Kenya State Of The Cities: *Baseline Survey:*

Overview Report

WORLD BANK GROUP

Kenya State Of The Cities: *Baseline Survey*

Overview Report

MARCH 2014

TABLE OF CONTENTS

Abbreviations i
Kenya State of the Cities Survey: Cities Covered ii
Acknowledgements iii
Executive Summary iii
Introduction v

Part A: Data Collection Methodology 1
A.1 Sampling overview 1
A.2 Data collection 3
A.3 Recruitment and training 4
A.4 Field period 4
A.5 Duration 5
A.6 Completion rates 5
A.7 Challenges and adjustments 5

Part B: Household Characteristics 7
B.1 Population description 7
B.2 Household size and composition 8
B.3 Household education 10
B.4 Household health 13

Part C: Household Economic Profile 17
C.1 Household poverty, income, and expenditure 17
C.2 Employment 26
C.3 Household wealth 27
C.4 Household finance: banking, credit, and remittances 27
C.5 Household-owned enterprises 29

Part D: Housing, Tenure, and Rents 33
D.1 Housing size and quality 33
D.2 Tenure and security 38
D.3 Housing values and rents 41
D.4 Social capital, civic participation, and safety 43

Part E: Infrastructure Services 47
E.1 Infrastructure indicator 47
E.2 Water access and quality 48
E.3 Electricity 52
E.4 Refuse and sanitation 55
E.5 Transportation 58
E.6 Communications 60

Part F: Conclusions and Policy Implications 63
F.1 Development Diamonds and Polygons 63
F.2 Poverty, infrastructure, educational attainment, and unemployment 65
F.3 Policy and Program Implications 69

References 70
Appendix 71

LIST OF FIGURES

Figure 1: Population pyramid 10
Figure 2: Impact of an increase of economic well-being on the probability of living in a formal area 24
Figure 3: Employment and unemployment of household members 25
Figure 4: Household wealth index by area 26
Figure 5: Household wealth index by head gender (All areas) 26
Figure 6: Sector of household-owned enterprises 31
Figure 7: Years in neighborhood and dwelling 40
Figure 8: Correlation of evictions to % feeling insecure 40
Figure 9: Use of private and shared taps for primary drinking water 49
Figure 10: Impact of increase in income on probability of having electricity 55
Figure 11: Poverty (percent of households living below the poverty line) 65
Figure 12: Living conditions (percent of households with "good" living conditions) 66
Figure 13: Mean infrastructure score 67
Figure 14: Educational attainment (proportion of residents over 18 years who have completed primary school and secondary school) 68
Figure 15: Unemployment (percentage of adults 18 and over who are unemployed) 69

LIST OF TABLES

Table 1: Description of formats used to denote statistical significance x
Table 2: Final sample achieved 2
Table 3: Sample composition 7
Table 4: Household size and composition (Summary) 8
Table 5: Household size and composition 9
Table 6: Education characteristics (Summary) 11
Table 7: Education characteristics 12
Table 8: Household health (Summary) 14
Table 9: Household health 15
Table 10: Household Income and expenditures (Summary) 17
Table 11: Household poverty, income, and expenditures 19
Table 12: Household monthly expenditures and gini coefficients (Summary) 20
Table 13: Household monthly expenditures and gini coefficients 21
Table 15: Individual-city Gini coefficients for wealth, income, and expenditure 22
Table 16: Bivariate correlations among income, wealth, and expenditure 22
Table 14: 15-City Gini coefficients of wealth, expenditure, and income 22
Table 17: Household banking, credit, and remittances (Summary) 27
Table 18: Household banking, credit, and remittances 28
Table 19: Household-owned enterprises (Summary) 29
Table 20: Household-owned enterprises 30
Table 21: Dwelling characteristics (Summary) 33
Table 22: Dwelling characteristics 34
Table 23: Additional dwelling characteristics (Summary) 36
Table 24: Additional dwelling characteristics 37
Table 25: Unit tenure and security (Summary) 38
Table 26: Unit tenure and security 39
Table 27: Housing values (1,000 KSh) and rents (Summary) 41
Table 28: Housing values and rents, by formal/informal 42
Table 29: Social capital and civic participation (Summary) 43

Table 30: Social capital and civic participation 44
Table 31: Community and safety (Summary) 45
Table 32: Community and safety 46
Table 33: The infrastructure indicator 47
Table 34: Average infrastructure indicator scores 48
Table 35: Water access and quality (Summary) 50
Table 36: Water access and quality 51
Table 37: Electricity and street lighting (summary) 53
Table 38: Electricity and street lighting 54
Table 39: Refuse, toilets, and grey water (Summary) 56
Table 40: Refuse, toilets, and grey water 57
Table 41: Public transport and road quality (Summary) 58
Table 42: Public transport and road quality 59
Table 43: Mobile phones, mobile banking, computers, and internet (Summary) 60
Table 44: Mobile phones, mobile banking, computers, and internet 61

APPENDIX

Appendix A: Abstract Tables for All Cities 72
A. Household Characteristics 72
B. Household Economic Profile 75
C. Dwelling Tenure, Security, and Characteristics 81
D. Infrastructure Services 86

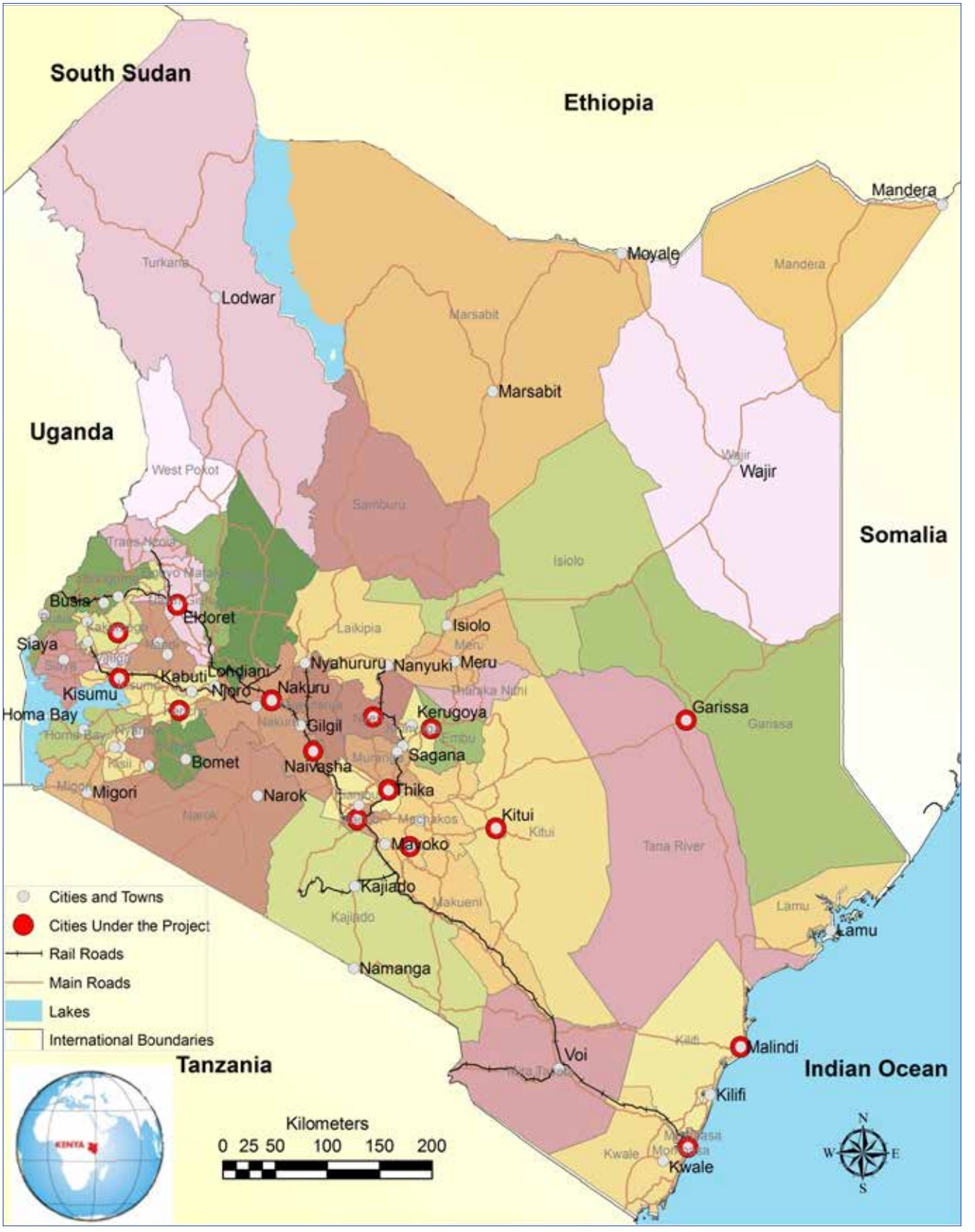
Appendix B: Development Diamonds and Polygons 93
Indicator Definitions 93
Development Diamonds 95
Infrastructure Polygons 93
Living Conditions Diamonds 94

Appendix C: Additional Methodology Tables 119
Appendix D: Detailed Regression Results 122

ABBREVIATIONS

CAPI	Computer Assisted Personal Interview
EA	Enumeration area
GOK	Government of Kenya
HH	Household
HUD	U.S. Department of Housing and Urban Development
KIHBS	Kenya Integrated Household Budget Survey
KISIP	Kenya Informal Settlements Improvement Program
KMP	Kenya Municipal Program
KNBS	Kenya National Bureau of Statistics
NMSP	Nairobi Municipal Service Project
PDA	Personal Digital Assistant, in this case a hand held computer used by interviewers
PSU	Primary Sampling Unit
SMSA	Standard Metropolitan Statistical Area
SRS	Simple Random Sample
SSU	Secondary Sampling Unit
WB	World Bank
WBG	World Bank Group

KENYA STATE OF THE CITIES BASELINE SURVEY: CITIES COVERED



ACKNOWLEDGEMENTS

The Kenya State of the Cities Baseline Survey was the result of the hard work, dedication, and support of many people. Within the World Bank, the work was coordinated and led by Sumila Gulyani (Lead Urban Specialist) and Wendy Ayres (Senior Economist). The report reflects the hard work of a team of experts from NORC who designed the survey instrument and sampling strategy, collected the data, and prepared the reports. These include Ray Struyk, Sarah Hughes, Sam Haddaway, Santanu Pramanik, Yvonne Cao, and Tasha Heidenrich. Clifford Zinnes of NORC at the University of Chicago oversaw production of all documents, including the statistical analysis and production of tables. Data collection was administered by a Kenyan firm, Infotrak Research and Consulting. Computer programming was in Stata and provided by Aaron Wilson. The Baseline Survey also benefited from the continued insights and guidance and of Ellen Bassett (Professor of Urban Planning, University of Virginia) and Debabrata Talukdar (Professor of Economics, School of Management, University of Buffalo), and from the contributions of Dean Cira, (Lead Urban Specialist), Sheila Kamunyori (Urban Speciaist), and R. Mukami Kariuki (Lead Water and Sanitation Specialist).

The team acknowledges the support provided by the World Bank management, in particular Diarietou Gaye (Country Director for Kenya), Thomas O'Brien (Country Program Coordinator for Kenya), and Sameh Wahba (Practice Manager, GSURR). The team also thanks the Peer Reviewers for their support. These include Melanie Walker (Senior Adviser, EXC), Catalina Marulanda, (Lead Urban Specialist, GSU10), and Apurva Sanghi (Program Leader, Kenya).

Support for the preparation of the Kenya Baseline Survey was provided by Elizabeth Karuoya (Program Assistant) and Roderick Babijes (Program Assistant). The team also thanks the report's editor, Tony Sittoni, and graphic designers Paul Chikombe and Robert Waiharo. To them the team extends its gratitude.

The team is grateful for the support of the Government of Kenya at all levels, without which this survey would not have been possible. Especially important were the contributions of the Kenya National Bureau of Statistics, which provided critical inputs into the sample design. The contributions of the team at the Directorate of Urban Development, Ministry of Land, Housing, and Urban Development were also essential. The team wishes to thank the respondents to the survey, who generously contributed their time to enable the survey teams to collect crucial information on the state of the cities in Kenya.

Finally, the team wishes to thank the Government of Sweden, the Cities Alliance, and the Bill and Melinda Gates Foundation for their generous support for the preparation of the Kenya State of the Cities Baseline Survey. Without their support, this work would not have taken place.

EXECUTIVE SUMMARY

The Kenyan government, with the support of development partners, is increasing its investments in urban infrastructure and services. In support of these investments, data is needed for establishing priorities and later to track the effectiveness of the investments to deepen understanding of the cities' growth dynamics, and to identify the specific challenges to improving services and quality of life for residents. Toward this end, the World Bank has contracted NORC at the University of Chicago to carry out a baseline study of the demographic, infrastructure, and economic profile of fifteen Kenyan municipalities: Eldoret, Embu, Garissa, Kakamega, Kericho, Kisumu, Kitui, Machakos, Malindi, Mombasa, Nairobi, Naivasha, Nakuru, Nyeri, and Thika.

While there have been several household surveys of Nairobi's informal settlements and numerous analyses using the survey data, few surveys or analyses have been carried out for informal settlements in other Kenyan municipalities or for moderate income areas in Nairobi. In short, prior to the State of the Cities survey, which this document describes, there has been little data available to support the design of programs to improve housing and related services in these cities.

This report addresses several objectives. First, it presents descriptive statistics calculated from the survey data to shed light on a number of key policy-research questions identified by the World Bank as part of the rationale for commissioning the survey. Second, this report draws on the companion deliverables—Statistical Abstracts for each of the fifteen municipalities—to highlight and contrast conditions on the ground that are the target of policy interest. Unlike the Statistical Abstracts, which provide greater detail of city-specific performance and conditions, this report compares the relative performance and conditions among the municipalities. Finally, this report describes the survey, sampling, and data collection that support the report's findings.

Among the key policy research questions the report considers are:[1]

a. what proportion of the residents in a municipality are living below the poverty line;
b. how long has the average resident lived in a particular municipality;
c. to what extent does access to different infrastructure services vary within and between municipalities;
d. how much are residents paying for various services in municipalities;
e. does the type of infrastructure service providers (private and public) vary across municipalities;
f. what are the differences in the economic bases across municipalities;
g. how does the actual tenure profile and residents' perception of tenure security vary across neighborhoods within municipalities and between municipalities; and
h. to what extent do education levels and certain health indicators vary across municipalities.

[1] Another question initially considered was to what extent, how and by whom are different infrastructure assets being maintained in different municipalities; the survey turned out not to be the best way to address this question and it was dropped.

The reader who seeks a sub-sector-by-sub-sector overview of the fifteen cities taken as a whole, along with representative policy implications, is directed to Part F. This section summarizes each topic using several illuminating graphical devices including development diamonds and infrastructure polygons. Greater detail is then provided in the body of this report through descriptive statistics calculated from the survey to offer a snapshot of the issues surrounding the questions, above. We say "snapshot" since the averages presented are unconditioned—they do not control for many sources of variation—and so may obscure as many relationships as they reveal. The tables and graphs are purely descriptive and are not meant to imply causality nor suggest that serious econometric analysis has been conducted. Still, they provide a preliminary comparison of population and infrastructure characteristics in Kenyan cities. The expectation is that future econometric analysis will elucidate the underlying causes driving the findings here.

INTRODUCTION

Background

The Kenyan government, with the support of development partners, is increasing its investments in urban infrastructure and services. In support of these investments, data is needed for establishing priorities and later to track the effectiveness of the investments to deepen understanding of the cities' growth dynamics, and to identify the specific challenges to improving services and quality of life for residents. Toward this end, the World Bank has contracted NORC at the University of Chicago to carry out a baseline study of the demographic, infrastructure, and economic profile of fifteen Kenyan municipalities: Eldoret, Embu, Garissa, Kakamega, Kericho, Kisumu, Kitui, Machakos, Malindi, Mombasa, Nairobi, Naivasha, Nakuru, Nyeri, and Thika.

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l. how much are residents paying for various services in municipalities;
m. does the type of infrastructure service providers (private and public) vary across municipalities;
n. what are the differences in the economic bases across municipalities;
o. how does the actual tenure profile and residents' perception of tenure security vary across neighborhoods within municipalities and between municipalities; and
p. to what extent do education levels and certain health indicators vary across municipalities.

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The tables and graphs are purely descriptive and are not meant to imply causality nor suggest that serious econometric analysis has been conducted. Still, they provide a preliminary comparison of population and infrastructure characteristics in Kenyan cities. The expectation is that future econometric analysis will elucidate the underlying causes driving the findings here.

Other survey documents produced

To facilitate access to the rich datasets generated by the survey, NORC has produced two other written products for each of the fifteen cities: a Statistical Abstract and a City at a Glance Report.

The Statistical Abstracts, which have been prepared for each of the 15 municipalities using the data from the project's completed household survey, provide comprehensive but easily accessible information on the wi**de range of household and municipal conditions, as reported by households.** The primary audience for the Abstract includes policy makers, development practitioners, development partners, civil society organizations, and urban residents. Better planning and more productive investments can result from exploiting the information in each city's Abstract.

Each Abstract comprises a set of tables designed to provide basic information on conditions in the municipality ranging from basic demographics to the types of water, sanitation, utility, and transport services used by households to the incidence and structure of home enterprises. From the survey data, we selected items that were believed to be most important for planners and then we carefully considered how to present each item—would it be better to report the mean value or to present the percentage distribution of values? To inform readers about the conditions faced by various household groups, we cross-tabulated all data items in several ways. Disaggregation was dependent on the particular table and generally provided by location (informal/formal settlement), gender of the head of household (informal areas, only), and expenditure quartile (or each side of the poverty line).[3] All table entries were subjected to hypothesis tests (either t- or F-test) to determine whether the differences observed for respective breakdown are statistically significant (different from each other).

The City at a Glance Reports, also calculated from the Kenya Cities Survey, are two-page dashboards that provide a set of "vital signs" of each municipality at a glance. These dashboards were conceived for policy-makers, politicians, and civil society. While they cover the same topics as the Statistical Abstracts, they differ in two ways. First, they are much shorter and less comprehensive. Second, they are graphical rather than tabular so as to facilitate quick and easy identification of municipal idiosyncrasies and characteristics.

While the material for the present report draws from these two products, it differs in several ways. First, the present report's figures and tables are more focused on comparing the fifteen cities to each other than on disaggregating the indicators themselves by their components and strata. Second, this report endeavors to apply the findings gleaned from the tables to the original set of key research questions posed by the World Bank. Finally, this report examines the methodological issues related to which indicator of economic well-being—wealth, income, or expenditure—best overcomes conceptual and data-collection limitations so as to provide the clearest and most realistic assessment of Kenyan urban households; the report also provides details on how the data were conceived, collected and cleaned.

[3] Informal/formal status was defined at the enumeration area level by the Kenya National Bureau of Statistics during the 2009 Census.

Organization of this report

In addition to this introduction, Volume I of this report contains a brief overview of methodology and a chapter for each of the topics of interest in the survey and associated policy research questions. These following sections are as follows:

A. Methodology and Data Collection
B. Household Characteristics
C. Household Economic Profile
D. Housing, Tenure, and Rents
E. Infrastructure Services
F. Conclusions and Policy Implications

While these figures have notes they also have a common set of column headings. The following are definitions for those headings that require clarification:

- *Informal/Formal Areas* – This distinguishes between areas based on whether most households in the area have property title and official services. It is a designation provided by a status code at the level of the EA (Enumeration area) as used by the National Census.
- *Gender (Informal)* – For the households living in the locations coded as "Informal," data for household characteristics are provided for both male- and female-headed households. As is standard, the male-headed households may contain the spouse while female-headed households do not.
- *Class (of durable)* – Durable assets are a standard measure of household wealth. They are grouped into three classes, roughly based on their likely market value and degree of permanence. The actual items in each class are indicated in the table. The values reported for these categories are the number owned by the household, not their average or total value.
- *Spending Power* – The total value of household expenditures collected by the survey, excluding rent or mortgage payments.
- *Access to Infrastructure* – This indicator combines six categories of infrastructure (divided into 13 subcategories) weighted by importance to the household and summed to create a household indicator from 0 to 9.5. See Part E of this report for a more detailed description.
- *Household Poverty* – This is the Kenya national poverty line, adjusted for inflation at the beginning of the survey. The poverty line varies depending on the number of members of the household and their age. It is calculated by adding together:
- 5,567 KSh per month for each adult 15 years and older in household
- 3,619 KSh per month for each child aged 5 to 14 in household
- 1,336 KSh per month for each child under 5 years old in household
- *Household Income* – The midway value of the response range selected in Survey Question 4.5 ("What was the total household cash income in KSh last month? Please do not include in-kind income or cash assistance you receive from family or friends who live outside the household.") The ranges and the imputed income (to the right of the arrow) are:
    - Less than 3,000 → 1,500
    - 3,001-6,000 → 4,500
    - 6,001-9,000 → 7,500

- 9,001-13,000 → 11,500
- 13,001-18,000 → 15,500
- 18,001-22,500 → 20,250
- 22,501-30,000 → 26,250
- 30,001-37,500 → 33,750
- 37,501-45,000 → 41,250
- 45,001-60,000 → 52,500
- 60,001-75,000 → 67,500
- Above 75,000 → 75,000

For the top open-ended category, the figure was taken as 75,000 KSh (which also helps to truncate outliers). Likewise, any "negative" incomes (say where the household's business ran at a loss) were thus recorded as 1,500 KSh.

Appendix A of Volume I presents all tables found in the Statistical Abstracts using the combined dataset including all 15 cities. Appendix B presents sixteen versions of each of the three Development Polygons, one using the combined dataset of all 15 cities and one for each of the individual cities. Appendix C presents some additional methodology-related tables. Finally, Volume II of this report contains detailed descriptions of sampling, weighting, data quality review, and data adjustments, as well as the survey instrument used for data collection.

Table presentation

The set of tables included in this report is designed to provide basic information on households' economic and demographic conditions, their housing conditions, and access to infrastructure and services. One challenge in preparing the tables was to provide a complete picture of conditions while still being selective in the information presented so as not to overwhelm the reader. A second challenge was to display the information in a way that permits stakeholders to understand conditions faced by different population groups.

To meet these challenges we have developed a set of tables with items believed to be most important for stakeholders and have broken down the items in several ways. In addition to providing an overall picture of household (HH) characteristics, the tables illustrate whether household characteristics differ by key factors. The rows generally present statistics for the entire 15-city sample as well as the individual cities, and the tables are typically presented in pairs. The first table of the pair, called the summary table, presents the overall figures for each city, in addition to the 15-city sample overall, by poor/non-poor, and by formal/informal. The second table in the pair then shows how the data differs by location (informal vs. formal areas), household poverty status (poor vs. non-poor), gender of the head of household (male vs. female headed, for informal areas only), as well as other factors pertinent to the particular table.[4] The columns list the household characteristics (e.g., size of household, percentage of children in school).

[4] Informal/formal status was defined at the enumeration area level by the Kenya National Bureau of Statistics during the 2009 Census. Poor/non-poor is defined using the answer to a question asking respondents whether their total household expenditure in the last month was above or below a poverty line calculated using the household size (5,567 KSh for each adult 15 years and older + 3,619 KSh for each child aged 5 to 14 + 1,336 KSh for each child under 5 years old).

From each table, one can quickly observe if there are large differences in household characteristics by location, spending power, etc., simply by comparing the cells (numbers). Each table also shows whether the observed differences are statistically significant.[5] "Statistically significant" means that statistical analysis has revealed that a difference, no matter how small or large, is unlikely due to chance or randomness. In practice, statistically significant differences are the ones researchers are interested in—they can be interpreted as telling us about meaningful differences in household characteristics by location, spending power, gender, or other category. When we discuss differences in the text of this report, we will refer to "statistically significant" differences unless otherwise noted.

In terms of policy decisions, whether differences matter is a combination of whether they are statistically significant and how large the differences are. Ultimately, it is up to the policy practitioner to decide how large a difference must be to matter in the context of interest. An important note when interpreting results is that statistical significance does not imply causality. In other words, if differences in values are statistically significant, this does not mean that one variable caused a change in the other variable. Another factor may be influencing both variables; for example, for we may find a "significant" difference between head-of-household education and household poverty, perhaps the key common cause is social status, which affects both their educational attainment and job/spending opportunities. Additionally, where a statistically significant difference is identified it does not imply the direction of the relationship. Perhaps the household poverty is the reason for the different education levels, or vice-versa. In this report, therefore, we will say a household characteristic is "associated with" or "correlated" with certain factors, rather than saying one is caused by another.

In order not to clutter the tables yet provide the reader with the maximum information, we mark statistically significant results in the tables with bold (for two adjacent values in the same column) and italics (to compare adjacent columns of data). Underlined values denote an insufficient number of household responses for some enumeration category of the sampling design to perform a test of statistical significance. The number of observations for a particular variable is noted in the tables in columns denoted by "N". Cells with no observations are indicated with hyphens (-).[6] The table, below, summarizes the formatting used in tables throughout this report. A value that is both bold and italicized indicates statistically significant differences for two adjacent cells (i.e., values in the same row) as well as for the distributions between adjacent columns. In contrast, a value in standard font—no bolding, italics, or underlining—still means that a significance test was performed but that the values under comparison were not statistically significantly different from each other. If a significance test was not performed, this is stated in a note immediately following the table.

Another feature of the data worth mentioning is that outliers (responses that are very different from all the others) were not a major issue in the survey data, affecting just three variables in any important way.[7]

[5] Statistical significance is noted when a test achieves a p-value ≤ 0.05.

[6] Regarding issues of non-response, both observational and item-specific, see Section 4, below.

[7] Across all fifteen municipalities these were (i) home value, in which 20 responses were reported in millions units instead of as the value itself (so we simply divided these responses by a million); (ii) 40 respondents reported travel time for a weekly or monthly commute rather than a daily commute (these over-eight-hours responses were dropped); (iii) we removed one case in which the time to get water was over a week.

Table 1: Description of formats used to denote statistical significance

Format	When we use it	Example
Bold	Two bolded values in the same row next to each other indicate that the difference is statistically significant. We also use bold for 'Yes' or 'No' variables. If bold, it means that the difference between the mean of households that answered 'yes' (displayed) and the mean of those that answered 'no' (not displayed) is statistically significant.[(a)]	Table 7 displays the mean household size for households located in formal and informal settlements; if the pair of values is bold, it means that the difference in household sizes between formal and informal areas is statistically significant. Table 26 displays the proportion of households which own land (or have tenure) that fall below the poverty line. If bold, it means that this proportion is statistically significantly different from the proportion of households which do not own land that fall below the poverty line.
Italics	We indicate statistically significant differences between columns of three or more cells using italics; this means the difference between the entire distributions (columns) is statistically significant.[(b)]	Table 11, Monthly household spending power, displays the distribution of households across income and expense ranges. If values appear italicized in both columns for households located in formal and informal settlements, the difference between the two distributions is statistically significant.
Under-line	Denotes values where, due to lack of data at the census tract (enumeration area, or EA) level, it was not statistically possible to conduct the significance test.[(c)]	Table 28 shows the mean value of households' primary residence with and without land, and of any other residence and/or land. An underlined value means that due to lack of data at the census tract level, it is not possible to perform a test for significant differences.
Hyphen (-)	In cases where there are no data for a cell at all, we note that with a hyphen (-).	Table B.3 shows data related to household finance. For the percentages of households according to source of financing, the cells that display a hyphen means that there were no observations for that particular variable and category.

(a) Here a p-test from an Adjusted Wald test is conducted.
(b) Here Pearson's Chi-squared test is conducted.
(c) At least two households are required to compute a household-level variance, which is required to conduct a hypo-thesis test. Note that this does not imply that the respective table values are based on just one household or even just one EA.

Finally, note that in tables presenting a distribution of responses, if some response categories are left out then the distribution will not add up to 100%. In cases where all response categories are listed then the first row of responses is given as 100. Unless otherwise noted, all figures presented in the tables are percentages.

PART A:

DATA COLLECTION METHODOLOGY

This chapter provides a brief description of how the Baseline Survey was developed, administered, and cleaned. For a more detailed description of survey procedure, please refer to Volume II of this Overview Report.

A.1 Sampling overview

The Kenya State of the Cities baseline survey is aimed to produce reliable estimates of key indicators related to demographic profile, infrastructure access, and economic profile for each of the 15 municipalities based on representative samples, including representative samples of households (HHs) residing in slum and non-slum areas. For this baseline household survey, NORC used a two- or three-stage stratified cluster sampling design within each of the 15 municipalities.

Our first-stage sampling frame was based on the 2009 census frame of enumeration areas. For each of the 15 municipalities, NORC received the sampling frame of EAs from Kenya National Bureau of Statistics (KNBS). In the first stage, NORC selected a sample of enumeration areas (PSUs). The second stage involved a random selection of households (SSUs) from each selected EA. In order to manage the field interviewing efficiently, we drew a fixed number of HHs from each selected EA, irrespective of EA size. The third stage arose in instances of very large EAs (EAs containing more than 200 households) in which EAs were divided into 2, 3 or 4 segments, from which one segment was selected randomly for household selection.

Stratification of enumeration areas. A few stratification factors were available for stra-tifying the EAs to help to achieve the survey objectives. As mentioned earlier, for this baseline survey we wanted to draw representative samples from slum and non-slum areas and also to include poor/non-poor households (HHs). For the 2009 census, depending on the location, KNBS divided the EAs into three categories: rural, urban, and peri-urban.

Although there is a clear distinction of EAs into slum and non-slum areas, it is hard to classify EAs into poor and non-poor categories. To guarantee enough representation of HHs living in slum and non-slum areas (also referred to as formal and informal areas) as well as HHs living below and above the poverty line, NORC stratified the first-stage sampling units (EAs) into strata, based on EA type (3 types) and settlement type (2 types). Given the resources available, we believe this stratification would serve our purpose as HHs living in slum and in rural areas tend to be poor. Table 1 in Appendix C presents the allocation of sampled EAs across the strata for each of the 15 cities in the baseline survey.

Sampling households is not as straightforward as the first-stage sampling of EAs, since the 2009 census frame of HHs does not exist. In the absence of a household sampling frame, NORC carried out a listing of HHs within each EA selected in the first stage. Trained listers, accompanied by local cluster guides (local residents with some form of authority in the EA), systematically listed all households in each selected EA, gathering the address, names of head of household and spouse, household description, latitude and longitude.

To ensure completeness of listing data, to avoid duplication, and to improve ease of locating households that were eventually selected for interview, listers enumerated households by chalking household identification number above the household doorway (an accepted practice for national surveys). The sampling frame of HHs produced from the listing activity was, therefore, up-to-date and included new formal and informal settlements that appeared after the 2009 census.

For adequate representativeness and to manage the interviewing task efficiently, NORC planned seven completed household interviews per EA. The final recommended sample size for the Kenya State of the Cities baseline survey is found in Table 2 in Appendix C.

Because the expected response rate was unknown prior to the start of the field period, the sampling team randomly selected ten households per enumeration area and distributed them to the interviewers working within the EA. Interviewing teams were instructed to complete at least seven interviews per EA from among the ten selected households. Interviewers were instructed to attempt at least three contacts with each selected household, approaching potential respondents on different days of the week and different times of day. Table 2 presents the final number of EAs listed per city and the final number of completed interviews per city. The table also presents the percent of planned EAs and interviews that were completed vs. planned. Please note that in several cities more interviews were completed than planned. As part of NORC's data quality plan, data collection teams were instructed to overshoot slightly the target of seven interviews per EA, if feasible, to mitigate any potential loss of cases due to poor quality or uncooperative respondents. Few cases were lost due to poor quality, therefore the target number of interviews remains over 100 percent in ten of the fifteen cities.

