Regional Poverty Rates and School Attendance Differentials

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The **Education Policy and Data Center (EPDC)** is a partnership of the United States Agency for International Development (USAID) and FHI 360. The mission of EPDC is to improve information and policies for education through better access and use of data and policy-oriented evaluation and research.

ABSTRACT

Many studies have found children's background characteristics are correlated with school attendance differentials, including an independent effect of the sub-national region where the children live. Why regions would have an independent effect is not well understood. This study finds that the regional poverty rate in the aggregate is correlated with lower net attendance rates. It is possible that a higher prevalence of poor households has spill-over effects on the sub-national region, leading to, for example, fewer common resources for schools, or, it may be that there are common factors underlying both higher poverty rates and lower attendance, for example, geographical inaccessibility.

INTRODUCTION

Within many countries, there is considerable variation of school attendance rates[2] between various sub-groups of the school-age population – by sub-national region, urban or rural residence, gender, wealth of household, education of parents (in particular, mother), disability. Many of these characteristics have an independent effect on attendance (Ingram et al., 2006; UIS and UNICEF, 2005; Filmer, 2006). Some of the mechanisms driving the attendance differences between these subgroups are understood, at least in part:

- *Lower household wealth* means that parents are less likely to be able to afford the costs associated with schooling in many countries (Bentaouett-Kattan, 2006), and more likely that the child's labor is needed for additional income generation rather than that the children can go to school.
- *Rural residence* means lower population density by definition and with this, a thinner distribution of schools, and more likely longer distances from home to school.
- *Rural families,* as a group, are also more likely to be dependent on their children's contributions to chores, leaving less time for school.
- *Girls education* is still, in some countries, less valued because girls are expected to marry and raise children, tasks that are not deemed to require (much) formal schooling.
- *Educated mothers* are more likely to have children attending school with success because, for example, these mothers can assist with schoolwork, understand the routine of school attendance, and have experienced the value of schooling.

[2] Here and in the rest of the analysis, "attendance rates" are generally short-hand for primary net attendance rates (NAR), although the results are likely to apply also to gross attendance rates and secondary school attendance.

For *sub-national regions*, it is not as obvious why there is an independent attendance effect. In some countries sub-national regions with lower attendance rates are further from the economic center of the country. Mozambique, an 800 kilometer long nation with its capital, Maputo, in the far south, is an example of this pattern, with the attendance rates declining the further one goes northward. Or, geographical variation in the country may explain sub-national differences, with hard-to-reach mountainous, intensely arid, or densely forested sub-regions having lower attendance rates. Another mechanism for a sub-national regional effect may be the overall poverty of the region (*regional poverty rate*). Poorer areas not only have households with fewer individual assets, but may, *as a region, have fewer common, or public, assets*, because the population can contribute less (to school resources, or to the parent teacher associations), or because civil servants are less willing to serve there, or because the local government is less able to raise local resources through taxes or other means, or a combination thereof.

To test the hypotheses that regional poverty rates may explain part of the "regional effect" on school attendance, this brief maps out sub-national relative poverty rates against sub-national attendance rates in 21 countries for which data were readily available.

Data

The data are from Demographic Household Surveys (DHS) taken in 2003-2005. These surveys query households about, among many other things, children's school attendance and household assets. Using the data on these assets, Filmer and Pritchett (2001) devised a methodology for estimating a household wealth index (basically an aggregated score based on possessions). Each household has a unique index. Between countries the indices are hard to compare because the range and the average of assets differ, reflecting national wealth differences, but also because there is some variation in the survey questions. But within

countries, indices are comparable, and relative income variation can be defined by mapping the distribution of incomes within that country. Commonly, the wealth indices are divided into five groups, or quintiles, each consisting of 20% of the country's households.

For a poverty rate that can be understood across countries, this brief defines the households in the lowest 20% of the national wealth distribution as being in relative poverty. The *relative poverty rate* of a particular region is the percentage of households in that region that fall within that lowest 20% of wealth. Relative poverty rates for urban and rural sub-regions are calculated separately within each national sub-region. Note that this definition of poverty is relative to the country's income levels, as opposed to an absolute measure of poverty such as the World Bank's "living below $1/$2 a day".

