

# NRVA 2007/08 Sampling Design

---

## Contents

APPROACH AND COMPARISON TO SAMPLING PROCEDURE FOR NRVA 2005	1
SAMPLE FRAME CHANGES SINCE NRVA 2005	1
CLUSTER SIZE	2
ANALYTICAL DOMAINS	2
URBAN ANALYTICAL DOMAINS	2
<i>Household listing for PSUs without household listing data</i>	4
<i>Household identification for PSUs with household listing</i>	5
REPLACEMENT HOUSEHOLDS-WITHIN-CLUSTER	5
REPLACEMENT CLUSTERS-WITHIN-DOMAIN	5
<i>Strategy for dealing with PSUs that are temporarily or permanently inaccessible</i>	5
PROPOSED STRATEGY FOR THE SELECTION OF SUMMER KUCHI	6
<i>Selection of Kuchi communities within districts</i>	7
<i>Procedure for determining number and identity of within district Kuchi community sample when there is no telephone reception</i>	7
<i>Selection of tents within a Kuchi community when there is no mobile telephone reception</i>	7
<i>Tent selection example</i>	7
<i>Selection of tents within a Kuchi community when there is mobile telephone reception in the community or close to it.</i>	8
<i>Calculation of Kuchi weights - May 10, 2008</i>	8
ANNEX 1 TABLE FOR SELECTING SAMPLING INTERVAL	11

---

### [Approach and comparison to sampling procedure for NRVA 2005](#)

The sampling design of the NRVA 2007-2008 was built on experience from the NRVA 2005. Most features and approaches of the sampling used in the NRVA 2005 are maintained. The biggest improvement in the design of the survey is the extension of the survey period from two months in the summer season to a full 12 month survey to ensure that seasonality is fully accounted for. The resulting sample is a total of 20, 576 households; 2,441 PSU's selected creating a household sample of 19,528 from the settled urban and rural population and 131 PSUs (1,048 households) from the Kuchi (nomadic) population.

The NRVA 2007-08 design improvements help to:

- Fully capture seasonality of consumption and other dimensions of welfare
- Improve the quality of the collected data, by giving greater specificity of household selection within PSUs.
- Reduce the number of interviewers needed, which thereby allows for more careful selection, and better training and supervision.
- Generate effective quality control procedures and iterative quality feedback to the survey teams.
- Produce national-level sample sufficient for a poverty estimate figures after the first few months of fieldwork, but this will be seasonally biased.
- Be consistent with recommended international standards.

The other main differences between NRVA 2005 and 2007-08 are that the NRVA 2007-08 sampling will:

- Use an updated sample frame
- Pre-select households in each selected PSU, with head of household name and size of household taken from household listing forms, except where there is no household listing data available.
- PSU sample randomly allocated into 12 monthly sub-samples

### [NRVA 2007-08 Sample frame](#)

Since NRVA 2005 there has been no household census, therefore the sampling frame used will for the most part be the same frame used for NRVA 2005, i.e. the pre-census household listing conducted by the Central Statistics Office from 2003-2005. Over a three-year period from 2002 until 2005, almost every household in Afghanistan was visited, and the number of males and females above and below 18 were enumerated, in preparation of the census to take place in 2008. Some listing enumeration took place after the NRVA 2005 sample was drawn, although security concerns prevented a complete enumeration of all households. At the time of drawing the sample for NRVA 2005, there were 42 districts with no household listing data available. The FAO livestock census (2002/03) at that time had produced the most complete village lists with estimated number of households per village, and this was used to complete the NRVA 2005 sample

frame. As this FAO data came from a livestock census, it was recognized that the urban areas would not be fully represented, (see inclusion of urban Helmand to analytical domains in section below).

Table 1 Areas not enumerated for pre-census household listing

Province	District and District number
Kandahar	Arghestan (13)
Kandahar	Ghorak (6)
Kandahar	Maroof (14)
Kandahar	Myanesheen (15)
Kandahar	Nish (16)
Kandahar	Reig (10)
Kandahar	Shah Wali Kott (3)
Kandahar	Shorabak (11)
Uruzgan	Some missing villages
Zabul	Arghandab (3)
Zabul	Daichopan (5)
Zabul	Kakar (4)

The household listing continued after the 2005 NRVA sample was drawn and the full listing was completed by early 2006. However, as a result of security concerns, eight (of 16) districts in Kandahar and three (of 11) districts in Zabul were not enumerated at all and there are some missing villages from various locations in Uruzgan (Table 1) when the pre-census household listing enumeration finished in 2006. For these unlisted areas, CSO conducted interviews with village Shura to get estimates of the total number of households and population, and introduced them into the sample frame, and it is this combined frame that was used for the NRVA2007-08 frame.

The NRVA 2007-08 survey aims to enumerate a sample covering the whole country, as was attempted with NRVA 2005. Poor security prevented enumeration in 11 districts in NRVA 2005, and some districts with poor security prevented female enumerators going, and in those situations, the consumption module of the female questionnaire was enumerated by men and the remaining modules were not used.

### Cluster size

The number of households enumerated per cluster has been reduced from 12 to 8, as standard errors from NRVA 2005 suggested that this would produce an economy of survey resources with little reduction in precision of the standard errors.

### Analytical domains, Stratification of the Frame

The analytical domains (or, the strata, areas at which we wish the data to be statistically representative) were 45 in total in NRVA 2005, and this was increased to 46 in 2007-08 (Table 2).

