
Fair's Fair

Health Inequalities and Equity in Tanzania

Report prepared by Paul Smithson
On behalf of Ifakara Centre for Health Research and Development and
Women's Dignity Project

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Commissioned by: Ifakara Centre for Health Research and Development and Women's Dignity Project

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Executive Summary

Inequalities in health outcomes and health care are important. From a “rights” perspective, health policies should seek to narrow inequalities and provide equal health care for equal need. From an economic perspective, health care resources are more efficiently used if they are directed towards the groups that need them most. From the perspective of national health progress, catch-up by disadvantaged groups offers the best prospects for rapid progress towards national targets.

Public policy in post-independence Tanzania has always had a strong egalitarian thrust. Since the advent of the first poverty reduction strategy, the “universalist” approach obtained added impetus and has been modified to pay particular attention to the poor. In spite of the clear policy commitments, there is surprisingly little documentation on health inequalities in Tanzania.

This study was commissioned by the Women’s Dignity Project and the Ifakara Centre for Health Research and Development. It is intended for senior managers and policy makers in the health sector as well as researchers, academics, civil society organizations, and donors. The report is a first attempt to elucidate issues of health inequalities and equity, point to key areas of concern, elaborate policy implications, and identify areas for further study.

Tanzania’s poor suffer a greater burden of ill-health than their more privileged counterparts. This is apparent for various health status indicators, including infant and under-five mortality, and malnutrition. Just why such differences in health outcomes persist is not entirely clear. In the absence of a multiple regression exercise we cannot know if income poverty alone is the key driver, or if inequalities are more closely associated with educational attainment, residence, or a combination of these, alongside their particular relationship to income poverty.

Spatial variations (across districts and regions) in health outcomes are even larger than socio-economic ones. What is clear is that the best districts tend to be clustered together, and the worst districts tend to be clustered together, pointing to factors that operate on quite a large geographic scale. There is no clear association of regional mortality disparities with regional wealth differences. A preliminary analysis shows an association with malnutrition, anaemia and adult educational attainment. A targeted policy response to narrow regional mortality disparities depends upon a better understanding of the causes.

In spite of poorer health status, disadvantaged groups (the poor, the less well-educated and rural residents) tend to consume less health care than others. This applies both to preventive and curative services. The size of the gap varies across different aspects of health care. For nearly universal services (immunisation) the gaps are relatively small. For services with lower coverage – including most reproductive health services – the gaps are much larger. The mismatch between health needs and health care consumption shows that the “Inverse Care Law” is alive and well in Tanzania. This is particularly apparent in relation to use and quality of maternal health services across socio-economic groups. Lastly, “utilisation” of health services among different groups is an imperfect measure, since the poor are less likely to receive a quality service even if they reach a facility.

A further examination of barriers to access suggests that lower health care consumption by the poor may be explained by a combination of factors, including cost, distance, quality, and “social barriers”, as well as demand-side factors. The latter – particularly health beliefs, provider preferences, knowledge and demand – may be more significant than is commonly supposed. Different policy measures are required to address each of the barriers described.

The study also documents substantial geographic variations in the supply of health care. At the simplest level, this points to the need for tightly targeted infrastructure development. A second implication is the need to re-think the configuration of services to ensure that rural people receive better access to services normally only provided at hospitals. Better infrastructure needs to be matched by the equipment, financial resources, supplies and human resources to ensure quality services are actually provided in the newly built structures. Of these “input factors”, the one that stands out most is human resources. Apart from addressing the overall shortage of skilled health personnel, the introduction of an incentive package to redress the mal-distribution of skilled human resources would possibly be the greatest pro-poor policy measure available on the supply-side.

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Acronyms

ANC	Antenatal Care
C-Section	Caesarean Section
DSM	Dar es Salaam
HBS	Household Budget Survey
ITN	Insecticide Treated Net
IPT	Intermittent Preventive Therapy
MCH	Maternal-Child Health
ORS	Oral Rehydration Solution
MCH	Mother and Child Health
MKUKUTA	National Strategy for Growth and Reduction of Poverty (Swahili Acronym)
TBA	Traditional Birth Attendant
TDHS	Tanzania Demographic and Health Survey
TRCHS	Tanzania Reproductive and Child Health Survey

Introduction

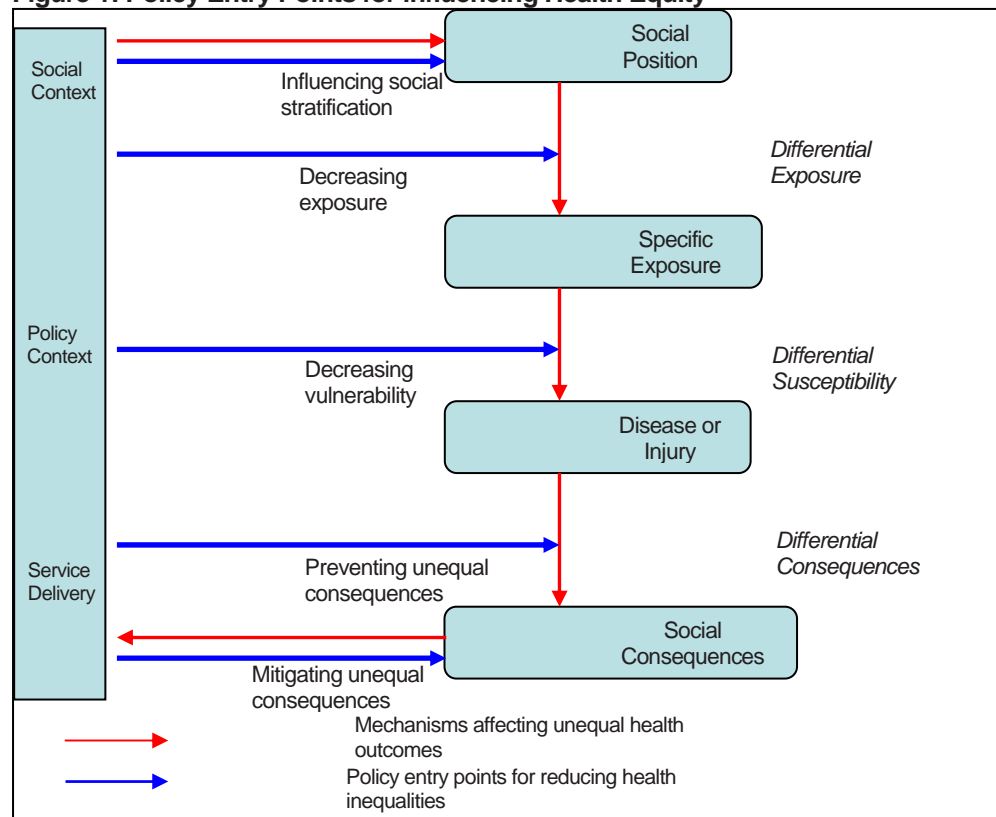
Public policy in post-independence Tanzania has always had a strong egalitarian focus. This was certainly true during the socialist era. Even after the transition to a liberal market economy, policy commitment to equity in the social arena remains. Thus the National Health Policy aims to “improve the health and well-being of *all Tanzanians, with a focus on those most at risk*” and to ensure that “health services are available and *accessible to all urban and rural areas*”.

Since the advent of the first poverty reduction strategy, the “universalist” approach has been modified to pay particular attention to the poor. The *Mkukuta*¹ speaks of improved quality of life and social well-being, *with particular focus on the poorest and most vulnerable groups*. It also makes an explicit commitment to *reduced inequalities across geographic, income, age, gender and other groups*.

In spite of the clear policy commitments described above, there is surprisingly little documentation on health inequalities and equity in Tanzania. This report is a first attempt to elucidate the issues, point to key areas of concern, elaborate policy implications, and identify areas for further study.

It is important to note at the outset that this paper is not simply about who gets – or doesn’t get – health care. Health inequalities between socio-economic groups are found all over the world and are known to be associated with underlying determinants, including education, nutrition, housing, water, and so forth. In the final analysis, reducing health inequalities implies narrowing socio-economic differences within society. This realm of policy lies beyond the health sector, in broader issues of economic policy and the distribution of wealth and opportunity.

Figure 1: Policy Entry Points for influencing Health Equity



Adapted from Evans et al (2001)

¹ Mkukuta: Kiswahili acronym for the National Strategy for Growth and Reduction of Poverty

Yet there are various stages along the way from health risks to health outcomes that are amenable to health policy intervention (Figure 1). Take the example of water-borne disease. In the first instance, people without access to clean and safe water are clearly at greater risk – and this will only be rectified when everyone has access to clean and safe water. Even with a poor water supply, risks can be reduced by home practices relating to water storage, water treatment, hygiene, and by public policies that promote these. In this way, specific exposure to disease can be avoided, in spite of different underlying risks.

At the same time, those groups with unsafe water sources are likely to suffer a greater burden of water-borne disease. But unequal mortality outcomes can still be avoided as long as those at greatest risk receive prompt and effective treatment. Finally, in the case of diseases that cause long-term disability or impoverishment, these unequal consequences of disease may be mitigated by palliative care, disability aids and social protection. These various stages in the chain between health risks, specific exposure to disease, effective treatment, and mitigation of the consequences may all contribute to unequal health outcomes and consequences.

This report was commissioned by the Women's Dignity Project and the Ifakara Centre for Health Research and Development. It is intended for senior managers and policy makers in the health sector as well as researchers, academics, civil society organizations, and donors. The report reveals the scale and nature of health inequalities and inequity in Tanzania. As such, it intends to raise awareness and understanding of the issues, and to stimulate policy debate and remedial action.

The paper begins by examining the scale and nature of inequalities in health status. It examines differences between socio-economic groups as well as across different parts of the country. It goes on to examine which groups benefit most from health services. Next, the report examines why some groups seem to benefit more than others, with reference to health-seeking behaviour, barriers to access, and the quality of care received. The report then examines the distribution of health care resources across the country before proceeding to a concluding chapter.

The analysis is largely based on analysis of existing survey data in the public domain: principally the Tanzania DHS 2004/5, the Household Budget Survey 2000/01 and the national Census 2002. Additional official data sources and qualitative publications are drawn upon where relevant.

At several stages in the analysis, we cannot reach a firm conclusion on the basis of the data available. Here, we have identified policy-relevant questions and suggested promising avenues for future research.

The author would like to thank Maggie Bangser and Hassan Mshinda who guided this assignment from its inception. Thanks are also due to the many individuals who kindly provided feedback on an earlier draft. These include Don De Savigny, Dave Gwatkin, Kara Hanson, Masuma Mamdani, Rene Loewenson and Jeff Blander. While every effort has been made to check the quality and accuracy of the analysis, any errors of fact or interpretation remain the responsibility of the author.

Socio-Economic Differences in Infant and Child Health

Tanzania's poor undoubtedly suffer a greater burden of ill-health than their more privileged counterparts. This is apparent for various health status indicators, including infant and under-five mortality, malnutrition and anaemia. The scale of the differences is illustrated in figure 2, below. Infant mortality rates for the two poorest quintiles are around 40% higher than those of the least poor. Differences of a similar magnitude are seen in under-five mortality. For malnutrition, the gap is even larger, with the poorest suffering nearly three times the stunting rate of the least poor. In this instance the biggest gap is between the top quintile and the rest.

Figure 2a

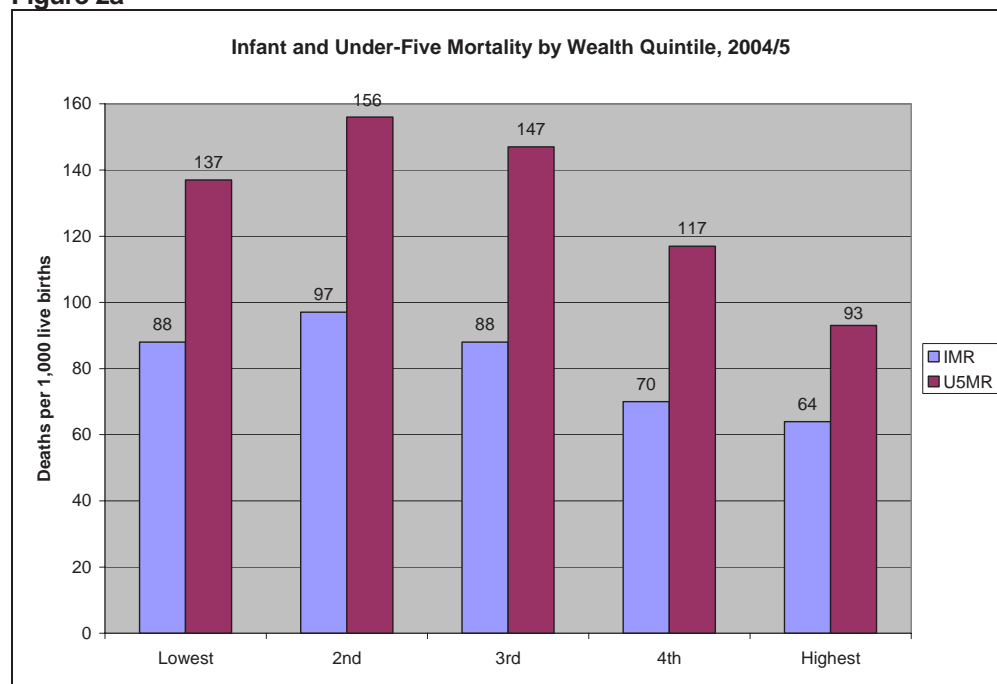
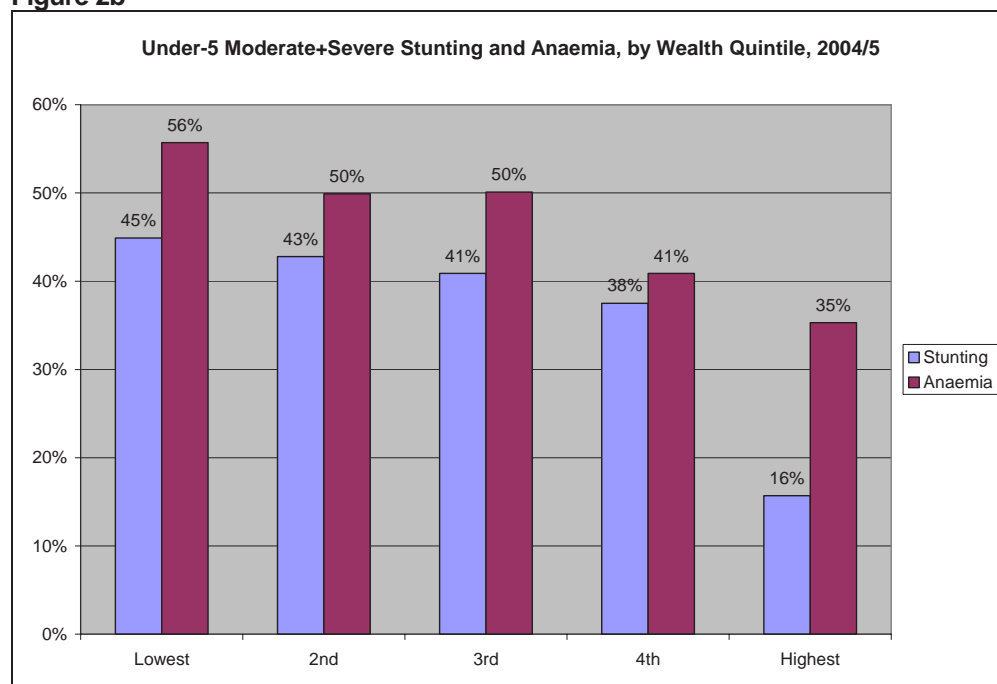


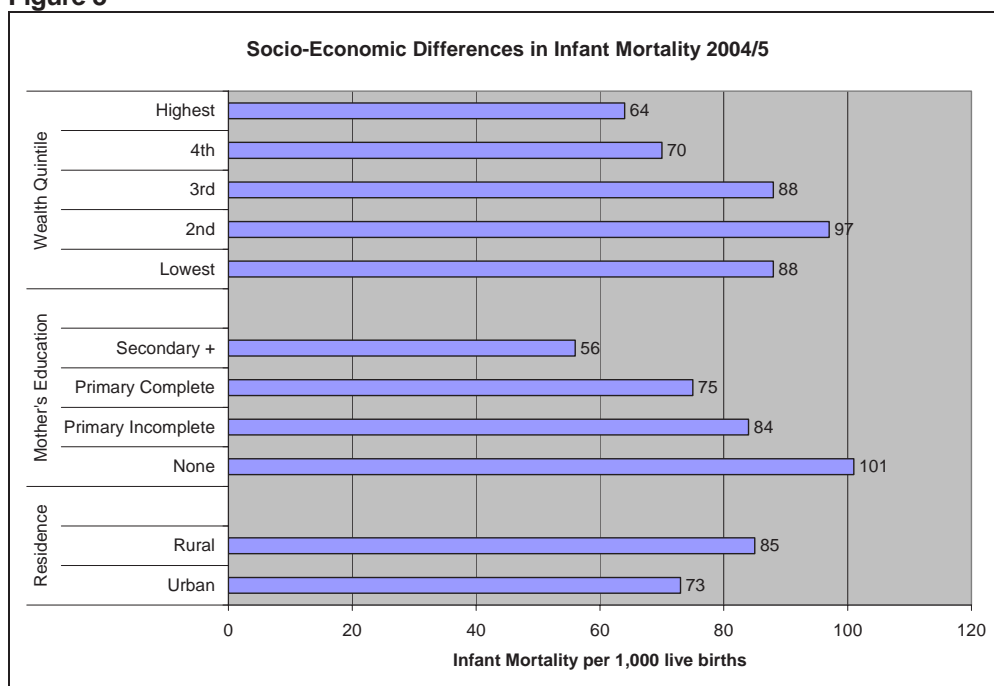
Figure 2b



Source: TDHS 2004/5. nb Stunting 0-59 months, Anaemia 6-59 months

These large differences are also seen for other measures of socio-economic deprivation. Figure 3 shows that infant mortality rates are considerably higher for children of uneducated mothers and for those living in rural areas. Similar patterns are seen for under-five mortality and for child malnutrition (data not shown).

