User Guide for the Senegal Migration Panel

1 - Overview

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1. Introduction

This User Guide provides information about the sampling, data collection and use of the Senegal Migration Panel (SMP).

SMP is a survey of households and individuals in Senegal, focused on migration beliefs and behavior as well as climate change beliefs and adaptation.

The **Core of SMP** constitutes a **repeated survey of households and male individuals** in **145 villages** in **rural Senegal**. So far, 3 core data waves have been collected, however not all components were included every year:

- Wave 1 (2022)
- Wave 2 (2023)
- Wave 3 (2024)

In addition, five add-on surveys were conducted in different waves:

- **Census** of all households and their members in 2022 (wave 1) and of the same households and their members in 2024 (wave 3)
- Survey of **village chiefs** in 2022 and 2024 (wave 1 & 3)
- Survey of **household-level village networks** in 2022 and 2024 (wave 1 & 3)
- Survey of **male individuals in 4 cities** of Senegal in 2023 (wave 2)
- Survey of **women** in SMP villages in 2024 (wave 3)

Table 1 presents an overview of the different surveys, their size by number of consented interviews, and timing. The surveys are ordered by sequence of implementation; i.e. the village chief surveys and census were fielded first, followed by the network surveys which were conducted jointly with the Core-household and individual surveys. In 2023, the Urban survey was conducted after the Core surveys were completed and in different locations. In 2024, the Woman survey was fielded jointly with the core and network surveys.

	Village chief	**Census**	**Network**	**Core**		**Urban**	**Woman**
Year	**Individual**	**Household**	**Household**	**Household**	**Individual**	**Individual**	**Individual**
2022	N=144	N= 9,665	N= 9,359	N= 4,814	N= 4,704		
2023				N=4,596	N=4,159	N=1,009	
2024	N=144	N = 8,842	N=8,842	N=4,514	N=3,774		N= 961
2025				N=4,615	N=4,075		

Table 1: Table shows number consented interviews by survey type and year.

2. Description of surveys

Village chief:

- Respondent: Village chief
- Content: Village characteristics + perceived changes in weather and climate

Census:

- Respondent: HH head or knowledgeable person in HH

- Content: Listing of all household members of age 15 and older ("HH roster") + members' basic sociodemographic background + their migration history

Network:

- Respondent: HH head or knowledgeable person in HH (same as *Core-household* respondent) + only for network questions: HH head or knowledgeable person in HH (same as *Core-household* respondent) jointly with male 18 to 40 years (same as *Core-individual* respondent)
- Content: Social ties of households

Core-household:

- Respondent: HH head or knowledgeable person in HH
- Content:
    - 2022: Socioeconomic information of the HH + climate change perceptions of the HH respondent
    - 2023: Socioeconomic information of the HH + migration history of household members + climate change perceptions of the HH respondent
    - 2024: Listing of all household members of age 15 and older ("HH roster") + information about their basic sociodemographic background + information about their migration history + socioeconomic information of the HH + climate change perceptions of the HH respondent

Core-individual:

- Respondent: Male 18 to 40 years
- Content: Detailed socioeconomic characteristics + migration attitudes and behavior + climate perceptions + wellbeing, risk preferences, etc.

Urban:

- Respondent: Male 18 to 40 years
- Content: Detailed socioeconomic characteristics + skills and employment + migration attitudes and behavior + climate perceptions + wellbeing, risk preferences, etc.

Woman:

- Respondent: Female 18 to 64 years
- Content: Sociodemographic characteristics + migration history and intend + social and political networks + participation in community activities and local politics + women's empowerment

3. Sampling

This section describes the sampling for wave 1 conducted in 2022. All SMP surveys, except for the urban survey, build on this sampling. For the sampling specificities of surveys in later waves or add-on surveys, we refer to the respective User Guide.

The goal was to create samples of households, young male individuals and village chiefs in 145 rural villages that are representative for specific departments and Senegal as a whole. Therefore, the primary sampling units are villages, the secondary sampling units are households, and the tertiary sampling unit are male individuals.

