Measuring Poverty, Death and Health in Developing Countries: Can we monitor the Millennium Development Goals?

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Background on Poverty and Death and their Measurement

The major causes of death are preventable. For example 40% of annual 11million child deaths worldwide (a tsunami a week) are due to diarrhoeal diseases and malnutrition, i.e. mostly preventable. In general, there is a lower prevalence of diarrhoea where there is piped water, toilet facilities, parental (not just maternal) educational level and functioning radio.

There is a large literature on the difficulties of measuring the extent to which poverty is being reduced by growth:

> "…..The extent to which growth reduces global poverty has been disputed for 30 years. Although there is better data than ever before, controversies are not resolved. A major problem is that consumption measured from household surveys, which is used to measure poverty, grows less rapidly than consumption measured in national accounts, in the world as a whole, and in large countries, particularly India, China, and the US. In consequence, measured poverty has fallen less rapidly than appears warranted by measured growth in poor countries.
> One plausible cause is that richer households are less likely to participate in surveys. But growth in the national accounts is also upwardly biased, and consumption in the national accounts contains large and rapidly growing items that are not consumed by the poor and not included in surveys. So it is possible for consumption of the poor to grow less rapidly than national consumption, without any increase in measured inequality. Current statistical procedures in poor countries understate the rate of global poverty reduction, and overstate growth in the world….."
> (http://www.wws.princeton.edu/%7Erpds/downloads/deaton_measuringpoverty_204.pdf)

This author would agree that consumption of items measured from surveys (or censuses) poorly reflects consumption of the same items measured in GDP. A classic example in the UK is that alcohol consumption reported in the General Household Survey is half the amount recorded by Customs and Excise. Equally, the omission of richer households and the items that they consume biases the estimates of inequality and of the trends in poverty. But this paper makes three simpler and more fundamental points: that household surveys do not include the poorest of the poor, that consumption expenditure is a poor substitute for measuring standard of living, and that the proxies used to measure poverty are almost impossible to compare over time so that within country trends are very difficult to assess.

As context, in the next section, we look at the Millenium Development Goals (MDGs) that set targets for 2015 (see Annex 1) and the deterioration of statistical systems in their capacity to monitor progress or retrogression towards those goals.

I. Context

I.1 Millennium Development Goals

The overall aim of much current aid - and especially the Department for International Development's (DFID) - is poverty reduction. In particular, several of the MDGs are explicitly concerned with monitoring the situation of the poor or those who are currently excluded; for example, targets 1 and 2 referring to eradicating extreme poverty and hunger, target 3 referring to Universal Primary Education (UPE), targets 5 and 6 referring to child and maternal mortality and targets 10 and 11 referring to safe water and slum dwellers (others such as target 4 referring to gender equity and targets 7 and 8 referring to communicable diseases are also implicitly concerned mainly with the poor).

There are two main questions in respect of the targets set for the MDGs:

- How will we know where we are in 2015?
- How far are we away now?

But, whilst lip-service is paid to the value and importance of statistics, donors rarely commit sufficient resources. At the country level, there is a lack of a systematic organisational culture of using data to inform policy; management information systems are weak so that, even where

policies are appropriate, they are not implemented. The result is that more often the programme interventions in these countries are designed without being adequately informed by the situation on the ground. Externally conducted household-survey based information systems like Demographic Health Surveys (DHS) and Living Standards Measurement Surveys (LSMS), are only partially able to fill these gaps in measuring progress (status) and the interpretation of data in order to draw out nationally relevant policy implications; on the contrary, they may marginalize the national processes (Booth and Lucas, 2002).

Yet, if we are serious about the MDGs, then we need to be able to assess where we are in 2015 and how far we are away from them now; countries themselves need to be able to make that assessment.

In particular, there is little consideration of the appropriate information systems for monitoring whether or not the particular services provided have in fact reached the poor. For many services, this requires the collection of individual socio-economic data: for the primary and basic education sub sector this poses less of a problem because the intention is to cover everybody. Where enrolment is, in fact, 100%, in principle a concern for the equitable treatment of the poor translates into appropriate allocation of resources to provide equal quality of education for all those enrolled. But where the net enrolment ratio is less than 100%, then there is the same problem as in other sectors of assessing whether or not specific disadvantaged groups are excluded; and this would once again require the collection of individual information. This paper explores some of the difficulties.