Table 2 Analytical domain structure for NRVA 2005 and 2007

	NRVA 2005	NRVA 2007
Provincial analytical domains	34 domains for each 34 provinces of rural or small urban populations	34 domains for each 34 provinces of rural or small urban populations
Urban analytical domains	10 urban domains from 10 provinces with the highest urban populations.	11 urban domains from 11 provinces with the highest provincial centre urban populations.
Nomadic pastoralists (Kuchi) analytical domains	1	1
Total Number Analytical Domains	45	46

### Urban analytical domains

In both 2005 and 2007-08, the NRVA sample design stratified on each of the provinces, and then further stratified by urban and rural several of the more populous provinces. The design for both 2005 and 2007-08 entailed sorting provinces by the total number of urban households in the province. In 2005, the ten provinces with the greatest number of urban households were then stratified into urban and rural areas. At this time, there was no data available on the urban population for Helmand, and it was therefore not stratified by an urban and rural split. Since then, Helmand was enumerated, and for the 2007-08 design, it was determined that Helmand has a level of urban population that warrants its own urban analytical domain. The primary change made in the 2007-08 design then is that 11 provinces (the 10 from 2005 plus Helmand) are stratified by urban and rural areas, resulting in 22 strata. The stratification in both designs was based on the CSO definition of urban from the 2003-05 household listing. Table 3 lists each of the provinces that have urban and rural strata.

Table 3 Number of households in the most urban populated provinces

Province	Urban HHs	Centre Urban HHs	Urban domains 2005	Urban domains 2007
KABUL	313,680	313,136	√	√
HIRAT	76,423	66,760	√	√
BALKH	71,151	61,227	√	√
KANDAHAR	54,378	54,378	√	√

NANGARHAR	31,800	31,289	√	√
BAGHLAN	23,727	16,532	√	√
KUNDUZ	25,685	16,219	√	√
JAWZJAN	19,187	14,379	√	√
HELMAND	13,907	12,859		√
FARYAB	16,870	11,235	√	√
TAKHAR	17,201	10,508	√	√

Source: CSO/UNFPA pre-census household listing 2003-2005

The remaining 23 provinces, with the lowest population of urban households, were not stratified by urban and rural areas. Each of these provinces is a separate stratum, resulting in 23 more strata. There are households that are classified as urban in the CSO household listing in the other remaining 23 provinces, but they do not belong to their own urban stratum. For the purposes of sampling, households in these 23 provinces are neither classified as urban or rural, just as belonging to the province stratum. These urban households are in small districts or provincial centres and are not thought to be representative of a typical urban lifestyle that is significantly different from that of rural settled households.<sup>1</sup>

### Two-stage selection process

Within each of the 45 strata, households were selected following a two-stage design. In the first stage, CSO enumeration areas, the primary sampling units (PSUs), were selected with probability proportional to the estimated number of households (ratio of number of households in PSU to number of households in the stratum). Then in the second stage, 8 households were selected as the ultimate sampling units from each PSU (each selected with probability equal to 8 over the number of households in the PSU). The overall probability of household selection then is the product of the probability from the first stage and the second stage. In the second stage, there was no follow up listing procedure, so the product is a constant within each stratum. Random selection was based on a fixed-interval, random-start point procedure.

The number of PSU's per stratum was chosen to ensure robust representativeness for the smaller provinces. No stratum has fewer than 240 households, the largest stratum has 1,344 households. The resulting sample is a total of 2,441 PSU's selected creating a household sample of 19,528 from the settled urban and rural population for which there are 32 PSU's selected that do not have complete household listing (i.e. PSU's selected in the non-listed areas as detailed in Table 1). In addition to this, an estimated 131 PSUs (1,048 households) will be sampled in three waves starting from late summer 2007 through early summer 2008 to capture the Kuchi (nomadic) population.

PSUs selected in those areas that were not enumerated in the household listing may still be in areas of poor security for some of the survey period. However, security is fluid, and to simply exclude PSU's in these areas with no household listing enumeration at the outset would be undesirable given the objective to obtain nationally representative estimates. The security situation at the time of planning the sample does not necessarily mean that the security situation will not improve at some point in 12 months survey period. Therefore the sample will assume that there is the potential to enumerate all areas and create a relatively flexible system for giving maximum opportunity for insecure areas to be enumerated at some point in the 12 month survey.

---

<sup>1</sup> The NRVA data files allow the analyst to decide whether to identify these households as rural or urban. The data file called "area\_name" contains two useful variables: urk and urbrur. The variable urk identifies households as urban (u), rural (r), or Kuchi (k) based on the design of the sample. This means that urban identifies only those households in the 11 urban strata. Rural identifies all households in the 11 rural strata and all households in the remaining 23 province-level strata. Kuchi identifies all of the Kuchi households wherever they were located when interviewed. The variable urbrur identifies households as either urban or rural as based on the definition in the CSO household listing from 2003-05. In particular, this variable will identify those urban households (as defined by CSO) in the 23 provinces that have not been stratified into rural and urban areas.

## Calculation of weights, probability of selection and post-stratification

The expansion factor used at the household level,  $W_{hsq}$ , expands the sample to the population of households. Similarly, the expansion factor  $w_{hsq}$  is for use in household-level files and expands the sample to the population of individuals. The factors are estimated as:

$$W_{hsq} = [\text{prob(PSU)} * \text{prob(USU)}] * [0.25 * \text{POP}_{s,2008}] / \sum_{hsq} \text{HHSIZE}_{hsq}$$

$$w_{hsq} = W_{hsq} * \text{HHSIZE}_{hsq}$$

where h identifies the household, s identifies the stratum, and q identifies the calendar quarter. The term in the first square brackets is the product of the probabilities of selection in each of the two stages. The term in the second square brackets is the CSO population estimate for 2008 based on the 2003-05 pre-census household listing and CSO projections. This is part of a post-stratification adjustment to the probability of selection, ensuring that sample-based population estimates correspond to CSO population estimates. Population is divided by 4 to uniformly allocate the population to each quarter of the year (assuming away seasonal international migration). The denominator,  $\text{HHSIZE}_{hsq}$  is the size of household h in stratum s sampled in quarter q. The denominator gives the total number of sample, non-Kuchi individuals in each stratum by quarter. The adjustment term in the numerator gives the population of individuals for each stratum by quarter as estimated by CSO household listing of the non-Kuchi population.<sup>2</sup>

## Household listing for PSUs without household listing data

The PSU's that do not have a household listing include those areas that were too insecure during household listings to be enumerated, and Kuchi (nomad) communities. For PSUs sampled where there is no household listing information, then the household listing is not available and households cannot be drawn ex-ante from the sample frame.

