Reaching the MDGs with equity

Identifying Zambia's most excluded people

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Introduction

We share a commitment to reaching the MDGs. Since 2000, our thinking and our actions have been driven by the achievement of these shared goals, and our results measured in terms of our progress. We are now in the last five years – the countdown – and our efforts are focused on the realisation of our collective commitment to our shared goals.

But we have to be sure that our efforts to reach the MDGs include and indeed prioritise the poorest, the most vulnerable and those who are most often excluded from our development successes. If our pursuit of 'quick wins' means picking the low-hanging fruit or taking the easiest route to 'ticking the box', we need be wary of strategies that exclude the most vulnerable.

The poorest and most vulnerable should be central to the achievement of the MDGs. Indeed, evidence shows that throughout the world, countries that have made deliberate efforts to reach the poorest, and to step up efforts to deliver services to the 'hard to reach' and underserved, have made the greatest steps towards equitable economic and human development. We need to identify these populations, and to address the factors that have repeatedly excluded them from the benefits of progress. To this end, we need to recognise that this might require additional efforts to overcome the geographical, social, gender and even individual barriers to participation.

This paper presents an analysis of deprivation and exclusion in Zambia. By analysing available national data on the distribution of vulnerability, poverty, deprivation and rights failures, an index of vulnerability is constructed. Recommendations are made on priority areas for additional investment.

Poverty, vulnerability & exclusion

The first MDG expresses the fundamental importance of reducing poverty. The importance of this goal cannot be understated, as the effects of poverty are re-echoed through the subsequent goals, underpinning much of the disadvantage with respect to health, education, environmental degradation and gender inequality.

This might suggest that a simple poverty focus would be a good approach for ensuring that our programmes are equitable. We take our programmes to the poor, and hence promote address inequity and progress towards the achievement of MDGs..... Or is the reality perhaps a bit more complicated?

In a country where so many people are poor, we need to examine carefully the differences between poor people. Many poor people have the capacity to exit poverty, and given the opportunity – the right policies and an appropriate enabling environment - they will do so. With job creation and/or better access to economic opportunity, incomes will rise, whilst improvements in basic services (better standards of health care or education, for example) outcomes will rapidly improve. People in this situation are often in urban areas or more economically diverse rural areas. Even those below the poverty line may achieve some degree of success in piecing together a livelihood, access to services, and assistance in times of trouble.

However, there are others who would be unlikely to enjoy the benefits of such change, and are much less able to construct any sort of progress or security. Rather, they live in constant poverty, with little or no chance of protecting themselves against shock or working towards a change in their circumstances. These groups fall into one of two categories.

The first group that are vulnerable to constant poverty and insecurity are the incapacitated, the elderly, the disabled or chronically sick. They often lack the capacity to engage even when opportunity arises. In the past, these groups would usually have been well cared for relatives. In contrast, however, in the context of the HIV pandemic and other threats to the health and survival of the poor, this has changed. There is evidence that such groups are now more likely to find themselves with significant care giving responsibilities, not least for orphaned children, that they are very poorly equipped to fulfil. These shortcomings have profound effects on child development in particular, as the effects of deficits in nutrition, education and health are carried into adult life. These groups may be found in any community, and are the focus of the expanding social cash transfer scheme.

The second group are people in profoundly underserved and very impoverished communities. These groups have been exposed to long term, chronic and intergenerational poverty on a wide scale, with substantial issues in physical access to markets and services, absence of the economic and social heterogeneity that engenders change, and widespread diminution of human capital development. For children, a poor diet and scant education is virtually certain, and premature entry into work and motherhood the norm. Opportunity such as it arises maybe based on exploitative, dangerous or migrant work. The interests and importance of these groups are usually completely overlooked, as they are usually far away, lacking both voice and influence.

This paper addresses this second group. If we can understand this group better and direct our focus towards them, we can realise substantial human capital that is now largely wasted, and make it available to contribute to national development and growth. Success in these efforts will address the most serious manifestation of inequity in Zambia, and accelerate progress towards the MDGS.

Amongst the poor there are very different outcomes

## Graph 1: Poverty distributions across quintile
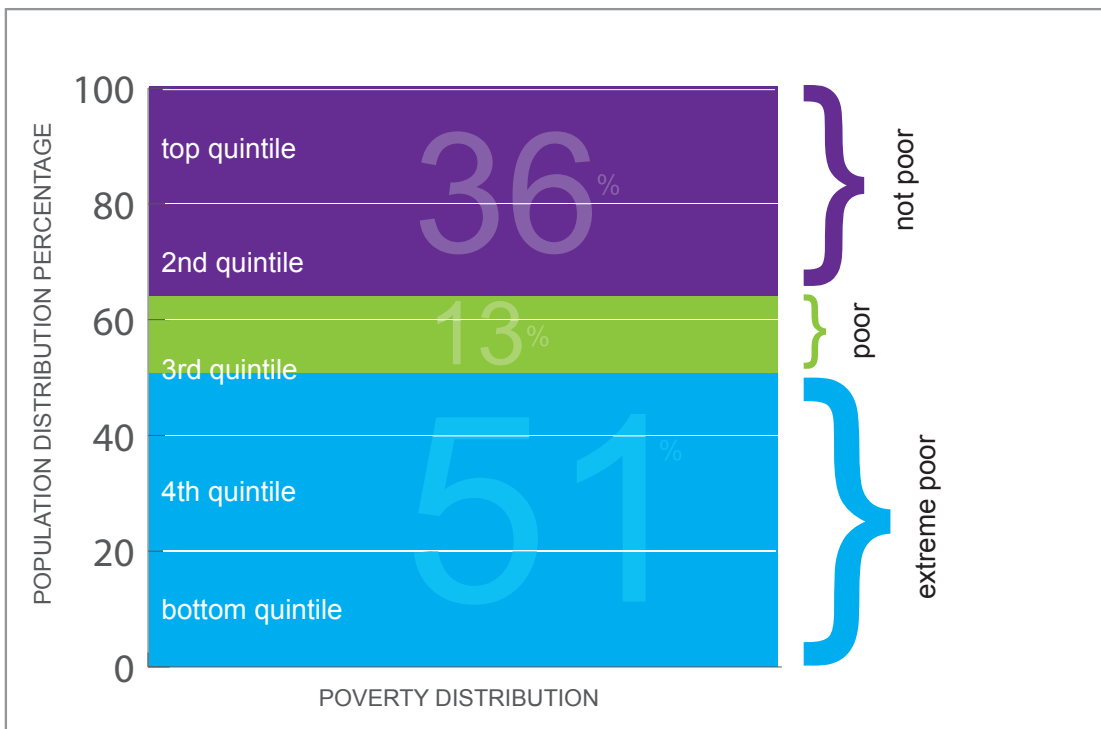
Data from the Demographic and Health Survey can be used to show the extent of difference between poor people. The graphs shown here disaggregate key indicators by income quintile, showing the differences between each 20% grouping of the population. As illustrated by the graph above:

- The top quintile is entirely non-poor.
- The second quintile is largely non-poor (16%), with a smaller proportion (4%) being those poor people who are closest to the poverty line.
- The third quintile is approximately evenly split between poor and extremely poor people.
- The fourth and fifth quintiles are comprised only of extremely poor people.

