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Urban Poverty and Inequality in Kenya

Muna Shifa[1] · **Murray Leibbrandt**[1]

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Abstract This paper explores urban poverty and inequality in Kenya. We use the 2009 Kenyan population census data and estimate multidimensional poverty and inequality measures in the capital city and other secondary cities and towns. The results of our analysis show that poverty levels vary considerably across the different hierarchies of cities and towns in the country. The incidence of multidimensional poverty is relatively lower in the capital city, Nairobi (27%), and its satellite towns such as Ruiru (22%) and Thika (27%), while the figure is relatively higher in other large secondary cities such as Mombasa (44%) and Kisumu (46%). However, we also find large disparities in poverty levels within these cities/towns. For instance, location level poverty estimates in Nairobi range from more than 60% in Korogocho and Laini saba locations to less than 5% in Kileleshwa and Kilimani. Consistent with this, location-based horizontal inequality estimates are the highest in Nairobi, followed by Thika town. We also find gender gaps in poverty levels in all urban centers. In particular, individuals living in female-headed households are on average poorer than those who live in male-headed households. Our results suggest that comparing living standards across different urban centers based on average poverty estimates masks significant within-urban-center inequalities. Understanding these spatial inequalities in multidimensional poverty is crucial to honing the targeting of anti-poverty policy.

Keywords Urban economic development · Multidimensional poverty · Inequality · Spatial poverty · Kenya

✉ Muna Shifa
shfmhb001@myuct.ac.za

Murray Leibbrandt
Murray.Leibbrandt@uct.ac.za

[1] Southern Africa Labour and Development Research Unit, School of Economics, University of Cape Town, Cape Town, South Africa

Introduction

Many countries are urbanizing rapidly with more than 90% of the future urban growth in the world expected to occur in cities and towns of the developing world (Acuto and Parnell 2016; UNDP 2016). Historically, urbanization is often associated with economic growth and development (Annez and Buckley 2009). However, in the context of developing countries, the relationship between urbanization and economic growth or development is highly contested (see, e.g., Annez and Buckley 2009; Turok and McGranahan 2013). Although average living standards tend to be much better in urban areas than rural areas, recent evidence also suggests that urban poverty is on the rise in the developing world (Gollin et al. 2016; Ravallion et al. 2007; Mitlin and Satterthwaite 2013). This is particularly true in the case of sub-Saharan Africa (SSA) where countries have experienced rapid urbanization with little reduction in aggregate poverty (Ravallion et al. 2007, p. 28; Annez and Buckley 2009).[1] These findings suggest that despite cities being Africa's economic hub, the capacity of African cities to improve the quality of life of their inhabitants seems to be declining over time (Brockerhoff and Brennan 1998; Kessides 2006; Laros and Jones 2014).

However, the extent and depth of urban poverty are not uniformly distributed across different cities or towns even within a given country (Cohen 2006; Kilroy 2009; Grant 2010; Ferré et al. 2012). For instance, using data from nine developing countries, Ferré et al. (2012) find that the incidence and depth of poverty are higher in secondary cities and smaller towns compared to big cities. Likewise, an earlier study by Brockerhoff and Brennan (1998, p. 94) shows that living conditions worsened for city residents as a whole in SSA since the late 1970s, and residents of small cities/towns in sub-Saharan African countries have very poor living conditions. If replicable, such analyses suggest that living conditions of residents in large cities of developing countries are superior compared to those in smaller towns or rural areas.

On the other hand, there is also a recognition of substantial and growing inequality within large cities in developing countries (Brockerhoff and Brennan 1998). This suggests that the advantage of large cities has declined in recent decades and that the higher level of average welfare in big cities masks significant within-urban-center inequalities. For instance, evidence suggests that residents of informal settlements in large cities often have limited access to basic services and exposed to higher levels of crime, violence, and various health risks than residents of rural areas or smaller towns (Brockerhoff and Brennan 1998; Mitlin and Satterthwaite 2013; World Bank 2013). Nevertheless, most existing studies in the developing countries tend to focus mainly on comparing rural poverty with average urban poverty, which ignores the extent of inequality between different urban centers in a given country and the extent of inequalities in living standards within cities of different sizes and functions. Understanding the extent and depth of urban poverty and inequalities helps to improve the allocation of social programs to those residing in areas of concentrated poverty in urban areas.

In this paper, we examine the level of poverty in major urban centers using data from Kenya. We also examine inequalities in living standards across cities and within cities of different sizes and functions in Kenya. Our focus is on living standards and not just

[1] However, the notion that there is rapid urbanization across sub-Saharan Africa has been challenged by some (see for, e.g., Satterthwaite 2010; Potts 2012).

money-metric well-being (i.e., well-being measured using income or consumption measures). Therefore, we assess poverty and inequalities through a multidimensional lens. This is particularly important because urban poverty is a multidimensional phenomenon, characterized by low consumption or low income, lack of basic services such as sanitation and water, lack of education, poor health, and lack of social and economic security (World Bank 2006; Mitlin and Satterthwaite 2013). We create a multidimensional poverty index (MPI) to examine multidimensional poverty and use multiple-deprivation scores to analyze living standards inequality. Unlike an income-based measure of inequality, a measure of inequality based on multiple deprivations can present a multidimensional aspect of inequality.

Kenya has experienced rapid urban growth over the past four decades with more than 25% of its population living in urban areas in 2015, up from less than 10% in the 1960s (Fig. 1). The country has experienced rapid urban growth since the 1970s despite stagnation in per capita GDP. Although there was high average economic growth in the 1960s and early 1970s, the average economic GDP growth rate was only 0.4% in the 1980s (with average GDP per capita of 880$) and −0.7% in 1990s (with average GDP per capita of 872$).

The rapid urbanization in the 1970s coincides with the end of colonial rule in Kenya that ended the restriction of Africans' rural-urban migration (Kenya 2013). Following this, the key drivers of urban population growth in Kenya include natural population increase, rural-urban migration, the transformation of rural and peri-urban spaces to urban spaces, and an increase in a number of refugees from the neighboring countries (Hope 2013; UN-Habitat 2016; Kenya 2013).[2]

The figure also shows that the share of the urban population living in the largest city, Nairobi, is declining over time indicating small- and medium-sized towns have grown in numbers as well as in their percentage share of the urban population since the 1970s. However, the concentration of economic activity is still concentrated in the capital city as Nairobi alone accounts for about 50% of Kenya's GDP (UN-Habitat 2016). The primacy of Nairobi suggests the lack of geographically balanced economic and social development in the country. Although in the past Kenya has had no comprehensive national urban policy framework, Kenya is among the few countries in Africa that has formulated and adopted a comprehensive national urban policy framework in recent years (UN-Habitat 2016; Kenya 2013). Indeed, one of the main issues highlighted in the new long-term development plan for the country is the need for appropriate urban planning to improve living standards for urban residents (Kenya 2013).

The paper is structured as follows. Following this introductory section, the section "Data" describes the data sources used in the study. The next section "Methodology for Measuring Multidimensional Poverty and Inequality" provides an overview of the methodology used to estimate multidimensional poverty and inequality. The section "Results and Discussions" presents poverty and inequality profiles for each urban

[2] However, according to the Kenya (2013, p. 195) the highest urban growth rate between 1999 and 2009 was due to the fact that while in 1999 only the "core urban" population was used in the analysis of urbanization, in 2009, both the "core urban" and "peri-urban" populations were used. "Core urban" refers to the central, built-up area of an urban center with intense use of land and high concentrations of services, functions, and activities. The "peri-urban" area is that beyond the central built-up area and forms the transition between urban and rural areas (Kenya 2013, p. 195).

center. The final section "Conclusions" provides a summary of our main findings and reflects on their policy implications.