I.2 Deterioration of Statistical Systems and Importance of Accuracy

Poverty Reduction Strategy Papers (PRSPs) – prompted by the donors - have now been developed by many developing countries proposing country policies for targeting programmes on poor people. But they are also weak on suggesting appropriate information systems for monitoring whether or not the particular services provided or interventions have in fact reached the poor.
As DFID's *Can't Count Progress* (2002) says:

> "The global statistical system is fragmented and characterised by poor inter-agency co-operation. Whilst more information is now available compared with previous years, this is usually through the medium of donor funded household surveys, which may by-pass domestic information systems and serve the needs of donors rather than developing countries themselves." (p.1)

They go on to say that

> "Inadequate statistics hold back progress being made by countries towards the MDGs as most do not have the information systems needed to inform poverty reduction strategies and underpin resource allocation and service delivery decisions and implementation." (p.3)

In many developing countries, there has been a lack of attention since independence to the 'boring' issue of maintaining the (colonial) infra-structure of statistical systems with the consequence that the capacity in terms of personnel is usually very weak both in numbers and qualifications. This has been compounded by the low levels of usage and demand in-country (although the data may be used extensively by outside 'experts'), partly, although only partly, because of difficulties of accessing data. The problem is that: where there is no delegated authority – or there are no resources to decentralise in the first place – then the local authorities see little point in collecting the data accurately or check back where reports from the operational units seem to be wrong; as Philip Musgrove said, "if data is not used within 5km of its source, it is unlikely to be reliable" (contribution to seminar World Bank, February, 2002). But the current donor-promoted trend towards decentralisation almost always means that accurate district estimates of living conditions are central to resource allocation.

The root cause, of course, is the chronic under-investment in statistical systems since independence, partly because of poor understanding about the role of statistics by both donors and national governments;

> "At the international level, our ability to monitor progress and identify key areas for support is hampered because of gaps, poor quality and inconsistent data." (p.1)

Whilst there is a plethora of data from international and to a lesser extent from national organisations, often combined in weird and wonderful ways,

> "neither countries nor donors have adequate information to monitor the effectiveness of their strategies and programmes." (*Can't Count Progress,* 2002, p.1).

I.3. Even the Population Denominator Data is sometimes wildly inaccurate

For a long time after independence – at least until the early 1990s, only a few countries in sub-Saharan Africa had functioning birth and death registration systems. Many of the population estimates were based on Coale-Brass-Demeny population models; and as Chris Murray (1987) showed, in several countries, the estimates were based on parameters from neighbouring countries. Whilst there have been

improvements over the last ten years, with donor recognition of the situation and some funding of the national statistical infrastructures, only a few population censuses can be relied upon. For reasons that are explained below, estimates of fertility and infant mortality – the basis for forecasting population growth - are probably not very accurate.

It is difficult to monitor the marginalized and poor (see section II). Equally, the measurement of poverty is contentious and this is explored in section III. There is no standard solution (section IV): context is important. Indeed, whilst there are an increasing variety of data systems in place and increasingly sophisticated analyses of the data, there is almost a wilful lack of recognition that our capacity to monitor specifically the situation of the poor on a routine basis in developing countries has barely improved since the author's review 15 years ago (Carr-Hill, 1991).

II. Monitoring the Poor

The problem is that it is difficult to monitor the situation of the poor because, in nearly all cases, this implies the collection of individual socio-economic data in order to assess whether or not specific disadvantaged groups are excluded[18]. In some specific cases such as HIV/AIDS, the identification problem is made more complex both because of stigma and discrimination and because - even in highly infected areas - it is still a relatively rare event.

There are three main possible types of source for documenting and monitoring population status: censuses conducted approximately every ten years; routine administrative data from vital statistics systems (for births and deaths) in some countries and, more generally, from surveys. Given the time scale for the MDGs, censuses are not useful other than as background data.

II.1 Censuses

Censuses collect information on data for identifying who is poor but they are not sufficiently frequent for the kind of monitoring required for the MDGs.

II.2 Routine administrative data

[18] The exception (referred to above) is where in principle a valued service is provided to everyone like primary schooling ; then the concern for the equitable treatment of the poor translates into appropriate allocation of resources to provide equal quality to all those enrolled ; and that is also very difficult.