This information provides a guide for interpreting the graphs below.

Graph 2 shows that extremely poor people have consistently had much lower access to skilled health service providers, with little change seen in the 11 years to 2007.

Graph 2: Percentage of births supervised by a skilled health provider
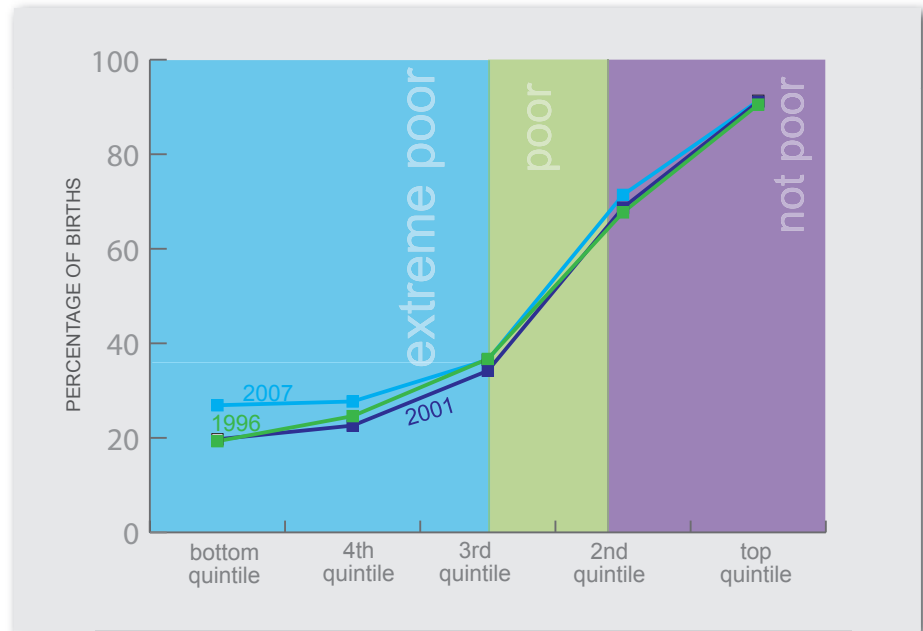
Graph 3 shows that the under five mortality rate across poverty quintiles has changed in the same period. The extent of the difference between the poorest and less poor / non-poor has reduced, and the poorest quintile has a lower rate of under five mortality than other poor groups. This may reflect the distribution of HIV infection, which is very much less prevalent in the poorest groups and hence one less source of mortality. Or it may reflect progress in combating malaria, which has reduced significantly in some of the poorest areas of the country. However, all groups are exposed to levels of under five mortality well above the MDG target.

Graphs 4 and 5 show a significant and persistent difference in educational experience between richer and poorer groups.

## Graph 3: Under-five mortality rate
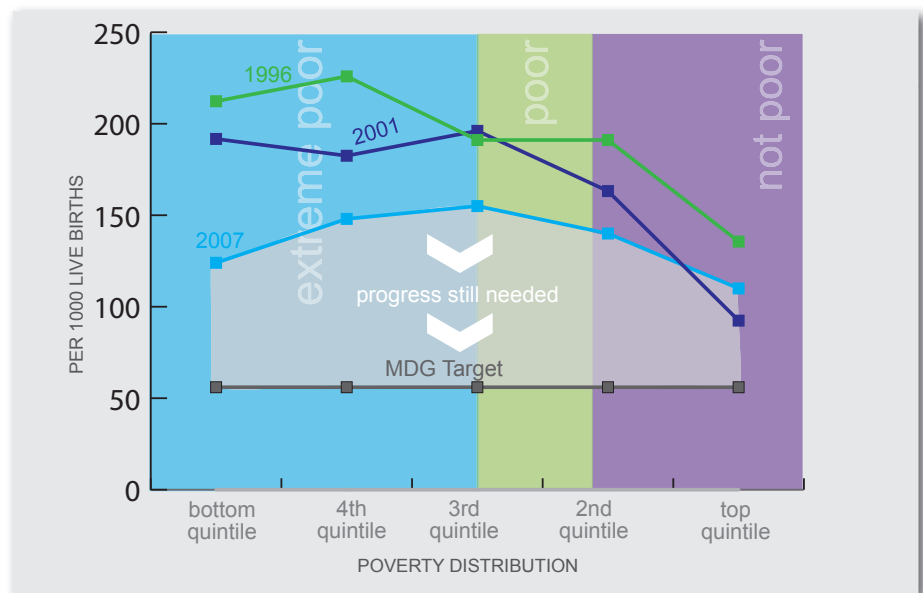
Graph 4 shows that although the proportion of 10 year olds that have ever attended school increased between 1996 and 2007 (most likely related to the introduction of the free basic schooling policy), a clear difference remains between richer and poorer groups, with the greatest disadvantage clearly affecting children in the poorest income quintile.

Graph 4: Percentage of 10 year olds that have ever attended school – 1996 and 2007
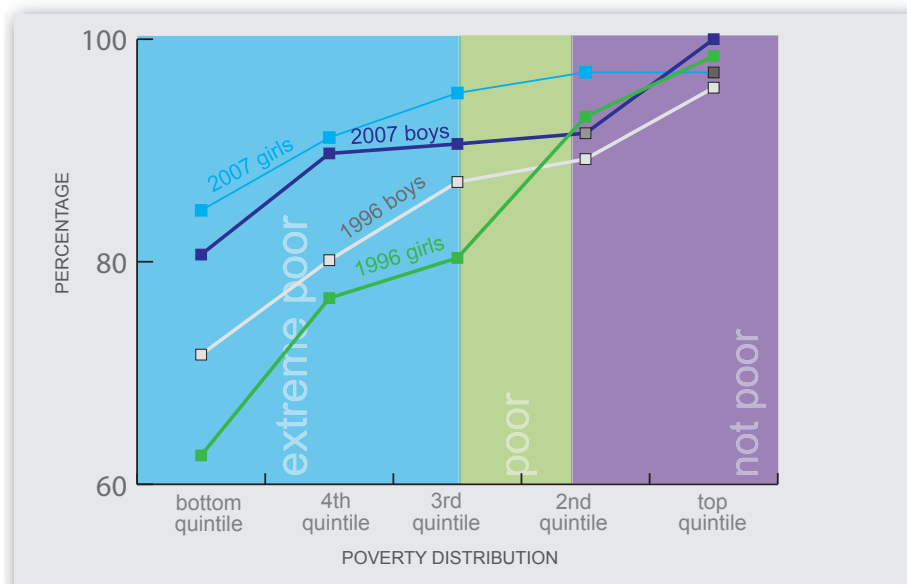

Graph 5 shows that regardless of enrolment, the proportion of adults who have completed primary school fell between 1996 and 2007. This is likely to be largely the result of falling completion rates for the poorest children over this period. It has been suggested that this might be the result of greater prevalence of HIV amongst more educated people, but this seems unlikely. The fact that there was virtually no change between 1996 and 2001 (when deaths due to HIV were probably more numerous) suggests otherwise, and in fact the difference in HIV prevalence between those that have completed primary school and those that have not is not significant).