There will be two separate methodologies followed: one for the areas that were insecure during the household listings, and one for the Kuchi communities.

For areas that were insecure in the household listings:

The fact that the PSUs without the household listing still tend to be in the insecure areas is part of the reason for adopting the simple method outlined below of developing a random start with sample interval for selecting households within PSUs (rather than an in-situ listing which takes time and draws unwanted attention to the survey teams in the village).

The procedure of developing a sample of random households from PSUs without a listing is outlined below.

Obtain as reliable as possible, and estimate of the number of **occupied** dwellings in the village. This can be cross referenced with the estimates previously provided by Shura members to CSO. Numbers are not expected to be exactly the same, but of a similar order of magnitude. If there is a huge difference between the two, further probing to try and understand the differences in the two numbers could be valuable in ensuring that the current estimate of the number of occupied households is realistic.

Once the estimate of occupied households has been determined, refer to Annex 1 table row below with the appropriate household number to determine maximum random start and sampling interval.

Randomly select a start number between 1 and the max start number indicated in the right-hand column. To do this use random number generator on a calculator to produce a number between zero and one, and then multiply this by the maximum start number. This provides the starting household number. Use the sampling interval on the same row and then select seven other households.

---

<sup>2</sup> We pin on estimated population rather than estimated number of households because of well understood incentives for the enumerators during the pre-census household listing to split large households into smaller units. There were no distorting incentives for mis-counting individuals during household listing process, and no distorting incentives during the NRVA fieldwork.

If the number of households in the rural village is greater than 1000, then calculate the maximum start number and the interval by dividing the total number of households by 8. For example  $1324/8=165.5 = 8*165 + 4$ . Therefore the maximum start number equals  $165+4 = 169$ .

If a household is empty, or the household members do not wish to be interviewed, go to the next nearest house and conduct the household questionnaire there.

For Kuchi communities:

For Kuchi communities we will first determine the number of communities in a district from the District Authorities, and then randomly select the communities to be enumerated. Once in the selected communities we will draw up a list of the household from speaking with the head of the community, then randomly select the households to interview. This process is described in detail later in this document.

### Household identification for PSUs with household listing

Eight households are randomly selected per cluster based upon the household population for each selected PSU from the household listing based sample. The households are selected in a similar way to the procedure for PSUs without a listing, with a random start within the sample interval range, but using the total number of households as recorded in the household listing database. The number of the household is pre-printed on the tracking sheet for the PSU, then CSO staff find the appropriate hard-copy of the listing forms and write the name of the head of household to facilitate specific house identification in the PSU. (The household number but not the household head name was entered in the listing database, so looking manually at the listing sheets is required to get the correct household head name.) This improves upon procedures in the NRVA 2005, where a database with the head of household names was not available as the household listing was still underway.

### Replacement households-within-cluster

Four reserve households are also drawn at the same time and printed on the cluster tracking form. Every time a reserve household is used, the reason for not using the original household sample has to be fully described on the cluster tracking sheet. Random checks of enumeration areas and reasons for not sampling selected households will be conducted by survey supervisors.

### Replacement clusters-within-domain

Of the 2,441 non-Kuchi PSUs in the sample design, only 68 were replacement PSUs (less than 3% replacement). The majority of these replacements were due to reasons of insecurity. Replacement PSUs were almost always PSUs in the nearest secure district. Accepted reasons for replacing a cluster within the domain:

- Persistent poor security preventing enumerator access.
- Prolonged lack of access due to very long term winter conditions (unlikely occurrence).
- Change of use of most of the households in the cluster to non-residential purposes, i.e. businesses, shops, etc.
- Surveyors not granted permission by village elders to conduct the survey despite district supervisor making a second visit for further explanation of the purpose of the survey.

Of the four reasons above for a PSU not being able to be surveyed, the change of use is the only one that justified an immediate replacement PSU without further investigation or opportunity for sampling at another point within the survey schedule.

### Strategy for dealing with PSUs that are temporarily or permanently inaccessible

The low replacement rate for PSUs was in part due to a flexible strategy for dealing with lack of access due to security or weather issues. Both of these causes are unpredictable and variable as to when and where they will prevent access to PSUs, although both have times of year when it is more likely. Therefore a strategy was followed that provided the maximum opportunity for these PSUs to be sampled at some point in the survey calendar. In the best case scenario, the factors that make a PSU inaccessible are not permanent, and most, if not all these PSUs will become available at some point during the year survey period. The simplest sampling strategy with PSUs that are inaccessible at the time they are meant to be enumerated would be to skip them, and hope that they become available at some point during the year-long survey.

The danger of this approach is that we end up towards the end of the survey period with a collection of PSUs that have remained inaccessible, for a large part of the survey period, but become accessible towards the end, because that's when they are reconsidered for enumeration, or their replacements are chosen. This bunching of inaccessible PSUs enumerated at one time of the year will create a confounding effect of insecurity and season. To prevent this, it is proposed to break up the year into four quarterly review periods. This is proposed as a mechanism to maintain geographic

representativeness and seasonal sampling balance within an analytical domain. Within a three month period, the procedures for accommodating inaccessible PSUs would be the following:

- If a PSU is not accessible at the scheduled time, skip that PSU and move onto enumerate the next PSU in the schedule. Record this information.
- Monitor the conditions that prevented the initial visit to the PSU taking place, and should they change to the extent that it is now possible to enumerate the PSU that you have skipped within this same quarter, go back and enumerate that PSU as soon as conditions allow. This will ensure that the time delay between the scheduled and the actual enumeration time is minimised wherever possible.
- At the end of the fieldwork quarter, any PSUs that remained inaccessible until the end of the quarter, will be considered as to whether they are likely to continue to be inaccessible or that conditions will change to permit them to be enumerated in the next quarter.
- Those PSUs that are now accessible for the next quarter of survey should be reintroduced to the schedule. They should be enumerated towards the beginning of the next quarter because this will reduce the delay between the original schedule and actual enumeration.
- If there are PSUs for which it is considered that will not be accessible at the very least in the next quarter, replacement PSUs should be drawn, adhering to the principle to maintain the representativeness and balance of the analytical domain and season effects within the national sample.
- Replacement PSUs should be drawn randomly from within the same district (for rural populations) and urban district-nahia for urban populations. These replacement PSU's should be drawn from the shadow sample which is created in the same way as the original sample, but with a different seed random start.