Data

We use data from the 2009 Kenyan population census and consider 19 major urban centers including the capital city, Nairobi, and other large secondary cities and smaller towns/municipalities. These census data give us a better representation of both smaller urban centers and neighborhoods within each urban center. In addition, the 2009 Kenyan population census provides detailed information on various well-being indicators including individuals' level of education, household asset holdings, and indicators of living standard conditions (access to water, sanitation, and housing conditions). With the exception of Nairobi, we use full population census data, which is obtained from the statistic office of Kenya. In the case of Nairobi, only the 10% sample from Integrated Public Use Microdata Series (IPUMS) is available for use.[3]

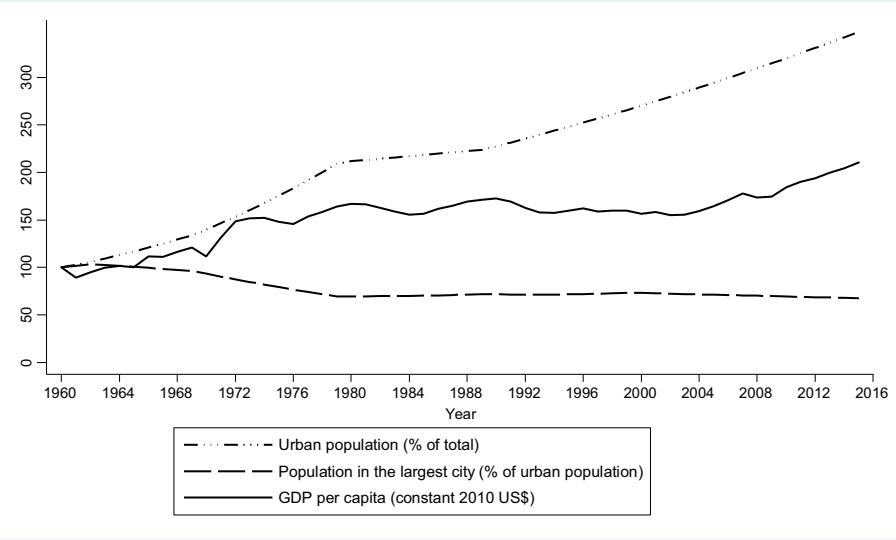
We identify cities, towns, or municipalities based on the country's definition of urban centers. An urban center in Kenya may infer a city, a municipal council, or a town council (Kenya 2012).[4] Our sample includes three cities (Nairobi, Mombasa, and Kisumu), four town councils (Karuri, Kikuyu, Klifi, Kangundo-tala), and 12 municipal councils (Table 1). Given the low population threshold in defining urban centers in Kenya, 2000 population, there were more than 178 urban centers in 2009 (Kenya 2012). In order to estimate poverty at lower geographical units such as locations and sub-locations within urban centers, access to a full population census data for the major urban centers is required. However, we have managed to get full population census data only for 18 major urban centers (excluding Nairobi). According to the 2009 population census report, 15 of the urban centers included in this study are among the largest 19 major urban centers in Kenya with a population size of 100,000.

The major urban centers considered in this study constitute more than 50% of the total urban population of Kenya. With 3.1 million people, the capital city, Nairobi, constitutes around 26% of the urban population in Kenya. This is followed by Mombasa constituting 7% of the urban population (with 0.9 million population), and Kisumu and Nakuru each constituting about 3% of the urban population (about 0.4 million population). For other urban centers, the population size ranges from close to 300,000 in Eldoret to less than 100,000 in Limuru (104,113) and Kiambu (87,958). Most of the major urban centers in Kenya are located in the high-potential agricultural zones, where population densities are also higher and along the Kenya-Uganda railway line. Among the major urban centers considered here, Ruiru, Mavoko, Thika, Kikuyu, and Kangundo-Tala are in close proximity to Nairobi.

With the exception of Nairobi, which is 100% core urban, other urban centers include a varying proportion of core urban areas, peri-urban areas, and in some cases

[3] We thank both the Kenyan National Bureau of Statistics and IPUMS for providing us with the data. We are very grateful to Bernard Obasi for helping us to identify major urban centers in the census data.

[4] "An urban centre has been defined as a built-up and compact human settlement with a population of at least 2,000 people defined without regard to the local authority boundaries. Whereas municipal and town councils essentially consist of local urban authorities, they are administrative units whose service provision boundaries may sometimes include the surrounding rural population" (Kenya 2012, p. 13).



Source: Own calculations using data from World Bank, World Development Indicators.

Fig. 1 Urbanization and per capita GDP in Kenya, 1960–2015

the surrounding rural population. For instance, Mombasa, Nakuru, Ruiru, and Garissa have no rural population and they have a relatively small proportion of peri-urban population (between 0.8% and 7%). While large urban centers such as Eldoret, Kisumu, and Kikuyu have a small or no rural population, more that 20% of their population is peri-urban. Likewise, more than 70% of the population is peri-urban in Kangundo-Tala and Machakos. Likewise, Kehanja, Malindi, and Kilifi municipalities have a large rural population, 88%, 43%, and 61%, respectively. These figures indicate that the different urban centers considered here serve different population groups that are located in core urban, peri-urban, and rural areas.

However, Potts (2017) pointed out that the inclusion of rural and peri-urban areas as part of urban centers in Kehanja, Machakos, and other urban centers in Kenya is problematic since these areas and their residents are "deeply rural and their appearance at all in a census list for urban centers is a definitional quandary." This implies the population sizes in these urban centers may not necessarily coincide with the population in city areas within these urban centers (Otiso 2005; Potts 2017). This will have implications in estimating urbanization rates and urban poverty. For example, if we consider total population size in each urban center in estimating poverty levels, we expect relatively higher poverty rates in urban centers with more rural and peri-urban populations than those with only core urban areas. Given the difficulty and confusion surrounding identification of the city areas in each urban center, we present our estimation results separated by core urban, peri-urban, and rural areas for each urban center.

Methodology for Measuring Multidimensional Poverty and Inequality

In measuring well-being, we follow Sen's capability approach (Sen 1992). Accordingly, poverty is not simply a lack of income or consumption, but a failure of basic

capabilities to function. Sen argues that people differ in their capacity to convert income and other resources into valuable achievements such as being healthy, being literate, and being well-nourished and well-sheltered. Thus, it is important to consider the distribution of such basic achievements and the corresponding capabilities in analyzing well-being in addition to income or resources.

Although Sen argues that capabilities are relevant evaluative space in analyzing human well-being instead of resources or achieved functionings, he did not provide the list of capabilities that are considered important for evaluating individual well-being. In Sen's view, "To have such a fixed list, emanating entirely from pure theory, is to deny the possibility of fruitful public participation on what should be included and why." (Sen 2004, p. 77). However, Sen suggested that for the purpose of measuring severe deprivations (poverty), we can focus on some elementary functionings (e.g., being well-nourished, being adequately clothed and sheltered, and avoiding preventable morbidity) and the corresponding capabilities. In addition, recognizing the difficulties of measuring capabilities due to data limitations, he suggested that "there is no option but to settle for the chosen functioning combination as the basis for forming a view of the opportunities that were actually enjoyed." Sen (1992, p. 135). Thus, in measuring

Table 1 Distribution of population by major urban centers, Kenya, 2009

Urban center	Total population	Urban status	By region (%)			Gender (%)
			Rural	Core urban	Peri-urban	Female
Nairobi	3,087,370	City	0	100	0	49.1
Mombasa	925,137	City	0	97.9	2.1	48
Kisumu	404,412	City	5.2	62.5	32.3	50.3
Nakuru	367,183	Municipal council	0	93.5	6.6	49.9
Eldoret	312,351	Municipal council	0	79.9	20.1	49.5
Kikuyu	265,533	Town council	0.3	75.4	24.3	50.6
Kehanja	255,357	Municipal council	88.7	11.3	0	50.8
Ruiru	240,226	Municipal council	0	99.2	0.8	49.8
Kangundo-tala	218,722	Town council	0	5.9	94.2	50.6
Malindi	204,537	Municipal council	43.5	40.2	16.3	50
Machakos	159,373	Municipal council	5.7	24.4	69.9	50.5
Thika	154,161	Municipal council	1.5	88.7	9.8	49.3
Karuri	137,942	Town council	16.2	78	5.8	49.7
Mavoko	137,724	Municipal council	1.3	79.6	19.1	45.3
Kilifi	122,018	Town councils	61.4	34.9	3.7	51
Nyeri	123,300	Municipal council	4.9	49.3	45.8	50.7
Garissa	115,744	Municipal council	0	94.3	5.7	48.9
Limuru	104,113	Municipal council	23.2	58.9	17.9	49.7
Kiambu	87,958	Municipal council	5.3	85.4	9.3	50.5
Total urban	12,023,570					
Kenya	38,412,088					

Source: own calculations using Kenyan population census (2009). Note: The Nairobi figure is based on the 10% sample. Based on the 100% census, the figure for Nairobi is 3,109,861 (Kenya 2012)

poverty, we focus on basic functionings (e.g., being well-nourished, adequately clothed and sheltered, being literate, and avoiding preventable morbidity).