Graph 5: Percentage of 15-49 year olds that have completed primary school
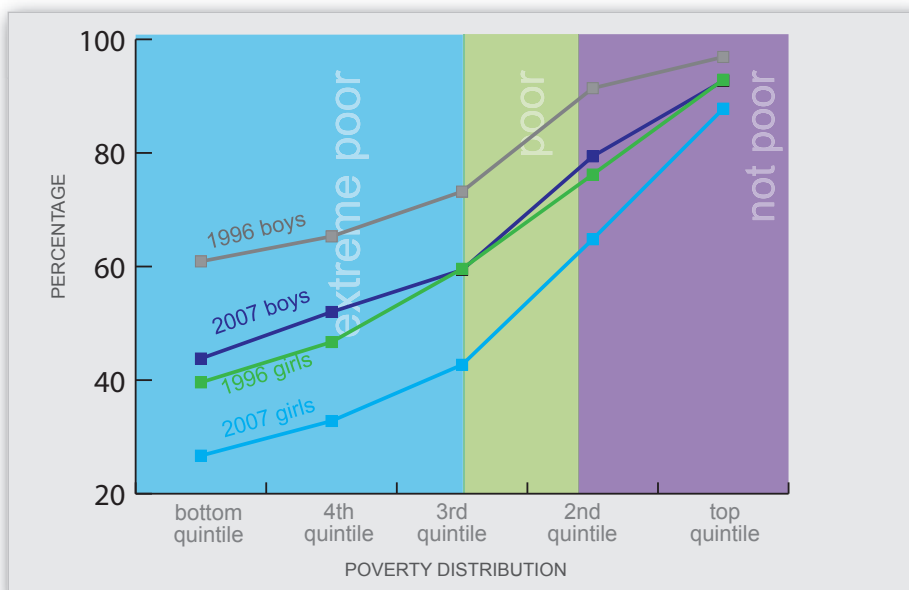
Graph 6 shows the prevalence of underweight children by income quintile. It shows us that progress has focused on improving results amongst extremely poor children, which is encouraging. However, results for the lower two quintiles remain above the MDG target, and further success of the same magnitude is required to ensure that progress is maintained.

Graph 6: Prevalence of underweight children under 5 years by quintile
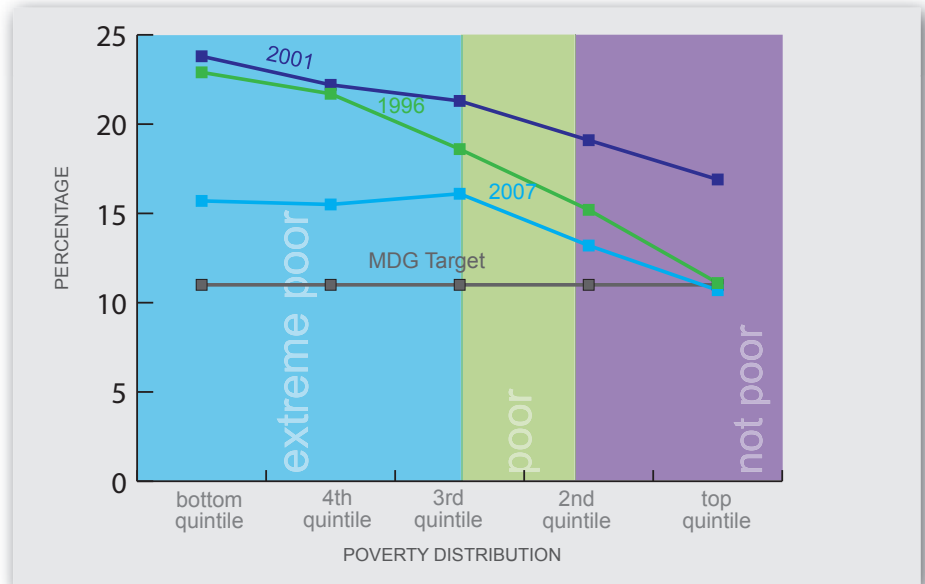
Lastly, graph 7 shows that efforts to direct services to the poorest and most excluded groups can have clear results. The investments made in the 'reaching every district' initiatives in immunisation, targeting those underserved districts where many of the country's poorest people live, had a very noticeable effect on increasing access to immunisation amongst those groups.

Graph 7: Proportion of children immunized against measles (%)

Although access to data disaggregated by quintile is very limited and indeed the quality and consistency of the data is not perfect, these graphs have provided evidence that in many respects, the very poorest groups have worse outcomes than other poor and non-poor groups. Unless special measures have been taken, as illustrated in graph 6, this is especially clear for the more simple indicators of service delivery. The indicators shown here mirror others that suggest that whilst the **needs of the poorest groups are greatest**, a focus on the poorest **can be effective, but remains a priority**.

The more poor people there are, the poorer those poor people are

The above evidence suggests that it is important to ensure that services reach the poorest groups – the bottom quintile or two quintiles, for example.

In locating these groups, it is important to understand the distribution of depth of poverty amongst the poor. There are two ways of doing this, which both suggest that in Zambia, people in the very poorest districts are poorer than those in districts were overall poverty levels are lower.

The first simple measure of this is shown in graph 8. Graph 8 is a plot of all districts, showing poverty gap against poverty headcount. The graph very clearly shows that the greater the levels of poverty, the further below the poverty line the poor people lie.

Graph 8: Poverty headcount by district
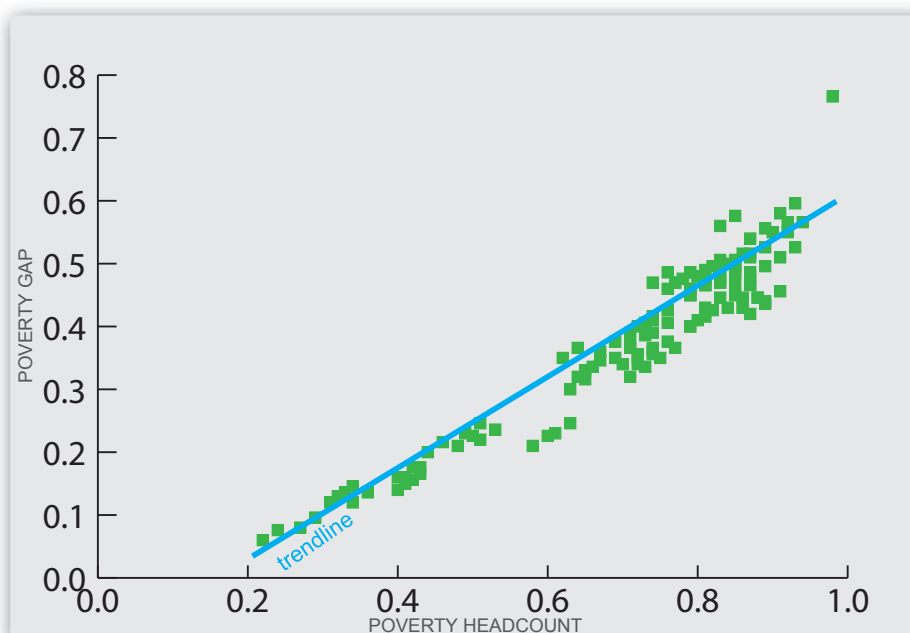
Discounting the outlier (extreme top right), the graph shows that in the least poor districts, poor people are on average less than 10% below the poverty line, whilst in the poorest districts, their income is on average 60% below the poverty line. In approximate terms, this means that if the poverty line is about $1 per day per adult, the average shortfall in the richer districts is 10 cents, whilst that in the poorest districts is 60 cents. Another way of looking at this issue is to map the proportion of the population in each district by national quintile. If the population were equally distributed, then each district would have 20% in the top quintile, 20% in the next quintile, and so on. But since poverty is not evenly distributed, this is not the case. Graphs 9, 10 and 11 all illustrate the population distribution within specific districts.

