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Low-Cost Private Schools: the Solution to Achieving "Education for All" in Africa's Slums?

– A Case Study of Kenya

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Abstract

Slum-dwelling children in developing countries are enrolling in fee-charging "low-cost private schools" (LCPSs) despite legal entitlement to Free Primary Education. The role of LCPSs in accelerating progress on international education targets is highly debated. This study examines the impact of LCPSs on education access and quality in Sub-Saharan African slums through a case study of Kenya. It finds that LCPSs expand access to schooling in slums—though to the detriment of equity in access—and out-perform public schools on some but not all measures of quality. It argues that LCPSs are not a panacea for fulfilling targets on access and quality.

Table of Contents

List of Figures

Acronyms

APHRC	African Population Health Research Center
CBO	Community-Based Organization
DHS	Demographic and Health Surveys
EFA	Education for All
FBO	Faith-Based Organization
FGD	Focus Group Discussion
FPE	Free Primary Education
GER	Gross Enrolment Rate
KCPE	Kenya Certificate of Primary Education
KNBS	Kenya National Bureau of Statistics
KSh	Kenyan Shilling
LCPS	Low-Cost Private School
MDG	Millennium Development Goal
MoE	Ministry of Education
NER	Net Enrolment Rate
PCR	Pupil-Classroom Ratio
PTR	Pupil-Teacher Ratio
SSA	Sub-Saharan Africa
UPE	Universal Primary Education

1. Introduction

Slum-dwelling children across developing countries are paying for private schooling despite their legal entitlement to Free Primary Education (FPE). Recognizing the fundamental role of education in economic and human development, governments in 2000 committed to achieving Universal Primary Education (UPE) by 2015 under the Millennium Development Goals (MDGs) and Education for All (EFA) agendas. Among the EFA goals are those of achieving "good quality" primary education and free universal access, especially for "children in difficult circumstances" (UNESCO 2000, 8). In an effort to fulfill international targets on education access and quality, many developing countries have implemented a FPE policy. Yet, urban poor children of these very countries are excluded from supposedly "universal" public education.

National statistics on promising educational progress disregard the estimated 862 million slum-dwellers who are "hidden from view" (UN-Habitat 2013a, 151; UNESCO 2010, 138; Cameron 2010). An emerging literature now highlights the inadequacies of public provision of educational services in slums. Filling the gaps left by the insufficient supply and deteriorating quality of public schools in slums is a "mushrooming" Low-Cost Private School (LCPS) sector; it is within this context that a puzzle emerges of slum-dwellers enrolling in fee-charging schools[1] while non-slum residents benefit from FPE.

LCPSs have sparked heated debate on the sector's potential role in achieving the EFA[2] goals on access and quality. While Tooley and Dixon (2006) and others (Tooley et al. 2008; Dixon 2012; Alderman et al. 2001) argue that LCPSs are a valuable partner in meeting EFA beyond 2015, UNESCO (2008, 16) and others (Härmä 2013; Cameron 2011; Oketch et al. 2010) contend that government reliance on the sector is "not a prescription…for accelerated progress towards EFA."

To shed light on the debated role of LCPSs in fulfilling EFA, this study examines the *impact of LCPSs on access to and quality of education in slums of Sub-Saharan Africa (SSA)* through a case study of Kenya. Having committed to EFA and the MDGs, Kenya abolished public primary tuition fees under its 2003 FPE policy. The 2010 Constitution consequently

[1] "School" and "education" henceforth refer to the primary level, encompassing grades 1-8.
[2] "EFA" henceforth refers to the aforementioned two goals on access and quality.

recognized FPE as a human right (KLR 2010, 37). Despite this policy and legal framework, many slum-dwelling children continue enrolling in the fee-charging LCPS sector.

This study thus explores the respective roles of LCPSs and public schools in Nairobi's slums to develop an understanding of the relationship between school type and measures of access and quality. By triangulating micro-level quantitative and qualitative data, it finds that: (i) while the LCPS sector expands access to schooling in slums, (ii) it does so to the detriment of equity in access; (iii) moreover, LCPSs are superior to public schools on some but not all measures of quality. It concludes that while LCPSs are not a panacea for achieving EFA in slums, they can, under certain conditions, be a temporary partner while the public sector is enhanced in size and quality.

In the first section, the study critically reviews the theoretical and empirical literature on education in slums, and presents the current debate on the LCPS sector's role in meeting EFA. It then introduces the conceptual framework and outlines the research design. The results of the case study are subsequently presented, followed by a discussion. It concludes by summarizing the findings and analyzing their policy implications.

2. Literature Review

2.1. Education in Slums

The Urban Penalty

Only recently has the notion of the "urban advantage" been interrogated and the issue of educational service provision in slums gained recognition in the development literature on education. UN-Habitat (2006, 107, 122) first acknowledged in 2006 the "urban penalty" in education to highlight intra-urban inequalities hidden behind aggregated educational statistics. The *EFA Global Monitoring Report* in 2008 similarly first acknowledged intra-urban disparities in access to education and the "sheer lack of schools" in slums (UNESCO 2007, 25). Others (UNESCO 2010, 175; Cameron 2010) have drawn attention to the exclusion of slum-dwellers from national surveys and official data, borne by the tendency to consider them "illegal." Neglect from government planning processes is but one element of the urban penalty contributing to the educational deprivation of slum-dwellers.

Slum-specific factors serving as barriers to education access and continuation are widely shared cross-nationally. Some authors (Mugisha 2006; Cameron 2010; UNESCO 2008; Oketch and Ngware 2012; Lewis 2010) emphasize *demand-side* obstacles faced by slum-dwellers, including extreme poverty, poor health, scarcity of study space, insecure roads and high opportunity costs of child labour in the informal sector. Others (Cameron 2010; Mugisha 2006; Härmä 2013) highlight *supply-side* barriers to education provision, including congestion, flooding, unstable electricity, tenure insecurity and an absence of political will to serve the urban poor. The "urban advantage" in education thus does not seem to apply to many slum-dwelling children.

Mushrooming LCPS Sector

It is within the urban penalty context that the LCPS sector has "mushroomed" in many developing countries. An emerging area of study, UNESCO (2008) first acknowledged in 2009 the changing educational landscape caused by LCPS growth across slums of Ghana, India, Kenya, Nigeria and Pakistan. Though lacking a standardized definition, LCPSs are generally classified as non-state schools catering for poor (typically urban) households, and self-financed

through relatively low fees[3] (Srivastava 2013, 12). Operating as small businesses on tight margins, LCPSs are owned and managed by a variety of actors with diverse motivations, including entrepreneurs, commercial enterprises, faith-based organizations (FBOs) and community-based organizations (CBOs) (Rose 2007; Srivastava 2013). As requirements for government approval are nearly unattainable in slums, such as property ownership and outdoor space, LCPSs tend to be non-registered (Heyneman and Stern 2014; Adelabu and Rose 2004; Dixon 2012; Härmä and Adefisayo 2013; Mugisha 2006). While therefore unregulated and without state assistance, LCPSs nevertheless teach ministry-approved curricula (Härmä 2013). Though diverse, the sector is generally deemed a private school alternative for the poor.

While "de facto privatization" (Tooley and Dixon 2006) has occurred for over a decade via LCPSs compensating for malfunctioning public education, nearly all researchers agree on the sparse availability of systematic and rigorous evidence on the LCPS model (Srivastava 2013; Dixon 2012; UNESCO 2008; Tooley et al. 2008; Härmä 2013; Lauglo 2004; Oketch and Ngware 2012; Heyneman and Stern 2014). Further complicating research on LCPSs is their tendency to exist "under the radar" in hidden and temporary structures, given the constant risk of eviction or forced closure (Härmä and Adefisayo 2013, 129; Dixon 2012; Cameron 2010). Insufficient data on the sector contributes to the lack of knowledge on the educational status of slum-dwelling children more generally.

South Asia

This research gap has nonetheless narrowed with the growing literature on "private schools for the poor" in South Asia. In India, the Probe Team (1999, 102-103) first noted how parental dissatisfaction with the lack of accountability and teaching activity of public schools drew the poor to the private sector. This trend is echoed in Tooley et al.'s (2007, 544) census of Hyderabad's slums in 2003, which shows greater enrolment in LCPSs (65%) than public schools (24%) and likely underestimated the proportion given difficulties in locating non-registered schools. In their analysis of quality, the authors (2007, 545-550) find LCPSs were superior to public schools in terms of teacher absenteeism, Pupil-Teacher Ratios (PTRs) and school inputs. In another study of a slum in East Delhi, Tooley and Dixon (2007, 208) find 66% of all schools

[3] While lower than formal private school fees to appeal to a wider client base, what is considered "low-fee" varies across context (Härmä and Adefisayo 2013; Srivastava 2013).

in 2004 were LCPSs, suggesting that the LCPS phenomenon may be widespread across Indian slums.

In four slum areas of Dhaka, Bangladesh, Cameron's (2010, vi) 2008 household survey reveals that the proportion of urban children to never enrol in school (15%) is double that of his rural sample, owing partly to the limited supply of public schools serving slums. Similar to quality concerns in India, Cameron (2010) notes parental discontent with the public sector's overcrowding and "double-shifting" system, wherein lower primary grades are taught during mornings and upper grades taught in afternoons. Given these supply and quality constraints, it is unsurprising that Cameron (2010, 9) finds more pupils (45%) in LCPSs than public schools (42%). This reflects the significant contribution of the non-state sector in meeting slum-dwellers' educational needs here as in India.

Sub-Saharan Africa

Until recently, there has been little attention on the African context, despite a similar phenomenon of LCPSs emerging in countries with a FPE policy. Some of the impetuses behind LCPS growth in parts of South Asia are also found in Nigeria. Adelabu and Rose (2004) and Härmä (2013, 550) suggest that Nigerian public schools have "fallen out of favour with parents" due to their deteriorating quality of teaching, poor infrastructure and frequent teacher strikes. This is reflected in Tooley and Dixon's (2006, 450) school census of Lagos's slums, which finds 43% of schools in 2003 were LCPSs enrolling 33% of all pupils. On quality measures, the authors (2006, 453-454) show that LCPS pupils achieved better mean scores than their public school counterparts on standardized maths and English tests (by 19% and 29% points respectively), and also observed greater teaching activity in LCPSs. These studies suggest that LCPSs in Nigeria's slums help fill both the supply and quality gaps of the public sector.

Evidence from a more recent study of Lagos suggests an increase in the relative significance of LCPSs. Härmä's (2013, 554) 2011 school census in two slums finds 33 LCPSs and only three public schools located at the periphery, signalling a barrier to public schooling access. As an indication of quality, Härmä's (2013, 549, 560) household survey reveals 94% of the sampled slum-dwelling children were enrolled in LCPSs despite requiring 38% of the minimum wage per child, which parents claim is owing mainly to perceived quality advantages of smaller class sizes and more active teachers. On the other hand, Härmä and Adefisayo (2013)

highlight how LCPSs in both slums utilize unqualified teachers and sub-standard infrastructure. Though extending access to many children, the quality of LCPSs relative to public schools in Lagos remains unclear.

In East Africa, rapid urbanization has produced a growing "under-class" of slum residents who are neglected by the public education sector (Oketch and Ngware 2012, 4). In Kenya, the other African country to have received growing attention in the literature, a scenario comparable to Nigeria is found in which slum-dwelling children are under-served by the state and primarily enrolling in LCPSs. In a macro-level study on enrolment, Mugisha's (2006) use of a slum residence index enables him to disaggregate Kenyan DHS data by slum households to find that school enrolment is lower in slums than non-slum urban areas. Moreover, enrolment for slum-dwelling children declines after age 11 at a faster rate than among rural counterparts (Mugisha 2006, 476). Though to be interpreted with caution, as it is unknown the extent to which the DHS sample is representative of all "illegally" residing slum households, the findings suggest an "urban penalty" is indeed experienced by slum-dwelling children in access to (registered) schools.