Table 2: Final sample achieved

Municipality	No. of EAs	Percent completed EAs/planned	Total No. of HHs completed	Percent completed interviews/planned
Nairobi	172	89.1%	1,182	87.5%
Mombasa	155	98.7%	1,095	99.6%
Kisumu	106	99.1%	740	98.8%
Nakuru	134	98.5%	1,095	115%
Eldoret	136	95.1%	976	97.5%
Malindi	143	100%	1,026	102.5%
Naivasha	143	100%	1,072	107.1%
Kitui	93	100%	660	101.3%
Machakos	121	100%	673	79.5%
Thika	143	100%	989	98.8%
Nyeri	143	100%	1,024	102.3%
Garissa	143	100%	1,035	103.4%
Kericho	143	100%	1,035	103.4%
Kakamega	136	100%	967	101.6%
Embu	142	99.3%	1,014	101.3%
Total	**2,053**	**98.4%**	**14,583**	**99.8%**

A.2 Data collection

The Kenya State of the Cities baseline survey consisted of a face-to-face interview conducted in English or Kiswahili by trained interviewing staff using tablet computers to capture responses. The questionnaire was developed by World Bank staff with input from stakeholders in the Kenya Municipal Program and NORC researchers and survey methodologists. The base questionnaire for the project was a 2004 World Bank survey of Nairobi slums. However, an extended iterative review process led to many changes in the questionnaire. The final version that was used for programming is included in Volume II.

The questionnaire's topical coverage is indicated by the titles of its nine modules:

1. Demographics and household composition
2. Security of housing, land and tenure
3. Housing and Settlement profile
4. Economic profile
5. Infrastructure services
6. Health
8. Household enterprises[8]
9. Civil participation and respondent tracking

As described above, the project goals include a comparison of households with expenditures above and below the poverty line. In the course of questionnaire development, NORC recommended using a relative poverty measure, whose formula is given at the end of the Introduction of this report. Poverty rate data from the KIHBS published report shows a 27 percent poverty rate for all urban areas.[9] There is, however, a wide variation among poverty rates among the four municipalities for which they are separately reported, ranging from 19.6 percent in Nairobi to 41.4 percent in Nakuru. For these four municipalities, the place-specific rates could be used to divide households into poor and non-poor groups. For the balance, the national rate for urban areas excluding these four municipalities, 33.1 percent could be employed.[10]

The Kenya State of the Cities questionnaire underwent extensive testing prior to the main data collection. NORC and its data collection subcontractor, Infotrak Research and Consulting (IRC), carried out focus groups in Nairobi and Thika, incorporating suggested wording and flow changes. The questionnaire was translated by two independent translators and then pretested again amongst interviewers and supervisors for additional input to both the English and Kiswahili versions. Finally, the data collection team pre-tested the questionnaire, including protocols for gaining cooperation, among a convenience sample in two neighborhoods in Nairobi. Changes to the questionnaire were tracked, with explanations for changes, deletions and additions. All changes were reviewed by the WB research team and programmed into the survey application only after approval by the World Bank.

[8] Module 7 was modified and the original Module 7 questions were moved to Module 9 after programming of the CAPI questionnaire had begun. No Module 7 appears in the final questionnaire.

[9] The KIHBS sampling design treated the rural and urban components of each district as separate strata. Hence, the figure in the text is only for all urban areas (Kenya National Bureau of Statistics, 2007, p.18).

[10] Figures are from KNBS (2007), Annex Table 4.4, p.73.

NORC contracted Manobi, S.A., a telecommunications and data company based in Senegal to program the questionnaire for use as a computer-assisted-personal-interview (CAPI). The pro-gram was loaded onto tablet computers and field-tested prior to data collection.

A.3 Recruitment and training

Staffing the large scale data collection was a crucial factor in establishing high quality data. Supervisors and interviewers were recruited by IRC using guidelines developed by NORC, which emphasized CAPI experience, face-to-face interviewing experience, the ability to gain cooperation and a commitment to data quality. Interviewers were grouped into 8 teams of 6-8 interviewers, each of which was led by an IRC supervisor with experience managing complex face-to-face social scientific surveys.

Training for the data collection team took place in three phases. In the first phase, supervisors were recruited, with particular care taken to include supervisors from ethnic and linguistic groups represented among the 15 cities. Supervisors participated in a five-day pretesting activity that included 2.5 days of classroom and small group training to become familiar with the tablet computers and programmed questionnaire followed by two days of pretesting among a convenience sample of respondents in informal areas in Nairobi.

The second phase of training included a one-day Training of Trainers (ToT) and two days of Supervisor training, including detailed instruction on carrying out listing and sampling, gaining cooperation among respond**ents, coaching interviewers, reporting and ensuring quality control, confidentiality and security.** Eight supervisors attended the ToT and Supervisor training.

The third phase of training included five days of classroom and small group activities for the 58 interviewers brought to training followed by two days of piloting among a convenience sample in informal areas of Nairobi. All interviewers were required to pass a practical exam using the tablet questionnaire and to successfully demonstrate all listing and interviewing tasks during the two day pilot. After training, three interviewers were dismissed from the data collection.

Due to the large size of the data collection effort required, it was necessary to organize it in two phases. The cities interviewed by phase are given in Table 3 in Appendix C.

A.4 Field period

Main data collection began July 17, 2012 and continued through March 14, 2013. Interviewers and supervisors were assigned as teams to the 15 cities included in the study. Each city included teams of 5-8 interviewers. With the largest of samples, Nairobi's team included eight interviewers.

Listing and interviewing were carried out simultaneously. Teams listed enumeration areas from Monday through Wednesday of each week, sampling took place Wednesday or Thursday, and cases were transmitted to interviewers' tablets in time for interviewing Thursday through Sunday.

Listing and the majority of interviewing for Phase I ended October 21, 2012. Phase II began with a refresher training of two days, November 9-10 and continued through mid-March, 2013, with breaks for Christmas December 21-January 5 and in the week before and the week after the presidential elections, which took place March 4, 2013.

A.5 Duration

Pretesting of the paper questionnaire prior to programming suggested a mean duration of approximately 50 minutes. Pretesting of the programmed questionnaire during supervisor pretest in-office and in the field showed an approximate length of 45 minutes. Fielded duration showed a median of 21 minutes, with some variation among cities, as shown in Table 4 in Appendix C. While duration values are captured automatically within the questionnaire in the form of timestamps at each question, the total duration of interviews may have been compromised when some supervisors, in keeping with common practice for paper and pencil surveys, reviewed enumerators' completed electronic questionnaires after completion and before transmitting the surveys to the server. This activity of scrolling through the questionnaire may have reset timestamps, causing completed surveys to appear very short in duration.

A.6 Completion rates

NORC has elected to present the completion rate rather than the response rate due to anomalies in the sample tracking data that reduce our confidence in the accuracy of the data for the final status (complete, refusal, ineligible) of some cases. Specifically, debriefings with the enumerators suggest that not all attempted cases were recorded, particularly the non-interview (refusal) and out-of-scope (ineligible) cases.

The completion rate is reported as the number of households that successfully completed an interview over the total number of households selected for the EA. These are shown by city in Table 5 in Appendix C, and have an average rate of 68.66 percent, with variation from 66 to 74 percent (aside from Nairobi at 61.47 percent and Machakos at 56 percent). As described earlier, ten households were selected per EA if the EA contained more than 10 households. For EAs where fewer than ten households were selected for interviews, all households were selected. In some EAs, more than ten households were selected due to a central office error.

A.7 Challenges and adjustments

The Kenya State of the Cities baseline survey comprised a complex and very large-scale set of data collection activities. The listing task required in-person door-to-door enumeration of over 140,000 households in 15 cities across Kenya. The interviewing task required locating, gaining cooperation and interviewing approximately 14,600 respondents. The NORC/IRC team experienced several challenges over the course of the project, specifically:

- Missing or inaccessible enumeration areas
- Extended field period overlapping election season
- Enumerator errors

Missing or inaccessible enumeration areas. Listing activities were based on enumeration areas selected from the 2009 Kenya census. Enumerators found EAs that no longer included households, or that never included households or to which enumerators were refused access by residents. When possible, replacement enumeration areas were selected using the approved sampling plan. In some instances, replacement was infeasible due to a limited field period and/or a lack of suitable replacements.

Extended field period. Initially planned to take place over 23 weeks, the listing and survey data collection effort lasted a total of 32 weeks. In particular, the level of effort necessary for carrying out the listing activity was underestimated considerably. Listing teams found that many enumeration areas were geographically large and thus required many more hours for on-foot enumeration than anticipated. In other cases, enumeration areas located in areas with high security risks required teams of two or three enumerators to remain together and to list only in midday. In other instances, enumerators were delayed by authorities or neighborhood groups suspicious of their activities in the enumeration area. The field period continued into February and then suspended for 2.5 weeks until after the elections on March 4. The final interviews were completed in mid-March.

The extension of the field period over different seasons and the collection of data in the weeks before and after the election may have unknown effects on the response data. Seven cities' interviews were conducted from mid-July to early November while eight cities' interviews were conducted from mid-November to mid-March. Seasonal effects may influence responses to questions on health, finance, education, transportation or other topics. Proximity of elections may influence responses to questions on access to infrastructure, civic behavior and other topics.

Enumerator errors. While NORC's data quality plan included a high level of validation (30 percent of each interviewer's completed interviews were re-contacted) and extensive data review, two aspects of the data collection effort appeared particularly difficult for the enumerators; data entry of long strings of digits and correctly assigning final status codes to households selected for interview.

Errors in data entry are an expected, if unfortunate, source of error in survey data. Enumerator data entry error was minimized by using a CAPI instrument that enforced skip patterns and did not permit certain types of incorrect responses. However, enumerators were required to enter the identification number for each enumeration area in both the listing and survey applications. EA codes are broken into 6 components totaling 12 digits in length; as such, the identifier proved to be easily mistyped on the touchscreen tablets.[11] After recognizing an unacceptable rate of data inconsistencies, NORC analysts carried out extensive cleaning to review and revise all EA identification numbers prior to doing the main analysis. Contextual information such as date, enumerator, GPS location, street name, and other information was used to correct the mistyped EA codes.

Sample management is a critical element of any survey undertaking. Each case selected for interview must be assigned a final status, such as complete, refused or ineligible. However, some selected but not completed cases may have been incorrectly identified as ineligible rather than refusal. NORC undertook an extensive review of the data to identify each case's final status. The final results after cleaning and review are reported in Appendix C.

[11] The six components of the EA code are: province (1 digit), district (2 digits), division (2 digits), location (2 digits), sublocation (2 digits), and EA number (3 digits).

PART B:

HOUSEHOLD CHARACTERISTICS

This chapter presents a comparison of basic household characteristics across the cities. We first describe the population under study and examine household size and composition. Finally this chapter seeks to address the research question, "to what extent do education levels and certain health indicators vary across municipalities".

B.1 Population description

Table 3 below shows the sample composition for each of the 15 municipalities: the sample size, weighted and un-weighted estimated population, the percentage of the sample in formal (better) and informal (slum) areas, the percentage of the sample that is poor and non-poor (defined as below/above the poverty line), and for informal areas only, the percentage with male heads of household and female heads of household.

On average, 32% of households across all cities live in informal areas. However, there is wide variation across municipalities: a few cities have a notable percentage of households living in informal areas— Kisumu (60%), Nairobi (41%) and Eldoret (29%)—but far more cities have 6% or less in informal areas—Kakamega, Kitui, Machakos, Malindi, Nakuru, Nyeri, and especially Garissa (2%).

Table 3: Sample composition

City	Sample	Estimated Population	Informal	Formal	Poor[(a)]	Non-Poor	Male-Headed	Female-Headed
All	14,556	1,638,554	32%	68%	51%	47%	74%	23%
Eldoret	974	97,064	29%	71%	69%	31%	75%	24%
Embu	1,014	14,818	13%	87%	48%	51%	67%	31%
Garissa	1,032	14,953	2%	98%	47%	53%	78%	19%
Kakamega	966	18,306	6%	94%	48%	51%	72%	26%
Kericho	1,030	23,018	11%	89%	85%	15%	80%	19%
Kisumu	740	87,958	60%	40%	48%	49%	75%	22%
Kitui	658	21,553	6%	94%	69%	24%	72%	23%
Machakos	670	24,090	6%	94%	63%	37%	70%	28%
Malindi	1,026	35,820	3%	97%	68%	32%	80%	19%
Mombasa	1,093	226,632	26%	74%	59%	41%	77%	20%
Nairobi	1,178	880,873	41%	59%	43%	55%	73%	22%
Naivasha	1,071	45,884	9%	91%	71%	28%	70%	27%
Nakuru	1,095	88,041	5%	95%	61%	37%	69%	28%
Nyeri	1,024	29,002	4%	96%	50%	49%	70%	26%
Thika	985	30,534	18%	82%	47%	53%	67%	29%

[(a)] *Note: Percentages may not add to 100 due to a number of people who either did not know or refused to answer.*

Overall, about half of the combined cities' respondents were poor; and the only city where the figure was notably lower than 50% was Nairobi, where 43% reported living below the poverty line. Several cities, on the other hand, had proportions considerably higher than 50% of households living below the poverty line; Eldoret and Kitui (both 69%), Malindi (68%), Naivasha (71%), and especially Kericho (85%). On average, 23% of the households in informal areas were female headed, and this percentage was fairly consistent across the fifteen municipalities. Perhaps surprisingly, this is highest in two small municipalities, Embu (31%) and Thika (29%).

B.2 Household size and composition

Table 4 summarizes the household size and composition of the 15 cities individually and combined. The average household in the 15 surveyed cities has 3.1 members. Kisumu has the largest households (4.1) while Embu has the smallest (2.3). Poor households and those in informal areas tend to be larger than non-poor households and those in formal areas. Overall, an average of 64% of household members are aged 15 to 60 years, 19% are children 5 to 14 years, and 14% are under 5. Only 1% are over 60 years old.

Table 4: Household size and composition (Summary)

City	Category	Avg HH Size	N	Mean % of HH members aged…				
				Under 5	5-14	15-60	Over 60	N
All	Total	3.1	14,549	14	19	64	1	44,535
	Formal	3.0	10,400	13	19	65	2	32,160
	Informal	3.2	4,149	15	18	64	1	12,375
	Poor	3.3	8,532	14	19	63	1	27,637
	Non-poor	2.9	5,839	13	18	66	1	16,296
Eldoret		3.1	974	15	21	63	1	3,009
Embu		2.3	1,014	10	17	69	3	2,300
Garissa		3.7	1,032	15	24	59	1	3,705
Kakamega		3.4	966	14	21	62	3	3,346
Kericho		3.1	1,030	18	17	63	1	3,339
Kisumu		4.1	740	13	23	55	2	3,018
Kitui		3.9	651	11	24	61	4	2,360
Machakos		3.1	670	11	19	67	3	2,000
Malindi		3.1	1,026	15	21	63	1	3,105
Mombasa		2.9	1,093	15	18	66	1	3,074
Nairobi		3.2	1,178	13	17	66	1	3,761
Naivasha		2.8	1,071	15	19	63	1	2,926
Nakuru		3.1	1,095	15	22	61	2	3,354
Nyeri		2.6	1,024	14	18	64	3	2,627
Thika		2.6	985	12	17	67	1	2,611

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 5 displays the average household size for poor and non-poor, as well the average household composition by members' age. Poor households are systematically larger than non-poor households, except for households in Garissa, where poor households are, on average, slightly smaller. The largest size differences between poor and non-poor households are in Kitui (1.5 members) and Malindi (1 member); differences in the remaining cities are less than one person on average.

Table 5: Household size and composition

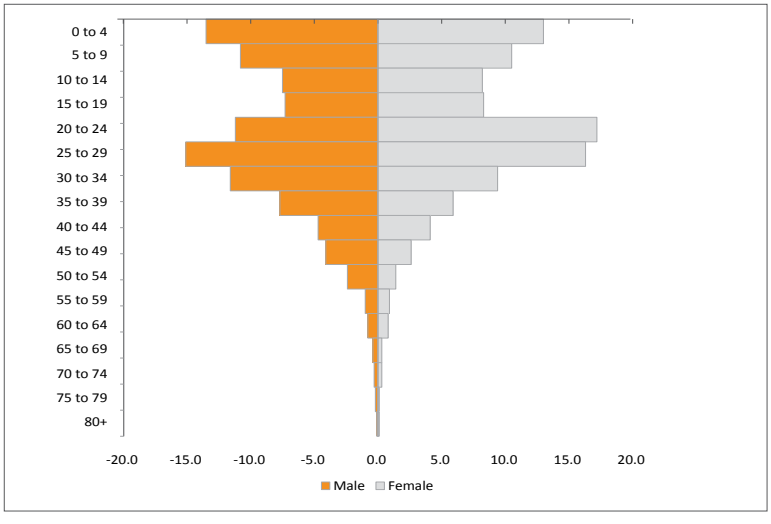
City	Poverty	Avg HH Size	N	Mean % of HH members aged…				
				Under 5	5-14	15-60	Over 60	N
All	Poor	3.3	8,536	14	19	63	1	27,637
	Non-poor	2.9	5,840	13	18	66	1	16,296
Eldoret	Poor	3.1	660	15	21	62	1	2,063
	Non-poor	3.0	308	14	20	65	1	928
Embu	Poor	**2.6**	470	10	19	66	4	1,222
	Non-poor	**2.0**	537	10	16	72	2	1,063
Garissa	Poor	**3.6**	493	16	**22**	60	2	1,741
	Non-poor	**3.7**	539	15	**26**	58	1	1,964
Kakamega	Poor	**3.6**	470	14	**23**	59	4	1,746
	Non-poor	**3.2**	481	13	**18**	66	2	1,537
Kericho	Poor	**3.2**	879	**19**	18	62	1	2,889
	Non-poor	**2.6**	147	**13**	14	71	1	432
Kisumu	Poor	**4.3**	346	13	25	54	2	1,515
	Non-poor	**3.8**	362	13	22	57	2	1,361
Kitui	Poor	**4.3**	418	12	26	58	4	1,704
	Non-poor	**2.8**	201	11	19	66	4	549
Machakos	Poor	3.2	420	11	20	65	4	1,267
	Non-poor	3.0	249	10	18	70	2	730
Malindi	Poor	**3.4**	664	**16**	22	61	1	2,210
	Non-poor	**2.4**	359	**12**	17	70	1	885
Mombasa	Poor	**3.0**	638	16	19	65	1	1,896
	Non-poor	**2.6**	451	13	16	69	2	1,167
Nairobi	Poor	**3.3**	535	14	18	65	1	1,783
	Non-poor	**3.0**	606	13	17	67	1	1,864
Naivasha	Poor	**3.0**	793	16	20	61	2	2,313
	Non-poor	**2.2**	271	13	15	70	1	593
Nakuru	Poor	**3.3**	693	**17**	23	59	2	2,288
	Non-poor	**2.8**	386	**12**	20	65	2	1,022
Nyeri	Poor	**3.0**	510	**16**	19	61	4	1,495
	Non-poor	**2.2**	507	**13**	16	68	3	1,115
Thika	Poor	**2.8**	543	12	20	65	1	1,505
	Non-poor	**2.5**	435	11	14	70	2	1,086

Furthermore, we can see in Table 5 that the overall composition by age in each city does not substantially vary from the proportion for all cities combined, except for the proportion of between 15 and 60 years old. The proportion of household members in this age category also registers the largest differences between poor and non-poor households. In five cities, the differences in the proportion of adults in poor and non-poor households are not significant. However, in ten cities, differences vary from four to nine percentage points and were significant.

While there are no considerable differences in the proportion of adults in poor and non-poor households in six cities, in nine of them, these differences vary from four to nine percentage points; these differences were statistically significant in most cities.

For a more illustrative display of the population distribution of the sample, Figure 1 presents the population pyramid across all 15 cities. This pyramid displays proportion of males and females (weighted percentages) that live in the sampled households. As in Table 5, the distribution of household members by age seems quite balanced between male and female members, except for the segment of youth between 20 and 24 years old, which contains more female members, and for adults aged 30 to 44, which includes a larger proportion of male members.

Figure 1: Population pyramid



B.3 Household education

This section analyzes the education level of adult household members and children school attendance. First, we present the proportion of adults (over 18 years old) in poor and non-poor households that have completed at least secondary school. Table 6 shows the figures for all 15 cities individually and combined. Overall, 57% of adults have a secondary education or higher, and the percentage is considerably higher in formal areas and non-poor households than in informal areas and poor households, respectively. The individual cities range from 29% in Garissa to 67% in Thika. Across all 15 cities, 91% of children 5-14 years old are currently attending school. This rate is consistent across area type and household poverty. Some 90% or more of children 5 to 14 years olds are currently in school in all cities except Garissa, where 79% of children are in school.

Table 6: Education characteristics (Summary)					
City	Category	% of adults with secondary or higher education	N	% of children 5-14 years old attending school	N
All	Total	57	26,966	91	8,916
	Formal	63	19,512	90	6,497
	Informal	46	7,454	91	2,419
	Poor	50	16,313	92	5,787
	Non-poor	65	10,296	90	3,013
Eldoret		56	1,770	93	638
Embu		56	1,577	94	391
Garissa		29	2,055	79	890
Kakamega		52	1,975	97	713
Kericho		49	1,992	96	617
Kisumu		46	1,562	90	716
Kitui		44	1,391	95	532
Machakos		51	1,341	97	356
Malindi		30	1,882	96	625
Mombasa		52	1,987	91	543
Nairobi		64	2,330	90	674
Naivasha		43	1,787	93	568
Nakuru		50	1,958	93	713
Nyeri		56	1,715	93	461
Thika		67	1,644	91	479

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

As shown in Table 7, a considerably larger percentage of adults from non-poor households completed at least secondary school than those from poor households; 78% of non-poor households vs. 66% of poor households, a difference of 15 percentage points. The smallest gap between poor and non-poor households can be found in Machakos (7 percentage points) while the largest can be found in Mombasa (27 percentage points). Table 7 also presents the percentage of children that were attending school (any grade) at the time of the survey. Interestingly, in almost half of the 15 cities, a higher proportion of children from poor households than from non-poor households were attending school, as is the case for the entire sample (92% of children attend school in poor households vs. 88% in non-poor households). There does not seem to be a consistent trend in children's school attendance based on poverty status, as this varies across cities.

Table 7: Education characteristics					
City	Category	% of adults with secondary or higher education	N	% of children 5-14 years old attending school	N
All	Poor	66	6,718	92	5,325
	Non-poor	78	6,220	88	2,731
Eldoret	Poor	64	593	97	422
	Non-poor	77	318	96	167
Embu	Poor	**51**	374	96	212
	Non-poor	**77**	548	93	156
Garissa	Poor	**64**	231	89	277
	Non-poor	**73**	379	94	416
Kakamega	Poor	**42**	364	75	402
	Non-poor	**57**	648	80	275
Kericho	Poor	**51**	793	97	512
	Non-poor	**76**	190	95	77
Kisumu	Poor	**60**	281	92	350
	Non-poor	**76**	382	95	265
Kitui	Poor	**65**	385	96	396
	Non-poor	**81**	216	99	80
Machakos	Poor	**61**	365	93	232
	Non-poor	**68**	351	90	112
Malindi	Poor	**66**	387	93	456
	Non-poor	**86**	304	93	139
Mombasa	Poor	**45**	514	92	322
	Non-poor	**72**	473	95	173
Nairobi	Poor	**68**	559	92	305
	Non-poor	**74**	806	94	284
Naivasha	Poor	**71**	534	89	439
	Non-poor	**82**	221	90	85
Nakuru	Poor	**58**	550	93	462
	Non-poor	**68**	395	88	177
Nyeri	Poor	**48**	406	97	257
	Non-poor	**68**	507	97	172
Thika	Poor	**62**	382	92	281
	Non-poor	**82**	482	86	153

B.4 Household health

Table 8 summarizes household health. About 91% of children overall have received BCG immunization against tuberculosis. Eighteen percent of surveyed households reported that a household member had been injured or ill in the two weeks prior to the survey, and 78% of the ill/injured had visited a health practitioner. On average, households spent 3,929 KSh on medical expenses in the month prior to the survey, and 24% of all households reported having health insurance.

Table 9 shows the percentage of children under 15 years old that have received BCG immunization, the proportion of households that reported having an injured or ill member in the previous two weeks, the proportion of those ill household members that visited a health practitioner in the previous two weeks, average household medical expenditures in the previous month and the proportion of households who have health insurance.

On average, a high proportion of children under 15 have received BCG immunization: 91% for both poor and non-poor household groups. It is unclear whether the proportion is different between poor and non-poor households' children as tests of significance could not be computed for that particular question due to a low number of observations at the census tract level.

On average, 19% of non-poor households and 17% of poor households reported that a member was ill/injured in the two weeks prior to the survey. In general, this proportion is higher for non-poor households than poor households in municipalities where there is a statistically significant difference—Eldoret, Garissa, and Kericho—but not in Nyeri, where the proportion is higher for poor households (differences between poor and non-poor households are not significant in other municipalities). These injured/ill household members generally visit a health practitioner; in all municipalities, at least two thirds do and in some as many as 99% visit a health practitioner (Kericho non-poor households).

On average, non-poor households spent 6,697 KSh on medical needs in the month prior to the survey, and poor households spent 797 KSh; in other words non-poor households spent more than 8 times as much as poor households. Among poor households, medical expenditures range from 173 KSh per month in Thika to 1,089 KSh in Nairobi; among non-poor households, they range from 222 KSh in Kitui to 11,470 KSh in Nairobi. In most municipalities, non-poor households seem to be spending more than poor households on medical expenditures, even though there tends to be a higher proportion of non-poor households than poor households with health insurance (on average, 32% of non-poor households have health insurance vs. 17% of poor households; with the maximum in Kericho—61% of non-poor households, and the minimum in Garissa—5% of poor households). For instance, in Machakos, poor households spent 281 KSh on medical expenses while non-poor households spent 655 KSh even though 48% of non-poor households have health insurance vs. 11% of poor households. One explanation could be that people who have health insurance seek out medical services more since costs may be covered under the insurance. However, the proportion of non-poor households that had an injured/ill member visit a health practitioner in the two weeks prior to the survey is lower than that of poor households (68% vs. 75%). Another explanation for the difference in medical expenditures between poor and non-poor households could come from the type and quality of medical services/products that non-poor households seek as compared to poor households. So even though they have health insurance, they may tend to seek higher quality/higher cost care and end up spending more than non-poor households. Additional analysis is needed to investigate this question further.

Table 8: Household health (Summary)

City	Category	% children with BCG immunization	N	% with an injured/ill member, prev. 2 weeks	N	% of ill that visit a health practitioner, prev. 2 weeks	N	Medical expenses (KSh), prev. month	N	% with health insurance	N
All	Total	91	7,906	18	14,549	78	2,483	3,929	14,313	24	14,502
	Formal	91	5,689	16	10,400	80	1,685	6,258	10,215	29	10,368
	Informal	91	2,217	21	4,149	76	798	824	4,098	17	4,134
	Poor	91	2,775	17	5,842	76	1,059	797	5,708	17	5934
	Non-poor	91	5,050	19	8,536	79	1,393	6,697	8,455	32	8448
Eldoret		87	520	20	974	77	183	612	970	21	970
Embu		92	408	14	1,014	81	135	472	1,002	27	1,014
Garissa		91	604	16	1,032	72	155	1,044	1,004	9	1,032
Kakamega		94	573	17	966	66	167	555	960	24	966
Kericho		83	586	11	1,030	97	123	426	1,027	26	1,029
Kisumu		87	500	38	740	75	276	2,335	691	23	736
Kitui		98	425	12	651	76	85	724	645	15	649
Machakos		98	356	15	670	73	85	418	662	25	670
Malindi		99	559	22	1,026	81	214	288	1,025	6	1,024
Mombasa		91	574	18	1,093	74	193	576	1,089	12	1,092
Nairobi		91	682	16	1,178	81	198	6,647	1,109	30	1,160
Naivasha		96	564	17	1,071	70	186	348	1,061	31	1,068
Nakuru		88	633	15	1,095	69	139	565	1,092	10	1,091
Nyeri		97	479	16	1,024	70	161	828	1,022	30	1,024
Thika		89	443	18	985	79	183	607	954	30	977

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 9: Household health

City	Poverty	% children with BCG immunization	N	% with an injured/ ill member, prev. 2 weeks	N	% of ill that visit a health practitioner, prev. 2 weeks	N	Medical expenses (KSh), prev. month	N	% with health insurance	N
All cities	Poor	91	2,775	17	5,842	76	1,059	797	5,708	17	5,934
	Non-Poor	91	5,050	19	8,536	79	1,393	6,697	8,455	32	8,448
Eldoret	Poor	85	363	16	660	78	95	597	659	16	659
	Non-Poor	92	154	27	308	77	86	655	307	32	307
Embu	Poor	93	224	15	470	80	68	420	465	14	470
	Non-Poor	92	182	13	537	82	65	512	530	39	537
Garissa	Poor	88	294	13	493	70	62	496	491	5	493
	Non-Poor	93	310	19	539	73	93	1,559	513	13	539
Kakamega	Poor	92	294	18	470	68	83	826	469	19	470
	Non-Poor	96	269	16	481	64	82	306	476	30	481
Kericho	Poor	81	516	10	879	95	87	361	878	19	878
	Non-Poor	98	68	22	147	99	35	800	145	61	147
Kisumu	Poor	88	253	37	346	74	130	1,086	326	20	344
	Non-Poor	86	224	39	362	74	138	3,694	340	25	361
Kitui	Poor	98	318	14	422	77	65	545	419	14	422
	Non-Poor	99	98	8	204	77	17	222	203	20	203
Machakos	Poor	98	231	15	420	75	44	281	418	11	420
	Non-Poor	98	124	15	249	68	41	655	244	48	249
Malindi	Poor	99	412	24	664	78	146	196	663	6	663
	Non-Poor	97	146	19	359	87	68	489	359	6	358
Mombasa	Poor	91	365	17	638	70	102	230	637	7	638
	Non-Poor	89	207	20	451	79	90	1,074	449	18	451
Nairobi	Poor	92	328	15	535	79	85	1,089	514	21	530
	Non-Poor	91	337	18	606	81	110	11,470	564	37	600

City	Poverty	% children with BCG immunization	N	% with an injured/ ill member, prev. 2 weeks	N	% of ill that visit a health practitioner, prev. 2 weeks	N	Medical expenses (KSh), prev. month	N	% with health insurance	N
Naivasha	Poor	96	460	19	793	72	147	318	783	29	790
	Non-Poor	98	102	13	271	62	37	429	271	38	271
Nakuru	Poor	88	445	15	693	66	90	471	691	9	691
	Non-Poor	89	183	13	386	81	45	737	385	12	386
Nyeri	Poor	96	280	21	510	71	100	604	509	24	510
	Non-Poor	97	197	12	507	68	59	1,067	507	37	507
Thika	Poor	83	267	15	543	71	89	173	533	12	470
	Non-Poor	97	174	20	435	85	93	940	415	45	537

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

PART C:

HOUSEHOLD ECONOMIC PROFILE

This section explores the economic base in the 15 municipalities and aims to answer questions such as: What is the proportion of residents in a municipality that lives below the poverty line? How do households' expenditure, income, and wealth profiles differ across cities? How many households own enterprises?

C.1 Household poverty, income, and expenditure

Table 10 summarizes household income and expenditures. As expected, poor households and those in informal areas have lower incomes and expenditures than non-poor households and those in formal areas. Garissa, Mombasa, and Nairobi have the smallest percentages of households in the lowest income category and Garissa, Nairobi, and Thika have the largest percentages in the highest category. Garissa, Nairobi, and Nyeri have the smallest percentages in the lowest expenditure categories, while Garissa, Nairobi, and Kisumu have the largest percentages in the highest expenditure category.