We focus on four broad dimensions of well-being: education, health, living conditions, and asset holdings. These dimensions play a crucial role in determining long-term welfare in both urban and rural areas. Table 2 presents variables (indictors) used to measure each dimension, deprivation cut-offs, and weights. This selection of dimensions and indicators are in line with the recent literature in measuring multidimensional poverty in poor countries (Alkire and Foster 2011; Vijaya et al. 2014).[5] However, most of the indicators, in particular the living standard indicators included in the MPI calculations, are not direct measures of functionings but they are the means to achieve some functionings (Alkire and Santos 2013). The use of these indicators as a proxy measure of functions is justified by assuming "these means are very closely connected with the ends (functionings) they are supposed to facilitate." (Alkire and Santos 2013, p. 11). In addition, in defining the deprivation cut-offs for each indicator (most are based on international standards such as MDGs), and we are assuming that "most people would achieve at least that level if they could." (Alkire et al. 2015, p. 3).

We follow the counting approach similar to the one used by Alkire and Foster (2011) to aggregate the various dimensions into a single multidimensional poverty index (MPI). Each dimension is equally weighted, and each indicator within a dimension is equally weighed. Equal weights are assigned based on a normative judgment that all the dimensions are equally important for poverty. However, our indicators and weightings differ slightly from the Alkire and Foster (2011) approach. The Alkire and Foster (2011) approach of estimating global MPI is based on three dimensions: education, health, and living standards, and each dimension weighted equally (1/3). In our case, we use four dimensions: education, health, living standards, and asset holdings, and each dimension weighted equally (1/4). While the Alkire and Foster (2011) approach uses ten indicators, we use only eight indicators.

In the Alkire and Foster (2011) global MPI estimate, the asset holdings indicator is included in the living standard dimension and thus weighted only 1/18. In our case, we consider asset holdings as a separate dimension and weighted 1/4, and it includes livestock holdings. Thus, unlike the global MPI, we weighted the asset dimension separately from the living standard indicators. One reason for doing this is that we assume the living standard indicators such as access to electricity, water, and sanitation reflect the extent of provision of public goods and services, while households' accumulation of physical assets reflects their behavioral decisions too. Therefore, addressing deprivation problems in the living standard measures and assets may require different poverty reduction strategies. In addition, our approach is in line with recent MPI estimates for 17 Latin American countries by Santos and Villatoro (2016). Santos and Villatoro (2016) have separated the living standard indicators into three dimensions: housing, basic services (access to water, electricity, and sanitation), and living standards (income and assets). For comparison purposes, we have also presented MPI estimates (Table 6 in the Appendix) using the AF approach of weighting (i.e., including the asset indicator in the living standard dimension).

[5] Although the dimensions of poverty include other indicators such as employment and income, availability of data within a single source (population census in our case) limits the number of dimensions and indicators used.

It is well recognized that household assets such as land and livestock holdings are closely related to households' income-generating opportunities and are a source of security against unexpected income fluctuations or other shocks in many developing countries (Vijaya et al. 2014). Although the AF's global MPI did not include land and livestock as part of household asset holdings, the revised MPI specification includes land and livestock as part of the asset holdings dimension (Kovacevic and Calderón 2014). This is because the assets included in the global MPI have some urban bias (Dotter and Klasen 2017). In our case, some of the urban centers considered in the study include a combination of core urban, peri-urban, and rural populations with different livelihood strategies. Thus, excluding livestock and land from the list of assets may overstate deprivation is assets in urban centers with more rural and peri-urban populations.[6] Table 4 in the Appendix provides the distribution of deprivation in assets and its components for each urban center. Although livestock ownership is lower in Nairobi and Mombasa, there are some variations in the distribution of livestock holdings among other secondary cities and towns.

In addition, while in the Alkire and Foster (2011) MPI, deprivations are often determined at a household level, in our case, derivations are determined at an individual level. When deprivations are determined at a household level, all individuals in a household are assigned household-level deprivation scores. Thus, all individuals in a household are considered deprived/not deprived in a given indicator irrespective of an individual's achievement in that indicator. For instance, in the Alkire and Foster (2011) approach, individuals are considered not deprived in the education indicator (years of schooling) if at least one member of a household has six years of education. This approach does not allow analyzing intra-household inequalities (e.g., by gender and age structure). However, often only few dimensions are measured at an individual level (e.g., education and health). Despite this, poverty estimates differ significantly when deprivations are determined at an individual level instead of households (see Vijaya et al. 2014).

The Alkire and Foster (2011) methodology identifies who is poor using a dual-cutoff approach: deprivation cutoffs and poverty cutoffs. A given individual is considered deprived in a given indicator if his/her achievement in that indicator is below a deprivation cutoff for that indicator (as specified in Table 2). Then, deprivation scores for each indicator are summed using their corresponding weights and a second cutoff, the poverty cutoff, is used to identify poor individuals. Alkire and Foster (2011) suggest a poverty cutoff, $k = 33.3\%$ (1/3 of the weighted indicators), to identify the poor and the non-poor individuals. Thus, a given individual is considered poor if he/she is deprived in at least 1/3 of the weighted indicators. Another two additional poverty cutoff points can be used to identify individuals who are vulnerable to multidimensional poverty ($k \geq 1/5$ and $k < 1/3$) and those who are severely multidimensionally poor ($k \geq 1/2$). Once the poor individuals are identified, the headcount poverty measure, the incidence of poverty, is measured as the multidimensional headcount ratio (H):

$$H = q \Big/ n$$

[6] However, we have included livestock only because we do not have information on land access.

where n is the total population and q is the number of people who are considered poor. The intensity of poverty (A), which measures the average proportion of deprivations poor people experience, can be expressed as[7]

$$A = \frac{\sum C_i(k)}{q}$$

where $C_i(k)$ is the deprivation score of the poor (the censored deprivation score of individual i) and k is a poverty cutoff. The MPI value is the product of the multidimensional poverty headcount ratio (H) and the intensity of poverty (A):

$$\text{MPI} = H \times A$$

We can decompose the MPI by different sub-groups and by indicators. For instance, the MPI can be decomposed by geographical regions (rural, urban, peri-urban areas) or population groups such as gender. The contribution of a given sub-population group j to MPI is expressed as

$$\frac{\left(n_j \big/ n\right) \times \text{MPI}_j}{\text{MPI}}$$

We can also calculate the contribution of each indicator to overall poverty using the following formula: contribution of indicator i to MPI $= \left(\frac{w_i \text{CH}_i}{\text{MPI}}\right) \times 100$.

where w_i is the weight of indictor i and CH_i is the censored headcount ratio, which is calculated as the sum of the number of people who are deprived in indicator i divided by the total population.

Finally, in order to analyze inequalities in living standards within each urban center, we estimate both vertical and horizontal inequalities.[8] Following Seth and Alkire's (2014) approach, we use the following formula to estimate inequality in deprivation levels:

$$I(C) = \frac{4}{n} \sum_{i=1}^{n} [c_i - \mu(c_i)]^2$$

which can be decomposable into within (first part) and between (second part) inequality measures as follows:

[7] For example, let us assume we have four indicators/dimensions and four individuals with the number of deprivations for each individual being 0, 2, 4, 1 respectively. Ignoring weights for simplicity, let us assume a poverty cutoff (k) of 2. Accordingly, the second person (deprived in ½ of the indicators) and the third person (deprived in all the indicators) are considered poor. The intensity (A) can be calculated as the average proportion of deprivations that the poor people experienced: presented. $A = (0.5 + 1)/2 = 0.75$.

[8] Vertical inequality measures inequality between individuals in a given society (country, region, location), while horizontal inequality measures inequality between groups of people (grouped by, e.g., race, gender, location, etc).