Micro-level studies on Kenya demonstrate a burgeoning LCPS sector compensating for this urban penalty. Analyzing educational data from the African Health and Population Research Center's (APHRC) longitudinal household slum survey, Oketch and Ngware (2012) find a steadily growing prevalence of LCPSs in Nairobi's slums. In comparing two Nairobi slums to two non-slum, middle-income Nairobi settlements, Oketch and Ngware (2012, 53) show that slum-dwelling children in 2005 were twice as likely to enrol in LCPSs as non-slum children, most of whom attended public schools instead. In terms of academic achievement, another study of the APHRC datasets (Ejakait et al. 2011, 1006) finds that slum-dwelling pupils performed worse than non-slum pupils on the 2006 Kenya Certificate of Primary Education (KCPE) exam. These various studies suggest that slum households are disadvantaged not only in access to free schooling, but also in educational quality compared to non-slum urban pupils.

Several authors have attempted to explain this conundrum of slum-dwelling children enrolling in LCPSs despite Kenya's FPE policy. While Tooley et al. (2008) argue that the impetus behind demand for the LCPS sector in Kenya's slums is its superior quality, Oketch et al. (2010) maintain instead that excess demand for education and short supply of public schools

explain the mushrooming of the sector. Though Dixon and Tooley (2012, 696) explicitly dismiss Oketch et al.'s (2010) argument in favour of their earlier position on quality, this study suggests that both explanations need not be deemed rivalrous and may instead be complementary.

2.2. The Polarized Debate

LCPS Advocates

From the literature on education provision in slums emerges a heated and unresolved debate on the LCPS sector's role in reaching EFA. On the one side are LCPS advocates (Tooley and Dixon 2006; Tooley et al. 2008; Dixon 2012; Alderman et al. 2001; Bridge International), who argue that government support of LCPSs can expand educational opportunities, enhance equity in access and improve schooling quality.

Access

A key argument in favour of the LCPS sector is its already vast contribution in extending access to children otherwise under-served by the state. Their large supply means that LCPSs tend to be closer in proximity to households than public schools, thus easily accessible (Härmä and Adefisayo 2013). Tooley and Dixon (2006, 457) and Tooley et al. (2008, 467), leading supporters of LCPSs, dismiss concerns that their fees pose insurmountable barriers to achieving EFA by arguing that they are modest and within reach of the poor. Others (Härmä and Adefisayo 2013) have noted that LCPSs are flexible in allowing piecemeal payments. Moreover, numerous studies report on the LCPS practice of offering free and concessionary places to disadvantaged children (Tooley and Dixon 2006; Adelabu and Rose 2004, 49; Härmä and Adefisayo 2013). The sector is thus seen as enhancing physical accessibility without the high costs of formal private schools.

Quality

Advocates also insist that LCPSs offer better quality schooling than the deteriorating public sector in many developing countries. Evidence from various studies (Tooley and Dixon 2006; Alderman et al. 2001; Härmä and Adefisayo 2013) suggest that LCPSs out-perform public schools on many measures, including teaching activity, class size and achievement tests. Though public school teachers tend to be more qualified than LCPS teachers, some (Tooley and Dixon 2006; Härmä and Adefisayo 2013) argue that this may mean little in reality if they are not present, on-task or skilled at delivering the subject matter. As they recruit teachers at lower costs

(UNESCO 2014, 272), LCPSs have been proposed as more cost-effective means of achieving good learning outcomes than public schools.

Their supposed superior quality is partly explained by market-based mechanisms of competition and accountability. Unlike public school teachers who have permanent positions and salaries unrelated to performance, private school teachers can be fired if parents "voice" dissatisfaction or "exit" by moving their children and payments elsewhere (Probe Team 1999, 64; Dixon 2012, 198). Some (Tooley and Dixon 2006; Härmä 2013, 552) argue that such market choice grants parents the "short route" of accountability and incentivizes schools to provide better quality and more affordable tuition. While expanding access for the urban poor, LCPSs are thus also promoted as a better quality alternative to the public sector.

Policy Approach

Rather than replacing what already exists in poor areas, advocates recommend embracing and expanding the LCPS sector as a more viable route to reaching EFA than public schooling. On the supply-side, Lauglo (2004) advises governments register LCPSs to channel support to them. Tooley and Dixon (2006) add that within a better regulatory framework, quality concerns could be resolved through government provision of grants or loans to LCPSs for investment in infrastructure, teaching materials and teacher training. On the demand-side, Mugisha (2006) and Tooley and Dixon (2006) propose a policy of targeted education vouchers or scholarships, which could formalize existing practices of concessionary places for the poor. Even if LCPS sector expansion undermines the public system, Tooley and Dixon (2006) argue that this concern is irrelevant to poor households provided EFA is achieved. Rather than universal public education, these authors advocate an approach of targeted support to the LCPS sector and disadvantaged households.

Universalists

On the opposing side are "universalists" (UNESCO 2008; Härmä 2013; Rose 2002; Cameron 2011; Watkins 2000; Adelabu and Rose 2004; Heyneman and Stern 2014; Oketch et al. 2010; Probe Team 1999; UNDP 2003), who deem primary education a public good. For these authors, the mushrooming LCPS sector is conceived as a direct symptom of state failure to respond to the educational needs of slum-dwelling children.

Access

The primary concern over LCPSs is their implications for equity in access to schooling. UNESCO (2010) and Härmä (2013) contend that while LCPSs fill the gaps in slums, from a social justice perspective this reflects an inexcusable scenario in which the urban poor invest their meagre incomes in schooling, while residents of less marginalized areas access free education; the responsibility for providing the public good is thus transferred to the market and parents (UNESCO 2008, 131). Moreover, the poorest households are unable to afford even the least expensive private schools, thus making them inaccessible to the "ultra-poor" who remain "left behind" (Härmä and Adefisayo 2013, 150; Srivastava 2013; Watkins 2000; Adelabu and Rose 2004; UNDP 2003; Probe Team 1999, 105). Responding to claims of concessionary places, Härmä and Adefisayo (2013) question the validity of self-reported philanthropy of school owners, while Srivastava (2013, 20) adds that such practices could be marketing ploys to retain pupils.

In addressing arguments about expanded market choice through private provision, UNESCO (2008, 16, 239) argues that rapid LCPS growth reflects a negative response of parents "voting with their feet" and incomes to exit the malfunctioning public sector, rather than "positive choice." Where the decision is between distant, overcrowded free public schools or nearby, fee-charging LCPSs with smaller classes, Härmä and Adefisayo (2013) question the actuality of greater "market choice." Exclusionary tuition fees of LCPSs and constraints on the exercising of choice are thus seen as undermining educational equity.

Quality

Universalists remain sceptical over quality claims in favour of LCPSs. Lincove (2007, 3) argues that in resource-constrained settings, the private sector merely compensates for weak public school capacity, rather than creates market-based incentives to improve quality. Srivastava (2013) similarly points to the lack of conclusive evidence that options of "voice" and "exit" have translated into adequate pressure to enhance LCPS accountability to parents. Others (Härmä 2013; Adelabu and Rose 2004) question how positive learning outcomes can be achieved given the disconcerting infrastructure and unjust teacher salaries that characterize LCPSs. "Low-cost" strategies of recruiting unqualified and under-paid teachers have especially been noted for leading to less skilled and motivated teaching (UNESCO 2014, 232). Such reliance on low quality inputs, though indeed more affordable than public schools, limits the

extent to which LCPSs can deliver positive and equitable learning achievements (Härmä and Adefisayo 2013; Srivastava 2013). While exacerbating educational inequity, LCPSs are thus also deemed to not ensure superior quality.

Policy Approach

For some universalists (UNESCO 2008, 131), LCPSs are "not a solution to the problem" of public provision. For others (Härmä 2013, 564; Heyneman and Stern 2014; Cameron 2011; Lincove 2007), LCPSs can serve as a complement or short-term bandage to the failing public sector, and should thus be "[given] some latitude to function." Universalists all advocate for the development of public education systems that are "properly financed" and "effectively managed" (UNESCO 2008, 21), rather than relying on LCPSs as a "generic policy tool to promote UPE" (Lincove 2007, 2). Ultimately, they demand public education systems resolve underlying problems of access and quality to fulfill children's right to education.

Problematizing the Debate

It is difficult to make sweeping generalizations about the contribution of LCPSs to fulfilling EFA for numerous reasons. As the review of empirical studies indicates, the LCPS sector is highly dynamic over time and heterogeneous in terms of fees, management and motives within any given context and across settings. Additionally, given the lack of official data on non-registered schools, field research involving enumerators searching for hidden schools and persuading the release of information likely omits many LCPSs (Härmä and Adefisayo 2013). Owing to the infancy of systematic research on this sector, Srivastava (2013, 13) also cautions that "….it is premature to hold firm assumptions" about its advantages.

Nonetheless, this study demonstrates that by triangulating various sources of data to obtain a comprehensive picture at the micro-level, it is possible to draw some conclusions on the role of the LCPS sector in slums. Rather than determining whether LCPSs are uniformly better than public schools, comparing micro-level findings on measures of access and quality against the macro-level debate on the sector can elucidate the potential advantages and limitations of channeling support to LCPSs in a FPE context. Such an approach can reconcile the polarized views on LCPSs by exposing the conditions under which LCPSs can accelerate EFA progress in slums.

3. Conceptual Framework

This study explores the wider theoretical debate on LCPSs in the context of slums in SSA. It employs the concepts of *access* to and *quality* of education to shed more light on the debated role of the mushrooming LCPS sector in reaching EFA.

The research question guiding the study is: *How does the LCPS sector impact on education access and quality in SSA's slums in the context of a FPE policy?*

This study therefore attempts to develop an understanding of the relationship between school type (low-cost private or public) and measures of access and quality in countries with a legal commitment to universal FPE. To address the question, it explores both LCPSs and public schools by analyzing the effects of school type (independent variable) on primary education access and quality (dependant variables) within slums.

For the purposes of this study, "LCPSs" are non-registered private schools catering to the poor and charging low tuition fees compared to nearby formal private schools. "Public" schools refer to government schools that receive capitation grants under the FPE policy. Briefly examined for comparisons, "formal private" are Ministry of Education (MoE)-registered schools that charge relatively high fees. The concept of "access" is broadly conceived as the extent to which children have *equitable* opportunities to fully participate in schooling, regardless of location, socio-economic status or other factors[4]. "Quality" is conceptualized as the effectiveness of educational services in delivering "recognized and measurable learning outcomes" and in healthy, adequately resourced learning environments (UNESCO 2000, 8). Lastly, slums are defined as informal urban settlements characterized by overcrowding, poor quality housing, insecure land tenure and inadequate public service provision (UN-Habitat 2003).

In light of the "urban penalty" suggested by Mugisha's (2006) findings, this study hypothesizes that public provision of education is, like other services, inadequate in Nairobi's slums. It also predicts that as slum-dwellers are constrained by poverty and location, not all have genuine choice among schools or can afford fees; LCPSs thus likely hamper progress on equity

[4] This study excludes analysis of gender equity, examined elsewhere on education in slums (Chant 2013; UN-Habitat 2013b) and on LCPSs more specifically (Tooley et al. 2008; Härmä and Adefisayo 2013).

in access within slums, and across slum and non-slum populations. Owing to market competition and the assumption of greater teacher accountability to fee-paying parents, the study hypothesizes that LCPSs are superior to public schools on some measures of quality. Lastly, it predicts that school type is not the sole variable impacting on access and quality, but that the slum setting itself presents both with particular obstacles.