Table 10: Household Income and expenditures (Summary)

City	Location	% of HHs in each income category (KSh)				% of HHs in each expenditure category (KSh)				N
		0 - 6,000	6,001 -13,000	13,001- 22,500	>22,500	0 - 6,000	6,001- 13,000	13,001- 22,500	>22,500	
All	Total	15	33	26	26	12	34	28	27	14,549
	Formal	13	29	24	34	11	30	26	33	10,400
	Informal	20	40	26	14	15	40	29	16	4,149
	Poor	21	40	25	14	17	41	26	15	8,532
	Non-poor	8	27	28	37	5	27	29	38	5,839
Eldoret		30	35	18	17	23	36	22	20	974
Embu		26	38	20	16	25	38	26	10	1,014
Garissa		7	31	29	33	10	26	26	38	1,032
Kakamega		28	32	19	21	17	34	27	22	966
Kericho		28	40	20	12	26	32	26	16	1,030
Kisumu		24	29	25	22	12	31	30	27	740
Kitui		29	34	22	15	13	37	32	18	651
Machakos		13	32	30	24	19	39	25	17	670
Malindi		29	39	21	11	28	36	24	12	1,026
Mombasa		11	43	30	17	12	41	28	19	1,093
Nairobi		11	30	27	33	9	30	28	33	1,178
Naivasha		28	48	19	6	20	50	22	8	1,071
Nakuru		22	37	23	17	14	41	29	16	1,095
Nyeri		12	39	27	22	6	37	38	20	1,024
Thika		14	22	31	33	12	39	31	19	985

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

[12] *Categories are provided instead of quartiles for comparability to income; fortuitously, these are fairly similar to the all-city quartile ranges*

Table 11 shows the proportion of households that are above and below the expenditure-based poverty line (see full definition in the Introduction of this report), the proportion of households in each municipality that falls within certain income ranges, and the proportion of households in each municipality that falls within certain expenditure ranges. There are two general approaches to measure spending power: expenditure and income. Conceptually, income derives from household members' salaries, business earnings, rents, public cash support, and earnings from financial assets in the month prior to the interview, but does not include any remittances. Expenditures include all purchases, including investments for household-owned businesses. In theory, both approaches express the same amount of spending power, but typically one approach is not enough, especially when estimations are based on survey data. This is because survey respondents' perceptions about their income and expenditures can be unreliable; estimates vary depending on seasonal changes in economic activities, type of assets owned, household's cash flows, and in-kind payments. In the survey, household income was reported by range (see the Introduction) and expenditure was calculated from individual spending on item categories.

The table shows that more than half of all households (52%) are considered poor. Kericho has the highest proportion of poor households and Nairobi has the lowest. As expected, non-poor households tend to have incomes that fall in the higher income categories: 37% of all non-poor households have incomes above 22,500 KSh compared to 8% with incomes below 6,000 KSh. They also report higher expenditures than poor households: 38% of non-poor households have expenditure amounts in the top category compared to 15% of poor households. This result is expected since our households are defined as poor or non-poor based on their household expenditures.

Table 12 and Table 13 give the mean values rent, water, and electricity expenditures, as well as the Gini coefficients for income and expenditures. On average, non-poor households spend 80% more on rent, 55% more on water and 74% more on electricity than poor households. The difference between rent expenditures between poor and non-poor households is particularly apparent in Malindi, where non-poor households spend 156% more than poor households on rent, and in Nairobi, where non-poor households spend 97% more than poor households on rent. On the other extreme, the gap in rent expenditures between poor and non-poor households is smallest in Eldoret and Garissa (26% and 21% respectively, between non-poor and poor households). Although the gap in Eldoret for rent is small, the gap in water and electricity expenditures is much bigger (non-poor households spend 68% more on water and 61% more on electricity than poor households). Inversely, while the gap in rent expenditures is the largest for Malindi, the difference in water and electricity expenditures between poor and non-poor households is much smaller (only 8% for water and 52% for electricity).

The Gini coefficient is a measure of inequality, with higher values indicating higher inequality. Table 13 shows that the six lowest Gini coefficients for expenditures are all associated with the poor household groups (0.3 to 0.35 in Nyeri, Naivasha, Kitui, Nakuru, Mombasa and Machakos). In general, Gini coefficients are lower for poor than non-poor households, indicating that poor households are more homogeneous in terms of expenditures than non-poor households.

Table 11: Household poverty, income, and expenditures

Location		% of HHs	% of HHs in each income category (KSh)				% of HHs in each expenditure category (KSh)[12]				N
			0-6,000	6,001-13,000	13,001-22,500	>22,500	0-6,000	6,001-13,000	13,001-22,500	>22,500	
All	Poor	52	21	40	25	14	17	41	26	15	8,532
	Non-Poor	48	8	27	28	37	5	27	29	38	5,839
Eldoret	Poor	70	**34**	**37**	16	14	28	37	20	15	660
	Non-Poor	30	**20**	**32**	23	24	9	34	25	32	308
Embu	Poor	49	**38**	38	15	8	42	40	15	3	470
	Non-Poor	51	**14**	38	24	23	9	37	36	18	537
Garissa	Poor	47	**13**	41	25	21	17	37	25	21	493
	Non-Poor	53	**3**	21	33	43	4	16	27	53	539
Kakamega	Poor	49	**39**	32	18	11	26	38	25	11	470
	Non-Poor	51	**16**	31	21	32	7	31	29	32	481
Kericho	Poor	85	**31**	42	18	9	30	35	25	10	879
	Non-Poor	15	**12**	27	33	29	2	18	33	47	147
Kisumu	Poor	49	34	33	20	13	17	36	27	20	346
	Non-Poor	51	14	25	30	30	5	27	33	35	362
Kitui	Poor	74	32	37	20	10	11	41	34	14	422
	Non-Poor	26	14	30	28	28	16	22	28	34	204
Machakos	Poor	63	**20**	45	28	7	28	48	19	5	420
	Non-Poor	37	**0**	12	34	54	3	25	35	37	249
Malindi	Poor	68	**38**	40	16	6	34	37	22	7	664
	Non-Poor	32	**9**	37	31	23	16	34	27	22	359
Mombasa	Poor	59	**15**	47	29	9	18	47	23	13	638
	Non-Poor	41	**5**	37	30	28	4	33	36	27	451
Nairobi	Poor	44	18	39	27	17	15	39	28	18	535
	Non-Poor	56	5	23	27	44	4	23	27	46	606
Naivasha	Poor	72	**32**	49	16	3	22	51	21	6	793
	Non-Poor	28	**18**	44	26	12	14	48	24	13	271
Nakuru	Poor	62	**28**	42	19	11	17	47	27	9	693
	Non-Poor	38	**14**	30	30	27	11	30	34	25	386
Nyeri	Poor	51	13	42	28	18	9	40	38	13	510
	Non-Poor	49	11	36	27	26	2	33	37	28	507
Thika	Poor	47	20	24	32	24	17	46	28	10	543
	Non-Poor	53	8	20	29	42	7	33	33	27	435

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

[12] Categories are provided instead of quartiles for comparability to income; fortuitously, these are fairly similar to the all-city quartile ranges

Table 12: Household monthly expenditures and gini coefficients (Summary)

City	Category	Average Rent (KSh)	N	Average Water Expenditure (KSh)	N	Average Electricity Expenditure (KSh)	N	Gini Coefficient of "fake income" (median of income category)	Gini coefficient of expenditures	N
All	Total	4,118	10,968	762	9,204	913	5,275	0.43	0.45	14,549
	Formal	5,193	7,409	903	6,034	1,035	3,927	0.42	0.45	10,400
	Informal	2,591	3,559	634	3,170	739	1,348	0.40	0.41	4,149
	Poor	2,897	6,256	592	5,424	639	2,506	0.41	0.37	8,532
	Non-poor	5,209	4,596	920	3,661	1,112	2,696	0.41	0.45	5,839
Eldoret		2,275	806	408	542	787	292	0.47	0.44	974
Embu		2,200	694	459	523	660	400	0.45	0.45	1,014
Garissa		3,462	714	1,801	271	2,005	172	0.37	0.42	1,032
Kakamega		2,334	622	629	542	845	283	0.48	0.42	966
Kericho		2,491	713	468	576	602	216	0.40	0.44	1,030
Kisumu		3,070	472	767	597	945	244	0.48	0.45	740
Kitui		2,201	346	538	399	659	160	0.46	0.36	651
Machakos		2,568	468	634	510	675	172	0.41	0.45	670
Malindi		2,383	744	484	852	704	327	0.43	0.40	1,026
Mombasa		2,808	918	607	1,013	662	641	0.38	0.38	1,093
Nairobi		5,446	1,055	884	711	1,064	653	0.45	0.49	1,178
Naivasha		1,679	926	577	822	521	268	0.36	0.34	1,071
Nakuru		2,135	977	739	442	719	499	0.44	0.40	1,095
Nyeri		2,343	667	565	652	699	445	0.40	0.36	1,024
Thika		3,612	846	555	752	549	503	0.39	0.38	985

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 13: Household monthly expenditures and gini coefficients

City	Poverty	Average Rent (KSh)	N	Average Water Expenditure (KSh)	N	Average Electricity Expenditure (KSh)	N	Gini Coefficient of "fake income" (median of income category)	Gini coefficient of expenditures	N
All	Poor	2,897	6,256	592	5,424	639	2,506	0.41	0.37	8,536
	Non-Poor	5,209	4,596	920	3,661	1,112	2,696	0.41	0.45	5,842
Eldoret	Poor	2,102	562	341	366	650	174	0.46	0.44	660
	Non-Poor	2,653	241	573	172	1,047	116	0.46	0.41	308
Embu	Poor	1,661	287	405	227	521	128	0.43	0.41	470
	Non-Poor	2,603	405	505	293	736	269	0.43	0.42	537
Garissa	Poor	3,105	327	1,503	125	1,619	69	0.39	0.39	493
	Non-Poor	3,761	387	2,047	146	2,230	103	0.33	0.39	539
Kakamega	Poor	1,702	276	547	238	784	75	0.45	0.37	470
	Non-Poor	2,865	335	701	296	877	203	0.45	0.41	481
Kericho	Poor	2,314	583	453	478	513	62	0.39	0.41	879
	Non-Poor	3,265	127	538	97	861	53	0.36	0.36	147
Kisumu	Poor	2,605	215	711	273	776	102	0.48	0.40	346
	Non-Poor	3,558	237	822	296	1,074	133	0.44	0.47	362
Kitui	Poor	1,729	194	494	252	551	84	0.41	0.32	422
	Non-Poor	2,893	140	656	126	824	68	0.46	0.40	204
Machakos	Poor	1,890	268	418	320	561	65	0.34	0.35	420
	Non-Poor	3,334	199	968	189	761	107	0.33	0.42	249
Malindi	Poor	1,541	472	473	582	566	176	0.39	0.36	664
	Non-Poor	3,949	269	511	269	862	150	0.40	0.41	359
Mombasa	Poor	2,404	533	582	595	530	328	0.35	0.35	638
	Non-Poor	3,327	382	643	415	811	310	0.37	0.38	451
Nairobi	Poor	3,541	498	627	324	669	256	0.41	0.38	535
	Non-Poor	6,974	527	1,093	359	1,296	375	0.42	0.49	606
Naivasha	Poor	1,484	687	532	619	413	187	0.33	0.31	793
	Non-Poor	2,163	233	702	198	754	78	0.37	0.38	271
Nakuru	Poor	1,710	618	643	283	573	292	0.41	0.32	693
	Non-Poor	2,865	345	865	153	891	203	0.42	0.44	386
Nyeri	Poor	1,906	273	378	319	638	176	0.36	0.30	510
	Non-Poor	2,673	392	733	329	725	264	0.42	0.39	507
Thika	Poor	2,720	463	370	423	465	232	0.38	0.37	543
	Non-Poor	4,341	377	709	323	615	264	0.38	0.38	435

Note: Significance tests not performed on Gini coefficients.

In Table 14, we calculated Gini coefficients and standard deviations of these three indicators. Looking at the fifteen cities combined, we do not find a major difference in what economic well-being indicator is considered, though, relatively speaking, wealth implies the most equality and income the least. Turning to the standard deviations, we found that though all indicators are fairly tightly distributed, wealth displays the least variation while expenditure displays the most. This is the expected result, given how the three indicators were derived.

Table 14: 15-City Gini coefficients of wealth, expenditure, and income

Indicator	Average	Std. Dev.*
Wealth	0.398	0.032
Exp.	0.412	0.041
Income	0.424	0.039

**Population-weighted 15-city variation about the mean of Column 2.*

The combined unweighted average Gini coefficients of the individual cities vary from 0.340 (expenditures in Naivasha) to 0.491 (expenditures in Nairobi) (Table 15). The trends within cities typically mirror those found across all cities combined (see above) but there are quite a few deviations. In 8 of the 15 cities, wealth exhibits the most equality (as it does across all cities); of the remaining 7, expenditure exhibits the most equality in 5. On the other hand, in 7 of the 15 cities income is the least evenly distributed (as it is across all cities), while in 6 cities it is wealth and in the remaining 2 it is expenditure. Nairobi appears to be the city with economic well-being spread least equally across its population, while Mombasa and Thika are comparatively more equal than most other cities. However, all of the calculated coefficients are generally close in value and differences among them are quite small.

Table 15: Individual-city Gini coefficients for wealth, income, and expenditure

	Eldoret	Embu	Garissa	Kakamega	Kericho
Wealth	0.356	0.406	0.461	0.395	0.388
Exp.	0.444	0.450	0.416	0.421	0.439
Income	0.469	0.454	0.368	0.478	0.401
	Kisumu	**Kitui**	**Machakos**	**Malindi**	**Mombasa**
Wealth	0.401	0.336	0.368	0.446	0.388
Exp.	0.455	0.358	0.449	0.397	0.379
Income	0.476	0.461	0.413	0.426	0.377
	Nairobi	**Naivasha**	**Nakuru**	**Nyeri**	**Thika**
Wealth	0.425	0.373	0.416	0.413	0.394
Exp.	0.491	0.340	0.398	0.363	0.385
Income	0.449	0.358	0.439	0.398	0.391

Table 16: Bivariate correlations among income, wealth, and expenditure

	All Cities		Below Poverty Line		Above Poverty Line		Female-Headed		Male-Headed	
	Income	Wealth	Income	Wealth	Income	Wealth	Income	Wealth	Income	Wealth
Expenditures	0.625	0.526	0.609	0.575	0.583	0.378	0.645	0.545	0.545	0.437
Stat. sig.*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Wealth	0.539		0.584		0.408		0.556		0.447	
Stat. sig.*	0.000		0.000		0.000		0.000		0.000	

In our survey, we measured three main indicators of economic well-being: income, expenditure, and wealth. Income is derived from a question asking respondents for their household's total cash income in the previous month. The response options were income ranges so we used the midpoint of each range to convert responses to values. Expenditure is the result of a battery of questions concerning monthly and yearly expenditures. To estimate total monthly expenditures, we totaled all responses and converted them to a monthly amount. Wealth is calculated from the household's declared ownership of a list of common household items. The value itself is created by totaling the KSh value of each item using an exogenously set and fixed estimate and dividing by 1,000; since each possible possession was only counted once, this should not be taken as a reliable estimate, but rather a unitless index of comparison.

To assess the degree to which these three indicators are consistent measures of economic well-being, we calculated the correlations between each pair (Table 16). Across all cities, the three indicators are significantly and positively correlated. The correlation between income and expenditure is the highest (0.63), while the income-wealth and expenditure-wealth correlations are lower and nearly equal (0.54 and 0.53, respectively).

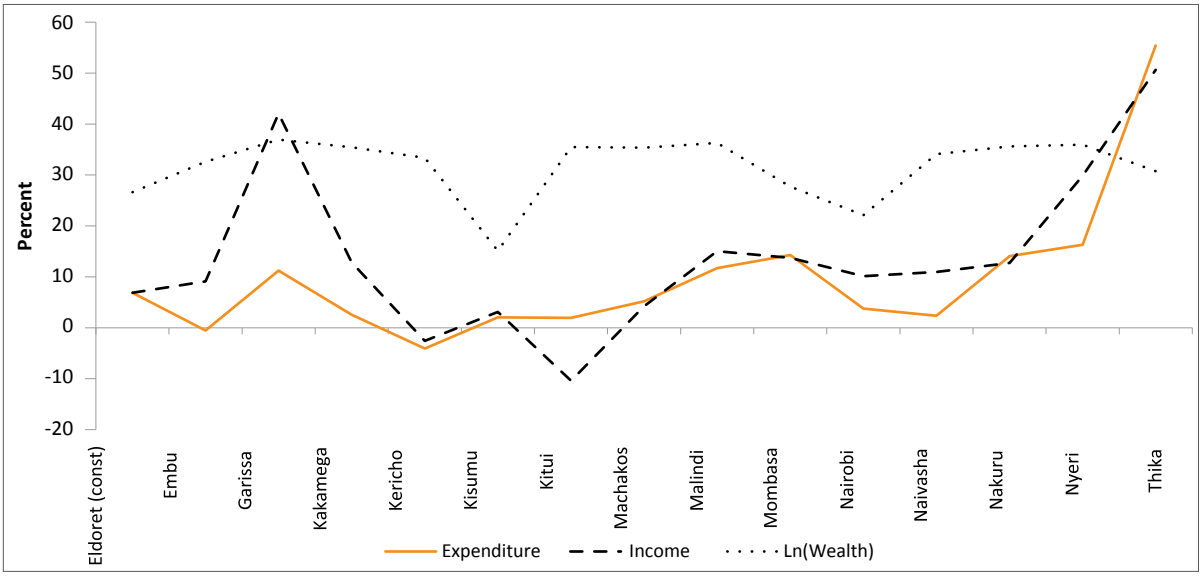
We also split the population into poor/non-poor, male-/female-headed, and formal/informal subpopulations and compared the correlations for each. The correlations among the three indicators were uniformly lower among non-poor households than they were among poor households. Similarly, they were uniformly lower among male-headed households than female-headed households. The correlations among formal areas and informal areas repeat the pattern found, above, for all cities, so they are not shown here. A higher correlation (closer to 1 or -1) means that the pair of indicators conveys a consistent story and are more interchangeable; a lower correlation (closer to 0) means that the relationship between the pair of indicators is complex and that both are necessary to capture the households' economic situation.

As a final comparison, we considered whether each of our indicators of income, expenditure, and wealth conveys the same story regarding the effect an increase in economic well-being has on the likelihood that a household would live in a non-slum (formal) area. Figure 2 summarizes these results.[12] For income and expenditure, this figure indicates the change in a household's probability of living in a formal area that would result from an extra 100 KSh of monthly income or expenditures. Since wealth is a unitless index that is not measured in KSh, the interpretation is different: the figure shows the percentage change in a household's probability of living in a formal area that would result from a 100% increase in its wealth. The figure indicates that the effect of an increase in wealth has a uniform effect across the cities—an increase in the likelihood of living in a formal area of about 30 percent. The exception is Kisumu, which is much less sensitive to a change in wealth. Income and expenditure indicators behave similarly to each other and display greater volatility, with Garissa, Nyeri and Thika showing the greatest sensitivity of an improvement to moving to a formal area.

Together, these results suggest that the three indicators of economic well-being are internally consistent, though they are more consistent for some subpopulations than for others.

[12] The detailed regression results can be found in the Appendix D.

Figure 2: Impact of an increase of economic well-being on the probability of living in a formal area



We find that increases in income and expenditure levels impact the propensity to live in a non-slum area fairly similarly—i.e., the two lines generally move together. Embu, Garissa, and Kitui are clear outliers. In Embu, an increase in expenditure has no effect on the probability a household lives in a non-slum areas. In Garissa, both income and expenditure have positive effects, but a change in income has nearly four times the effect as a change in expenditure. In Kitui, we find that an increase in income actually decreases a household's probability of living in a formal area, while an increase in expenditure has the opposite result. This is a curious outcome that may be explored in further analyses.

In all cities except Eldoret, Kisumu, Mombasa, and Nairobi, the doubling of a household's score on the wealth index correlates to a 30% to 40% increase in the probability of living in a non-slum area (similarly, a 10% increase in the wealth index would coincide with a 3% increase in the probability of living in a formal area).

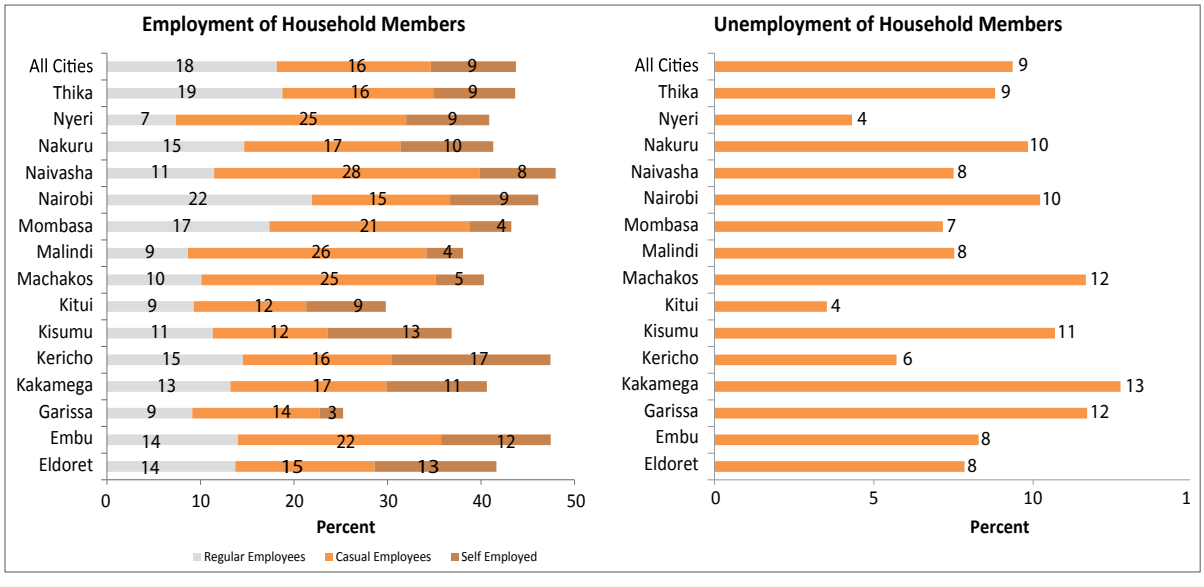
Though the graph makes it appear as though wealth has a much more powerful impact than income or expenditure, this is in fact rather ambiguous. Imagine the simple case of a household in Thika with a wealth index of 1. A doubling of their wealth index (from 1 to 2) would result in a 30% increase in the probability that they would live in a non-slum area. To realize that same 30% increase, a household with an initial wealth index of 3 would have to raise their index all the way to 6, 2 points more than the first household. So, this says that the marginal change in probability for a household with low initial wealth will be much higher than that for a household with high initial wealth. The income and expenditure regressions, on the other hand, are modeled linearly. Each additional 100 KSh of income or expenditure has the same effect on every household, regardless of their starting point.

Finally, we estimated regression model to explore the effect of income, wealth, and area type (formal/informal) on a household's marginal propensity to consume (MPC).[13,14] Here the wealth index may be seen to proxy consumption behavior out of permanent income—the household's expectations of sustainable longer-term levels—and the income variable itself to proxy consumption behavior consistent with shorter-run expectations. After controlling for differences among cities, we found that moving from informal to formal areas has a generalized and statistically significant effect on expenditure, raising it by an average of 5,223 KSh per month.

In informal areas, the marginal propensity to consume (MPC) is statistically significant and high, at 0.694. In other words, a household in an informal area on average spends 70% of each additional KSh it earns. While the change in the MPC of moving into a formal area is statistically insignificant (-0.128), we cannot reject the hypothesis that the average MPC for households in formal areas is 0.47 (calculation not shown). In other words, as economic theory predicts, better-off households (those in the formal areas) have a lower MPC than worse-off households (those in the informal areas).

The MPC out of wealth in informal areas is 490 KSh for a one-unit increment in the household's wealth index. Note that the incremental MPC out of wealth from moving into the formal sector is statistically significant and negative (-202 KSh). This result is expected: as your wealth increases, you will not be consuming as much from the additional assets.

Figure 3: Employment and unemployment of household members



[13] This refers to the extra or additional consumption a household engages in from an extra amount of earnings. It does not refer to the average amount of a KSh that a household spends from its total earnings.

[14] Detailed regression results can be found in Appendix D.

C.2 Employment

In this section we examine the primary activity of all adults over 18 years old. Figure 3 shows the proportion of adults over 18 in different activity categories. A large proportion of adults over 18 (43%) is economically active: 18% are regular employees, 16% are casual employees, and 9% are self-employed. About one-third are students and 11% are homemakers. The rate of unemployment amongst adults over 18 is 9%. In Garissa, only 26% of the adult population over 18 is economically active and 25% are homemakers. Kericho has both the largest proportion of economically active adults (48%) and the lowest proportion of homemakers (11%). The highest levels of unemployment are found in Machakos (12%), Kakamega (13%) and Garissa (12%) while the lowest levels of unemployment can be found in Nyeri and Kitui (both 4%).

Figure 4: Household wealth index by area

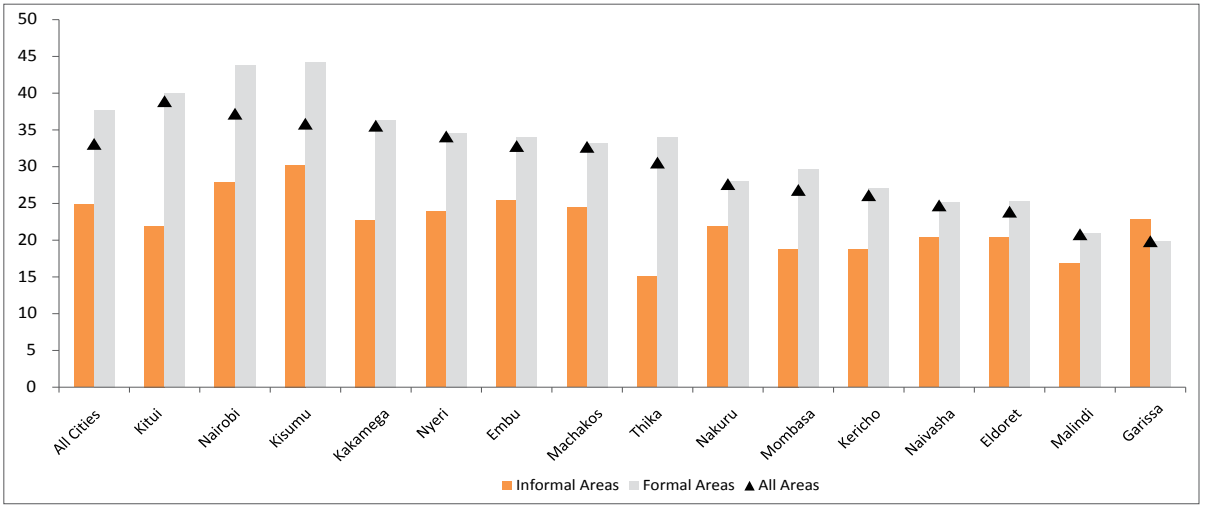
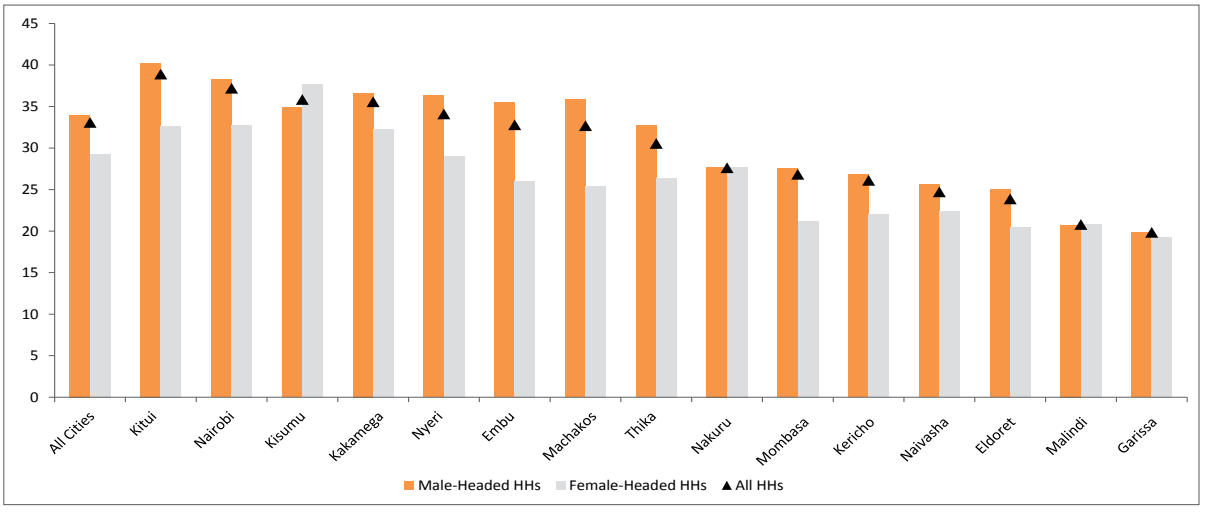


Figure 5: Household wealth index by head gender (All areas)



C.3 Household wealth

The "household wealth index" is calculated from the household's declared ownership of a list of common household items. The value itself is created by totaling the estimated value of each item in USD, converting to KSh, and dividing by 1,000; so the average of 33.1 means that the average household owned approximately 33,100 KSh worth of listed possessions. However, since each possible possession was only counted once, this should not be taken as a reliable estimate, but rather a unitless index of comparison.

For all municipalities, the wealth index value is higher in formal than informal areas, except in Garissa (although most households live in formal areas so the estimate may have a large margin of error). On average, households scored 24.8 in informal areas and 37.7 in formal areas. Nairobi and Kisumu's formal area households have the highest values, 43.7 and 44.2 respectively, while Thika households in informal areas have the lowest, at 15.1. For most municipalities, the wealth index value is higher for male-headed than female-headed households, with the exception of Kisumu and Malindi.

C.4 Household finance: banking, credit, and remittances

Table 17 shows that across all 15 cities, a larger proportion of households in formal areas than in informal areas have a bank account (72% vs. 55%). However, as Table 18 shows, the reverse is true for Kitui: 67% of households in informal areas have a bank account, compared to 52% in formal areas. Nairobi, as one might expect, has the largest overall proportion of households with a bank account (73%).