Despite the existence of policies and strategies on equity targeting mechanisms, implementation modalities are often not clear in terms of targeting measures to reach the disadvantaged groups. This is often due to the lack of infrastructure so that a clear implementation modality cannot be defined; but, in part, it is also because routine administrative data on schools and clinics do not, in general, include the socio-economic data that would be adequate for identifying who is poor. In most countries, Censuses do collect such information but, as mentioned, they are not sufficiently frequent for the kind of monitoring required for the MDGs.

The only realistic possibilities are either to use the individual data on an aggregate level, or to map relationships established elsewhere onto the routine data sources (see below).

II.3 Household Surveys

Three series of household surveys have been carried out in developing countries over the last couple of decades: the Demographic Household Surveys (DHS) sponsored by the United States Agency for International Development (USAID), the Living Standards Measurement Surveys (LSMS) sponsored by the World Bank, and the more recent Multiple Indicator Cluster Surveys sponsored by UNICEF. Crudely speaking the first focus on adult health and are relatively weak on collecting socio-economic information; whilst the second are very good at collecting socio-economic information but are relatively weak at collecting education and health data; the third focuses on the education and health of children but also collect data on household assets. Whilst the response rates to household surveys are higher in developing countries than in countries like the United Kingdom – where the response rates are very rarely higher than 70% - both series suffer from the structural problems of household surveys that are compounded in a developing country context.

II.3.1 Omissions

With rare exceptions, Household Surveys omit:

1. Those not in households because they are homeless;
2. Those who are in institutions;
3. Mobile, Nomadic or pastoralist populations;
4. Many of those in fragile or disjointed or multiple occupancy households.

Homeless

It is well-known in Europe that the homeless have more difficulty accessing health and social services. They have poor health and the lowest life-expectancy. In developing countries, the same is true for street children, who are also deprived of schooling. Yet, rather obviously, household surveys omit the homeless and street children.

Institutions

Most household surveys omit those in institutions: care homes, military installations and prisons. Careful reporting usually acknowledges this but, when we are concerned with the distribution of income and wealth at least the first and third categories are very important omissions and will bias the results against the poor. For example, the Welsh, based on analysis by Gordon et al (2002), decided to use a household survey as the basis for its allocation of health care resources. The consequence was that the Northern areas of Wales where there are all the nursing and residential homes lost a considerable amount of resources.

Mobile, Nomadic or Pastoralist Populations

In European countries, response rates are lowest among young men and this is usually presumed to be a consequence of their higher rates of mobility, in turn associated – at least for some – with higher incomes. But the mobile poor in developing countries are usually entirely excluded from household surveys. In particular, gypsy and nomadic populations who have much less access to health and social services are rarely covered; and whilst it is difficult to assess their wealth (e.g. cattle), and there clearly are some who are rich-in-kind, the majority are usually poor in all senses.

Fragile or Multiple Occupancy Households

The latter is particularly an issue in many countries in sub-Saharan Africa because new forms of household are developing as a response to the impact of HIV/AIDS and include:

- elderly household heads with young children, grandparent households;
- large households with unrelated fostered or orphaned children attached;
- child headed households;

- single-parent, mother or father headed households;
- cluster foster care – where a group of children is cared for formally or informally by neighbouring adult households;
- children in subservient, exploited or abusive fostering relationships;
- itinerant, displaced or homeless children;
- neglected, displaced children in groups or gangs (Hunter and Fall, 1998).

This diversity complicates the task of monitoring through classic forms of household survey. Unfortunately the three main categories (the homeless, the pastoralists and those in disjointed households) are likely to constitute a significant fraction of the very poor in many developing countries. Moreover, given the security situation – or simply difficulty of transport - in many countries, it can often be difficult for those implementing institutions to carry out a fully representative survey. When repeated, the surveys may take different samples in different areas.

In order therefore to have a realistic assessment of trends in poverty, both at the national and regional level, it is important to examine the extent to which these four difficulties create a bias in the estimation of (trends in) the national level of poverty (and poverty related targets), and more particularly in the estimation of the distribution of those indicators within country or of relationship between those indicators and other household characteristics.

