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## Diagrams for demographic data collection: examples from the Tembomvura, Zimbabwe

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#### • Introduction

Participatory Rural Appraisal (PRA) methods have not been popular in demographic data collection. The need for quantification as well as the worry about large representative samples have made demographers concentrate on precoded questionnaires which can be used to collect large amounts of sometimes irrelevant but easily quantifiable data. Many demographers are, however, aware of the deficiency of the data collected using questionnaires and have started using alternative methodologies.

This study discusses how visual methods used in PRA were used in demographic data collection among the Tembomvura people of Zambezi Valley in 1992. The study examined not only the demographic measures (which could be obtained from a quantitative questionnaire) but also the opinions of the population and how they perceived their fertility, mortality and population growth.

#### The Tembomvura

Originally from Mozambique, the Tembomvura people are a group of hunters and gatherers who have recently been resettled in Chapato ward, close to the borders of Mozambique, Zimbabwe and Zambia. Although expected to be cultivators, they still persist with hunting (clandestinely) and gathering. Hunting has been banned and heavy jail sentences are given to any person found in possession of traps or game meat. Gathering is

controlled because most of the edible roots and tubers, such as *Dioscorea bulbifera* (*Manyana*) and *Tacca leontopetaloides* (*Bepe*), are found within the game reserve and anyone found loitering inside is arrested on suspicion of poaching.

The severe drought of 1989 to 1992 destroyed all prospects of cultivation, making survival even more difficult. The community's fear of being arrested as well as poverty and hunger made fieldwork in the area extremely demanding. The population is also very mobile, often making it difficult to identify a fixed village.

#### • Methods

The following PRA methods were used in combination with a demographic questionnaire to collect information on fertility, mortality, migration and health behaviour in a hunting and gathering community: mapping of the area; group interviews; local seasonal disease calendar; modelling of retrospective fertility and mortality; pie-charts of common sources of treatment; and diagramming of issues relating to animal conservation.

#### Mapping the area

In order to obtain a useful and reliable map of the area, respondents were asked to draw it themselves. Because illiteracy is high, the respondents were very reluctant to show their 'ignorance' on paper. After staying with the community for some time this initial reluctance was overcome.

To model the area, respondents were asked to use local materials, which included sticks,

stones, leaves, fruit and animal bones. Men and women produced two maps of the area which were very difficult to decipher. This called for a process of 'unlearning' for the researcher since I had been used to reading maps which showed the cardinal points and could not understand a map drawn from a different perspective.

An interesting feature of the maps is how the men's map is a romantic depiction of a past life, of the way the area used to look when the community was engaged in hunting (Figure 1). The women's map was more contemporary and indicated a knowledge not only of their area but of significant places like the clinic, school and the grinding mill, as well as the location of houses (Figure 2).

The lessons learned from area mapping were:

- Respondents had a very detailed knowledge of their area which they were reluctant to show. They had to be convinced that whatever they knew was important.
- The amount of detail given on the maps by the villagers increased as I stayed longer in the village.
- Cultural beliefs determined the kind of information that was shown on the map. For example the initial maps did not show the position of waterholes and places of initiation until I settled in the village and some kind of trust was established.

### **Group interviews: common childhood diseases**

In examining common childhood diseases in the community, informal group interviews were carried out. Local disease names and taxonomies were collected. Medical names were provided by the clinic staff in the area. Men and women differed in their perceptions of childhood diseases (Table 1). The women were good at distinguishing subtle differences in diarrhoea while the men assumed that those diseases which affected them, such as TB, swelling of the body and attack by wild animals, also affected children.

### **Local disease calendar**

To examine the prevalence of particular diseases during certain seasons, the groups were asked to rank each disease on a scale of one to ten (using seeds), according to the frequency of occurrence of the disease during a particular season. The information was used to design a local seasonal disease calendar<sup>1</sup> (Table 2).

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<sup>1</sup> This was based on a method described by A. Kumar 1992. Trends in health care. *RRA Notes 16. Special Issue on Applications for Health*. IIED, London.

**Figure 1. Women's map (copied from model made on ground over two months)**

**Figure 2. Men's map**

**Table 1. Common childhood diseases and the number of groups mentioning them**

Common Diseases	Males	Females	Total
<i>Katyoty</i> : measles	8/8	10/10	18/18
<i>Kamkumpa</i> : neonatal tetanus	2/8	10/10	12/18
<i>Nhova</i> : severe diarrhoea with depressed fontanell	6/8	10/10	16/18
<i>Manyoka eghazi</i> : diarrhoea with blood	6/8	9/10	15/18
<i>Manyoka emhepo</i> : diarrhoea, cough	8/8	10/10	18/18
<i>Kwezvaimoyo</i> : whooping cough	7/8	9/10	18/18
Cough with blood - referred to as TB	8/8	5/10	13/18
ARI	8/8	8/10	18/18
<i>Kushinhirwa mwana</i> : sickness due to witchcraft	8/8	0/10	8/18
Snakebite, attack by wild animals	8/8	10/10	18/18
Starvation	8/8	10/10	18/18
Swelling of body - probably due to poisoning	8/8	4/10	12/18
<i>Kupisa muviri kwembudud</i> : fever due to malaria	6/8	8/10	14/18