4. Research Design

4.1. The Case Study

Though an estimated 60% of Nairobi's population live in slums occupying 5% of its land (UN-Habitat 2005, 10), relatively little is known about their educational status. Despite extensive study of the immediate macro-level impact of Kenya's FPE (see UNESCO 2005; Oketch and Somerset 2010; Muyanga et al. 2010), far less research has been conducted at a micro-level on slums and the LCPS phenomenon. Some authors of Kenya (Watkins and Alemayehu 2012, 36) have identified an absence of "…robust studies comparing the [LCPSs] serving poor communities with public schools serving comparable communities." Others (Lauglo 2004, 45) have highlighted the need to study qualitative data on non-state schooling in Kenya's slums.

This study contributes to this research gap by employing a case study method in which the aforementioned hypotheses are tested in Nairobi's slums. The most recent quantitative and qualitative secondary data are collated and triangulated from different sources to present a comprehensive, contemporary picture of education provision. The study compares measures of access and quality across school type within the slums, while also comparing, where meaningful, slum-level data against aggregate national averages. To better understand public sector capacity on quality, comparisons are made with ten arid districts[5] that have been identified by the MoE (2012) and others (Ruto et al. 2009; Lauglo 2004; UNICEF 2008) as the most under-served (apart from slums) by Kenya's public schooling.

The two slums for which the most data are available—*Kibera* and *Korogocho*—are selected. As demonstrated by the literature review, Kenya is a typical example of the broader phenomenon of LCPS growth in SSA; the conclusions are thus relevant for other urbanizing countries in the region with a similar FPE policy.

4.2. Data Sources and Limitations

The study's main sources include census data from Tooley et al. (2008), Dixon and Tooley (2012) and Allavida (2012), APHRC survey datasets presented in various studies and

[5] Garissa, Ijara, Isiolo, Mandera, Marsabit, Moyale, Samburu, Tana River, Turkana and Wajir.

government datasets[6] (KNBS 2007; KNEC 2011) on registered schools. Additionally, semi-structured interviews[7] were conducted via telephone with four key informants[8]—chosen through convenience and snowball methods of sampling—who are directly involved in education programmes in either or both slums. While eliciting anecdotal evidence to be interpreted with caution, the interview data presented in the discussion cross-check other sources and illustrate slum-specific factors influencing education access and quality.

Though among the largest in Kenya, the two selected slums may be limited in their representativeness of all slums. Moreover, as household surveys and official statistics subsume slum households under the aggregated urban category or exclude them entirely, there is a lack of slum-specific educational indicators. Additionally, no government data is available on non-registered LCPSs. Most data are thus drawn from micro-level slum studies, which may complicate triangulation where discrepancies arise in study dates, adopted measures of access and quality or operationalization of LCPSs.

[6] The 2007 school census dataset was disaggregated by locational level to isolate schools in Kibera and Korogocho; however, locations are not contained in the 2011 KCPE score dataset. While slum school names were thus manually cross-checked between the two, not all were located on the KCPE dataset, owing perhaps to school closures, name changes or an absence of exam data.
[7] See Appendix A.
[8] See Appendix B.

5. Results

This section presents, cross-checks and corroborates quantitative and qualitative findings on measures[9] of access and quality from different sources[10]. Where data is not presented, this is due to its unavailability for that particular measure or location.

5.1. Access to Education

Study Sites

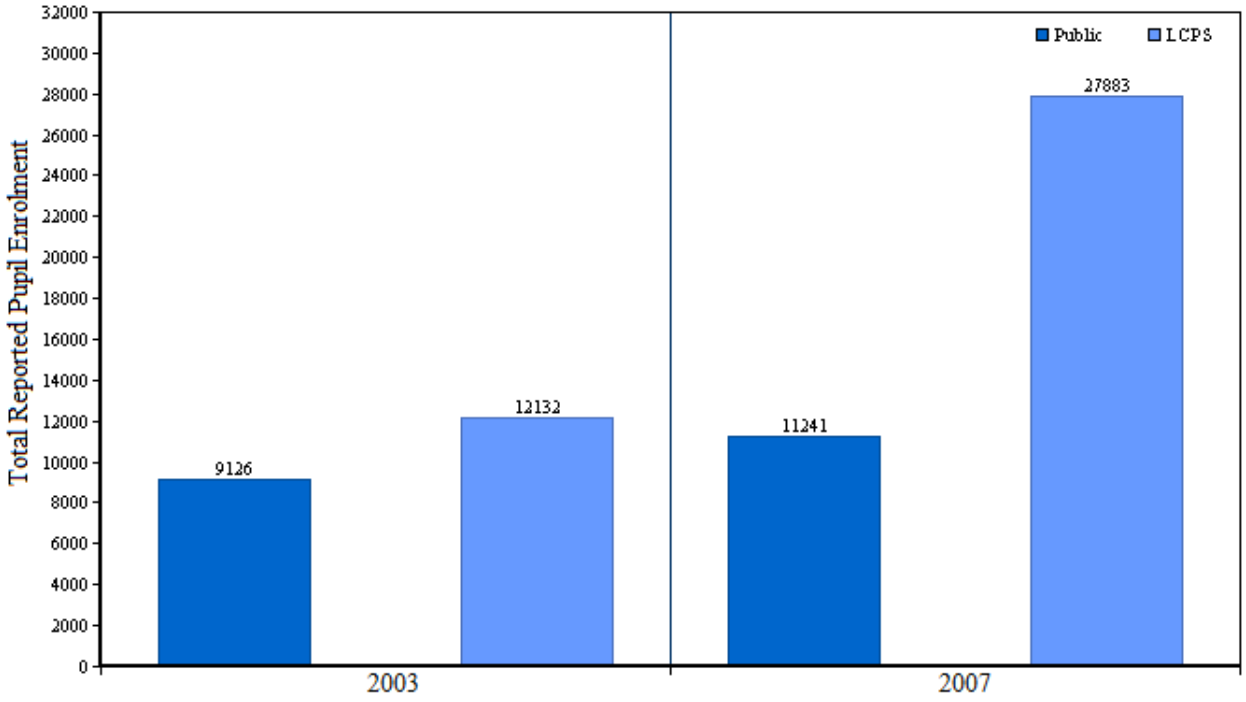
Frequently cited as the largest slum of SSA, estimates of *Kibera's* population range from 235 000-700 000 residents of an area of 2.5 km², located 5 km south of Nairobi city (Map Kibera 2010; Dixon and Tooley 2012, 696; UN-Habitat 2005, 10). An estimated 40% of its population are school-aged children (Allavida 2012, 1). Ranked the fourth largest and 48th poorest out of 49 Kenyan slums, *Korogocho's* population is estimated between 40 000-180 000 residents in an area of 0.97 km², located 11 km northeast of Nairobi (Oketch and Ngware 2012, 24; MacAuslan and Schofield 2011, 7; Ngware et al. 2013, 3).

Schooling Options

In Kibera, the same **five public** schools from 2003 were serving the community in 2007 (Dixon and Tooley 2012, 699), though government data (KNBS 2007) reveal nine. In comparison, there were **118 formal private** (KNBS 2007) and **116 LCPSs**[11] in 2007 (Dixon and Tooley 2012, 699). While public schools serve an average of 3000 pupils each, LCPSs each serve less than 500 (Allavida 2012, 17). As shown by *Figure 1*, there was nearly 2.5 times the number of pupils in LCPSs as public schools in 2007 (Dixon and Tooley 2012, 699). The management types of LCPSs are equally divided among individual proprietors, CBOs and FBOs (Tooley et al. 2008, 452). Rather than registered with the MoE, some are registered as local organizations or charities (Allavida 2012, 7).

[9] See Appendix C.
[10] See Appendix D.
[11] In contrast to 69 LCPSs in 2003 (Tooley et al. 2008), suggesting a mushrooming of the sector.

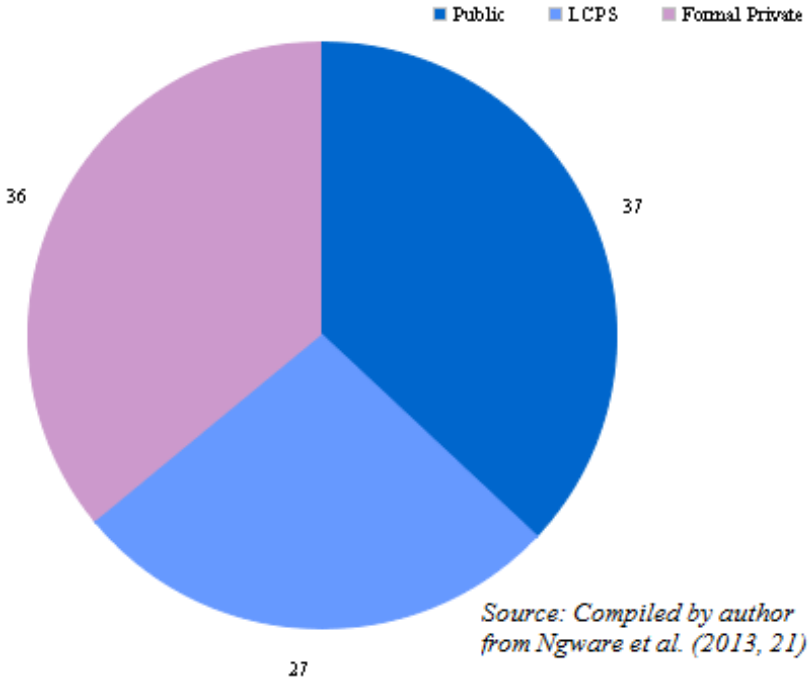
Figure 1: Enrolment Levels by School Type (Kibera)



Source: Compiled by author from Dixon and Tooley (2012, 699)

Similarly in Korogocho, there were only **two public** schools in 2012, though the government dataset (KNBS 2007) reveals four and three others were located on the outskirts in 2006 (Ngware et al. 2013, 94; Oketch et al. 2010, 30). The public sector's total enrolment proportion decreased from 52% in 2005 (Ngware et al. 2009, 599) to 37% in 2012 (see *Figure 2).* In comparison, there were **32 formal private** schools in 2007 (KNBS 2007) and **29 LCPSs** in 2006, with an additional seven LCPSs located near Korogocho (Oketch et al. 2010, 30). Like Kibera, LCPSs are managed by entrepreneurs, CBOs or FBOs (Oketch and Ngware 2012, 52). In terms of physical accessibility, 35% of households reported living more than 0.5 km to the nearest school in 2005, while the probability of enrolment increased by 1.6% for the remaining 65% who lived within 0.5 km (Ngware et al. 2009, 600-603).

Figure 2: Enrolment Proportions by School Type (Korogocho, 2012)



Source: Compiled by author from Ngware et al. (2013, 21)

School Fees

In Kibera, the mean household expenditure for education was KSh 890/month in a 2004 survey, while only 17% of respondents spent less than KSh 400/month on education (UN-Habitat 2005, 28). Though supposedly free, focus group discussions (FGDs) with parents in 2003 reveal "hidden" public schooling costs that are not observed in LCPSs, including requirements of two uniforms, leather shoes and levies for building maintenance (Tooley et al. 2008, 463). LCPS fees ranged from KSh 50-1500/month in 2007 with a mean of KSh 353/month for grade 8 (Pamoja 2008; Dixon and Tooley 2012, 701). In 2003, several LCPSs in Kibera reported allowing concessionary or free places for orphans and children of widowed mothers or large families (Tooley et al. 2008, 454). Supporting this finding is a 2011 survey in which 28% of the sampled 57 LCPSs in Kibera reported offering concessionary places; however, 81% also described sending pupils home on a monthly basis due to unpaid debts (Allavida 2012, 21).

