The Challenge of Sample Design During Civil War

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1. Introduction:

Civil wars have become pronounced and endemic to many countries in the world since the end of the Cold War. It is estimated that 20 per cent of sub-Saharan Africa's population now live in countries that are at war with themselves and low-intensity conflict has become endemic to many other African countries (Elbadawi and Sambanis, 2000). In comparison to other regions, Africa has the highest incidence of intense civil wars with increasing trend during the last two decades. This upsurge of civil wars has a considerable negative impact on the socio-economic structures as well as on gathering of reliable data for effective humanitarian intervention. While the need for data during civil war is a pressing priority, the challenge for collecting reliable data and meeting the requirements of a scientific probability sample is an arduous task. Despite such difficulties, it is critically important to provide a sampling framework for gathering quality data in the context of civil war that is becoming increasingly a normal phenomenon.

The objective of this paper is to share the experience of Southern Sudan in using somewhat unorthodox procedures in sample design for rural surveys among the communities exposed to a prolonged civil war. Southern Sudan has been in recurrent civil wars (1955-1972, 1982-now) with no comprehensive population census carried out since the eruption of the second civil war in 1982. The only reliable population census was the one carried out almost half a century ago in 1953 during the colonial period and the subsequent population censuses (1963, 1973, 1983, and 1993) were partially or not carried out in Southern Sudan as a result of civil wars. Besides lack of recent census (enumeration areas), there are no detailed maps and compounded further by high population movement as a result of insecurity and erratic political changing in administrative boundaries. With the high hope of peace in Sudan, there is now preparation work for various surveys (Multiple Indicators Cluster Survey (MICS) and Agricultural Survey) to be carried as building blocks for and prior to the planned population census that will provide reliable enumeration areas for a new sample frame. Meanwhile there is a pressing need to design appropriate sample frame for such surveys.

2. Sampling Framework: Traditional Social Hierarchy

The real challenge during civil war is how to design and use sample that will use the generally accepted probability sampling that is representative and with sample size sufficient to achieve reliability requirements. As the possibility of

using existing sample is not an option during civil war as a result of demographic changes and displacement, it becomes necessary to design and select a new sample, either “standard Segment Design” or “Modified Segment Design”. In the context of civil war, the modified segment methodology has an advantage over the standard segment design as no household listing is needed but it equally has a clear disadvantage in creating compact segments that would make sampling less reliable. In collecting food security, livelihood, health and demographic data in Southern Sudan, modified segment methodology has been used (Deng, 2003).

Generally the sampling framework in Southern Sudan has been based on traditional administrative structure (chief, sub-chief, headman, households) that has steadily managed to survive during civil war, while formal administrative structure (region, county, payam and boma) has been recently formed and changing overtime with no clear boundaries. The main idea is to use traditional social hierarchy as basis for sampling but to conform to the formal administrative structure and hence used somewhat unorthodox procedures to develop the frame and select the sample in a three-stage probability sample. The first stage of sampling was to list all executive chief jurisdictional areas as the primary sampling units (PSUs) from which stratification was applied by using serpentine geographical arrangement and systematic sampling to select sample chiefs. Once the sample chiefs with clear geographical areas of their jurisdiction have been selected from PSUs, the headmen that are within their boundaries were identified and listed from which a sample “headmen” are randomly selected. The sample headmen were then asked to share their roster of households, from which a sample households are randomly chosen for complete interview. Prior to sample selection, the levels of formal administrative structure (region, county and payams) were geographically sorted and stratified in serpentine order and together with systematic sampling of chiefs formed “implicit stratification”.

3. Conclusion:

The aforementioned sample design is undoubtedly an inferior sampling method but it is the most appropriate, effective and relevant methodology in the context of civil war. The results of various surveys that used such inferior sample design in Southern Sudan were satisfactory offered without apology since probability sampling has been in a way followed in these surveys. One apparent disadvantage of such sample design is the fact that the sampling error will be larger than what is ideally desired because of lack of reliable size measures for stratification exercise (Turner, 1999). There is no doubt that such sample design is not appropriate in the “normal” conditions where standard sample framework could easily be applied (Dirk, 2004).

References:

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