The benefits of such a scheme are that:

- The flexible strategy allows for enumeration of inaccessible PSUs as soon as they become accessible.
- Replacement PSUs are distributed relatively evenly across seasons for all analytical domains where they are required.
- The shadow sampling scheme maintains the appropriate number of PSUs per district or nahia.

#### Strategy for the selection of Kuchi communities

Due to their nomadic nature, sampling Kuchi communities during their annual migrations is not practical. However, there are two times in the year when the locations of the Kuchi communities are most stable; winter, probably the most predictable time for finding Kuchi communities; and summer, when most communities have reached their final summer grazing location. Therefore the NRVA 2007-08 samples Kuchi communities both in winter and in summer locations during the 12 months survey, dividing into three waves. As the surveys started in late summer 2007, the summer sample will be split between late summer 2007 and early summer 2008, with a full winter sample taken in the winter 2007-08. That is, half of the Kuchi sample was interviewed in the winter while a quarter in summer 2007 and summer 2008 respectively. This sampling design follows the procedure developed during the NRVA 2005; but it was extended to accommodate the year-round nature of the NRVA 2007-08.

The sampling design of for NRVA Kuchi communities was based on the 2004 National Multi-sectoral Assessment on *Kuchi (NMAK)*. It gives an indication of how many Kuchi communities are in each district during the summer and winter. Migratory patterns change according to climate and land conflicts. Therefore rather than trying to draw a sample based upon the predicted number of Kuchi communities per district, and run the risk that this information is not accurate, we use the sample frame to draw a list of PSUs. The sampling strategy intended to sample 70 PSUs in the summer and 70 PSUs in winter to provide sufficient households to have a representative sample further nomadic Kuchi analytical domain. The actual number of Kuchi PSUs is 131, yielding an effective sample size of more than 1,000 households.

The Kuchi community sample was selected as follow. (1) a sample of 70 PSUs in the summer and 70 PSUs in winter was drawn from the NMAK sampling frame. Table 4 indicates for both summer & winter, the number of districts where it was expected to find the 70 randomly selected PSUs. (2) Districts to visit were determined from the selected Kuchi community PSUs. The summer sample of 70 PSUs was drawn, and found to be in 57 separate districts, while the winter sample of 70 PSU's was drawn from 58 separate districts (Table 4). It is important to note that the combined summer and winter location sample frame is ordered in terms of either winter or summer location districts for the respective winter or summer sample to be drawn. This is to ensure that the sampling interval moves through the population in the geographically ordered way that is applied in the sample procedures for other analytical domains of the settled population.

Table 4 List of the number of PSU's per districts selected for the summer & winter Kuchi sample

Kuchi PSU's	# CSO districts from summer 70 PSUs (Summer)	# Kuchi communities expected (Summer)	# CSO districts from 70 PSUs (Winter)	# Kuchi communities expected (Winter)
1	47	47	49	49
2	7	14	8	16

3	3	9	0	0
4	0	0	0	0
5	0	0	1	5
Total	57	70	58	70

It is not expected that the number of PSU's as predicted by of the 2004 NMAK sample frame will be encountered. Therefore, after visiting the district, it was determined how many Kuchi communities are actually present before a decision is made on the number of Kuchi communities to sample in that district. The strategy to split late summer 07 and early summer 08 provided an opportunity to modify the second sampling depending upon the number of communities encountered in the 1st summer round. The list of 57 districts chosen for would-be enumeration of the Kuchi summer component has been randomly split into two parts, with the intention of visiting one half of the districts in the summer of 2007 and the other half in the summer of 2008. The lists of the Kuchi districts expected to be sampled are presented in Table 5.

A second list of 70 PSU's drawn from the sample frame with the unique districts was drawn for the winter sample.

### Selection of Kuchi communities within districts

Upon their arrival into a district, fieldworkers wrote up a list of all Kuchi communities in the district, using Form KUCHI-1. Once the team felt the information on the name and number of Kuchi communities in the district was complete, they called in the information by phone to the Kabul headquarters survey coordinator. The list was drawn up in consultation with knowledgeable officials in the district center and any Kuchi Shura representatives. This process does not require travel within the district. If there are no Kuchi communities at all in the district, there is no alternative sampling proposed.

Although the order of the communities in the list is immaterial, it is good practice to ask fieldworkers to draw the list in a certain systematic way. It was proposed to record the Kuchi communities within the district in increasing distance from the district center. During the telephone call to headquarters, the Kabul office selected one or more Kuchi communities in the district, and then these selections were communicated to the fieldworkers immediately.

### Procedure for determining number and identity of within district Kuchi community sample when there is no telephone reception

- Number the Kuchi communities in the list with serial numbers from 1 to N.
- If N is less than or equal to 15, then select a random integer between 1 and N. If N is greater than 15, then select a random integer between 1 and 15. Call R the random integer so selected.
- Select Kuchi Community Number R:
- If R+15 is less or equal N, select a 2<sup>nd</sup> Kuchi Community Number R+15.
- If R+30 is less or equal N, Select a 3<sup>rd</sup> Kuchi Community Number R+30, and so forth.

The expectation from the information on the summer location of Kuchi communities from the 2004 NMAK sample frame is that this selection procedure should give a sample size of 35 communities in each half summer sampling round, i.e. late summer 2007 and early summer 2008.