In Korogocho, while average public school fees in 2012 were KSh 60/month (of which 75% covers meals and the remaining covers exams and extra classes), average LCPS fees were KSh 325/month (of which 70% covers tuition and the remaining covers meals and extra classes)

and formal private fees were Ksh 689/month (Ngware et al. 2013, 14-15). Pupils unable to afford public school levies in Korogocho reportedly skip school meals, temporarily stay home or drop-out entirely (MacAuslan and Schofield 2011, 29; Abuya et al. 2013, 755). Payments to LCPSs reportedly involve informal and flexible arrangements (Ngware et al. 2013).

Equity in Access

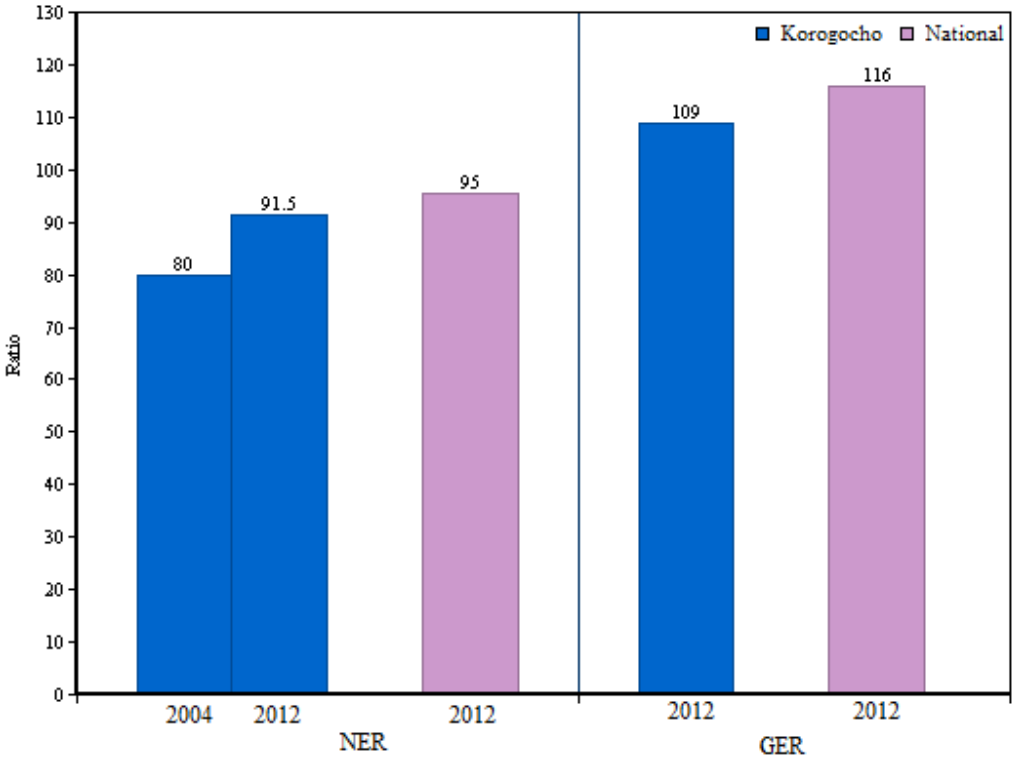
LCPS pupils in Kibera were found to be more disadvantaged than their public school counterparts on measures of average household income (KSh 5689 and KSh 8852 respectively) and mothers' education level in 2003 (Dixon et al. 2013, 90). Similarly, 43% of pupils from the poorest quintile in Korogocho attend formal private or LCPSs compared to 33% of the wealthiest in 2005; belonging to the wealthiest quintile, however, doubles a child's likelihood of enrolling in public school compared to the poorest (Oketch et al. 2010, 28-29).

Disregarding school type, inequities are also apparent in general enrolment. In Korogocho, orphans, poorer children and children of households headed by someone non-educated are less likely to be enrolled in any school compared to children of the inverse characteristics (Oketch and Ngware 2012, 58). As an indicator of inequity in school continuation, FGDs in 2008 reveal various factors leading to drop-out among disadvantaged households in Korogocho, including extra levies, insecurity and dumpsites serving as money-making opportunities (Abuya et al. 2013, 748-750).

Enrolment and Completion

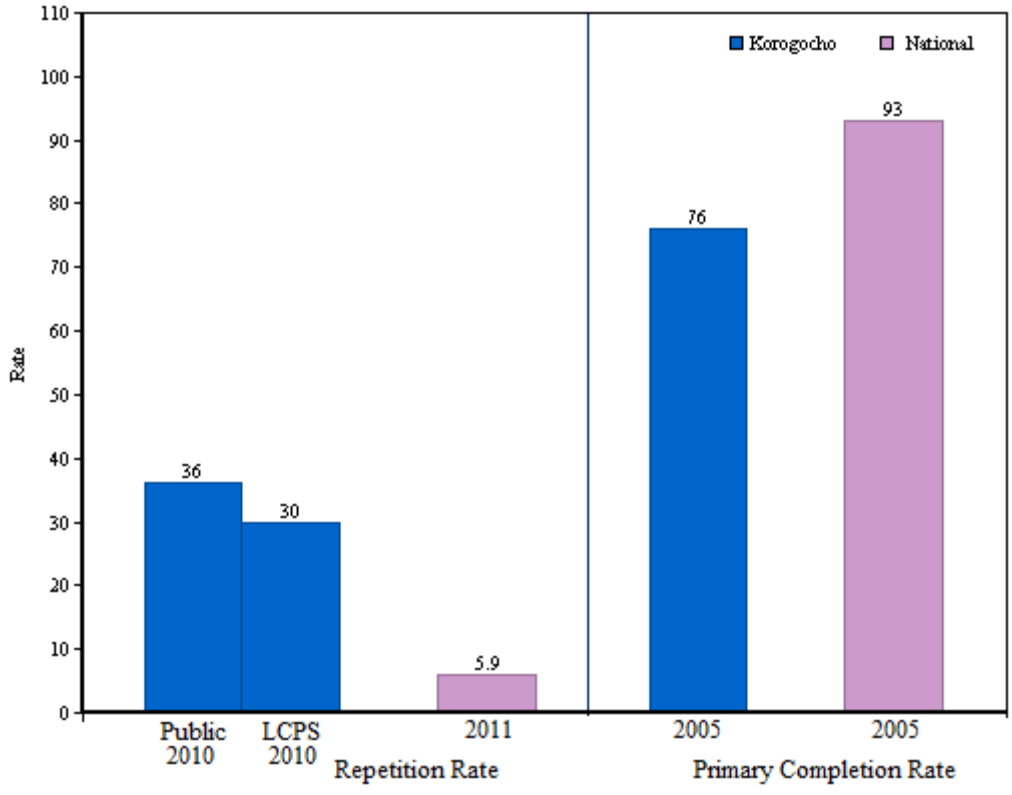
As depicted in *Figure 3*, the Net Enrolment Ratio (NER) and Gross Enrolment Ratio (GER) in Korogocho are lower than national rates. Similarly, *Figure 4* shows a lower primary completion rate in Korogocho (76%) than nationally (93%) (Admassu 2013, 4; UNICEF 2007, 3). Repetition rates are found to be higher in public schools (36%) than LCPSs (30%), both of which are higher than the national rate (5.9%) (Admassu 2013, 4; Njoka et al. 2012, 13).

Figure 3: Enrolment Rates by Location



Source: Compiled by author from Mudege et al. (2008, 103); Ngware et al. (2013, 20); KNBS (2014, 13)

Figure 4: Repetition and Completion Rates by Location



Source: Compiled by author from UNICEF (2007, 3); Njoka et al. (2012, 13); Admassu (2013, 4)

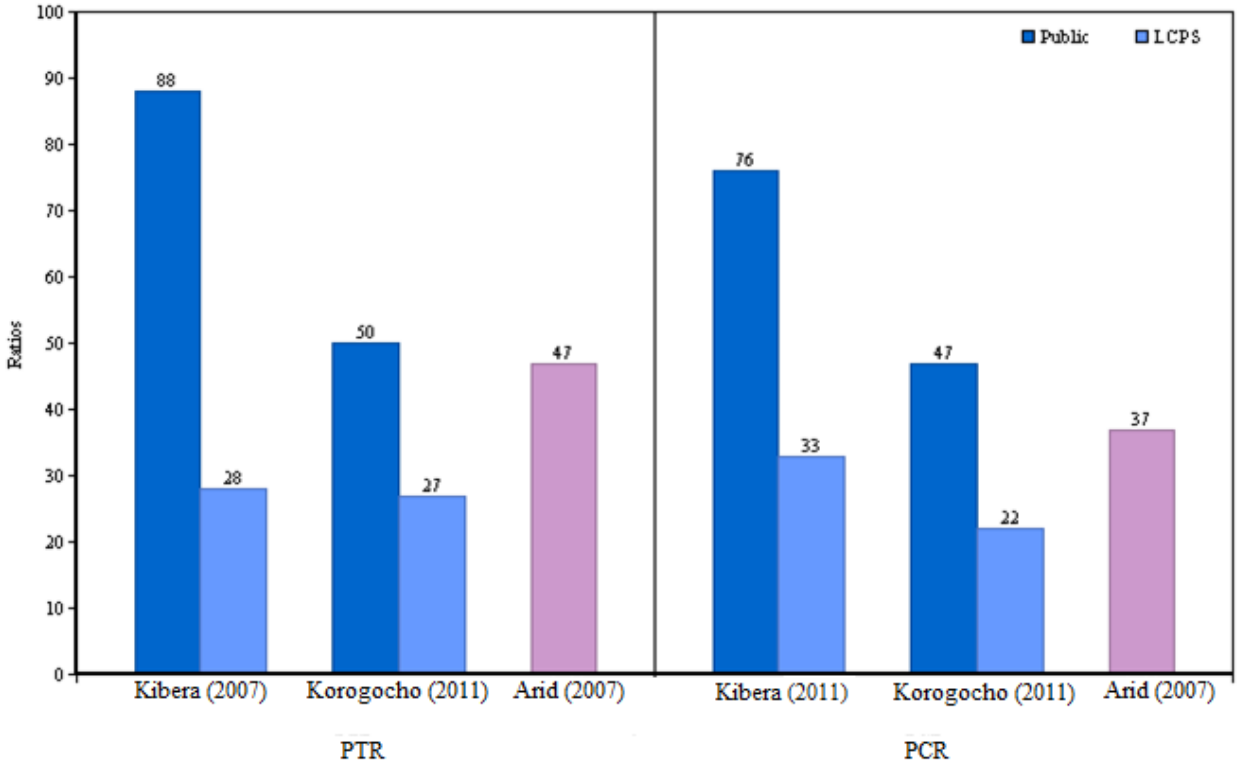
5.2. Quality of Provision

PTRs

In Kibera, *Figure 5* illustrates that PTRs in LCPSs (28:1) were more than three times lower than in public schools (88:1) in 2007, which was also the case in 2003 (21:1 and 60:1 respectively) (Dixon and Tooley 2012, 699; Tooley et al. 2008, 454). Computations on government data (KNBS 2007), however, reveal a different public school ratio (50:1) and a formal private ratio (20:1) that is lower than LCPSs. In a parallel scenario in Korogocho, PTRs are lower in LCPSs (27:1) than in public schools (50:1) (Oketch and Ngware 2012, 17). Government data (KNBS 2007) also indicate a different public school PTR (39:1) and a relatively low formal private school ratio (17:1).

