^2$  where  $\hat{Y}_{st1}$  and  $\hat{Y}_{st2}$  are the estimates for sub-sample 1 and sub-sample 2 respectively for stratum 's' and sub-stratum 't'.

##### 4.6.2 For ratio $\hat{R}$ :

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

##### 4.6.3 Estimates of Relative Standard Error (RSE):

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

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

4.7 **Multipliers:**

The formulae for multipliers at stratum/sub-stratum/second-stage stratum level for a sub-sample and schedule type are given below:

sector	sub-stratum	formula for multipliers		
		segment 9	segment 1	segment 2
<b>Schedule 0.0</b>				
rural	all	$\frac{Z_{st}}{n_{stm}} \times \frac{1}{z_{stmi}}$	$\frac{Z_{st}}{n_{stm}} \times \frac{1}{z_{stmi}}$	$\frac{Z_{st}}{n_{stm}} \times \frac{1}{z_{stmi}} \times D_{stmi}^*$
urban	for million plus cities (except Mumbai)	$\frac{Z_{st}}{n_{stm}} \times \frac{1}{z_{stmi}}$	$\frac{Z_{st}}{n_{stm}} \times \frac{1}{z_{stmi}}$	$\frac{Z_{st}}{n_{stm}} \times \frac{1}{z_{stmi}} \times D_{stmi}^*$
	for other strata	$\frac{N_{st}}{n_{stm}}$	$\frac{N_{st}}{n_{stm}}$	$\frac{N_{st}}{n_{stm}} \times D_{stmi}^*$
<b>Schedule 2.34</b>				
rural	all	$\frac{Z_{st}}{n_{stmj}} \times \frac{1}{z_{stmi}} \times \frac{E_{stmi9j}}{e_{stmi9j}}$	$\frac{Z_{st}}{n_{stmj}} \times \frac{1}{z_{stmi}} \times \frac{E_{stmi1j}}{e_{stmi1j}}$	$\frac{Z_{st}}{n_{stmj}} \times \frac{1}{z_{stmi}} \times D_{stmi}^* \times \frac{E_{stmi2j}}{e_{stmi2j}}$
urban	for million plus cities (except Mumbai)	$\frac{Z_{st}}{n_{stmj}} \times \frac{1}{z_{stmi}} \times \frac{E_{stmi9j}}{e_{stmi9j}}$	$\frac{Z_{st}}{n_{stmj}} \times \frac{1}{z_{stmi}} \times \frac{E_{stmi1j}}{e_{stmi1j}}$	$\frac{Z_{st}}{n_{stmj}} \times \frac{1}{z_{stmi}} \times D_{stmi}^* \times \frac{E_{stmi2j}}{e_{stmi2j}}$
	for other strata	$\frac{N_{st}}{n_{stmj}} \times \frac{E_{stmi9j}}{e_{stmi9j}}$	$\frac{N_{st}}{n_{stmj}} \times \frac{E_{stmi1j}}{e_{stmi1j}}$	$\frac{N_{st}}{n_{stmj}} \times D_{stmi}^* \times \frac{E_{stmi2j}}{e_{stmi2j}}$
j = 1,2,3, ....., 19				

- Note: (i) For estimating any characteristic for any domain not specifically considered in sample design, indicator variable may be used.
- (ii) Multipliers have to be computed on the basis of information available in the listing schedule irrespective of any misclassification observed between the listing schedule and detailed enquiry schedule.
- (i) For estimating number of villages possessing a characteristic,  $D_{stmi}^* = 0$  in the relevant multipliers and there will be only one multiplier for the village (see paragraph 7.2.1.1 in this context).

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

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

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

4.8.3 Similarly, FSUs with survey codes 1 and 4 as per schedule 0.0 having number of enterprises in the frame of j-th second stage stratum greater than 0 but number of enterprises surveyed according to data file, considering all three segments together, as nil (i.e.  $E_{i9j} + E_{i1j} + E_{i2j} > 0$  but  $e_{i9j} + e_{i1j} + e_{i2j} = 0$ ) will be taken as casualties for j-th second stage stratum

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

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

- (i) Suppose for segment 1,  $E_{i1j} > 0$  but  $e_{i1j} = 0$  while for segment 2,  $E_{i2j} > 0$  and  $e_{i2j} > 0$ . In that case  $D_i^* \times E_{i2j}$  will be replaced by  $(E_{i1j} + D_i^* \times E_{i2j})$  in the formula for multiplier of segment 2.
- (ii) Suppose for segment 1,  $E_{i1j} > 0$  and  $e_{i1j} > 0$  while for segment 2,  $E_{i2j} > 0$  but  $e_{i2j} = 0$ . In that case  $E_{i1j}$  will be replaced by  $(E_{i1j} + D_i^* \times E_{i2j})$  in the formula for multiplier of segment 1.

However, segment 9 need not be clubbed with segment 1 or segment 2 if segment 9 enterprises are surveyed but no enterprises could be surveyed from segments 1 / 2.

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

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

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

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

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

- (i) If an rural sub-stratum is void then it may be merged with the other sub-stratum of the stratum.

- (ii) If a rural/urban stratum (district) is void due to all FSUs being casualty, it may be excluded from the coverage of the survey. The state level estimates will be based on the estimates of districts for which estimates are available and remarks to that effect may be added in appropriate places.

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

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

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

The adjustment will be made involving other strata/sub-strata (within NSS region) of the State/U.T. Suppose A, B, C and D are the four strata in the State/UT/Region and stratum C is void for j-th *second stage stratum*. If  $\hat{Y}_{aj}$ ,  $\hat{Y}_{bj}$  and  $\hat{Y}_{dj}$  are the aggregate estimates for the strata/sub-strata A, B and D respectively, then the estimate  $\hat{Y}_{cj}$  for stratum/sub-stratum C may be obtained as  $\left( \frac{\hat{Y}_{aj} + \hat{Y}_{bj} + \hat{Y}_{dj}}{Z_a + Z_b + Z_d} \times Z_c \right)$  where  $Z_a$ ,  $Z_b$ ,  $Z_c$  and  $Z_d$  are the sizes of strata A, B, C and D respectively.

**5. Reference to the values of  $Z_{st}$ ,  $N_{st}$ ,  $n_{st}$ ,  $z_{sti}$ ,  $D_{sti}$ ,  $D^*_{sti}$ ,  $E_{sti1j}$ ,  $e_{sti1j}$ ,  $E_{sti2j}$ ,  $e_{sti2j}$ :**

- Values of  $Z_{st}$ ,  $N_{st}$  and allotted  $n_{st}$  for the whole round are given in appendix Table 2 for rural sector and in Table 3 for urban sector.
- $n_{st}$  should not be taken from the tables. The values of  $n_{stm}$  for each sub-sample are to be obtained following the guidelines given in para 9 above. It includes uninhibited and zero cases but excludes casualty cases.
- The value of  $z_{sti}$  for the samples selected by PPS is to be taken from the column of sample list under the heading “selection size” or from item 15, block 1, schedule 0.0. Value of  $D_{sti}$  is to be taken from item 18 of block 1, sch 0.0.  $D^*_{sti}$  is to be calculated from the value of  $D_{sti}$ .
- Values of  $E_{sti1j}$ ,  $E_{sti2j}$  are to be taken from col.(4), block 6a and 6b of sch 0.0 for respective segments.
- The value of  $e_{sti1j}$  and  $e_{sti2j}$  should not be taken from col (8), block 6a and 6b of sch.0.0. The figures should be obtained by counting the number of enterprises in the data file excluding the casualty households.

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