## Graph 9, 10, 11: Population distribution into quintiles in three districts
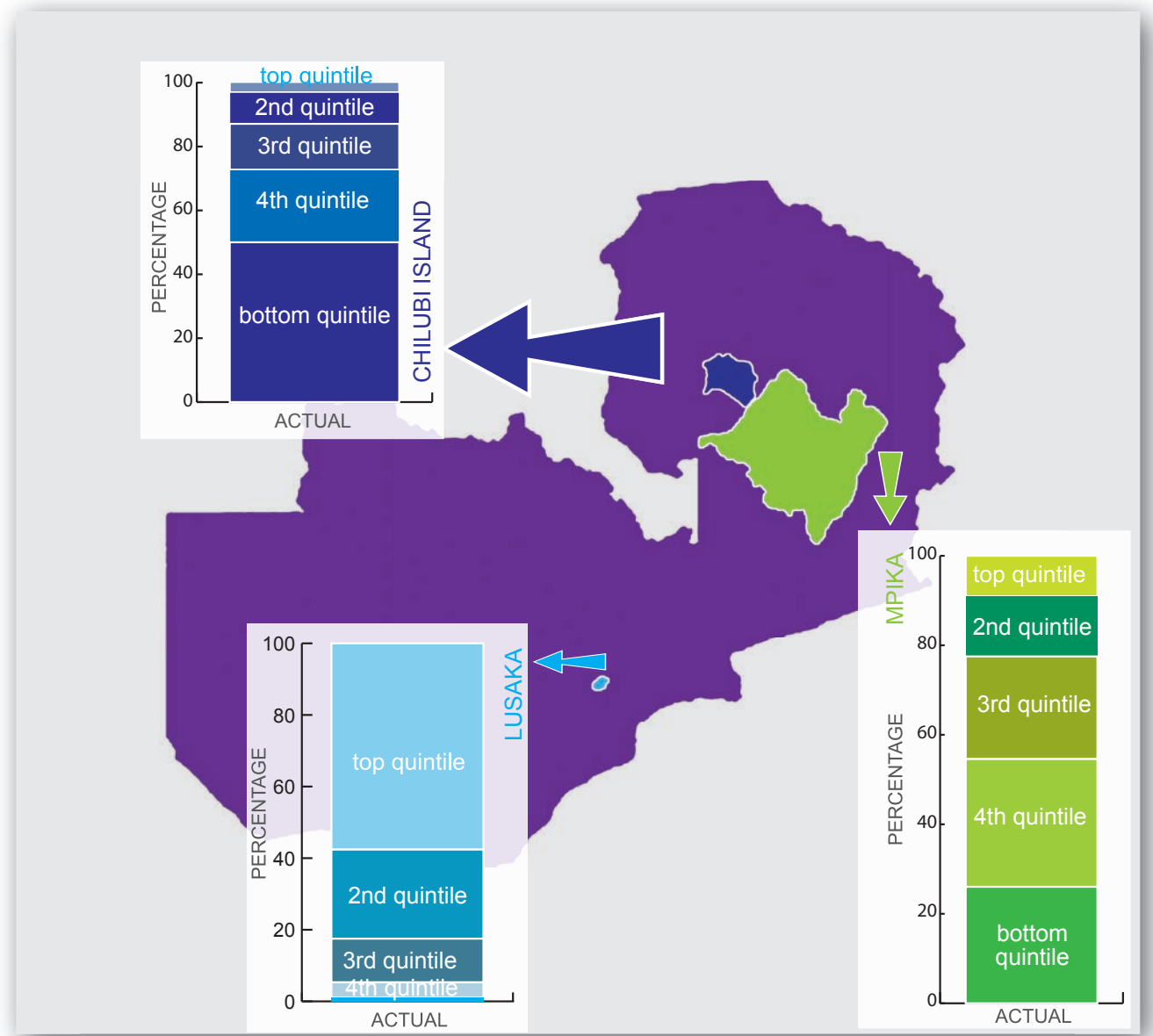
The graphs each first show the actual distribution of the population into quintiles for each district. For Chilubi Island, one of the poorest districts, just 3% of the population is in the top national quintile, whilst 50% is in the bottom national quintile. As might be expected, the proportion of top quintile (all non-

poor) and next quintile (largely non-poor) is higher for Mpika (which is close to average in terms of poverty headcount), and very much higher in Lusaka. It is clear that in Chilubi, the population proportion in the bottom quintile is over-represented, Mpika shows a distribution somewhat similar to what might be expected, with the each quintile present in more or less the same proportions, whilst in Lusaka, a great many more poor people are in the 3rd quintile than would be expected, whilst the bottom quintile is virtually absent.

Thus both approaches have shown clearly that the poor people in districts where poverty headcount is highest are on average poorer than poor people in districts where there are most poor people. The final comment in this section makes a more simple point. Graph 12 shows a simple distribution of income deciles by rural / urban location. Hence it shows that nearly 90% of the poorest income decile is made up of people who live in rural areas, whilst just 30% of the wealthiest income decile live in rural areas. With some 65% of the population in rural areas, this the graph shows that the rural population is overrepresented in the bottom three deciles, markedly so for the poorest quintile.

## Graph 12: Distribution of rural / urban population by quintile
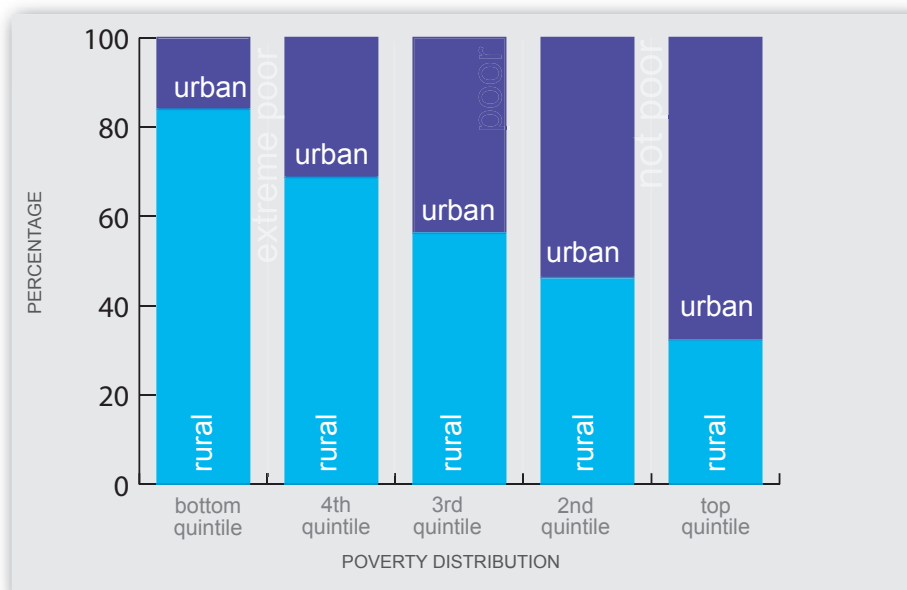
Building an index of district vulnerability

There is strong evidence that the poorest 20% of the population have poor access to services and worse outcomes than other groups. There is also evidence that this group is very predominantly rural, and over-represented – up to half the population or double what might be expected - in the poorest districts.