These slum averages can be compared against Nairobi city's average PTR of 41:1 in 2007 and the national target rate of 40:1 (SACMEQ 2011, 5). Further comparisons can be made with arid public schools' average PTR, which was around 47:1 (KNBS 2007) or 53:1 (Ruto et al. 2009, 29) in 2007.

Figure 5: PTR and PCR by School Type and Location



Source: Compiled by author from KNBS (2007); Dixon and Tooley (2012, 699); Ruto et al. (2009, 29); Njoka et al. (2012, 12); Oketch and Ngware (2012, 17); Allavida (2012, 17)

PCR

Findings on Pupil-Classroom Ratios (PCRs) are similar to PTRs. Kibera's average public school PCR was 58:1 in 2007 (KNBS 2007) and 76:1 in 2011 (Allavida 2012, 17). Lower averages are found for LCPSs (33:1) in 2011 (Allavida 2012, 17) and formal private schools (22:1) in 2007 (KNBS 2007). In Korogocho, public schools attained a PCR of 47:1 in both 2007 and 2011, while formal private schools and LCPSs had lower averages of 30:1 (2007) and 22:1 (2011) respectively (KNBS 2007; Oketch and Ngware 2012, 17). Slum public school ratios can be contrasted with lower averages in Nairobi's schools overall (50:1, 2007), arid public schools (37:1, 2007) and the national benchmark of 45:1 (SACMEQ 2011, 3-5; KNBS 2007).

Pupil-Textbook Ratio

Public schools in both slums attained the officially required pupil-textbook ratio (2:1) on main subjects in 2011-2012 (Allavida 2012, 18; Ngware et al. 2013, xiii). While in 2012 a sample of 57 LCPSs in Kibera achieved a ratio of 3:1, LCPSs in Korogocho attained 1:1, which was even lower than the slum's formal private schools (2:1) (Allavida 2012, 18; Ngware et al. 2013, xiii).

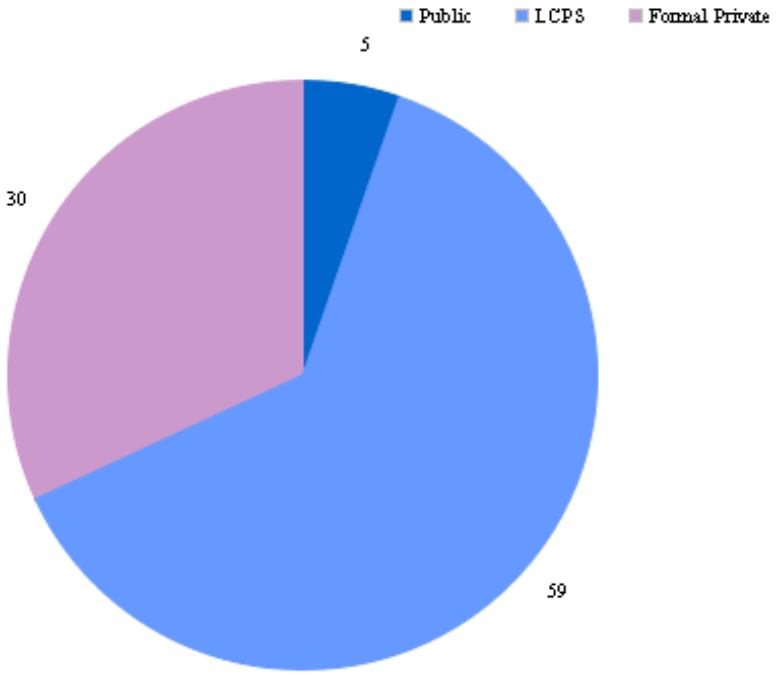
Absenteeism

In Korogocho, grade 6 pupil absenteeism in LCPSs (17%) in 2012 was lower than both public (25%) and formal private schools (25%) (Ngware et al. 2013, 31). Similarly, self-reported teacher absenteeism in Korogocho was lower in LCPSs (7%) than public schools (21%) (Ngware et al. 2013, 63).

Teachers

Teachers in the LCPS sector are found to have less experience, less training (see *Figure 6*) and lower qualifications than public school teachers. While all teachers in Kibera's public schools are formally qualified, only 57% among a sample of 57 LCPSs have teaching qualifications (Allavida 2012, 18). Moreover, 79% of LCPS teachers in 2011 had been teaching in their schools for less than a year, 12% had been teaching 1-5 years and a majority were ages 21-30 (Allavida 2012, 9-10). Similarly, the mean age of teachers in Korogocho was lower in LCPSs (27) than public schools (42), as was the amount of teaching hours (27 hours/week and 32 hours/week respectively) (Ngware et al. 2013, 58; Oketch and Ngware 2012, 17-18).

Figure 6: Proportion of Untrained Teachers by School Type (Korogocho 2012)



Source: Compiled by author from Ngware et al. (2013, 59)

Infrastructure and Inputs

Kibera's public schools are, on average, located on plots of 2 hectares, while most LCPSs are squeezed onto 0.3 hectares of unowned land in the middle of the congested slum and fewer are located in apartments near the periphery (Allavida 2012, 8). Roughly two-thirds of LCPSs in Kibera are constructed of mud and iron sheets and one-third of permanent materials, while all public schools are of concrete and cement block (Map Kibera 2014). Similarly in Korogocho, 95% of public schools are found to have classrooms meeting the government's minimum building requirements, including stone walls and cemented floors, while most LCPSs do not (Oketch and Ngware 2012, 17).

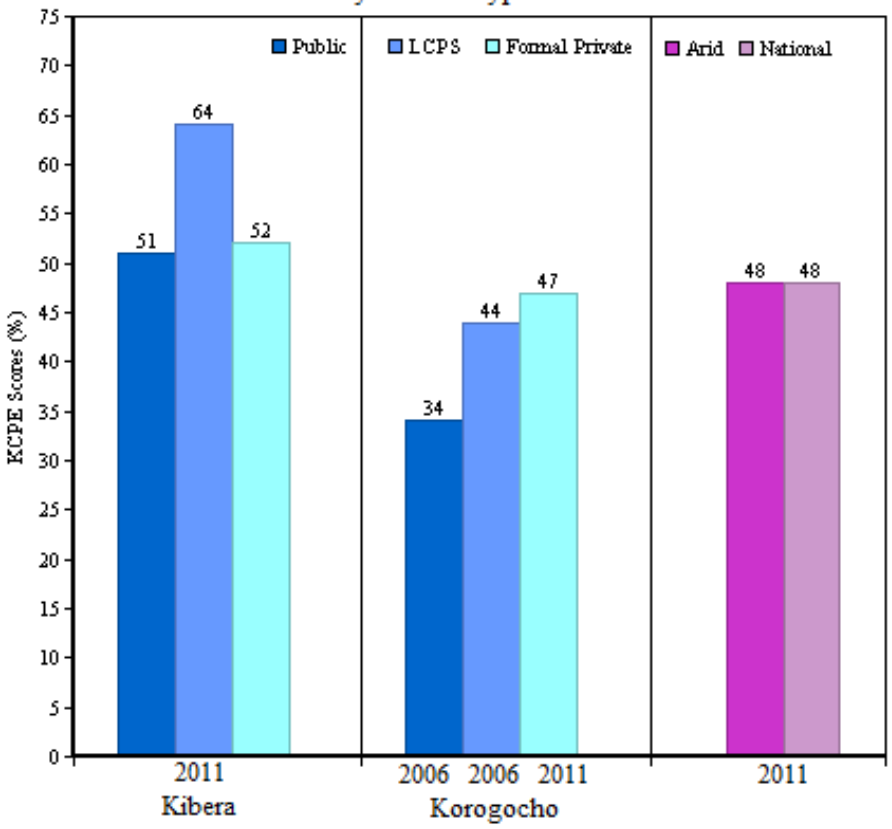
In 2007, the pupil-toilets ratio—for which the MoE standard is 25:1—in Kibera and Korogocho was far higher in public schools (71:1 and 51:1 respectively) than formal private schools (36:1 and 44:1 respectively) and LCPSs (30:1 in Korogocho), while the average ratio of arid public schools was 55:1 (KNBS 2007; Ngware et al. 2011, 102). Moreover, 80% of Kibera's LCPSs are found to have a clean water source inside the compounds compared to 50% of public

schools in 2011; on the other hand, all public schools have a feeding programme, compared to only 56% of LCPSs (Allavida 2012, 17).

Learning Outcomes

As *Figure 7* illustrates, pupils from LCPSs performed better on KCPE exams than public school pupils in both slums, while in Kibera they even out-performed (64%)[12] both formal private school pupils (52%) and the national average (48%) (Allavida 2012, 19; KNEC 2011). Arid public school pupils, however, performed better (48%)[13] than LCPS pupils in Korogocho (44%) (KNEC 2011; Ejakait et al. 2011, 1073).

Figure 7: KCPE Exam Scores by School Type and Location



Source: Compiled by author from KNEC (2011); Ejakait et al. (2011, 1073); Allavida (2012, 19)

[12] On scores out of 500.
[13] Another study found a similar score of 49% in 2008 (Ruto et al. 2009, 29).

In 2003, LCPS pupils in Kibera performed better than their public school counterparts on maths and Kiswahili tests (Dixon et al. 2013, 97). In 2011, however, more grade 3 public school pupils (76%) could read an English paragraph at a grade 1 level than those in LCPSs (61%) (Allavida 2012, 18). In Korogocho, LCPS pupils in 2012 attained higher mean scores on grade 6 literacy and numeracy tests (53% and 44% respectively) than public school pupils (47% and 40% respectively) and formal private school pupils (50% and 43% respectively) (Ngware et al. 2013, 39, 47).

Household Perceptions

FGDs in both slums indicate a general parental perception of the superior quality of LCPSs. Some parents who have experienced both sectors in Kibera suggest that the public sector's poor quality stems from its overcrowding, post-FPE policy "double-shift system" and lack of teacher accountability (Tooley et al. 2008, 461). Other parents claimed that in public schools, "children do not learn… all they do is play," while teachers are sometimes found sewing instead of teaching (Tooley et al. 2008, 461-462). Moreover, some suggested that while public school teachers were more concerned with their pupils when parents were paying for tuition, their accountability to pupils and parents has deteriorated since the 2003 abolition of fees (Tooley et al. 2008, 462).

Most parents in Kibera find that LCPS teachers are, however, more committed and give closer attention to their pupils in smaller classes than public school teachers, leading to perceived better learning and exam performance (Tooley et al. 2008, 462, 466). Many parents thus prefer paying LCPS fees where their children are "happy," "learning" and "love" their teachers (Tooley et al. 2008, 464). During FGDs in 2011, parents expressed desire for LCPSs to be granted land title and shared a general concern over the government's lack of support of Kibera's children (Allavida 2012, 21-22).

In Korogocho, FGDs with parents in 2012 revealed the perception that despite the FPE policy, households still pay levies for public education, which some found even more expensive than private schooling fees (Ngware et al. 2013, 88). Parents enrolling children in LCPSs suggest it is mainly owing to better teacher and pupil performance, while in some cases children themselves refused public schools upon seeing their interior (Ngware et al. 2013, 91). Like Kibera, parents explain that smaller class sizes in LCPSs enables greater interaction with

teachers and more effective class management, whereas public school teachers "…do teach but they tire a lot" (Ngware et al. 2013, 93). These opinions are supported by a 2012 survey in which 59% of households with children attending LCPSs in Korogocho reported that LCPS choice was due to quality-related reasons, while 13% cited cost-related reasons and 10% reported accessibility or safety considerations (Ngware et al. 2013, 84-85). Households of both slums thus express a general preference for LCPSs, which is analyzed in the following section.