II.3.2 Limits of Self-Reporting by Households

Even where the problems of sampling have been solved, there are limits of reported household studies in developing countries are:

- They concentrate on rural households. This is both a possible bias among expatriate researchers who go to rural areas that they believe represent the 'real' Africa (but see Chambers, 1983), and avoid places that are squalid or dangerous like poor parts of large cities; and local researchers' searching for ways of getting relatively generous overnight allowances whilst away from their urban base, and ensures the continued under-representation of poverty among urban households. But in Africa and South Asia, one third of the population live in urban areas.
- The problem is usually conceptualised as a household study, excluding information about the relations between households. Commonly used survey methods fail to capture the dynamics of household and intra-household allocation and relations that

underlie household decision-making (Chong, 1999; Rugalema, 1999).

- Consumption and income poverty may be seen as the major problem by the researcher, but communities and households may not have the same perception of its importance. For example, a Zambia study concluded that 'research methods used in the study villages found that there was almost no link made in people's minds between HIV/AIDS and either the value of children or fertility. At present AIDS is not seen as a major problem by the majority of people, despite its recognition as a worrying disease' (Barrett and Browne, 2000: 22).

II.3.3 Problems of Bias

One of the objectives of the Demographic Health Surveys (DHS) is to provide information that will be useful for designing health care policies and in particular for the allocation of resources to different population groups. But, in addition to the problems of coverage documented above, this will only work if the reports of morbidity and mortality are accurate or – at least - that the biases are not systematically related to socio-economic characteristics.

But, analysis of several DHS surveys shows that this is not always the case. For example, the findings of the recent DHS in Iran showed that the reported illness rate was higher in households *with* piped water supply, *with* inside toilets *with* central heating, *with* TV than in households without any of those assets. Similarly, reported illness increases, reported deaths decrease with mother's educational level; whilst at the area level, mortality increases from urban to rural, reported illness decreases. Worse still, controlling for reports of self-reported illness, use of health care services increases with income.

III. Measurement of Poverty

There is a long debate between those who argue for using absolute or relative poverty. This is rather academic from the point of view of the poor in developing countries. In practice, conventional absolute levels of US$1 or, more recently, US$2 a day per person, originally based on small studies of household expenditures and other measures of well-being, are used with little evidence about the current relation of such thresholds with other measures of well-being e.g. mortality, education.

The problem is that, whilst one can ask for a record of all household expenditure in a large population survey, this will result in a very long questionnaire (Diamond et al, 2001; Falkingham and Namazie, 2002).

Given these and other problems; in measuring income and expenditure and the difficulties in determining how, if at all, to adjust for household size and composition; analysts have begun to rely on asset measures.

Falkingham and Namazie (2002) presents a summary of the kinds of indicators that are included in asset indices (reproduced as Box 1. Montgomery et al (1997) has surveyed the studies that have used a range of different measures. Falkingham and Namazie also summarises work on other, what they call, proxy indicators of welfare: the CASHPOR Home Index; Participatory Wealth Ranking' and proxy means testing.

III.1 Asset Indicators in the DHS

The DHS collect extensive information about maternal and child health and some socio-economic data but does not collect information about expenditure or income. However, the standard modules do include questions on:

- the ownership of assets (such as a radio, a bicycle);
- dwelling characteristics (such as type of roof or walls);
- access to basic services.

Examples of what are included are given in Box1. Most studies have employed a range of indicators detailed in Box 2.

Box 1: Housing characteristics and household durables in the DHS

- Has electricity
- Source of drinking water
  - Piped water
  - Well water
  - Surface water
  - Rainwater
  - Tanker truck
  - Bottled water
  - Other
- Time to water source
- Type of toilet facility
  - Flush toilet
  - Pit toilet latrine
  - No facility
  - Other
- Main floor material
  - Natural
  - Rudimentary

- Finished
- Other

- Persons per sleeping room
- Household possessions
  - Radio
  - Television
  - Telephone
  - Refrigerator
  - Bicycle
  - Motorcycle
  - Private car

Box 2: Components of the CASHPOR House Index and adaptations to South India and China

