

Notes on a design of a simple spatial sampling  
method (S3M) for assessing coverage of health  
and nutrition programmes in Liberia

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## Warning in rgdal::readOGR(dsn = "maps/lbr_rdsl_unmil", layer =	
## "lbr_rdsl_unmil", : Dropping null geometries: 70, 89, 1125, 1253, 2054,	
## 2678, 2708, 3190, 3261	



# Simple Spatial Sampling Method (S3M)





# Chapter 1

## Introduction

The Simple Spatial Survey Method (S3M) was developed from the CSAS coverage survey method as a response to the widespread adoption of community management of acute malnutrition (CMAM) by ministries of health. Large-scale programs need a large-scale survey method and S3M was developed to meet that need.

S3M was designed to :

- Be simple enough for MoH, NGO, and UNO personnel without specialist statistical training to perform.
- Provide a general survey method. S3M can be used to survey and map :
- Need for and coverage of selective-entry programs such as CMAM and TSFP as well as universal programs such as EPI, GMP, GFD (general ration), and “blanket” SFP over wide areas.
- Levels of indicators such as those for IYCF, WASH, and period prevalence / cumulative prevalence of ARI, fever, and diarrhoea over wide areas.

This document concentrates on using S3M to assess the need for and coverage of a variety of selective-entry feeding programs. The indicators discussed in this manual are:

- Therapeutic feeding (OTP and TSFP) programs :
- Prevalence of SAM and coverage of treatment of SAM in children aged between 6 and 59 months.
- Prevalence of MAM and coverage of treatment of MAM in children aged between 6 and 59 months.
- Prevalence of MAM and treatment of MAM and in pregnant and lactating women (PLWs).
- Food-based prevention of malnutrition (FBPM) programs :

- Prevalence of need for and coverage of food-based prevention of malnutrition in younger children at risk of developing MAM and SAM.
- Prevalence of need for and coverage of food-based prevention of malnutrition in pregnant and lactating women (PLWs) at risk of developing MAM and SAM.
- Coverage of screening for all of the above programs.
- Coverage of Behaviour Change Communication (BCC) programs focussing on maternal and child health and nutrition to all principal carers of children (usually their mothers) and all PLWs.



# Chapter 2

## The survey sample

The survey method described here uses a two-stage sample:

- **First-stage:** We take an even (or near-even) spatial sample of communities from all of the communities in the survey area.
- **Second-stage:** We take a sample of eligible individuals from each of the communities identified in the first stage of sampling.

Two-stage sampling is used in many survey methods. A typical example of a survey method that uses a two- stage sample is the SMART method that is commonly used for nutritional anthropometry surveys.

The main difference between the sample taken in S3M based surveys and in SMART type surveys is that S3M based samples used a spatial sample in the first stage whereas SMART type surveys use a proportional to population size (PPS) sample.

The advantages of using a spatial first stage sample is that such a sample allows us to identify where (and why) coverage is good, and where (and why) coverage is poor. This information is essential to improving program coverage and ensuring equitable access to services.

A spatial sample can be used to produce equivalent results to a traditional proportional to population size (PPS) sample as is used in (e.g.) SMART type surveys using a weighted analysis. This means that a spatial sample can be made to act as a PPS sample. A PPS type sample cannot, however, be made to act as a spatial sample.



# Chapter 3

## The first stage sample

### 3.1 Step 1: Find a map

The first step in a S3M survey is to find a map of the survey area. A map showing the locations of all towns and villages in the survey area is essential. Try to find a map showing the locations of all towns and villages in the survey area. You may need to update the map to take into account migration and displacement.

For the coverage survey of 2 counties in Liberia, it will be practical and useful to have:

- A small scale-map (a wide area map but with poor detail) of the entire survey area for each of the 2 counties. If the counties are contiguous (i.e., share borders with each other), the small scale map can be of the two counties together. This map does not need to show the location of all towns and villages in the survey area but it gives a general idea of where the 2 counties are located and main towns and location and roads.