Regional poverty variation

Figure 1 (page 6) shows the relative poverty rates cross-tabulated with the region's net primary attendance rates. Disregarding the attendance rates for the moment, the figure can be read to show the variation in relative poverty by looking at the *vertical spread* of the dots.

The relative poverty rates vary considerably between regions within countries, particularly, between rural regions. With few exceptions, all urban areas in each country have lower relative poverty rates than even the "wealthiest" rural area. For the most part, the urban areas in the 21 countries all contain similar, low rates of households in the lowest 20% of incomes. Exceptions are Rwanda and Tanzania, each with a few urban areas with higher relative poverty rates, and Bangladesh, were all urban areas have an 8-12% relative poverty rate.

Between rural areas, the range of relative poverty rates is larger than between urban areas. In some countries the highest relative poverty rate is close to 80%, while the lowest relative poverty rates in those same countries is very low – 1% in Chad, 4% in Ethiopia, 1% in Ghana, 2%

in Kenya, and 3% in Peru. Rural poverty, it turns out, is not uniform, but rather unequally spread around most countries, with some rural areas carrying the bulk of the rural poverty burden.

Regional relative poverty and school attendance rates

Figure 1 (page 6), showing the relative poverty rates cross-tabulated with net primary attendance for urban and rural sub-regions, can also be read for the correlation between these two variables. A dotted linear regression line is shown for the correlations in the rural areas, with the correlation coefficient R^2 as an indication of the strength of the attendance-poverty rate relation.

In the urban areas, with little relative poverty rate variation, there is similarly little net primary attendance rate variation, overall. Most urban attendance rates are reasonably high, although there are some countries in Africa with some urban regions where the net primary attendance rate is only around 60. The attendance variation is larger than the relative poverty rate variation, and the two are not correlated in any country except in Cameroon and Mozambique where the correlation is weak.

In the rural areas, there is more net attendance rate variation, and in a little under half of the countries, net attendance is strongly, negatively correlated with the relative poverty rate. In summary, in the rural areas:

- In 8 out of 21 countries, all in sub-Saharan Africa, there is a "strong" ($R^2 > .50$) negative correlation between net attendance and the relative poverty rate – Burkina Faso, Cameroon, Chad, Ethiopia, Ghana, Kenya, Madagascar, and Malawi.
- In 7 of the 21 countries there is a "weak" ($R^2 = .10$-$.50$) negative correlation – Bangladesh, Morocco, Mozambique, Nigeria, Peru, Senegal, and Tanzania.
- In 5 of the 21 countries there is "no" ($R^2 < .10$) correlation – Egypt,

Indonesia, Philippines, Rwanda, and Vietnam.
- In one country, Guinea, there is a "weak" positive correlation.

