SAMPLING METHODOLOGY OF SURVEY TO EVALUATE THE SOCIO-ECONOMIC IMPACT OF COVID-19

Introduction

World is currently under the challenge to cope with the pandemic COVID-19 and country wide lock downs were implemented for ensuring social distancing to curtail/minimize the spread of pandemic. The situation has badly affected the lives of people and economies of many countries of the world. Pakistan is also currently trying to cope up with this global challenge. It is evident that Population/economy of Pakistan will also be badly affected by the closure of business/economic activities due to COVID-19 pandemic. However, for evidence based policy and planning regarding the matter, no data is available which is representative at the national/provincial level. Consequently, PBS being the NSO taken the initiative of conducting the survey in order to study the impact of the crises on the lives of people. A short independent survey has been designed with consultation of all relevant stakeholders. This will give evidence based results on magnitude/level of effects of pandemic on employment, food security and general wellbeing of people of Pakistan and the coping strategies adopted. The survey will be conducted in four provinces, AJ&K and GB. The survey results will be nationally representative with urban and rural level and also at overall provincial level.

Sampling Frame:

Latest 2017-Population & Housing Census frame used for the survey. The frame information is given below:

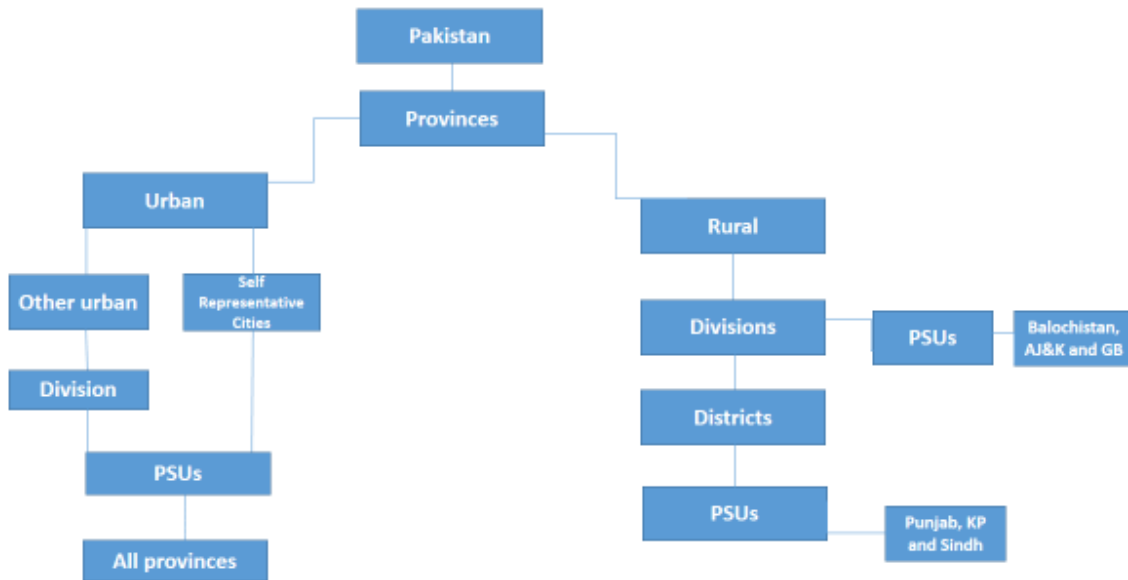| S. No.	Name of Province	No. of PSUs		
		Rural	**Urban**	**Total**
1	Khyber Pakhtunkhwa	22,538	3267	25,805
2	Punjab	59,841	27,162	87,003
3	Sindh	17,239	21,892	39,131
4	Balochistan	8383	1839	10,222
5	Islamabad	789	726	1515
6	Azad Jammu & Kashmir	3496	526	4022
7	Gilgit-Baltistan	1098	148	1246
	Total	**113,384**	**55,560**	**168,944**

Sample Size Estimation:

It is presumed that urban part of the country is severely affected by the pandemic, therefore, more sample size is allocated to urban areas and big cities to get clear picture. Total sample size of the survey is 500 PSUs with 70% urban and 30% rural share i.e. 349 PSUs and 151 PSUs respectively. Further, urban part is further divided into Self Representative Cities (SRC) and other urban for better accuracy of the survey results.

Two indicators namely average household consumption and food insecurity (taken from PSLM survey) used to compute sample size of the survey. Finally, sample size of 500 sample PSUs has estimated using average households consumption variable. Estimated sample is representative with the precision of 3.2% at National level and 4% at rural and 4.2% urban level.Keeping in view the objectives of the survey, sample size is distributed to Rural: Urban with 30%: 70% as detail below:

S. No	Name of Province	Rural	Urban	Total
1	Khyber Pakhtunkhwa	20	47	67
2	Punjab+ Islamabad	54	125	179
3	Sindh	46	107	153
4	Baluchistan	19	42	61
5	Azad Jammu & Kashmir	7	17	24
6	Gilgit Baltistan	5	11	16
	Total	151	349	500

Stratification Plan:

- As per stratification plan, for rural part, sample PSUs of Punjab, Sindh and KP provinces are stratified at district level and for Balochistan, AJ&K and GB at division level.
- Urban part is further divided into two parts i.e. Self-Representative Cities (SRC) at city and other urban at division level. Other Urban made after extracting the SRC from respective division.
- For urban part, sample size is stratified at division level for all provinces.

Sample Allocation:

Proportional allocation has been adopted for sample size allocation.

Sample Design:

Two stage stratified random sample design has adopted for the survey. At first stage, sample PSUs have selected using systematic random sampling with PPS method. No of households inside each PSU as per sampling frame has considered as measure of size (MOS). At second stage, 12 households have selected using systematic random sampling technique with equal probability in urban and rural areas.

Sampling Weights:

Two stage sampling weights will be developed for the survey. First stage sampling weights are the reciprocal of probability of selection of sample PSU at the first stage as explain below:

First stage probability of selection of sample PSU=p_1

$p_1 = n_{h * N_{hi/\sum N_{hi}}}$

where, n_h = number of sample PSUs selected in h^{th} stratum

N_{hi} = MOS in selected ith PSU of hth stratum

$\sum N_h$ = Sum of all houses in h^{th} stratum

First stage sampling weights= $w_1 = 1/p_1$

For rural areas, stratum total is no. of households at the district level for Punjab, Sindh and KP provinces and for Balochistan, AJ&K and GB at division level.

For urban areas, stratum total is no. of households at the division level for all provinces including AJ&K and GB. Later, for SRC and Other Urban respective Stratum total will be used for calculation of first stage weights.

For second stage sampling weights field coverage information of listed household and covered household will be used.

Second stage weights=$w_2 = M_{hi}/ m_{hi}$

Where, M_{hi}=no of listed household

m_{hi}=no. of covered household

Two Stage sampling weights=$w_t = w_1 * w_2$