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# Who benefits from public spending on health care in Malawi? An application of Benefit Incidence Analysis to the Health Sector

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Abstract

A principal objective of the Malawi government is to provide public health services that reach poor men and women. This paper assesses to what extent the Government has been successful in achieving this. Malawi was also found to be more successful than other countries in Africa at providing health services that reach the poor. The analysis of benefit

incidence finds that the distribution of benefits across socio-economic groups is largely explained by differences in the utilization of health services and the lower reported incidence of illness among the poor, rather than the distribution of the health subsidy.

## Introduction

Ensuring equitable health care is a principal objective of the Malawi government, and the basis for public subsidy and public provision. The government provides essential health services all citizens free of charge. These services are financed from general taxation and supported by donors.

*"The overall objective and desire of the Ministry of Health is to develop a health delivery system that is pro-actively responsive to the prevailing needs and problems - a health care delivery system that addresses the current and foreseeable health, disease and health care management problems by focusing on the provision of a minimum package of essential health services to the people of Malawi with emphasis on the poor, women and children".<sup>1</sup>*

The objective of this paper is to assess to what extent the government has been successful in achieving its objective. It employs a quantitative technique termed 'benefit incidence analysis' to estimate the distributional impact of public curative health spending in Malawi on different socio-economic groups.

## Methodology: What is Benefit Incidence Analysis?

Identifying the recipients and measuring the benefits of publicly subsidized health care is important for evaluating a government's effectiveness. There are two approaches to measuring the value to the beneficiaries of government subsidized goods and services. The first is based on the individual's own valuation of the good, elicited through questions about willingness to pay, and the second is called benefit incidence.

Benefit incidence analysis combines information about the unit

subsidy for providing a good or service with information on the subsidy's use, to show how the benefits of government spending are distributed across the population or between socio-economic groups. This methodology only considers the monetary benefit from using the government-subsidized service, and does not provide any assessment of the therapeutic benefit.

## Application of Benefit Incidence Analysis to the provision of government curative health services in Malawi

In undertaking this analysis, information on the government expenditure for providing public health services is taken from the government's accounts. Data on the use of government health facilities and the socio-economic characteristics of the users are taken from the Second Integrated Household Survey (IHS-2),<sup>3</sup> which was conducted throughout Malawi between March 2004 and March 2005.

The first step in benefit incidence analysis is to estimate the unit subsidy, which is defined as net government spending on a service divided by the number of times the service is used over a given period of time. In this application, total government expenditure for the provision of curative health services was obtained from government accounts, for the period from March 2004 to March 2005, which corresponds to the same timeframe that the household survey data was collected.

Total curative health expenditure consists of two components: all recurrent expenditure, categorized as Curative Health Services, and a proportion of expenditure, recorded as Administrative and Support Services, (as some of these costs are associated with the provision of curative health services.)<sup>b</sup> It

Table 1: Percentage ill and treatment response, by socio-economic group

	% reported had been ill in the 2 weeks prior to interview	Of those ill, % seeking				
		No care	Self Treatment	Treatment at Govt Health Facility	Treatment at Mission or Private Facility	Traditional Care
<b>Quintile:</b>						
1 (poorest 20%)	23%	17%	41%	31%	5%	5%
2	26%	13%	43%	33%	7%	4%
3	29%	14%	45%	29%	7%	4%
4	31%	12%	45%	28%	10%	4%
5 (richest 20%)	29%	11%	44%	29%	13%	3%
<b>Gender:</b>						
Male	25%	12%	45%	30%	10%	4%
Female	30%	15%	43%	30%	8%	4%
<b>Residence:</b>						
Urban	17%	10%	37%	38%	13%	2%
Rural	29%	13%	45%	29%	9%	4%
<b>TOTAL</b>	<b>28%</b>	<b>13%</b>	<b>44%</b>	<b>30%</b>	<b>9%</b>	<b>4%</b>

was not possible to distinguish between the cost of providing primary and secondary health care from the government accounts.

Estimates on the number of visits to government health facilities, disaggregated by district, were obtained from the IHS-2. Respondents were asked if they had been ill in the two weeks prior to interview, and those that reported that they had been ill were then asked what action they had taken, which included the option of "sought treatment at a government health facility".<sup>c</sup> The responses reflect the availability, cost and quality of health services, as well as the circumstances of the individual, and are presented in Table 1.