Table 2 Dimensions, indicators, deprivation thresholds, and weights of the MPI

Indicator	Deprived if…	Weight
Education		1/4
Years of schooling	Children aged less than 16 years who are not at the expected age-adjusted years of schooling[a] and those who are aged 16 and above who have not completed at least 8 years of schooling	1/4
Health		1/4
Disability or morbidity	Has any morbidity	1/4
Living standards[b]		1/4
Electricity	If no access to electricity	1/20
Sanitation	Sanitation facility is pit latrine uncovered, bucket latrine, bush, cesspool, or other	1/20
Drinking water	Drinking water source is not any of the following: borehole, piped, protected well, protected spring	1/20
Flooring	Floor is earth (dirt, sand, or dung floor)	1/20
Cooking fuel	Cooking fuel is dung, wood, or charcoal	1/20
Assets		1/4
Asset ownership	Not having at least one asset related to access to information (radio, TV, telephone) and not having at least one asset related to mobility (bike, motorbike, car, truck, animal cart, motorboat) or at least one asset related to livelihood (refrigerator or livestock)	1/4

Note: After removing observations with missing values, our sample size is 7,197,447 individuals

[a] According to the Kenyan education system, the entrance age of primary school is 6 years (duration = 6 years), the entrance age of lower secondary school is 12 years (duration = 2 years), and the entrance age of high secondary school is 14 years (duration = 4 years). We use the following cutoff points to determine deprivations in education: if age 4 and less, not deprived; age 5 or 6, not attending pre-primary school; age 7 or 8, not completed pre-primary education; age 9, not completed at least grade 1; age 10, not completed at least grade 2, etc., and age 15, not completed grade 7. In addition, for those aged >4 and less than 13 years, they should be currently enrolled in school not to be deprived in education

[b] The deprivation cutoffs for these indicators are in line with the MGD guidelines (see Alkire and Santos 2013)

$$I(C) = \left[\sum_{J=1}^{m} \delta^J I\left(C^j\right)\right] + 4 \sum_{J=1}^{M} \delta^J \left[\mu\left(C^J\right) - \mu(C)\right]^2$$

where c_i indicates a weighed deprivation level for each individual, δ^J is the population share of subgroup J, $I(C^J)$ is the level of inequality in subgroup J, and $\mu(C^J)$ is the average deprivation score for group J. As a horizontal inequality measure, sub-location level deprivation scores are used to assess inequality in well-being across sub-locations within each major urban center. Accordingly, spatial inequality estimates are calculated at urban center levels as the standard deviation of population-weighted sub-location deprivation scores within an urban center.

Because population census data do not include information on income/consumption, we measure poverty using only non-income dimensions. However, it is well recognized that income is one key dimension of poverty in urban settings as the urban economy is highly monetized. Thus, to complement our poverty analyses, we provide income

poverty estimates in the case of Nairobi. These poverty estimates are a result of a recent small-area poverty mapping by the Kenyan National Bureau of Statistics (KNBS). The small-area poverty estimates are calculated by combining the 2009 Kenyan population census data with the 2005 Kenya Integrated Household Budget Survey (KIHBS).

Results and Discussions

In this section, we present poverty and inequality estimates. We first present multidimensional poverty estimates for each urban center. For a selected number of urban centers, we also present location-level poverty estimates in order to examine within-urban-center spatial poverty levels. Then, we present inequality estimates in living standards within each urban center (both vertical inequalities and horizontal inequalities).

Multidimensional Poverty Estimates

Table 3 presents multidimensional poverty estimates (poverty cutoff, $k = 1/3$) by major urban centers for Kenya in 2009. Table 5 in the Appendix presents raw deprivation scores for each indicator and the contribution of each dimension to the overall MPI. Poverty estimates in Table 3 show a significant level of differences in poverty levels among the urban centers considered in this study. Based on the head-count poverty measure, the percentage of the population who are considered poor is the lowest in Ruiru (22%) followed by Thika and Nairobi (both 27%), and Nakuru and Karuri (both 30%). In contrast, the figure is the highest in Kilifi (66%) followed by Garissa (61%), Kehanja (56%), and Malindi (56%). Poverty levels range between 39% and 46% in other large secondary cities such as Eldoret (39%), Kisumu (46%), and Mombasa (44%).

The relatively high incidence of poverty in Kilifi, Malindi, and Kehanja is consistent with the fact that a large share of their population is rural (Table 1), which lacks many of the basic urban amenities considered in this study. However, with more than 90% of its population being core urban, Garissa is also among the poorest major urban centers in Kenya. The poverty level in Garissa is greater than the Kenyan average (55%), and it is closer to the average for rural Kenya (60%). Likewise, with no rural populations (and 98% core-urban), the level of poverty in Mombasa is higher than the levels in some other urban centers with relatively larger rural or peri-urban population such as Karuri (16% rural population) and Nyeri (5% rural and 46% peri-urban populations). In addition, differences in poverty levels are very high even if we compare only urban centers with no rural population (Nairobi, Eldoret, Nakuru, Garissa, Kangundo-Tala, Ruiru, and Mombasa). For instance, the poverty levels in Mombasa, Kisumu, and Garissa are higher than the levels in Ruiru, Nairobi, and Thika.

Furthermore, even if we limit our analysis to only the core urban population, the inequality remains very high. Poverty among core urban population is the lowest in Ruiru, followed by Thika, Nairobi, Kikuyu, and Nakuru. In contrast, it is the highest in Garissa, followed by Kilifi, Kehanja, and Malindi. This is also true when we use other poverty cutoffs. Figure 2 presents MPI estimates for urban centers with no (or very small) rural population based on different poverty cutoffs. Irrespective of the poverty cutoffs used, multidimensional poverty is the highest in Garissa followed by Mombasa,

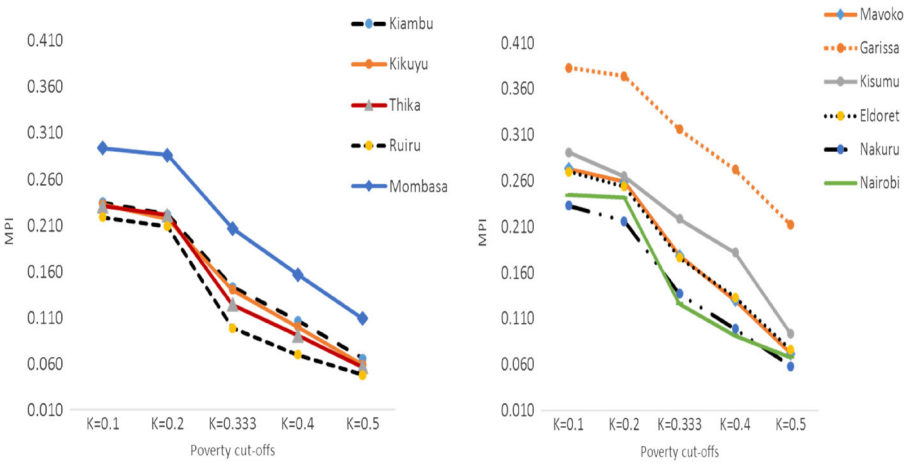
Table 3 Multidimensional poverty (poverty cutoff, $k = 1/3$) by major urban centers (2009)

Urban centers	Total			MPI by region			Contribution (%)	
	MPI	*H* (%)	*A* (%)	Core urban	Peri-urban	Rural	urban	Peri-urban
Nyeri	0.173	36.3	47.7	0.14	0.205	0.200	40	54.4
Kiambu	0.143	31.1	46.1	0.136	0.194	0.171	81.1	12.5
Karuri	0.137	30.2	45.5	0.131	0.149	0.162	74.6	6.3
Kikuyu	0.14	31.1	45.2	0.132	0.166	0.125	70.9	28.8
Limuru	0.193	43	44.8	0.184	0.229	0.188	56.2	21.1
Thika	0.124	27.2	45.8	0.119	0.169	0.169	84.7	13.3
Ruiru	0.099	21.8	45.4	0.097	0.286	–	97.8	2.2
Mombasa	0.207	43.6	47.4	0.203	0.383	–	95.9	4.1
Kilifi	0.343	66.4	51.6	0.278	0.38	0.374	26.9	4.3
Malindi	0.285	56.2	50.7	0.217	0.304	0.341	30.6	17.3
Mavoko	0.179	39.6	45.1	0.167	0.226	0.225	74.3	24.1
Machakos	0.231	47.6	48.5	0.179	0.246	0.266	18.9	74.5
Kangundo-tala	0.234	47	49.9	0.212	0.236	–	5.3	94.7
Garissa	0.316	61.1	51.7	0.305	0.488		91	9
Kisumu	0.218	46.1	47.4	0.191	0.263	0.267	54.5	39.1
Kehanja	0.293	56.2	52.2	0.241	–	0.3	9.2	–
Eldoret	0.176	38.5	45.8	0.173	0.192	–	78	22
Nakuru	0.137	30.3	45.3	0.134	0.177	–	91.5	8.5
Nairobi	0.126	27.4	46.0	0.126	–	–	100	–
Kenya	0.287	54.6	52.5	0.179	0.264	0.326		

Source: own estimates using Kenyan population census (2009)

Kisumu, Eldoret, and Mavoko, while it is the lowest in Ruiru and Thika. These results indicate that there is no clear negative relationship between the size of the urban center and poverty levels. Poverty levels in smaller urban centers such as Ruiru and Thika are less than the levels in larger urban centers such as Nairobi, Mombasa, Kisumu, and Eldoret.