There is no relation between the national net attendance rate and whether countries have a strong, weak, or no correlation between net attendance and the relative poverty rate.
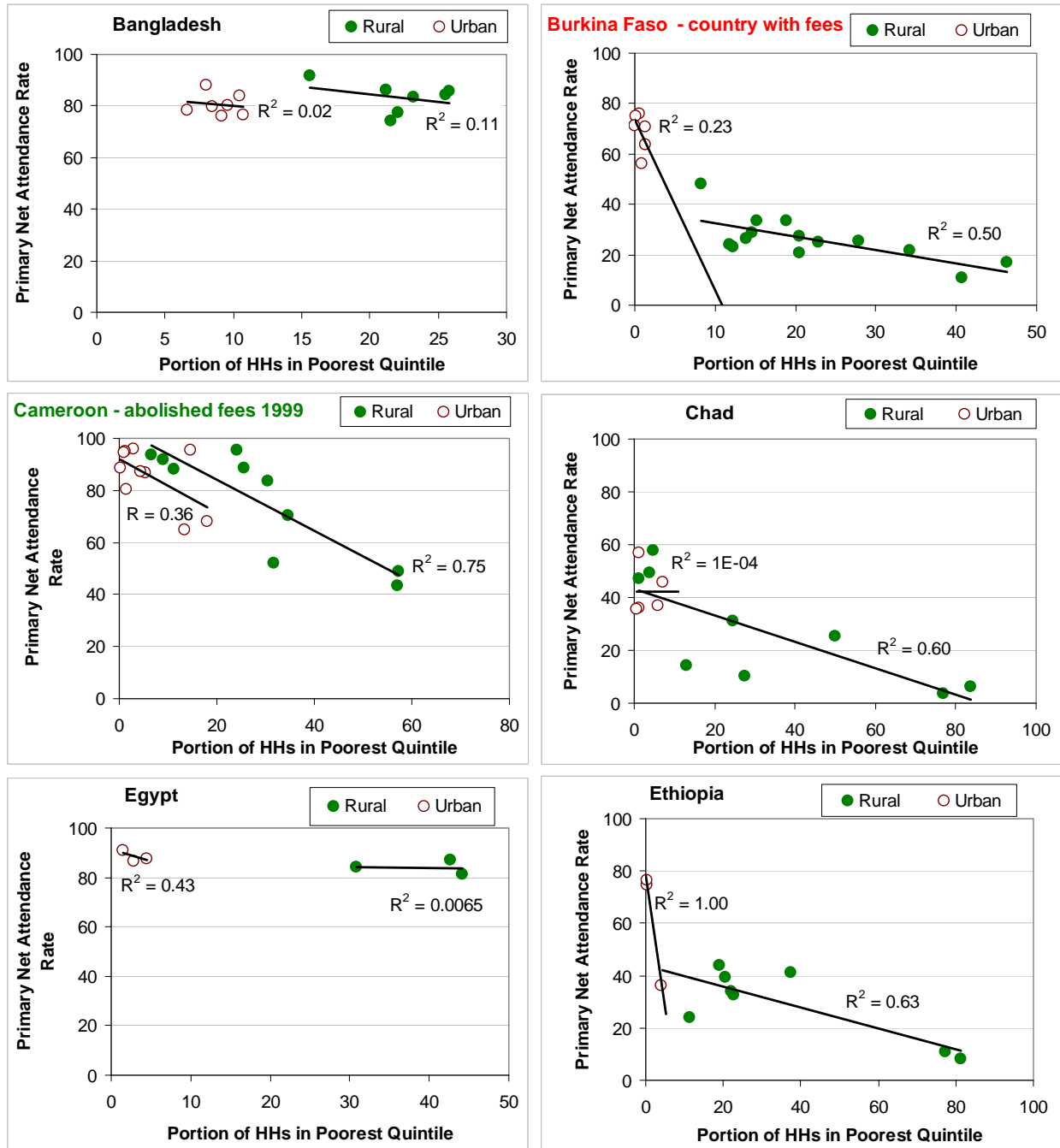
That relative poverty rates are not necessarily an impediment to high attendance rates is shown by the diverse group of countries with weak or no correlation between net attendance and relative poverty rates. Most of these countries have little or no