Table 17: Household banking, credit, and remittances (Summary)

City	Category	% with Bank Account	N	% Sending Cash (last 3 months)	N	Avg Transfer (KSh)	N	% Receiving Cash (last 3 months)	N	Avg Remittance (KSh)	N
All	Total	66	14,504	58	14,525	6,666	5,781	20	14,523	15,516	2,556
	Formal	72	10,368	56	10,379	7,695	4,091	20	10,382	19,211	1,951
	Informal	55	4,136	59	4,146	5,182	1,690	18	4,141	10,104	605
	Poor	58	8,506	51	8,525	5,090	2,823	19	8,526	11,441	1,392
	Non-poor	76	5,829	65	5,830	7,992	2,894	20	5,829	19,347	1,133
Eldoret		58	971	38	970	6,207	353	14	971	14,496	127
Embu		62	1,014	41	1,014	6,563	396	27	1,013	9,889	240
Garissa		42	1,032	21	1,032	7,567	211	18	1,032	19,812	189
Kakamega		67	966	44	966	5,313	392	28	966	10,113	256
Kericho		63	1,029	33	1,029	8,542	301	11	1,029	8,682	109
Kisumu		57	739	59	739	5,546	354	36	737	9,467	197
Kitui		53	641	50	650	5,199	324	23	647	14,424	133
Machakos		58	670	38	670	5,464	247	22	670	6,698	125
Malindi		37	1,025	37	1,024	4,161	452	12	1,025	15,212	109
Mombasa		65	1,091	53	1,093	4,930	551	17	1,093	8,231	157
Nairobi		73	1,168	68	1,171	7,789	695	20	1,168	20,035	185
Naivasha		68	1,067	41	1,071	4,428	429	15	1,071	5,925	150
Nakuru		52	1,090	38	1,095	4,934	361	20	1,095	8,652	186
Nyeri		51	1,022	44	1,019	4,709	434	29	1,023	9,004	282
Thika		70	979	37	982	5,996	281	14	983	17,376	111

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 18: Household banking, credit, and remittances

City	Area	% with Bank Account	N	% Sending Cash (last 3 months)	N	Avg Transfer (KSh)	N	% Receiving Cash (last 3 months)	N	Avg Remittance (KSh)	N
All	Informal	55	4,136	59	4,146	5,182	1,690	18	4,141	10,104	605
	Formal	72	10,368	56	10,379	7,695	4,091	20	10,382	19,211	1,951
Eldoret	Informal	44	489	39	488	5,345	178	14	489	10,091	62
	Formal	63	482	38	482	6,575	175	14	482	16,494	65
Embu	Informal	54	137	31	137	8,139	39	21	137	4,134	24
	Formal	64	877	43	877	6,392	357	28	876	10,536	216
Garissa	Informal	34	20	7	20	300	1	38	20	4,713	6
	Formal	42	1,012	21	1,012	7,610	210	18	1,012	20,390	183
Kakamega	Informal	59	96	31	96	2,964	30	31	96	27,341	25
	Formal	68	870	45	870	5,410	362	28	870	9,011	231
Kericho	Informal	48	202	38	202	9,879	74	8	202	12,597	18
	Formal	65	827	32	827	8,350	227	12	827	8,367	91
Kisumu	Informal	56	369	65	370	4,734	207	35	368	10,967	94
	Formal	58	370	51	369	7,206	147	38	369	7,261	103
Kitui	Informal	67	104	68	105	6,785	53	14	104	8,631	13
	Formal	52	537	49	545	5,067	271	24	543	14,615	120
Machakos	Informal	58	148	37	148	4,919	52	18	148	7,862	24
	Formal	58	522	38	522	5,496	195	22	522	6,638	101
Malindi	Informal	36	136	40	136	2,659	55	5	136	7,899	6
	Formal	37	889	37	888	4,220	397	12	889	15,325	103
Mombasa	Informal	51	542	51	543	4,006	264	16	543	6,435	74
	Formal	70	549	54	550	5,241	287	17	550	8,856	83
Nairobi	Informal	61	576	73	580	5,845	362	19	578	11,337	88
	Formal	81	592	65	591	9,408	333	20	590	26,703	97
Naivasha	Informal	69	325	47	325	4,049	140	14	325	5,554	43
	Formal	68	742	41	746	4,472	289	15	746	5,959	107
Nakuru	Informal	42	458	28	459	3,484	126	15	459	10,950	69
	Formal	53	632	39	636	4,995	235	20	636	8,552	117
Nyeri	Informal	25	103	38	103	3,474	37	32	103	6,489	28
	Formal	52	919	44	916	4,756	397	29	920	9,127	254
Thika	Informal	22	431	15	434	4,569	72	9	433	5,860	31
	Formal	80	548	42	548	6,107	209	15	550	18,878	80

In all municipalities, the proportion of households sending cash within the last three months is larger than the proportion receiving cash within the last three months. This is consistent with the fact that many working age individuals come to the city to look for work and send remittances back to their families in rural areas. Nairobi has the largest proportion of households sending cash (68%) and also the largest difference between proportion of households sending and proportion of households receiving cash (48% difference). In comparison, Garissa has the lowest proportion of households sending cash (21%) and also the smallest difference between proportions of households sending and receiving cash (3% difference), suggesting that people may not come to Garissa to look for employment, that they leave Garissa to seek employment elsewhere, or both.

Although the proportion of households sending cash is higher than the proportion of households receiving cash, the average cash transfer value (5,182 KSh) is approximately half the average remittance value (10,104 KSh). Furthermore, both average cash transfers and average cash remittances are higher in formal areas than informal areas on average (7,695 KSh vs. 5,182 KSh for cash transfers and 19,211 KSh vs. 10,104 KSh for cash remittances).

C.5 Household-owned enterprises

Table 19 shows summary information for household-owned enterprises. Eighteen percent of all households own a business, and the proportion is larger in non-poor areas (22%) than poor areas (14%). On average, the household-owned enterprises have been in business for 1.1 years and have two employees.

Table 19: Household-owned enterprises (Summary)

City	Category	% of HH Owning a Business	N	Years in Business	N	Mean # of Employees	N
All	Total	18w	14,543	1.1	2,103	2.0	2,117
	Formal	19	10,394	0.9	1,412	2.0	1,419
	Informal	16	4,149	1.4	691	1.8	698
	Poor	14	8,531	1.2	1,081	1.7	1,090
	Non-poor	22	5,837	1.0	985	2.1	989
Eldoret		22	973	0.9	221	1.7	222
Embu		21	1,014	1.4	206	1.9	207
Garissa		6	1,032	1.0	55	2.2	56
Kakamega		11	966	1.1	108	2.5	108
Kericho		15	1,030	1.4	158	2.0	158
Kisumu		18	740	2.0	118	1.5	118
Kitui		22	651	1.0	137	1.7	140
Machakos		11	670	0.9	62	1.8	62
Malindi		7	1,026	1.2	82	1.4	82
Mombasa		8	1,093	0.8	93	1.4	93
Nairobi		21	1,175	1.1	239	2.2	244
Naivasha		17	1,071	1.5	162	1.7	162
Nakuru		17	1,095	0.9	169	1.7	168
Nyeri		16	1,024	1.1	150	2.0	150
Thika		14	983	1.5	143	2.0	147

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 20 presents the percentage of households that own a business, the average number of years the business has been operating and the mean number of employees at the business for formal and informal areas for each of the 15 cities. Overall, 18% of households surveyed indicated that they owned a business in the previous 12 months. The proportion is higher in formal areas than informal areas (19% vs. 16%). Eldoret, Kitui, Nairobi and Embu have the highest rate of business ownership, while Mombasa, Malindi and Garissa have the lowest.

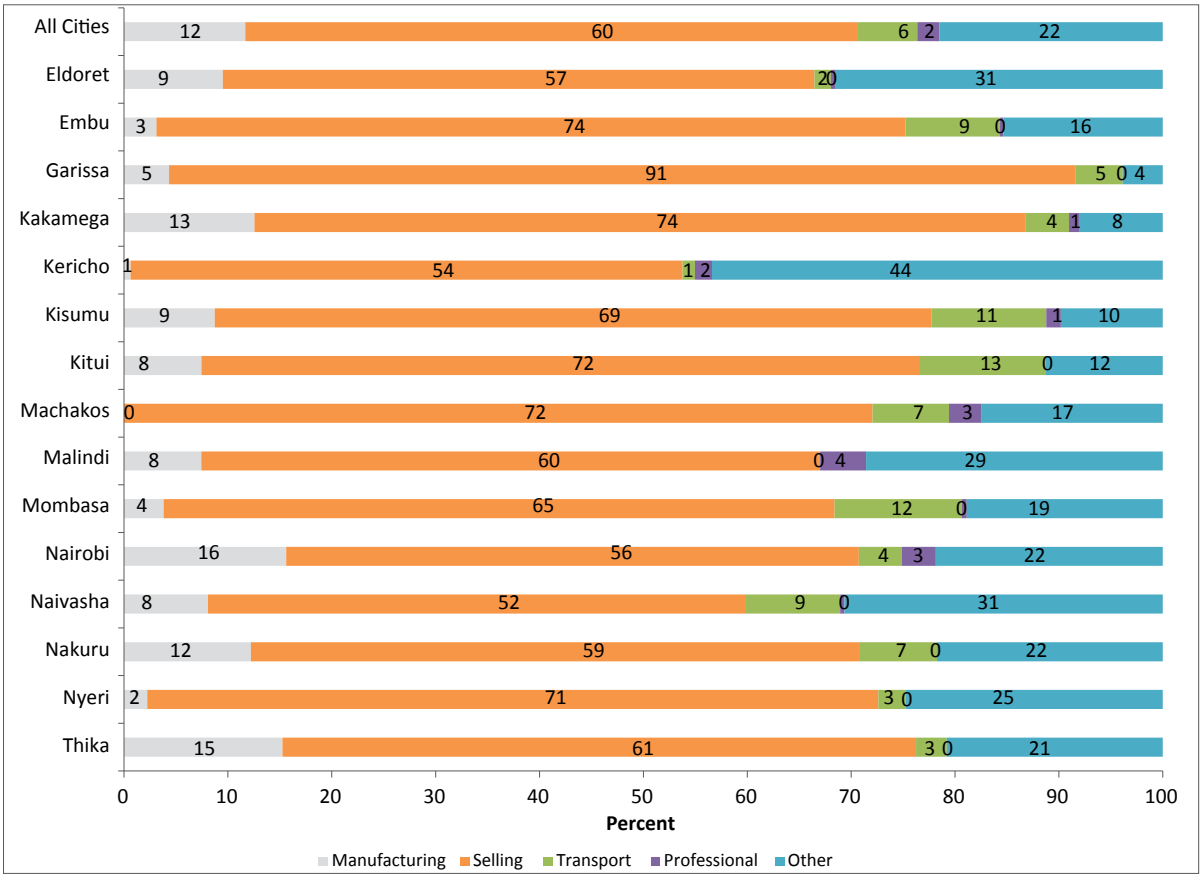
Table 20: Household-owned enterprises

City	Area	% of HH Owning a Business	N	Years in Business	N	Mean # of Employees	N
All	Informal	16	4149	1.4	691	1.8	698
	Formal	19	10394	0.9	1412	2	1419
Eldoret	Informal	26	490	1.3	117	1.6	118
	Formal	20	483	0.8	104	1.8	104
Embu	Informal	32	137	2.3	42	1.9	42
	Formal	19	877	1.1	164	1.9	165
Garissa	Informal	7	20	0.2	1	4	1
	Formal	6	1012	1	54	2.2	55
Kakamega	Informal	18	96	1.6	17	1.3	17
	Formal	10	870	1.1	91	2.7	91
Kericho	Informal	16	202	1.3	37	1.8	37
	Formal	14	828	1.4	121	2.1	121
Kisumu	Informal	21	370	2.2	75	1.4	75
	Formal	13	370	1.6	43	1.7	43
Kitui	Informal	30	105	1.2	28	2.2	28
	Formal	21	546	1	109	1.7	112
Machakos	Informal	9	148	1.2	12	1.5	12
	Formal	11	522	0.9	50	1.9	50
Malindi	Informal	7	136	0.6	10	1.1	10
	Formal	7	890	1.2	72	1.4	72
Mombasa	Informal	9	543	1.1	53	1.4	53
	Formal	8	550	0.7	40	1.4	40
Nairobi	Informal	17	581	1.4	102	2.1	104
	Formal	24	594	0.9	137	2.3	140
Naivasha	Informal	14	325	1.1	48	1.6	48
	Formal	17	746	1.5	114	1.7	114
Nakuru	Informal	11	459	1.2	52	1.5	52
	Formal	17	636	0.9	117	1.7	116
Nyeri	Informal	18	103	3.1	18	1.2	18
	Formal	16	921	1	132	2	132
Thika	Informal	18	434	1.4	79	1.5	83
	Formal	13	549	1.5	64	2.2	64

Businesses in informal areas have been operating longer than in formal areas on average (1.4 years vs. 0.9 year). This tends to be true for most municipalities except for Kericho, Malindi, Naivasha and Thika. Most of these businesses tend to be small, with an average of 1.8 employees in informal areas and 2 employees in formal areas. Nairobi and Garissa have the largest average business sizes, each with over 2 employees.

Figure 6 shows that most businesses (60%) are in the sales sector, especially in Garissa where 91% of household-owned businesses are in sales. On average, manufacturing accounted for 12% of all household-owned businesses. Nairobi and Thika have the largest proportion of manufacturing businesses (16% and 15% respectively) while none of Machakos businesses are in manufacturing, and only 1% of Kericho businesses and 2% of Nyeri businesses are in manufacturing. Finally a small proportion of businesses are in the transport (6% on average) and professional service (2% on average) sectors.

Figure 6: Sector of household-owned enterprises



PART D:

HOUSING, TENURE, AND RENTS

In this section, we examine dwelling characteristics, housing tenure and security, and social capital and civic participation.

D.1 Housing size and quality

Table 21 summarizes the characteristics of dwellings in the 15 cities surveyed. On average across all cities, households have 2.1 persons per room and under one bathroom. About 29% of all households have a kitchen. The proportion of households with a kitchen in formal areas (37%) is more than twice the proportion in informal areas (15%).

Table 21: Dwelling characteristics (Summary)

City	Area	Persons per room	N	Number of bathrooms	N	% of HHs with kitchen	N
All	Total	2.1	14,512	0.8	14,541	29	14,546
	Formal	2.0	10,372	0.9	10,394	37	10,397
	Informal	2.4	4,140	0.6	4,147	15	4,149
	Poor	2.5	8,510	0.7	8,528	20	8,532
	Non-poor	1.8	5,826	0.8	5,839	38	5,838
Eldoret		2.1	970	0.7	973	28	973
Embu		1.3	1,012	0.5	1,014	32	1,014
Garissa		2.5	1,030	0.7	1,032	39	1,032
Kakamega		1.8	965	0.3	966	33	966
Kericho		2.2	1,029	1.0	1,030	20	1,030
Kisumu		2.4	740	0.5	740	48	740
Kitui		1.8	651	0.8	649	48	651
Machakos		1.8	669	0.4	670	24	670
Malindi		2.0	1,026	0.6	1,026	20	1,025
Mombasa		2.1	1,092	0.9	1,093	21	1,093
Nairobi		2.2	1,175	0.7	1,174	31	1,177
Naivasha		2.1	1,070	0.9	1,071	12	1,071
Nakuru		2.2	1,082	1.3	1,094	21	1,095
Nyeri		1.6	1,016	1.0	1,024	39	1,024
Thika		1.9	985	0.7	985	27	985

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 22 presents household dwelling characteristics. On average, there are 2.5 persons per room in dwellings of poor households and 1.8 persons per room in those of non-poor households. Poor households live in dwellings with an average of 0.7 bathrooms as compared to 0.8 bathrooms for dwellings of non-poor households. On average, 20% of poor households' dwellings have a kitchen compared to 38% for non-poor households.

Table 22: Dwelling characteristics

City	Poverty	Persons per room	N	Number of bathrooms	N	% of HHs with kitchen	N
All	Poor	2.5	8,510	0.7	8,528	20	8,532
	Non-Poor	1.8	5,826	0.8	5,839	38	5,838
Eldoret	Poor	2.3	657	0.7	660	25	660
	Non-Poor	1.8	308	0.7	308	36	308
Embu	Poor	1.5	469	0.4	470	24	470
	Non-Poor	1.2	536	0.6	537	40	537
Garissa	Poor	2.7	492	0.8	493	47	493
	Non-Poor	2.3	538	0.7	539	32	539
Kakamega	Poor	2.1	470	0.2	470	26	470
	Non-Poor	1.5	480	0.4	481	41	481
Kericho	Poor	2.3	878	1.0	879	17	879
	Non-Poor	1.7	147	1.0	147	34	147
Kisumu	Poor	2.7	346	0.3	346	45	346
	Non-Poor	2.1	362	0.6	362	51	362
Kitui	Poor	2.7	418	0.3	416	45	418
	Non-Poor	2.1	201	0.6	201	51	201
Machakos	Poor	1.8	419	0.5	420	17	420
	Non-Poor	1.6	249	0.4	249	35	249
Malindi	Poor	2.2	664	0.5	664	15	664
	Non-Poor	1.4	359	0.9	359	30	358
Mombasa	Poor	2.4	638	0.8	638	14	638
	Non-Poor	1.8	450	1.0	451	32	451
Nairobi	Poor	2.7	534	0.7	533	18	535
	Non-Poor	1.8	605	0.8	606	40	606
Naivasha	Poor	2.3	792	0.8	793	12	793
	Non-Poor	1.5	271	1.3	271	15	271
Nakuru	Poor	2.4	686	1.2	693	18	693
	Non-Poor	1.8	380	1.4	386	27	386
Nyeri	Poor	1.8	504	1.0	510	38	510
	Non-Poor	1.4	505	1.0	507	39	507
Thika	Poor	2.2	543	0.8	543	19	543
	Non-Poor	1.7	435	0.6	435	34	435

For all municipalities but Machakos, the number of persons per room is significantly higher for poor households than non-poor households, which can be in part explained by the fact that poor households tend to be bigger than non-poor households (on average poor households have 3.3 members and non-poor households have 2.9 members). Where it is significant, the number of bathrooms is also significantly higher for non-poor households than poor households. In general, non-poor households have a higher probability of living in a residence with a kitchen, except in Garissa where the reverse is true (47% of poor households reported having a kitchen vs. 32% of non-poor households).

Very few households use electricity as their primary cooking fuel, on average only 1% of poor households and 2% of non-poor households. Non-poor households in Kericho cook with electricity most, but the proportion (6%) remains very low. A larger proportion of households use gas as their primary cooking fuel, 16% of poor households and 33% of non-poor households. The table also shows a larger variation in proportion of households that use gas from municipality to municipality and between poor and non-poor households. Non-poor households use gas more than poor households, and in fact large proportions of non-poor households in some municipalities use gas (46% of non-poor households in Thika, 40% in Nairobi, 37% in Embu and 30% in Kericho). On the other hand, only 1% of poor households in Garissa, 2% in Malindi and 3% in Kisumu and Kitui use gas as their primary cooking fuel.

Finally, as can be expected, the dwelling structure tends to be more precarious for poor households than non-poor households (Table 23 and Table 24). Nearly three times as many households in informal areas have earth or clay floors as households in formal areas (17% vs. 6%). On average, 12% of poor households as compared to 6% of non-poor households live in a dwelling with earth/clay floors, and 61% of poor households as compared to 73% of non-poor households live in a dwelling with permanent (stone/brick/block) walls. These differences between poor and non-poor households are particularly apparent in Embu, Kakamega, and Malindi. In Embu, 19% of poor households have an earth/clay floor, while only 6% of non-poor households do, and only 45% of poor households have permanent walls, compared to73% of non-poor households. In Kakamega, 36% of poor households have an earth/clay floor, while half as many (18%) non-poor households do; 35% of poor households in Kakamega have permanent walls, compared to 60% of non-poor households. Finally, 42% of poor households in Malindi have earth/clay floors 17% of non-poor households, and 57% of poor households have permanent walls vs. 83% of non-poor households. On the other hand, these differences are much smaller in Machakos, where 90% of non-poor households and 96% of poor households live in a dwelling with permanent walls, and non-existent in Naivasha as the differences are not statistically significant.

Table 23: Additional dwelling characteristics (Summary)								
City	Category	Cooking Fuel				Earth/ clay floor	Stone/ brick/ block walls	N
		Electricity	N	Gas	N			
All	Total	1	14,027	24	14,027	9	67	14,548
	Formal	1	10,001	32	10,001	6	83	10,399
	Informal	1	4,026	11	4,026	17	39	4,149
	Poor	1	8,531	16	8,298	12	61	8,532
	Non-poor	2	5,839	33	5,553	6	73	5,839
Eldoret		2	961	13	961	20	60	973
Embu		1	846	24	846	12	59	1014
Garissa		1	971	3	971	8	91	1,032
Kakamega		0	962	11	962	27	48	966
Kericho		1	1,020	11	1,020	12	45	1,030
Kisumu		0	730	9	730	25	39	740
Kitui		0	639	7	639	23	99	651
Machakos		1	655	12	655	8	92	670
Malindi		1	974	8	974	34	65	1,026
Mombasa		2	1,078	21	1,078	6	88	1,093
Nairobi		1	1,157	32	1,157	5	64	1,178
Naivasha		1	1,051	10	1,051	10	76	1,071
Nakuru		3	1,073	12	1,073	9	61	1,095
Nyeri		4	959	23	959	16	54	1,024
Thika		2	951	40	951	17	82	985

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 24: Additional dwelling characteristics

City	Poverty	Cooking fuel				Earth/clay floor	Stone/brick/ block walls	N
		Electricity	N	Gas	N			
All	Poor	1	8,531	16	8,298	12	61	8,532
	Non-Poor	2	5,839	33	5,553	6	73	5,839
Eldoret	Poor	2	660	9	651	21	58	660
	Non-Poor	1	308	21	305	18	66	308
Embu	Poor	1	470	11	412	19	45	470
	Non-Poor	0	537	37	427	6	73	537
Garissa	Poor	1	493	1	470	12	86	493
	Non-Poor	1	539	5	501	4	95	539
Kakamega	Poor	0	470	4	466	36	35	470
	Non-Poor	1	481	19	481	18	60	481
Kericho	Poor	1	879	8	872	13	41	879
	Non-Poor	6	147	30	144	4	68	147
Kisumu	Poor	0	346	3	343	33	30	346
	Non-Poor	1	362	15	355	18	47	362
Kitui	Poor	0	417	3	412	33	30	418
	Non-Poor	1	201	15	196	18	47	201
Machakos	Poor	1	420	4	408	11	90	420
	Non-Poor	1	249	26	246	4	96	249
Malindi	Poor	0	664	2	636	42	57	664
	Non-Poor	2	359	19	335	17	83	359
Mombasa	Poor	1	638	14	630	9	85	638
	Non-Poor	2	451	31	444	2	94	451
Nairobi	Poor	0	535	21	525	6	57	535
	Non-Poor	2	606	40	595	4	70	606
Naivasha	Poor	1	793	7	787	9	77	793
	Non-Poor	1	271	17	257	11	76	271
Nakuru	Poor	2	693	8	683	10	57	693
	Non-Poor	4	386	20	374	6	69	386
Nyeri	Poor	3	510	15	485	22	41	510
	Non-Poor	4	507	32	467	10	67	507
Thika	Poor	3	543	32	518	26	72	543
	Non-Poor	2	435	46	426	9	91	435

D.2 Tenure and security

Table 25 and Table 26 show the proportion of households that own their dwelling (structure only, as well as structure and land), the proportion of households that rent and the proportion of households that feel secure in the tenure of their dwelling. Most households rent their dwellings, and very few actually own their dwelling (whether the structure only, or the structure and land). On average, 86% of households rent their dwellings, including 91% of households in informal areas and 83% of households in formal areas. The proportion of households renting in informal areas is larger than the proportion in formal areas (91% vs. 83%); in some municipalities, the proportion of renters is higher in informal areas (in Kakamega for instance, 92% of households in informal areas are renters vs. 65% in formal areas), while in other municipalities, the proportion of renters is higher in formal areas (the most drastic difference can be found in Garissa where 72% of households in formal areas are renters but only 7% of households in informal areas rent).

While only 7% of households in informal areas and 14% of households in formal areas own their dwelling and the land, there is large variation between municipalities. In Garissa, 93% of households in informal areas own the structure and the land, and in Kitui 65% of households in formal areas do. On the other hand, only 3% of households in informal areas in Nairobi and Naivasha own the structure and the land.

Table 25: Unit tenure and security (Summary)

City	Category	Own structure	Own structure and land	Renting	N	% feeling secure in unit tenure	N
All	Total	2	12	86	14,544	66	14,139
	Formal	2	14	83	10,395	71	10,102
	Informal	2	7	91	4,149	58	4,037
	Poor	2	10	88	8,530	64	8,266
	Non-poor	2	13	85	5,839	68	5,701
Eldoret		0	12	86	973	67	940
Embu		5	23	70	1,014	76	1,000
Garissa		1	28	71	1,032	56	966
Kakamega		7	23	67	966	86	962
Kericho		1	20	78	1,030	56	1,010
Kisumu		5	22	73	740	83	735
Kitui		1	61	35	651	86	639
Machakos		0	38	62	670	65	633
Malindi		3	28	66	1,026	87	976
Mombasa		3	10	87	1,093	82	1,064
Nairobi		1	7	91	1,175	59	1,169
Naivasha		1	14	84	1,071	79	1,062
Nakuru		0	11	88	1,095	62	1,065
Nyeri		9	18	68	1,023	60	949
Thika		4	6	90	985	49	969

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 26: Unit tenure and security							
City	Area	Own structure	Own structure and land	Renting	N	% feeling secure in unit tenure	N
All	Informal	2	7	91	4,149	58	4,037
	Formal	2	14	83	10,395	71	10,102
Eldoret	Informal	0	11	88	490	64	471
	Formal	0	12	85	483	68	469
Embu	Informal	8	12	78	137	67	133
	Formal	4	24	69	877	78	867
Garissa	Informal	0	93	7	20	100	19
	Formal	1	27	72	1,012	56	947
Kakamega	Informal	4	4	92	96	71	96
	Formal	7	25	65	870	87	866
Kericho	Informal	2	6	93	202	37	197
	Formal	1	22	76	828	58	813
Kisumu	Informal	4	11	85	370	78	369
	Formal	5	38	54	370	91	366
Kitui	Informal	1	6	92	105	69	104
	Formal	1	65	31	553	87	535
Machakos	Informal	0	9	91	148	49	148
	Formal	0	40	60	522	66	485
Malindi	Informal	3	31	64	136	87	125
	Formal	3	28	66	890	87	851
Mombasa	Informal	2	9	89	543	76	520
	Formal	4	10	86	550	84	544
Nairobi	Informal	1	3	96	581	49	578
	Formal	1	10	88	594	66	591
Naivasha	Informal	0	3	96	325	68	323
	Formal	1	15	83	746	80	739
Nakuru	Informal	0	7	92	459	58	445
	Formal	0	11	88	636	63	620
Nyeri	Informal	5	22	66	103	51	84
	Formal	9	18	69	920	60	865
Thika	Informal	17	3	79	434	40	425
	Formal	1	7	92	551	51	544

On average, 57% of informal area households felt secure in their unit's tenure, while 70% of formal area households did. Within most municipalities, households feeling secure in their dwelling's tenure (unit, dwelling or structure) seems to be associated with ownership. In other words, the proportion of households feeling secure in their unit's tenure is higher in informal than formal areas when ownership of structure and land is higher in informal than formal areas, and vice-versa, within most municipalities. However, there is no clear trend across municipalities. In some municipalities, the rate of ownership is low, yet the proportion of households feeling secure is quite high; for instance in Kisumu, 77% of households feel secure in their unit's tenure while only 11% own the dwelling and land and 4% own the structure only.

Figure 7 shows that on average, households have been living in their dwelling for a little over 5 years (5.1 years for informal areas and 5.6 years for formal areas), and in their neighborhood 1-2 years longer than that (6.6 years in informal areas and 7.2 years in formal areas). The highest average number of years living in a dwelling is found in Kitui (13.9 years in formal areas) and the lowest in Naivasha (2.9 years in informal areas).

Figure 8 shows the correlation between the proportion of households that have experienced evictions with the proportion of households feeling insecure in their unit's dwelling. We would expect these correlations to be high—i.e. evictions in a city would be associated with feelings of insecurity.

Figure 8: Correlation of evictions to % feeling insecure

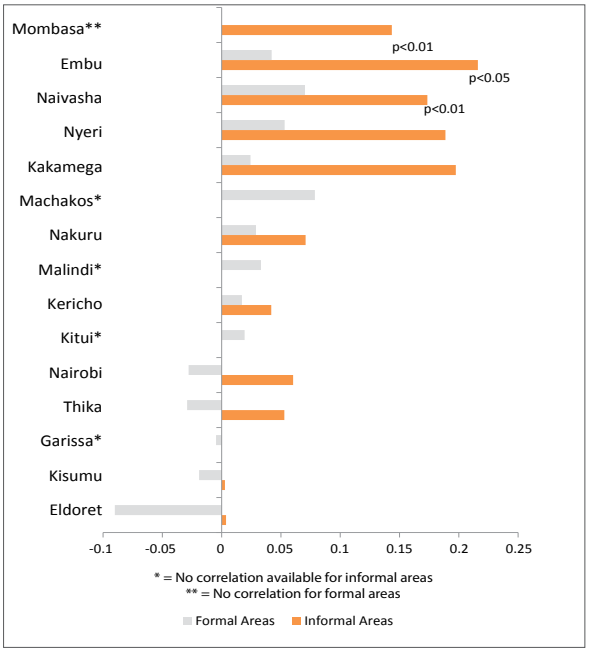
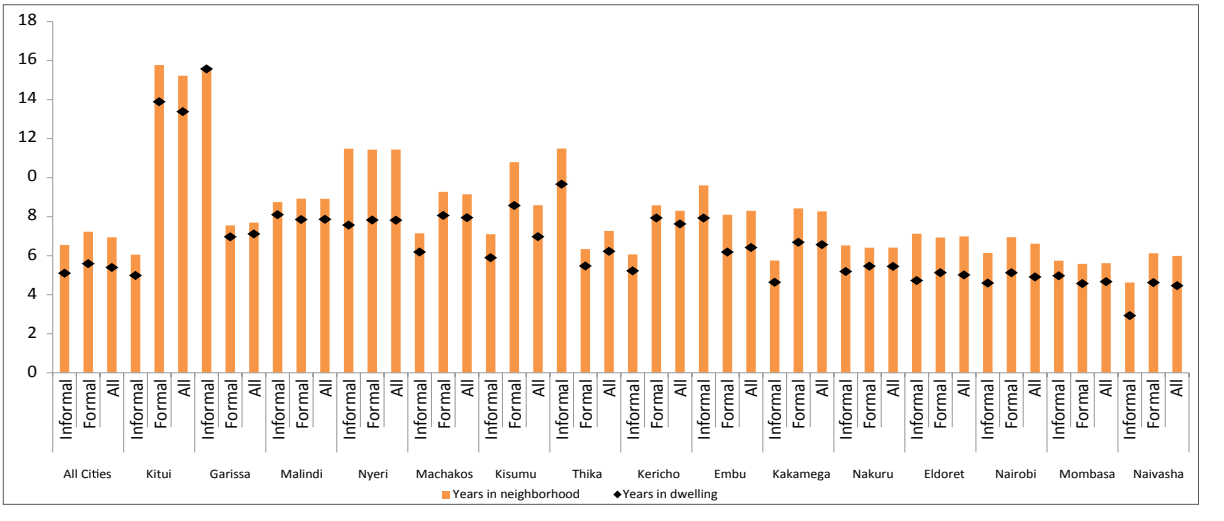


Figure 7: Years in neighborhood and dwelling



D.3 Housing values and rents

Table 27 and Table 28 show average housing values and monthly rents. Households in formal areas spend about 50% more on rent than households in informal areas (5,193 KSh in formal areas vs. 2,591 KSh in informal areas) and their dwelling value is about 13% higher than those of households in informal areas. In all municipalities, rents in formal areas are higher than in informal areas, although there is variation in the magnitude of the gap between formal and informal areas. In Thika, households in formal areas spend 473% more than those in informal areas on average, while in Kakamega the difference is only 25%.

On the other hand, it is not always the case that dwelling values are higher in formal than informal areas. In Eldoret, Embu, Garissa, Kisumu, average dwelling values are higher in informal than in formal areas, although sample sizes are quite small. On average, dwellings are worth 6,742 KSh in informal areas and 7,779 KSh in formal areas.

Table 27: Housing values (1,000 KSh) and rents (Summary)

City	Category	Month rent (KSh)	N	Dwelling Value (1,000 KSh)	N
All	Total	4,118	10,968	7,633	1,328
	Formal	5,193	7,409	7,779	1,106
	Informal	2,591	3,559	6,742	222
	Poor	2,897	6,256	8,401	750
	Non-poor	5,209	4,596	7,804	567
Eldoret		2,275	806	1,005	33
Embu		2,200	694	1,116	107
Garissa		3,462	714	4,327	161
Kakamega		2,334	622	3,489	147
Kericho		2,491	713	921	33
Kisumu		3,070	472	1,482	99
Kitui		2,201	346	1,769	92
Machakos		2,568	468	1,123	74
Malindi		2,383	744	4,488	109
Mombasa		2,808	918	3,168	70
Nairobi		5,446	1,055	11,586	49
Naivasha		1,679	926	652	27
Nakuru		2,135	977	5,276	60
Nyeri		2,343	667	14,035	231
Thika		3,612	846	2,041	36

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 28: Housing values and rents, by formal/informal					
City	Area	Monthly rent (KSh)	N	Dwelling value (1,000 KSh)	N
All	Informal	2,591	3,559	6,742	222
	Formal	5,193	7,409	7,779	1106
Eldoret	Informal	1,503	424	1,239	16
	Formal	2,613	382	938	17
Embu	Informal	1,787	101	1,410	14
	Formal	2,274	593	1,076	93
Garissa	Informal	2,000	1	4,871	19
	Formal	3,465	713	4,263	142
Kakamega	Informal	1,899	87	307	6
	Formal	2,373	535	3,553	141
Kericho	Informal	1,593	174	83	7
	Formal	2,630	539	998	26
Kisumu	Informal	2,176	311	2,313	19
	Formal	5,169	161	1,100	80
Kitui	Informal	2,202	94	1,451	5
	Formal	2,200	252	1,771	87
Machakos	Informal	2,093	134	-	0
	Formal	2,615	334	1,123	74
Malindi	Informal	1,308	86	2,005	21
	Formal	2,420	658	4,582	88
Mombasa	Informal	2,120	462	1,197	28
	Formal	3,046	456	3,626	42
Nairobi	Informal	3,294	550	11,224	13
	Formal	7,099	505	11,712	36
Naivasha	Informal	1,307	310	100	1
	Formal	1,723	616	656	26
Nakuru	Informal	1,639	424	1,214	21
	Formal	2,164	553	5,443	39
Nyeri	Informal	931	65	2,451	25
	Formal	2,404	602	14,614	206
Thika	Informal	725	336	518	27
	Formal	4,152	510	2,943	9

D.4 Social capital, civic participation, and safety

In this section, we examine households' participation in their community. Table 29 summarizes social capital and civic participation. Few households (9%) reported contacting a local councilmember, and about twice as many (16%) attended community forums. Twice as many households voted in 2007 national elections (68%) as did in local elections (28%).