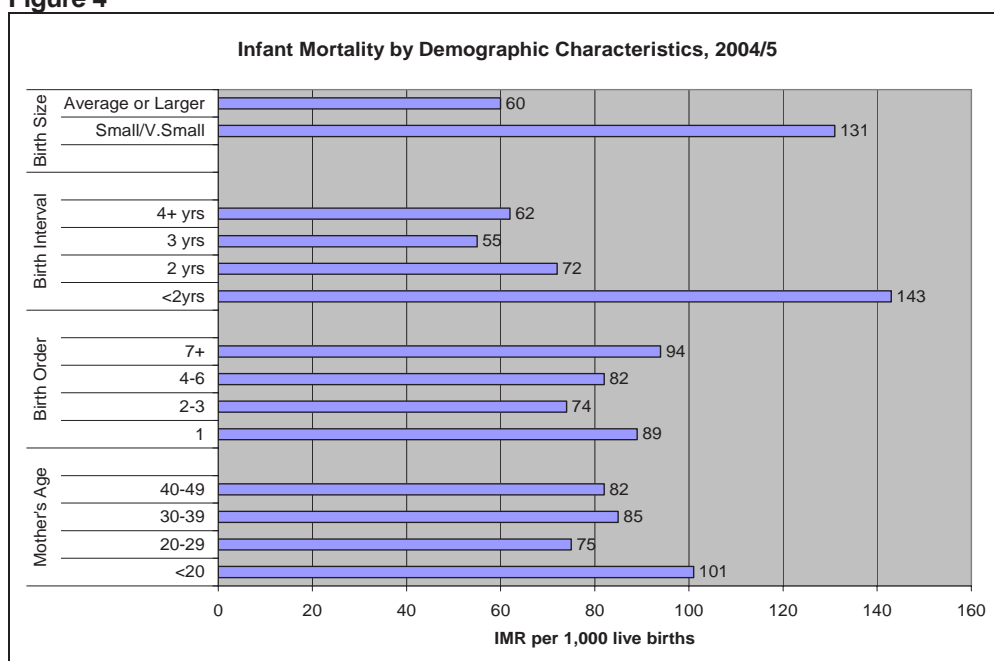
Figure 3



Source: TDHS 2004/5.

The TDHS data also show that excess mortality is associated with more “proximate” variables. Young mothers, first births, high order births, short birth interval and low birth weight (proxied by size of baby) are all associated with higher infant mortality. These are well-known public health risks. They may, in part, mediate the effect of socio-economic deprivation since all of them are likely to be associated to some degree with lower education, rural residence and poverty.

Figure 4



Source: TDHS 2004/5.

It is a fact, therefore, that children from poorer families, children living in rural areas, and those with less educated mothers are more likely to die. But why is this so?

It could be that poverty is the chief cause of excess mortality – and that rural areas and uneducated mothers are more likely to be poor. It might also be that education is the determining factor, and that less-well educated households are more likely to be poor and to live in rural areas.

Unfortunately, the data tabulated in the TDHS does not allow us to determine the independent effect of each variable. To do this would require a multiple regression analysis to examine the independent and combined effect of the different variables. Once this is done, we will have a better idea of the likely impact of poverty reduction, of improved female education, of improved sanitation and water supply, and so on.

Conclusion on Socio-Economic Differences in Infant and Child Health

What we can conclude is that:

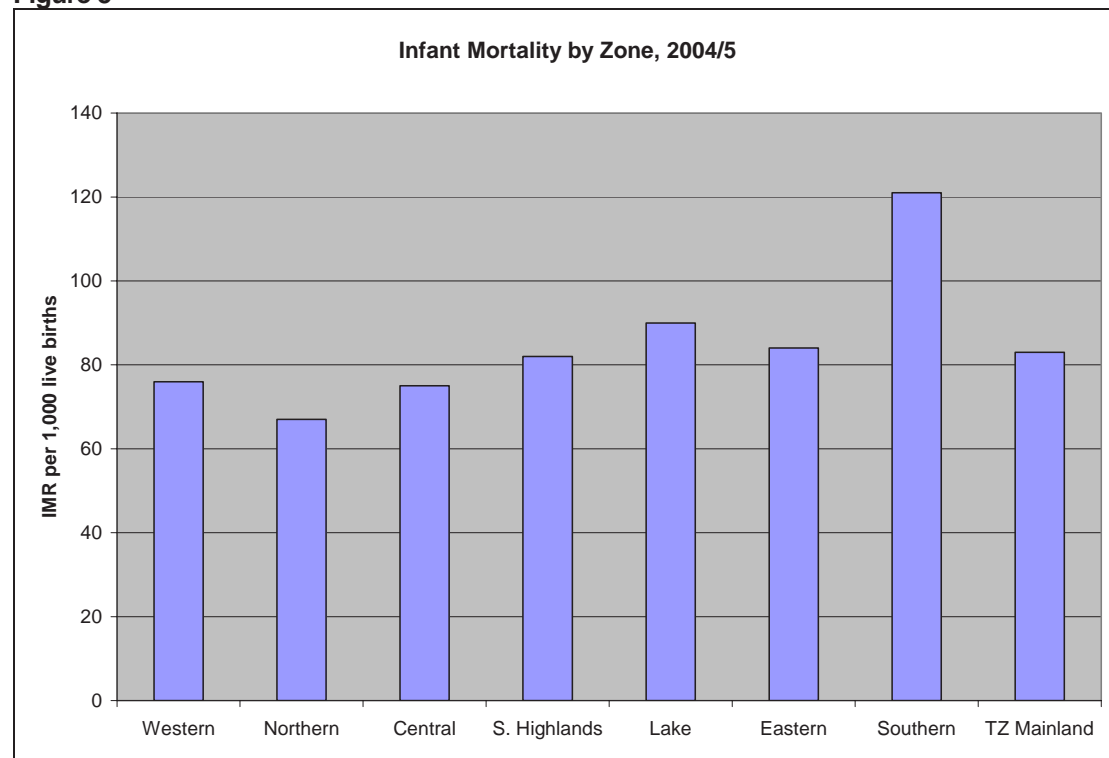
- The poor do suffer a greater burden of disease than the non-poor
- Differences of a similar magnitude are seen for other aspects of socio-economic deprivation, particularly education.
- Infant mortality is also associated with proximate determinants. These risks could be averted (even if underlying socio-economic differences persist) if reproductive health policies can encourage later first birth, longer birth spacing, and lower fertility.
- We cannot tell which aspect of socio-economic deprivation is the main driver – and hence which changes in underlying determinants will exert the greatest impact on outcomes.
- A multiple regression model could help to answer these questions, and would demonstrate the likely impact of improved determinants on health outcomes.

Spatial Variations in Mortality

Zonal Variations

The TDHS data also show marked differences in infant and under-five mortality across different parts of the country. The Southern Zone has the worst performance, with mortality rates that are 40% to 50% above the mainland average. In contrast, mortality rates in the Northern Zone are 20%+ better than the mainland average. Moreover, these geographic variations are very persistent, being clearly evident in each of the last three DHS surveys.

Figure 5



Source: TDHS 2004/5.

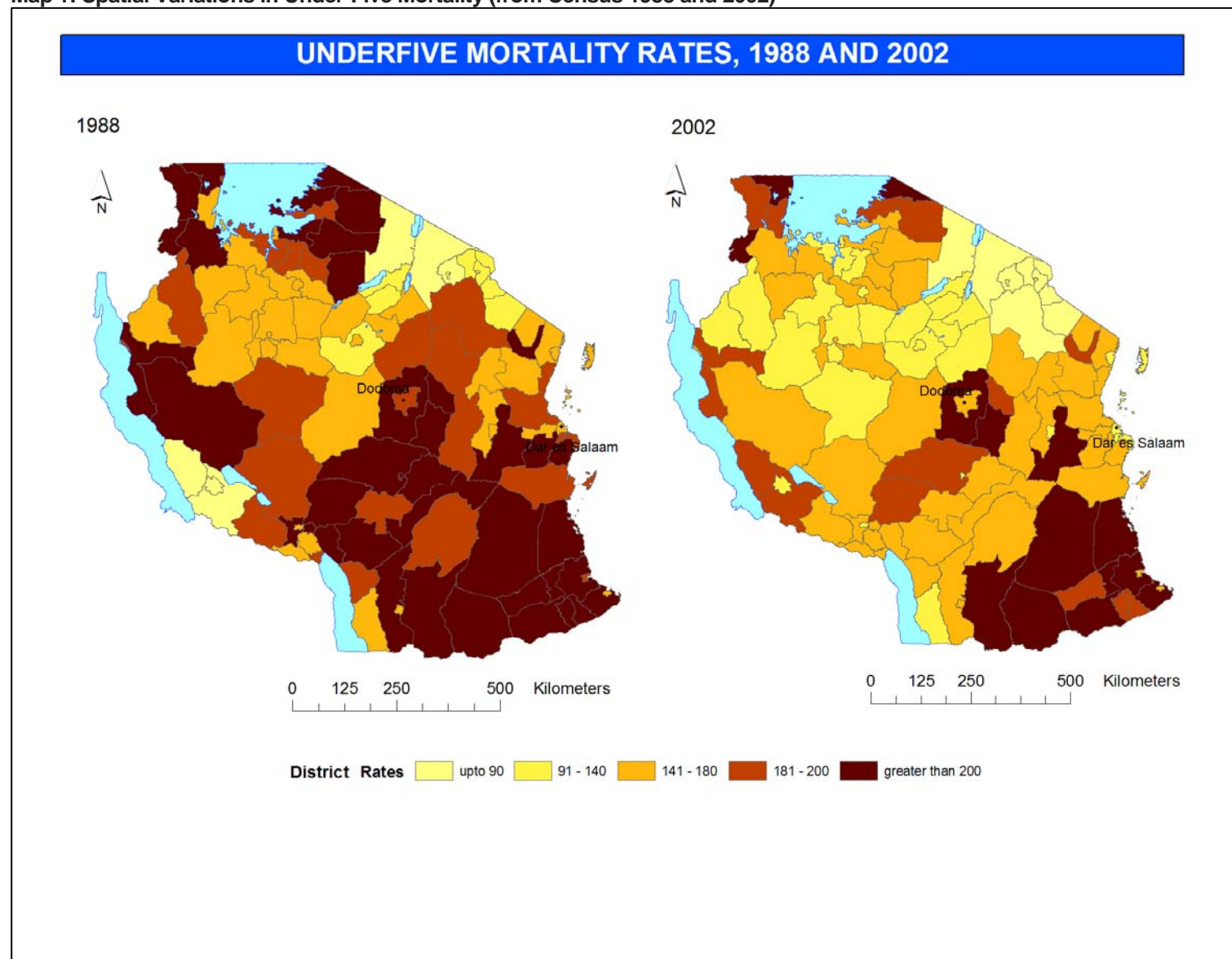
This is very puzzling. How can it be that a whole region's average mortality can be so much worse – or better than others? Mortality in the southern zone is even worse than that of children elsewhere whose mothers have no education. Mortality in the Northern zone is comparable to that of the highest wealth quintile in other locations. Yet surely the north cannot entirely comprise wealthy, educated households and the south the opposite. This suggests that other factors, associated with place, may be coming into play.

Regional and District Variations

To investigate the striking geographical variations in mortality, we turn to the more detailed mortality estimates available from the 2002 Census². These confirm the general pattern observed by the TDHS. Unsurprisingly, variation between regions is even greater than that between zones; and variation across districts is greater than that across regions. This is depicted in Map 1, below.

² The Census produced "indirect estimates" of infant mortality and under-five mortality by region and by district.

Map 1: Spatial Variations in Under-Five Mortality (from Census 1988 and 2002)



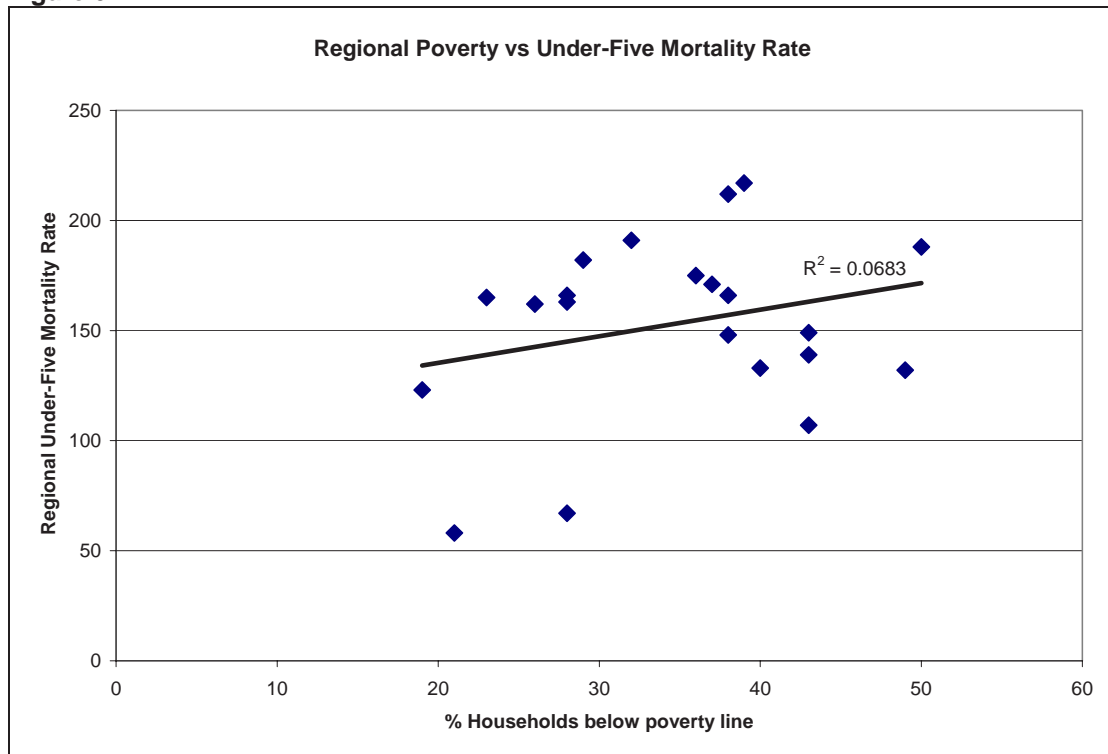
The first observation is that the districts with the worst mortality rates tend to be clustered close to each other – producing regions and zones with poorer than average mortality rates. Zones of poorer performance are the same ones in 2002 as in 1988. The highest mortality districts are clustered around the south of the country – spreading down the coast from Lindi to the Mozambique border, and west beyond Tunduru. Other high mortality clusters are found on the eastern and western shores of Lake Victoria. Another cluster forms a belt of higher than average mortality running from Mbeya in the south-east to Dodoma in the centre. Conversely, all of the districts in the northern highlands have under-five mortality rates below 90 per 1,000. This spatial clustering suggests that whatever determinants are at work are operating on quite a large scale.