regional variation of attendance rates whatsoever. Four countries however, do have attendance rate variability, but un-correlated with relative poverty rates – Mozambique, Nigeria, Senegal, and Tanzania. Here, other factors than wealth must drive sub-national differences. The geographical distance from the economic center was already mentioned for Mozambique. In Nigeria, the attendance
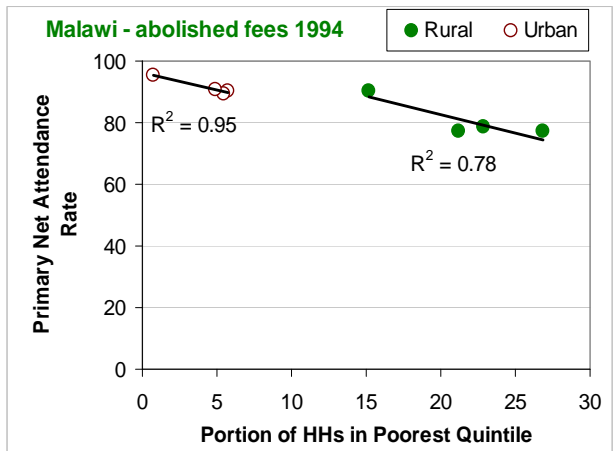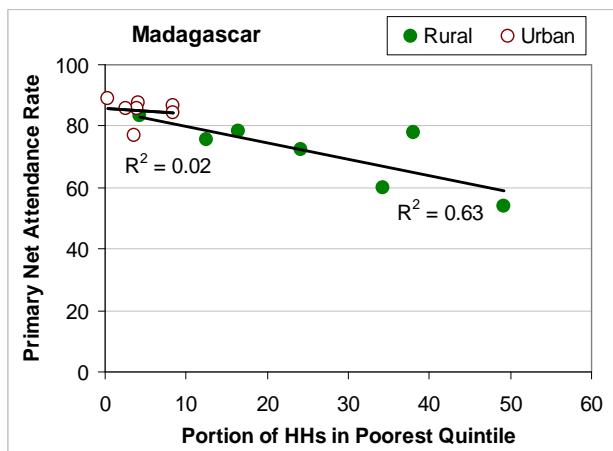