Table 29: Social capital and civic participation (Summary)

City	Category	% contact local council	N	% attend community forums	N	% voting in local elections	N	% voting in 2007	N
All	Total	9	14,538	16	14,544	28	14,536	68	14,544
	Formal	10	10,392	16	10,396	29	10,391	69	10,396
	Informal	9	4,146	17	4,148	27	4,145	65	4,148
	Poor	8	8,529	16	8,531	26	8,524	65	8,530
	Non-poor	10	5,836	16	5,838	30	5,838	70	5,838
Eldoret		6	972	13	972	25	970	70	972
Embu		11	1,013	14	1,014	26	1,012	69	1,014
Garissa		12	1,032	12	1,032	21	1,032	51	1,032
Kakamega		9	966	23	966	43	966	77	966
Kericho		4	1,030	8	1,030	18	1,029	73	1,030
Kisumu		21	740	29	740	56	740	87	740
Kitui		37	649	50	650	55	650	83	650
Machakos		13	670	21	670	33	670	63	670
Malindi		6	1,026	16	1,026	16	1,026	36	1,026
Mombasa		9	1,093	14	1,093	24	1,093	49	1,093
Nairobi		8	1,174	16	1,178	25	1,175	72	1,178
Naivasha		8	1,071	8	1,071	32	1,071	65	1,071
Nakuru		12	1,095	13	1,095	37	1,094	67	1,095
Nyeri		24	1,024	29	1,024	41	1,024	67	1,024
Thika		8	983	12	983	23	984	59	983

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 30 shows the proportion of households that have contacted a member of the local council in the past 2 years, the proportion that have attended community forums in the past 2 years, the proportion that have voted in local elections in the past 2 years, and the proportion that voted during the 2007 presidential elections.

On average, there are negligible differences between informal and formal areas in the proportion of households reporting that they contacted the local council in the past 2 years (9% and 10% in informal and formal areas respectively). A slightly larger proportion attended community forums (17% and 16% for informal and formal areas respectively). More than a quarter have voted in local elections (27% in informal

Table 30: Social capital and civic participation

City	Category	% contact local council	N	% attend community forums	N	% voting in local elections	N	% voting in 2007	N
All	Informal	9	4,146	17	4,148	27	4,145	65	4,148
	Formal	10	10,392	16	10,396	29	10,391	69	10,396
Eldoret	Informal	6	489	10	489	24	487	69	489
	Formal	6	483	14	483	26	483	71	483
Embu	Informal	15	137	20	137	32	137	78	137
	Formal	11	876	14	877	25	875	67	876
Garissa	Informal	27	20	28	20	35	20	40	20
	Formal	12	1,012	12	1,012	21	1,012	51	1,012
Kakamega	Informal	10	96	24	96	42	96	73	96
	Formal	9	870	23	870	43	870	77	870
Kericho	Informal	5	202	6	202	18	202	62	202
	Formal	4	828	8	828	18	827	74	828
Kisumu	Informal	17	370	25	370	52	370	86	370
	Formal	26	370	36	370	61	370	88	370
Kitui	Informal	8	104	8	105	21	105	70	105
	Formal	39	545	52	545	57	545	83	546
Machakos	Informal	9	148	10	148	23	148	64	148
	Formal	14	522	22	522	33	522	63	522
Malindi	Informal	4	136	28	136	12	136	34	136
	Formal	6	890	15	890	16	890	36	890
Mombasa	Informal	11	543	15	543	26	543	48	543
	Formal	8	550	13	550	23	550	49	550
Nairobi	Informal	7	580	19	581	24	581	70	581
	Formal	8	594	14	597	26	594	74	595
Naivasha	Informal	8	325	4	325	34	325	61	325
	Formal	8	746	8	746	32	746	66	746
Nakuru	Informal	10	459	11	459	35	458	59	459
	Formal	12	636	13	636	37	636	67	636
Nyeri	Informal	24	103	22	103	32	103	50	103
	Formal	24	921	29	921	41	921	68	921
Thika	Informal	8	434	12	434	16	434	59	434
	Formal	8	549	12	549	25	550	59	551

and 29% in formal areas) and about two thirds voted during the 2007 presidential elections (65% in informal and 69% in formal areas). The most active municipalities are Kisumu and the formal area households of Kitui, while the least active are Garissa, Malindi and Mombasa.

Table 31 and Table 32 show the proportion of households that reported having a community leader. In addition, the survey asked respondents whether people in their neighborhood would cooperate if asked by an official to conserve water or electricity because of an emergency (asked on a four- point scale where 4="very likely" and 1="very unlikely" to cooperate), and whether people in their neighborhood look out for each other (asked on a five-point scale where 1="strongly disagree" and 5="strongly agree"). Finally the table also shows the proportion of households that reported feeling safe from crime in their own neighborhood.

On average, households reported having a community leader more in informal areas than formal areas (44% in informal areas vs. 33% in formal areas). There is no average difference between informal and formal areas in terms of whether people would cooperate to conserve water/electricity and whether people in their neighborhood look out for each other. However households in informal areas feel generally less safe in their own neighborhood than in formal areas (54% in informal areas vs. 69% in formal areas). This is true in all municipalities where differences are significant between formal and informal areas.

Table 31: Community and safety (Summary)

City	Category	% have community leader	N	Cooperate if asked	N	Looking out	N	% feel safe	N
All	Total	37	13,838	3.2	14,384	3.8	14,516	64	14,546
	Formal	33	9,844	3.2	10,268	3.8	10,376	69	10,397
	Informal	44	3,994	3.2	4,116	3.7	4,140	54	4,149
	Poor	38	8,199	3.2	8,457	3.8	8,516	61	8,531
	Non-poor	36	5,477	3.2	5,759	3.8	5,825	66	5,838
Eldoret		53	956	3.1	973	3.6	973	58	973
Embu		45	834	3.1	987	4.0	1,004	72	1,014
Garissa		5	1,030	2.9	1,032	3.4	1,032	65	1,032
Kakamega		57	887	3.1	937	3.7	966	70	966
Kericho		17	1,018	3.1	1,030	3.5	1,030	62	1,030
Kisumu		36	726	3.0	728	3.7	738	69	740
Kitui		89	566	3.4	618	4.1	642	83	651
Machakos		68	594	2.9	669	3.1	670	82	670
Malindi		38	1,024	3.6	1,017	4.2	1,024	68	1,026
Mombasa		28	1,083	3.4	1,090	3.7	1,092	55	1,093
Nairobi		39	1,073	3.1	1,149	3.7	1,173	65	1,176
Naivasha		44	1,037	3.3	1,071	4.0	1,071	72	1,071
Nakuru		12	1,068	3.3	1,094	4.1	1,095	60	1,095
Nyeri		20	975	3.4	1,014	4.3	1,023	61	1,024
Thika		11	967	3.0	975	3.7	983	52	985

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 32: Community and safety

City	Area	% have community leader	N	Cooperate if asked	N	Looking out	N	% feel safe	N
All	Informal	44	3,994	3.2	4,116	3.7	4,140	54	4,149
	Formal	33	9,844	3.2	10,268	3.8	10,376	69	10,397
Eldoret	Informal	58	481	3.0	490	3.3	490	53	490
	Formal	51	475	3.2	483	3.8	483	61	483
Embu	Informal	45	114	3.1	133	4.0	137	65	137
	Formal	45	720	3.1	854	3.9	867	74	877
Garissa	Informal	22	20	2.9	20	3.8	20	95	20
	Formal	5	1,010	2.9	1,012	3.4	1,012	64	1,012
Kakamega	Informal	56	90	3.0	96	3.6	96	65	96
	Formal	57	797	3.1	841	3.7	870	70	870
Kericho	Informal	15	195	2.9	202	3.2	202	50	202
	Formal	17	823	3.1	828	3.5	828	63	828
Kisumu	Informal	29	364	3.0	364	3.5	368	62	370
	Formal	46	362	3.2	364	4.0	370	79	370
Kitui	Informal	70	92	3.2	99	4.0	102	61	105
	Formal	90	474	3.4	519	4.1	540	84	546
Machakos	Informal	65	132	2.8	148	3.1	148	68	148
	Formal	68	462	2.9	521	3.1	522	83	522
Malindi	Informal	52	136	3.6	136	4.3	136	66	136
	Formal	37	888	3.6	881	4.2	888	68	890
Mombasa	Informal	29	537	3.3	540	3.6	542	52	543
	Formal	28	546	3.4	550	3.8	550	56	550
Nairobi	Informal	50	535	3.1	570	3.7	579	52	581
	Formal	32	538	3.1	579	3.8	594	74	595
Naivasha	Informal	50	318	3.3	325	3.8	325	73	325
	Formal	44	719	3.3	746	4.0	746	71	746
Nakuru	Informal	17	453	3.3	459	4.0	459	56	459
	Formal	12	615	3.3	635	4.1	636	60	636
Nyeri	Informal	27	100	3.1	102	4.0	102	58	103
	Formal	20	875	3.5	912	4.3	921	61	921
Thika	Informal	21	427	2.9	432	3.4	434	24	434
	Formal	9	540	3.0	543	3.7	549	58	551

In Kitui, 90% of households in formal areas reported having a community leader. These households are also the ones that are the most civically engaged according to the results in the previous table. On the other hand, only 5% of households in formal areas in Garissa reported having a community leader and their voting rates are also quite low (21% voted in local elections and 51% in the 2007 presidential elections). It could be that having a community leader energizes communities to participate in other forums and elections, or it could be that some municipalities are naturally more engaged and thus decide to select a community leader.

PART E:

INFRASTRUCTURE SERVICES

This section discusses results on households' access to infrastructure in the 15 cities in our sample. We first present a composite infrastructure indicator, then examine the components to this indicator in more depth.

E.1 Infrastructure indicator

We created a simple infrastructure indicator to summarize households' access to various types of infrastructure. Each household receives a score of either 0.5 or 1 for each infrastructure service they have access to (see Table 33), and the household's infrastructure score is the sum of each item they report. The total score ranges from 0 to 9.5.

Table 33: The infrastructure indicator

Infrastructure type	Item	Score
Water access	Piped	1
	Shared or indirect connection	0.5
Electricity	Direct access	1
	Street lighting	0.5
Refuse disposal	Collection system	1
Sanitation	Own toilet	1
	Shared with fewer than 20 people	0.5
	Legal sewer system for toilet	0.5
	Grey water not poured into street	0.5
Road access	"Good" at dwelling	0.5
	Not limited during rainy season	0.5
Dwelling protection infrastructure	No flooding	1
	No mudslides	1

Table 34, shows the average infrastructure score for each city by poverty and area type (formal or informal). In all cities except Garissa, the average infrastructure score is higher among non-poor households than poor households; in all cities except Kitui, it is higher in formal areas than informal areas (most results are statistically significant). Households in formal areas in Nairobi and Thika scored the highest (each with an average above 5) while those in informal areas in Malindi scored the lowest (2.15).

Table 34: Average infrastructure indicator scores				
City	Poor	Non-poor	Informal	Formal
All	4.12	4.84	3.47	5.08
Eldoret	4.09	4.54	3.48	4.53
Embu	4.09	5.00	4.01	4.64
Garissa	4.44	4.09	3.69	4.26
Kakamega	3.54	4.53	3.25	4.10
Kericho	3.94	4.94	3.55	4.16
Kisumu	3.17	3.83	3.16	4.01
Kitui	3.53	4.27	4.18	3.66
Machakos	3.11	4.18	3.46	3.51
Malindi	2.28	2.99	2.15	2.53
Mombasa	2.89	3.73	2.43	3.53
Nairobi	4.72	5.45	3.84	6.07
Naivasha	3.28	3.42	2.53	3.39
Nakuru	3.82	4.39	3.85	4.04
Nyeri	4.40	5.39	3.28	4.96
Thika	4.53	5.55	2.74	5.62

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

E.2 Water access and quality

Piped water access varies largely by location type and poverty. In formal areas, 69% of households have access, while in informal areas, only half as many (35%) do. In non-poor areas, 15% more households have access than in poor areas (65% of non-poor vs. 50% of poor). Piped water access also varies widely by city. In Nyeri and Garissa, more than 90% of households have access, while in Machakos, Mombasa, and Naivasha, less than 30% have access. Overall, about 20% of households use a private piped connection for their primary source of drinking water, while about 34% use a shared tap. Nearly all households surveyed (91%) use a public water provider, and about half (48%) treat their drinking water at home.

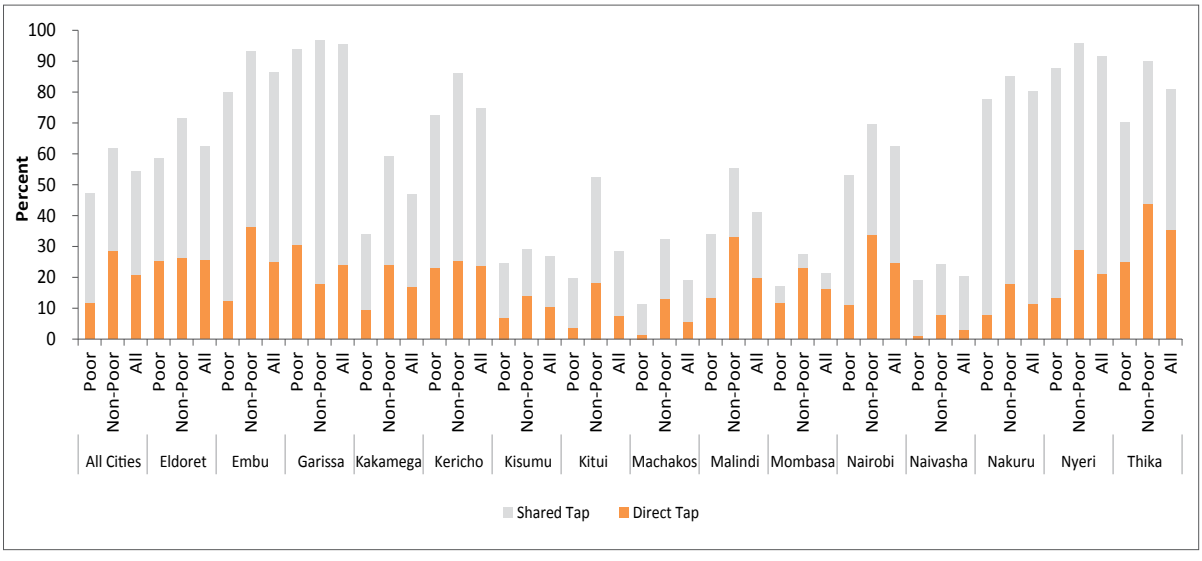
In Table 36 we find that in all cities, piped water access is more common among non-poor households than poor households, and in many cases the magnitude of this difference is quite large.

As for the use of piped water sources, a mere 12% of households in poor areas use a private piped connection as their most important source for drinking water, which is less than half the proportion of non-poor households that use such connections (29%). The difference between these two proportions is statistically significant in most cities; the difference between formal and informal areas is also significant in many cities (not shown). Some 60% of households that do not use a piped water source said that it is because they are renters and their landlord does not give them the option; about 20% reported that the cost of the initial connection would be too high.

The gap between access and use of piped water has several possible explanations. One possible explanation is water quality, but most households that use water reported that the water quality was good. Another possibility is that the cost of water is too high, but we found households without a water connection rarely reported that the reason for this was the cost of water. Given the data collected, these two explanations seem improbable. The third possible explanation is reliability—households may not use the piped water as their main source if it is not reliably available. While the survey did not ask explicitly about the reliability of water from piped sources, this seems a likely explanation for the gap between access and use.

In most cities, the use of a shared tap as the most important source is more common than the use of a private piped connection. In Figure 9, we summed the proportion of households using a private tap and the proportion using a shared tap in order to visualize what proportion uses any tap (private or shared) as their most important water source. In eight cities—Eldoret, Embu, Garissa, Kericho, Nairobi, Nakuru, Nyeri, and Thika—more than 50% of households in both poor and non-poor areas use tap water. In two others—Kitui and Malindi—more than half of non-poor households, but fewer than half of poor households, use a tap. In nearly all cities, usage of shared taps is much higher than usage of private taps—oftentimes the proportion using a shared tap is 3-4 times higher than the proportion using a private tap.

Figure 9: Use of private and shared taps for primary drinking water



Non-poor households spend an average of 920 KSh per month on water, while poor households spend 592 KSh. Garissa and Nairobi are the only two cities in which both poor and non-poor households pay more than the 15—city average for water. In 10 cities—Eldoret, Embu, Kakamega, Kericho, Kitui, Malindi, Mombasa, Naivasha, Nyeri, and Thika—both poor and non-poor households spend less on water than the 15-city average.

In most cities, nearly all respondents listed that their water provider was a public service provider. The only exceptions to this trend are Embu, Kitui, Mombasa, and Naivasha.

Table 35: Water access and quality (Summary)

City	Poverty	Piped Water Access (Dwelling or Compound)	N	Primary Drinking Water Source			Monthly Water Expend-itures (KSh)	N	Good Water Quality	N	Public Water Prov-ider	N	Treats Drink-ing Water	N
				Private Piped Connection	Shared Tap	Shared Tap								
All	Total	57	14,547	20	34	14,544	762	9,204	64	14,549	91	8,367	48	14,545
	Formal	69	10,398	26	39	10,397	903	6,034	68	10,400	93	6,906	49	10,397
	Informal	35	4,149	9	24	4,147	634	3,170	57	4,149	85	1,461	46	4,148
	Poor	50	8,532	12	36	8,528	592	5,424	64	8,532	92	4,275	43	8,531
	Non-poor	65	5,839	27	33	5,839	920	3,661	64	5,839	91	4,004	53	5,837
Eldoret		72	973	26	44	973	408	542	63	974	99	623	34	973
Embu		88	1,014	25	61	1,014	459	523	64	1,014	71	905	32	1,014
Garissa		96	1,032	27	69	1,032	1,801	271	72	1,032	100	988	19	1,032
Kakamega		50	966	17	30	966	629	542	86	966	95	485	50	966
Kericho		76	1,030	24	51	1,030	468	576	81	1,030	99	802	11	1,030
Kisumu		31	740	10	17	740	767	597	61	740	96	216	73	740
Kitui		35	650	8	21	651	538	399	48	651	78	281	51	651
Machakos		21	670	5	13	669	634	510	23	670	89	159	39	668
Malindi		41	1,026	20	21	1,026	484	852	68	1,026	100	445	13	1,026
Mombasa		25	1,093	14	5	1,092	607	1,013	42	1,093	69	226	45	1,093
Nairobi		64	1,178	24	37	1,177	884	711	70	1,178	96	675	54	1,177
Naivasha		25	1,071	2	17	1,071	577	822	41	1,071	72	209	54	*1,071*
Nakuru		83	1,095	11	69	1,095	739	442	69	1,095	98	857	45	*1,095*
Nyeri		92	1,024	21	70	1,024	565	652	79	1,024	89	922	20	*1,024*
Thika		81	985	32	44	984	555	752	85	985	100	574	21	*985*

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 36: Water access and quality

City	Poverty	Piped Water Access (Dwelling or Compound)	N	Primary Drinking Water Source			Monthly Water Expend-itures (KSh)	N	Good Water Quality	N	Public Water Prov-ider	N	Treats Drink-ing Water	N
				Private Piped Connection	Shared Tap	N								
All	Poor	50	8,532	12	36	8,528	592	5,424	64	8,532	92	4,275	43	8,531
	Non-poor	65	5,839	27	33	5,839	920	3,661	64	5,839	91	4,004	53	5,837
Eldoret	Poor	67	660	26	40	660	341	366	63	660	99	387	34	660
	Non-poor	82	308	28	52	308	573	172	61	308	99	233	36	308
Embu	Poor	82	470	13	67	470	405	227	65	470	67	389	26	470
	Non-poor	95	537	37	57	537	505	293	64	537	74	513	37	537
Garissa	Poor	94	493	35	59	493	1,503	125	73	493	100	465	15	493
	Non-poor	97	539	19	78	539	2,047	146	70	539	100	523	22	539
Kakamega	Poor	37	470	9	25	470	547	238	83	470	95	169	47	470
	Non-poor	63	481	24	35	481	701	296	88	481	95	309	54	481
Kericho	Poor	74	879	23	50	879	453	478	80	879	99	670	11	879
	Non-poor	86	147	26	61	147	538	97	83	147	99	129	12	147
Kisumu	Poor	27	346	7	18	346	711	273	57	346	100	89	72	346
	Non-poor	35	362	14	17	362	822	296	66	362	93	120	75	362
Kitui	Poor	26	418	4	16	418	494	252	45	418	76	139	49	418
	Non-poor	63	201	18	35	201	656	126	55	201	77	127	55	201
Machakos	Poor	13	420	1	10	419	418	320	22	420	84	64	28	420
	Non-poor	35	249	12	19	249	968	189	26	249	92	95	59	247
Malindi	Poor	34	664	13	21	664	473	582	65	664	100	220	11	664
	Non-poor	56	359	32	22	359	511	269	75	359	99	222	17	359
Mombasa	Poor	20	638	10	5	637	582	595	41	638	70	93	38	638
	Non-poor	33	451	19	4	451	643	415	43	451	69	132	55	451
Nairobi	Poor	54	535	11	42	534	627	324	71	535	98	252	48	534
	Non-poor	72	606	33	35	606	1,093	359	69	606	94	405	58	606
Naivasha	Poor	23	793	1	18	793	532	619	45	793	68	133	51	793
	Non-poor	32	271	6	18	271	702	198	33	271	77	74	61	271
Nakuru	Poor	81	693	8	70	693	643	283	67	693	98	521	46	693
	Non-poor	86	386	18	67	386	865	153	73	386	98	323	45	386
Nyeri	Poor	88	510	14	74	510	378	319	75	510	84	437	16	510
	Non-poor	96	507	29	67	507	733	329	84	507	94	479	24	507
Thika	Poor	71	543	25	45	542	370	423	81	543	100	247	19	543
	Non-poor	90	435	38	44	435	709	323	88	435	100	320	24	435

In some cities it is common for households to treat their water at home, while in others it is rare. Overall, less just under half of poor households treat drinking water while just over half of non-poor households do this. This is most common in Kakamega, Kisumu, Nairobi, and Naivasha, and least common in Garissa, Kericho, Malindi, Nyeri, and Thika. Generally, households reported treating their water through either boiling or adding bleach/chlorine (not shown). Further analysis may be done to determine whether most households who do not treat their water do not do so because they are drinking from reliable sources—public water system, private well, borehole, or bottled water.

E.3 Electricity

Use of electricity is very common in the 15 surveyed cities—70% of poor households and 81% of non-poor households have electricity (Table 37). Of those without electricity, most report that the reason is because they are renters and their landlord will not pay for the connection.

In all 15 cities, poor households use electricity less often than non-poor households, and in nearly every city the differences between poor and non-poor households and between households in formal and informal areas are statistically significant (Table 38). A large proportion of poor households in Kakamega, Kitui, and Malindi—70% or higher in each city—live in a dwelling without access to electricity. The price of electricity varies quite a bit, but overall, poor households spend an average of 739 KSh and non-poor households spend just over 1,000 KSh per month.

Most households who are not connected to electricity (over 60%) report that the reason is because they are renters and their landlord does not offer it. The second most common reason cited (about 20%) is that the initial connection is too expensive.

Very few households—only about 30% overall— report that they have mostly functioning street lighting on their street. A surprisingly large number of cities—Garissa, Kakamega, Kericho, Kisumu, Kitui, Malindi, and Naivasha—have essentially no street lighting whatsoever.

To explore the relationship between use of electricity and income, we estimated the impact of a change in income on the probability that a household is connected to electricity.[15] Figure 10 summarizes the results for the formal and informal sectors by gender by showing the change in probability of having electricity that would result from a 1% increase in per capita income.[16] The use of "snakes" in the figure facilitates the visualization of several relationships, as will be seen.

First, in all 15 cities an increase in income has the largest effect on male-headed households in formal areas. For example, a 10% increase in income would raise the probability of having electricity by 3.5 percentage points for male-headed households in Eldoret's formal sector.[17] For male-headed households in informal areas and female-headed households in both area types, the effects of income increases are less than half that.

[15] An analogous analysis was carried out for private toilets and private piped water, but has not been included herein.

[16] The detailed Logistic regression equation is available in the annex of this report.

[17] Another way to say this is that the probability, a number between 0 and 1, would increase by 0.35.

Table 37: Electricity and street lighting (summary)

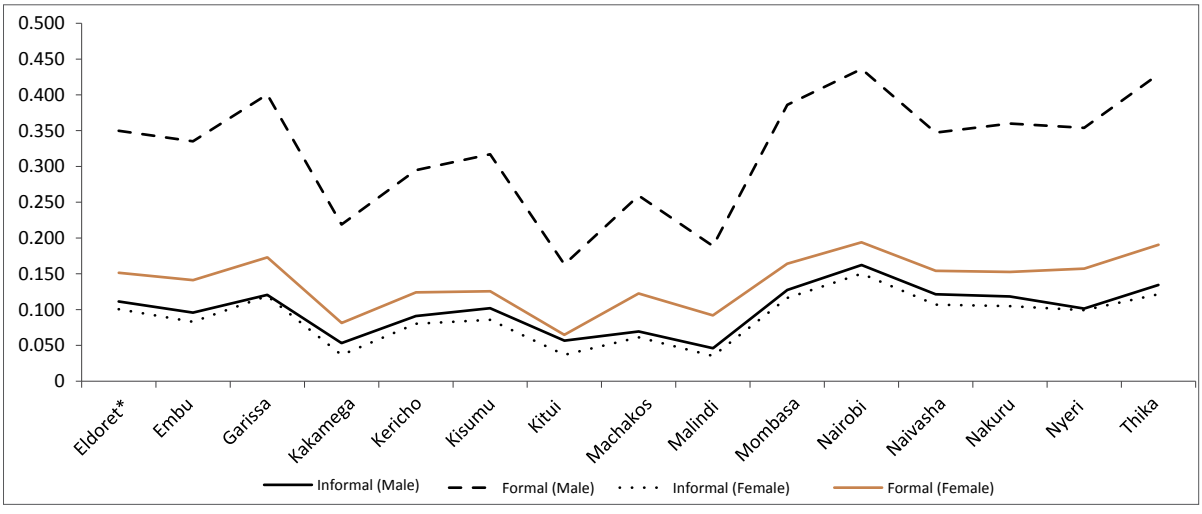
City	Category	Elec-tricity	N	Monthly Electricity Expenditure (KSh)		Reason for No Connection				Street Lighting	N
					N	Renters	Connection Cost	Monthly Cost	N		
All	Total	75	14,547	913	5,275	63	22	8	5,151	31	14,549
	Formal	81	10,398	1,035	3,927	63	23	7	3,427	36	10,400
	Informal	63	4,149	739	1,348	68	19	7	1,724	26	4,149
	Poor	70	8,531	639	2,506	69	20	6	3,685	30	8,532
	Non-poor	81	5,839	1,112	2,696	60	22	10	1,399	32	5,839
Eldoret		65	973	787	292	58	31	5	363	16	974
Embu		64	1,014	660	400	39	40	10	349	6	1,014
Garissa		82	1,032	2,005	172	24	48	24	188	1	1,032
Kakamega		42	966	845	283	47	44	3	555	0	966
Kericho		59	1,030	602	216	50	38	3	433	2	1,030
Kisumu		53	740	945	244	51	33	8	373	2	740
Kitui		35	650	659	160	14	59	1	328	1	651
Machakos		53	670	675	172	26	46	20	292	12	670
Malindi		39	1,026	704	327	43	41	13	513	0	1,026
Mombasa		74	1,093	662	641	66	24	7	341	19	1,093
Nairobi		84	1,178	1,064	653	70	15	8	215	47	1,178
Naivasha		69	1,071	521	268	58	25	8	327	1	1,071
Nakuru		73	1,095	719	499	61	24	6	285	13	1,095
Nyeri		72	1,024	699	445	45	28	0	332	17	1,024
Thika		84	985	549	503	78	14	4	257	36	985

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 38: Electricity and street lighting

City	Poverty	Elec-tricity	N	Monthly Electricity Expenditure (KSh)	N	Reason for No Connection				Street Lighting	N
						Renters	Connection Cost	Monthly Cost	N		
All	Poor	70	8,531	639	2,506	69	20	6	3,685	30	8,532
	Non-poor	81	5,839	1,112	2,696	60	22	10	1,399	32	5,839
Eldoret	Poor	61	660	650	174	58	33	4	280	16	660
	Non-poor	76	308	1,047	116	55	26	8	80	17	308
Embu	Poor	52	470	521	128	37	47	8	226	7	470
	Non-poor	76	537	736	269	43	27	14	119	4	537
Garissa	Poor	78	493	1,619	69	20	57	18	112	1	493
	Non-poor	85	539	2,230	103	29	35	32	76	0	539
Kakamega	Poor	27	470	784	75	46	49	2	350	0	470
	Non-poor	56	481	877	203	50	36	6	197	0	481
Kericho	Poor	56	879	513	162	50	38	3	400	2	879
	Non-poor	76	147	861	53	57	41	2	32	3	147
Kisumu	Poor	45	346	776	102	51	34	8	204	2	346
	Non-poor	62	362	1,074	133	50	33	9	152	2	362
Kitui	Poor	30	417	551	84	13	64	1	234	1	418
	Non-poor	53	201	824	68	17	39	0	72	1	201
Machakos	Poor	42	420	561	65	22	49	22	224	9	420
	Non-poor	71	249	761	107	38	34	12	68	17	249
Malindi	Poor	29	664	566	176	45	39	14	396	0	664
	Non-poor	58	359	862	150	37	51	11	117	1	359
Mombasa	Poor	66	638	530	328	62	29	7	252	17	638
	Non-poor	85	451	811	310	81	9	7	89	21	451
Nairobi	Poor	80	535	669	256	81	9	5	117	46	535
	Non-poor	86	606	1,296	375	58	22	12	93	48	606
Naivasha	Poor	68	793	413	187	60	28	7	263	0	793
	Non-poor	73	271	754	78	53	15	12	63	2	271
Nakuru	Poor	71	693	573	292	58	30	4	207	12	693
	Non-poor	78	386	891	203	65	13	10	74	12	386
Nyeri	Poor	60	510	638	176	39	33	0	228	13	510
	Non-poor	83	507	725	264	61	18	0	102	21	507
Thika	Poor	74	543	465	232	79	13	5	192	36	543
	Non-poor	92	435	615	264	74	15	2	65	37	435

Figure 10: Impact of increase in income on probability of having electricity



Second, though the levels change, the order of the effect's strength for each city is always the same. An increase in income for a given gender head is associated with a higher likelihood of getting electricity if the household is in the formal sector than informal sector. Likewise, an increase in income for a household in a given sector is associated with a higher likelihood of getting electricity if the household head is male than female. In fact, an increase in income for a female-headed household in the formal sector increases the household's chances of having electricity by more than that of the same percentage increase in income of either gender head's household in the informal sector.