**Table 2. A local childhood disease calendar**

Disease	Hot and Dry 1991	Hot/wet 1991/2	Cold 1992	Windy
Measles	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○	○ ○ ○ ○ ○ ○ ○ ○
Diarrhoea with depressed fontanell	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○	○ ○
Diarrhoea	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○ ○	○ ○ ○ ○ ○
ARI	○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○
Fever	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○	○ ○
Neonatal tetanus	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○
Whooping cough	○ ○ ○	○ ○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○ ○ ○ ○ ○ ○ ○ ○ ○

It was encouraging to note that the local prevalence pattern fitted an epidemiological seasonal prevalence of diseases like tetanus, ARI and whooping cough. The community had very detailed knowledge about the relationship between the weather and some of the diseases.

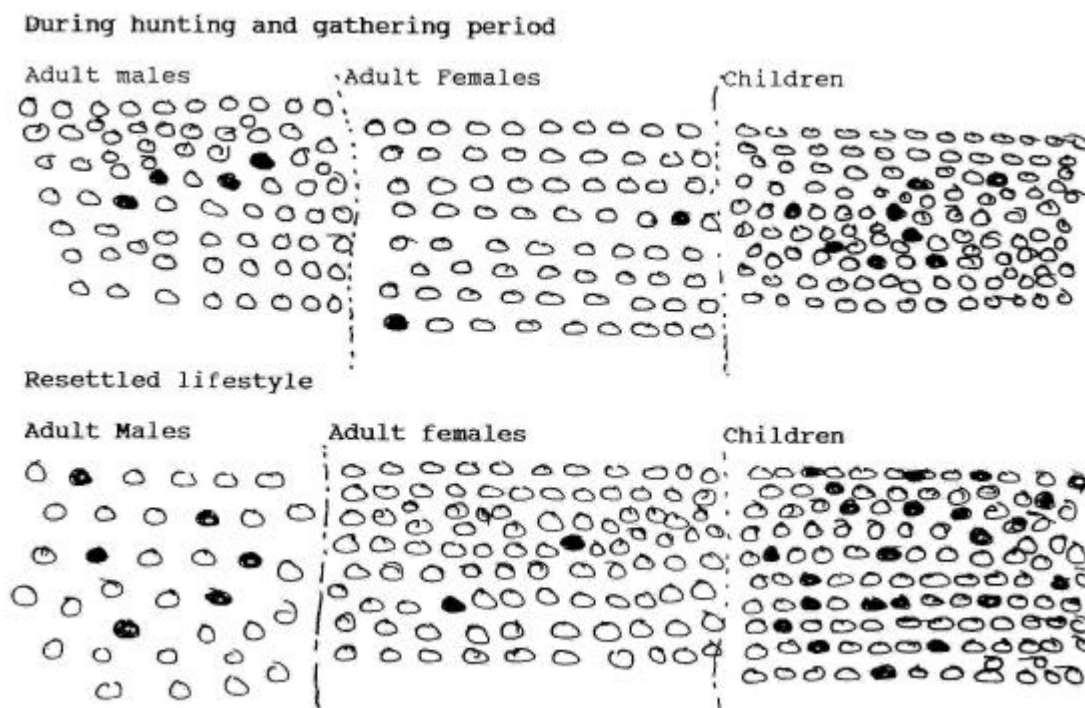
- **Demographic issues**

**Mortality**

**Modelling the changes in the size of the population**

We examined the elders' perceptions of the change in the size of the population from the time they lived as hunters and gatherers to the time they resettled. The size of the population was modelled using the fruits of *Ziziphus mauritania* which is locally abundant. We examined the average number of people that died per year (Figure 3), indicated by the black circles.

**Figure 3. Population model**



Results from modelling the mortality situation included the following:

- Male adult mortality has been on the increase since resettlement. The change in diet from meat during the hunting period to maize since resettlement is considered unhealthy for men;
- Female mortality has been low and stable during both periods. The women said they are used to eating inferior foods so the change of lifestyle does not affect them; and,
- Infant and childhood mortality have increased since resettlement. This contradicts other research findings which say that infant and childhood mortality normally decrease when foragers are resettled since resettlement is associated with development of modern medical facilities<sup>2</sup>. The community's explanation of the contradiction was that the clinic is the source of disease and should only be used as a last resort.