Sampling of villages:

The sampling is based on a list of administrative units that were obtained from Senegal's National Agency for Statistics and Demography, ANSD. A village was defined as a settlement containing between 40 and 150 households. (Settlements are defined exclusively and exhaustively as "quartiers/villages" by ANSD.) Villages are ordinarily defined as containing at least several hundred residents (more than hamlets) but fewer than a couple thousand (fewer than towns). Given an average household size of about 10, our definition meets this common notion of a village.

All urban communes and communes in the Dakar region were excluded from the sampling frame. Further, certain areas bordering the Gambia, Mali, or Guinea were excluded for security reasons (specifically, the departments of Bignona, Bounkiling, Medina Yoro Foulah, Saraya, Bakel, Salemata, and the district of Fongolembi). In total, the sampling frame covers 3,082 out of 3,463 rural villages across all regions and 35 of 41 departments outside of Dakar.

From that sampling frame, we selected 3 types of villages, with 145 villages in total:

- Type 1: Focus department villages, N=90
  90 villages in 3 focus departments were selected representatively for the respective department. The departments are Matam, Kaolack and Sedhiou.
- Type 2: National sample villages, N=35
  35 villages were representatively sampled from the whole country, after excluding Type 1 and Type 3 villages (other villages in focus departments were included in sampling frame of Type 2).
- Type 3: PARERBA program evaluation villages, N=20
  20 villages were purposefully selected for the PARERBA program evaluation. This included 10 villages in which the PARERBA program was implemented and 10 control villages. The control villages were selected based on a manual matching, mimicking the program selection process. In each treatment commune, we identified similar villages in terms of population using the ANSD list of administrative units. These villages were then screened through a short phone interview with the village chief. Selection criteria were absence of existing or planned irrigation infrastructure and availability of around 5 ha community owned land for a hypothetical irrigation system.

Type 1 and Type 2 villages were randomly sampled within location-based strata, namely within district for focus departments and within region for the national sample. A re-randomization algorithm was employed to ensure representativeness with respect to a set of characteristics for which administrative data was available (logged population and household counts, average household size, and the share of women at the village level, and the average age and share of residents recorded as absent at the level of the commune).

Sampling of *village chiefs*:

In each village the chief was sampled for an interview, resulting in a sample of 145 village chiefs.

Sampling of households for the *Census*:

All households (N=9,937) in the 145 villages were sampled.

Sampling of households for the *Network* survey:

All households (N=9,937) in the 145 villages were sampled.

Sampling of households for the *Core-household* survey:

We sampled 6,031 households in the 145 villages to be approached for a Core-household interview (for a final sample size of 4,814).

Households with a male in the age range of 18 to 40 years were eligible for the core interview. Within-village household samples were drawn in proportion to village size, with a minimum target sample size of 15 households and a maximum of 45 households per village. Within villages sampling was stratified based on census data of migration experiences among the target group of 18 to 40 year old males, such that those that have migrated either domestically or internationally in the previous twelve months were undersampled roughly by a factor of two. Within each strata, household selection probabilities are proportional to the number of within-household target individuals, i.e. the relevant household size metric.

Sampling of male individuals for the *Core-individual* survey:

We targeted one male individual from each of the households sampled for the *Core-household* survey.

Male individuals in the age range of 18 to 40 years were eligible. The respondent was randomly selected among all males 18 to 40 years in the household. If the selected respondent was not available at the time of the data collection household visit, the next male on a list (with males 18 to 40 years in the household ordered randomly) was interviewed.

4. Weights

We provide design-based sampling weights that can be used to calculate estimates that are representative for particular populations. The weights adjust for differences in village selection probabilities across strata (regions for the national sample, and communes for each of the three focus department samples in Kaolack, Matam, and Sedhiou), differences in household selection probabilities for core-household interviews within villages, and differences in the probabilities with which target individuals were selected within households.