Graph 13 gives another example of how outcomes in the very poorest districts are similar to the very poorest quintiles, by contrasting the experiences of the best to worse 20% of districts with regards to supervised delivery of babies with the experiences of the richest to poorest 20% of the population.

Graph 13: Births supervised by skilled attendants by district & by quintile
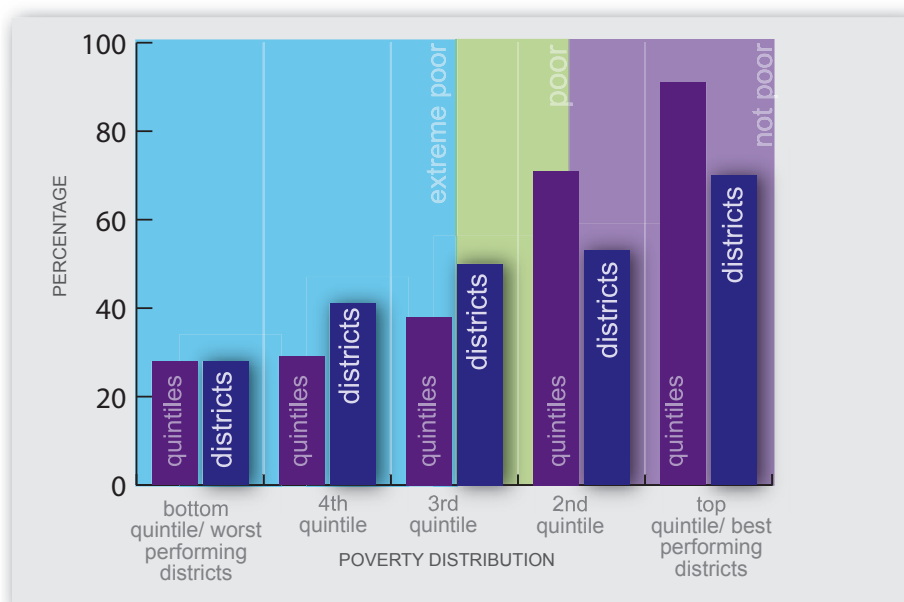
Whilst these data sets are not directly comparable, it is interesting to note the similarities between two measures of this important indicator of service provision and access / uptake. This suggests that it is reasonable to think that the experiences of the worst 15 districts and the lowest income quintile are similar.

It is clear that targeting a notional population group, where 'membership' of the group is measured using a complex and relative scale, would be very difficult. In contrast, the evidence presented above and in the preceding sections suggests that it would be legitimate to

create a district index of vulnerability, encompassing both service provision and outcomes for children and women.

A major problem in developing a district index is the availability of accurate and up to date information. The presence of clear anomalies in the data means that an index should be designed to 'blunt' the effect of an outlier or inaccurate value. Both the age and accuracy of some of the available data also means that the index should not be overly detailed, or be built on a complicated system of weighting. Rather, the solution has lain in the observation that whilst absolute values with regard to most variables range rather widely over any period of time, the ranking of districts in terms of relative performance has stayed much more constant. By using relative position or ranking, rather than absolute values, a much more robust index can be developed. Further, data for some indicators is at present only available as ranking information from secondary sources, and by using this approach a larger number of indicators are available for inclusion.

The data available for the index is summarised in the table below:

DATA	SOURCE	COMMENT
POVERTY		
Poverty headcount	LCMS 2006	District data provided by CSO. 210 data expected in May 2010 which will provide an important update.
Extreme poverty		
Poverty gap		
ACCESS TO SERVICES		
Pupil/teacher ratio	EMIS	2010 data.
School attendance	LFS 2009	CSO study measured attendance of 7 - 14 year olds.
Antenatal visits	Sitan 2008	HMIS data 2006 for bes and worst performing 20 districts only. Can be updated from HMIS. These three indicators were grouped together to make a composite maternal and newborn health index.
Supervised deliveries		
Immunisation		
Access to safe water	2000	Census data. Can be updated end 2011.
CHRONIC DEPRIVATION		
Stunting	2000	Census data. Updated figures from NFNC only for 30 selected districts. Can be updated end 2011.
Under 5 mortality	2007	Ministry of Health projections.
GEOGRAPHICAL REMOTENESS		
Distance from transport links	n/a	Indicator generated on (a) proximity to major routes, (b) significant geographical constraints to access to district
Population density	n/a	Indicator generated using CSO population projections and geographical information. Can be updated end 2011.
SOCIAL INCLUSION		
Female headed households	2000	Ranking of census data from report for UNICEF by Seshaani et al 2002. Can be updated end 2011.
Child participation in labour	LFS 2009	CSO study measured labour participation of 7 to 14 year olds.
Gender index	n/a	This indicator was generated as a child protection proxy, using data on schoul dropout rates from EMIS 2009. The rationale was as follows: School droupout rates vary throughout the country for boys and girls. The rate at which girls drop out is patly but not only a function of the overall dropout rate. In some districts where the average is the same, there is a marked difference in the extent of disparity between dropout rates for boys and girls. The extent of this difference is taken as a measure of girl's vulnerability, hence although this indicator is based on education data, it is used to show the extent of differentiation in the experience of boys and girls

Clearly, there are issues in some of these data sources. However, as the best currently available sources the question is not whether they are as good as might be hoped – many are not – it is about whether they should be excluded. By utilising a ranking approach rather than the absolute values, the issue of indicator values is not a concern, only the relative position. This limits inaccuracy, and creates a robust index.

Constructing the index

For each indicator, the districts were ranked in order of outcomes. In each case, the worst ten performing districts were given two points, and the next worse performing districts were given one point. A total of 420 'vulnerability points' were distributed on this basis, around 14 indicators.

|	total poor rank	x poor rank	P2 rank	U5 MR rank	FHH rank	school attencance	child labour	stunting	population density	MCH	remote sparce	PTR	gender index	access to water	total
Chadiza			1	1	2	2		1		1			1		9
Chama	1			2			2	2	2	2	2		1	2	16
Chavuma				1							1		2		4
Chibombo															0
Chiengi	2	2		2		2			2	2		2	2	2	18
Chililabom-bwe															0
Chilubi	2	1		1		1	2	2	2	1	1	2	2	2	19
Chingola															0
Chinsali		1	1				1		2					2	7

The above shows an extract from the alphabetically arranged data table. A simple contrast can be seen between districts that score badly on many of the indicators (Chilubi, Chama), and those that do not appear in the worst performing districts in any instance.