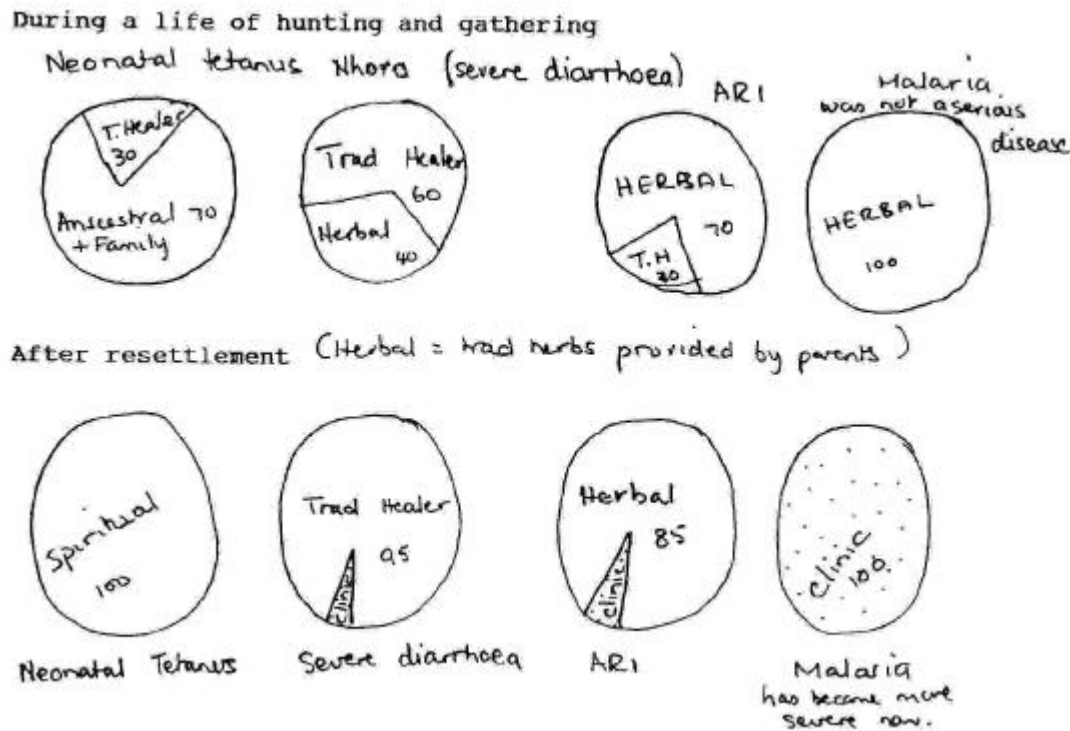
### Examining the most common sources of treatment

What are the most common sources of treatment used for childhood diseases? Have these differed during the different lifestyles? Results obtained were shown in a pie-chart drawn on the ground by the researcher and filled in by respondents.

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<sup>2</sup> For example, see N.G. Blurton-Jones 1992. Demography of the Hadza, an increasing and high density population of savanna foragers. *American Journal of Anthropology* 89: 159-181.

**Figure 4. Examining the most frequent types of treatment for serious childhood diseases**



The pie-charts indicate that resettlement has not been associated with the use of modern medical facilities which might explain why there has not been any real improvement in child mortality since resettlement. Malaria is considered to be a fairly new disease. I interfered in the process by suggesting ways in which the pie-chart could be completed. I could not resist the temptation of 'holding the

### Fertility

The most exciting exercise was the collection of lifetime fertility for the women in the community. The process was confused and hilarious and it brought the researcher and respondents to a closer appreciation of their different worlds - one is a world of no figures and no counting and the other a world of neurotic quantification. Estimation of the age of children, when they were born and when they died was a long process which could take up to two days with each respondent.

### Dramatisation

To reconstruct the lifetime fertility of some of the women in the community, the following exercise was done. We asked children and some adults from the population to stand in front of the woman whose lifetime fertility was being constructed. We then asked the woman to use actors to represent her own children and then try to arrange them into a fertility record. The problem was that some of the actors did not take kindly to being told they represented a dead person. This exercise was useful and we called it 'dramatisation'.

In cases where visualisation could not be used, we modelled the whole family using *Ziziphus mauritania* seeds to represent female children and *Tamarindus indica* for male children. (Men use this fruit to increase sexual potency!)