### Selection of tents within a Kuchi community when there is no mobile telephone reception

Fieldworkers will draw up the list of all tents (households) in the selected communities using Form KUCHI-2. It is expected that this list can be drawn in consultation with knowledgeable persons in the community. It does not require visiting all the tents in the community. Fieldworkers then selected the eight tents to be interviewed as follows:

- Number the tents in the list with serial numbers from 1 to N.
- Divide N by 8, and keep one decimal. Call the result "the sampling step" (S).
- Select a random integer between 1 and S. Call this number "the random start" (R).
- Compute numbers R, R+S, R+2S, ..., R+7S, keeping one decimal.
- The numbers of the selected tents are the integer of the above numbers.

### Tent selection example

- There are 90 tents in the community, N=90
- $S=N/8 = 90/8 = 11.25 = 11.3$  to 1 decimal place
- Random integer number between 1 and 11.3 (R) = random start 3
- $R, R+S, R+2S, \dots, R+7S = 3, 14.3, 25.6, 36.9, 48.2, 59.5, 70.8, 82.1$
- Select tents 3, 14, 25, 36, 48, 59, 70, 82



## Selection of tents within a Kuchi community when there is mobile telephone reception in the community or close to it.

Fieldworkers will draw-up the list of all tents (households) in the selected communities using Form KUCHI-2. It is expected that this list can be drawn in consultation with knowledgeable persons in the community. It does not require visiting all the tents in the community. After construction of the list, the Kabul office was telephoned, who then provided the identities of the households to be surveyed. An Excel program that would generate the random selection of communities within district and households within Kuchi community has been written, and this was used when the surveyor's phone in from the district for the number and identity of Kuchi communities to be enumerated, and also when they phone in from the actual Kuchi community for the identity of the households to be enumerated. Surveyors were encouraged to use the telephone procedure over the manual procedure wherever possible. For example, if mobile telephone reception was not available in the community but was available nearby, the surveyors were encouraged to call Kabul for selections.

## Calculation of Kuchi weights -

For Kuchi households we simply post-stratify to ensure that sample-estimates match the NMAK-based population estimates. By design, the Kuchi selection process is meant to be self-weighting (uniform weights across the Kuchi sample), and under the assumption that the process succeeded in a self-weighted design, our expansion factors are estimated as:

$$W_{hw} = [\alpha * POP_{NMAK}] / \sum_{hw} HHSIZE_{ht} \quad (\text{household expansion factor, hh\_weight})$$

where  $POP_{NMAK}$  is the Kuchi population estimate from the National Multi-sectoral *Assessment on Kuchi (NMAK) in 2004*,  $t$  identifies summer or winter round, and  $\alpha$  is a scalar taking the value of 0.5 for winter, 0.25 for summer 2007 and summer 2008.

---



Table 5 Districts to be sampled for Kuchi in late summer 2007 and early summer 2008

Late summer of 2007				Early summer of 2008			
District Code	Summer Province	Summer District	Expected communities	District Code	Summer Province	Summer District	Expected communities
0105	Kabul	Qarabagh	10	0109	Kabul	Paghman	15
0110	Kabul	Char Asyab	17	0113	Kabul	Bagrami	17
0114	Kabul	Dih Sabz	21	0305	Parwan	Shinwary	5
0307	Parwan	Bagram	5	0310	Parwan	Shikh Ali	8
0313	Parwan	Panjshir2	29	0401	Wardak	Maidan shahr	10
0402	Wardak	Jalrez	27	0403	Wardak	First Part Of Behsood	3
0407	Wardak	Chak	9	0409	Wardak	Nerkh	9
0501	Logar	Pul alem	26	0505	Logar	Mohammad Agha	30
0507	Logar	Azra	22	0609	Ghazni	Qarabagh	18
0613	Ghazni	Ajeristan	10	0702	Paktika	Matta Khan	1
0715	Paktika	Wozakhowa	4	0801	Paktika	Gardiz	35
0804	Paktya	Zurmat	22	1010	Nangarhar	Hisarak	9
1408	Badakhshan	Baharak	31	1411	Badakhshan	Yawan	3
1423	Badakhshan	Khwahan	2	1501	Takhar	Taluqan	1
1508	Takhar	Namak -Ab	1	1605	Baghlan	Khinjan	4
1702	Kunduz	Iamamsahib	3	1707	Kunduz	Archi	4
1912	Balkh	Sholgara	11	2106	Sari Pul	Sangcharak	9
2204	Faryab	Almar	3	2205	Faryab	Qaisor	8
2210	Faryab	Dawladaboadd	4	2302	Badghis	Muqur	3
2303	Badghis	Abkamary	14	2304	Badghis	Qadis	3
2306	Badghis	Ghormach	7	2307	Badghis	Murghab	3
2404	Hirat	Pushtun zarghun	15	2408	Hirat	Kohistan	5
2413	Hirat	Farsi	27	2416	Hirat	Kushki Kohna	16
2506	Farah	Shib koh	2	2604	Nimroz	Chakhansoor	5
2705	Hilmand	Garmser	3	2905	Zabul	Day chopan	29
3001	Uruzgan	Tirin kot	3	3003	Uruzgan	Khas Uruzgan	8
3106	Ghor	Passaband	22	3108	Ghor	Tulak	27
3109	Ghor	Tulak	5	3110	Ghor	Taywara	9
3205	Bamyan	Yakawlang	2				