A simple frequency distribution of the vulnerability scores shows a right skewed distribution, in which the mean is greater than the median. This suggests an unequal distribution, not a normal distribution around a mean, and suggests that it is work examining the 'tail end' districts with the greatest vulnerability scores.
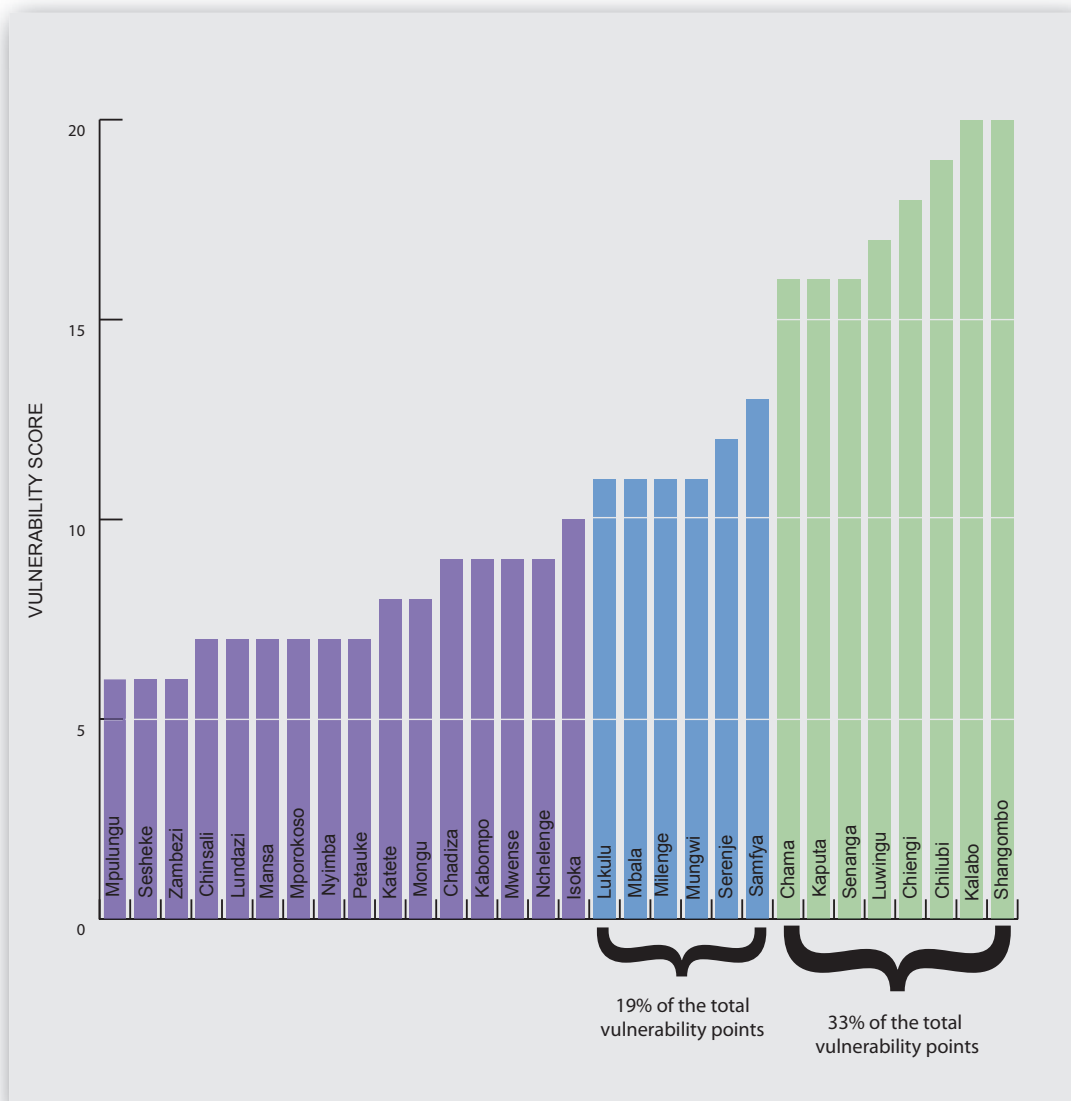
The districts with vulnerability scores above the mean are shown below.

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Graph 14: Frequency distribution of vulnerability points per district (mean = 5.8, median 4.4)
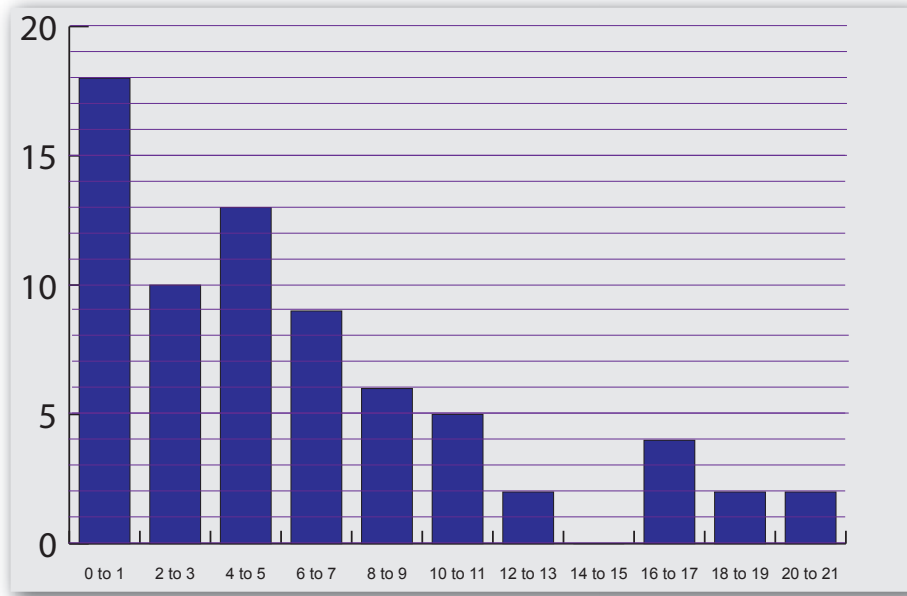
Graph 15: Districts scoring above average vulnerability scores

Further examination of the data shows that the worst scoring eight districts (11% of the districts) have 33% of the total vulnerability points (from Shang-ombo down to Chama on the above graph), or three times greater than average. The next seven have a further 19% of the points (to Isoka), doubly represented. These districts should form a priority list for work directed to under-served and especially vulnerable districts. The summary details are as follows:

| DISTRICT	NOTES
Shangombo, Western Province	All the districts in the worst-scoring eight are very hard to reach; only one is connnected to any other location by tarmac, and many have severe physical constraints besides dirt roads. The total population of these districts is approximately 800,000 or 7% of the population (Census 2000 projections).
Kalabo, Western Province	
Chilubi, Northern Province	
Chiengi, Luapula Province	
Luwingu, Northern Province	
Senanga, Western Province	
Kaputa, Northern Province	
Chama, Eastern Province	
Samfya, Luapula Province	These districts are also fairly hard to reach, although noticeably less so than the eight above. However, most have considerable geo-graphical access issues within the district. The population of these seven districts is about 780,000 people.
Serenje, Central Province	
Mungwi, Northern Province	
Milenge, Luapula Province	
Mbala, Northern Province	
Lukulu, Western Province	
Isoka, Northern Province	

Isoka district is due to be split in two soon - when this happens, the remaining Isoka district will be relatively better performing, whilst the newly created Muyo-mbe district (adjacent to Chama, in the 'top eight', will be very hard to access and amongst the poorest performing in the country. Muyombwe would certainly merit inclusion in the 'worst performing' group, whilst Isoka would probably not merit inclusion in targeted programmes.