- Variables pw_vill* give the scaled inverse of the village selection probability and can be used to ensure national / focus department representativeness when working with the village, census and network data.
- Variables pw_core_hh* provide the scaled inverse of the core-household selection probability and can be used to ensure national / focus department representativeness when working with core-household data.
- Variables pw_core_ind* provide the scaled inverse of the overall core-individual selection probability and can be used to ensure national / focus department representativeness when working with core-individual data.
- Variable pw_core_ind_in_vill is the scaled inverse of the within-village core-individual selection probability and can be used to ensure SMP village representativeness when working with the core-individual data.

We provide weights that can be used to ensure national representativeness when using all randomly sampled observations, as well as weights for each sample type separately (national sample, Kaolack focus sample, Matam focus sample, Sedhiou focus sample, and the PARERBA sample).

- Use weights **pw_vill**, **pw_core_hh**, and **pw_core_ind** to ensure national representativeness when using all randomly sampled observations,
- Weights **pw_*_national_only** when using the national sample only,
- Weights **pw_*_kaolack_only** when using the Kaolack focus sample,
- Weights **pw_*_matam_only** when using the Matam focus sample,
- Weights **pw_*_sedhiou_only** when using the Sedhiou focus sample, and

- Weights **pw_*_PARERBA_only** when using the PARERBA sample to ensure representativeness with respect to either households or individuals (males aged 18-40) within PARERBA program evaluation villages.

Since the weights are design-based, weights for the focus department samples do not cover observations from the national sample that happen to be in one of the focus departments. For the same reason, villages in the PARERBA sample do not have weights that take into account village selection.

While weights are well-distributed for each sample type, note that the combined weights will have a relatively high variance, because the all-village sample combines a large number of villages from focus regions with small numbers of villages from other regions.

Strata and sampling units:

- Village selection was carried out within region strata (**strata_natl**) for the national sample, and within communes (**strata_focus**) for the focus samples. We also provide a consolidated set of village-level sampling strata (**strata_vill**) for use with all randomly sampled observations. Within villages, households were again selected in strata (given by variable **strata_hh**) based on prior migration exposure (available for reference in **strata_mig**).
- The primary sampling unit (PSU) is the village (variable **ea**). Within villages, the sampling unit is the household (**hhid**). A target individual is then selected within a sampled household.
- We provide variables that can be used for finite population corrections at each sampling stage, including the number of villages in each first-level stratum (**fpc_vill**), the number of households in each second-level stratum (**fpc_hh**), and the number of target individuals in each households (**fpc_ind**).

5. Linking households and individuals across surveys and waves

Households can be linked across surveys of *Core*, *Census*, *Network* and *Woman* and waves using the variable *hhid*. The male individual respondents can be linked across waves of *Core-individual and Census* using *pid*. And male individual respondents can be linked to their wives, if they participated in the *Woman* survey, by matching the woman-survey variable *husband_link* to the Core-individual variables *pid*. Respondents of the household level surveys may not be the same across waves and cannot be linked. However, household members listed in the roster of the *Core-household* surveys can be linked across waves using *memberid*. In addition, respondents of the *Woman* survey can be linked to the household member roster of the *Core-household* survey.

Table 2 summarizes the variables for linking households and individual male respondents across waves and surveys.

What to link:	**Across surveys:**	**2022**	**2023**	**2024**
Household	**Core-household**	hhid_anon	hhid_anon	hhid_anon
	Core-individual	hhid_anon	hhid_anon	hhid_anon
	Village chief	hhid_anon		hhid_anon
	Census	hhid_anon		
	Network	hhid_anon		hhid
Male respondent	**Core-individual**	ind_id_anon	ind_id_anon	ind_id_anon
	Census	ind_id_anon		ind_id_anon
	Women	husband_link		

Household members	**Census**	ind_id_anon	ind_id_anon	ind_id_anon
Female respondent	**Core-household**	ind_id_anon		ind_id_anon
	Women			womanid

Table 2: Table shows variable names to link households and individual male respondents across waves and surveys.