It is interesting to note that poorer individuals report a lower incidence of illness. This result is counter-intuitive as the association between poverty and ill-health is well known.<sup>4</sup> However, analysis of household survey data often finds a lower reported incidence of illness by the poor, and is thought to reflect differences in what individuals consider to be an illness, with the poor having greater tolerance for illness, and lower awareness of health issues.<sup>d</sup> The table also shows that the poor are more likely to take no action or seek traditional care, and less likely to seek treatment at a mission or private health facility, which would incur a charge.

From the IHS-2 data on the use of government health services, over a two-week period it was possible to estimate the annual

number of visits to a government health facility in each district. Combining this information with the district level expenditure on curative health services, the unit subsidy for a visit to a government health facility was estimated for each district.

The second step in calculating the benefit incidence is to attribute a benefit to users of the public service. Using the IHS-2 dataset, each individual who reported they had used a government health facility was assigned a monetary benefit that corresponds to the unit subsidy for the district in which he or she resides. In two-thirds of cases it was also possible to determine whether the individual used, and benefited from, a government hospital (for inpatient or outpatient care at a secondary or tertiary facility) or health centre (primary care).<sup>e</sup>

The third step is to analyse the distribution of benefits from the public subsidy across the entire population, grouped by socioeconomic characteristics, and therefore determine whether the benefits from the public curative health services in Malawi are reaching the poor.

The benefit incidence - that is the share of the total public subsidy for curative health services - by socioeconomic group for any government health facility and disaggregated by type of facility is shown in Table 2. The benefit incidence has also been calculated by gender and place of residence. For these cases, the share of the total subsidy relating to a given group should be compared to the share of the group in the total population.

**Table 2: Benefit Incidence of the public curative health subsidy in Malawi, in total and by type of health facility**

	Population Characteristics	Benefit incidence: Share of total subsidy (%)		
		Overall: Any Government Health Facility	Government hospital	Government health centre
Quintile				
1 (poor 20%)	20.0%	15.8%	14.0%	18.2%
2	20.0%	20.2%	17.8%	22.7%
3	20.0%	21.3%	20.9%	18.0%
4	20.0%	21.5%	22.3%	26.1%
5 (rich 20%)	20.0%	21.2%	24.9%	15.0%
Gender				
Male	49.2%	44.8%	44.1%	46.4%
Female	50.8%	55.2%	55.9%	53.6%
Residence				
Urban	11.3%	11.0%	16.3%	6.8%
Rural	88.7%	89.0%	83.7%	93.2%

## Research Findings

### Benefit Incidence of total public curative health spending

The benefit incidence analysis of the overall curative health spending finds that there is a slight bias in favour of wealthier individuals: the poorest 20% of the population receive 15.8% of the benefits whilst the richest 20% receive 21.2% of the benefits. Analysing by gender shows that women benefit more than men, as women, who represent 50.8% of the population, receive 55.2% of the benefits. While the distribution of benefits between urban and rural populations is proportionate: the urban

population represent 11.3% of the population and receive 11.0% of the benefits.

The benefit derived from the use of a government health facility can be decomposed into two parts: utilization of health services, and the subsidy associated with the provision of the service. A closer look at the data presented in Table 3 shows that the trends in the benefit incidence largely reflect the trends in the reported incidence of illness and the use of government health services.

**Table 3: Utilization of any government health facility, and benefit incidence from the public curative health subsidy, by socio-economic group.**