Why, then, are whole areas of the country so much healthier than others? To answer this question definitively we would need to perform a spatial (ecological) analysis, searching for variables that are associated with better or worse mortality rates. Because many factors are likely to be inter-related (e.g. wealth-education-nutrition), a multiple regression model is required to tease out the independent and combined effect of variables. Such a detailed analysis is beyond the scope of this paper. However, we can at least provide a preliminary indication of factors that may be at work. The analyses below use under-five mortality rates as the dependent variable since sample sizes will be larger than for infant mortality.

Poverty

The fit between the poverty of a region³ and its under-five mortality rate is surprisingly poor. This does not prove that wealth is *unimportant* as a health determinant. This may well be the case at household level, but the association may be concealed when dealing with regional averages. However, the data clearly show that regional under-five mortality variations are not explained only by poverty.

Figure 6



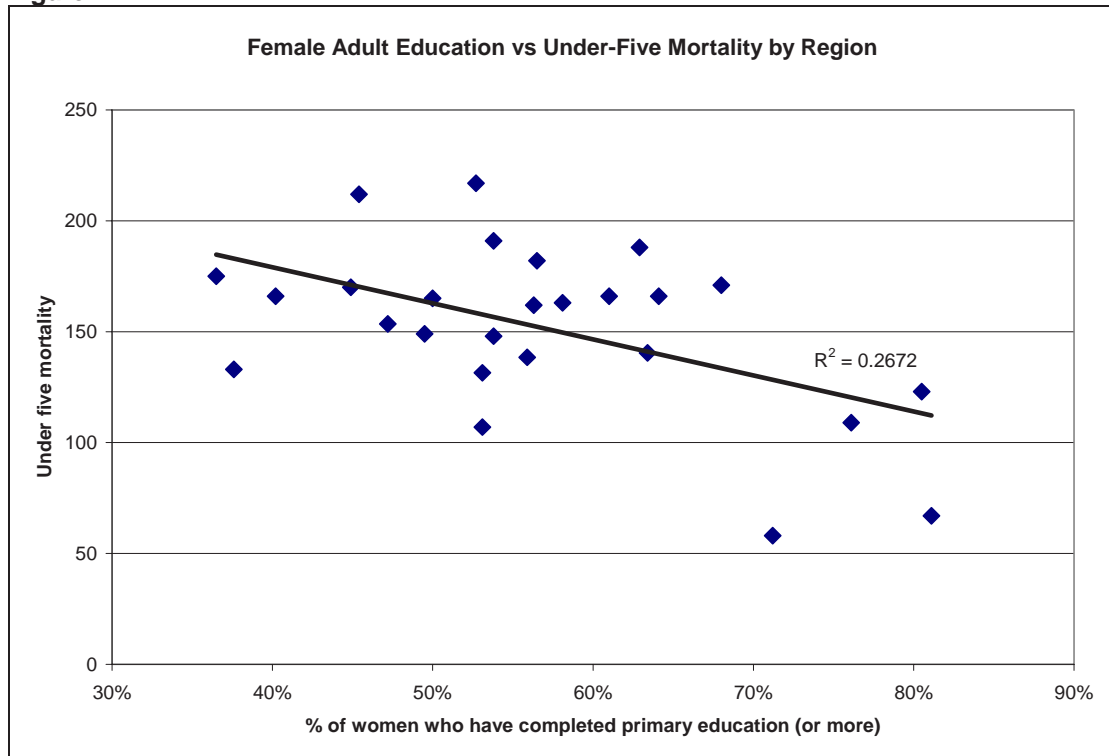
Source: Under-5 Mortality from 2002 census; Poverty data from PHDR 2005

³ As measured by proportion of households below the poverty line. Based on HBS 2000/1 data and recalculated for PHDR 2005, table 14, p55.

Education

Education of mothers and of household heads is known to be associated with child survival at the household level. Could it be that some of the regional differences are explained by education? The figure below shows a moderate association. Regions with the highest educational attainment among women also tend to be the regions with lowest under-five mortality. But if the top four regions were removed from the model, the association would be much weaker. Thus education seems to explain *some* of the regional mortality variation⁴, but cannot be the only factor at work.

Figure 7



Source: Female adult educational attainment from TDHS 2004/5; Under-five mortality from Census 2002

Proximity to Primary Health Care Facilities

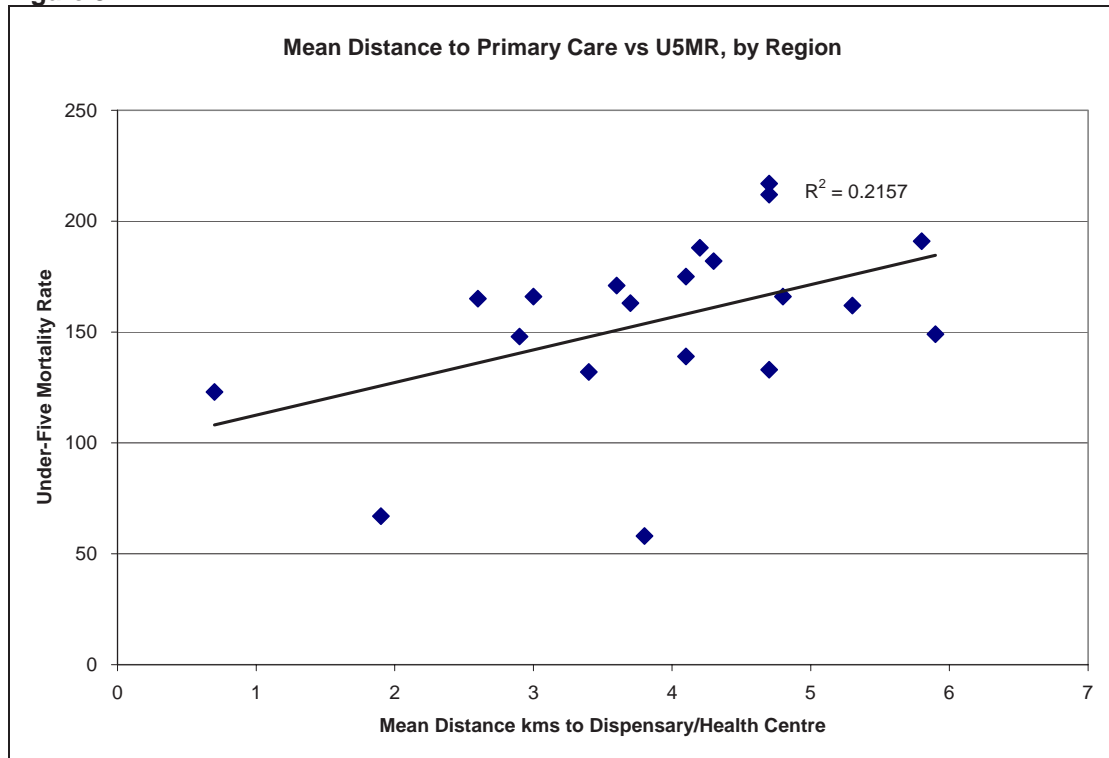
There does seem to be some association between regional under-five mortality and mean distance to primary health care facilities. The association is also moderate: distance explaining just over 20% of the regional variance in mortality. It may be that a stronger association would be evident if urban populations were excluded (plotting under-five mortality against mean distance to primary health care facilities for rural populations only). Note also, that the association observed might be explained by a confounding factor such as population density.

Nonetheless, the weakness of this association does lead to the conclusion that a systematic regional bias towards better (or worse) proximity to health care services is not the dominant explanatory factor for the large regional mortality variation observed.

It is also important to differentiate between proximity to a primary health care facility and proximity to quality basic health care services. Facilities – meaning the actual structures – do not necessarily translate into the availability of quality care.

⁴ Adult female education may help to explain why Kilimanjaro and Arusha seem to be favourable “outliers” on all of the other factors considered here.

Figure 8

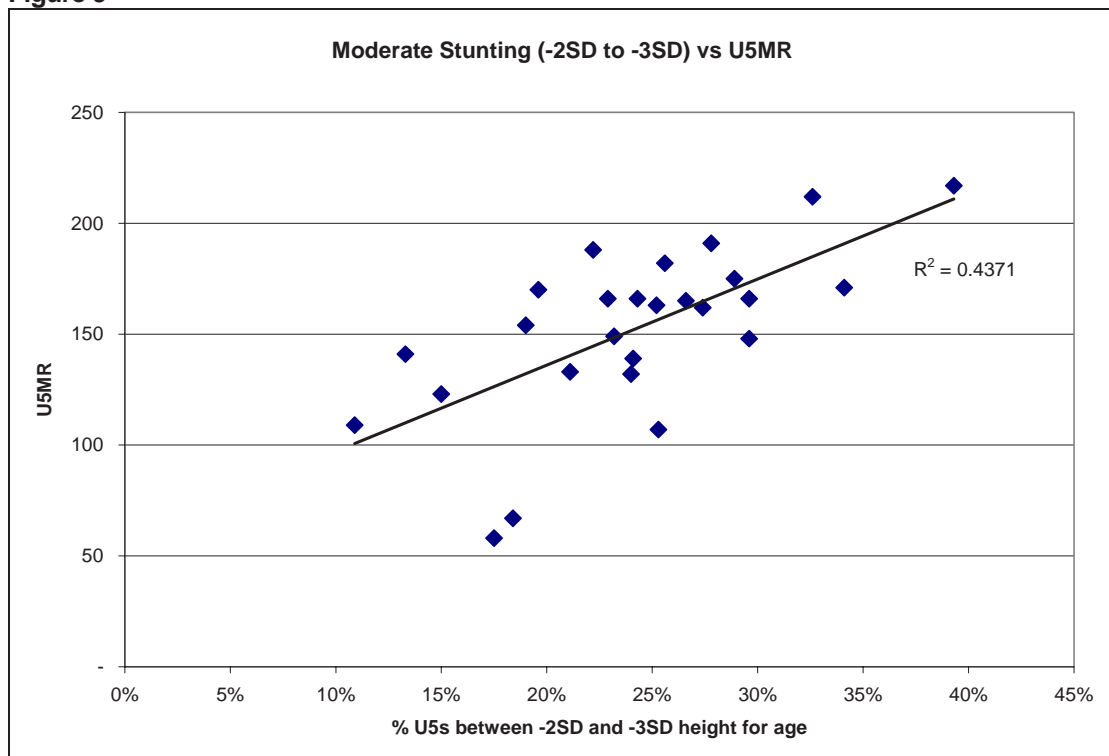


Source: Mean Distance to Primary Care from HDS 2000/1; U5MR from Census 2002.

Nutrition

A very much stronger fit is found with regional malnutrition rates. Of the three measures of malnutrition (stunting, underweight, wasting), the association seems to be strongest for stunting.

Figure 9



Source: Stunting data from TDHS 2004/5 table 11.11; under-five mortality from 2002 census

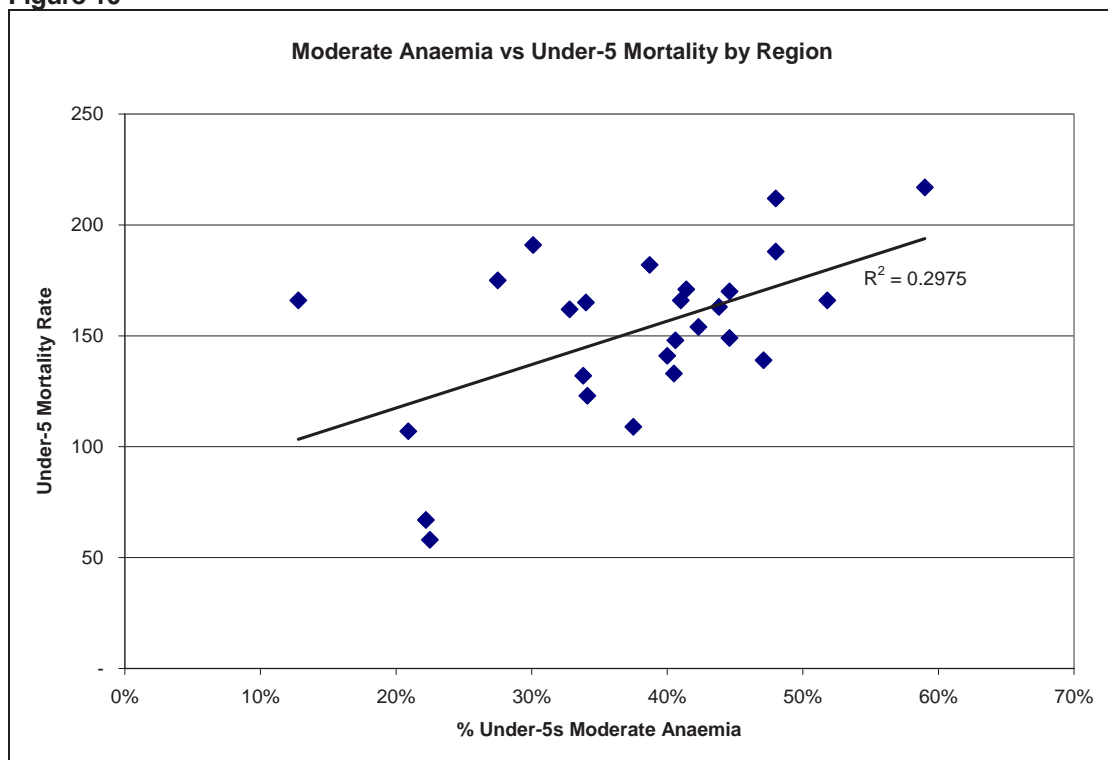
This is an interesting finding. If nutrition were simply a question of wealth, we would have expected no better “fit” to the mortality data than we found for poverty. The fact that the fit is considerably better suggests that other (large area) factors are at work – perhaps relating to ecological conditions⁵ or differences in typical dietary composition⁶. The underlying causes of these striking regional variations in malnutrition are certainly worthy of more detailed study. If it does turn out that nutrition - independent of poverty - is a leading factor in explaining regional disparities, the policy implications are clear. Much more effort would need to be devoted to tackling malnutrition in those areas most at risk

Malaria

We would like to have undertaken a comparison of regional mortality rates with malaria transmission intensity. As the leading cause of child mortality and a factor associated with large-scale geographic variation (altitude, precipitation, water bodies), it would be surprising if malaria were not at least partially responsible for regional mortality differences. Although some data on malaria transmission is available, it does not offer sufficient sensitivity and variation at the regional level to permit a meaningful analysis. This is because the majority of regions and districts are classified as endemic, offering no further insight into the intensity of malaria transmission.