CASHPOR House Index		Adaptation to South India		Adaptation to China	
Size of House:		**Size of House:**		**Size of House:**	
Category	Point	Category	Point	Category	Point
Small	0	Small <20sq. meters	0	Small	0
Medium	2	Medium 20-29 sq meters	2	Medium	2
Large	6	Large >29 sq meters	6	Large	6
Structural condition:				**Structural condition:**	
Category	Point			Category	Point
Dilapidated	0			Dilapidated	0
Average	2			Average	2
Good	6			Good	6
Quality of walls:		**Height and materials of walls:**		**Quality of walls:**	
Category	Point	Category	Point	Category	Point
Poor	0	< 4 feet mud	0	Poor	0
Average	2	4 feet mud	2	Average	2
Good	6	> 5 feet	6	Good	6
Quality of roof:		**Quality of roof:**		**Quality of roof:**	
Category	Point	Category	Point	Category	Point
Thatch /Leaves	0	Thatch /Leaves	0	Non/Mud	0
Tin/Iron sheets	2	Tin/Iron sheets	2	Partial stone	2
Permanent roof	6	Tiles & other good materials	6	Cement/Concrete	6

Note: CASHPOR is a network of 23 Grameen Bank replications in nine countries of Asia
Source: Simanowitz, Nkuna and Kasim (2000)

Much of the literature has been concerned with the issue of creating an index from this information on asset ownership. Some authors have used equal weights, some have used normative (expert) judgement as to the appropriate weights some have used prices (but these are rarely available) and others have used statistical weighting procedures. The apparent objectivity of the latter approach depends, of course, on whether the indicators that are included in the questionnaire in the first place are appropriate.

There has also been concern over the extent to which such an index empirically correlates with income or expenditure based indices of welfare (see for example, Falkingham and Namazie, 2002). But there is a prior question as to whether we are necessarily looking for something to substitute for income or expenditure based indices or for a welfare-based poverty-related measure that can be reliably measured across countries.

One possibility that has been canvassed is to include an expenditure schedule but it is generally agreed that this would result in an over-long questionnaire (Diamond et al 2001; Falkingham and Namazie, 2002). USAID are trying to develop more generally relevant asset indices. These would need to be tested and validated against income and expenditure. The interview schedule could in principle be

augmented to fill this gap, although there is the issue of respondent (interviewer) fatigue if the questionnaire becomes too long. It also needs to be remembered that there are often many more problems with extending a long-run established survey than with initiating a new survey. The alternative is to develop an asset index (Falkingham and Namazie, 2002).

III.2 Problems in Developing Asset Indices

There are perhaps four major issues:

- The indicators of asset ownership in the DHS and in many other surveys – do not generally include information on the quality and quantity of the goods and services including the reliability of the asset (whether they are in working condition).
- It is often difficult to distinguish between household ownership and individual access and between household ownership of assets and household based assets that are shared or publicly owned.
- There are problems in generalising across different communities and, in particular, one would expect rural and urban areas to have different needs for assets, and for these to change over time.
- Because of changes in the coverage of the formal economy, it is very difficult to assess trends over time even within a particular community.

The choice of specific assets for constructing an assets index must reflect the particular socio economic and cultural environment to which the index will be applied. Filmer and Pritchett (1998) in their analysis of DHS data from 35 countries, found that the number of assets needed to create an adequate index of wealth ranged from 9 to 17 [19] and these vary across countries. Nevertheless, despite the different methods of constructing an index these generate a superficially plausible ranking of households that can then be apparently compared across localities, regions or countries or even over time.

IV. What are the Alternatives?

IV.1 Covering Poor Populations

[19] Note that all this means is that a satisfactory level of internal reliability was reached; it tells us nothing about the validity of the indices which is what we want to know.

IV.1.1 Extending the Sample

The sample sizes of DHS and LSMS vary hugely although in recent years the majority of them have been between 15,000 and 20,000 households. If we assume, arbitrarily, that we are especially interested in the status of the bottom 20% of the income distribution, then the maximum coverage (see below) of such households out of an achieved 5,000 sample would be 3,000. By the time this is broken down into say, 5 main regions and six demographic groups, the average cell size is around 100. We could all accept these as a reasonable cell size. In principle, therefore, surveys with achieved sample sizes of 15,000 or more would be adequate.

However, the problem of ensuring that the sample has adequately covered the poor is not easy; as, apart from the highly mobile employed (e.g. street sellers, truck drivers), they are among those who are most likely to be classified as 'non-response' or 'unobtainable'.