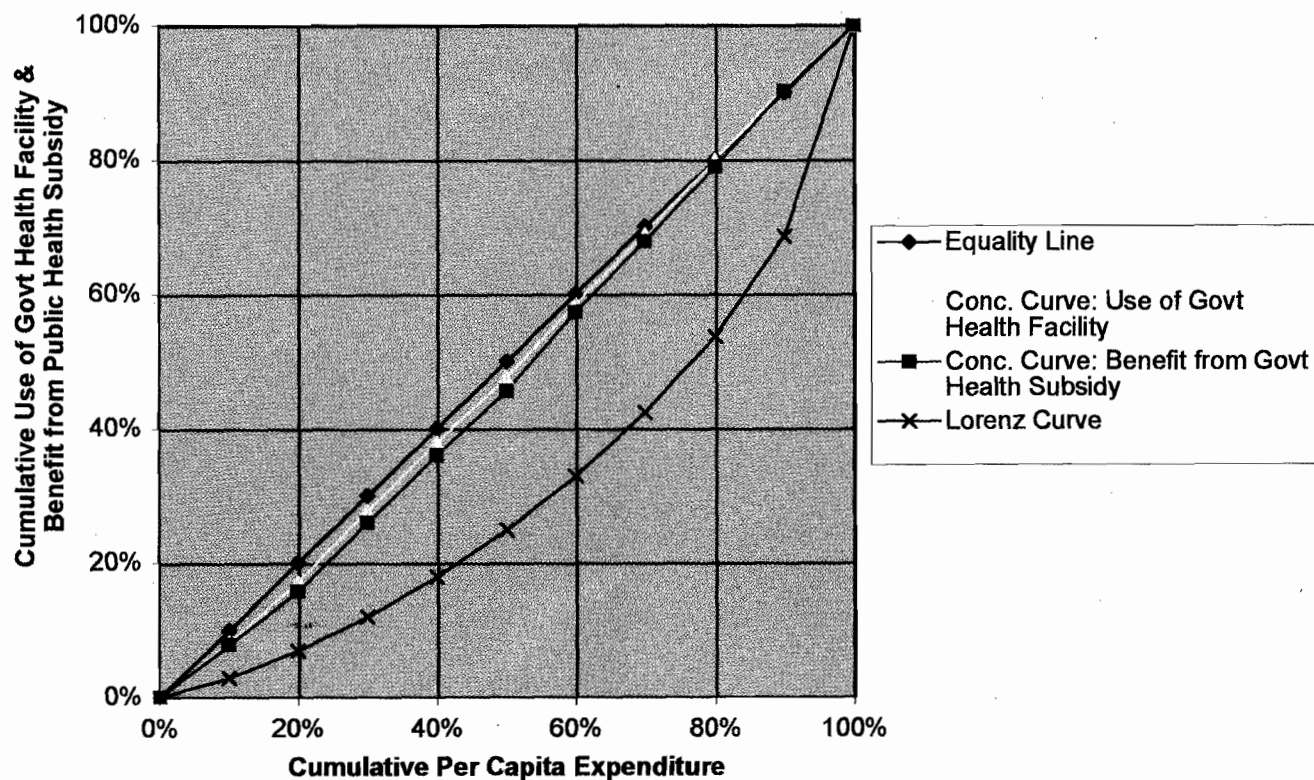
	By socioeconomic grouping:			
	Population Characteristics	Reported illness Incidence of (share of total reported illness) (%)	Utilization of Any Government Health Facility (share of total visits) (%)	Benefit incidence - any Government Health Facility (share of total subsidy) (%)
<b>Quintile</b>				
1 (poor 20%)	20.0%	16.4%	17.1%	15.8%
2	20.0%	19.0%	20.8%	20.2%
3	20.0%	21.0%	20.6%	21.3%
4	20.0%	22.5%	21.4%	21.5%
5 (rich 20%)	20.0%	21.1%	20.1%	21.2%
<b>Gender</b>				
Male	49.2%	45.0%	45.0%	44.8%
Female	50.8%	55.0%	55.0%	55.2%
<b>Residence</b>				
Urban	11.3%	7.1%	9.0%	11.0%
Rural	88.7%	92.9%	91.0%	89.0%

As discussed earlier, the reported incidence of illness is lower among the poor. This affects the utilization data, as only those that reported illnesses were asked if they had used government health facilities, and creates some bias in benefit incidence in favour of the rich. The utilization of government health facilities is also proportionately higher amongst women, and those living in rural areas.

Some of the inequality in the distribution of the benefits across quintiles can therefore be explained by inequality in the use of government health services. However, variation in the unit subsidy across districts is also relevant as the degree of inequality in benefit is greater than in use. This can be easily illustrated using concentration curves, as in Figure 1.