E.4 Refuse and sanitation

Our survey asked households about their refuse and sanitation. Table 39 shows the summary of results. Across all 15 cities, only 13% of households use refuse collection. This ranges from 0% in Kakamega to 17% in Nyeri. Few households (24%) have a toilet in their home and most (73%) share their toilet with other households.

Table 40 shows that rates of usage of city collection systems for refuse disposal are quite low among both poor and non-poor households in the 15 cities studied (12% among the poor, 14% among non-poor). There is, however, fairly substantial variation across cities. In Embu, Kakamega, and Kitui, almost no households reported using a city collection system. Cities with relatively high—but far from universal—usage rates include Kericho, Machakos, Mombasa, Nairobi, Naivasha, and Nakuru; in these cities, poor households typically utilize garbage collection systems much less frequently that non-poor households. In most cities, the difference between poor and non-poor households, as well as the difference between formal and formal areas, is statistically significant—i.e., poor and slum households appear systematically underserved.

Across all cities, non-poor households have toilets in their dwelling more than twice as frequently (33%) as do poor households (15%). In all 15 cities, the percent of households with a toilet in the dwelling is higher in non-poor households than in poor households (this difference is significant in nearly all cities). With the exception of poor households in Kitui, more than 50% of both poor and non-poor households in all cities share their toilet with at least one other household. Typically, households without a toilet in their dwelling use a shared toilet.

Table 39: Refuse, toilets, and grey water (Summary)

City	Poverty	Refuse Collection	N	Toilet in Home	N	Share Toilet	N	Toilet disposal				Grey Water Disposal			
								Septic Tank	N	Formal Sewer	N	Drain	N	Road	N
All	Total	13	14,541	24	14,545	73	14,028	9	14,047	37	14,047	58	14,513	37	14,513
	Formal	16	10,394	32	10,398	65	10,231	9	10,094	49	10,094	65	10,379	30	10,379
	Informal	8	4,147	10	4,147	87	3,797	7	3,953	18	3,953	46	4,134	49	4,134
	Poor	12	8,529	14	8,531	82	8,163	5	8,195	33	8,195	54	8,511	41	8,511
	Non-poor	14	5,835	33	5,837	64	5,697	12	5,678	41	5,678	62	5,826	33	5,826
Eldoret		6	972	22	973	73	969	7	862	27	862	39	971	56	971
Embu		2	1,010	24	1,014	59	999	12	989	20	989	39	1,002	49	1,002
Garissa		9	1,032	9	1,032	81	1,015	2	1,019	17	1,019	10	1,031	88	1,031
Kakamega		0	966	19	966	64	952	4	962	17	962	59	966	32	966
Kericho		16	1,030	11	1,030	68	1,026	2	980	17	980	18	1,027	79	1,027
Kisumu		6	740	15	737	78	708	6	716	12	716	44	739	47	739
Kitui		1	651	5	651	43	628	3	646	5	646	49	648	45	648
Machakos		13	670	12	670	59	670	4	670	18	670	9	669	71	669
Malindi		7	1,026	14	1,026	81	993	19	928	4	928	44	1,025	55	1,025
Mombasa		15	1,093	29	1,093	80	1,081	24	1,024	5	1,024	50	1,089	47	1,089
Nairobi		14	1,178	26	1,178	71	1,081	7	1,133	54	1,133	72	1,178	23	1,178
Naivasha		15	1,071	7	1,071	80	1,064	1	1,065	14	1,065	30	1,069	62	1,069
Nakuru		15	1,094	17	1,095	74	1,086	2	1,079	18	1,079	31	1,091	63	1,091
Nyeri		17	1,023	22	1,024	60	1,009	3	1,019	34	1,019	40	1,024	42	1,024
Thika		13	985	31	985	63	747	1	955	72	955	69	984	28	984

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 40: Refuse, toilets, and grey water

City	Poverty	Refuse Collection	N	Toilet in Home	N	Share Toilet	N	Toilet Disposal				Grey Water Disposal			
								Septic Tank	N	Formal Sewer	N	Drain	N	Road	N
All	Poor	12	8,529	14	8,531	82	8,163	5	8,195	33	8,195	54	8,511	41	8,511
	Non-poor	14	5,835	33	5,837	64	5,697	12	5,678	41	5,678	62	5,826	33	5,826
Eldoret	Poor	5	660	20	660	74	657	4	588	27	588	41	659	56	659
	Non-poor	10	307	26	308	71	307	14	270	27	270	36	307	54	307
Embu	Poor	1	468	10	470	65	465	6	456	10	456	31	464	57	464
	Non-poor	2	535	36	537	54	527	17	526	28	526	47	531	40	531
Garissa	Poor	10	493	11	493	79	479	4	482	21	482	12	493	87	493
	Non-poor	9	539	8	539	82	536	1	537	13	537	8	538	90	538
Kakamega	Poor	0	470	11	470	70	460	3	466	10	466	48	470	42	470
	Non-poor	0	481	27	481	58	477	5	481	24	481	68	481	22	481
Kericho	Poor	13	879	8	879	69	875	2	839	13	839	17	876	82	876
	Non-poor	31	147	25	147	65	147	5	138	38	138	26	147	63	147
Kisumu	Poor	4	346	10	345	84	323	4	328	9	328	41	346	52	346
	Non-poor	10	362	20	360	72	353	7	356	17	356	50	361	40	361
Kitui	Poor	0	418	3	418	39	402	2	416	3	416	48	417	46	417
	Non-poor	1	201	10	201	60	196	7	198	12	198	62	200	32	200
Machakos	Poor	10	420	4	420	60	420	5	420	12	420	5	419	69	419
	Non-poor	19	249	26	249	57	249	2	249	28	249	16	249	75	249
Malindi	Poor	4	664	6	664	88	636	13	588	3	588	43	663	56	663
	Non-poor	12	359	32	359	67	354	30	337	6	337	46	359	53	359
Mombasa	Poor	14	638	22	638	86	627	18	587	3	587	48	634	49	634
	Non-poor	17	451	39	451	72	450	32	433	8	433	53	451	45	451
Nairobi	Poor	13	535	13	535	86	483	2	515	51	515	68	535	28	535
	Non-poor	14	606	36	606	61	568	10	582	57	582	76	606	20	606
Naivasha	Poor	14	793	5	793	82	787	1	790	10	790	31	791	62	791
	Non-poor	18	271	12	271	75	270	2	268	23	268	28	271	62	271
Nakuru	Poor	17	692	11	693	79	686	2	683	12	683	26	691	68	691
	Non-poor	12	386	28	386	65	384	3	380	29	380	39	384	54	384
Nyeri	Poor	9	510	13	510	62	503	2	509	22	509	32	510	48	510
	Non-poor	25	506	31	507	57	499	3	503	47	503	48	507	36	507
Thika	Poor	8	543	20	543	69	360	1	528	65	528	50	543	45	543
	Non-poor	17	435	40	435	60	380	1	420	77	420	85	434	13	434

Typically, about 30% or fewer households use toilets connected to a formal sewer. In Nairobi and Thika, more than half of households use toilets connected to a formal sewer. Rates in other cities are typically around 30% or lower, and poor households, predictably, are usually connected to formal sewers less often than non-poor households. Nyeri, where 47% of poor households and 22% of non-poor households use toilets connected to a sewer, is an exception. Connection rates to septic tanks are also low—typically below 10%—but are more often used by non-poor households than poor households. They are particularly common in Malindi and Mombasa.

Most households either dispose of grey water— used kitchen or bath water—by pouring it down a drain or simply dumping it in the street. The former is considered better practice than the latter. Across all 15 cities, more than half of all households (poor and non-poor) dump grey water into a drain. Households in Garissa, Kericho, and Machakos use drains to dispose of grey water less frequently than in other cities.

E.5 Transportation

Households in the 15 cities covered in the survey use a variety of means of transportation, and Table 41 summarizes the results. Fifty-two percent of households use public transportation, and this varies largely from city to city—the lowest rate is in Malindi (5%) and the highest is in Nairobi (61%). While 31% reported that their access road is in poor condition, less than half that (13%) said their road is unusable when there are heavy rains.

Table 41: Public transport and road quality (Summary)

City	Category	Public Transport	N	Poor Access Road	N	Unusable Roads in Rainy Season	N
All	Total	52	14,549	31	14,544	13	14,540
	Formal	56	10,400	26	10,397	9	10,392
	Informal	43	4,149	39	4,147	19	4,148
	Poor	47	8,532	33	8,532	14	8,530
	Non-poor	56	5,839	30	5,836	13	5,834
Eldoret		51	974	38	973	21	973
Embu		18	1,014	52	1,014	21	1,014
Garissa		26	1,032	35	1,031	17	1,029
Kakamega		15	966	41	966	21	966
Kericho		14	1,030	57	1,030	5	S1,030
Kisumu		42	740	29	740	21	740
Kitui		15	651	66	651	1	650
Machakos		34	670	58	669	21	670
Malindi		5	1,026	51	1,026	6	1,026
Mombasa		60	1,093	35	1,093	13	1,093
Nairobi		61	1,178	22	1,177	11	1,077
Naivasha		18	1,071	65	1,070	7	1,071
Nakuru		40	1,095	43	1,095	23	1,095
Nyeri		27	1,024	49	1,024	31	1,024
Thika		37	985	34	985	14	984

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Table 42: Public transport and road quality

City	Category	Public transport	N	Poor access road	N	unusable roads in rainy season	N
All	Poor	47	8,532	33	8,532	14	8,530
	Non-poor	56	5,839	30	5,836	13	5,834
Eldoret	Poor	48	660	37	660	21	660
	Non-poor	57	308	40	308	21	308
Embu	Poor	14	470	55	470	19	470
	Non-poor	21	537	49	537	22	537
Garissa	Poor	26	493	27	493	7	492
	Non-poor	27	539	42	538	26	535
Kakamega	Poor	9	470	37	470	17	470
	Non-poor	22	481	45	481	24	481
Kericho	Poor	11	879	58	879	5	879
	Non-poor	28	147	56	147	8	147
Kisumu	Poor	39	346	31	346	24	346
	Non-poor	46	362	27	362	19	362
Kitui	Poor	14	418	68	418	1	417
	Non-poor	17	201	54	201	1	201
Machakos	Poor	26	420	53	420	18	420
	Non-poor	46	249	68	248	27	249
Malindi	Poor	3	664	47	664	5	664
	Non-poor	9	359	62	359	7	359
Mombasa	Poor	58	638	32	638	12	638
	Non-poor	63	451	40	451	13	451
Nairobi	Poor	55	535	26	535	12	535
	Non-poor	65	606	19	606	10	606
Naivasha	Poor	19	793	62	793	6	793
	Non-poor	15	271	76	270	12	271
Nakuru	Poor	38	693	40	693	23	693
	Non-poor	45	386	49	386	24	386
Nyeri	Poor	19	510	52	510	31	510
	Non-poor	35	507	45	507	32	507
Thika	Poor	27	543	51	543	17	543
	Non-poor	46	435	20	435	10	434

In Table 42, we present the percent of households with at least one member using public transportation (matatus or regular buses) as their main mode of transportation to work/school. Across all cities, about half of all households use public transportation—47% among poor households and 56% among the non-poor. Usage is especially high in Eldoret, Nairobi, and Mombasa. Almost no one in Malindi uses public transportation; in Kakamega, usage is restricted to mostly non-poor households.

Many households reported that their access road was in poor condition during the most recent dry season. Residents of Nairobi and Kisumu reported the best roads. Naivasha has the poorest roads—62% of poor households and 76% of non-poor households reported that their access road was in poor condition.

When asked if their access road was usable in the rainy season, most households said "yes". Even in Nyeri, the city with the worst roads during the rainy season, about 70% of households said their access roads were usable. In Kitui only 1% of poor and non-poor households said that their access road was unusable during the rainy season.

E.6 Communications

The penetration of mobile phones in Kenya's cities is truly impressive—in all 15 cities, households own, on average, 1.74 mobile phones and 85% use mobile banking (Table 43).

Table 43: Mobile phones, mobile banking, computers, and internet (Summary)

City	Category	# of mobile phones	N	Mobile banking	N	Home computer	N	Internet usage	N
All	Total	1.74	14,490	85	14,535	12	14,545	23	14,532
	Formal	1.87	10,357	87	10,389	16	10,396	28	10,388
	Informal	1.52	4,133	81	4,146	6	4,149	15	4,144
	Poor	1.62	8,496	83	8,526	4	8,531	13	8,522
	Non-poor	1.85	5,821	88	5,835	18	5,838	32	5,833
Eldoret		1.42	972	76	973	5	973	13	973
Embu		1.17	1,013	64	1,013	4	1,014	20	1,013
Garissa		1.54	1,029	78	1,031	3	1,032	14	1,032
Kakamega		1.67	965	86	966	6	966	18	965
Kericho		1.35	1,028	77	1,030	4	1,030	14	1,028
Kisumu		1.83	736	89	739	8	739	24	739
Kitui		1.65	636	83	648	3	650	10	649
Machakos		1.67	669	75	670	5	670	15	670
Malindi		1.00	1,026	64	1,026	1	1,026	7	1,026
Mombasa		1.36	1,092	79	1,092	4	1,093	15	1,093
Nairobi		2.01	1,169	92	1,176	18	1,177	29	1,173
Naivasha		1.27	1,060	68	1,070	2	1,071	6	1,071
Nakuru		1.45	1,091	69	1,095	4	1,095	12	1,095
Nyeri		1.32	1,022	70	1,024	6	1,024	21	1,024
Thika		1.57	982	86	982	15	985	22	981

Note: Significance tests not performed on this table. For statistical significance of sub-populations within each city, please refer to the Statistical Abstracts.

Though we found significant differences in the number of mobile phones owned by poor and non-poor households in some cities, the magnitude of these differences are generally quite small (see Table 44). Similarly, mobile banking is extremely popular, certainly due in large part to the success of services such as M-PESA. Mobile banking is used slightly more often by non-poor households than poor households in all cities except Kitui.

A comparison of the percent difference in the number of mobile phones owned between formal and informal households reveals some patterns. In Eldoret, for example, the average number of mobile phones owned in formal areas is 25% higher than the average number in informal areas. Kitui is the only city in which households in informal areas own more mobile phones than households in formal areas. Ownership rates are also similar in formal and informal areas in Kericho, Kisumu, Machakos, and Malindi. The largest disparity, by far, is in Thika, where households in formal areas own, on average, 67% more mobile phones than households in informal areas.

Given that computer ownership is practically non-existent among poor households and typically low among non-p**oor households, internet usage is surprisingly high.** This may be due to the rising popularity of internet-enabled smartphones, which allow internet access without a computer. In all 15 cities, internet usage is at least 2 or 3 times among non-poor households than it is among the poor.

Table 44: Mobile phones, mobile banking, computers, and internet

City	Area	# of mobile phones	N	Mobile banking	N	Home computer	N	Internet usage	N
All	Poor	1.62	8,496	83	8,526	4	8,531	13	8,522
	Non-poor	1.85	5,821	88	5,835	18	5,838	32	5,833
Eldoret	Poor	1.36	659	73	660	3	660	9	660
	Non-poor	1.54	308	83	308	9	308	23	308
Embu	Poor	1.09	469	53	470	2	470	9	470
	Non-poor	1.26	537	74	536	5	537	31	536
Garissa	Poor	1.40	490	73	492	3	493	9	493
	Non-poor	1.66	539	82	539	4	539	18	539
Kakamega	Poor	1.48	469	80	470	2	470	8	469
	Non-poor	1.85	481	92	481	9	481	29	481
Kericho	Poor	1.27	877	74	879	2	879	10	877
	Non-poor	1.77	147	95	147	16	147	41	147
Kisumu	Poor	1.69	343	85	346	5	346	16	346
	Non-poor	1.96	361	93	361	11	361	31	361
Kitui	Poor	1.69	409	84	416	1	417	6	416
	Non-poor	1.59	196	81	201	9	201	21	201
Machakos	Poor	1.43	419	65	420	1	420	4	420
	Non-poor	2.07	249	91	249	12	249	34	249
Malindi	Poor	0.98	664	62	664	0	664	5	664
	Non-poor	1.05	359	67	359	4	359	11	359

City	Area	# of mobile phones	N	Mobile banking	N	Home computer	N	Internet usage	N
Mombasa	Poor	1.29	638	75	638	1	638	9	638
	Non-poor	1.44	450	84	450	7	451	24	451
Nairobi	Poor	1.83	534	91	534	6	535	16	531
	Non-poor	2.11	600	94	606	26	606	38	605
Naivasha	Poor	1.27	785	65	792	1	793	4	793
	Non-poor	1.28	268	76	271	4	271	13	271
Nakuru	Poor	1.39	690	67	693	1	693	7	693
	Non-poor	1.54	385	71	386	10	386	21	386
Nyeri	Poor	1.32	508	65	510	3	510	13	510
	Non-poor	1.32	507	74	507	9	507	28	507
Thika	Poor	1.43	542	81	542	5	543	6	543
	Non-poor	1.69	434	90	434	24	435	37	432

PART F:

CONCLUSIONS AND POLICY IMPLICATIONS

This section presents some of the conclusions and key takeaways from the earlier chapters. First, we introduce the development diamonds and polygons. Then we present overview figures of poverty level, living conditions, infrastructure score, educational attainment and unemployment level for all cities combined as well as each city individually.

F.1 Development Diamonds and Polygons

This section presents the "Development Polygons" for all cities. These polygons, which illustrate an "overall" sense of the state of the cities, include: the Development Diamond, the Infrastructure Polygon, and the Living Conditions Diamond.[18] In each polygon, we present information for all areas, informal areas, and formal areas. The value labels provide the value of the indicator for all areas. Subsets of the polygons also appear in Appendix B of Volume I of this Overview Report, the Statistical Abstracts, and the City at a Glance Reports, all of which are produced under the NORC contract. The axes for all figures represent percentages.

F.1.1 Development Diamond

In the development diamond below, the "Welfare" indicator is related to the expenditure-based poverty line. A poverty line was calculated based on the household size, and respondents were asked whether their household expenditures fell above or below that line. Across all cities, 48% of households live above the poverty line. The rates are comparable for formal and informal areas (47% in informal areas and 49% in formal areas). However, only 23% of households have "good" living conditions. This indicator is a composite of three variables; it corresponds to the percentage of dwellings that (1) have a piped water connection, (2) are connected to electricity, and (3) have walls made of either stone or brick/block. The proportion of households which have "good" living conditions are considerably higher in formal areas than informal areas (29% and 11% respectively).

The employment indicator gives the percentage of adults 18 and over who are working; that is, they listed their main activity as either: (1) Employer, (2) Working for pay as a 'regular' employee, (3) Working for pay as 'casual' employee, (4) Own account worker (or self-employed), (5) Helping without pay in household business, or (6) Apprentice. Overall, 60% of all adults 18 over listed their main activity in one of these categories; 62% in informal areas and 59% in formal areas. Finally, "Education" gives the percentage of all individuals (of all ages) reporting their highest level of education as "completed primary" or higher; 71% of all individuals reported that they had completed at least primary education.

[18] The basic format for all three figures appears in the World Bank Policy Research Working Paper, *"Poverty, Living Conditions, and Infrastructure Access"* A Comparison of Slums in Dakar, Johannesburg, and Nairobi" by Sumila Gulyani, Debabrata Talukdar, and Darby Jack (2010). We strived to make our own figures as similar as possible, though some deviations, noted in the accompanying text, were necessary.

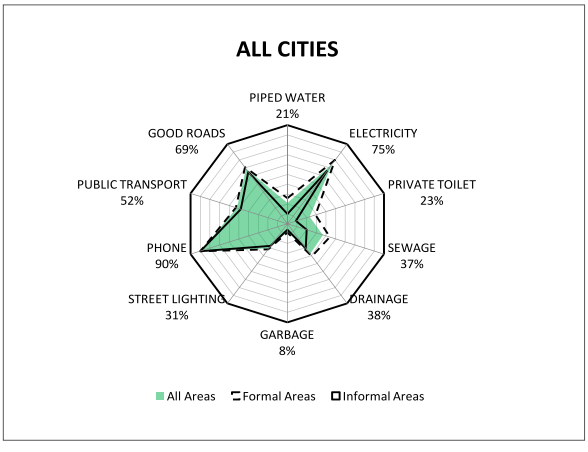
F.1.2 Infrastructure Polygon

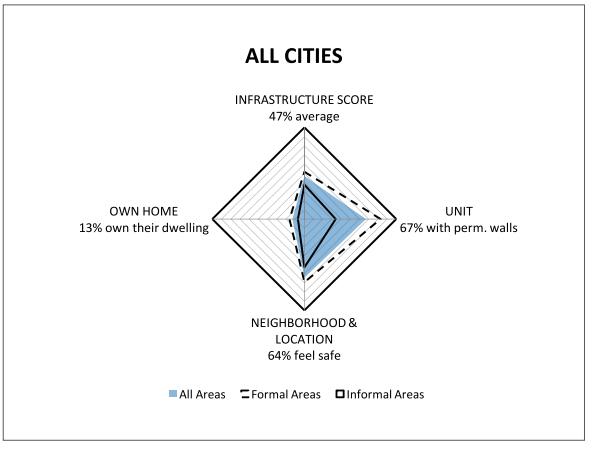
The infrastructure polygon below shows that of all infrastructure services, phone is the one most readily available to households across all 15 cities. Indeed, 90% of all households reported having a mobile phone or landline and this was consistent in formal as well as informal areas. Furthermore, 75% of households reported being connected to electricity with a larger number of households in formal than informal areas being connected (80% vs. 66% respectively). Across all 15 cities, 69% of households reported that their access road was in good condition during the most recent dry season. Furthermore, 52% of all households had at least one member reporting that their main mode of transportation to work or school is a matatu or a regular bus. In terms of street lighting, 31% of households reported having street lights or lamp posts on their street that work most of the time or all of the time.

Overall 21% of households reported having a piped water connection inside their dwelling or reported using a private piped water connection as their main source of water; 23% use an individual ordinary pit latrine or a flush toilet located in their house; 37% reported that their toilet has a council connection to a public sewer and 38% reported that they have a drain outside their house for rainwater. For all four indicators, the proportions are larger for households in formal than informal areas. Finally, only 8% of all households use a city collection system for refuse disposal (9% in formal areas vs. 6% in informal areas).

F.1.3 Living Conditions Diamond

The infrastructure score is described in Section E.1 of this report. The figure reported in this diamond is the average infrastructure score for all households, divided by the total possible score of 9.5 (to convert to a percentage of the possible points). Across all cities, households received a score of 4.5 out of a possible 9.5. The mean score for households in formal areas is higher than for those in informal areas. "Unit" indicates the percentage of households for which the enumerator observed that the dwelling's external walls were either stone or brick/block. On average, 67% of all households live in such a dwelling; although the difference between formal and informal areas is considerable (83% in formal areas vs. 34% in informal areas). "Neighborhood and Location" refers to the percentage of households which reported that they feel safe in their neighborhood. Overall, 64% of households reported that they felt safe in their own neighborhood (69% in formal areas and 53% in informal areas). Finally, "own home" corresponds to the percentage of households which reported that they own their structure (they may or may not also own their land). Only 13% of all households reported that they own their structure; 7% in informal areas and 16% in formal areas.





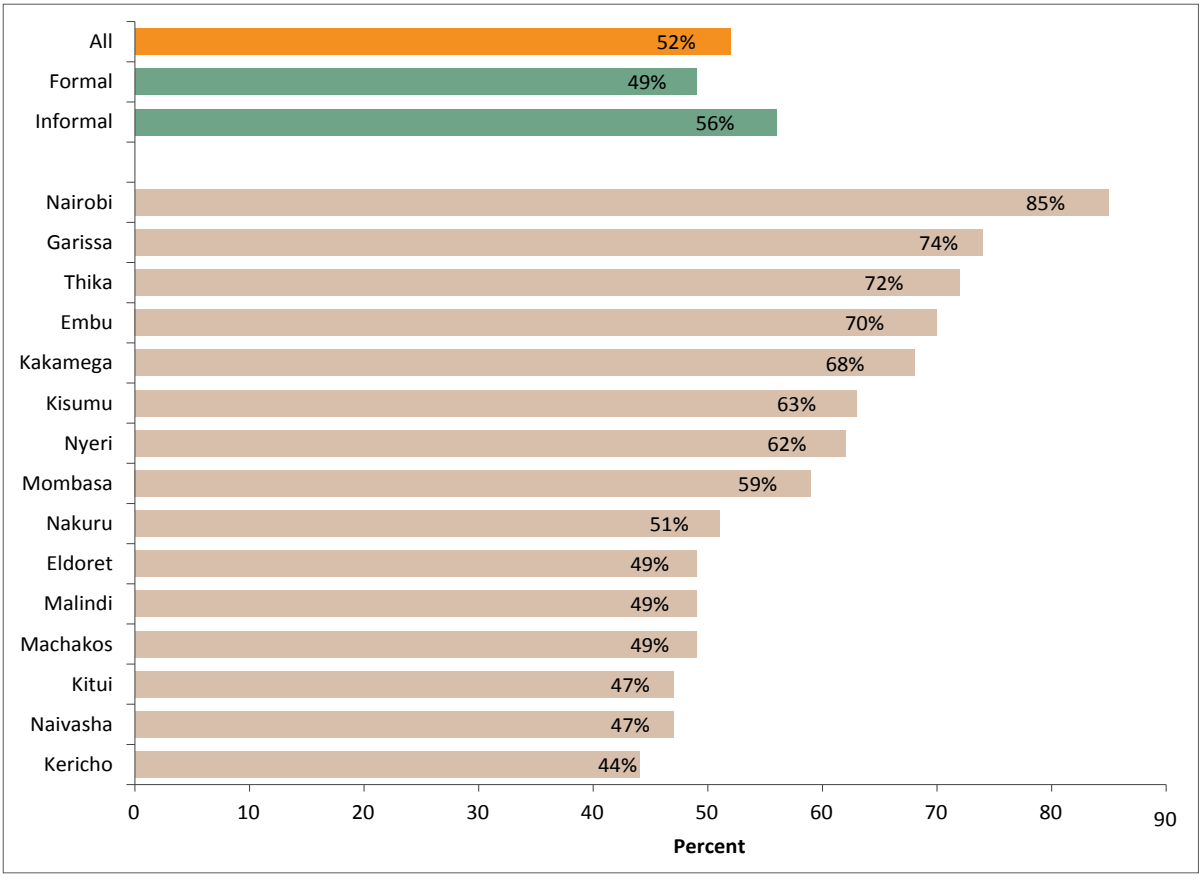
F.2 Poverty, infrastructure, educational attainment, and unemployment

The following bar graphs present information on poverty levels, living conditions, infrastructure, educational attainment and unemployment for all cities combined, formal vs. informal areas, poor vs. non-poor households and for each of the 15 cities.

F.2.1 Poverty

Overall, 52% of households live below the poverty line. Informal areas have a larger proportion of poor households than formal areas (56% vs. 49%). The city with the largest proportion of poor households is Nairobi where 85% of households live below the poverty line. In Garissa, Thika, Embu and Kakamega as well, more than two-thirds of households are considered poor. Kericho has the smallest proportion of poor households, followed by Naivasha, Kitui, Machakos, Malindi and Eldoret which all have less than 50% of households living below the poverty line.

Figure 11: Poverty (percent of households living below the poverty line)



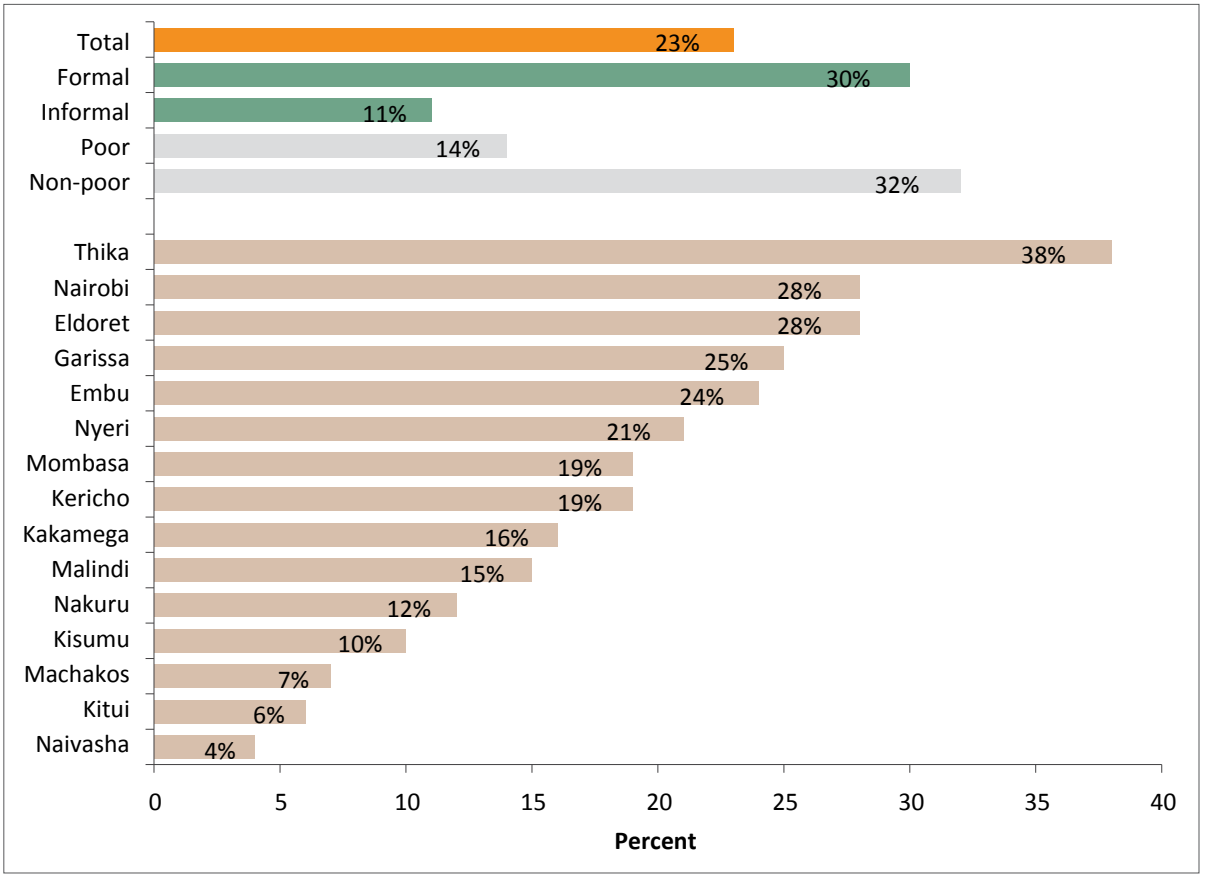
F.2.2 Living Conditions

Figure 12 shows the percentage of households which have "good" living conditions as defined by having a piped water connection, being connected to electricity and having walls made of either stone or brick/block (this indicator appears in the Development Polygon). Across all cities, only 23% of households meet all three of these standards. A larger proportion of non-poor than poor households have "good" living conditions (32% vs. 14%). The city with the largest proportion of households with "good" living conditions is Thika (38% of households). At the other end of the spectrum, less than 10% of households in Machakos, Kitui and Naivasha have "good" living conditions (7%, 6% and 4% respectively).

Both access and use of piped water is very low among the poor. Only 50% have access to piped water, and a mere 12% use it as a primary source. On the other hand, electricity coverage is high. 70% of poor households and 81% of non-poor households across all cities have electricity. Exceptions are Kakamega, Kitui, and Malindi, where 70% or more of poor households live without electricity; this should be a priority for these three cities. Only about 30% of households report that they have street lighting.

Finally, the dwelling structure tends to be more precarious for poor households than non-poor households. On average, 12% of poor households as compared to 6% of non-poor households live in a dwelling with earth/clay floors, and 61% of poor households as compared to 73% of non-poor households live in a dwelling with permanent (stone/brick/block) walls.