6. Analysis and Discussion

6.1. Access

There is a clear shortage of public schools serving slum-dwelling children, with a greater proportion of pupils enrolled in the non-state sector. Although public schools each serve on average more pupils than LCPSs, a calculation reveals only two public schools/km² compared to 42 LCPSs/km² in the slums, supporting the hypothesis of insufficient public schooling options and suggesting greater physical accessibility of LCPSs. Moreover, significantly more pupils are enrolled in LCPSs than public schools in Kibera, confirming LCPS advocates' claims of the sector's existing vast reach. Though government data indicate more public schools than other sources, the discrepancies are likely due to larger demarcations of Kibera and Korogocho's areas (Maron 2014), thus capturing more distant schools on the slums' outskirts.

Explanations for the limited public school supply may range from political to practical, such as concern over incentivizing rural-urban migration or inadequate size of land plots for meeting government approval requirements (CfBT 2014; Marco 2014). As a majority of the LCPSs are not registered, thus unknown to the MoE (at least officially), it is reasonable to assume that in their absence there would be no public alternatives serving either community. Quality concerns aside, the limited presence of the public sector in the slums confirms the universalists' perspective that the burden of education provision has been transferred to households and the private sector.

A relatively high mean expenditure for education in Kibera, extra levies for public schooling in both slums and high fees of some LCPSs suggest that most households with school-attending children are forced to pay, despite the FPE policy. Combined with evidence explored earlier that non-slum households mainly enrol in the "free" public sector, these findings support the hypothesis that fee-charging LCPSs hinder progress on equity in access between slum and non-slum urban populations. While public school fees are relatively minimal, sending three children to a LCPS at the average fee rate in the slums equates to over 10% of the official minimum wage[14] of a casual labourer in Nairobi. Given that many slum-dwelling households likely earn a lower wage in the informal sector and school-owners may under-report fee levels, the actual LCPS fee proportion of household income may be considerably higher; indeed, the

[14] KSh 9780.95/month (Grant 2013).

LCPS fee proportion of the average household income level of LCPS pupils in Korogocho (KSh 5689) reaches 18% for three children. Moreover, the fee proportion of minimum wage reaches 46% in both slums for LCPSs on the higher end of the fee spectrum (KSh 1500/month).

Despite theoretically expanding access by offering greater supply, these costs suggest that, as universalists argue, the LCPS sector likely remains inaccessible for the poorest of the poor, who potentially face high opportunity costs of child labour or cannot sacrifice other expenses to afford even the least costly schools. The findings support the hypothesis that LCPSs contribute to inequity in access to schooling within slums by remaining unaffordable for many. Though access may be made easier through informal payment arrangements and free places reportedly offered to disadvantaged children by LCPSs, a household survey would be necessary to validate school claims of assistance, which are not extensive in the first place. Moreover, it is unlikely that all of the poorest are able to access the limited supply of free places, which may also depend on parents' abilities to negotiate with school managers. Given the dynamic LCPS market, pupils in free places at schools that suddenly close may face obstacles in finding free places elsewhere or overcoming the hidden costs of public schooling (Tooley et al. 2008, 460).

Equity concerns are reinforced by counter-intuitive findings in the slums indicating that relatively more disadvantaged children access LCPSs, whereas more well-off children enrol in "free" public schools (and presumably formal private schools). Though seemingly challenging the hypothesis that LCPSs are unaffordable for the poor, it is still likely that the ultra-poor remain excluded, as examined above. In light of evidence on public schooling costs, such as uniforms, feeding programmes, extra classes and presumably transport costs given their further distances, the counter-intuitive findings can be interpreted as the ability for wealthier slum-dwellers to afford such inflexible costs (CfBT 2014; Babu 2014); it may be more feasible for poorer households, however, to access LCPSs allowing flexible payments, not requiring uniforms and located closer in proximity. Moreover, given the short supply and congestion in public schools, there may simply be no available places for poorer children, thus drawing them to the LCPS sector. Disadvantaged pupils that do manage to access public schools are likely the same as those reported to miss meals or stay home when unable to afford extra levies, thus impeding their educational progress. Contrary to claims of LCPS advocates, poorer households

may therefore not have genuine choice among sectors and schools, which could potentially lead to intergenerational transmission of educational inequity.

Findings in the slums indicate lower levels of overall enrolment and completion than national averages, as well as higher repetition rates, which imply systematic disadvantages faced by slum-dwellers. As both slums are characterized by high population densities, insecure roads, seasonal flooding and the presence of child labour (Abuya et al. 2013; Allavida 2012; Mudege et al. 2008), such slum-specific variables may serve as barriers to access and continuation, thus partly explaining the poorer rates.

These obstacles are echoed by interviewees, who confirm that particularly in Korogocho, high levels of insecurity and gang violence may affect school attendance by endangering the roads and potentially leading to child recruitment in criminal activity (CfBT 2014; Babu 2014). In terms of child labour, interviewees also indicate that the poorest parents sometimes temporarily withhold children from schooling either for casual labour, such as painting houses and selling groundnuts, or housework to free up adults for wage labour (Babu 2014; CfBT 2014). Even if child labourers do not drop-out, such labour can both affect their attendance and their learning outcomes if unable to find time for assignments (Babu 2014). It is thus again questionable the extent to which slum-dwellers have genuine market choice given this setting. Momentarily disregarding school type, findings on enrolment and completion support the urban penalty literature, and Mugisha's (2006) conclusions, on barriers to access leading to educational inequities between slum and non-slum populations.

6.2. Quality

LCPSs achieve significantly lower PTRs and PCRs than public schools. Though the government dataset reveals lower ratios for public schools than other sources, this may be because it both includes schools beyond the slums' peripheries and does not provide PTR data for all schools. Though formal private schools have a slightly lower PTR than LCPSs in both slums, in Korogocho the LCPSs achieved a significantly lower PCR (22:1) than formal private schools (30:1), suggesting that even at lower fees pupils can enjoy smaller classes. The LCPS averages on both measures in the slums are also well below the averages for Nairobi city and national target rates, while the inverse is true for public schools. On measures of teacher supply

and class size, LCPSs thus contribute significantly in slums by offering better quality alternatives to public schools.

In practice, relatively low PTRs and PCRs mean that pupils of LCPSs potentially enjoy more interaction with teachers and focus better on schoolwork than public school pupils, while also easing class supervision and discipline. Moreover, as crowded and poorly ventilated classrooms have been noted for their health consequences in slums (Ngome and Kimiywe 2005, 8), the lower PCR of LCPSs may play a role in preventing the transmission of diseases.

Findings on pupil-textbook ratios, however, are mixed; while public schools attained the national requirement in both slums, LCPSs achieved a higher ratio in Kibera and lower in Korogocho. This suggests that while public schools are well-resourced given the state's support and requirement of meeting official standards, unregulated LCPSs can vary on their extent of learning materials, especially where dependent on unpredictable funds (CfBT 2014; Babu 2014).

Results on teacher qualifications and experience are, however, consistent; LCPS teachers are younger, less experienced and trained and have lower formal qualifications than public school teachers in slums. Given the possibility of LCPS managers over-reporting teacher qualifications (Srivastava 2013), the actual levels may be even lower. This is fairly unsurprising in light of the affordability argument on LCPSs put forth by advocates, owing to their low-cost inputs.

As pointed out by universalists, hiring unskilled teachers at salaries below minimum wage to minimize operating costs and school fees may, however, have adverse implications on learning outcomes. Unqualified and under-valued teachers may especially be problematic for teaching quality at the upper primary level. While confirming the tendency of LCPSs to have young and under-paid teachers, interviewees also highlighted how their high turnover potentially undermines lesson continuity and learning outcomes, especially among volunteer teachers who may leave their posts for paid opportunities elsewhere (Babu 2014; Marco 2014). Moreover, as highlighted by universalists, the unsteady cash flow of LCPSs means that the already low teacher salaries are not guaranteed to be paid, which is disconcerting from a social justice perspective of teachers' rights (Srivastava 2013, 23). In terms of qualifications, experience and salaries, LCPSs thus do not appear to have contributed to improving teaching quality in the slums.

Nonetheless, on KCPE exams and most achievement tests administered by various studies, LCPS pupils out-performed their public school counterparts and even formal private school counterparts on some tests. While Kibera's LCPS pupils performed more poorly than public school pupils on English tests in one study, the achievement gap may disappear once controlling for socio-economic background variables, such as the extent to which English is spoken at home. Although KCPE exams can only be conducted at registered schools or examination centres (Ngome and Kimiywe 2005, 9; Marco 2014), thus making it difficult to attribute exam scores to pupils from non-registered LCPSs, evidence that they also performed better on literacy and numeracy tests lends support to the inference that LCPS pupils tend to have better learning outcomes than public school pupils.

These greater academic achievements of LCPS pupils arise despite being taught by less qualified teachers. This may be explainable by smaller class sizes of LCPSs or greater accountability of teachers to fee-paying parents, as argued by LCPS advocates. Findings on attendance also indicate that LCPS teachers are present more often than public school teachers in Korogocho, which is consistent with empirical observations of greater teaching activity in LCPSs in slums of Nigeria and India, discussed earlier. Even if unqualified, the better attendance and potentially greater effort and motivation of LCPS teachers may thus partly explain the superior academic achievements of their pupils. Similarly, the lower pupil absenteeism of LCPSs than public schools in Korogocho may also contribute to the correlation of achievement and school type.

Confirming universalists' concerns, findings on structures indicate that LCPSs are associated with poor quality infrastructure while all public schools are built of permanent materials; this is unsurprising given the LCPSs' lack of property ownership and literature highlighting the temporary nature of their structures in slums. Interviewees similarly suggest that tenure insecurity and the possibility of government slum upgrading projects tend to disincentivize LCPSs from investing in permanent infrastructure (Babu 2014; Maron 2014). The relationship between school type and school inputs, however, is not as clear; while the LCPS average pupil-toilets ratio is lower than both public and formal private schools and more LCPSs have a clean water source than public schools, feeding programmes in Kibera are nearly twice as common in public schools as LCPSs. Though LCPS pupils may not have to pay lunch fees, the

absence of a feeding programme can adversely impact on their learning and ability to focus. These mixed results reflect the LCPS model of utilizing low-quality inputs to minimize costs.

Qualitative findings on household perceptions indicate a general greater preference of LCPSs over public schools despite the fees. There appears to be a strong parental perception of the deteriorating quality of public schools since the 2003 FPE policy in both slums, especially given their overcrowding, "double-shift system" (seen earlier in Bangladesh) and overall lack of teaching activity. LCPSs are seen as filling the gaps through smaller classes and more motivated teachers. Supporting the claims of LCPS advocates, teacher accountability emerged as a theme both in reference to fee-charging public schools prior to 2003 and LCPSs presently. Household perceptions in favour of LCPSs thus lend further support to other measures indicating their superior quality, and could also suggest the exercising of choice among schools; it may be that, as LCPS advocates argue, this positive choice ignites market-based incentives for LCPSs to further improve their quality.

Though unclear whether due to market competition and teacher accountability, as implied by FGDs, the collection of findings on quality support the hypothesis that LCPSs out-perform public schools on some measures of quality. On other indicators, however, public schools prevail.

Lastly, findings on the arid lands suggest that Kenya's public school system is not necessarily uniformly dysfunctional, but that schools serving slum communities may be especially inferior in quality. The average PTR, PCR and pupil-toilets ratio for arid public schools are below those of slum public schools. Though perhaps owing to smaller populations in arid areas, these findings nonetheless suggest that public schools serving marginalized communities are capable of meeting minimum quality standards. Moreover, pupils from arid public schools performed better on KCPE exams than LCPS pupils in Korogocho (although at different years), which is significant given that LCPS pupils themselves out-performed their public school counterparts in the slums. This finding again suggests that Kenya's public sector is capable of producing positive learning outcomes even in disadvantaged areas.