However, **anaemia** rates might provide a proxy for malaria transmission intensity since malaria is the leading cause of anaemia in Tanzanian children⁷.

Figure 10



Source: Under-5 anaemia from TDHS 2004/5; Under-five mortality from Census 2002

⁵ E.g. rainfall, length of farming season, number of crop cycles, type of crops grown

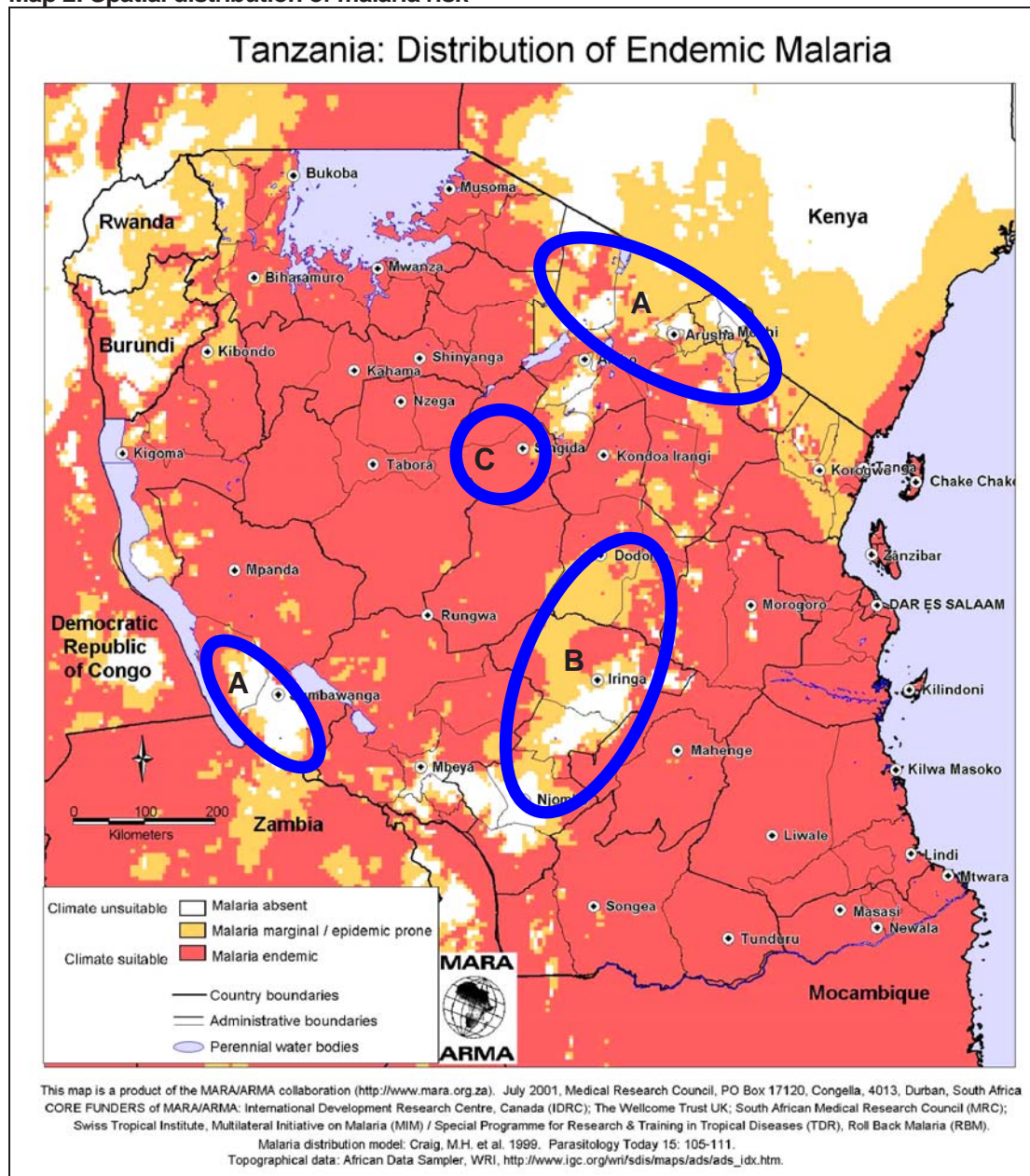
⁶ E.g. livestock-keeping areas; areas where fish/seafood contributes to diet. As pastoralism is closely linked to ethnicity, it may also be that dietary composition and malnutrition exhibits strong variations across ethnic groups.

⁷ Although recurrent malaria is widely believed to be the leading cause of iron-deficiency anaemia in Tanzania, it is clearly not the only one. Helminth infections (also associated with ecological conditions) and hookworm are also known to play a major role.

A reasonably strong association between regional childhood anaemia and mortality rates is indeed found. Without further analysis, we cannot rule out the possibility that anaemia itself simply raises mortality risk, and that the anaemia is caused by multiple factors not limited to malaria. But it is certainly a tantalising finding and suggests that a more in-depth examination of malaria risk is needed. If, for example, a substantial portion of excess mortality in the worst regions is attributable to malaria, then effective malaria control could dramatically narrow regional mortality disparities.

Nonetheless, it is clear that the fit with malaria is an imperfect one. The map below shows that there are some areas with low malaria risk – but high mortality, and vice versa. So we must conclude that malaria might be part of the reason, but cannot be the whole explanation for regional mortality variation.

Map 2: Spatial distribution of malaria risk



Source: MARA

Note:

“A” denotes areas with low malaria intensity, low mortality

“B” denotes area with low malaria intensity, high mortality

“C” denotes area with high malaria intensity, low mortality

Other factors

Of course a multitude of other factors may also be at work. A similar analysis in Brazil at sub-regional level (De Souza et al, 1999) examined the impact of a wide range of socio-economic determinants (female literacy, household income, water and sanitation) as well as health service factors and proximate determinants. A spatial analysis of childhood mortality in West Africa included a number of variables, including water and sanitation, household assets, maternal education, population density, proximity to coast, proximity to a large town, farming system, length of growing season, rainfall and malaria risk (Measure-DHS, 2003).

Tentative Conclusion on Spatial Variations in Mortality

The findings here show an intriguing association between a region's mortality performance and three key variables: average (adult) educational attainment; childhood stunting rates, and childhood anaemia rates. Moreover, it looks as if the effect of malnutrition and anaemia are independent, since the two variables themselves show no clear association (data not shown). The likely explanation for the large regional mortality differences in Tanzania is therefore a combination of variables, rather than a single dominant one.

The preliminary analysis described above is sufficiently promising - and the regional variations sufficiently large - to warrant an in-depth spatial analysis. This should examine a much broader range of variables than those examined here, should separate them according to type (proximate variables, socio-economic, ecological), and combine each group in a logistic regression model that is careful to exclude confounding variables. Comparing variables from the same survey source should also yield more statistically robust conclusions⁸.

The analysis should also explore related variables (e.g., nutrition, food security, and mother's education) in order to find the best fit possible – both to identify underlying causes, and to pinpoint areas most amenable to policy intervention.

If the very substantial regional variations can be explained by a few, significant, factors, clear policy conclusions should follow that will permit major progress on closing the health gap between Tanzania's regions.

It is important to stress again that a spatial analysis at this level does not prove or disprove an association between a certain factor and probability of mortality at the individual level. Rather, it seeks to identify factors that operate on a wider geographic basis to produce whole regions that perform substantially better or worse with respect to mortality.

⁸ The analysis here also relies upon combining variables from different data sources: Regional mortality from 2002 Census, Nutrition, Education and Anaemia data from the 2004/5 DHS.

Access to Maternal & Child Health: The Inverse Care Law

Introduction

It is important at the outset to clarify terminology. “Access” is often seen as synonymous with proximity of health care services. Here we use the term more narrowly to mean “*Effective Access*” – that is, actual utilisation of health services. Where the term is used in the more common sense, we shall refer to *Geographic Access, Proximity or Availability*.

This section begins with an analysis of actual utilisation of health care across socio-economic groups. We start by presenting the poor : non-poor differential in utilisation of selected services – both preventive and curative. Next, we examine other socio-economic differences in health care use, using maternal health care as an example.

In both instances, the conclusion is inescapable that the consumption of health care is typically *inversely* related to need. In other words, those who most need health care are actually consuming it least. Perhaps even more surprising, is the finding that those who reach a health care facility do not necessarily receive equal treatment.

Of course this is not a situation peculiar to Tanzania. The “inverse care law” was first coined by J. Tudor Hart in 1971. In short, it states that those who most need health care actually get the least. The “law” has since been found to apply in a wide variety of settings in both developed and developing countries. The reasons that the situation applies in Tanzania is examined further in the following chapter, with reference to geographic barriers, quality of care, cost and social barriers to access.

Poor : Non-Poor Differentials in Health Care Utilisation

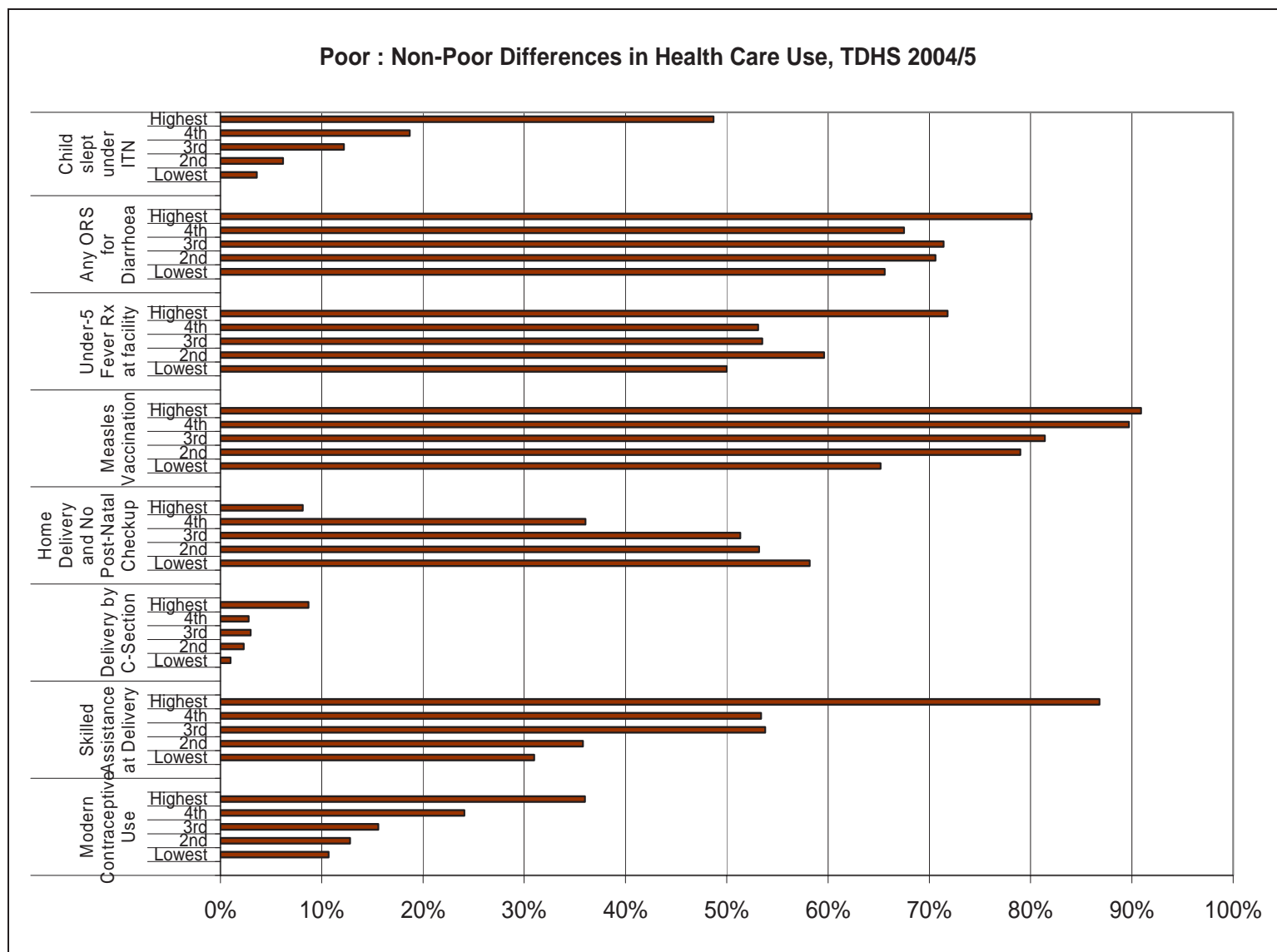
The figure below illustrates the probability of utilisation of selected preventive and curative health care services by wealth quintile. In all instances, women from richer households consume more of the service in question than the poorest women. The differences are especially large for contraceptive use, skilled assistance at delivery, caesarean section, post-natal care and ITN use. Even services believed to be near-universal (measles vaccination) show substantial differences between wealth groups.

- Women from richer households are **3.4 times** more likely to use modern contraception than the poorest
- Women from richer households are **2.8 times** more likely to receive skilled assistance at delivery than the poorest
- Women from richer households are **8.7 times** more likely to give birth by caesarean section than the poorest. In this instance, it is the top quintile that benefits so much more than the others.
- The poorest women are more than **7 times** more likely to give birth at home AND receive no post-natal check-up for their infants. The biggest gap here is between the richest quintile and the rest.
- Compared to their poorer counterparts, the children of richer women are **40%** more likely to receive measles vaccination, **40%** more likely to receive treatment for fever at a health facility, and **20%** more likely to receive any ORS for diarrhoea
- Under-fives in the richest households are **14 times** more likely than the poorest to have slept under an ITN the previous night.

The inescapable conclusion is that there are, indeed, substantial health care utilisation differences between rich and poor, with the richer households benefiting substantially more.⁹

⁹ To test the statistical significance of these differences, we need to refer to the confidence intervals of the individual quintile estimates, not shown in the report. Perhaps the simplest statistical test would be to reclassify the data into the Poor (bottom 49%) and Non-Poor (top 51%) where larger sample sizes will yield narrower confidence intervals.

Figure 11



Other Socio-Economic Differences in Health Care Utilisation

Taking maternal and newborn health care as an example, we also see that there are substantial differences between groups according to other socio-economic variables such as education and residence:

- Women in urban areas are more than **twice** as likely to deliver at a health facility as their rural counterparts
- Women with at least some secondary education are **2.6 times** more likely to deliver at a health facility than those with no education
- Women with secondary education or more are over **11 times** more likely to deliver by caesarean section than those with no education – and **four times** more likely than those who have completed only primary education.
- Those in urban areas are **3.6 times** more likely to deliver by C-Section than women delivering in rural areas
- Babies born in rural areas are nearly **4 times** more likely not to have been weighed at birth, or to receive post-natal care
- Babies born to non-educated mothers are **four to five times** more likely not to receive post-natal care than those of the best educated mothers.

Table 1

	Delivery at health facility	Delivery by C-Section	No post-natal	Baby not weighed at birth
Education				
None	32%	1%	59%	66%
Some Primary	42%	4%	49%	55%
Primary Complete	53%	3%	37%	42%
Secondary or more	85%	13%	13%	13%
Residence				
Urban	81%	8%	13%	16%
Rural	39%	2%	51%	58%

Source: TDHS 2004/5.

Conclusion on Access to Maternal and Child Health Care

What, then, can we conclude about the nature of disadvantage? Is it poverty per se that confers a disadvantage? Or do poorer people consume less health care because they are more likely to live in rural areas or to have lower educational attainment? Unfortunately, the data as tabulated do not offer an answer to this question. We would need to examine:

- If a poverty effect is still seen *within* the rural / urban group, and *within* the education status groups.
- If an education effect is still seen *within* wealth quintiles and *within* residence group

Teasing apart the independent and combined effect of these socio-economic factors has important policy implications. If it is *residence*, then it would point towards issues of physical access as the core problem. If it is *education*, then norms, expectations, knowledge and health-seeking behaviour might be the explanation. If it is *poverty* per se that drives the differences, it would point to issues of affordability and/or opportunity costs. Cross-tabulating this data and/or performing a multiple regression is therefore an important area of further analysis that should be undertaken.