As a robustness check, Table 6 in the Appendix replicates the results presented in Table 3 with the asset holdings dimension included in the living standards dimensions(following the AF global MPI approach); as a result, the weight for the asset holdings indicator reduced from 1/4 to 1/18. Including the asset holdings dimension in the living standards indicator significantly reduces the magnitude of the MPI for all urban centers considered here. However, the ranking of the urban centers based on the MPI estimate did not change due to this. The reduction in the estimated MPI due to changing the weight for the asset holdings indicator from 1/4 to 1/18 is expected as at least 40% of the individuals are deprived in this indicator in almost all urban centers (except in Kangundo-tala and Kenanja). Table 4 in the Appendix shows that asset deprivation contributes the most to the MPI estimate in all urban centers, except in Malindi, Kangundo-tala, and Kenanja. This is followed by the living standard indicators (total), except that in Garissa the contribution of education is higher than the living standard indicators. In Ruiru and Nairobi, the contributions of living standard indicators



Source: Own estimates using Kenyan population census (2009).

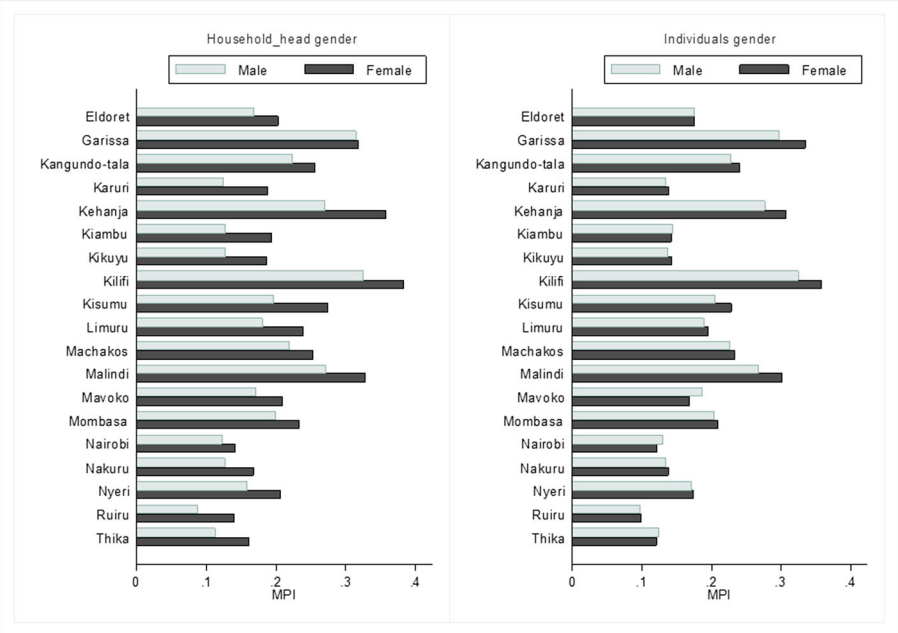
Fig. 2 Multidimensional poverty (different poverty cutoffs) by major urban centers (2009)

and education are more or less the same. The percentage of the population with a disability is 5% or less in all the urban centers. Thus, despite health measured using morbidity is given an equal weight like other dimensions (education, assets, and living standards), its contribution is very low.

Figure 3 shows gender gaps in poverty levels in almost all urban centers considered here. We present poverty levels by household head gender (left) and individuals' gender (right). In both cases, the incidence of poverty is higher among females compared to males. However, the gender gap is more pronounced in the case of the household head gender. This is expected given that most of the indicators (except education and morbidity) are household level indicators (both male and female individuals have the same level of deprivations). The figure shows that poverty is higher for individuals living in female-headed households compared to those who live in male-headed households.

Comparing poverty levels by urban/rural areas, in all urban centers, the level of poverty in peri-urban areas is larger than the level in core urban areas, with the gap being relatively larger in Ruiru followed by Mombasa and Garissa (Table 3). However, poverty in peri-urban areas is more or less the same with the level in rural areas in Nyeri, Thika, Kilifi, Mavoko, and Kisumu, while it is higher in Kikuyu, Limuru, and Kiambu. High levels of poverty in peri-urban areas have important implications for rural-urban dynamics, as these are areas where rural-urban interactions are most intense. To further examine spatial inequalities, we present poverty estimates by location for Nairobi (Fig. 4a, b) and some of the other major urban centers (Fig. 5). In the case of Nairobi, we also compare our estimates with income poverty estimates obtained from KNBS.

Among the four districts of Nairobi, the incidence of multidimensional poverty varies from 21% in Westland district to 36% in Nairobi West district. Likewise, the incidence of income poverty varies from 18% in Nairobi East district to 26% in Nairobi West. Thus, Nairobi West district is the poorest based on both the income and multidimensional poverty estimates. Within Nairobi West district, the location with



Source: Own estimates using Kenyan population census 2009.

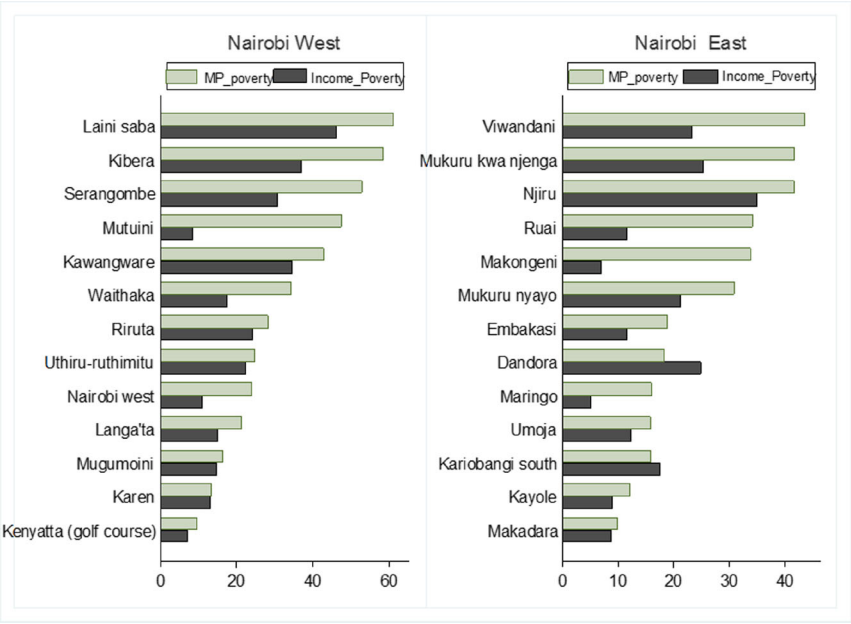
Fig. 3 Multidimensional poverty estimates (k = 1/3) by gender and major urban centers, 2009

the lowest MP poverty rate is Kenyatta (golf course), with 10% of the population living below the poverty threshold, while locations with higher poverty rates are Serangombe (53%), Kibera (59%), and Laini Saba (61%).

Likewise, within Nairobi North district, MP poverty levels reach 74% in Korogocho location, while it is 9 and 7% in Starehe and Ngara locations, respectively. Similarly, in Westlands district, the level of poverty is the lowest in Kileleshwa and Kilimani locations (4%) while it reaches 32% in Kitisuru and Kangemi locations. In Nairobi East district, the incidence of poverty varies from 10 to 12% in Makadara and Kayole locations to 42–43% in Njiru, Mukuru, Kwanjenga, and Viwandani locations.