Table 6 Districts to be sampled for Kuchi for winter in 2007/08

District Code	Winter Province	Winter District	Expected Kuchi Communities	District Code	Winter Province	Winter District	Expected Kuchi Communities
110	Kabul	Char Asiab	3	1202	Laghman	Qarghai	16
206	Kapisa	Tagab	15	1203	Laghman	Alingar	8
307	Parwan	Bagram	13	1421	Badakhshan	Arghanj Khawa	1
502	Logar	Barki Barak	4	1501	Takhar	Taluqan	1
506	Logar	Kharwar	6	1514	Takhar	Khowja Bahowdin	3
709	Paktika	Gomal	12	1515	Takhar	Darqad	2
717	Paktika	Warmamai	14	1602	Baghlan	Baghlane Jadeed	10
902	Khost	Tareizayi	67	1701	Kunduz	Markaz kunduz	12
1002	Nangarhar	Behsood	13	1702	Kunduz	Iamam Saheb	6
1003	Nangarhar	Surkhrod	30	1704	Kunduz	Char Dara	16
1004	Nangarhar	Chiperhar	11	1707	Kunduz	Dasht-i-archi	8
1006	Nangarhar	Kama	13	1911	Balkh	Chamtal	11
1007	Nangarhar	Kuz kunar	9	2102	Sar-i-Pul	SuzmaQula	4
1011	Nangarhar	Khogyani	9	2204	Faryab	Almar	5
1012	Nangarhar	Pachar Wagan	9	2205	Faryab	Qaisar	4
1017	Nangarhar	Dur Baba	4	2210	Faryab	Dawlat Abad	8
1019	Nangarhar	Bati kot	20	2302	Badghis	Muqur	3
1020	Nangarhar	Muhmand Dara	11	2303	Badghis	Abkamary	14
1022	Nangarhar	Lalpoor	8	2304	Badghis	Qadis	3
1111	Kunar	Noor Gool	3	2306	Badghis	Ghormach	7
1201	Laghman	Mehterlam	13	2307	Badghis	Murghab	3

District Code	Winter Province	Winter District	Expected Kuchi Communities	District Code	Winter Province	Winter District	Expected Kuchi Communities
2402	Hirat	Enjil	6	2708	Hilmand	Bughran	3
2406	Hirat	Kushk	11	2710	Hilmand	Naw zad	12
2411	Hirat	Adraskan	41	2806	Kandahar	Ghorak	2
2416	Hirat	Kishk-i-Kahna	15	2812	Kandahar	Espeen Boldak	9
2501	Farah	Farah	7	2902	Zabul	Shah Joi	9
2504	Farah	Anar Dara	4	2908	Zabul	Shinkay	5
2509	Farah	Bala Blook	8	3001	Uruzgan	Terinkott	18
2604	Nimroz	Chakhansoor	5				
2703	Hilmand	Nad Ali	4				

Annex 1 Table for selecting sampling interval

No. dwelling s	Househo ld Sa is mpling Interval	Ma x hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Ma x hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Max househol d start No.
8	1	1	60	7	11	112	14	14
9	1	2	61	7	12	113	14	15
10	1	3	62	7	13	114	14	16
11	1	4	63	7	14	115	14	17
12	1	5	64	8	8	116	14	18
13	1	6	65	8	9	117	14	19
14	1	7	66	8	10	118	14	20
15	1	8	67	8	11	119	14	21
16	2	2	68	8	12	120	15	15
17	2	3	69	8	13	121	15	16
18	2	4	70	8	14	122	15	17
19	2	5	71	8	15	123	15	18
20	2	6	72	9	9	124	15	19
21	2	7	73	9	10	125	15	20
22	2	8	74	9	11	126	15	21
23	2	9	75	9	12	127	15	22
24	3	3	76	9	13	128	16	16
25	3	4	77	9	14	129	16	17
26	3	5	78	9	15	130	16	18
27	3	6	79	9	16	131	16	19
28	3	7	80	10	10	132	16	20
29	3	8	81	10	11	133	16	21
30	3	9	82	10	12	134	16	22
31	3	10	83	10	13	135	16	23
32	4	4	84	10	14	136	17	17
33	4	5	85	10	15	137	17	18
34	4	6	86	10	16	138	17	19
35	4	7	87	10	17	139	17	20
36	4	8	88	11	11	140	17	21
37	4	9	89	11	12	141	17	22
38	4	10	90	11	13	142	17	23
39	4	11	91	11	14	143	17	24
40	5	5	92	11	15	144	18	18
41	5	6	93	11	16	145	18	19
42	5	7	94	11	17	146	18	20
43	5	8	95	11	18	147	18	21
44	5	9	96	12	12	148	18	22
45	5	10	97	12	13	149	18	23
46	5	11	98	12	14	150	18	24
47	5	12	99	12	15	151	18	25
48	6	6	100	12	16	152	19	19
49	6	7	101	12	17	153	19	20
50	6	8	102	12	18	154	19	21
51	6	9	103	12	19	155	19	22
52	6	10	104	13	13	156	19	23
53	6	11	105	13	14	157	19	24
54	6	12	106	13	15	158	19	25
55	6	13	107	13	16	159	19	26
56	7	7	108	13	17	160	20	20
57	7	8	109	13	18	161	20	21
58	7	9	110	13	19	162	20	22
59	7	10	111	13	20	163	20	23

No. dwelling s	Househo ld Sa is mpling Interval	Ma x hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Ma x hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Max househol d start No.
164	20	24	218	27	29	272	34	34
165	20	25	219	27	30	273	34	35
166	20	26	220	27	31	274	34	36
167	20	27	221	27	32	275	34	37
168	21	21	222	27	33	276	34	38
169	21	22	223	27	34	277	34	39
170	21	23	224	28	28	278	34	40
171	21	24	225	28	29	279	34	41
172	21	25	226	28	30	280	35	35
173	21	26	227	28	31	281	35	36
174	21	27	228	28	32	282	35	37
175	21	28	229	28	33	283	35	38
176	22	22	230	28	34	284	35	39
177	22	23	231	28	35	285	35	40
178	22	24	232	29	29	286	35	41
179	22	25	233	29	30	287	35	42
180	22	26	234	29	31	288	36	36
181	22	27	235	29	32	289	36	37
182	22	28	236	29	33	290	36	38
183	22	29	237	29	34	291	36	39
184	23	23	238	29	35	292	36	40
185	23	24	239	29	36	293	36	41
186	23	25	240	30	30	294	36	42
187	23	26	241	30	31	295	36	43
188	23	27	242	30	32	296	37	37
189	23	28	243	30	33	297	37	38
190	23	29	244	30	34	298	37	39
191	23	30	245	30	35	299	37	40
192	24	24	246	30	36	300	37	41
193	24	25	247	30	37	301	37	42
194	24	26	248	31	31	302	37	43
195	24	27	249	31	32	303	37	44
196	24	28	250	31	33	304	38	38
197	24	29	251	31	34	305	38	39
198	24	30	252	31	35	306	38	40
199	24	31	253	31	36	307	38	41
200	25	25	254	31	37	308	38	42
201	25	26	255	31	38	309	38	43
202	25	27	256	32	32	310	38	44
203	25	28	257	32	33	311	38	45
204	25	29	258	32	34	312	39	39
205	25	30	259	32	35	313	39	40
206	25	31	260	32	36	314	39	41
207	25	32	261	32	37	315	39	42
208	26	26	262	32	38	316	39	43
209	26	27	263	32	39	317	39	44
210	26	28	264	33	33	318	39	45
211	26	29	265	33	34	319	39	46
212	26	30	266	33	35	320	40	40
213	26	31	267	33	36	321	40	41
214	26	32	268	33	37	322	40	42
215	26	33	269	33	38	323	40	43
216	27	27	270	33	39	324	40	44
217	27	28	271	33	40	325	40	45