**Figure 1: Concentration curves depicting the distributional differences in use of government health facilities, and the benefit received from the public curative health subsidy**

### Benefit Incidence of Government Curative Health Services



The concentration curves in Figure 1 plot the cumulative proportion of the utilization of health services and the benefit received from the health subsidy by individuals on the vertical axis against the cumulative proportion of individuals, ranked by per capita expenditure. An equal distribution occurs along the 45-degree line, the equality line, and deviation from this line represents some degree of inequality. A concentration curve lying below the equality line shows inequality towards the rich, while a concentration curve lying above the equality line shows inequality towards the poor.

The concentration curve depicting the benefit incidence of the public health subsidy lies marginally below the equality line. This shows that there is a reasonably equitable distribution, with a slight bias in favour of richer individuals. The concentration curve for the utilization of government health services lies slightly above the benefit concentration curve and is, therefore, slightly more equitable. The difference between the two concentration curves represents some inequality in unit subsidies

between districts in favour of the rich.

The chart also shows the Lorenz curve, which illustrates the degree of inequality in expenditure among the population. As the line lies far below the equality line it shows considerable inequality between the welfare of individuals. Moreover, as the benefit concentration curve lies above the Lorenz curve, then government spending on public curative health services is progressive relative to expenditure. In other words, the distribution of the benefit from the health subsidy is considerably more equitable than the distribution of expenditure across the population.

#### Benefit Incidence of Public Health Spending on Hospitals and Health Centres

For the majority of individuals surveyed it is also possible to identify the type of facility used, and therefore it is also possible to calculate the benefit derived. Table 4 provides data for the reported incidence of illness, as well as the use of and benefit from government hospitals and health centres.

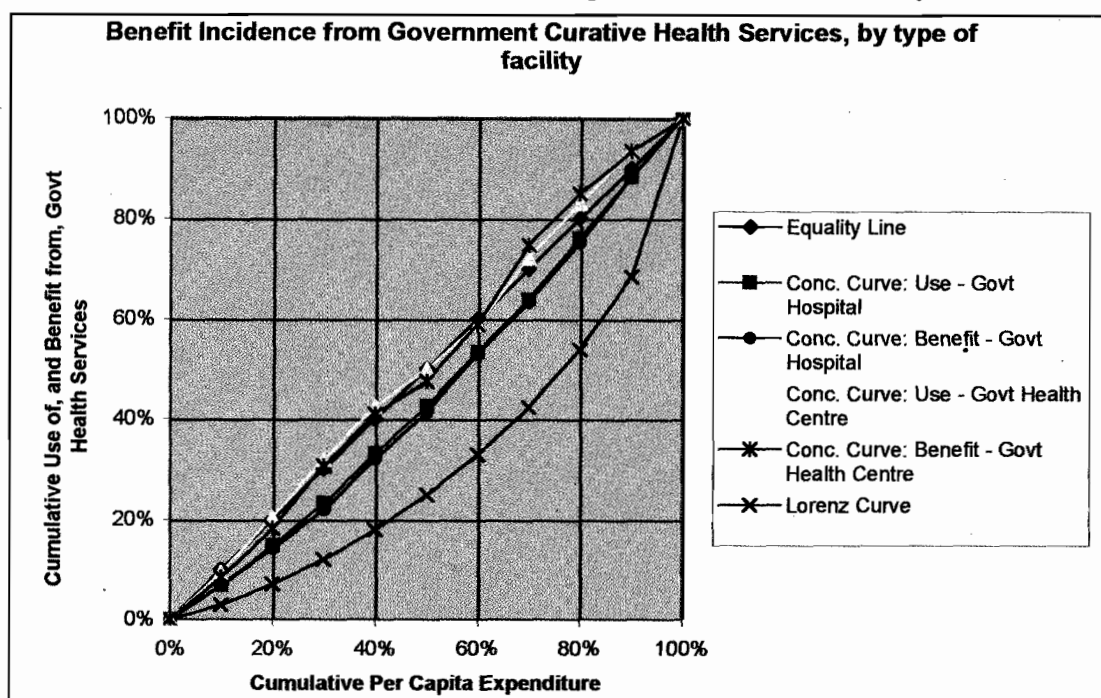
**Table 4: Use of government health services and benefit from the public health subsidy, disaggregated by type of facility.**