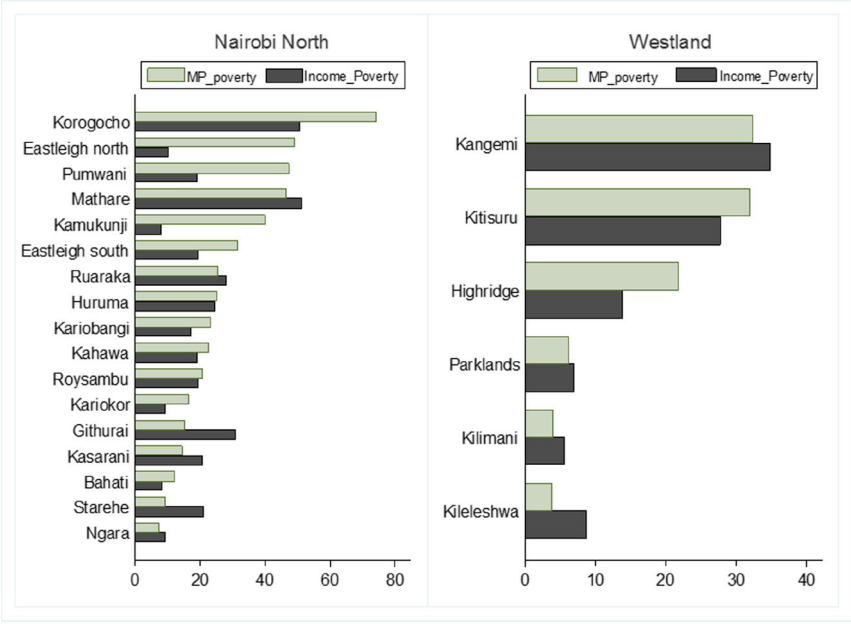
The ranking of locations by income poverty and our multidimensional poverty estimates is similar in the Westland district (except Kileleshwa location). In contrast, in other districts, there are some differences between income poverty ranks and multidimensional poverty ranks. For instance, in Nairobi North district, Korogocho and Eastleigh north locations are among the poorest in multidimensional poverty (74 vs 49% being poor). Although the incidence of income poverty is also high in Korogocho (51%), the figure is only 10% in Eastleigh north location. Likewise, while the level of income poverty is only 8% in Kamukunji location, the figure reaches 40% in the case of multidimensional poverty. Similar large gaps in poverty estimates can be observed in Mutuini location in Nairobi East district and Makongeni location in Nairobi East district. However, the overall trend suggests that locations that are multidimensionally poor are also characterized by high levels of income poverty.

a



Source: Own estimates using Kenyan population census 2009. Note: Income poverty estimates are obtained from KNBS. The income poverty estimates are based on the 2005/06 monetary poverty lines for rural (Ksh1, 562 per month per person) and urban areas (Ksh 2, 913 per month per person).

b



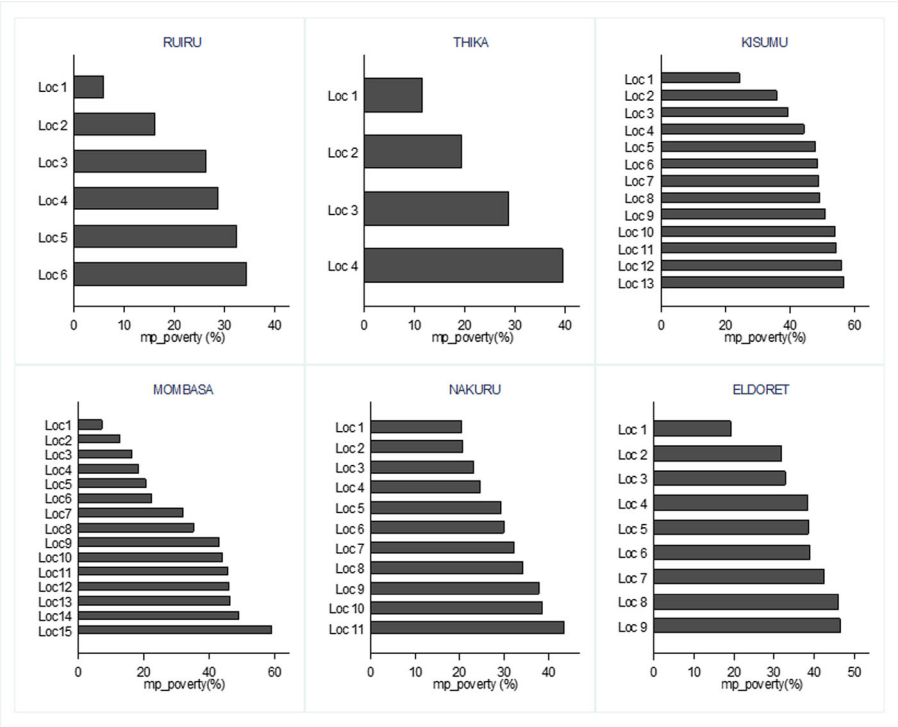
Source: Own estimates using Kenyan population census 2009. Note: Income poverty estimates are obtained from KNBS.

Fig. 4 Income and multidimensional poverty by district and location, Nairobi, 2009>

Figure 5 also shows large disparities in poverty levels among different locations within other major urban centers. Looking at Mombasa, the second largest city in Kenya, the incidence of poverty in the poorest location is about eight times higher than in the richest location. Likewise, in Ruiru, the least poor urban center, the incidence of poverty in the poorest location is six times higher than in the richest location.

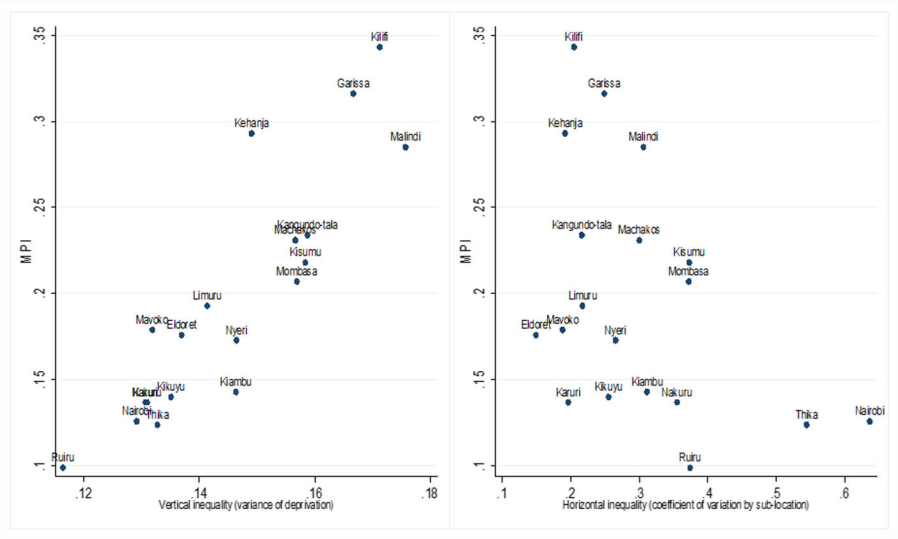
Inequality in Living Standards Within Urban Centers

Having shown that poverty levels significantly differ across different urban centers and within each urban center, we now go on to look at inequality estimates. This enables us to examine the distribution of average deprivation levels among the population irrespective of who is poor. Figure 6 presents estimates of inequality of average deprivation levels by urban centers. The level of inequality differs based on whether one looks at vertical and horizontal (based on location) inequality measures. Based on the vertical inequality measure (inter-personal inequality), the top six most unequal urban centers include Malindi, Kilifi, Garissa, Kangundo-tela, Kisumu, and Mombasa. In contrast, the level of vertical inequality is the lowest in Ruiru, Nairobi, and Karuri.



Source: Own estimates using Kenyan population census 2009.

Fig. 5 Multidimensional poverty by location in Mombasa and other secondary cites, 2009



Source: Own estimates using Kenyan population census 2009.

Fig. 6 Vertical and horizontal inequality estimates by urban centers, Kenya, 2009

However, when it comes to horizontal inequality, the most unequal urban centers are Nairobi and Thika, followed by Ruiru, Mombasa, Kisumu, and Nakuru, while the figure is relatively lower in Eldoret, Karur, and Mavoko. In addition, among urban centers with no or very small rural population, a relative higher level of both horizontal and vertical inequality is registered in Mombasa and Kisumu. Although urban centers like Nairobi, Ruiru, and Thika have relatively lower overall poverty levels compared to other urban centers, these cities register higher inequalities in deprivation scores between their different sub-locations. These location-based inter-group inequalities in relatively affluent urban centers suggest that access to basic services and assets is systematically lower in some sub-locations than others. Indeed, according to Muhula (2009), spatial inequalities in access to public services and other horizontal inequalities in Kenya are largely due to regional disparities in public spending.

Conclusions

Recent literature on developing countries has debunked the assumption that poverty is exclusively or even predominantly a rural phenomenon. This is not a useful starting point for analytic or policy formation and implementation. Thus, understanding the landscape of and interactions between capitals, secondary cities and smaller towns have become as important to the analysis of poverty as the rural/urban landscape and rural/urban interactions. This paper has shown that, even when the measurement of poverty moves beyond money-metrics to

multidimensional indicators, the poverty landscape is variegated across the rural/urban continuum and within urban spaces.