Household surveys in developed countries with an average response rate of around 70% face similar problems, although the under-represented groups usually considered are rather different, being mobile young males (across the income range) and the elderly (who are in institutions). It is usually deemed sufficient to re-weight the responses to the latest Census – although doubts are often expressed as to how reliable that really is.

One could over-sample geographical areas or population sub-groups that are known to be poorer - although that depends on being confident about the original sampling frame in the first place – but it would not solve the problem of reaching the poor.

IV.1.2 Attribution of Poverty

Indeed, where it is deemed essential that there be 100% population coverage – for example where the information is going to be used as the basis of resource allocation formulae - the preferred approach in the UK is often to abandon surveys altogether and attribute socio-economic data to individuals based on their residence.

A similar approach – poverty mapping – has been used in Bolivia and is being adopted more generally in other countries. This involves estimating a quantified relationship between income and household characteristics based on the LSMS and then using this to impute an income for census respondents. Diamond et al (2001) suggest that, if census information is recently available and roughly coincides with a

DHS survey, the same procedure could be used to map indicators of education, health and mortality onto the census via household type (e.g. status of head of household, household structure, educational level and location). This combines the advantages of a census with the more detailed information from a survey.

There are caveats: such a procedure of course relies on the validity of the relationship estimated from the survey and typically assumes that there is a more or less constant association between household characteristics and income across all income strata. This is rather unlikely theoretically, as one expects the share of expenditure on food and other 'essentials' to decline with rising incomes (the Engels Curve) and, empirically, the relationship between expenditures on education, health care and declared income in developed countries does vary across income strata. This can be circumvented by estimating a variable relationship between income and health (see below) although it rapidly becomes more complicated and with higher standard errors especially at the bottom of the income distribution.

Finally, whilst this is ingenious, it will depend on outside experts for its implementation, again not solving the problem of local ownership of expertise, or even of the necessary infrastructure (GIS-like data).

IV.2 Re-analysing the Household Surveys

Data from the DHS are freely available. However, as stated, the marginalized and poor are among those who are most likely to be classified as 'non-response' or 'unobtainable'.

IV.2.1 Examination of Potential for Bias

The possible sample biases have been documented above. Comparison of survey estimates at district level with aggregate data could provide some indications of where the biases might be most important; and, where available, small-scale empirical studies could be consulted to confirm those biases.

IV.2.2 Further Data Analysis

In principle, the documentation of measures of education, health and poverty will often, after necessary manipulation of the data, only require cross-tabulations. But analysis of the relative importance of different factors may involve more complex multi-variate statistical analysis. In many developing countries there are well-trained

statisticians; but data analysis skills are different and additional to statistical skills; they can only be learned through apprenticeship and that is difficult to organise both practically and in human resource terms.

IV.3 Obtaining and Using Reliable Data

The difficulties here arise partly because of the fragility of national statistical systems (see above) but also because of a lack of culture of using evidence in decision-making. In principle, of course, the move towards decentralisation, will lead to some local control over resources, and therefore provides an opportunity for the development of a functioning system and the revival of regulatory frameworks.
But :

- real decentralisation of decision-making in terms of control over substantial resources where there are real choices over what to do at the local level are a long way off in many countries, despite participatory budgeting;
- moreover, whilst in a seminar/workshop context, it may be possible to persuade local officials of the usefulness of accurate and valid data, using data as a basis for decision-making is a really foreign concept.
- There has to be a reason for local level officials to complete the forms which can either come from a shared commitment to national norms (e.g. Vietnam) or additional payment.

The involvement of local people in decision-making has been a preoccupation of many groups over the last 15-20 years (e.g. Chambers, 1997; the development of Participatory Rapid Rural Appraisal techniques; World Bank and the Voices of the Poor, etc.). But, all too often – not always – the outcome has been that 'insights' from the rural area have been brought back to the district/provincial or national level for discussion on, for example, 'how to integrate the communities in decision-making'. This has not encouraged the development of a local decision-making culture

IV.4 What is the Reality of Health-Related Poverty: two examples

It has already been argued that the current poverty lines are conventional: the problem is illustrated in respect of the association between poverty and health care in Palestine and poverty and mortality in Swaziland.