Figure 12: Living conditions (percent of households with "good" living conditions)



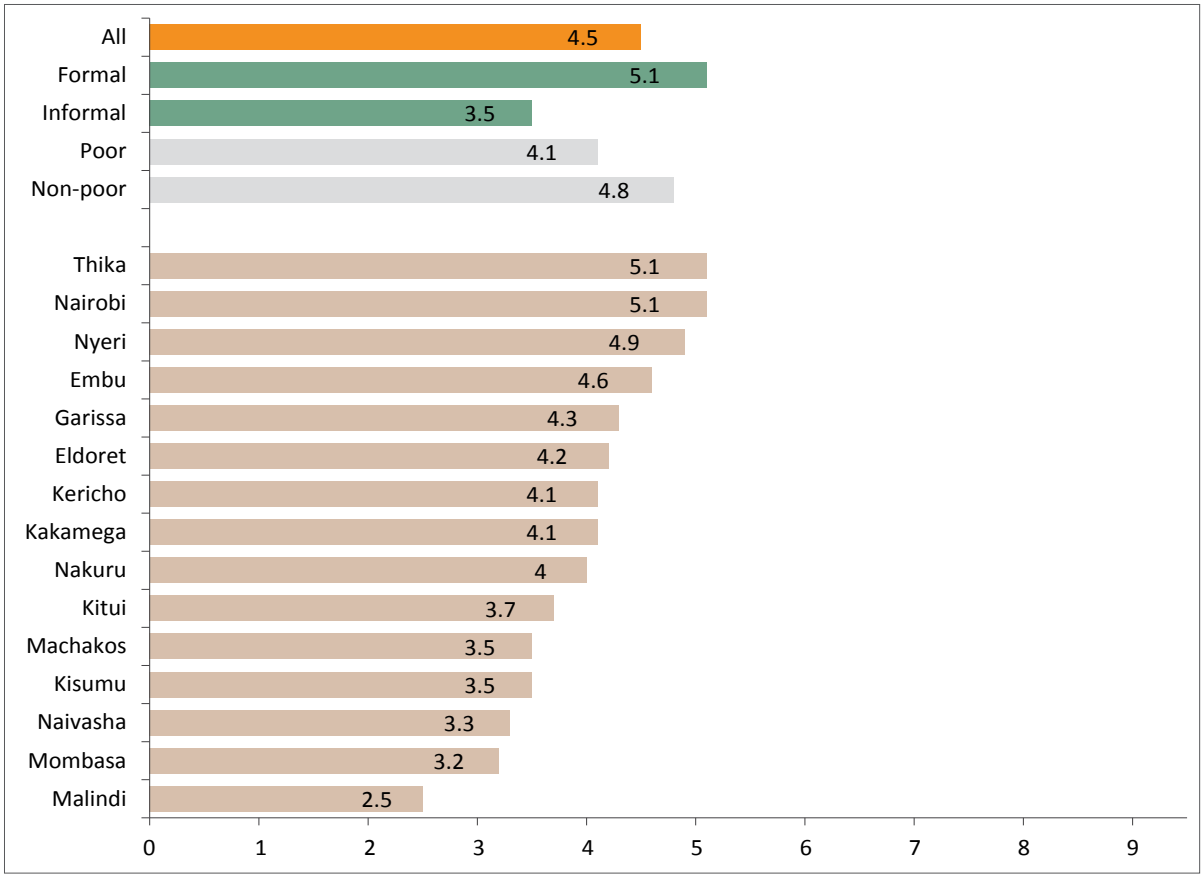
F.2.3 Infrastructure

The average infrastructure score across all households in the 15 cities is 4.5 (out of a possible 9.5 points). It is higher in formal than informal areas and among non-poor households than poor households. Those differences are significant in 14 of the 15 cities. Thika and Nairobi households have the largest infrastructure scores with a score of 5.1 while Malindi only scored 2.5.

Overall, usage of refuse and sanitation services is extremely low. This has important public health implications. Use of city collection systems for refuse is less than 10% among both poor and non-poor households in the 15 cities studied. Poor and slum households appear systematically underserved, especially in Embu, Kakamega and Kitui where almost no households reported using a city collection system. Across all cities, non-poor households have toilets in their dwelling more than twice as frequently (33%) than poor households (15%). Typically, households without a toilet in their dwelling use a shared toilet and very few toilets are connected to a formal sewer. Most households dispose of grey water by pouring it down a drain or simply dumping it in the street.

Finally, many households reported that their access road was in poor condition during the most recent dry season, but roads were typically usable in the rainy season, even in Nyeri and Kitui where roads are especially bad.

Figure 13: Mean infrastructure score

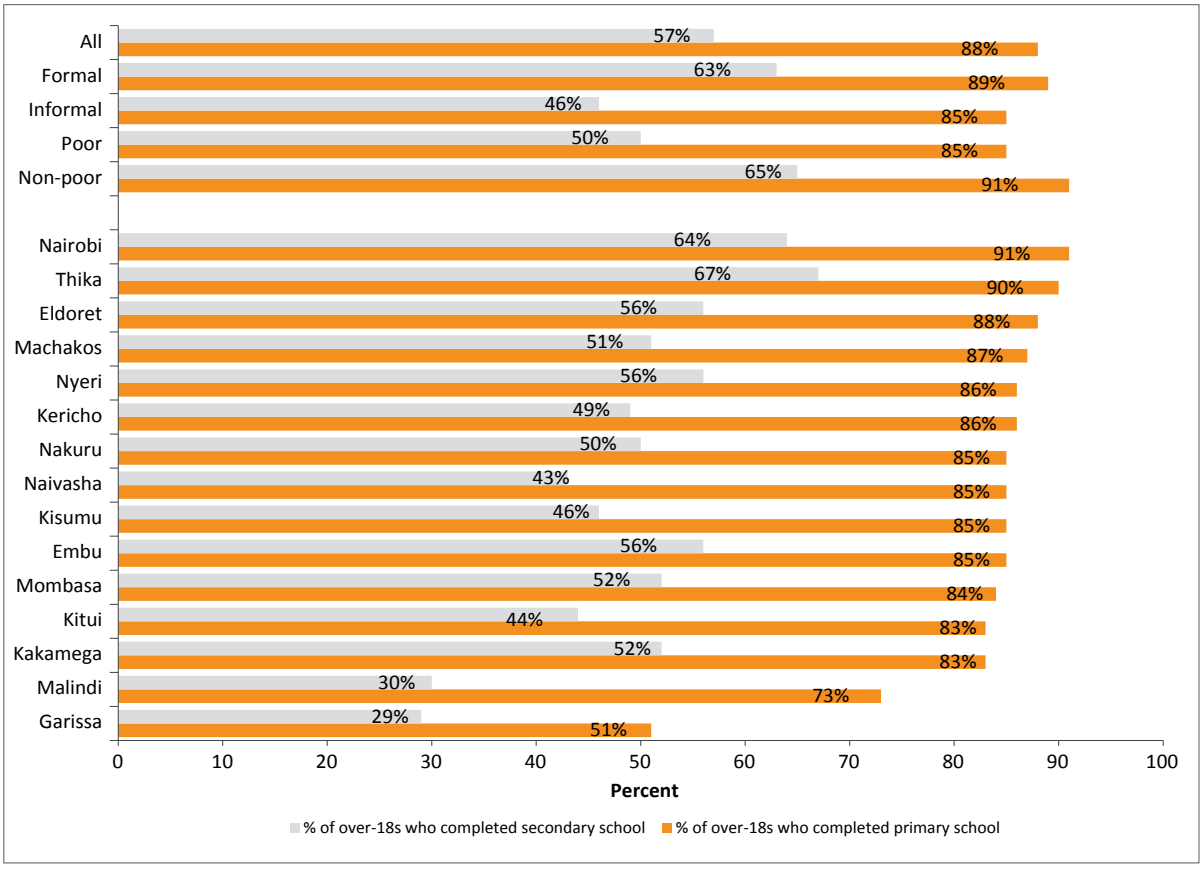


F.2.4 Educational attainment

The results on education are extremely encouraging: most adults have at least a primary education (88% of adults 18 years and over) and more than half have completed secondary school (57%). Poor households and those in informal areas are relatively worse off than non-poor households and those in formal areas; 63% of adults in formal areas vs. 46% in informal areas and 65% of non-poor adults vs. 50% of poor adults have competed secondary school.

Primary school completion is highest in Nairobi (91%) and Thika (90%) and lowest in Malindi (73%) and Garissa (51%). These cities are also the ones with the highest and lowest rates of secondary school completion. However, primary school completion and secondary school completion are not always related. For instance, in Nakuru, Naivasha, Kisumu and Embu, 85% of adults have completed primary education while the proportion of adults who have completed secondary education ranges from 43% to 56%.

Figure 14: Educational attainment (proportion of residents over 18 years who have completed primary school and secondary school)



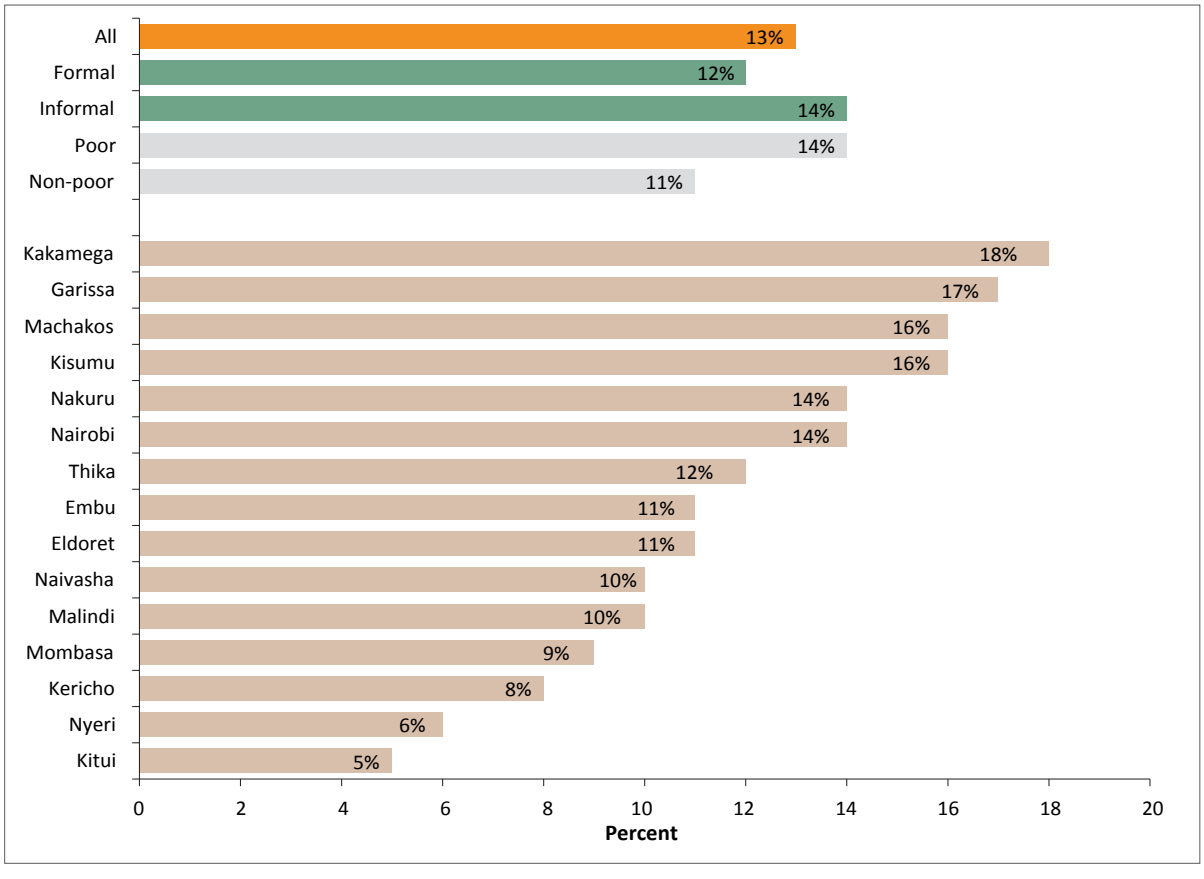
F.2.5 Unemployment

The unemployment rate amongst adults over 18 is 13% across all cities. The highest levels of unemployment are found in Kisumu, Machakos, Kakamega, and Garissa (each with unemployment of 16% to 18%) while the lowest levels of unemployment can be found in Nyeri and Kitui (6% and 5% respectively).

F.3 Policy and Program Implications

The KMP Baseline Survey has generated a large amount of information which has revealed a great variety in each of the dimensions studied in this report. The report also reveals that informal areas possess great diversity and vibrant activity. Informal areas are not just some transitory or ad hoc space that the poor use as a result of not affording the more formal areas. There are wealthier households in the informal areas and poorer households in the formal areas. The informal areas also have their own (informal) institutions and, for some measures, higher levels of social capital than more formal areas. Length of time living in an informal area appears more strongly and posi-tively statistically correlated with expenditure and income, compared to formal areas, though the ranking is reversed for wealth. Moreover the finding that female heads of household and larger families tend to be worse off in general is maintained at the formal/informal area level. Still, in the aggregate, households in the informal areas clearly lag behind those in more formal areas on measures of infrastructure, education, and security. These findings indicate that continued resources be dedicated to strengthening urban infrastructure as the trends of population pressure on it continue to rise dramatically.

Figure 15: Unemployment (percentage of adults 18 and over who are unemployed)



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APPENDIX

Appendix A: Abstract Tables for All Cities

This appendix presents the same tables found in the Statistical Abstracts, but using the full 15-city dataset.

A. Household Characteristics

Table A.1: Household demographic characteristics

Characteristic	All	Location		HH poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Number of households							
Weighted	1,637,870	528,875	1,108,995	830,214	772,808	383,965	123,571
N (unweighted)	14,553	4,149	10,404	8,536	5,840	3,046	1,008
Size of household	3.14	3.02	3.20	3.28	2.97	3.14	2.47
N	14,557	4,150	10,407	8,538	5,840	3,046	1,008
Mean percent of household members aged:							
Total	100	100	100	100	100	100	100
Under 5	11.2	12.6	10.6	12.3	10.3	12.3	12.7
5 to 14	13.0	12.3	13.3	14.0	11.9	11.3	14.5
15 to 60	72.6	72.2	72.7	70.8	74.6	73.4	69.7
Over 60	1.5	0.9	1.8	1.5	1.5	0.8	1.2
N	14,553	4,149	10,404	8,536	5,840	3,046	1,008
Proportion of households…							
Male-headed	76	76	77	78	75		
Female-headed	24	24	23	22	25		
N	14,173	4,054	10,119	8,321	5,686		
Female-headed distribution		33	67	49	51		
N		3,575		3,530			

Table A.2: Household education characteristics							
		Location		HH poverty		Gender (Informal)	
Characteristic	All	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of individuals 5 and older with highest grade completed:							
Total	100	100	100	100	100	100	100
None	3	2	3	3	2	2	4
Some Primary	26	29	25	30	22	28	31
Completed primary	16	20	14	19	13	21	16
Some secondary	11	13	10	12	11	13	13
Completed secondary	24	25	23	24	24	26	22
Higher	20	11	24	13	28	10	14
N	37,457	10,244	27,213	23,107	13,839	7,812	2,142
Mean percent of household's adults over 18 with highest grade completed:							
Total	100	100	100	100	100	100	100
None	2.8	2.4	3.0	3.3	2.1	1.7	4.3
Some Primary	9.4	12.3	8.1	12.3	6.4	11.1	15.3
Completed primary	19.3	23.9	17.0	23.1	15.2	26.3	18.2
Some secondary	11.3	14.1	10.0	12.2	10.3	13.5	15.0
Completed secondary	31.4	32.5	30.8	31.4	31.6	33.9	28.9
Higher	24.8	13.8	30.1	16.5	33.8	12.9	16.8
N	14,529	4,144	10,385	8,529	5,828	3,044	1,005
Percent of individuals in school by age group:							
5 to 14	90.1	88.9	90.6	92.1	87.5	93.9	81.4
N	5,260	1,402	3,858	3,366	1,828	997	361
15 to 18	72.5	65.8	75.0	67.2	79.0	71.5	58.0
N	2,204	579	1,625	1,374	790	397	163
Over 18	11.6	7.6	13.5	9.1	14.2	7.5	7.6
N	14,488	4,133	10,355	8,508	5,810	3,036	1,002

Table A.3: Household health characteristics							
		Location		HH poverty		Gender (Informal)	
Characteristic	All	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of household's children under 15 having received BCG immunization	91	90	91	91	91	91	87
N	7,908	2,217	5,691	5,051	2,775	1,630	518
Percent of households with an injured/ill member, previous two weeks	18	23	16	17	19	23	19
N	14,557	4,150	10,407	8,538	5,840	3,046	1,008
Percent of ill household members that visit a health practitioner, previous two	78	77	78	75	79	79	73
N	2,485	798	1,687	1,394	1,059	595	179
Household medical expenditures (KSh), previous month	3,844	966	5,246	728	7,437	682	392
N	14,321	4,099	10,222	8,457	5,706	3,009	996
Percent of households with health insurance	24	18	27	17	32	21	9
N	14,510	4,135	10,375	8,520	5,825	3,034	1,005

B. Household Economic Profile

Table B.1: Household-members' occupation/main activity

Characteristic[a]	All	Location		HH poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of adults over 18 with occupation:							
Employer	0.3	0.1	0.5	0.1	0.6	0.1	0.0
Regular employee	24.4	21.3	25.8	19.0	30.0	22.0	20.2
Casual employee	22.1	28.7	19.2	27.6	16.5	30.3	26.5
Self-employed	12.4	12.5	12.3	10.7	14.2	11.9	17.9
Unpaid family worker	0.7	0.5	0.9	0.9	0.5	0.4	0.8
Apprentice	0.2	0.0	0.3	0.1	0.3	0.0	0.1
Student	9.9	6.4	11.5	8.5	11.4	4.9	9.8
Pensioner/investor	0.9	0.4	1.1	0.8	1.1	0.3	0.2
Earning from investments/ property	0.3	0.1	0.3	0.3	0.3	0.2	0.1
Sick/unable to work	0.4	0.1	0.6	0.5	0.4	0.2	0.1
Unemployed looking for work	8.4	10.5	7.4	8.9	7.8	8.9	13.8
Unemployed, not looking for work now	3.5	3.9	3.4	3.5	3.4	4.3	2.2
Homemaker	14.9	14.5	15.1	17.5	12.0	16.0	6.5
N	26,926	7,438	19,488	16,299	10,270	5,772	1,466
Mean percent of household's adults over 18 with occupation:							
Employer	0.4	0.1	0.5	0.1	0.6	0.1	0.0
Regular employee	25.2	22.6	26.4	18.9	31.5	22.9	23.0
Casual employee	26.0	32.2	23.1	31.6	20.7	33.8	30.0
Self-employed	12.9	12.7	13.0	10.7	15.2	11.1	19.6
Unpaid family worker	0.6	0.3	0.7	0.8	0.8	0.3	0.3
Apprentice	0.2	0.0	0.3	0.1	0.4	0.0	0.0
Student	7.4	4.8	8.6	6.5	8.2	3.7	5.9
Pensioner/investor	0.6	0.2	0.8	0.6	0.7	0.3	0.1
Earning from investments/ property	0.3	0.1	0.4	0.3	0.4	0.1	0.1
Sick/unable to work	0.4	0.1	0.5	0.4	0.3	0.1	0.0
Unemployed looking for work	7.6	9.2	6.9	8.2	7.1	8.3	10.5
Unemployed, not looking for work now	3.0	3.3	2.8	3.0	2.8	3.9	1.8
Homemaker	13.8	13.2	14.1	16.9	10.4	14.7	6.5
N	14,529	4,144	10,385	8,529	5,828	3,044	1,005

(a) The category "Other" has been omitted.

Table B.2a: Monthly household spending power, as measured by expenditure											
		Location		Household has…			HH head is(c)		Gender (Informal)		
Characteristic	All	Informal areas	Formal areas	Ten-ure[a]	Water connec-tion	A busi-ness[b]	Skilled	Un-skilled	Male-headed	Female-headed	Value of transfer (row pct.)[d]
Percent of HHs below poverty line	52	53	51	49	33	41	46	56	55	48	
N	14,378	4,093	10,285	2,665	3,046	2,080	4,960	9,418	3,007	994	
Percent of households with expenditure:[d]											
Less than 3,000 KSh	2	2	2	3	1	1	1	3	2	2	2,281 (8%)
3,001-6,000 KSh	11	12	10	10	4	5	6	13	11	16	2,935 (22%)
6,001-9,000 KSh	15	17	14	10	8	9	12	17	18	12	3,757 (32%)
9,001-13,000 KSh	19	21	18	13	9	14	15	21	20	24	4,329 (36%)
13,001-18,000 KSh	17	19	15	11	11	18	16	17	18	22	5,333 (45%)
18,001-30,000 KSh	22	18	23	25	25	30	26	19	20	14	5,917 (53%)
31,001-75,000 KSh	12	7	15	18	29	19	18	9	7	7	11,277 (60%)
Above 75,000 KSh	4	3	4	10	13	5	6	2	3	3	22,116 (64%)
N	14,557	4,150	10,407	2,710	3,091	2,120	5,027	9,530	3,046	1,008	5,785
Cash transfers(e)	5,803	4,740	6,530	13,277	9,611	8,130	5,996	5,667	5,691	3,480	
N	2,558	605	1,953	624	503	412	725	1,833	352	233	

(a) Household possesses deed or other officially recognized document conferring ownership of the structure, land, or both.
(b) "Business" refers to a self-employed activity that may or may not entail household or wage employees.
(c) Includes those self-declared as "skilled" as well as "professional".
(d) An imputed 30-day value from responses over several periods (7 days for food, 30 days for other consumables, 12 months for durables and annual services). See Volume I in the Overview Report. No significance test performed on this column.
(e) Transfers are cash outflows over last three months averaged over households with such flows (equal to proportion of row households in parentheses).

Table B.2b: Monthly household spending power, as measured by income											
		Location		Household has…			HH head is(c)		Gender (Informal)		
Characteristic	All	Informal areas	Formal areas	Ten-ure(a)	Water connec-tion	A busi-ness(b)	Skilled	Un-skilled	Male-headed	Female-headed	Value of transfer (row pct.)(d)
Proportion of households with income:(d)											
Less than 3,000 KSh	4	5	4	7	1	4	1	6	3	10	6,045 (24%)
3,001-6,000 KSh	11	13	10	9	3	6	6	14	12	17	6,454 (19%)
6,001-9,000 KSh	16	19	15	14	5	14	10	20	19	21	9,737 (17%)
9,001-30,000 KSh	18	21	16	11	9	14	14	20	22	17	6,677 (16%)
13,001-18,000 KSh	16	18	15	12	8	14	18	15	19	13	11,133 (17%)
18,001-30,000 KSh	17	15	18	18	20	21	20	14	15	11	11,949 (15%)
31,001-75,000 KSh	13	7	16	14	35	18	21	8	8	8	25,645 (14%)
Above 75,000 KSh	6	3	7	15	19	8	10	3	2	3	65,875 (21%)
N	13,523	3,867	9,656	2,484	2,865	1,949	4,729	8,794	2,838	938	2,291
Cash remittances(e)	15,090	10,624	17,325	22,091	32,477	14,514	20,455	12,551	11,622	9,993	
N	2,558	605	1,953	624	503	412	725	1,833	352	233	

(a) Household possesses deed or other officially recognized document conferring ownership of the structure, land, or both.
(b) "Business" refers to a self-employed activity that may or may not entail household or wage employees.
(c) Includes those self-declared as "skilled" as well as "professional".
(d) Total household cash income in KSh, previous month, not including in-kind income or cash assistance from/to family or friends who live outside the household. No significance test performed on this column.
(e) Remittances are cash inflows over last three months averaged over households with such flows (equal to proportion of row households in parentheses).

Table B.3: Household wealth composition							
		Location		HH poverty		Gender (Informal)	
Characteristic	All	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Index of household wealth[a]	33.1	26.3	36.3	25.6	40.6	25.5	26.4
N	14,557	4,150	10,407	8,538	5,840	3,046	1,008
Household's average holdings of:							
Class-1 durables (furniture, pans, iron, mosquito net) [7]	5.8	5.4	6	5.5	6.1	5.3	5.6
Class-2 durables (stove, sewing machine, fan, wheelbarrow, water storage tank) [60]	1.3	1.2	1.4	1.2	1.5	1.2	1.3
Class-3 durables (refrigerator, washing machine, electric generator, bicycle) [100]	0.3	0.2	0.3	0.1	0.4	0.2	0.2
Farm animals (poultry and livestock) [200]	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Entertainment equipment (radio, TV, satellite dish, DVD, video player) [80]	1.9	1.6	2.1	1.7	2.2	1.6	1.5
Motorized transport (motorcycle [400], car [1,000])	0.1	0	0.1	0	0.1	0	0
N	14,557	4,150	10,407	8,538	5,840	3,046	1,008
Value of primary residence, not its land (in 1,000 KSh)[b]	2,886	209	4195	454	4244	402	402
N	224	55	169	132	91	34	19
Value of primary residence and its land (in 1,000 KSh)[b]	7,269	5,454	8,634	5,454	8,634	12,105	2,154
N	1,104	168	936	617	476	122	43
Value of other land and/or residence (in 1,000 KSh)[c]	4,227	5,718	3,890	4,343	4,204	8,330	182
N	299	45	254	125	172	33	12

(a) This is a class-weighted average of the number of items as disaggregated in this same table, multiplied by the weight given within the square brackets [].

(b) About 46% of the sample had missing values for this amount, though at about the same frequency across the categories of this table. About half the sample that declared owning land or a residence failed to report its value. Averages are only over households with the asset. See "Proportion of Owners" in Table C.1. Please, note that values in the last three rows of the table are divided by one thousand.

(c) Since the survey does not ask the value of these, they have been imputed as a percent of primary residence value where it was declared (see Footnote (b)). These imputations are: land in city (10%), land outside city (5%), residence only in city (40%), and residence only outside of city (28%). If household has both land and structure these are scored separately and added together. In the case where the land of primary residence is not owned the value of the residence is first doubled before the imputations are made.

Table B.4: Household finance							
		Location		HH poverty		Gender (Informal)	
Characteristic	All	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with a bank account	66	58	70	57	76	58	55
N	14,512	4,137	10,375	8,512	5,830	3,033	1,008
Percent of households with a loan from a							
Bank	7	6	7	4	10	58	55
Microfinance institution	2	2	2	1	2	1	3
Savings/credit group or co-op	4	4	4	3	6	4	4
Relative/friend	3	3	3	3	3	3	2
Informal lender	0	0	0	0	0	0	1
N	974	490	484	660	308	380	108
Percent of HHs receiving cash from those not now living at residence[(a)]	20	20	20	19	20	16	31
N	14,531	4,142	10,389	8,532	5,830	3,039	1,007
Percent of HHs sending cash to those not now living at resi-dence[(a)]	57	66	54	49	67	68	56
N	14,533	4,147	10,386	8,531	5,831	3,043	1,008

(a) Over the previous twelve months.

Table B.5: Household-owned business profile							
		Location		HH poverty		Gender (Informal)	
Characteristic	All	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Rate of HH business owner-ship, last 12 months	18	17	18	14	22	16	21
N	14,551	4,150	10,401	8,537	5,838	3,046	1,008
Type of business:[a]							
Manufacturing	13	14	13	14	13	14	14
Selling	59	65	56	65	55	60	71
Transport	5	5	5	4	6	7	0
Professional (including Internet)	2	1	3	1	3	1	0
Other (barber, cleaning, etc.)	22	17	25	18	25	19	13
N	2,120	700	1,420	1,091	989	473	213
Years in operation	1.1	1.5	0.9	1.2	1	1.5	1.6
N	2,104	692	1,412	1,081	985	467	211
Number of employees	2.0	1.9	2.1	1.7	2.2	2.0	1.7
N	2,118	699	1,419	1,090	989	472	213
Which are…							
Household members	1.2	1.2	1.2	1.2	1.2	1.3	1.1
N	2,116	698	1,418	1,088	989	472	212
Non-household members	0.8	0.7	0.9	0.5	1.1	0.7	0.6
N	2,102	695	1,407	1,085	979	470	211
Revenue in previous month[b]	40,875	34,106	44,347	13,274	60,449	45,728	12,001
N	1,623	545	1,078	831	771	358	177
Registration status:							
Local authority (municipal or city council)	36	30	39	30	41	32	26
Kenya Revenue Authority	14	12	14	9	17	11	18
Registrar of Companies	5	6	5	1	9	7	6
None of the above	54	63	50	58	51	60	65
N	2,120	700	1,420	1,091	989	473	213
Share of businesses making fiscal contributions:							
Daily market local fee	31	30	31	29	33	31	27
Single business permit local fee	35	28	39	33	37	28	28
Value Added Tax	9	6	10	3	13	8	4
N	2,120	700	1,420	1,091	989	473	213

(a) Households were allowed to choose more than one category so these figures may exceed 100%.
(b) Average over only those businesses operating over the period.

C. Dwelling Tenure, Security, and Characteristics

Table C.1: Household dwelling characteristics

Characteristic	All	Location		HH poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Number of persons per room	2.1	2.4	2	2.5	1.8	2.5	1.9
N	14,520	4,141	10,379	8,516	5,827	3,040	1,005
Number of bathrooms	0.8	0.5	0.9	0.7	0.8	0.5	0.6
N	14,549	4,148	10,401	8,534	5,840	3,045	1,007
Proportion of residences with kitchen	29	16	35	20	38	16	17
N	14,554	4,150	10,404	8,538	5,839	3,046	1,008
Primary cooking fuel:							
Electricity	1	1	1	1	2	1	2
Paraffin or kerosene	39	53	32	39	38	54	49
Gas	24	12	30	15	34	11	16
Charcoal	32	33	31	39	24	33	32
Firewood	4	1	5	6	2	1	1
N	14,035	4,027	10,008	8,304	5,554	2,926	1,006
Proportion of households that:							
Total	100	100	100	100	100	100	100
Owns the land only	0	0	0	0	0	0	0
Owns structure only	2	1	2	2	2	1	3
Owns land and structure	12	5	15	11	12	5	6
Rents	86	93	83	87	86	94	90
Squats	0	0	1	1	0	0	1
N	14,552	4,150	10,402	8,536	5,840	3,046	1,008
Pct. of HHs in areas subject to[a]:							
Flooding[b]	49	62	43	52	47	62	64
N	14,541	4,148	10,393	8,532	5,831	3,045	1,007
Mudslides[c]	14	12	14	17	11	12	12
N	14,554	4,149	10,405	8,537	5,839	3,046	1,007
10 minute walk to formal or informal garbage dump	38	55	29	40	35	55	53
N	14,556	4,150	10,406	8,538	5,840	3,046	1,008
Factory pollution (air, water, noise)	9	13	8	9	10	13	14
N	14,556	4,150	10,406	8,538	5,840	3,046	1,008

Characteristic	All	Location		HH poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Housing quality:							
Pct. with earth/clay floor	9	14	7	12	6	14	18
N	14,556	4,150	10,406	8,538	5,840	3,046	1,008
Percent with corrugated iron or grass roof	86	94	82	90	82	94	92
N	14,556	4,150	10,406	8,538	5,840	3,046	1,008
Percent with stone/brick/ block walls	67	34	83	62	73	33	38
N	14,556	4,150	10,406	8,538	5,840	3,046	1,008

(a) All data is self-reported, and therefore subjective.
(b) Households reported that the area floods during heavy rains.
(c) Households reported that they are located on a hillside that is subject to mudslides.