6.3. Summary

Findings on *access* reveal that the LCPS sector plays a significant role in enrolment in the slums, especially through serving poorer households. The most recent evidence indicates that a majority of pupils in Kibera and Korogocho (71% and 63% respectively) are attending fee-charging private schools, suggesting that most pupils in slums are paying for a supposedly free UPE. Moreover, the fact that more children from the poorest quintile in slums are paying for education through LCPSs than those from the wealthiest indicates that the most disadvantaged are not benefiting from the FPE programme to which they are entitled. Without the LCPS sector, however, many slum-dwelling children would be left to an already over-congested public sector, formal private schools that they cannot afford, labour in the informal sector or idleness in the often insecure slums.

The relationship between school type and *quality* is not clear; while LCPSs out-perform public schools in slums on some quality measures, including PTRs, PCRs, KCPE exam scores, certain achievement tests and household perceptions, they are inferior in terms of infrastructure and teacher qualifications and experience. Moreover, results are mixed on measures of pupil-textbook ratios and school inputs. Only when greater weight is placed on class size, learning outcomes and household opinions does the LCPS sector significantly enhance quality of schooling in slums. In its absence, however, households would be left to choose between crowded public schools with lower learning achievements or expensive formal private schools of superior quality.

The LCPS sector plays an important role in serving the accessibility and quality needs of many slum-dwelling households. It is likely that both the inadequate supply of public schools (as claimed by Oketch et al. 2010) and the perceived and real superior quality of LCPSs on some measures (as argued by Tooley et al. 2008) are major drivers of household demand and the mushrooming of LCPSs in slums. Despite supporting some arguments of LCPS advocates, the findings are primarily in favour of universalists in terms of equity and numerous quality measures. The sector's heterogeneity, owing to its non-registered and unregulated nature, and the instability of the LCPS market, given tenure insecurity and unpredictable funds, imply that LCPS pupils are educated in volatile situations in which continuity and quality of learning are not safeguarded. Where "access" implies equitable opportunities and good "quality" requires

qualified teachers in adequately resourced schools, LCPSs cannot be the solution to fulfilling EFA in slums. As explored in the conclusion, however, compromise can be found in the polarized debate.

7. Policy Implications and Conclusion

This study examined the puzzle of LCPS sector growth in slums within a FPE context through a case study of Nairobi, Kenya. By comparing the respective roles of LCPSs and public schools, it sought to understand the impact of the LCPS sector on education access and quality in SSA's slums.

The study found that on measures of access and quality, school type does matter. The short supply and over-congestion of public schools restrict education *access* for slum-dwelling children. LCPSs are far greater in quantity and, in Kibera, enrol more total pupils than public schools, thus compensating for insufficient public provision. This contribution, however, comes with the cost of exacerbating inequity in access. LCPS fees inevitably exclude ultra-poor households. Counter-intuitively, however, more slum-dwellers from the poorest quintile enrol in LCPSs than the richest, suggesting that particular obstacles constrain the ability of the poor to exercise genuine choice among sectors and schools, such as hidden costs and further distances of public schools.

The evidence on *quality* does not support advocates' claims of the LCPS sector's overall superiority to public schools. LCPSs perform worse than public schools in terms of infrastructure and teacher qualifications and experience. They are superior, however, in class size, certain learning outcomes and household perceptions. Moreover, contrary to suggestions of LCPS advocates, the public education sector is not entirely dysfunctional in serving the quality needs of marginalized communities. Public schools in arid lands out-performed slum public schools and LCPSs on numerous quality measures, suggesting that Kenya's public sector does have the capacity to perform well in extremely poor areas.

Lastly, setting aside school type, slum-dwelling children are found to be systematically disadvantaged by their marginalized setting in general school enrolment and continuation. This indication of the "urban penalty" justifies greater policy attention to the educational needs of slum-dwellers and their inclusion in official data.

While lending support to universalists' claims that LCPSs are not an adequate substitute for free public education, a key policy implication of the study's findings is that middle ground can be found within the debate. Providing *universal* FPE, even to the "hidden" urban poor, is

ultimately the Kenyan government's legal obligation. As LCPSs demonstrate that they can perform relatively well despite operating on low costs in resource-constrained settings, quality improvements in the public sector need not be costly. While focusing on expanding the supply and improving the quality of the public sector, incorporating the already extensive LCPS sector into the FPE programme can nonetheless serve as a temporary means of accelerating EFA progress in slums. Certain measures likely need to be adopted to mitigate LCPSs' weaknesses, including granting them property rights to incentivize infrastructure investments, MoE registration to abolish their fees through capitation grants and regulation to ensure quality standards.

As the Kenyan case represents an instance of the mushrooming of LCPSs serving the urban poor, the conclusions can be generalized to a broader set of cases in SSA. Particularly relevant are rapidly urbanizing countries identified by the literature (see Härmä and Adefisayo 2013; Rose 2002; Oketch et al. 2010; Tooley and Dixon 2006) for having similar LCPS growth under a FPE policy, including Ghana, Malawi, Nigeria, Tanzania and Uganda. Further research remains to be conducted to facilitate cross-country comparisons, including systematic national data-collection efforts on the "hidden" LCPS sector and on primary and secondary education provision in slums more generally. Qualitative research on learning processes in LCPSs, rather than outcomes, may also enhance an understanding of their potential advantages.

Reliance on LCPSs is not the magic bullet solution to achieving EFA in slums. Nonetheless, the paradox of urban poor enrolling in fee-charging schools despite a FPE policy is but a mere indication of the value that slum-dwelling households place in education; adequately and equitably meeting this demand can further Kenya's human development.

Bibliography

Abuya, B., M. Oketch, and P. Musyoka. 2013. "Why do pupils dropout when education is `free'? Explaining school dropout among the urban poor in Nairobi." *Compare: A Journal of Comparative and International Education* 43 (6): 740-762.

Adelabu, Modupe. and Pauline Rose. 2004. "Non-state provision of basic education in Nigeria." In *Nigeria: Study of Non-State Providers of Basic Services*, edited by G. Larbi, M. Adelabu, P. Rose, D. Jawara, O. Nwaorgu and S. Vyas. London: DFID.

Admassu, Kassahun. 2013. *Primary School Completion and Grade Repetition Among Disadvantaged Groups: A Challenge to Achieving UPE by 2015*. Nairobi: APHRC.

Alderman, H., P. F. Orazem, and E. M. Paterno. 2001. "School Quality, School Cost, and the Public/Private School Choices of Low-Income Households in Pakistan." *Journal of Human Resources* 36: 304-326.

Allavida Kenya. 2012. *Access to and Quality of Basic Education in Kibera, Nairobi: Study and Synthesis Report.* Nairobi: Allavida.

Bridge International Academies. "Bridge International Academies: Model." <http://www.bridgeinternationalacademies.com/approach/model/> accessed 27 July, 2014.

Cameron, Stuart. 2010. *Access to and Exclusion from Primary Education in Slums of Dhaka, Bangladesh.* Brighton: CREATE.

—. 2011. "Whether and where to enrol? Choosing a primary school in the slums of urban Dhaka, Bangladesh." *International Journal of Educational Development* 31 (4): 357-366.

Chant, Sylvia. 2013. "Cities through a 'Gender Lens:' a Golden 'Urban Age' for Women in the Global South?" *Environment and Urbanization* 25 (9): 9-29.

Dixon, Pauline. 2012. "Why the Denial? Low-Cost Private Schools in Developing Countries and Their Contributions to Education." *Econ Journal Watch* 9 (3): 186-209.

Dixon, Pauline and James Tooley. 2012. "A Case Study of Private Schools in Kibera: An Update." *Educational Management Administration and Leadership* 40 (6): 690-706.

Dixon, Pauline, James Tooley and Ian Schagen. 2013. "The Relative Quality of Private and Public Schools for Low-income Families Living in Slums of Nairobi, Kenya." In *Low-fee Private Schooling: Aggravating Equity or Mitigating Disadvantage*, edited by P. Srivastava, 83-103. Oxford: Symposium Books.

Ejakait, Epari, Maurice Mutisya, Alex Ezeh, Moses Oketch, and Moses Ngware. 2011. "Factors Associated With Low Achievement Among Students From Nairobi's Urban Informal Neighborhoods." *Urban Education* 46 (5): 1056-1077.

Grant Thornton. 2013. *The Regulation of Wages Order, 2013.* <http://www.braeburn.com/attachments/article/182/Wages%20%20Guide%202013.pdf> accessed 27 July, 2014.

Härmä, Joanna. 2013. "Access or quality? Why do families living in slums choose low-cost private schools in Lagos, Nigeria?" *Oxford Review of Education* 39 (4): 548-566.

Härmä Joanna and Folasade Adefisayo. 2013. "Scaling up: challenges facing low-fee private schools in the slums of Lagos, Nigeria." In *Low-fee Private Schooling: Aggravating Equity or Mitigating Disadvantage,* edited by P. Srivastava, 129-151. Oxford: Symposium Books.

Heyneman S.P. and J.M.B. Stern. 2014. "Low cost private schools for the poor: What public policy is appropriate?" *International Journal of Educational Development* 35: 3-15.

Kenya Law Reports (KLR). 2010. *The Constitution of Kenya.* Republic of Kenya.

Kenya National Bureau of Statistics and Ministry of Education (KNBS). 2007. *Kenya Primary Schools, 2007.* Kenya Open Data. *<https://www.opendata.go.ke/Education/Kenya-Primary-Schools-2007/p452-xb7c>* accessed 27 July, 2014.

—. 2014. *Kenya Facts and Figures 2014.* Nairobi: KNBS.

Kenya National Examinations Council (KNEC). 2011. *KCPE Trends*. The Open Institute <http://bit.ly/kcpetrends> accessed 28 July, 2014.

Lauglo, Jon. 2004. *Basic Education in Areas Targeted for EFA in Kenya: ASAL Districts and Urban Informal Settlements*. Washington: World Bank.

Lewis, Valerie. 2010. "The Urban (Dis)Advantage: Slums, School and Children's Work." Paper presented at *Population Association of America 2010 Annual Meeting Program*, Dallas 15-17 April, 2010.

Lincove, Jane. 2007. *Do private markets improve the quality or quantity of primary schooling in sub-Saharan Africa?* Washington: USAID.

MacAuslan, Ian and Lilly Schofield. 2011. *Evaluation of Concern Kenya's Korogocho Emergency and Food Security Cash Transfer Initiative.* London: Concern Worldwide.

Map Kibera Trust. 2010. "Kibera's Census: Population, Politics, Precision." <http://www.mapkibera.org/blog/2010/09/05/kiberas-census-population-politics-precision/> accessed 27 July, 2014.

—. 2014. *Map of Schools in Kibera.* Open Street Map. <http://www.openstreetmap.org/> accessed 17 August, 2014.

Ministry of Education (MoE), Kenya. 2012. *A Policy Framework for Education.* Republic of Kenya.

Mudege, N. N., E. Zulu and C. Izugbara. 2008. "How Insecurity Impacts on School Attendance and School Drop Out among Urban Slum Children in Nairobi." *International Journal of Conflict and Violence* 2 (1): 98-112.

Mugisha, Frederick. 2006. "School enrollment among urban non-slum, slum and rural children in Kenya: Is the urban advantage eroding?" *International Journal of Educational Development* 26 (5): 471-482.