No. dwelling s	Househo ld Sa is mpling Interval	Ma x hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Ma x hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Max househol d start No.
326	40	46	380	47	51	434	54	56
327	40	47	381	47	52	435	54	57
328	41	41	382	47	53	436	54	58
329	41	42	383	47	54	437	54	59
330	41	43	384	48	48	438	54	60
331	41	44	385	48	49	439	54	61
332	41	45	386	48	50	440	55	55
333	41	46	387	48	51	441	55	56
334	41	47	388	48	52	442	55	57
335	41	48	389	48	53	443	55	58
336	42	42	390	48	54	444	55	59
337	42	43	391	48	55	445	55	60
338	42	44	392	49	49	446	55	61
339	42	45	393	49	50	447	55	62
340	42	46	394	49	51	448	56	56
341	42	47	395	49	52	449	56	57
342	42	48	396	49	53	450	56	58
343	42	49	397	49	54	451	56	59
344	43	43	398	49	55	452	56	60
345	43	44	399	49	56	453	56	61
346	43	45	400	50	50	454	56	62
347	43	46	401	50	51	455	56	63
348	43	47	402	50	52	456	57	57
349	43	48	403	50	53	457	57	58
350	43	49	404	50	54	458	57	59
351	43	50	405	50	55	459	57	60
352	44	44	406	50	56	460	57	61
353	44	45	407	50	57	461	57	62
354	44	46	408	51	51	462	57	63
355	44	47	409	51	52	463	57	64
356	44	48	410	51	53	464	58	58
357	44	49	411	51	54	465	58	59
358	44	50	412	51	55	466	58	60
359	44	51	413	51	56	467	58	61
360	45	45	414	51	57	468	58	62
361	45	46	415	51	58	469	58	63
362	45	47	416	52	52	470	58	64
363	45	48	417	52	53	471	58	65
364	45	49	418	52	54	472	59	59
365	45	50	419	52	55	473	59	60
366	45	51	420	52	56	474	59	61
367	45	52	421	52	57	475	59	62
368	46	46	422	52	58	476	59	63
369	46	47	423	52	59	477	59	64
370	46	48	424	53	53	478	59	65
371	46	49	425	53	54	479	59	66
372	46	50	426	53	55	480	60	60
373	46	51	427	53	56	481	60	61
374	46	52	428	53	57	482	60	62
375	46	53	429	53	58	483	60	63
376	47	47	430	53	59	484	60	64
377	47	48	431	53	60	485	60	65
378	47	49	432	54	54	486	60	66
379	47	50	433	54	55	487	60	67

No. dwelling s	Househo ld Sa is mpling Interval	Ma x hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Ma x hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Max househol d start No.
488	61	61	542	67	73	596	74	78
489	61	62	543	67	74	597	74	79
490	61	63	544	68	68	598	74	80
491	61	64	545	68	69	599	74	81
492	61	65	546	68	70	600	75	75
493	61	66	547	68	71	601	75	76
494	61	67	548	68	72	602	75	77
495	61	68	549	68	73	603	75	78
496	62	62	550	68	74	604	75	79
497	62	63	551	68	75	605	75	80
498	62	64	552	69	69	606	75	81
499	62	65	553	69	70	607	75	82
500	62	66	554	69	71	608	76	76
501	62	67	555	69	72	609	76	77
502	62	68	556	69	73	610	76	78
503	62	69	557	69	74	611	76	79
504	63	63	558	69	75	612	76	80
505	63	64	559	69	76	613	76	81
506	63	65	560	70	70	614	76	82
507	63	66	561	70	71	615	76	83
508	63	67	562	70	72	616	77	77
509	63	68	563	70	73	617	77	78
510	63	69	564	70	74	618	77	79
511	63	70	565	70	75	619	77	80
512	64	64	566	70	76	620	77	81
513	64	65	567	70	77	621	77	82
514	64	66	568	71	71	622	77	83
515	64	67	569	71	72	623	77	84
516	64	68	570	71	73	624	78	78
517	64	69	571	71	74	625	78	79
518	64	70	572	71	75	626	78	80
519	64	71	573	71	76	627	78	81
520	65	65	574	71	77	628	78	82
521	65	66	575	71	78	629	78	83
522	65	67	576	72	72	630	78	84
523	65	68	577	72	73	631	78	85
524	65	69	578	72	74	632	79	79
525	65	70	579	72	75	633	79	80
526	65	71	580	72	76	634	79	81
527	65	72	581	72	77	635	79	82
528	66	66	582	72	78	636	79	83
529	66	67	583	72	79	637	79	84
530	66	68	584	73	73	638	79	85
531	66	69	585	73	74	639	79	86
532	66	70	586	73	75	640	80	80
533	66	71	587	73	76	641	80	81
534	66	72	588	73	77	642	80	82
535	66	73	589	73	78	643	80	83
536	67	67	590	73	79	644	80	84
537	67	68	591	73	80	645	80	85
538	67	69	592	74	74	646	80	86
539	67	70	593	74	75	647	80	87
540	67	71	594	74	76	648	81	81
541	67	72	595	74	77	649	81	82

