

SAMPLING OF HOUSEHOLDS WITHIN SELECTED CLUSTERS IN LESS AFFLUENT COUNTRIES

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A method of sampling grew out of the effort to eradicate smallpox (Henderson *et al*). It is known as the EPI method - Expanded Program of Immunization. In this method a sample of villages, typically 30, is selected with probability proportional to the best size estimates available. An interviewer is sent into a selected village with instructions to find some central point such as the village church. From this point she picks a direction and walks to the edge of the village counting houses as she goes. She selects a random number between 1 and this number of houses, and starts the interviews with the house with that number. With the EPI method the number of households to visit is fixed, typically at 7. The other 6 households select would be the 6 that are closest to the first. The EPI methodology departs from scientific sampling on two counts. The interviewer can not be expected to find a random starting point. She will likely walk on a street or path that radiates from her chosen central point and those houses located off such streets will have a lower probability of selection. Secondly the size estimates will often be out of date. This means that, with sampling a fixed number of households, households in villages which have decreased in size will be oversampled, and those in villages which have increased will be undersampled. A third problem is that we can expect poor estimation when all households are selected from a single part of a village. We are developing a method of sampling within clusters that has the potential for overcoming these 3 problems and that does not require, as in the usual practice, a list of the households in the cluster to be constructed. We have programmed a hand held computer to accept an interval and to randomly

select one household in each such interval. Generally one would use interval sizes which would give each household in the population the same overall probability of selection. The interviewer walks systematically through the village, pointing the computer at each house and pushes a button. The computer then says "selected" or "not selected". The method has been used in three health surveys, but none of these have been under our control, and our observations are thus limited. We have some impressions. The method is fast. It will likely take considerably less time than making the usual listings and, except for call backs, no return visit is required. Samplers like using the method, and can likely therefore be motivated to use the method correctly. Much more work needs to be done on all the standard sorts of things like defining dwelling units and households. We need to take into account what we know about households in our villages, towns, and cities, including areas of temporary housing. We need to learn more about patterns of living and we need to take all of this into account in the development of methods and training procedures. We have observed some poor sampling with our method, such as lack of care in looking for dwelling units in alleys and marginal areas, but this, as we see it is just the usual matter of working to improve one's sampling. The method unlike EPI is, we believe, fundamentally sound and we look forward to developing it and learning from others as they work to develop similar methods.

Henderson, R.H., Davis, H., Eddins, D.L. & Forge, W.H. 1973. Assessment of vaccination coverage, vaccination scar rates, and smallpox scarring in five areas of West Africa. *Bull WHO*, 48: 183-194.