	By Socioeconomic Group:					
	Population Characteristics	Reported Incidence of illness (share of total reported illness) (%)	Government Hospital		Government Health Centre	
			Utilization : (share of total visits) (%)	Benefit incidence: (share of total subsidy)(%)	Utilization : (share of total visits) (%)	Benefit incidence: (share of total subsidy)(%)
<b>Quintile</b>						
1 (poor 20%)	20.0%	16.4%	14.8%	14.0%	20.4%	18.2%
2	20.0%	19.0%	18.3%	17.8%	22.1%	22.7%
3	20.0%	21.0%	20.2%	20.9%	16.4%	18.0%
4	20.0%	22.5%	22.9%	22.3%	24.1%	26.1%
5 (rich 20%)	20.0%	21.1%	23.9%	24.9%	17.1%	15.0%
<b>Gender</b>						
Male	49.2%	45.0%	43.7%	44.1%	46.6%	46.4%
Female	50.8%	55.0%	56.3%	55.9%	53.4%	53.6%
<b>Residence</b>						
Urban	11.3%	7.1%	13.8%	16.3%	5.1%	6.8%
Rural	88.7%	92.9%	86.2%	83.7%	94.9%	93.2%

Disaggregating by type of facility finds the public subsidy for hospital services disproportionately benefit richer individuals: the poorest quintile receives 14.0% of the benefit, while the richest quintile receives 24.9% of the benefit. This inequality in the distribution of benefits is shown in the concentration curve

in Figure 2. As the concentration curve depicting utilization of hospitals services is almost identical, it is shown that the benefit incidence reflects the differences in utilization rather than variation in the unit subsidy.

Figure 2: Concentration curves depicting the utilization of government hospitals and health centres, and the benefit incidence of the public curative health subsidy for these.



Women receive a slightly greater share of the benefits than men, which reflects gender differences in utilization of government health services. Furthermore, the benefit received from the subsidy for hospital services is proportionately greater in urban areas: 16.3% of the benefits correspond to the urban population, though they represent only 11.3% of the population. This primarily reflects a greater utilization of hospital services in urban areas, despite a comparatively low reported incidence of illness, though also slightly higher unit subsidies were associated with tertiary hospital services.

The results for the benefit incidence of government health centres find that the poorest quintile obtains a greater share of the benefits (18.2%) than the richest quintile (15.0%), and the overall trend is shown in Figure 2. The concentration curves corresponding to the utilization and benefit incidence of government

health centres show considerable equity. Moreover, rural populations receive the majority of the benefit from the subsidy for provision of health centres. These findings highlight the importance of primary health centres in providing care to the rural poor.

### Discussion

Benefit incidence analysis has been undertaken in other developing countries, and a summary of evidence from African countries, taken from a paper by Castro-Leal et al.<sup>5</sup>, is presented in Table 5. The overall conclusion from benefit incidence analyses in developing countries is that curative health spending tends to be poorly targeted. In comparison, Malawi appears to have considerably more equitable public health services.

Table 5: Benefit incidence of public spending on health in selected countries

Country	Quintile shares of:									
	All health		Primary facilities		Hospital - any service		Hospital Outpatient		Hospital Inpatient	
	Poor	Rich	Poor	Rich	Poor	Rich	Poor	Rich	Poor	Rich
<b>Africa</b>										
Malawi (2004-5)	16%	21%	18%	15%	14%	25%				
Cote d'Ivoire (1995)	11%	32%	14%	22%	8%	39%				
Ghana (1992)	12%	33%	10%	31%			13%	35%	11%	32%
Guinea (1994)	4%	48%	10%	36%	1%	55%				
Kenya (1992)	14%	24%	22%	14%	13%	26%				
Madagascar (1993)	12%	30%	10%	29%	14%	30%				
Tanzania (1992-3)	17%	29%	18%	21%			11%	37%	20%	36%

This comparative success provokes questions about why Malawi has been more successful than other countries. There are some features of the Malawian health sector that may explain its relative success in reaching the poor, such as the government's adoption of an Essential Health Package, which encourages a prioritisation of pro-poor health services. In addition, the policy that services should be provided without charge substantially reduces the costs that an individual incurs in accessing health care, which encourages a more equitable utilization of health services.