IV.4.1 Health care Consumption in Palestine

A recent survey by the Palestinian Central Bureau of Statistics has demonstrated that out-of-pocket expenditure by households on health care items on average is NIS 399 per month (approximately £600 per year). When grossed up, and combined with government health care expenditure this leads to an estimate of approximately £370 million Compared to GNP per capita, estimated at around £750 per year in 2004, this suggests that 15% of national income is spent on health care; almost US levels.

The major items of household expenditure were:

- dentistry (NIS 108.1 or 28%),
- medications and vitamins (NIS 91.4 or 24%),
- consultations with GPs and specialists (NIS 43.7 or 11%),
- spectacles and hearing aids (NIS 43.0 or 11%) and
- transportation (NIS 31.7 or 8%).
- secondary care is only NIS18.8 (or 5%).

The level of spending on dentistry is very high – and, again, almost US levels.

The breakdown of expenditure by household income quintiles is shown in Table 1. It can be seen that the poorest quintile spent twice as much of their income on health care as the most well-off quintile (38% compared to 19%). Such a large proportion is unsustainable; indeed, the high levels of expenditure on health care – including very high levels of spending on dentistry - must be driving many *into* poverty.

Table 1 Percentage of Household Expenditure spent on Health Care

	West Bank			Gaza Strip			Total		
Quintile	Mean	N	S.D.	Mean	N	S.D.	Mean	N+	S.D.
Up to 880	48.6	580	82.8	25.7	378	58.7	38.4	958 (4485)	73.9
890 to 1200	29.9	460	55.8	14.5	336	19.8	22.7	796 (5097)	43.5
1210 to 1980	27.4	469	42.2	15.4	299	28.6	22.3	768 (4957)	37.5
2000 to 2600	24.9	515	42.8	12.2	223	26.1	20.5	738 (5095)	38.3
2610 or more	20.6	650	39.0	9.4	102	16.4	18.8	752 (5017)	36.7
All	**28.8**	2674	**53.4**	**16.3**	1338	**35.2**	**24.2**	**4012 (24652)**	**47.9**

+ Note that quintiles have been defined for the survey population rather than the survey households by attributing household mean income to all members of the household

Source: Palestinian Central Bureau of Statistics; calculations by author.

IV.4.2. Where do Poverty Lines come from?

As a precursor to designing a programme of homecare services for those living with AIDS in Northern Lumombo, a baseline survey was carried out of who was providing care currently. Although not relevant to this issue, it is interesting that the sample size was quite large, because it was based on a power calculation by the programme designers of the numbers estimated to be caring informally, and they had assumed that this was very low because of the high prevalence of AIDS[20]; in fact, the proportion of people who were providing informal care was much higher than they had expected.

The survey also collected information on deaths. Whilst there are continuing debates – especially in South Africa – over the relation between poverty and HIV, most agree that, at high levels, HIV incidence is income or social class neutral whilst deaths from AIDS will depend on the capacity to survive and be cared for. Accordingly, the gradient with income should inflect at a 'true' health-related poverty line.

The report (EPOS Health Consultants 2003) on the survey itself provides the starting point:

> "The 619 visited households combined comprised 3838 persons. They reported a total of 155 deaths in the last 12 months leading to an astonishing mortality rate of 40.4 per thousand per year or more than five times the rate reported in the 1997 census, which was 7.6 per thousand. It is without doubt that this mortality is caused by the advancing of the AIDS epidemic, even taken into consideration the possibility of a certain extent of bias. This is clearly illustrated by the age distribution of the deceased. Almost half was between 15 and 40 years old, the age group that is most severely affected by the AIDS epidemic, while in the 1997 census this age group counted for only 14% of the deaths."

The implication of these figures is that the long-run equilibrium life expectancy is already below 25 years. The breakdown by household income is shown in Table 2. It can be seen that the percentage of households with death dropped from about 30% among the poorest households to about 12.5% among all households with incomes more than 500 Rand per month or about 85 Rand or US$12 per person per month. This would suggest a health-related poverty line of less than US$0.5 per day.

[20] The incidence of HIV in Swaziland is estimated to be 39% - almost the highest possible level given that most older people will not be affected and only a proportion of children are victims of MTCT.