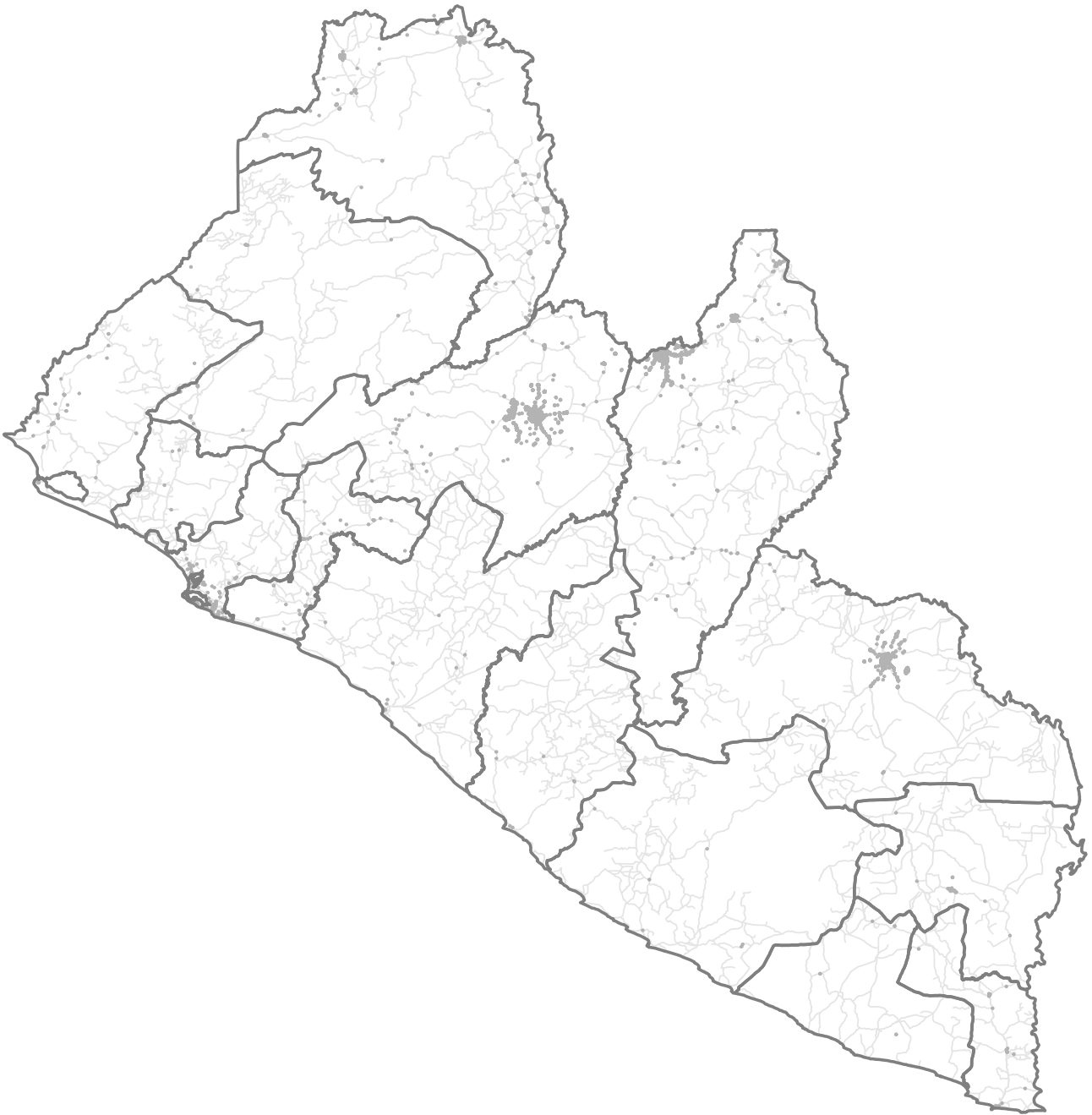


Figure 3.1: Small scale map of Liberia showing counties, roads and points of interest

A collection of larger scale maps (a small area map but with good detail) of each of the five regions of Niger showing the locations of all towns and villages. A large-scale map of Dosso found in Figure 2 is a good example. The Humanitarian Information Centre (HIC) in Niamey is a good resource for obtaining these maps. The small-scale map in Figure 1 will be useful for identifying initial sampling locations. The large-scale maps will be useful for identifying the precise location of sampling points and for selecting the communities to be sampled.

The first step in an S3M survey is to find a map of the survey area.

Try to find a map showing the locations of all towns and villages in the survey area. You may need to update the map to take into account migration and displacement.

If you are surveying a very large area then you will find it useful to have:

- A small scale map of the entire survey area. This map does not need to show the location of all towns and villages in survey area.
- A collection of larger scale maps showing the locations of all towns and villages. This collection of maps should cover the entire survey area.

The small scale map will be useful for identifying initial sampling locations.

The large scale maps will be useful for identifying the precise locations of sampling points and for selecting the communities to be sampled.



## Chapter 4

### The second stage sample





# Chapter 5

## Analysis