

ANNEX A: Sample Design

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Introduction

The Government of Balochistan in collaboration with UNICEF and technical assistance of Federal Bureau of Statistics has carried out Multiple Indicator Cluster Survey (MICS) to achieve the following objectives:

- i) To produce district level estimates to meet the requirements of policy makers and planners under the new system of devolution of power at district level.
- ii) To collect information on 24 Key Social Indicator to help measure progress and prepare profiles of administrative units of Balochistan.
- iii) To develop plan and monitoring system for delivery of social services.

Universe

The universe of this survey consists of all urban and rural areas of Balochistan defined as such by 1998 Population Census and changes made thereafter by provincial Government. The following areas being restricted have been excluded from the scope of this survey.

S. No.	Name	District
1.	Quetta Cantt.	Quetta
2.	Khuzdar Cantt.	Khuzdar
3.	Loralai Cantt.	Loralai
4.	Zhob Cantt.	Zhob

Sampling Frame

A. Urban Areas:

Federal Bureau of Statistics has developed its own sampling frame through Quick Count Record Survey. This frame is an area frame wherein each city/town has been divided into a number of small compact areas called Enumeration Blocks (E.B). Each enumeration block consists of an average of 200 to 250 households with well-defined boundaries recorded in the prescribed forms and maps thereof with physical features. Each enumeration block has also been classified into low, middle and high-income group keeping in view the majority of the households located in the enumeration block belonging to a particular income class. Similarly, each enumeration block has been classified as residential, commercial and industrial in accordance with the predominance of an activity therein. This sampling frame now comprises all urban areas of the Balochistan except military restricted areas. The frame is regularly updated after every 5 to 7 years due to rapid growth in cities/town/urban area. It was updated last in 2003 and there are 608 enumeration blocks in all urban areas of Balochistan.

B. Rural Areas:

The sampling frame for rural domain consists of list of Mouzas/Dehs/Villages prepared by the Population Census. A Mouza/deh/Village is the smallest revenue estate identified by its name, had-bast number, cadastral map and name of Tehsil, District & Province in which it is located. The rural sampling frame comprising 6557 Mouzas/Dehs/Villages has been used for drawing the sample for Multiple Indicator Survey.

Stratification Plan:

A. Urban Domain

i) Large Sized City.

Quetta city has been considered as large sized city. This city has been divided into two towns namely Chiltan and Zarghoon respectively. Each town constitutes a separate stratum which has further been sub-stratified according to low, middle, high income groups based on the information collected in respect of each enumeration block at the time of demarcation/ updating of urban areas sampling frame.

ii) Remaining Urban Areas.

Excluding Quetta district urban population within each district has been considered a stratum.

B. Rural Domain.

In rural domain, each administrative district and two towns of Quetta district of Balochistan Province has been treated as independent and explicit stratum.

Sample Size and its Allocation:

Keeping in view the variability of the characteristics for which estimates are to be prepared, requirements of provincial government in term of logistic cost, population distribution and main objectives of the survey, an estimated sample of 10676 households has been considered appropriate to provide estimates of population parameters within acceptable reliability limits. The entire sample of households (SSUs) is drawn from 730 primary sampling units (PSUs), out of which 251 PSUs are urban and 479 PSUs are rural. The sample households have been allocated to 26 districts in proportion to their population according to the 1998 population census; however, higher proportion of sample is allocated to the urban domain and to smaller districts to get the district estimates with urban and rural breakdown of desired precision. The distribution of sample PSUs and SSUs in 26 districts are enclosed as annexure-A.

Sample Design:

A two-stage stratified sample design has been adopted for the survey.

Selection of Primary Sampling Units.

Enumeration Blocks demarcated as part of urban sampling frame in urban domain, mouzas/dehs/villages whose lists were prepared by the Population Census Organization at the time of the 1998 Population Census have been taken as primary sampling units (PSUs). Sample PSUs from each stratum/sub-stratum have been selected with probability proportionate to size. The numbers of households and population have been considered as measure of size pertaining to urban and rural domain respectively.

Selection Of Secondary Sampling Unit

Based on actual listing undertaken in respect of each sample PSU by the field staff 16 and 12 households (SSUs) have been selected from rural and urban sample areas respectively adopting systematic sampling technique with a random start. Households have been considered as secondary sampling units for urban while population has been taken as measure of size in respect of rural areas.