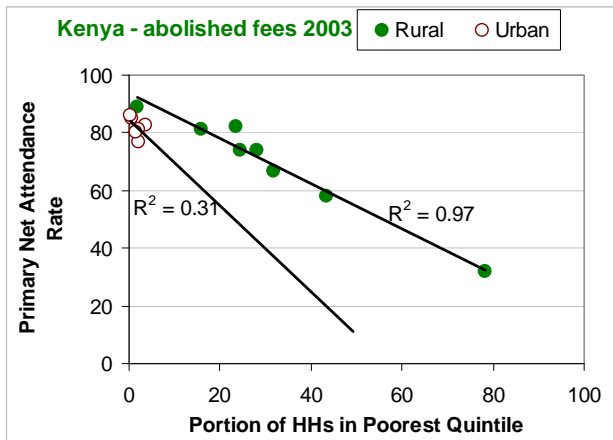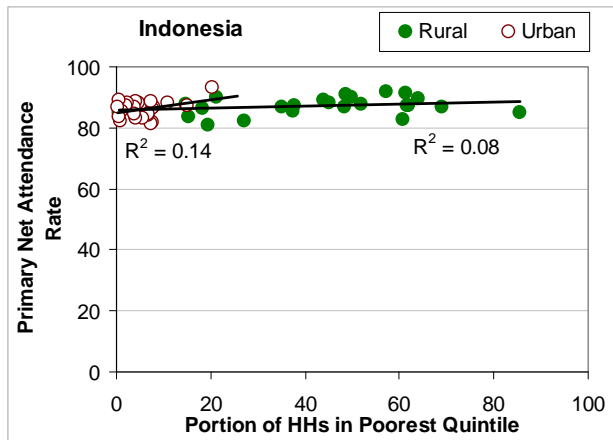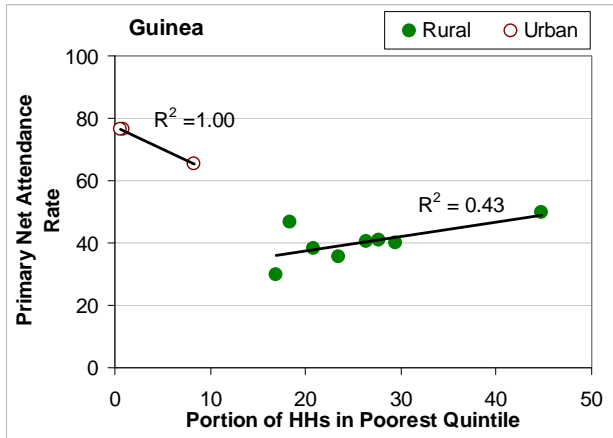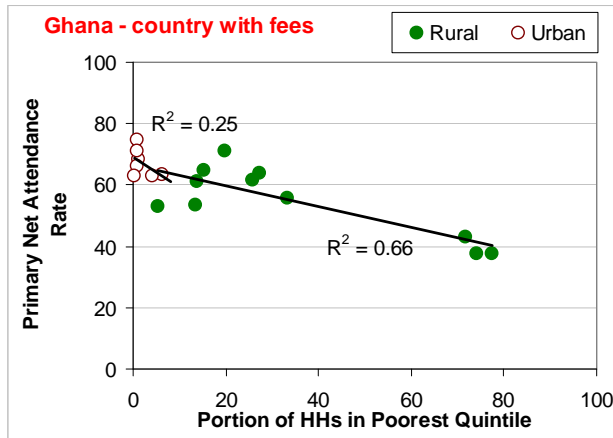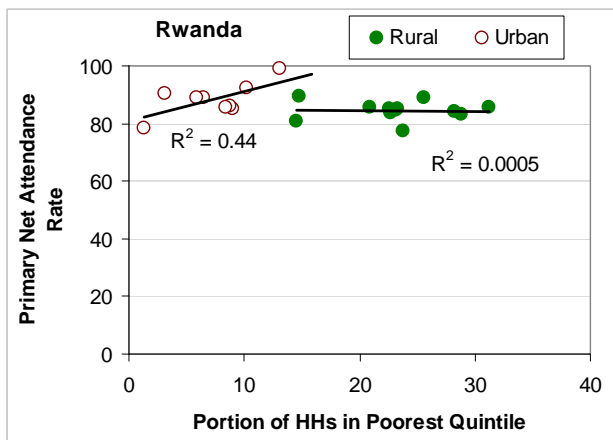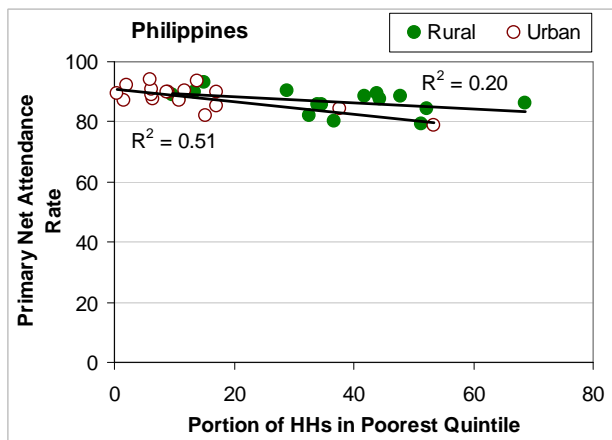
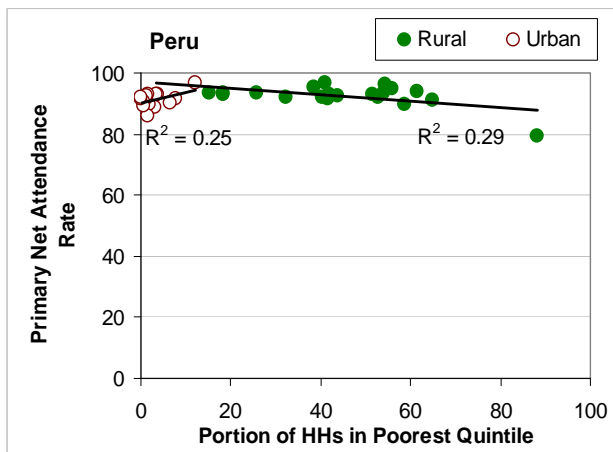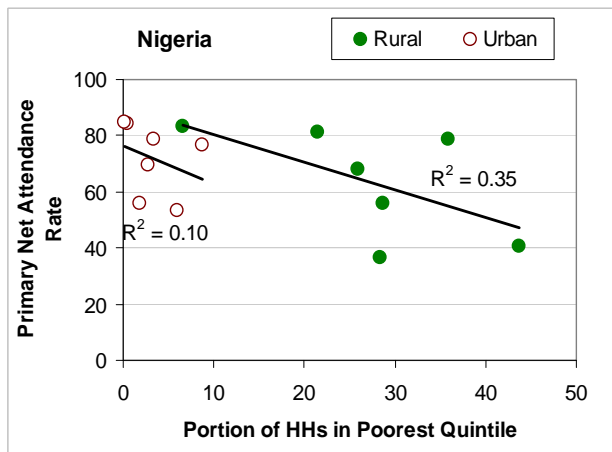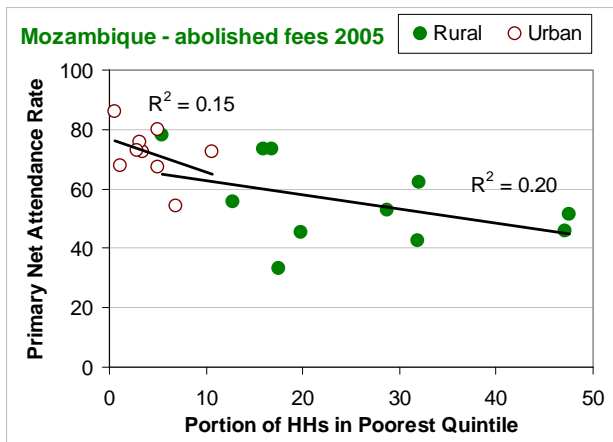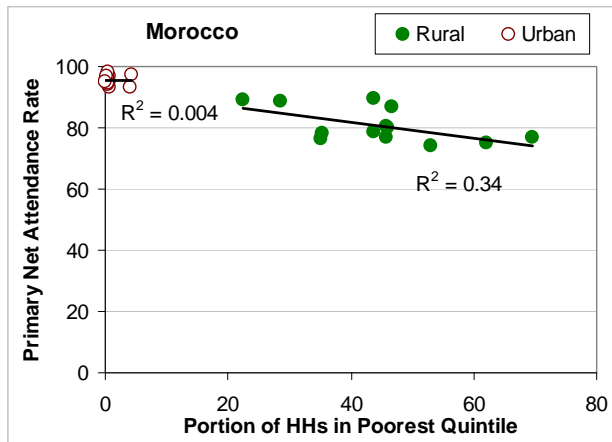differentials appear to lie more along cultural/religious lines.