Muyanga, Milu, John Olwande, Esther Mueni and Stella Wambugu. 2010. "Free Primary Education in Kenya: An Impact Evaluation Using Propensity Score Methods." *PMMA Working Paper.* Nairobi: Partnership for Economic Policy.

Ngome, Charles and Judith Kimiywe. 2005. *Baseline Survey on Non-Formal Schools In Korogocho and Kariobangi Slums, Nairobi.* Nairobi: Kenyatta University.

Ngware, Moses, Benta Abuya, Kassahun Admassu, Maurice Mutisya, Peter Musyoka and Moses Oketch. 2013. *Quality and Access to Education in Urban Informal Settlements in Kenya.* Nairobi: APHRC.

Ngware, Moses, Moses Oketch and Alex Ezeh. 2011. "Quality of Primary Education Inputs in Urban Schools: Evidence From Nairobi." *Education and Urban Society* 43 (1): 91-116.

Ngware, Moses, Moses Oketch, Alex Ezeh and Netsayi Mudege. 2009. "Do household characteristics matter in schooling decisions in urban Kenya?" *Equal Opportunities International* 28 (7): 591-608.

Njoka, Evangeline, Andrew Riechi, Charles Obiero, Everlyn Kemunto, Daniel Muraya, Joel Ongoto and Donvan Amenya. 2012. *Towards Inclusive* and *Equitable Basic Education System*: *Kenya's Experience*. Tunis: Association for the Development of Education in Africa.

Oketch, Moses and Anthony Somerset. 2010. *Free Primary Education and After in Kenya: Enrolment impact, quality effects, and the transition to secondary school*. Brighton: CREATE.

Oketch, Moses, Maurice Mutisya, Moses Ngware and Alex Ezeh. 2010. "Why are there proportionately more poor pupils enrolled in non-state schools in urban Kenya in spite of FPE policy*?" International Journal of Educational Development* 30 (1): 23-32.

Oketch, Moses and Moses Ngware. 2012. *Urbanization and Education in East Africa.* Nairobi: APHRC.

Pamoja Trust. 2008. *An Inventory of the Slums in Nairobi.* Pamoja Trust <http://www.irinnews.org/pdf/nairobi_inventory.pdf> accessed 27 July, 2014.

Probe Team, The. 1999. *Public Report on Basic Education in India.* Oxford: Oxford University Press.

Rose, Pauline. 2002. "Is the Non-State Education Sector Serving the needs of the Poor?: Evidence from east and southern Africa." Paper presented at *World Development Report 2004 Conference*, Oxford, 2-4 November, 2002.

—. 2007. *Supporting Non-state Providers in Basic Education Service Delivery.* Brighton: CREATE.

Ruto, Sara Jerop, John Mugo and Zipporah Ongwenyi. 2009. *Educational Marginalisation in Northern Kenya*. Paris: UNESCO.

SACMEQ. 2011. "Quality of Primary School Inputs in Kenya." *Policy Brief.* Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ).

Srivastava, Prachi. 2013. *Low-fee private schooling: aggravating equity or mitigating disadvantage?* Oxford: Symposium Books.

Tooley, James and Pauline Dixon. 2006. "'De facto' privatisation of education and the poor: implications of a study from sub-Saharan Africa and India." *Compare: A Journal of Comparative and International Education* 36 (4): 443-462.

—. 2007. "Private schooling for low-income families: A census and comparative survey in East Delhi, India." *International Journal of Educational Development* 27 (2): 205-219.

Tooley, James, Pauline Dixon and James Stanfield. 2008. "Impact of Free Primary Education in Kenya: A Case Study of Private Schools in Kibera." *Educational Management Administration and Leadership* 36 (4): 449-469.

Tooley, James, Pauline Dixon and S. V. Gomathi. 2007. "Private schools and the millennium development goal of universal primary education: a census and comparative survey in Hyderabad, India." *Oxford Review of Education* 33 (5): 539-560.

UNDP. 2003. *Human Development Report 2003*. New York: UNDP.

UNESCO. 2000. *The Dakar Framework for Action- Education for All: Meeting our Collective Commitments.* Paris: UNESCO.

—. 2005. *Challenges of Implementing Free Primary Education in Kenya– Assessment Report*. Nairobi: UNESCO.

—. 2007. *EFA Global Monitoring Report 2008, Summary: Education for All by 2015, Will We Make It?* Paris: UNESCO.

—. 2008. *EFA Global Monitoring Report 2009, Overcoming Inequality: Why Governance Matters.* Paris: UNESCO.

—. 2010. *EFA Global Monitoring Report 2010, Reaching the Marginalized.* Paris: UNESCO.

—. 2014. *EFA Global Monitoring Report 2013/4, Teaching and learning: Achieving Quality for All*. Paris: UNESCO.

UN-Habitat. 2003. *The Challenge of Slums*. Nairobi: UN-Habitat.

—. 2005. *Kibera Social and Economic Mapping: Household Survey Report*. Nairobi: UN-Habitat.

—. 2006. *State of the World's Cities 2006/7*. Nairobi: UN-Habitat.

—. 2013a. *State of the World Cities Report 2012/2013: Prosperity of Cities.*

—. 2013b. *State of Women in Cities 2012/2013*: *Gender and the Prosperity of Cities.* Nairobi: UN-Habitat.

UNICEF. 2007. *Education statistics: Kenya*. New York: UNICEF.

—. 2008. *Education in Kenya: A Situational Analysis.* New York: UNICEF.

Watkins, Kevin. 2000. *The Oxfam Education Report.* London: Oxfam GB.

Watkins, Kevin and Woubedle Alemayehu. 2012. *Financing for a Fairer, More Prosperous Kenya.* Washington: Brookings Institution.

Interviews

Babu, Michael. 2014. *Interview with author*, 1 August, 2014.

CfBT Representative. 2014. *Interview with author*, 4 August, 2014.

Maron, Mikel. 2014. *Interview with author*, 22 July, 2014.

di Marco, Alexia. 2014. *Interview with author*, 22 July, 2014.

Appendix A: Semi-Structured Interview Schedule

Access to Education

1.) What are the primary obstacles that households face in accessing primary schools in or near the slum?
2.) What are the primary obstacles to educational service provision in the slum?
3.) Why is there a lack of public provision of education within the slum?
4.) What household characteristics, if any, are associated with enrolment in each school type (ie. public schools, low-cost private schools and formal private schools)?

Quality of Provision

1.) Does the quality of education vary by school type and, if so, in what ways?
2.) What characteristics of the slum setting itself impact on the quality of education provision and how?
3.) Do household perceptions on schooling quality vary by school type and, if so, in what ways?

Appendix B: List of Interviewees

Alexia di Marco, interviewed 22 July, 2014
*Senior Education Consultant***,** CfBT Education Trust

Mikel Maron, interviewed 22 July, 2014
*Founder and Board Member***,** Map Kibera Trust

Michael Babu, interviewed 1 August, 2014
Community Outreach Programme Coordinator, Strathmore University

Representative of CfBT, interviewed 4 August, 2014
Education Regional Coordinator, CfBT Education Trust

Appendix C: Definitions of Selected Indicators

Measures of Access

Gross Enrolment Rate: The primary school enrolment level of any age as a proportion of the total population of school-aged children (can exceed 100% where there is grade repetition or early/late school entry).

Net Enrolment Rate: The primary school enrolment level of school-aged children as a proportion of the total population of school-aged children.

Primary Completion Rate: The number of primary school graduates in a given year as a proportion of the total number of children of graduation age in the population.

Repetition Rate: The proportion of pupils enrolled in a given grade who study the same grade the following year.

Measures of Quality

Kenya Certificate of Primary Education Exam Score: Percentage of score out of 500 on national standardized exam taken at the end of eight years of primary schooling.

Pupil Absenteeism: The self-reported number of school days from which pupils were absent during the last complete school week.

Pupil-Classroom Ratio: The average number of pupils per classroom.

Pupil-Teacher Ratio: The average number of pupils per teacher.

Pupil-Textbook Ratio: The average number of pupils per textbook.

Pupil-Toilets Ratio: The average number of pupils per toilet.

Teacher Absenteeism: The self-reported number of school days from which teachers were absent during the week prior to the survey.

Appendix D: Data Collation

	Access to Education		
	Kibera	**Korogocho**	**Total Kenya**
Public Schools	**5** in 2007 **(**Dixon and Tooley 2012) **9** in 2007 (KNBS 2007)	**2** in 2012 (Ngware et al. 2013) **4** in 2007 (KNBS 2007)	
Average Fees (KSh)	"Hidden costs" (Tooley et al. 2008)	60/month in 2012 (Ngware et al. 2013)	
Formal Private	**118** in 2007 (KNBS 2007)	**32** in 2007 (KNBS 2007)	
Average Fees		689/month in 2012 (Ngware et al. 2013)	
LCPSs	**116** in 2007 (Dixon and Tooley 2012)	**29** in 2006 (Oketch et al. 2010)	
Average Fees	353/month, grade 8 in 2007 (Dixon and Tooley 2012)	325/month (Ngware et al. 2013)	
NER		**91.5%** in 2012 (Ngware et al. 2013) **80%** in 2004 (Mudege et al. 2008)	**95%** in 2012 (KNBS 2014)
GER		**109 %** in 2012 (Ngware et al. 2013)	**116%** in 2012 (KNBS 2014)
Repetition Rates		**36%** public, **30%** LCPS in 2010 (Admassu 2013)	**5.9%** in 2011 (Njoka et al. 2012)
Primary Completion Rate		**76%** of grades 3-6 pupils in 2005 (Admassu 2013)	**93%** in 2005 **(**UNICEF 2007)

	Quality of Provision				
	Kibera	**Korogocho**	**Total Nairobi**	**10 Arid**	**Total Kenya**
PTR	**88:1** public, **28:1** LCPS in 2007 (Dixon and Tooley 2012) **50:1** public, **20:1** formal private in 2007 (KNBS 2007) **60:1** public, **21:1** LCPS in 2003 (Tooley et al. 2008)	**50:1** public, **27:1** LCPS (Oketch and Ngware 2012) **39:1** public, **17:1** formal private in 2007 (KNBS 2007)	**41:1** in 2007 (SAC-MEQ 2011)	**47:1** public in 2007 (KNBS 2007) **53:1** in 2007 (Ruto et al. 2009)	**43:1** in 2007 (SAC-MEQ 2011)
PCR	**76:1** public, **33:1** LCPS in 2011 (Allavida 2012) **58:1** public, **22:1** formal private in 2007 (KNBS 2007)	**47:1** public, **22:1** LCPS in 2011 (Oketch and Ngware 2012) **47:1** public, **30:1** formal private in 2007 (KNBS 2007)	**50:1** in 2007 (SAC-MEQ 2011)	**37:1** public in 2007 (KNBS 2007)	**45:1** in 2007 (SAC-MEQ 2011)
Pupil: Text-book	**2:1** public, **3:1** LCPS in 2011 (Allavida 2012)	**2:1** public, **1:1** LCPS, **2:1** formal private in 2012 (Ngware et al. 2013)			
KCPE Exam Scores	**51%** public, **52%** formal private in 2011 (KNEC 2011) **64%** LCPSs in 2011 (Allavida 2012)	**34%** public, **44%** LCPS in 2006 (Ejakait et al. 2011) **47%** formal private in 2011 (KNEC 2011)	**37%** in 2011 (KNEC 2011)	**48%** public in 2011 (KNEC 2011)	**48%** in 2011 (KNEC 2011)
Pupil: Toilets Ratio	**71:1** public, **36:1** formal private in 2007 (KNBS 2007)	**51:1** public, **44:1** formal private in 2007 (KNBS 2007) **30:1** LCPS in 2007 (Ngware et al. 2011)		**55:1** public in 2007 (KNBS 2007)	