Although benefit incidence analysis provides important insights into the situation in Malawi, further research would be necessary to explain the cross-country findings.

Finally, it is also important to outline the limitations of benefit incidence analysis. As noted earlier, the technique solely focuses on the in-kind monetary benefit received by an individual and does not examine the extent to which an individual's health need has been fulfilled. The analysis also focuses on utilization of services, though does not provide any indication of the quality of the healthcare received. For a normal good or service, increased utilization implies consumer satisfaction in the quality of the service provided. However, this does not necessarily hold for health care.

Data limitations also often constrain the application of the technique. For instance, it would also have been interesting to consider benefit incidence of in-patient and out-patient hospital services. Similarly, as in most countries, it was only possible to consider public curative health care, as there was no data available on the use of preventative health services.

## Conclusions

The analysis finds that although there is a slight bias in favour of wealthier individuals, there is overall a reasonably equitable distribution of the benefits from public health spending. Disaggregating by type of health facility found that the poor receive a considerably lower share of the benefits from the subsidy for the provision of government hospitals, whilst the benefits from the provision of government health centres were equitable.

The benefit incidence of Malawi's public curative health subsidy was also found to be relatively more equitable than other African countries.

The benefit incidence was largely explained by differences in the utilization of health services and the lower reported incidence of illness amongst the poor, rather than the distribution of the health subsidy. This implies that if the Malawi government wants to increase the share of the benefits reaching the poor, then a reallocation of the public curative health subsidy would not be sufficient. In initiating policy change it would be important to understand what factors affect the utilization of government health services, as well as individual decisions about health care. This should take into consideration influences on the demand for health care, including barriers to access, and also supply characteristics, such as the availability and quality of care.

In conclusion, the Malawi government has been reasonably successful fulfilling its objective of providing health services that reach poor people, and this is thought to reflect the government's policy of prioritising essential health services and the provision of services without user fees. Any attempt to further increase the share of the benefits from public health spending reaching the poor should focus on improving health awareness and facilitating greater utilization of health services, particularly among the rural poor.

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## Endnotes

<sup>a</sup> Government of Malawi's Consolidated Annual Accounts for the financial year ending June 2004 and the Ministry of Health's Draft Expenditure Return for the financial year ending June 2005 (as final Government accounts for the year ending June 2005 were not published at the time of analysis).

<sup>b</sup> There are two cost centres which include curative care expenditure that have been excluded: Zomba Mental Hospital, as it provides specialist health services, and Likoma District Health Office, as there is no information on the use of government health services for that district in the IHS-2 data. For the costs centres that are central hospitals all administrative costs have been included. However, for other cost centres, which represent district health offices, it is not possible to identify which administrative costs are associated with the provision of curative health services and an assumption has been made that only half of these costs should be included. It should also be noted that the distinction between curative and preventative health expenditures in the government accounts is imperfect.

<sup>c</sup> First, all respondents were asked: "In the past two weeks did you suffer from an illness or injury?". To all those that responded yes a second question was posed: "What action did you take to find relief for your illness?". Several responses were possible, including "Sought treatment at a government health facility".

<sup>d</sup> This finding is also consistent with a evidence cited in Mathanga and Bowie's paper on "Malaria Control in Malawi: Are the poor being served?", which reports a higher level of parasitemia amongst children from households with low socioeconomic status in rural Malawi.<sup>8</sup>

<sup>e</sup> This can be determined by combining the response to the question "Who diagnosed the illness?" ("Medical worker at hospital" or "Medical Worker at Other Health Facility") with "What action did you take to find relief for your illness?" ("Sought treatment at government health facility"). In 54.4% of the cases the facility was a hospital, in 12.5% of cases it was an "other health facility" and for the remaining 33.1% of cases it was not possible to tell from the available data.

<sup>f</sup> Those instances when the type of facility was unreported, was also estimated to consider whether the characteristics of this group are likely to cause any bias in the other two categories: government hospitals and government health centres. From the utilization data for this 'unknown' category it can be seen that there was slightly more information available for the richest quintile and those residents in urban areas. This is expected to cause slightly higher figures for the utilization of, and benefits from, the use of hospital services. However, this bias is not thought to significantly affect the trends reported.