Estimation Procedure

In order to build-up estimates of total and ratio etc., and their variance, estimation procedure required information on the number of PSU's (Primary Sampling Units) or sample sites for each stratum, the number of SSU's (Secondary Sampling Units) or households by site, probability of selection of a PSU and the result of an indicator for each household or sub-group, such as a child in the household. Definitions of the estimation procedure are contained in the Technical Notes.

Allocation And Stratification Sampling Plan

The sampling plan required adequate representation for each district with the numbers of households at a minimum of about 500 (see Table on next page). This differed from the usual plan, which required a sample based on the whole province.

The sample was selected from several strata (defined sub-groups of the population): the rural area from each of the 26 districts, the urban area in those districts with urban populations (all but Awaran, and Musa Khel) and three in each town of Quetta City (lower, middle and upper classes).

Because the sample was not selected in equal proportion to the population for each stratum, weighting (adjustment) was required to restore the un-weighted (actual) sample to that of the population proportion.

**Allocation And Stratification For Multiple Indicator Cluster Survey (Mics)
District /Stratum Wise Allocation Of Sample Psu's And Ssu's (Proportional Allocation
Suggested By Unicef/Sampling Consultant) Balochistan**

S/NO	NAME OF DISTRICT/STRATUM	POPULATION COUNT AS PER P. CENSUS 1998			NO.OF SAMPLE					
		URBAN	RURAL	TOTAL	HOUSEHOLDS (SSUs)			VILLAGES/BLOCKS (PSUs)		
					URBAN	RURAL	TOTAL	URBAN	RURAL	TOTAL
1	Quetta Chiltan Town	168341	151923	320264	276	272	548	23	17	40
2	Quetta Zarghoon Town	320705	7080	327785	396	64	460	33	4	37
3	Pishin	22955	344228	367183	72	304	376	6	19	25
4	Killa Abdullah	56792	313477	370269	108	272	380	9	17	26
5	Ziarat	636	32704	33340	24	336	360	2	21	23
6	Barkhan	7670	95875	103545	24	320	344	2	20	22
7	Loralai	34984	262571	297555	108	304	412	9	19	28
8	Killa Saifullah	25299	168254	193553	48	352	400	4	22	26
9	Zhob	43843	231299	275142	120	288	408	10	18	28
10	Musa Khel	0	134056	134056	0	352	352	0	22	22
11	Dera Bugti	15495	165815	181310	48	304	352	4	19	23
12	Kohlu	9665	90181	99846	24	336	360	2	21	23
13	Sibi	57826	122572	180398	168	240	408	14	15	29
14	Bolan	39487	248569	288056	108	271	379	9	17	26
15	Jaffarabad	85523	347294	432817	132	272	404	11	17	28
16	Jhal Magsi	8097	101844	109941	24	320	344	2	20	22
17	Naseerabad /Tamboon	38431	207463	245894	120	288	408	10	18	28
18	Kalat	33794	204040	237834	108	272	380	9	17	26
19	Khuzdar	118248	299218	417466	156	256	412	13	16	29
20	Lasbela	115424	197271	312695	192	256	448	16	16	32
21	Mastung	24131	140514	164645	120	272	392	10	17	27
22	Awaran	0	118173	118173	0	352	352	0	22	22
23	Kharan	27806	179103	206909	84	304	388	7	19	26
24	Chaghai	35896	166668	202564	120	272	392	10	17	27
25	Ketch/Turbat	68603	344601	413204	144	304	448	12	19	31
26	Panjgur	21297	212754	234051	96	304	400	8	19	27
27	Gwadar	100152	85346	185498	192	176	368	16	11	27
TOTAL		1481100	4972893	6453993	3012	7663	10675	251	479	730

- 1 No urban area exists in the frame of FBS relating to Awaran & Musa Khail Districts.
- 2 Keeping in view a few enumeration blocks available in updated frame of FBS, proportion to rural sample size for the districts i.e. Ziarat, Kohlu, Dera Bugti, Jhal Magsi, Kharan, Barkhan and Qilla Saifullah have been enhanced.
- 3 Quetta city has been segregated into two towns namely Chiltan and Zarghoon towns
- 4 12 and 16 sample households have been selected from each urban and rural area respectively.