Whichever is the explanation, it is clear that poverty is associated with poorer physical access to health services, and with poorer educational status. Thus even if it turns out not to be poverty per se that drives the differences, it will remain the case that the poor suffer disadvantage in their effective access (utilisation) of health care. In the next section, we analyse the available evidence on barriers to access.

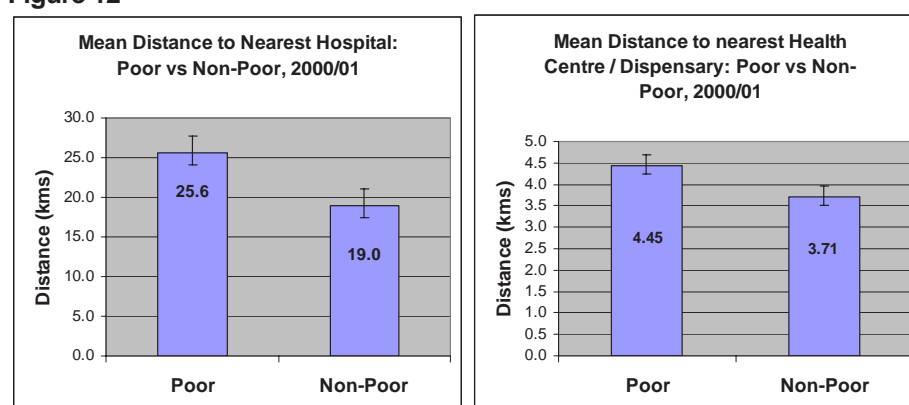
Barriers to Access

In the previous section we have seen that households that are poorer, less well-educated, and rural have poorer utilisation of health care. Why is this? In this section, we examine in more depth what role might be played by physical access, by financial barriers to access, and health seeking behaviour.

Physical Accessibility

It is the case that poorer people tend to live further away from health care facilities. The poorest half of the population lived, on average, 6kms further away from the nearest hospital as compared to the richest half. A significant difference is also seen for the mean distance to the nearest health centre or dispensary. In addition, as stated earlier, accessibility to a health care facility does not necessarily mean accessibility to quality care. The operative question should be accessibility to a basic minimum of quality health care.

Figure 12



Source: World Bank reanalysis of HBS 2000/01

Of course this difference might simply be explained by the urban-rural divide. Mean distance to a hospital in Dar es Salaam is just 2.8kms, compared to 25.7kms in rural areas.

Table 2

% Population within 5kms of Health Centre/Dispensary by Poverty Quintile			
Poverty Quintile	DSM	Other Urban	Rural
Poorest	96%	97%	65%
Second	99%	97%	63%
Third	96%	97%	64%
Fourth	100%	98%	72%
Least Poor	99%	99%	77%
% Population within 10kms of Hospital by Poverty Quintile			
Poverty Quintile	DSM	Other Urban	Rural
Poorest	93%	97%	34%
Second	98%	97%	31%
Third	94%	97%	34%
Fourth	100%	98%	37%
Least Poor	100%	99%	42%

Source: World Bank reanalysis of HBS data 1991/92 and 2000/01

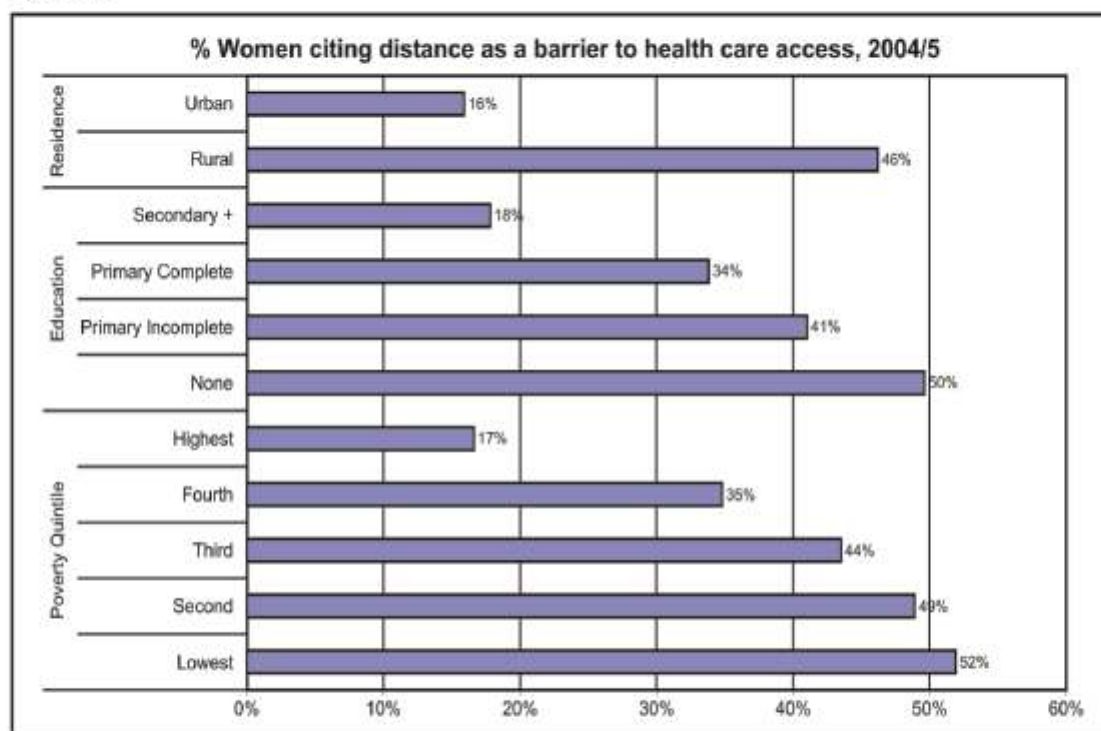
The table above confirms that residence matters more than poverty for physical access to health care. In urban settings, even the poorest quintile enjoys almost universal access to primary health care facilities within 5kms. In rural settings, all quintiles are substantially worse off with respect to physical accessibility. This is compounded by *slightly* worse access for poorer rural households. Thus, the chief determinant is where you live (urban/rural) rather than how poor you are.

So far we have established that there are substantial variations in proximity of health care, and that these are principally driven by residence rather than poverty status. The next question is whether these differences are big enough to constitute a serious barrier to accessing services.

The household budget survey 2000/01 counted those who reported illness, those who consulted any provider, and the reasons for not consulting. For the country as a whole, nearly 70% of sick people sought a health care consultation. Of the 30% who didn't, only 10% of them cited distance as the main constraint. This implies that out of 100 sick people, only 3% (10% of the 30%) did not seek care because of distance.

The TDHS 2004/5 tells a quite a different story¹⁰. Women were asked whether certain factors were "a big problem" when they are sick and want to seek medical advice or treatment. Here 37% of women cited distance to the health facility as a big problem, and the same proportion cited the need to take transport. Even more striking are substantial differences between rich and poor and between urban and rural. Over half of the poorest quintile cited distance to facility and need to take transport as big problems. In contrast, less than 20% of urban women and those from the highest quintile encountered these problems.

Figure 13



Source: TDHS 2004/5

¹⁰ The much higher proportion citing distance as a problem in the TDHS might be explained in several ways: 1) The HBS asked about actual illness and actual health seeking behaviour, whereas the TDHS was a more abstract question. 2) The TDHS asked whether the factors constituted "a big problem", not whether it actually prevented them from accessing care. 3) The TDHS specified when sick AND want to seek treatment. The majority of the sick people from the HBS who didn't seek treatment cited "no need". If these respondents are excluded, 18% of those sick AND saw a need to seek treatment did not do so because of distance

Nonetheless, it does look as though most people do access treatment when ill, and of those who don't, only a minority are prevented from doing so due to distance. True, the proportion affected is somewhat higher in rural areas than in urban, but the numbers are fairly small. On average, for general, all-age illness, we cannot conclude that distance is a major impediment to accessing some level of health care.

Table 3

	DSM	Other Urban	Rural	Main-land
Proportion of individuals reporting illness, last 4 weeks	19%	24%	28%	27%
<i>Of whom sought any consultation</i>	80%	76%	67%	69%
<i>Proportion sick, but did not consult</i>	20%	24%	33%	31%
<i>Of sick non-consulters, those who cited "no need"</i>	58%	50%	43%	44%
<i>Of sick non-consulters, those who cited "too far"</i>	7%	3%	11%	10%
Proportion of all sick who did not consult because of distance	1%	1%	4%	3%
Proportion of sick who felt a need to consult, but did not do so because of distance	16%	6%	19%	18%

Source: HBS 2000/01

Of course, this is not to say that distance is never a problem. We do know, for example, that some regions suffer particularly poor physical access. Thus the average household in Shinyanga, Dodoma and Tanga regions has a mean distance to primary facility of over 5kms. For the country as a whole, 11% of rural households – or roughly 3.5 million people – live more than 10 kms from their nearest primary facility.

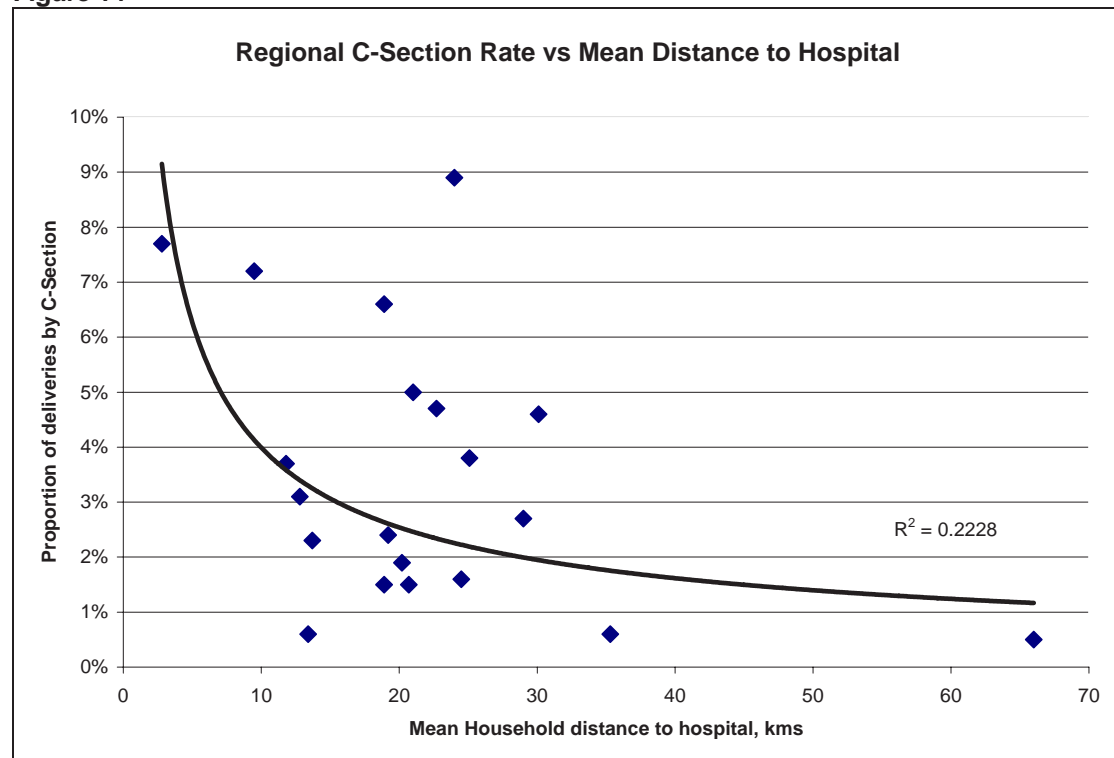
The second qualification is that the HBS and TDHS figures refer to illness in general. For illnesses requiring hospital treatment, the much greater distances will surely be an impediment. Moreover, when a person's mobility is impaired, when roads and transport are poor, or when access to hospital is urgent – as with women in labour – distance will surely present a greater obstacle. Some indication of access to hospital services (by different socio-economic groups) could be obtained from the TDHS data since a number of variables included disaggregation of the data according to the type of health facility visited. This would be an instructive analysis since information on patterns of hospital service use is extremely scarce in Tanzania.

Distances to hospital are very much greater than distance to primary facility. For the mainland as a whole, the average household must travel 21kms to reach a hospital. In rural Dodoma this rises to over 40kms, while residents of rural Rukwa live on average 77kms from a hospital. For the country as a whole, 42% of rural households live more than 20kms from a hospital and 22% (about 8 million people) live more than 40 kms away.

The trend-line in the figure below indicates that the mean distance to a C-Section would need to come down to around 10kms before reasonable C-Section rates can be expected. While there are many outliers¹¹, the trend line shows a weak association between C-Section rates and mean distance to hospital across regions. This clearly points to the need to extend comprehensive emergency obstetric services below the level of the hospital and to make it available at the health centre level.

¹¹ Note that these are regional averages. Favourable outliers might be explained by a significant number of people living in urban parts of the region obtaining c-sections. Unfavourable outliers might be explained by a small proportion who live close enough to hospitals to obtain c-sections. Also note that because c-sections are relatively rare, the confidence intervals on regional points will be quite large.

Figure 14



Source: C-Section Rate from TDHS 2004/5; Mean Distance to Hospital from HBS 2000/1

In summary, we conclude that the population's physical access to primary health care facilities is reasonably good. As a result, it does not show up as a major impediment to health care utilisation. However, physical access to basic care is quite varied across regions, and distance is not synonymous with quality of care. Lastly, there will doubtless be sizeable minorities of people in every region who have much larger than average distances to travel.

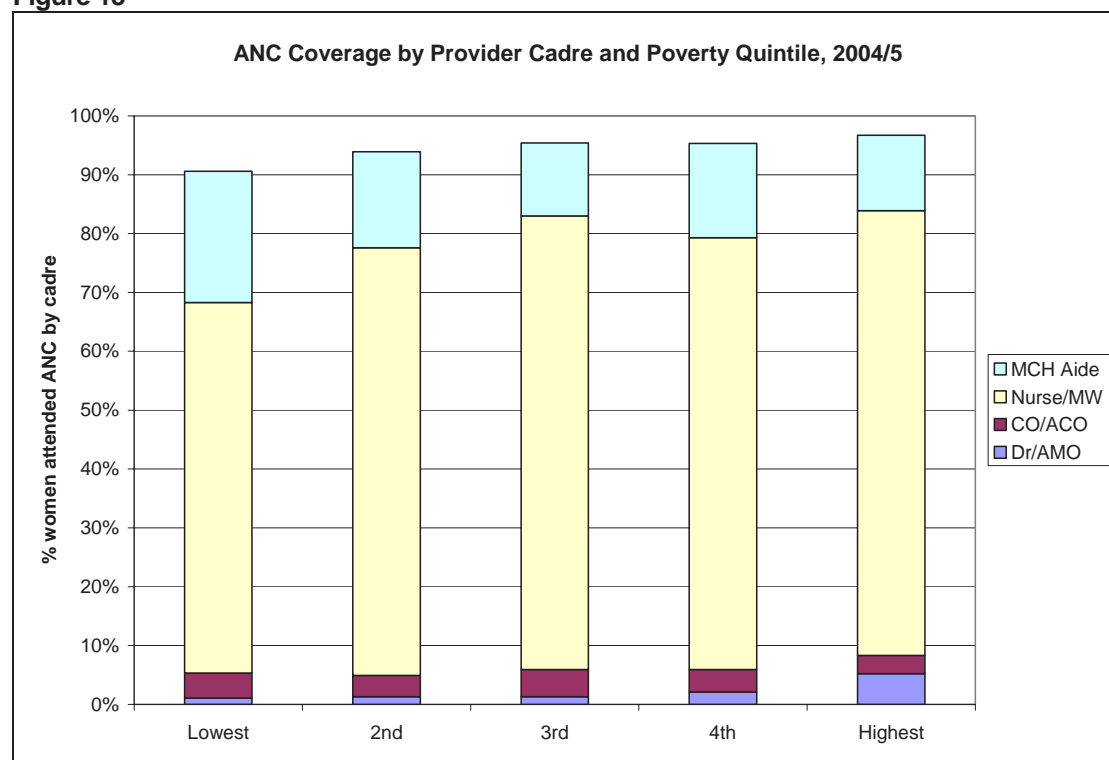
The impact of distance as a constraint to utilisation is likely to be much more significant with respect to services requiring hospital treatment – including emergency obstetric care. Here the mean distances are very much larger – particularly in rural areas - and there does seem to be an association at regional level between mean distance to hospital, and the proportion of deliveries performed by C-Section.