How unequal is the distribution of vulnerability?

The last consideration in this paper is to provide a cumulative vulnerability distribution of the scores assigned in the above index.

Graph 16: Culmulative vulnerability distribution
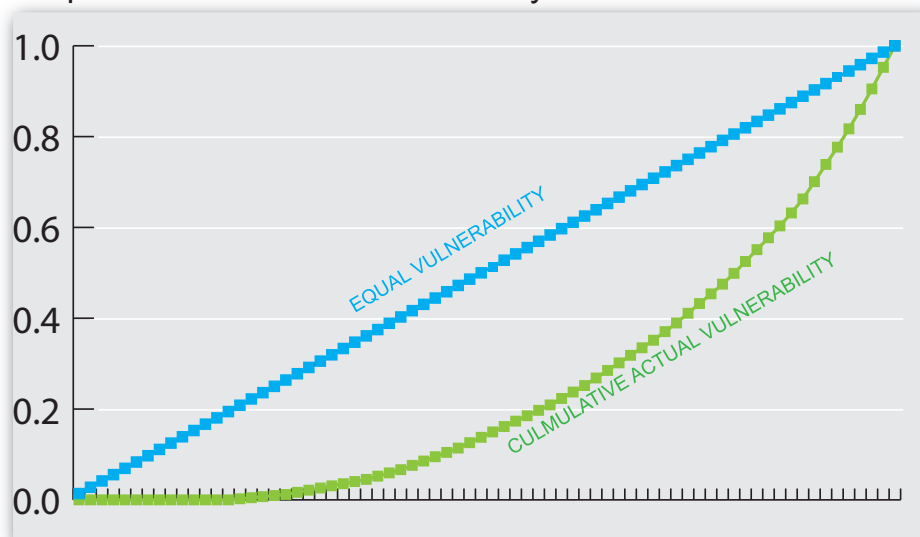
This graph is similar to one that says something like x% of the population has a y% share of the wealth. So by reading off at horizontal point 36 (half the districts), it is clear that instead of having 50% of the vulnerability score, these districts only have about 12%. Or reading vertically from point 60, it is clear that the remaining 12 districts absorb 55% of the vulnerability scores, rather than the 18% that would be left if the distribution were even. The gini coefficient provides a percentage measure between zero (perfectly equal, the blue line) and 100 (completely unequal).

Graph 16 compares a line for cumulative values of equal vulnerability – the blue line – with the actual distribution of scores. Equal vulnerability shows what would be the case if all 72 districts had an equal share of vulnerability, whilst the actual distribution suggests a considerable inequality. The calculation of a gini coefficient for this inequality gives an index of 51.71, which is remarkably similar to Zambia's national income distribution gini coefficient of 50.8. Of course this index is not directly comparable with the income coefficient, but it is nonetheless clear that the district level distribution of inequality is highly unequal. Change will occur as district performance becomes more similar, and variation between districts becomes less systematic. In this case, the first difference would be seen in the extent of the skew in graph 13,

and the magnitude of the spread in graph 14. When the extent of difference between districts with respect to any indicator becomes less pronounced, the points assigned could first be reduced and then eliminated. But whilst variation in each of these indicators remains highly pronounced by district, the index provides a useful tool for selecting districts for intervention.

A note on HIV and AIDS

For a decade and more, HIV in Zambia has been seen as an urban phenomenon. As shown in graph 17, the prevalence rate is higher in urban areas, which constitute a smaller number of districts.

Graph 17: HIV Prevalence (%, age 15 to 49)
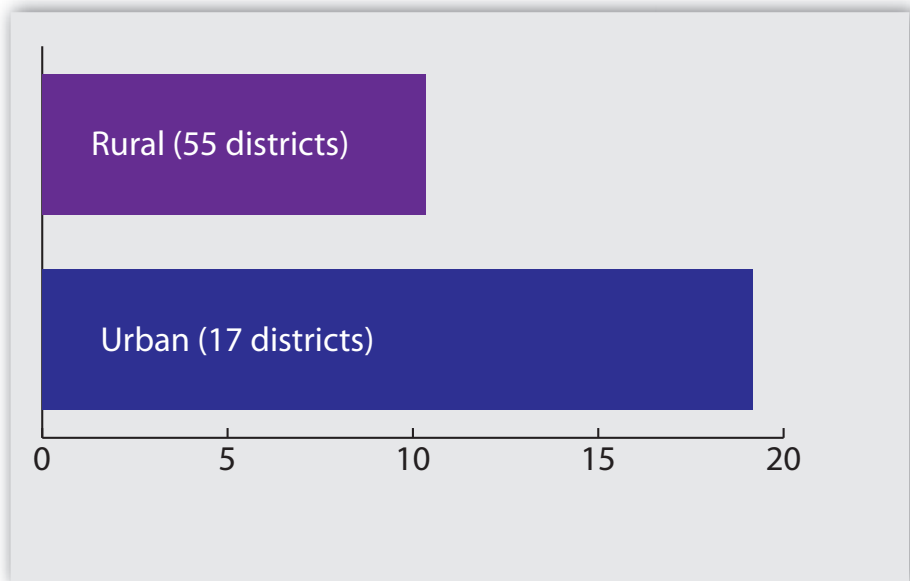
As a result, much of the financial, human and technical resources directed towards the epidemic have been directed towards urban areas, as the 'priority'. The long standing assumption is that this will provide the most cost-effective way of achieving the high impact results that are so important.

However, by using an 'equity lens' and re-examining the data from the perspective of the poorest, we can see that the urban bias may in fact carry a price that is paid by the poor.

The priority awarded to urban programming has been based on population proportions, not population numbers. However, with recent availability of both poverty and HIV data by district, we can now make more valid statements in terms of numbers. With the district data, we can now make a reasonable assumption that *at a district level*, HIV is evenly distributed between poor and non-poor people. We know that this is not so at an aggregate level, but at a district level the assumption is more valid.