No. dwelling s	Househo ld Sa is mpling Interval	Ma x hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Ma x hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Max househol d start No.
650	81	83	704	88	88	758	94	100
651	81	84	705	88	89	759	94	101
652	81	85	706	88	90	760	95	95
653	81	86	707	88	91	761	95	96
654	81	87	708	88	92	762	95	97
655	81	88	709	88	93	763	95	98
656	82	82	710	88	94	764	95	99
657	82	83	711	88	95	765	95	100
658	82	84	712	89	89	766	95	101
659	82	85	713	89	90	767	95	102
660	82	86	714	89	91	768	96	96
661	82	87	715	89	92	769	96	97
662	82	88	716	89	93	770	96	98
663	82	89	717	89	94	771	96	99
664	83	83	718	89	95	772	96	100
665	83	84	719	89	96	773	96	101
666	83	85	720	90	90	774	96	102
667	83	86	721	90	91	775	96	103
668	83	87	722	90	92	776	97	97
669	83	88	723	90	93	777	97	98
670	83	89	724	90	94	778	97	99
671	83	90	725	90	95	779	97	100
672	84	84	726	90	96	780	97	101
673	84	85	727	90	97	781	97	102
674	84	86	728	91	91	782	97	103
675	84	87	729	91	92	783	97	104
676	84	88	730	91	93	784	98	98
677	84	89	731	91	94	785	98	99
678	84	90	732	91	95	786	98	100
679	84	91	733	91	96	787	98	101
680	85	85	734	91	97	788	98	102
681	85	86	735	91	98	789	98	103
682	85	87	736	92	92	790	98	104
683	85	88	737	92	93	791	98	105
684	85	89	738	92	94	792	99	99
685	85	90	739	92	95	793	99	100
686	85	91	740	92	96	794	99	101
687	85	92	741	92	97	795	99	102
688	86	86	742	92	98	796	99	103
689	86	87	743	92	99	797	99	104
690	86	88	744	93	93	798	99	105
691	86	89	745	93	94	799	99	106
692	86	90	746	93	95	800	100	100
693	86	91	747	93	96	801	100	101
694	86	92	748	93	97	802	100	102
695	86	93	749	93	98	803	100	103
696	87	87	750	93	99	804	100	104
697	87	88	751	93	100	805	100	105
698	87	89	752	94	94	806	100	106
699	87	90	753	94	95	807	100	107
700	87	91	754	94	96	808	101	101
701	87	92	755	94	97	809	101	102
702	87	93	756	94	98	810	101	103
703	87	94	757	94	99	811	101	104



No. dwelling s	Househo ld Sa is mpling Interval	Ma x hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Ma x hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Max househol d start No.
812	101	105	866	108	110	920	115	115
813	101	106	867	108	111	921	115	116
814	101	107	868	108	112	922	115	117
815	101	108	869	108	113	923	115	118
816	102	102	870	108	114	924	115	119
817	102	103	871	108	115	925	115	120
818	102	104	872	109	109	926	115	121
819	102	105	873	109	110	927	115	122
820	102	106	874	109	111	928	116	116
821	102	107	875	109	112	929	116	117
822	102	108	876	109	113	930	116	118
823	102	109	877	109	114	931	116	119
824	103	103	878	109	115	932	116	120
825	103	104	879	109	116	933	116	121
826	103	105	880	110	110	934	116	122
827	103	106	881	110	111	935	116	123
828	103	107	882	110	112	936	117	117
829	103	108	883	110	113	937	117	118
830	103	109	884	110	114	938	117	119
831	103	110	885	110	115	939	117	120
832	104	104	886	110	116	940	117	121
833	104	105	887	110	117	941	117	122
834	104	106	888	111	111	942	117	123
835	104	107	889	111	112	943	117	124
836	104	108	890	111	113	944	118	118
837	104	109	891	111	114	945	118	119
838	104	110	892	111	115	946	118	120
839	104	111	893	111	116	947	118	121
840	105	105	894	111	117	948	118	122
841	105	106	895	111	118	949	118	123
842	105	107	896	112	112	950	118	124
843	105	108	897	112	113	951	118	125
844	105	109	898	112	114	952	119	119
845	105	110	899	112	115	953	119	120
846	105	111	900	112	116	954	119	121
847	105	112	901	112	117	955	119	122
848	106	106	902	112	118	956	119	123
849	106	107	903	112	119	957	119	124
850	106	108	904	113	113	958	119	125
851	106	109	905	113	114	959	119	126
852	106	110	906	113	115	960	120	120
853	106	111	907	113	116	961	120	121
854	106	112	908	113	117	962	120	122
855	106	113	909	113	118	963	120	123
856	107	107	910	113	119	964	120	124
857	107	108	911	113	120	965	120	125
858	107	109	912	114	114	966	120	126
859	107	110	913	114	115	967	120	127
860	107	111	914	114	116	968	121	121
861	107	112	915	114	117	969	121	122
862	107	113	916	114	118	970	121	123
863	107	114	917	114	119	971	121	124
864	108	108	918	114	120	972	121	125
865	108	109	919	114	121	973	121	126

No. dwelling s	Househo ld Sa is mpling Interval	Ma hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Ma hou d st No.	No. dwelling s	Househo ld Sa is mpling Interval	Max household start No.
974	121	127	983	122	129	992	124	124
975	121	128	984	123	123	993	124	125
976	122	122	985	123	124	994	124	126
977	122	123	986	123	125	995	124	127
978	122	124	987	123	126	996	124	128
979	122	125	988	123	127	997	124	129
980	122	126	989	123	128	998	124	130
981	122	127	990	123	129	999	124	131
982	122	128	991	123	130	1000	125	125