Quality of Care

Quality of care can be expected to have an impact on effective access. The better the quality, the more likely a person is to seek it when ill, to travel further, to be willing to pay and so forth. Is it the case that the poor encounter poorer quality services or poorer treatment outcomes than the non-poor, and if so, why? Health care quality is difficult to measure, so here we rely on proxy indicators including the cadre of staff providing services, and the "content" of services received.

For ANC, the majority provider for rich and poor alike are nurses or midwives. For the minority who receive ANC from a medical doctor, this is much more likely for the top quintile than others. Conversely, for the minority who receive ANC from an MCH Aide, this is more likely for the poorer quintiles. Thus there are rich-poor differences in the type of provider, but these differences are at the margin. There are, though, some important regional exceptions, with a much higher reliance on MCH Aides for antenatal care in Mtwara, Lindi, Rukwa, Tabora and Mara.

Figure 15



Source: TDHS 2004/5.

Similar patterns are seen with respect to assistance at delivery. In the poorest quintile, the proportion of births assisted by a TBA, trained TBA or MCH Aide exceeds that of all skilled attendants (doctor, clinical officer, nurse or midwife). The top quintile receives the vast majority of assistance at delivery from skilled cadres.

A similar analysis could be performed by facility type – to see whether there are systematic differences between rich and poor in their use of hospitals, health centres and dispensaries. Although this data was collected in the DHS, it is not tabulated in the published report.

Turning to the content of care, we find some very curious differences. Even if they have attended ANC, poorer women are substantially less likely to receive key interventions than their richer counterparts. A similar differential is seen between women of different educational status and between urban and rural areas. These differences are evident with respect to basic assessment (blood pressure, urine and blood analysis) as well as for advice on pregnancy complications. This leads to the important conclusion that *even if they access care*, the poor, the less well-educated, and rural women are much less likely to receive key ANC interventions.

Table 4: % of women who attended ANC receiving key interventions by wealth quintile

Wealth Quintile	Advised on complications	BP measured	Urine Sample	Blood Sample	TT (2 or more)	Malaria Prophylaxis
Lowest	42%	55%	28%	40%	60%	50%
2nd	40%	60%	30%	44%	56%	49%
3rd	44%	57%	28%	43%	53%	49%
4th	48%	69%	46%	61%	58%	58%
Highest	64%	93%	82%	88%	70%	60%

Source: Recalculated from TDHS 2004/5 (% receiving intervention over % attended ANC)

This might be explained by disadvantaged households obtaining service from less well staffed or well-stocked health facilities. However, qualitative studies document perceived discrimination (or fear of discrimination) by poorer people, those with lower educational attainment and those who feel they are of low social standing or without “connections”.

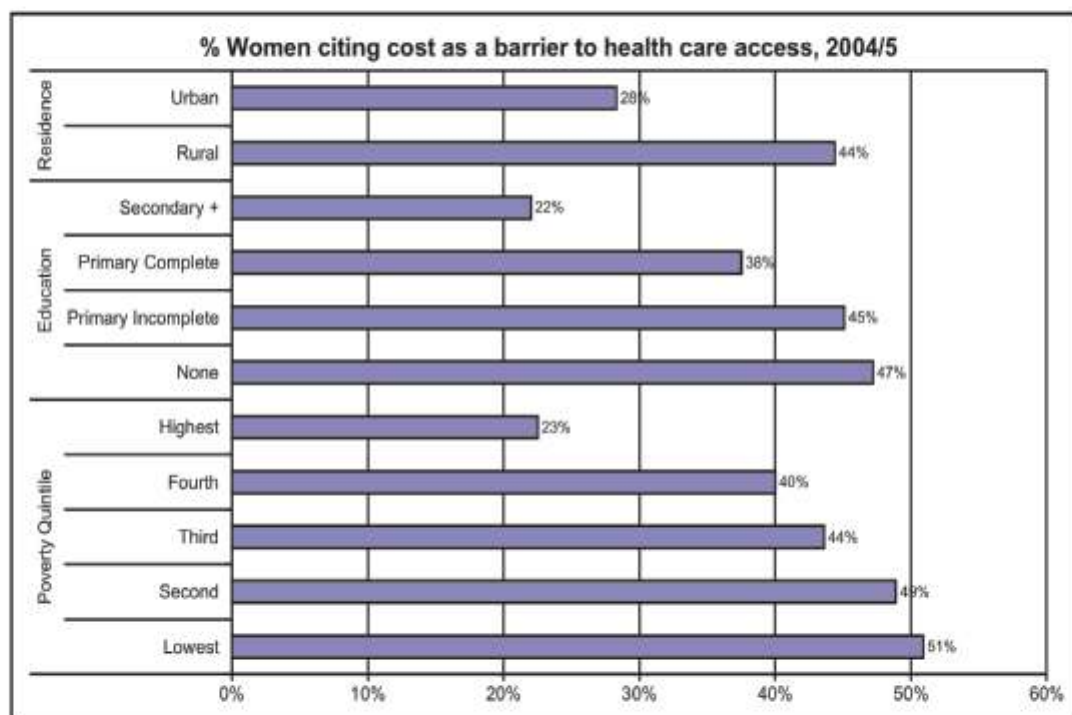
The data presented do not allow us to tease apart the separate effects of poverty, residence or educational status. It seems likely that residence (and hence level of facility and cadre providing the care) accounts for at least some of the differences seen. It may also be the case that the disadvantaged groups make fewer ANC visits and so are less likely to receive the interventions. Whatever the reason, these findings clearly illustrate the existence of *missed opportunities* to narrow the health care gap between rich and poor – by ensuring that key interventions are delivered for all persons who actually access the service.

The final aspect of quality is user satisfaction. The DHS shows that richer, better-educated, and urban women are nearly twice as likely as poorer, less well-educated, rural women to cite “unfriendly provider” as a big problem in accessing care. It is difficult to tell whether this is an objective difference, or whether it reflects higher expectations among the wealthier and better-educated.

Financial Barriers

According to the TDHS, “getting money for treatment” was the single biggest problem encountered by women in seeking health care. On average, this was cited by 40% of respondents. The scale of this problem is clearly very much greater for the poor. For the bottom two quintiles, about 50% cited it – compared to 23% in the top quintile. Even the middle quintiles (second top and third top), getting money for treatment was a big problem for more than 40%.

Figure 16



Source: TDHS 2004/5.

The HBS data tells a similar story. Of those who did not consult a health care provider AND saw a need to do so, about 50% of respondents did not do so because of

expense. Surprisingly, this proportion is even higher in urban areas than in rural areas. The higher purchasing power of urban residents would be expected to reduce the cost barrier. We can only speculate that this finding may reflect the higher costs of health care in urban settings.

These figures are very similar to those found by the Policy and Service Satisfaction Survey – albeit with a much smaller sample size. Cost of treatment was cited as the major health care problem by over 50% of households. Nearly three quarters of households felt that people's ability to pay for health has deteriorated during the previous 5 years. 40% of respondents know a person who has been refused treatment on the basis of cost.

The impact of cost barriers on health care may even be underestimated by these statistics. Numerous reports cite cost as a factor in delaying treatment-seeking as well as inability to purchase prescribed medicines. In both cases, even though the person accessed a service provider, the treatment outcome will be poorer.

If cost of care is a barrier, we would expect the rich-poor differentials to be higher where a purchase is required subsequent to the health care consultation. This certainly seems to be the case for mosquito nets, where ownership is substantially higher among the richer quintiles. The TRCHS also showed that coverage of malaria prophylaxis was much higher among richer women. A roughly similar (and low) proportion of rich and poor had received IPT at their ANC clinic. But richer women were much more likely to purchase it subsequently (presumably when IPT was unavailable or not offered). This finding highlights the importance of ensuring the availability of key supplies in public clinics. If they are not available and need to be purchased, the poor are much less likely to benefit.

It is noteworthy that household expenditures on health care rose significantly between the HBS 1991/2 and 2000/01. In part this might be explained by the liberalisation of private health care. But it is also surely attributable to the introduction (and increase) of user fees during the 1990s. Even households below the basic needs poverty line are spending significant sums on health care, implying that this will displace expenditure on food and other essential items – a fact that has been confirmed by numerous qualitative studies.

The final point worth mentioning is that a financial barrier is affected by willingness as well as ability to pay. Willingness to pay depends both on the perceived quality of service (especially availability of drugs and skilled personnel) as well as on the value attached to health by the individual. Socio-economic differences in the perception (and hence value) of health and health care are examined in more detail in the next sub-section.

Social Barriers

At first sight these seem to play a lesser role than either physical distance or cost of treatment. Relevant data from the TDHS 2004/5 "big problems in seeking health care" are summarised below.

Table 5: Problems in Accessing Health Care (Women)

Wealth Quintile	Knowing where to go	Getting permission to go	Not wanting to go alone	Concern there may not be female provider	Unfriendly provider
Lowest	9%	9%	33%	7%	10%
2nd	8%	7%	27%	7%	13%
3rd	5%	5%	25%	6%	11%
4th	5%	4%	25%	7%	15%
Highest	6%	4%	16%	11%	20%

“Knowing where to go”, “getting permission to go” and “concern that there may not be a female provider” each scored less than 10% on average. Nearly a quarter of respondents said that “not wanting to go alone” was a big problem, and this obstacle was much more prevalent for the poorest quintile (33%) than for the richest one (16%). Unfriendly provider, on the other hand, seems to be more of a problem for richer women, possibly reflecting higher expectations.

The data discussed above tell only a part of the story. A more insidious influence of social barriers to care relates to people’s perception of ill-health, their knowledge of danger signs, and their propensity to seek treatment.

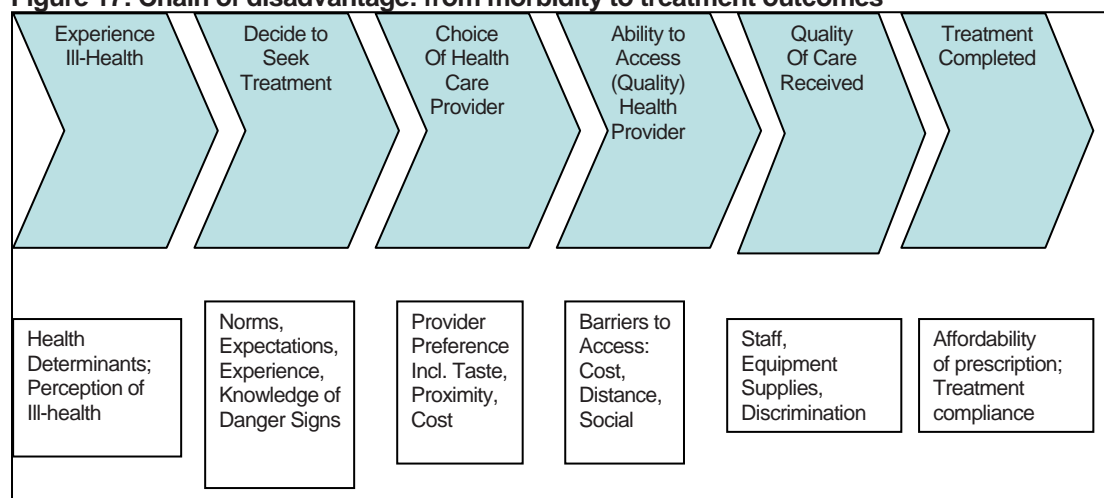
The first illustration of this is the proportion of people reporting illness or injury – where there seems to be a slight tendency for richer households to report more illness. This is puzzling in light of the expectation that poorer people will actually suffer worse health. This finding is not unique to Tanzania. In many different cultural settings, wealthier people and those with higher educational attainment seem to report more ill-health. This is attributed to different levels of *experience* and *expectations*. In short, it would seem that poorer people tend to have lower expectations of what constitutes “ill health” and are therefore less likely to report themselves as being unwell. It may also be the case that people report less illness if they view their condition with fatalism and feel that any change for the better is out of reach.

The second illustration comes from a study in southern Tanzania¹² where poorer women were found to have significantly lower knowledge of danger signs of childhood illness. Again, this will confer disadvantage because a mother will be less likely to seek care promptly for her child.

A third illustration, from the same study, is that poorer women were half as likely to receive antibiotics for children with presumed pneumonia, and half as likely to be prescribed anti-malarials for fever (as compared to the richest group). Quite why this apparent discrimination should be exercised is difficult to say. The effect, though, is clear enough. Even the poor who access services seem to be obtaining poorer treatment and are therefore experiencing poorer treatment outcomes.

The flow chart below illustrates that disadvantage may arise at several stages along the chain of events from perception of illness to treatment outcomes. While the disadvantage at any one stage may be quite small, the compounding effect of disadvantage at every stage will be very much magnified.

Figure 17: Chain of disadvantage: from morbidity to treatment outcomes



Smithson, 2006.

¹² Kilombero, Morogoro Rural, Rufiji and Ulanga Districts. Shellenberg J A et al, 2003.

Conclusions on Barriers to Access

As regards distance, the national averages tell us that most households live within 5kms of a primary health care facility, and that the majority of households do seek consultation when ill. A relatively small proportion of those who were ill did not seek treatment because of distance. However, these national averages belie a number of more subtle points.

First, there are large variations in physical access across regions, and between urban and rural areas. Second, poorer households tend to have larger distances to travel than less poor ones. Third, a sizeable minority of households in rural areas have very much greater distances to travel. Fourth, distances to hospital are very much greater than for primary facilities. For conditions requiring hospital treatment (like C-Section), distance is bound to be a much more significant problem than for minor illnesses. Finally, whether or not it actually prevented them from seeking treatment, nearly 40% of women cited distance as a big problem in accessing health care.

On top of the distance barrier, is the differing quality and content of service received. Though the evidence here is thin, it does point towards systematically better quality of care for better off households – possibly largely because of the type of facility that they access and the skills of the provider working in that facility.

The greatest barrier reported by respondents is cost. 50% of women cited this as a big problem, and the proportion is much higher for poorer women than richer ones. The relatively high levels of health care utilisation in Tanzania suggest that cost is not an overwhelming barrier for most people in accessing health care. However, it is enough of a barrier to deter some people from seeking treatment, to delay treatment-seeking, to preclude the purchase of prescriptions or preventive measures such as ITNs, or to require sale of assets or displacement of basic needs expenditures. Moreover, the quantitative and qualitative data support the assertion that the significance of the cost barrier is greater for poorer households than for richer ones.

These obstacles – cost, quality and distance – are exacerbated by social barriers to access. These also disproportionately affect poorer households. Because they relate to norms, values and knowledge, social barriers are particularly difficult to tackle through supply-side measures. In the long run, prompter care-seeking will probably depend upon raising education levels across the board. Nonetheless, in the short term some improvement might be gained by increased understanding of danger signs and encouraging prompt care seeking - and by eliminating discrimination against poorer clients by health providers.