Graph 18, 19, and 20 show the estimated distribution of HIV infection and poverty in terms of numbers, not proportions.
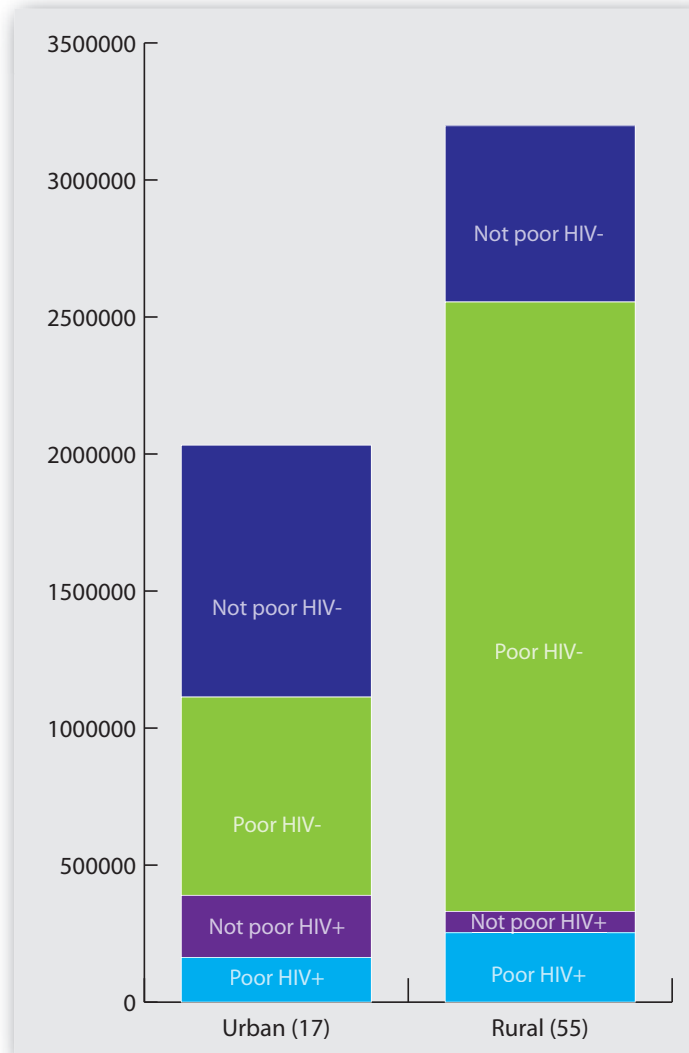
Graph 18: Poor population aged 15 to 49 in rural and urban districts
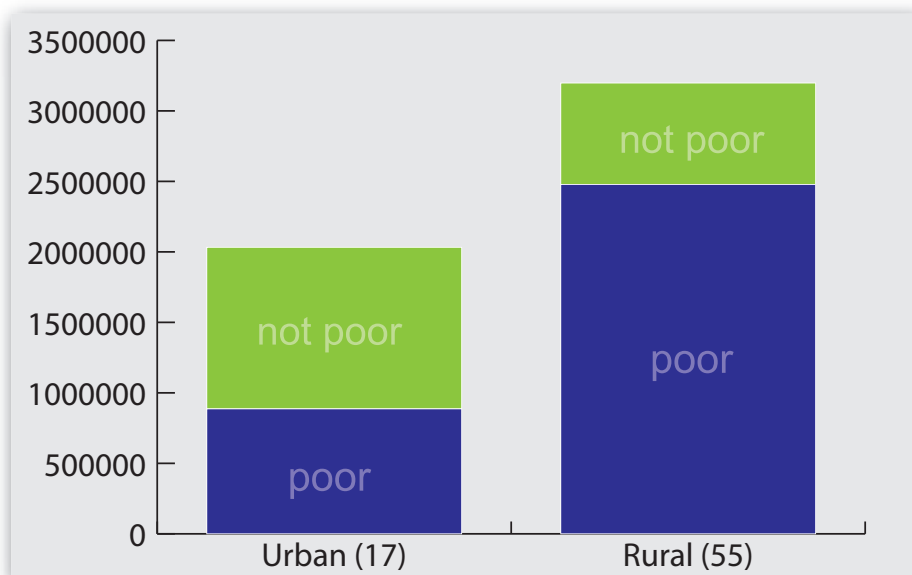
Graph 19: HIV+ population aged 15 to 19
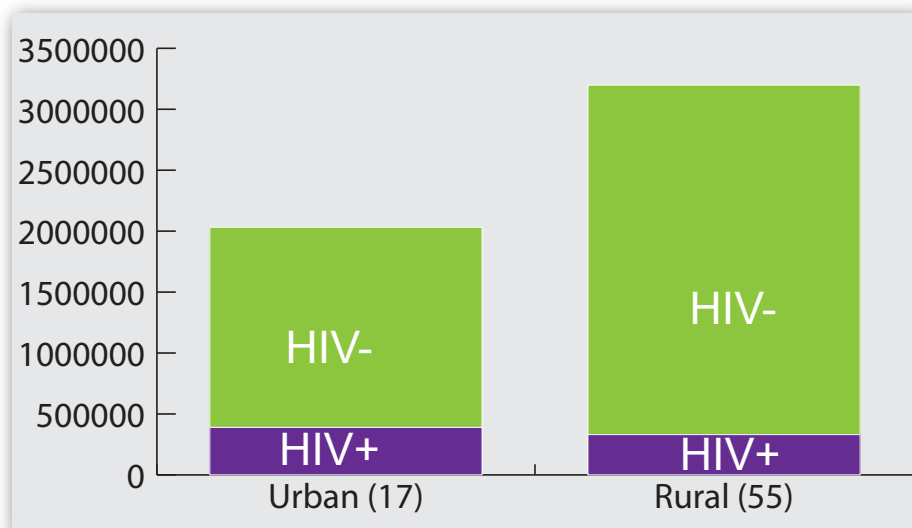
Graph 20: Population, poverty and HIV in urban and rural districts

	URBAN	RURAL
Poor HIV-	723,487	2,224,340
Not poor HIV -	919,015	643,023
Not poor HIV+	226,742	77,192
Poor HIV+	162,924	253,209

The graphs above show that the number of people living with HIV and AIDS are approximately the same between rural and urban areas.

However, there are nearly twice as many poor people living with HIV and AIDS in rural areas.

This means that the strategy of focusing on urban areas – the high impact approach – serves to exclude the many poor people living with HIV and AIDS, simply because so many are distributed in small numbers in rural districts. **If we take an equity focus,** which means that we must embrace the challenge of ensuring that our programmes reach the poorest, then we need to consider very seriously the need to direct just as much effort to fighting AIDS in the large number of lower prevalence districts.

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The following graph shows the distribution of poor people with HIV.

Graph 21: Distribution by district of poor people with HIV

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Conclusion

Whilst programming to address diverse deprivations and development challenges needs to be widely implemented across the country, this paper has shown that special efforts are needed to reach most vulnerable and poorly served districts. Further, by extending an equity analysis it also clear that we also need to extend the focus of HIV programming and intensify efforts beyond the current bias towards urban areas, so as to ensure the equitable inclusion of poor people in all aspects of HIV programming.

It is recommended that systematic efforts be addressed to extending targeted support to the eight districts in the first priority group. The next group is also important, and represents very valid destinations for downstream support.

Next steps could include

- an assessment of existing engagement in the priority districts
- the preparation of district briefs on each
- establishment of systems to monitor progress on reducing inequity
- advocacy and technical support for better access to district based data
- further analysis of the distribution and focus of efforts addressing HIV and AIDS

References

Graph 1   Living condition monitoring survey (LCMS) 2006
Graph 2-7   Zambia Demographic and Health Survey (ZDHS)
             2007 / 2001 / 1996
Graph 8-12   Calculations from Living condition monitoring survey (LCMS)
             2006
Graph 13   Zambia Demographic and Health Survey (ZDHS) 2007 and
             Living condition monitoring survey (LCMS) 2006
Graph 14-16 Calculations from index

Notes