Table 2 Numbers and percentages of dead by household income group

		Number of reported dead in the household					Percentages	
Household Income	Total reported dead	1	2	3	4	Total households	Households not reporting a death	Households reporting a death
.00	33	12	2	1		48	68.8	31.2
1-250	149	46	9	1	1	206	72.3	27.7
251-500	82	15	4			101	81.2	18.8
501-750	42	4	1	1		48	87.5	12.5
751-1000	71	8	1		1	81	87.7	12.3
1001-1500	41	5		1		47	87.2	12.8
1501-2000	30	4	1			35	85.7	14.3
2001 or more	29	3				32	90.6	9.4
	477	*73*	*11*	*3*	*1*	*598*	*79.8*	*20.2*

EPOS Health Consultants, Baseline Assessment of the Coverage of Home Based Care in Northern Lubombo Region, Survey Report, November 2003; Calculations by author

VI. Conclusions

The measurement of inequalities and poverty has been a growth industry around the world. There has been considerable emphasis on the analytic techniques but little reflection on what is meant by poverty and how that can be captured quantitatively. Arguments over the use of absolute or relative poverty miss the point; what should be included in the basket of goods and services.

Measuring access to or possession of those goods and services introduces a whole other layer of difficulty. Whilst there is growing recognition of the problem, there has been very little attention to improving the reliability and validity of the basic data.

Indeed, the donor tendency has been to by-pass existing systems either through attempting to develop very sophisticated electronic data collection systems or through household surveys that substitute for national statistical systems. Sophisticated questionnaire instruments have been developed enabling the poor to set their own criteria for poverty lines.

In this paper, however, we considered, in particular, the difficulty of collecting data from the poorest of the poor in developing countries. One specific branch of this growth industry has been household surveys especially those promoted by USAID and the World Bank (Gwatkin, 2002). To a large extent those have brushed aside the basic difficulties in using those to estimate poverty. On a simple technical

level, we know that, in developed countries, response rates to household surveys – and increasingly to censuses – are dropping; and some analysts do try and check for these biases, but there are still many who ignore basic procedures (Carr-Hill and Dixon, 2003). More seriously, household surveys omit crucial population categories – the homeless, those in institutions, the mobile, those in multiple occupancy households - among which the poorest of the poor will be concentrated.

In developing countries, as currently organised, household surveys are almost uniquely inappropriate in collecting data to address inequalities and to monitor the conditions of the poor. If the MDGs are to be taken seriously, it becomes crucial to be able to monitor what is happening. At the moment, we can't because we don't know where we are.

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ANNEX THE MILLENIUM DEVLOPMENT GOALS

Goal One *Eradicate extreme Poverty and hunger*

Target 1 Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day.

Target 2 Halve, between 1990 and 2015, the proportion of people who suffer from hunger.

Goal Two *Achieve Universal Primary Education by 2015*

Target 3 Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling.

Goal Three *Promote gender equality and empower women*

Target 4 Eliminate gender disparity in primary and secondary education, preferably by 2005, and to all levels of education no later than 2015.

Goal Four *Reduce Child mortality*

Target 5 Reduce by two thirds, between 1990 and 2015, the under-five mortality rate

Goal Five *Improve maternal health*

Target 6 Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio.

Goal Six *Combat HIV/AIDS, malaria and other diseases*

Target 7 Have halted by 2015 and begun to reverse the spread of HIV/AIDS

Target 8 Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

Goal Seven *Ensure environmental sustainability*

Target 9 Integrate the principles of sustainable development into country policies and programmes and reverse the losses of environmental resources.

Target 10 Halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation.

Target 11 Have achieved by 2020 a significant improvement in the lives of at least 100 million slum dwellers.

Goal Eight Build a global partnership for development

Target 12 Develop further an open, rule-based, predictable, non-discriminatory trading and financial system. It Includes a commitment to good governance, development, and poverty reduction - both nationally and internationally

Target 13 Address the special needs of the least developed countries. Includes: tariff and quota-free access for least-developed countries' exports; enhanced programme of debt relief for HIPCs and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction

Target 14 Address the special needs of landlocked countries and small island developing States (through the Programme of Action for the Sustainable Development of Small Island Developing States and the outcome of the twenty-second special session of the General Assembly)

Target 15 Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term

Target 16 In cooperation with developing countries, develop and implement strategies for decent and productive work for youth

Target 17 In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries

Target 18 In cooperation with the private sector, make available the benefits of new technologies, especially information and communication