Geographic Distribution of Health Care Supply

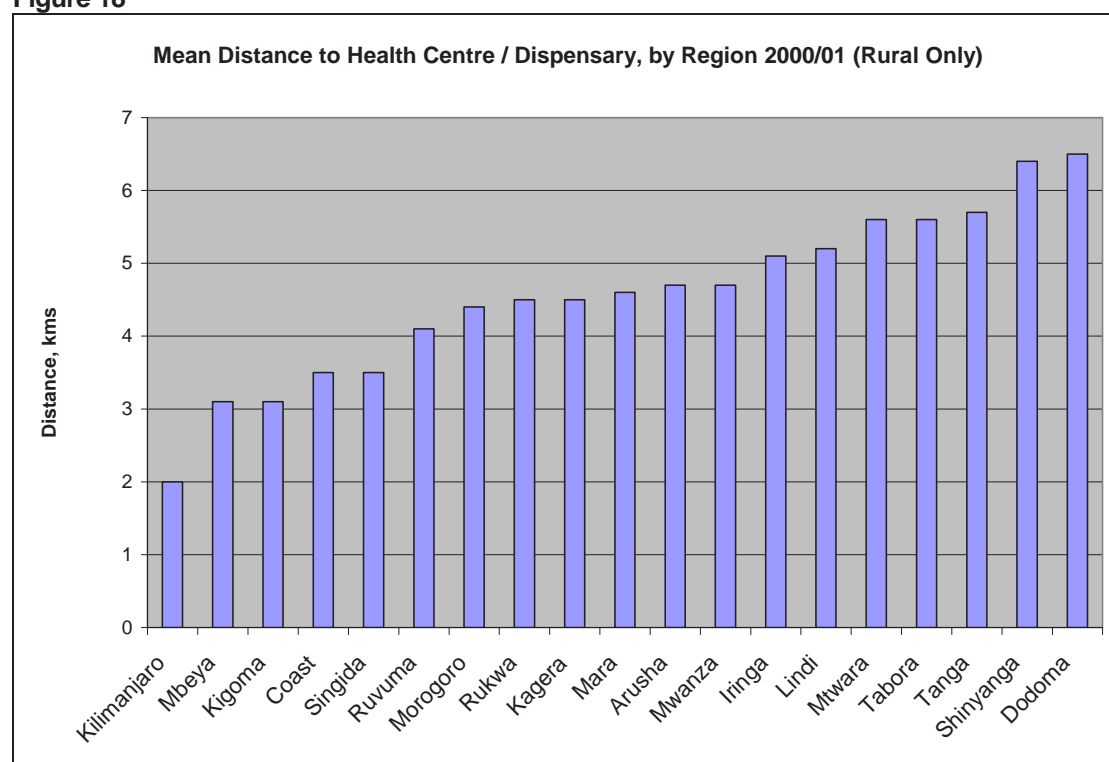
Throughout the report so far, we have noted that there are substantial variations in health outcomes, in health care utilisation and in physical access across different parts of the country. In this section we briefly review the quantitative data on the geographic distribution of health care, with respect to financing, human resources and infrastructure. The data show that very large disparities in health care supply exist across Tanzania, in spite of the political commitment to universal and equitable distribution of basic services.

Health Infrastructure

Since the 1970s Tanzania has aimed to provide one dispensary per 10,000 people, one health centre per 50,000, and one hospital per district. For the country as a whole, the target for dispensaries has been exceeded, while the number of health centres still falls short of the official national staffing standards (1999). However, national ratios belie the regional and district variation that exists. Besides, simple population ratios obscure the fact that practical accessibility will also be lower in areas with lower population density. For this reason, the distance to primary services is a better measure of accessibility.

In urban areas, 98% of households live within 6kms of a primary facility, with a mean distance of just 1.1kms. In rural areas, however, mean distance varies from 2kms in rural Kilimanjaro region to 6.4kms in Shinyanga and 6.5kms in Dodoma.

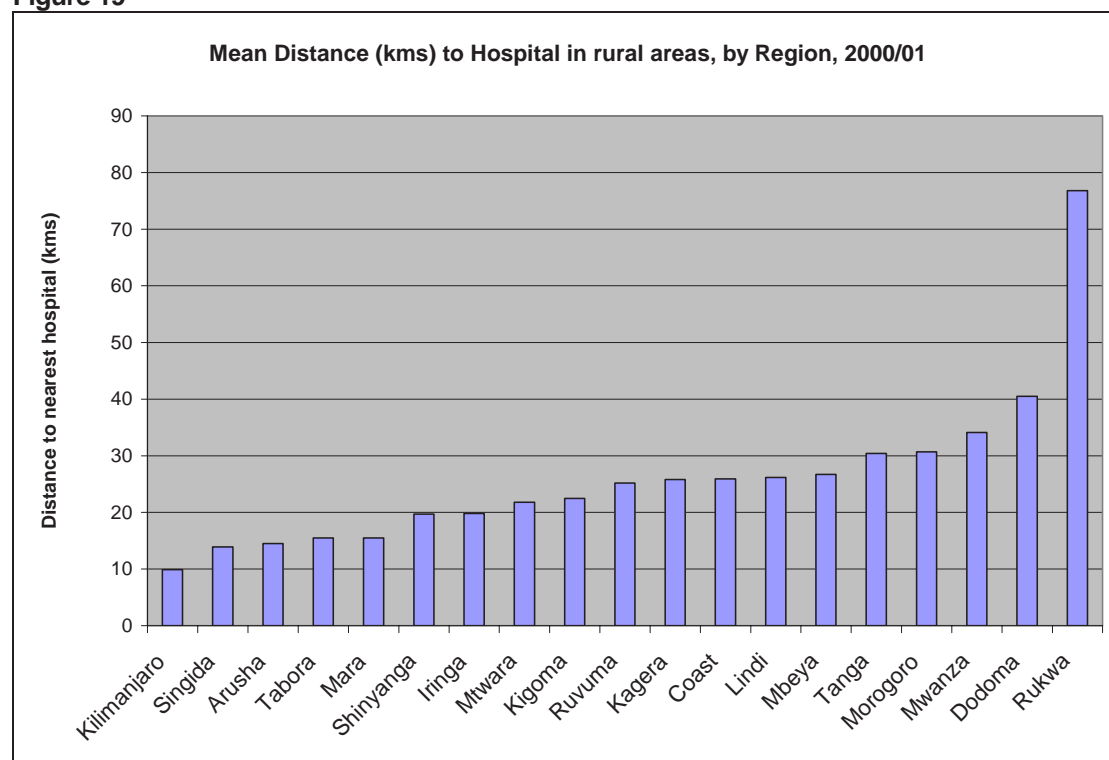
Figure 18



Source: HBS 2000/01

Variations in distance to hospital are even starker – ranging from under 10kms in rural Kilimanjaro region, to 77kms in rural Rukwa region (Figure 19).

Figure 19



Source: HBS 2000/01

These data clearly point to the need for a targeted approach to the development of new health infrastructure, focusing first on those areas that are most under-served.

Health Finance

Simple presence of a facility is not enough if there are insufficient financial and human resources to make it functional. Unlike the distribution of physical infrastructure, we find that the distribution of public health budgets displays relatively small variations. Figure 20 shows regions ranked by their district block grant per capita (personal emoluments and "other charges").

Since the introduction of the new formula for the health block grant, the gap between maximum and minimum has narrowed sharply. This has particularly favoured the districts that had traditionally lagged behind. These differentials can be expected to narrow further over time as the districts with higher funding are held constant and the others catch up.

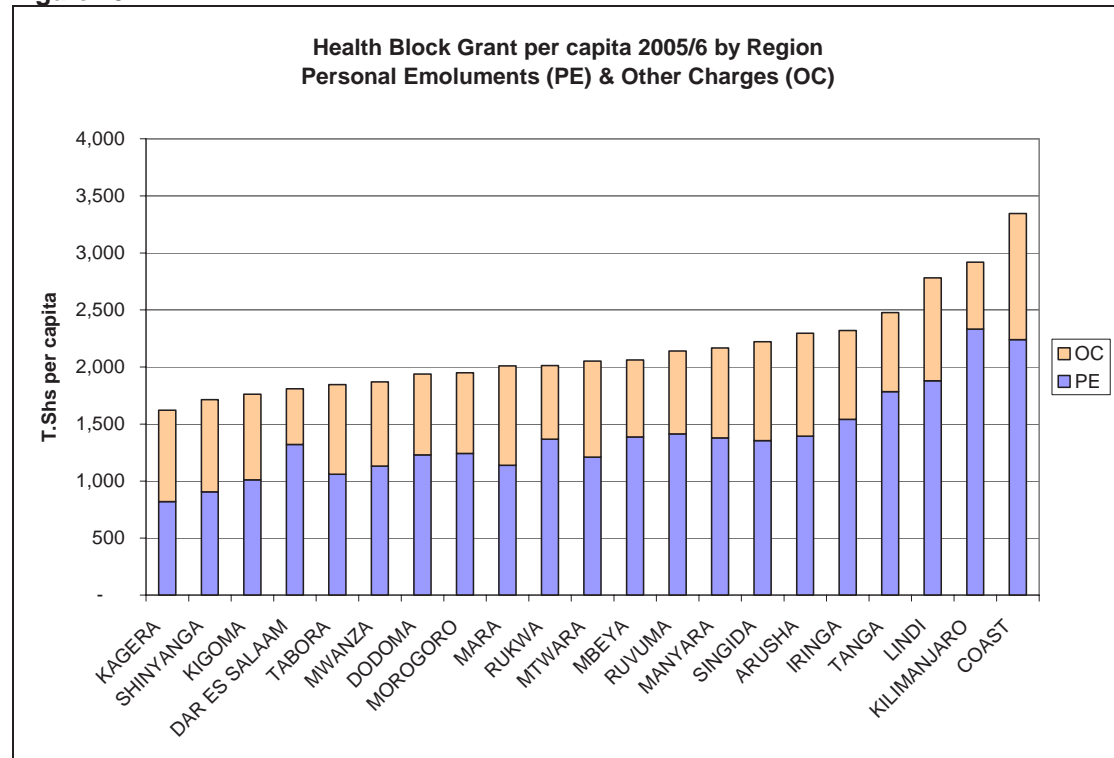
Table 6: Variation in district block grant per capita (PE& OC combined): before and after new formula (Tanzania Shillings)

	2003/4	2005/6
Mean block grant per capita	1,689	2,409
Maximum	7,458	10,201
Minimum	582	1,159
Ratio Max:Min	12.8	8.8
Standard Deviation	970	1,202
Co-efficient of variation*	0.57	0.50

* co-efficient of variation = standard deviation / mean

Source: Calculated from MOH figures

Figure 20

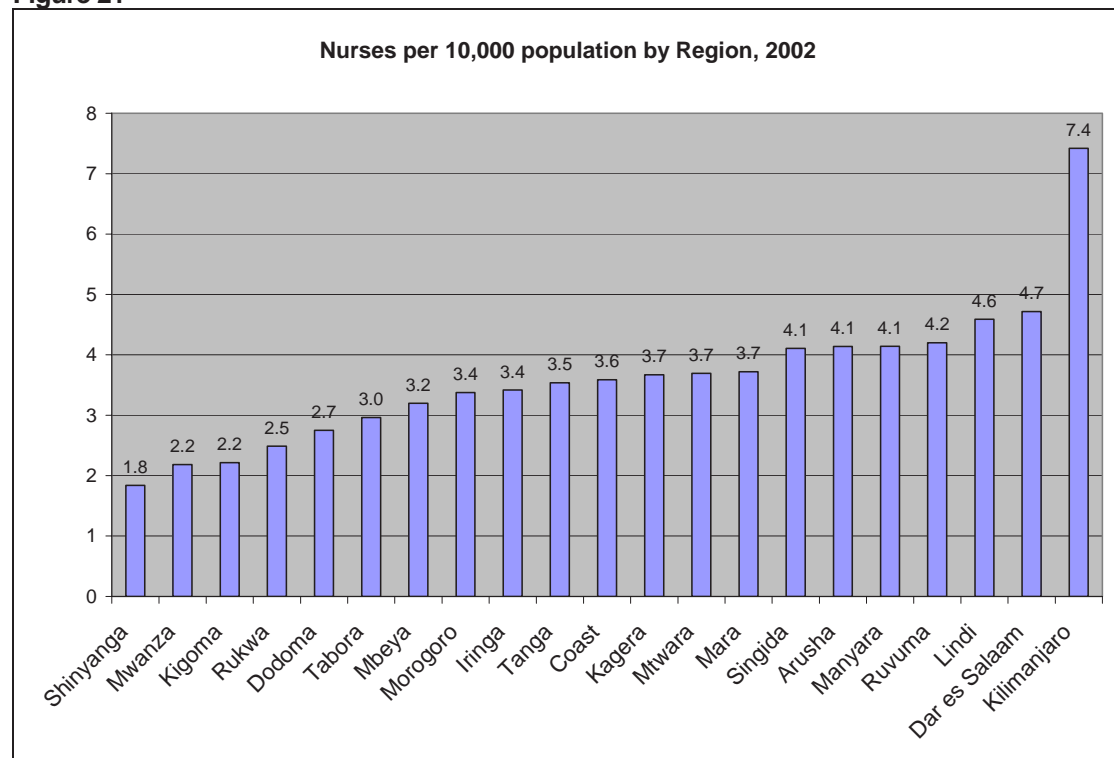


Source: MOH

Health Personnel

Perhaps the most fundamental element required for quality services is health human resources. Here we find striking differences between regions, even after excluding the distorting effects of national specialist hospitals.

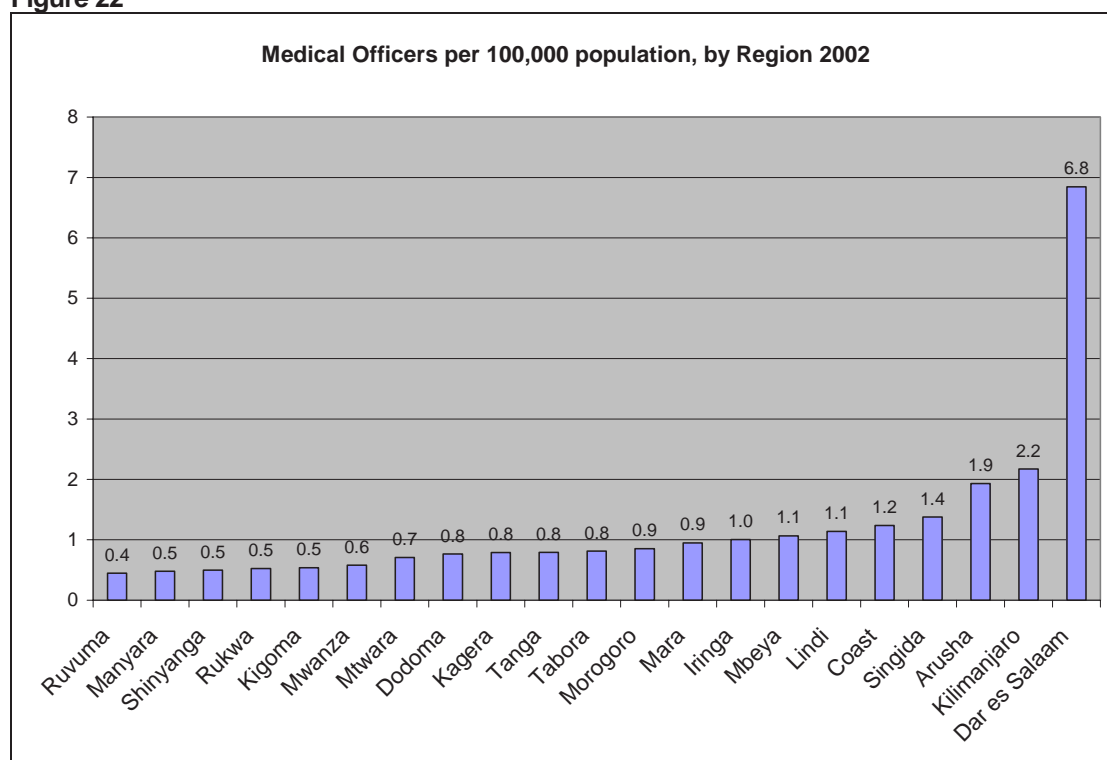
Figure 21



Source: MOH Health Personnel Census 2002 (draft)

In the case of medical officers (again, excluding national referral hospitals), it is Dar es Salaam that stands out, with nearly 7 per 100,000 population. Meanwhile, thirteen mainland regions have less than 1 medical doctor per 100,000 people.