Using the recent Kenya census (2009), we examine multidimensional poverty and inequalities in living standards for major urban centers in Kenya. We analyze both inter-urban and intra-urban inequalities. Our results show that the level of poverty is relatively lower in the capital city, Nairobi, and secondary towns which are in close proximity to Nairobi metropolitan areas like Ruiru, Thika, and Kikuyu. In contrast, a relatively higher level of poverty is observed in other large secondary cities/towns including Mombasa, Kisumu, Machakos, and Garissa. Our findings suggest that although average living standards are relatively higher in the largest city, Nairobi, there is no clear relationship between city size and poverty levels with regard to other secondary cities/towns. For instance, the level of poverty in Mombasa and Kisumu, the second and third largest cities in Kenya, respectively, is much higher than the level in smaller towns like Kiambu, Ruiru, or Thika. These results suggest that irrespective of city size, poverty outcomes may vary across different urban centers due to differences in economic, social, and geographic settings.

We also find that there are large spatial disparities in poverty levels within each urban center considered here, with the level of location-based inequality being the highest in more affluent urban centers such as Nairobi, Ruiru, and Thika than other urban centers. Using income poverty data for Nairobi, we have also shown that locations that are multidimensionally poor are also characterized by high levels of income poverty. These results indicate that the use of urban aggregate data in measuring urban poverty in a given country hides considerable differences in urban inequalities.

This analysis has serious implications for the targeting of anti-poverty policy. There is no support for blunt spatial rules based on stark rural/urban divides in either the design of policy or in its administration. Certainly, the local-area focus of this paper has allowed us to highlight pockets of vulnerability and to highlight where the especially vulnerable are located. This is useful information. But it demands an approach to policy making that recognizes this reality from the outset and, then, is designed to allow implementation to go to the poor where they are not where policy makers want them to be.

This is very much in line with the vision of policy-making that is implicit in the sustainable development goals initiative. The mandate is for each country to conceptualize, measure, and use its own sustainable development indicators to orient and focus policy. Indeed, the fact that the picture that we have derived in this paper is a multidimensional one derived using Kenya's most recent census is highly apposite to what Kenya needs to be doing as part of the SDG process. One of the SDGs is to "End poverty in all its forms everywhere" by 2030. Thus, policies that aim to reduce the extent of deprivations in living standard measures such as access to safe drinking water, sanitations, affordable and clean energy, safe and affordable housing, and better access to education are expected to reduce overall multi-dimensional poverty in the country.

In addition, given that spatial inequality is a key component of overall inequality, it is important to reduce the observed large spatial disparities in living standards across and within urban centers in order to reduce overall national inequality and poverty levels. However, further research is required to fully understand the socio-economic and political processes that drive the production and reproduction of spatial inequalities among urban residents of the country.

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Table 4 Deprivation in asset holdings

Town	Asset deprivation (%)	Components of the asset (% deprived)			Components of livelihood support(% deprived)	
		Information	Mobility	Livelihood support	Livestock	Refrigerator
Nairobi	66.3	4.6	74.2	75.4	96.9	77.5
Nyeri	46.2	4.8	70.4	54.3	61.5	89
Kiambu	50.5	5.0	70.7	58.6	72.6	80
Karuri	55.8	5.1	76.0	64.8	74.3	86.5
Kikuyu	47.5	4.3	69.0	56.2	66.9	83.7
Limuru	52.8	6.4	70.7	61.8	66.3	91.3
Thika	56.8	5.1	63.0	76.8	89.7	84.2
Ruiru	55.5	3.7	63.4	71.7	85.3	82.1
Mombasa	62.6	9.5	74.6	72.5	94.8	76.6
Kilifi	49.3	24.9	60.3	54.6	58.8	94.2
Malindi	40.6	18.3	47.1	52.4	60.4	90.9
Mavoko	57.7	5.9	66.2	71.1	81.8	86.8
Machakos	39.8	7.6	72.0	44.6	48.7	94
Kangundo-tala	28.3	10	51.0	32.7	33.4	98.3
Garissa	57.1	8.8	80.6	59.0	69.5	86.3
Kisumu	40.9	7.7	52.4	61.6	72.6	86.8
Kehanja	29.2	18.2	60.1	22.3	22.6	99.1
Eldoret	55.5	6.7	63.3	73.3	81.7	89.1
Nakuru	48.3	4.9	54.5	74.1	84.9	85.8

Source: own estimates using Kenyan population census (2009)

Table 5 Raw deprivation scores for each indicator

Urban centers	Deprivation in each indicator (%)								Contribution of each dimensions (%)			
	Electricity	Floor	Cooking	Water	Sanitation	Assets	Education	Disability	Living standard	Assets	Education	Disability
Nairobi	24	8.0	22.4	16.4	13.2	66.3	13.7	2.1	21.8	52.8	22.3	3.1
Nyeri	50.1	36.7	77.9	17.9	36.6	46.2	17	2.5	33.8	40.5	22.4	3.3
Kiambu	28.6	11.2	59.1	22.6	16.2	50.5	16.2	2.1	27.2	46.8	23.1	2.9
Karuri	26.9	11.8	61.5	20.7	8.4	55.8	16.3	2.0	25.3	48.4	23.2	3.1
Kikuyu	29.5	14.7	71.6	21.8	15.5	47.5	15.9	2.4	27.5	46.2	22.8	3.5
Limuru	47	21.0	87.6	22.4	5.2	52.8	19.1	2.0	27.9	48.6	21.2	2.3
Thika	37.7	15.0	37.7	12.3	13.5	56.8	12.6	1.7	26.7	49.5	21.0	2.8
Ruiru	28.9	7.9	37	17	10.3	55.5	12.0	1.6	24.3	47.7	24.9	3.2
Mombasa	38.5	15.2	59.3	24.3	20.0	62.6	23.7	2.0	26.0	48.4	23.7	2.0
Kilifi	86.1	67.4	95.4	7.8	50.0	49.3	45.5	2.4	32.9	33.3	32.2	1.7
Malindi	79.0	56.5	90.5	11.2	47.3	40.6	41.3	2.9	33.1	30.8	33.7	2.4
Mavoko	53.2	14.7	51.4	35.0	24.3	57.7	15.4	2.3	29.7	47.7	19.7	2.8
Machakos	74.6	29.5	88.6	52.2	39.8	39.8	24.2	3.8	34.7	36.2	25.2	3.9
Kangundo-tala	91.8	46.2	96.2	55.5	37.4	28.3	29.0	5.0	36.1	28.3	30.4	5.2
Garissa	50.2	27.6	94.4	7.6	39.9	57.1	52.3	1.8	26.0	36.8	35.9	1.3
Kisumu	65.2	34.9	84.3	37.3	32.6	40.9	22.2	4.3	33.1	38.8	23.7	4.4
Kehanja	96.3	82	97.8	72.0	43.9	29.2	40.4	3.1	39.1	24	34.2	2.7
Eldoret	47.7	26.6	80.1	7.6	14.1	55.5	18.1	1.9	28.6	46.7	22.3	2.3
Nakuru	30.6	13.7	77.7	17.1	18.2	48.3	14.9	2.1	27.6	47.3	22.1	3.0

Source: own estimates using Kenyan population census (2009)

Table 6 MPI estimates with different weightings for the asset deprivation indicator (w = 1/18)

Urban center	Total			MPI by region			Contribution by dimension (%)		
	MPI	H (%)	A (%)	Core urban	Peri-urban	Rural	Living standards (including assets)	Education	Disability
Nyeri	0.108	20.6	52.3	0.07	0.142	0.165	39.8	52.4	7.8
Kiambu	0.087	17.8	48.7	0.082	0.117	0.107	30.0	62.1	7.9
Karuri	0.084	17.5	47.7	0.079	0.103	0.101	27.2	64.8	8.0
Kikuyu	0.086	17.6	48.9	0.076	0.116	0.082	29.2	61.5	9.3
Limuru	0.102	20.3	50.1	0.09	0.123	0.115	30.5	62.8	6.7
Thika	0.068	14	48.3	0.067	0.069	0.103	29.8	61.9	8.4
Ruiru	0.062	13.2	46.8	0.061	0.167	–	27.0	64.6	8.4
Mombasa	0.124	25.4	49	0.12	0.305	–	31.2	63.5	5.3
Kilifi	0.263	47.3	55.6	0.185	0.332	0.3	39.2	57.8	3.0
Malindi	0.237	43.5	54.6	0.162	0.255	0.301	37.9	57.9	4.1
Mavoko	0.09	17.5	51.4	0.069	0.174	0.181	34.6	56.9	8.5
Machakos	0.158	29.2	54	0.077	0.182	0.203	40.8	51.1	8.0
Kangundo-tala	0.193	35	55.3	0.115	0.198	–	41.4	50.0	8.6
Garissa	0.272	53.7	50.6	0.259	0.47	–	33.6	64.2	2.2
Kisumu	0.142	26.3	53.7	0.097	0.213	0.224	37.7	52.2	10.0
Kehanja	0.266	47.3	56.3	0.157	–	0.28	45.4	50.6	3.9
Eldoret	0.1	19.9	49.9	0.09	0.137	–	32.8	60.7	6.5
Nakuru	0.081	16.7	48.5	0.077	0.132	–	30.0	61.5	8.5
Nairobi	0.07	15.4	45.3	0.07	–	–	24.5	65.3	10.2
Kenya	0.236	42	56.2	0.105	0.215	0.282			

Source: own estimates using Kenyan population census (2009)

Appendix.