#### Females:

Green fruits: children under 10

Orange fruits: over 10 but not married

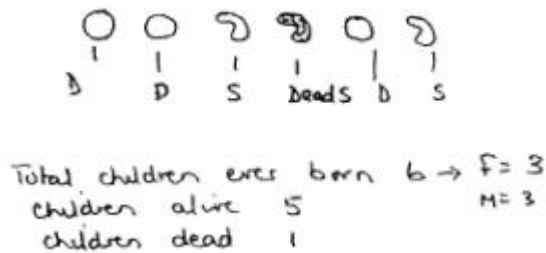
Ripe red: females of reproductive age

Brown: post reproductive  
Dead children were represented by dry seeds

#### Males:

Green fruits: children under 10  
Greenish-brown: 10-20 unmarried  
Ripe brown: married  
Dry seeds: dead

**Figure 5. An example of an individual woman's record of lifetime fertility**



The exercise was interesting but exhausting. The children particularly enjoyed eating some of the orange *Ziziphus mauritania* fruits. This was followed by quarrels as to who ate who! It must be stated that the limited size of people with which this method was used made the exercise manageable. If the number had been greater, the method would have been very complicated.

#### • Animal conservation and human survival

We examined the change in the animal population from the villagers' point of view since there were recurring complaints about

animals pushing people out of their original homes.

#### • Concluding discussion

##### The villagers' view

*"We did not know that we had all this information. Tell your government to ask us this way and we will tell them our view."*

*"One does not need to be able to write in order to be able to translate thoughts into concrete actions."*

*"At first we thought you were crazy, playing with mud and stones and we did what we could to humour you. But later, especially after the area modelling exercise it was exciting to see one's village on the ground".*

*"You are a very good teacher. Can you come and teach our children?"*

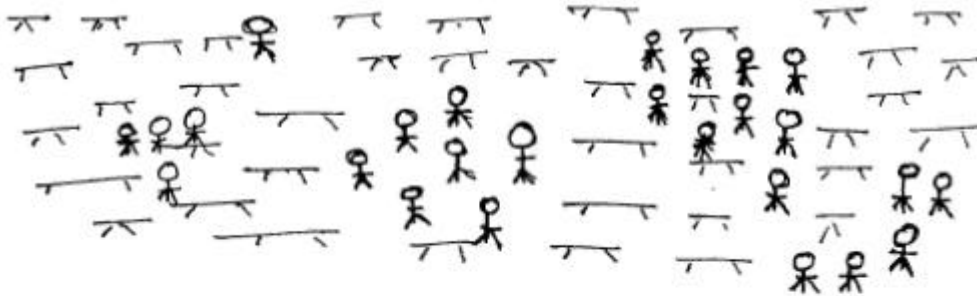
From the village traditional healer: *"You are very convincing. Maybe you and I should work together in future".*

The villagers had a sense of humour. After my hut was destroyed by a gas fire, the villagers made a small fire on the model of the village. The children went as far as dramatising the fire shouting *"my papers, my papers! Leave the clothes, bring out the papers!"*.



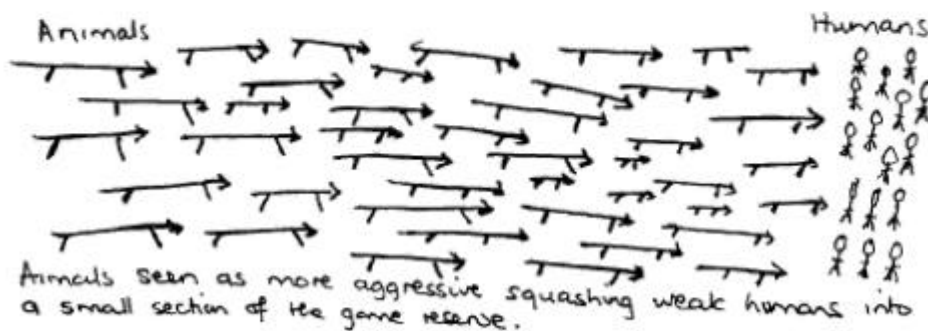
Figure 6. Modelling the animal population

## Hunting Period



*"Although we lived side by side with animals, we respected each other. We were big and strong. We killed animals for food and each time before we killed we asked for permission from our own mhondoro clan ancestral spirit who communicated with Mudzimu yesango spirits of the forest. Each knew his place. That is the law of our existence. This is both our land and animal land."*

## After hunting was banned



*"There is no order. If you protect animals too much, they will keep on multiplying and become more and more arrogant. Now they sense our weakness. They know we are not allowed to kill them. So, they do what they like and try to push us out of our villages."*

## Lessons learned from PRA

PRA is difficult; it is more than application. It is a process of 'unlearning' from being the 'knower' to sharing and learning new ideas. To a demographer, this is an extremely painful exercise which challenges the conventional process of gathering demographic data. At the same time, PRA is so logical. One wonders what research used to be like without letting those who knew the information (the villagers or respondents) define it and conceptualise it for the researcher.

It is extremely difficult to let go and let the respondents do things at their own pace. One of the psychological implications of the demographic questionnaire is the illusion of control - of doing everything according to your schedule. It is difficult to let go of this illusion.

It must be stated that demography, by its very nature, can not be divorced from quantification. However PRA methods can be used to strengthen demographic data collection by providing flesh for the skeletal figures that are collected by the quantitative questionnaire.

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