Figure 22



Source: MOH Personnel Census 2002 (draft)

Yet even these regional variations obscure the true extent of the mal-distribution of personnel. District variations are larger still. Within districts it is typically the case that the vast majority of skilled staff is found in the district hospital, with the peripheral facilities depending upon thinly spread, and lower qualified, personnel.

The origins and solutions to the health sector's human resource problems have been much debated in recent years. There is little doubt that there is an overall shortage of staff, that it is particularly acute for higher cadres, and that this shortage is expected to get worse unless there is a radical change in manpower production and hiring. To some extent, the problem was caused by the payroll restrictions and hiring freeze that were associated with structural adjustment and the first phase of civil service reform.

To some extent there has always been a problem with human resource distribution. Staff understandably did not wish to be posted to districts with poor communications, poor schooling and inadequate infrastructure (water, electricity). Many in the Ministry of Health feel that the problem has worsened since the decentralisation of health personnel and the introduction of the human resource "market" whereby staff apply for advertised posts. In the absence of a tangible incentive package, it is entirely predictable that the more popular districts would have little trouble filling their posts, while the less popular ones would have chronic problems in attracting candidates.

Apart from the bonding and central posting of new graduates, it seems unlikely that Tanzania will revert to a centralised posting system. In its absence, it is abundantly clear that the less popular districts will need to offer financial and non-financial incentives to make them more attractive to applicants. Moreover, in the interests of policy harmonisation, it is also clear that this needs to be tackled in a systematic way for all public servants (particularly health and education staff who live in remote settings) rather than on a sector-by-sector basis.

Negotiating such an incentive package will doubtless be a protracted and difficult process. But this should not obscure the fact that it may be the single most “pro-poor” change that can be made on the supply side to assure access to quality health care for the most disadvantaged areas.

Conclusion on Geographic Distribution of Health Care Supply

Distance to primary health care services is a better measure of accessibility than the number, or distribution, of health facilities. While there are variations across regions in distance to primary facilities, the variations to hospitals are more evident. New health infrastructure should prioritize those areas that are most under-served. The more sparsely-populated regions present a particular challenge.

The distribution of public health budgets displays rather smaller variation across regions, and the new formula for the health block grant has narrowed the gaps considerably.

While regional variations in the distribution of personnel certainly exist, district variations are larger still. The acute shortage of staff, particularly for higher cadres, requires a radical change in hiring and deployment practices. This includes potentially adopting strategies to bond and re-centralize at least some hiring, and to offer financial and non-financial incentives to make remote districts attractive. These changes need to happen system-wide, however, among all public servants.

Overall Conclusions

Inequalities in health outcomes and health care are important. From a “rights” perspective, health policies should seek to narrow socio-economic differentials in health and aspire to ensure equal health care for equal need. From an economic perspective, health care resources are more efficiently used if they are directed towards the groups that need them most, rather than consumed by a minority. From the perspective of national health progress, the most rapid advances in the national averages will be made by tackling the health of those groups that are furthest behind.

Poorer people in Tanzania are less healthy. This is clearly illustrated by differentials in infant and under-five mortality rates – which in turn account for the majority of the “burden of disease”. It is further illustrated by poor : non-poor differentials in malnutrition – which in turn is known to relate closely to morbidity and mortality. Though the socio-economic differentials in health status exist, they are less extreme than in more unequal societies.

Just why such differences in health outcomes persist in Tanzania is not yet known. In the absence of a multiple regression exercise we cannot tell if income poverty is the key driver of health inequalities, or if they are more closely associated with educational attainment, residence, or a combination of these. Such exercises in other country settings have found that the income factor tends to fall away once educational status is controlled for. If this turns out to be the case in Tanzania, then a key long-run solution to reducing socio-economic disparities in health outcomes lies in assuring universal education, to as high a level as possible, and particularly for girls.

Spatial variations in health outcomes (infant and under-five mortality) are even larger than socio-economic ones. What is clear is that the best districts tend to be clustered together, and the worst districts also tend to cluster together. This is all the more puzzling because they do not show a clear association with income poverty at the regional level. This is not to say that wealth is unimportant for health. Rather it suggests that the factors at work operate on quite a large scale. Possible candidate explanations include diet (in turn related to soil types, rainfall and farming systems), infant feeding and child rearing practices (in turn related to ethnic group), malaria transmission intensity, and perhaps other factors such as water and sanitation. A better understanding of the underlying causes of these regional variations is a priority topic of research, as it would allow a targeted policy response to narrow the differences.

While long-run policy options should seek to address health determinants, excessive vulnerability to illness can and should be addressed in the short run. This can happen with a deliberate targeting of preventive and curative services to those who most need them. This certainly does not seem to be the case at present.

In spite of poorer health status, disadvantaged groups (the poor, the less well-educated and rural residents) tend to consume less health care than others. This applies both to preventive and curative services. The size of the gap varies across different aspects of health care. For nearly universal services (immunisation) the gaps are relatively small. For services with lower coverage – including most reproductive health services – the gaps are much larger. The mismatch between health needs and health care consumption shows that the “Inverse Care Law” is alive and well in Tanzania.

Caution is required in interpreting this phenomenon. Certainly we cannot jump to the conclusion that the poor are systematically excluded from health care. Moreover, the differences should be understood in the context that Tanzania enjoys relatively high (average) utilisation of health care – implying that most of the people, most of the time, are not excluded from accessing primary health care facilities.

An examination of various barriers to access suggests that a combination of factors is at work. Cost of accessing care (including opportunity costs, transport, etc.) is certainly a factor and is cited as the most prevalent problem by the population. Unsurprisingly, it is more likely to be cited by poorer people who have lower purchasing power. There is no doubt that a lower price of services would be of particular benefit to the poor. But this would likely be achieved at the expense of the revenues raised from people able to pay. If an exemption and waiver system were working, it would be possible to reconcile both of these goals. Yet international experience shows that differential pricing of health care (targeted subsidies or free care for only certain groups) is extremely difficult to achieve in practice.

Where revenues are low in relation to the cost of collection (primary care), the pragmatic choice would be to go for zero pricing rather than token fees or differential pricing. At the hospital level, where user-fee revenues are likely to play a much bigger role, the policy choice is more complex. Apart from user fees, financial barriers could also be reduced by assuring availability of prescription drugs and other health-related consumables, and tackling the problem of "unofficial fees" (bribes) in the health sector. Unless these are routinely available, the need to purchase them outside the facility will surely further disadvantage the poor.

Physical access also seems to play a role. Though it does not show up as a major impediment in the national averages, sizeable parts of the population have to travel much further than average to seek basic health care. The problem is even more severe with hospital services. Here the critical factor seems to be where you live, rather than how poor you are – although even within rural areas the poor have worse geographic access to services.

A third aspect is quality of care. Even if clients reach health services, it is clear that disadvantaged people obtain poorer services. This is no doubt partly attributable to the type of facility they attend, and the cadre of staff who attend to them. Yet even on a small area basis there is evidence that poorer people are less likely to receive key health interventions. Whether this is due to discrimination on the part of the provider, or to lack of informed demand by the client, or both, is difficult to say.

The final, and possibly the most important aspect, is social barriers to access. One surprising finding is the fact that the poor – who, by objective measures, suffer more ill health – actually report less illness. This phenomenon is commonly found in other cultural settings and is generally seen as a reflection of differing norms, experience and expectations in relation to health. Different health "standards" are compounded by poorer knowledge of danger signs, lower likelihood and delays in care-seeking (possibly because of other barriers cited above), a greater likelihood of choosing informal providers (again relating to health beliefs, expectations and norms), and a lower likelihood of obtaining quality care. It is probably these factors that account for the differentials seen between rich and poor for services that are widely available, at short distance and officially free of charge. The policy implications here point towards the importance of influencing the demand side. In the long-run, this probably comes back to education. In the short run, knowledge of danger signs and encouraging prompt care seeking should play a role in narrowing the gaps.

This study has also documented substantial variations in the supply of health care – both between urban and rural areas, and between different parts of the country. At the simplest level, this points to the need for tightly targeted infrastructure development in favour of the areas with poorest geographic access. A second implication is the need to re-think the configuration of services to ensure that rural people enjoy better access to services normally only provided at hospitals. This is particularly true for emergency obstetric care – in the absence of which Tanzania is highly unlikely to make progress against its maternal mortality target.

Better distribution of infrastructure needs to be matched by the provision of quality basic health care in those facilities, including the equipment, financial resources,

supplies and human resources to make it functional. Of these “input factors”, the one that stands out most is human resources, where mal-distribution is seen across regions, within regions, and within districts. Apart from addressing the overall shortage of skilled health personnel, the introduction of an incentive package to redress the imbalances would possibly be the greatest pro-poor policy measure available on the supply-side.

References

Amaro, RA An assessment of the causes of maternal mortality for Tanzanian women: a case study of the Hai District. MSc. 1998, Queen Margaret College, Edinburgh.

Basu A.M. (2002) Why does education lead to lower fertility? A critical review of some of the possibilities. Working Paper Series Vol. 12, No.5, Cornell University & Harvard Centre for Population and Development Studies, June 2002.

Anya SE. Seasonal variation in the risk and causes of maternal death in the Gambia: malaria appears to be an important factor. *Am. J. Trop. Med. Hyg.* 70(5), 2004:510-513.

Castro-Leal F, J Dayton, L Demery & K Mehra. Public Spending on health care in Africa: do the poor benefit? *Bulleting of the World Health Organization*, 2000 78(1), p66-74

Chandramohan, D, B Greenwood, J Cox et al. Relationship between malaria endemicity and acute febrile illness mortality in children. *Bulletin of the World Health Organization*, 2001. 79(4): p.375-376

De Souza A C T, et al. Variations in infant mortality rates among municipalities in the state of Ceara, Northeast Brazil: an ecological analysis. *International Journal of Epidemiology* 1999; 28: 267-275

Equinet (2005). Annotated bibliography on equity in health. Downloaded 2-8-2005 from www.equinetafrica.org/bibl/

Evans T, M Whitehead, F Diderichsen, A Bhuiya, M Wirth. *Challenging inequalities in health: from ethics to action*. Rockefeller Foundation. OUP, 2001.

Ghattas H, T Fulford, A Prentice. Effect of moderate anaemia on later mortality in rural African children. *Lancet* 2003; 361:2048-50.

Gwatkin D.R. Health inequalities and the health of the poor: what do we know? What can we do? *Bulletin of the World Health Organization*, 2000; 78(1):3-18.

Gwatkin D.R, S Rutstein, K Johnson, E A Suliman, A Wagstaff & A Amouzou. Socio-economic differences in health, nutrition and population, World Bank (2000). Data accessed from www.worldbank.org/

Gwatkin D.R, S Rutstein, K Johnson, E A Suliman, A Wagstaff & A Amouzou. Socio-economic differences in health, nutrition and population, World Bank (2003). Data accessed from www.worldbank.org/

Hart, J.T. The Inverse Care Law. *Lancet* 1971; i:405-12.

Kitange H, ABM Swai, G Masuki et al. Perinatal mortality in rural Tanzania. *World Health Forum*, 1994. 15:p.82-84

Kopoka P A. Provision of health services in Tanzania in the twenty first century: lessons from the past. Electronic Publication from the University of Dar es Salaam, Tanzania. March 2000.

Low, A, T Ithindi & A Low. Fairly fair? Approaches to health equity in Namibia. ID21 abstract, downloaded 18-8-2005.

Measure-DHS (2003). A Spatial Analysis of Childhood Mortality in West Africa. Balk D et al, DHS Geographic Studies #1, 2003.

Medical Research Council, South Africa. Mapping Malaria Risk in Africa. Malaria Distribution Model: Craig, M. H. et al. 1999.

Mkenda A. (2005) Poverty in Tanzania: Regional Distribution and a Comparison between 1991 and 2000. Paper presented during the 4th PEP Research Network General Meeting, June 2005, Colombo, Sri Lanka.

Moser K, DA Leon, D Gwatkin. How does progress towards the child mortality Millennium Development Goal affect inequalities between the poorest and least poor? Paper presented at the Global Forum for Health Research, Mexico City, November 2004.

National Bureau of Statistics and Macro International (1992). Tanzania Demographic and Health Survey 1991/92.

National Bureau of Statistics and Macro International (1996). Tanzania Demographic and Health Survey 1996.

National Bureau of Statistics and Macro International (2000). Tanzania Reproductive and Child Health Survey 1999.

National Bureau of Statistics (2002). National Population and Housing Census 2002. (Note: infant and under-five mortality rates by district and region circulated electronically and not yet published).

National Bureau of Statistics. Tanzania HIV/AIDS Indicator Survey 2003-4. NBS/TACAIDS/Macro International, March 2005.

National Bureau of Statistics. Household Budget Survey 2000/01. Dar es Salaam, July 2002.

National Bureau of Statistics and Macro International (2005). Tanzania Demographic and Health Survey 2004/5.

National Sentinel Surveillance System & Adult Morbidity and Mortality Project (2001). Progress in safe motherhood in Tanzania during the 1990s. Findings based on NSS/AMMP monitoring. Working Paper No. 1, Ministry of Health, July 2001.

National Sentinel Surveillance System & Adult Morbidity and Mortality Project (2002) Community level trends and inequalities in acute febrile illness mortality in Tanzania 1996-2001: a case for "socio-geographic" targeting of interventions? Working Paper No. 6, Ministry of Health, 2002.

Ndulu B.J. (1982) Unequal regional distribution of economic opportunities in Tanzania and affirmative policy efforts towards equalisation." Economic Research Bureau Paper No. 82.8, University of Dar es Salaam.

Pelletier DL, EA Frongillo, DG Schroeder, J-P Habicht. The effects of malnutrition on child mortality in developing countries. Bulletin of the World Health Organization, 73, 1995.

Research on Poverty Alleviation (REPOA) (2003) Policy and Service Satisfaction Survey.

Setel P, D Whiting, Y Hemed et al., (2000). Educational status is related to mortality at the community level in three areas of Tanzania, 1992-1998. Journal of Epidemiology and Community Health, 2000. 54:p.936-937.

Schellenberg D, C Menendez, E Kahigwa, J Aponte, J Vidal, M Tanner, H Mshinda, P Alonso. Intermittent treatment for malaria and anaemia control at time of routine vaccinations in Tanzanian infants: a randomised, placebo-controlled trial. *Lancet* 2001. 357:9267-

Steketee RW, JJ Wirima, AW Hightower, L Slutsker, DL Heymann, JG Breman. The effect of malaria and malaria prevention in pregnancy on offspring birthweight, prematurity, and intrauterine growth retardation in rural Malawi. *Am. J. Trop. Med. Hyg.* 1996; 55 (1 Suppl.):33-41

Tanner M, E Burnier, C Mavombana, B Betschart, D de Savingny, HP Marti, R Suter, Aellen M, E Ludin, AA Degremont. Longitudinal study on the health status of children in a rural Tanzanian community: parasitoses and nutrition following control measures against intestinal parasites. *Acta Trop.* 1987 June; 44(2):137-74

United Republic of Tanzania. Tanzania Human Resource Development Survey 1993-4, (1996).

URT (2005). National Strategy for Growth and Reduction of Poverty. Main Report and Annex.

World Bank (2003). Tanzania. A country status report on health and poverty. World Bank & Ministry of Health, January 2003.