That said, in 8 of the 21 countries, the relative poverty rate has a strong, negative correlation with net attendance, suggesting that there can be regional poverty factors that keep children out of school.

To some extent, these strong correlations are an artifact of the aggregated household effects – a greater prevalence of poor households, each with a lower attendance of its children, will, summed together, add up to lower regional attendance. However, it is possible that there are, in *addition,* a regional poverty effect such as those mentioned at the onset. A multivariate analysis with separate variables for household level incomes and the regional poverty rate will be able to separate these two effects. That analysis is not undertaken for this brief, but may be in the future, as part of the EPDC's ongoing analyses of factors driving inequality of educational opportunities in developing countries.

Figure 1. Cross-tabulation of primary net attendance rates by relative income depravation in sub-national regions, rural and urban separated, for 21 countries.

Ghana - country with fees

Primary Net Attendance Rate vs Portion of HHs in Poorest Quintile. $R^2 = 0.25$, $R^2 = 0.66$. Legend: ● Rural ○ Urban

Guinea

Primary Net Attendance Rate vs Portion of HHs in Poorest Quintile. $R^2 = 1.00$, $R^2 = 0.43$. Legend: ● Rural ○ Urban

Indonesia

Primary Net Attendance Rate vs Portion of HHs in Poorest Quintile. $R^2 = 0.14$, $R^2 = 0.08$. Legend: ● Rural ○ Urban

Kenya - abolished fees 2003

Primary Net Attendance Rate vs Portion of HHs in Poorest Quintile. $R^2 = 0.31$, $R^2 = 0.97$. Legend: ● Rural ○ Urban

Madagascar

Primary Net Attendance Rate vs Portion of HHs in Poorest Quintile. $R^2 = 0.02$, $R^2 = 0.63$. Legend: ● Rural ○ Urban

Malawi - abolished fees 1994

Primary Net Attendance Rate vs Portion of HHs in Poorest Quintile. $R^2 = 0.95$, $R^2 = 0.78$. Legend: ● Rural ○ Urban

Senegal

Tanzania - abolished fees 2004

Vietnam

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ABBREVIATIONS

DHS	Demographic and Health Surveys
EPDC	Education Policy and Data Center
UIS	UNESCO Institute of Statistics
UNICEF	United Nations Children's Fund

DEFINITIONS

Primary school net attendance rate is the total number of children who said they were attending primary school in the present year and who are of primary school age, expressed as a percentage of the primary school age population.