References

Acuto, M., & Parnell, S. (2016). Leave no city behind. *Science, 352*(6288), 893.

Alkire, S., & Foster, J. (2011). Counting and multidimensional poverty measurement. *Journal of Public Economics, 95*(7), 476–487.

Alkire, S., & Santos, M.E. (2013). Measuring acute poverty in the developing world: robustness and scope of the multidimensional poverty index. OPHI Working Paper No. 59. http://environmentportal.in/files/file/Measuring%20Acute%20Poverty%20in%20the%20Developing%20World.pdf. Accessed 07 Sept 2017.

Alkire, S., Foster, J. E., Seth, S., Santos, M. E., Roche, J. M., & Ballon, P. (2015). Multidimensional poverty measurement and analysis: Chapter 6–Normative choices in measurement design. In S. Alkire, J. Foster, S. Seth, M. E. Santos, J. M. Roche, and P. Ballon (Eds.), *Multidimensional poverty measurement and analysis* (pp. 241–283). Oxford: Oxford University Press.

Annez, P. C., & Buckley, R. (2009). Urbanization and growth: setting the context. In M. Spence, P. C. Annez, & R. M. Buckley (Eds.), *Urbanization and growth. Commission on Growth and Development* (pp. 1–45). Washington: The World Bank.

Brockerhoff, M., & Brennan, E. (1998). The poverty of cities in developing regions. *Population and Development Review, 24*(1), 75–114.

Cohen, B. (2006). Urbanization in developing countries: current trends, future projections, and key challenges for sustainability. *Technology in Society, 28*(1), 63–80.

Dotter, C., & Klasen, S. (2017). The multidimensional poverty index: achievements, conceptual and empirical issues (No. 233). Courant Research Centre: Poverty, Equity and Growth-Discussion Papers. https://www.econstor.eu/bitstream/10419/162856/1/893991872.pdf. Accessed 07 Sept 2017.

Ferré, C., Ferreira, F. H., & Lanjouw, P. (2012). Is There a Metropolitan Bias? The relationship between poverty and city size in a selection of developing countries. *The World Bank Economic Review, 26*(3), 351–382.

Gollin, D., Jedwab, R., & Vollrath, D. (2016). Urbanization with and without industrialization. *Journal of Economic Growth, 21*(1), 35–70.

Grant, U. (2010). Spatial inequality and urban poverty traps. ODI Working Paper 326/CPRC Working Paper 166. https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/5502.pdf. Accessed 07 Sept 2017.

Hope Sr., K. R. (2013). The growth of urban communities in Kenya. *African Identities, 11*(3), 274–289.

Kenya (2012). Kenya Population Census 2009: Analytical Report Volume VIII on Urbanization. Nairobi: Central Bureau of Statistics/Ministry of Finance and Planning. https://www.knbs.or.ke/download/analytical-report-on-urbanization-volume-viii-2/. Accessed 07 Sept 2017.

Kenya (2013). Kenya Population Situation Analysis. National Council for Population and Development, NCPD. https://www.unfpa.org/sites/default/files/admin-resource/FINALPSAREPORT_0.pdf. Accessed 07 Sep 2017.

Kessides, C. (2006). The urban transition in Sub-Saharan Africa: Implications for economic growth and poverty reduction. https://www.citiesalliance.org/sites/citiesalliance.org/files/CA_Docs/resources/paper-pres/ssa/eng/ssa_english_full.pdf. Accessed 07 Sept 2017.

Kilroy, A. (2009). Intra-Urban Spatial Inequality: Cities as "Urban Regions".https://openknowledge.worldbank.org/handle/10986/9144. Accessed 07 Sept 2017.

Kovacevic, M., & Calderón, M. C. (2014). UNDP's multidimensional poverty index: 2014 specifications. UNDP Human Development Report Office Occasional Paper. https://www.researchgate.net/profile/Maria_Calderon/publication/284663692_UNDP's_Multidimensional_Poverty_Index_2014_Specifications/links/5655daa708aeafc2aabe55f1.pdf. Accessed 07 Sept 2017.

Laros, M., & Jones, F. (2014). The state of African cities 2014: re-imagining sustainable urban transitions. Nairobi: UNHabitat. http://mirror.unhabitat.org/pmss/listItemDetails.aspx?publicationID=3528. Accessed 07 Sept 2017.

Mitlin, D., & Satterthwaite, D. (2013). *Urban poverty in the global south: scale and nature*. Abingdon: Routledge.

Muhula, R. (2009). Horizontal inequalities and ethno-regional politics in Kenya. *Kenya Studies Review, 1*(1), 85–105.

Otiso, K. M. (2005). Kenya's secondary cities growth strategy at a crossroads: which way forward? *GeoJournal, 62*(1), 117–128.

Potts, D. (2012). Challenging the myths of urban dynamics in sub-Saharan Africa: the evidence from Nigeria. *World Development, 40*(7), 1382–1393.

Potts, D. (2017). Conflict and collisions in sub-Saharan African urban definitions: interpreting recent urbanization data from Kenya. *World Development, 97*(C), 67–78.

Ravallion, M., Chen, S., & Sangraula, P. (2007). New evidence on the urbanization of global poverty. *Population and Development Review, 33*(4), 667–701.

Santos, M. E., & Villatoro, P. (2016). A multidimensional poverty index for Latin America. *Review of Income and Wealth*. https://doi.org/10.1111/roiw.12275.

Satterthwaite, D. (2010). Urban myths and the mis-use of data that underpin them (No. 2010, 28). Working paper//World Institute for Development Economics Research. https://www.econstor.eu/handle/10419/54031. Accessed 07 Sept 2017.

Sen, A. (1992). *Inequality reexamined*. Oxford: Oxford University Press.

Sen, A. (2004). Capabilities, lists, and public reason: continuing the conversation. *Feminist Economics, 10*(3), 77–80.

Seth, S., & Alkire, S. (2014). Did poverty reduction reach the poorest of the poor? Assessment methods in the counting approach (Vol. 77, p. 3). OPHI Working Paper.https://pdfs.semanticscholar.org/8b91/fe5bd1851f26216f112a5050d3ed146a4e5b.pdf. Accessed 07 Sept 2017.

Turok, I., & McGranahan, G. (2013). Urbanization and economic growth: the arguments and evidence for Africa and Asia. *Environment and Urbanization, 25*(2), 465–482.

UNDP (2016). Sustainable urbanization strategy. UNDP's support to sustainable, inclusive and resilient cities in the developing world. http://www.undp.org/content/undp/en/home/librarypage/poverty-reduction/sustainable-urbanization-strategy.html. Accessed 07 Sept 2017.

UN-Habitat (2016). Urbanization and Development: Emerging Futures. World Cities Report 2016. Nairobi: UN-Habitat. https://unhabitat.org/wp-content/uploads/2014/03/WCR-%20Full-Report-2016.pdf. Accessed 07 Sept 2017.

Vijaya, R. M., Lahoti, R., & Swaminathan, H. (2014). Moving from the household to the individual: multidimensional poverty analysis. *World Development, 59*, 70–81.

World Bank (2006). Dimensions of urban poverty in the Europe and central Asia region. Policy research paper 3998. http://siteresources.worldbank.org/INTECAREGTOPURBMUNGOV/Resources/urbanpoverty.pdf. Accessed 07 Sept 2017.

World Bank; International Monetary Fund. (2013). *Global monitoring report 2013: rural-urban dynamics and the millennium development goals*. Washington: World Bank.