Table C.2: Household residence and land tenure							
		Location		HH poverty		Gender (Informal)	
Characteristic	All	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households that:							
Total	100	100	100	100	100	100	100
Own the land only	0	0	0	0	0	0	0
Own structure only	2	1	2	2	2	1	3
Own land and structure	12	5	15	11	12	5	6
Rent	86	93	83	87	86	94	90
Squat	0	0	1	1	0	0	1
N	14,552	4,150	10,402	8,536	5,840	3,046	1,008
Percent of HHs that feel secure in ownership	87	81	87	84	89	80	80
N	2,710	381	2,329	1,730	935	264	107
Variability of households feeling secure[(a)]	0.02	0.08	0.03	0.07	0.03	0.09	0.54
N	2,710	381	2,329	1,730	935	264	107
Percent of HHs that experienced eviction	2	4	2	2	3	4	3
N	14,553	4,150	10,403	8,537	5,840	3,046	1,008
Proportion of HH owners by type of land-possession document:							
Total	100	100	100	100	100	100	100
None	22	33	20	28	17	27	46
Freehold title	60	47	63	57	64	48	44
Temporary occupation license	3	4	2	2	3	4	2
Share certificate	2	1	2	3	2	1	1
Government certificate							
of title[(b)]	7	9	7	5	9	9	6
Letter from chief (pro-vincial administration)	3	3	3	4	2	5	1
Other	3	4	3	2	4	6	0
N	3,004	444	2,560	1,915	1,038	307	125
Neighborhood mobility							
Years in dwelling	5.4	4.9	5.7	5.4	5.3	5.6	4.5
N	14,530	4,135	10,395	8,523	5,833	10,491	3,035
Years in neighborhood	6.9	6.3	7.2	7.0	6.8	7.2	6.0
N	14,514	4,132	10,382	8,513	5,830	3,035	1,001
Home loan payment as a percent of spending power[(c)]	42	26	45	40	42	27	26
N	156	37	119	51	101	31	6

(a) Computed as the between-EA correlation coefficient. No significance tests performed on this row.
(b) Long-term lease from City council/Government.
(c) Computed only for those with a housing loan.

Table C.3: Distribution of housing values and rents										
		Location		Household has…			HH head is…[c]		Gender (Informal)	
Characteristic	All	Informal areas	Formal areas	Tenure	Water con-nection	A busi-ness	Skilled	Un-skilled	Male-headed	Female-headed
Average home value (1,000 KSh) [a]	6,562	6,603	6553	7,269	13,133	9,944	6,504	6,590	9,586	1,157
N	1,329	223	1,106	1,104	285	244	343	986	156	62
Distribution of home values:	Total	100	100	100	100	100	100	100	100	100
1-8,999 KSh	4	14	1	0	2	0	9	1	0	41
9,000-299,999 KSh	21	30	19	17	2	18	12	25	35	20
300,000-999,999 KSh	16	18	16	18	5	20	8	21	12	29
1,000,000-2,499,999 KSh	25	22	26	28	23	22	25	25	29	6
2,500,000-250,000,000 KSh	34	17	38	37	68	39	47	28	24	4
N	1,328	223	1,105	1,104	285	244	343	985	156	62
Average monthly rent (tenants)[b]	4,224	2,899	4,943		10,502	4,805	5,636	3,271	2,577	3,678
N	10,975	3,559	7,416		2,327	1,566	4,103	6,872	2,644	835
Distribution of monthly rents: Total		100	100		100	100	100	100	100	100
1-899 KSh	10	10	9		3	9	5	13	11	9
900-1,499 KSh	13	20	10		2	9	10	16	20	22
1,500-1,999 KSh	16	23	11		3	11	11	19	24	21
2,000-3,499 KSh	31	31	30		16	33	30	31	30	29
3,500-150,000 KSh	31	16	39		76	38	45	21	15	19
N	10,972	3,558	7,414		2,325	1,566	4,103	6,869	2,644	834

(a) Self-reported, current, monthly, fair-market price (response to the question, "If you were to sell your house, how much do you think you could sell it for?").
(b) Excludes imputed owner-occupied rents.
(c) Includes those self-declared as "skilled" as well as "professional".

Table C.4b: Neighborhood social capital and civic participation

Characteristic	All	Location		Access to infrastructure[a]		Gender (Informal)		Tenure[b]	
		Informal areas	Formal areas	Lower half	Upper half	Male-headed	Female-headed	Own	Rent
Social capital									
Average HH response to:									
People in my neighborhood cooperate if asked by an official(c	3.2	3.1	3.2	3.2	3.2	3.1	3.2	3.2	3.2
N	14,392	4,117	10,275	7,183	7,209	3,020	1,001	3,022	11,366
People in my neighborhood look out for/trust each other(d)	3.8	3.7	3.8	3.7	3.8	3.6	3.7	3.9	3.7
N	14,524	4141	10,383	7,222	7,302	3,041	1,004	3,039	11,481
Proportion of HHs feeling safe from crime in own neighborhood	64	53	69	52	71	54	50	75	62
N	14,554	4,150	10,404	7,237	7,317	3,046	1,008	3,043	11,507

(a) Defined by assigning scores using responses from thirteen infrastructure-related questions.
(b) Alternatively, this could be the length of time living in the neighborhood: less/more than (say) 2 years.
(c) Four-point scale where 1="Very unlikely" to 5="Very likely".
(d) Five-point scale where 1="Strongly disagree" to 5="Strongly agree".

Table D.1a: Water access

Characteristic	All	Security of Ownership[a]			Location		HH poverty		Gender (Informal)	
		Secure	Insecure	Rent	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with private piped water connection inside dwelling	25	37	10	24	13	31	16	34	11	18
N	14,555	2,297	411	11,842	4,150	10,405	8,538	5,840	3,046	1,008
Percent of households with piped water connection in compound	48	44	51	49	31	56	44	53	31	33
N	14,555	2,297	411	11,842	4,150	10,405	8,538	5,840	3,046	1,008
Percent of households close to piped water access(b)	74	57	52	77	76	73	72	78	76	73
N	6,171	1,039	202	4,929	2,687	3,484	4,252	1,829	1,970	650
Monthly cost of water in …	Time (minutes)[c]	868	1,027	574	651	581	578	667	629	673
N	6,338	1,100	198	5,040	2,723	3,615	4,279	1,969	2,006	656
Money (KSh)	739	1,291	890	651	662	792	574	921	642	710
N	9,212	1,681	312	7,215	3,171	6,041	5,429	3,663	2,320	775
Most important water source:	Total	100	100	100	100	100	100	100	100	100
Piped	20	29	8	19	10	25	12	28	8	13
Bottled	1	3	0	1	1	2	0	2	0	2
Shared tap connection	34	21	44	35	21	40	35	33	23	19
Vendor (kiosk, tanker, other)	36	20	24	38	60	24	41	29	59	60
Neighbor(s)	3	7	2	3	3	3	4	2	3	2
Well/borehole	4	11	10	3	4	4	5	3	5	3
Natural source outside household	1	8	9	1	1	2	2	1	0	1
N	14,552	2,298	410	11,839	4,148	10,404	8,534	5,840	3,046	1,006

Table D.1a: Water access (continued)

Characteristic	All	Security of Ownership[a]			Location		HH poverty		Gender (Informal)	
		Secure	Insecure	Rent	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
No connection due to:	100	100	100	100	100	100	100	100	100	100
Other sources available	6	11	12	6	6	7	7	5	7	4
Renting(d)	61	2	8	69	66	56	61	60	65	68
Can't afford connection	18	47	44	14	16	20	17	19	16	16
Can't afford monthly bill	5	8	12	4	6	3	5	5	6	6
Provider has waiting list	2	7	2	1	2	2	2	3	2	1
No service available	6	23	22	4	4	9	7	5	4	3
Other	2	2	0	2	2	2	2	2	2	2
N	6,135	1,035	202	4,898	2,673	3,462	4,229	1,819	1,957	649

(a) Self-reported; "secure" includes owners who feel no one could force them to leave without an official legal process in which they would participate, "insecure" includes owners who feel they could be forced to leave without an official legal process, and "rent" includes renters, squatters, and people who own their structure but not land.
(b) Respondents were asked whether there were dwellings or businesses within 50 meters of their home that had a piped water connection in the dwelling or compound.
(c) Calculated as the sum of time spent travelling, waiting in line, and filling containers.
House does not have a connection and landlord will not pay for one.

Table D.1a: Water access (continued)

Characteristic	All	HH poverty		Location		Water quality					Gender (Informal)	
		Poor	Non-poor	Informal areas	Formal areas	Good	Fair	Poor	Total	N	Male-headed	Female-headed
Water source:[a] Piped	20	12	28	10	25	72	25	3	100	2,537	8	13
Bottled	1	0	2	1	2	44	45	12	100	110	0	2
Shared tap connection	34	35	33	21	40	75	23	2	100	5,474	23	19
Other vendor	36	41	29	60	24	54	37	9	100	4,170	59	60
Neighbor(s)	3	4	2	3	3	80	17	3	100	552	3	2
Well/Borehole	4	5	3	4	4	32	59	9	100	868	5	3
Natural outside-HH source	1	2	1	1	2	38	44	17	100	653	0	1
N	14,552	8,534	5,840	4,148	10,404	9,300	4,576	672			3,046	1,006
Water provider:	Public	95	93	88	95	74	23	3	100	7,707	88	87
Private	1	1	1	5	1	67	32	1	100	185	4	8
Self	3	3	3	4	3	46	49	5	100	207	5	3
Community	2	1	3	3	2	46	49	5	100	268	4	2
N	8,369	4,277	4,004	1,461	6,908	6,076	2,133	158			1,075	357
Percent of households treating drinking water	48	42	54	52	47	55	38	7	100	5,226	51	55
N	14,553	8,537	5,838	4,149	10,404	9,302	4,575	671			3,045	1,008
Treatment method:(b)	Boiling	60	59	58	60	55	39	7	100	2,789	56	64
Add bleach/chlorine	54	44	49	49	45	51	40	9	100	2,596	1117	370
Other (sieve, filter, settle)	3	2	3	2	3	68	30	2	100	224	2	1
N	5,228	2,723	2,410	1,522	3,706	2,780	2,056	390			1,117	370

(a) Most important water source.
(b) Since multiple responses were permitted, the sum can exceed 100%. Likewise, "Other" is not shown, since it was negligible, so the sum may also be less than 100%.

Table D.2a: Access to electricity and waste-disposal							
		Location		HH poverty		Gender (Informal)	
Characteristic	All	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Electricity							
Proportion of households with access to electricity	75	66	80	69	82	67	64
N	14,555	4,150	10,405	8,537	5,840	3,046	1,008
Reason for no connection:	Total	100	100	100	100	100	100
Renters	59	68	51	60	57	68	69
Firm has waiting list	4	2	6	4	4	2	2
Cannot afford connection	26	18	33	28	24	19	17
Cannot afford monthly bill	8	8	7	7	10	7	11
Other	3	4	3	2	5	4	1
N	5,152	1,724	3,428	3,686	1,399	1,236	452
Percent of households with mostly functioning street lighting	31	28	32	27	35	29	23
N	14,557	4,150	10,407	8,538	5,840	3,046	1,008
Average monthly bill, KShs	924	691	1013	623	1,149	687	647
N	14,557	4,150	10,407	8,538	5,840	3,046	1,008
Percent of households not paying for electricity	5	4	5	5	4	5	2
N	5,707	1,453	4,254	2,771	2,858	1,077	328
Payment to:	Total	100	100	100	100	100	100
Utility	62	44	69	58	65	42	51
Prepaid card	8	4	10	2	12	2	7
Landlord	16	25	12	20	13	26	20
Third party (from utility power line)	13	26	8	18	9	27	21
N	5,277	1,349	3,928	2,507	2,696	1,004	299
Percent of households with outages at least once weekly	33	48	27	35	31	47	46
N	9,363	2,414	6,949	4,824	4,429	1,805	550
Refuse disposal							
Main method:							
Dumping	34	47	28	40	29	47	48
Burying	3	2	3	4	2	2	2
Burning	14	14	14	15	14	15	13
Collection system(a)	48	35	54	40	55	34	37
N	14,549	4,148	10,401	8,535	5,836	3,044	1,008
Proportion of HHs paying for collection	81	64	87	78	84	65	69
N	3,252	863	2,389	1,608	1,587	624	211

(a) Run by city, community, or private firm.

Table D.2b: Access to sanitation							
		Location		HH poverty		Gender (Informal)	
Characteristic	All	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with toilet in home	24	10	30	14	34	9	13
N	14,553	4,148	10,405	8,537	5,838	3,044	1,008
Type of toilet system:							
Pit latrine (individual)	25	25	25	31	19	24	27
VIP latrine	1	0	1	1	1	0	1
Flush toilet/WC	41	22	50	31	51	21	25
Public/shared latrine	31	48	23	34	27	48	45
Paid shared latrine	2	4	0	2	1	5	2
N	14,552	4,148	10,404	8,536	5,838	3,044	1,008
Number of people sharing the toilet:							
Doesn't share	27	11	34	18	35	9	16
Shares with 2-9 other households	50	45	52	57	43	45	48
Shares with 10+ other households	23	44	14	25	22	46	36
N	14,383	4,073	10,310	8,413	5,793	2,992	987
Type of disposal system for toilet:							
Total	100	100	100	100	100	100	100
Pit latrine	51	69	42	59	42	69	68
Sewer (legal)	37	20	45	30	44	21	20
Sewer (informal)	3	3	4	5	2	3	3
Septic tank/soak pit	8	7	9	5	12	7	8
N	14,055	3,954	10,101	8,201	5,679	2,892	972
Disposal of "grey water":							
Total	100	100	100	100	100	100	100
Dump into drain	58	50	62	52	65	52	43
Pour onto road	37	45	33	43	30	43	53
Pour into latrine	2	2	2	2	2	2	3
Other	3	2	3	3	3	3	2
N	14,521	4,135	10,386	8,517	5,827	3,032	1,007

Table D.3: Access to transport

Characteristic	All	HH activity(a)		Location		HH poverty		Gender (Informal)	
		Work	Study	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
									Percent who work or study…
inside the neighborhood	31			31	30	34	28	30	36
outside the neighborhood	67			67	67	64	70	68	63
inside and outside the neighborhood	2			2	2	2	3	2	1
N	19,486			5,484	14,002	11,331	7,903	4,247	1,138
Main mode of travel(b)	Walk	50	75	59	51	63	44	60	62
Bicycle	1	1	1	1	1	1	1	1	0
Own vehicle	3	3	1	2	3	0	5	1	2
Matatu	37	43	19	34	39	32	43	34	32
Shared taxi	0	0	0	0	0	0	0	0	0
Bike taxi	1	1	1	1	1	1	1	1	1
Municipal bus	0	0	1	0	1	0	1	1	0
N	27,946	4,660	3,148	7,808	20,138	16,838	10,737	5,969	1,685
Transport time (minutes)	26	26	22	24	26	23	28	24	25
N	27,539	4,565	3,111	7,676	19,863	16,654	10,539	5,865	1,660
One-way trip cost	91	108	92	104	86	68	91	74	234
N	7,806	1,657	516	2,173	5,633	3,798	3,894	1,725	402
Households with road access as:Poor	31			35	29	34	28	36	35
Good	69			65	71	66	72	64	65
N	14,548			4,147	10,401	8,536	5,837	3,044	1,008
Percent of households with limited road access during rainy season	13			20	10	14	13	20	21
N	14,544			4,148	10,396	8,534	5,835	3,045	1,008

(a) Informal areas only.
(b) To work or to school. May not add to 100% since "Other", which was negligible, is not reported in table.

Table D.4: Access to communications							
		Location		HH poverty		Gender (Informal)	
Characteristic	All	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with functioning land line	1	1	1	1	2	0	2
N	14,550	4,148	10,402	8,535	5,839	3,045	1,008
Average number of mobile phones owned by household	1.7	1.6	1.8	1.6	1.9	1.7	1.3
N	14,494	4,133	10,361	8,500	5,822	3,035	1,003
Percent of households using mobile banking	85	86	85	81	89	86	81
N	14,539	4,146	10,393	8,530	5,836	3,044	1,007
Percent of households with functioning computer	12	7	14	4	20	7	8
N	14,549	4,149	10,400	8,535	5,839	3,046	1,008
Percent of households using internet (any means)	23	16	26	12	33	16	17
N	14,536	4,144	10,392	8,526	5,834	3,042	1,007

Table D.5: Access to infrastructure indicator							
		Location		HH poverty		Gender (Informal)	
Characteristic	All	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Mean score on access to infrastructure indicator	4.48	3.56	4.92	4.01	4.95	3.54	3.60
N	14,557	4,150	10,407	8,538	5,840	3,046	1,008

Appendix B: Development Diamonds and Polygons

This section presents the "Development Polygons" for all cities. These polygons, which illustrate an "overall" sense of the state of the cities, include: the Development Diamond, the Infrastructure Polygon, and the Living Conditions Diamond. There are 16 versions of each polygon—one that combines data for all 15 cities, and one for each of the 15 cities. In each polygon, we present information for all areas, informal areas, and formal areas. The value labels provide the value of the indicator for all areas. Subsets of the polygons also appear in Volume I of this Overview Report, the Statistical Abstracts, and the City at a Glance Reports, all of which are produced under the NORC contract.

The axes for all figures represent percentages. Polygons with larger areas represent a "better" situation in regards to the associated indicator(s). Hence, a polygon that fully covers the graph (100% on all axes) would indicate that the city's population is doing very well in terms of development, infrastructure, or living conditions.

Indicator Definitions

The indicators included in the polygons are described below.

Development Diamonds

- *Welfare.* This is the expenditure-based poverty line. A poverty line was calculated based on the household size, and respondents were asked whether their household expenditures fell above or below that line.
- *Employment*. Percent of adults 18 and over who are working; that is, they listed their main activity as either: (1) Employer, (2) Working for pay as a 'regular' employee, (3) Working for pay as 'casual' employee, (4) Own account worker (or self-employed), (5) Helping without pay in household business, or (6) Apprentice.
- *Education*. Percent of all individuals (of all ages) reporting their highest level of education as "completed primary" or higher.
- *Living Conditions.* This is a composite of three variables. The first is the response to a question asking whether there is a piped water connection inside the dwelling. The second is the response to a question asking if the dwelling unit is connected to electricity. The third is the enumerator's observation of the material used for the construction of the external walls of the respondent's dwelling. This indicator presents the percent of dwellings that (1) have a piped water connection, (2) are connected to electricity, and (3) have walls made of either stone or brick/block.

Infrastructure Polygons

- *Piped Water.* Percent of households who have a piped water connection inside their dwelling or compound AND use a private piped water connection as their main source of water.
    - NOTE: In the Statistical Abstracts, this indicator instead presents the percent of households that report having a private piped water connection inside their dwelling or compound. Note that this is a measure of access – it is not the percent of households who use piped water as their primary source.

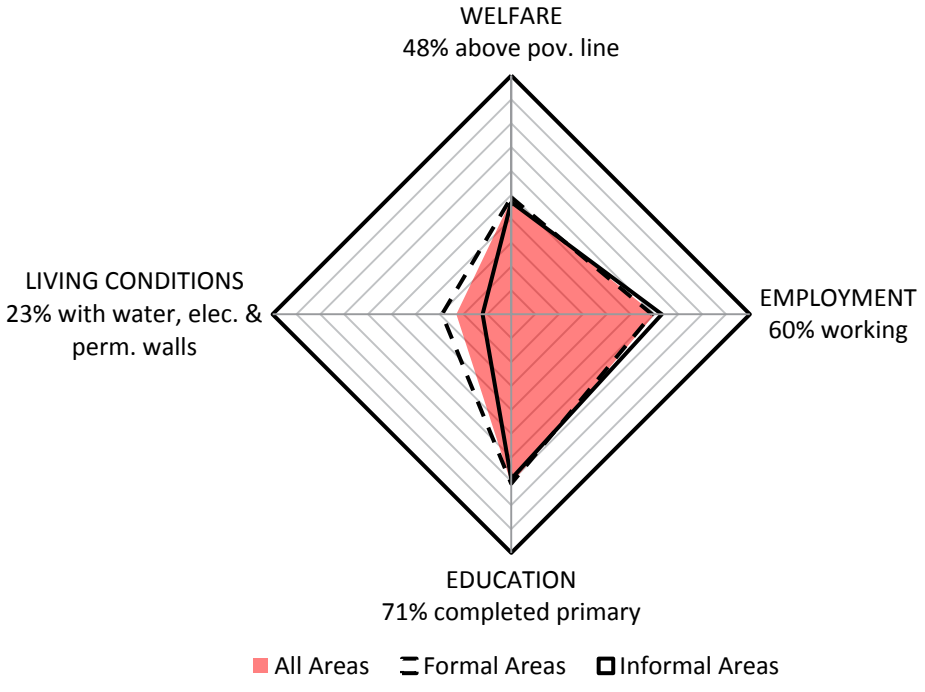
- *Electricity.* Percent of households reporting that their dwelling unit is connected to electricity.
- *Private Toilet.* Percent of households who use an individual ordinary pit latrine or a flush toilet located in their house.
- *Sewage.* Percent of households reporting that their toilet has a council connection to a public sewer.
- *Drainage.* Percent of households reporting that there is a drain outside their house for rainwater.
- *Garbage.* Percent of households using a city collection system for refuse disposal.
- *Street Lighting.* Percent of households with street lights or lamp posts on their street that work most of the time or all of the time.
- *Phone.* Percent of households with a mobile phone or landline.
- *Public Transport.* Percent of households with at least one member reporting that their main mode of transportation to work or school is a matatu or regular bus.
- *Good Roads.* Percent of households reporting that their access road was in good condition during the most recent dry season.

Living Conditions Diamonds

- *Infrastructure Score.* The infrastructure score is described in Section E.1 of this report. The figure reported in this diamond is the average infrastructure score for all households, divided by the total possible score of 9.5 (to convert to a percentage of the possible points).
- *Unit.* Percent of households for which the enumerator observed that the dwelling's external walls were either stone or brick/block.
- *Neighborhood and Location.* Percent of households reporting that they feel safe in their neighborhood.
- *Own Home.* Percent of households reporting that they own their structure. They may or may not also own their land.

Development Diamonds

ALL CITIES



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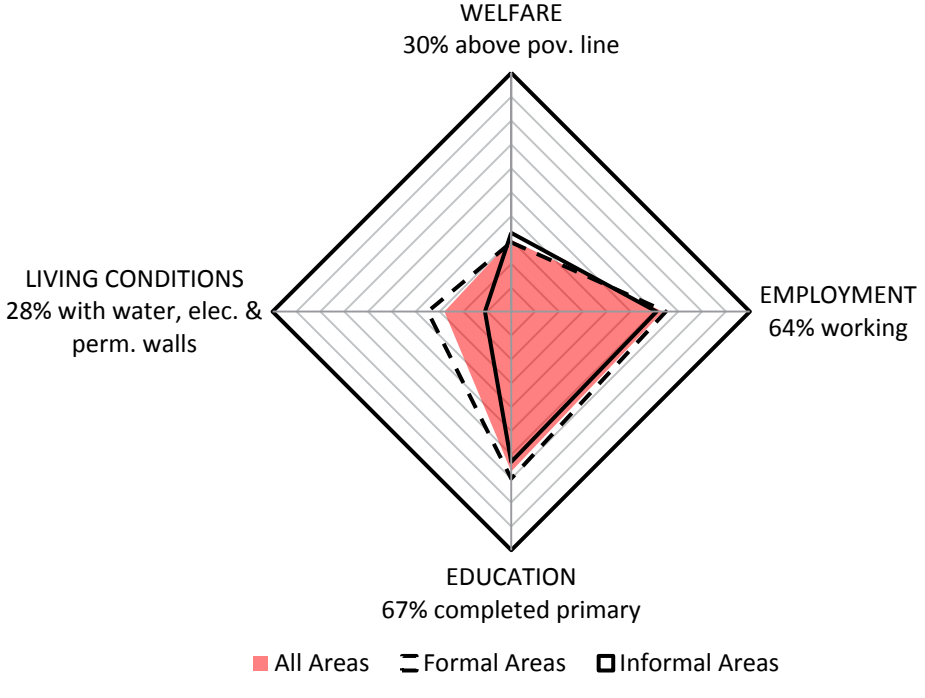

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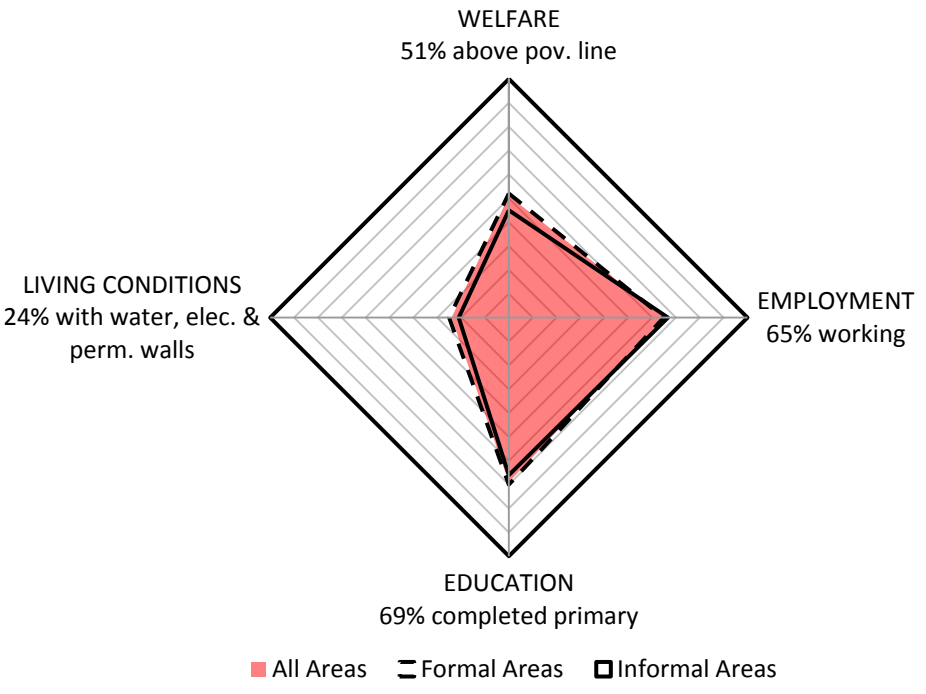

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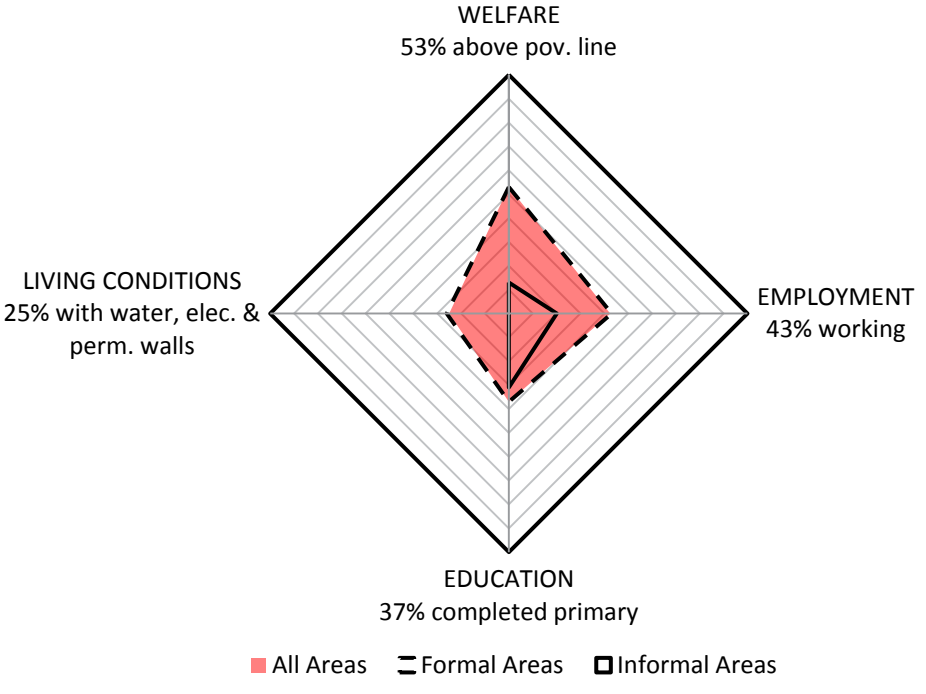

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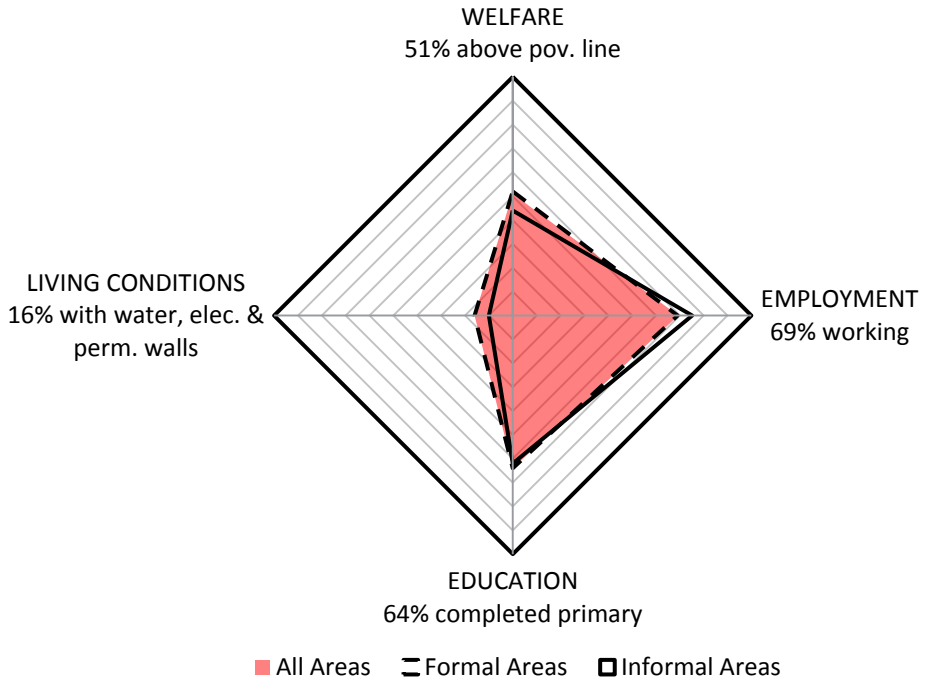

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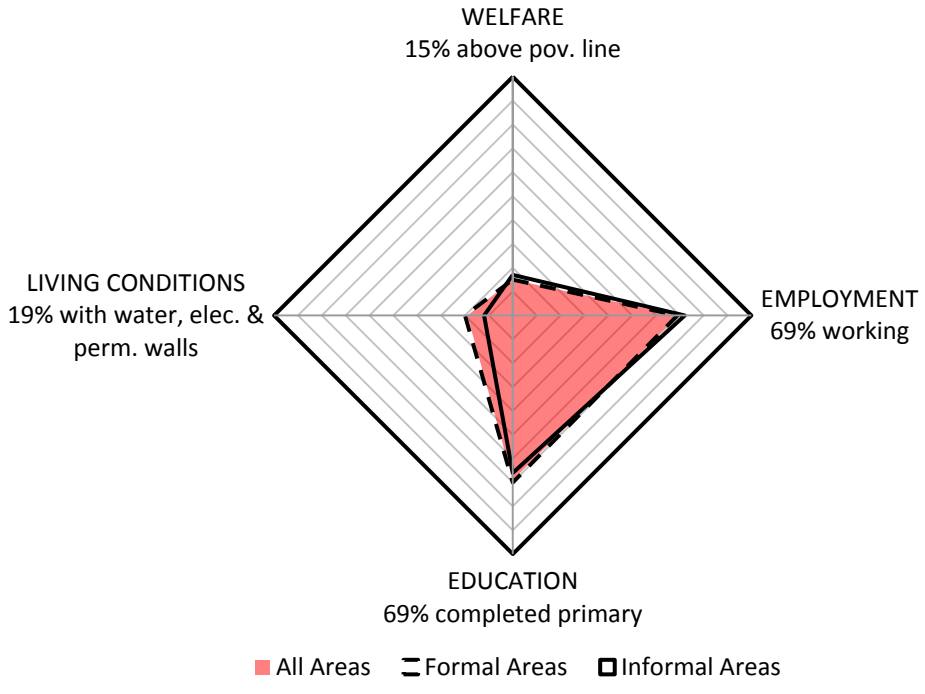

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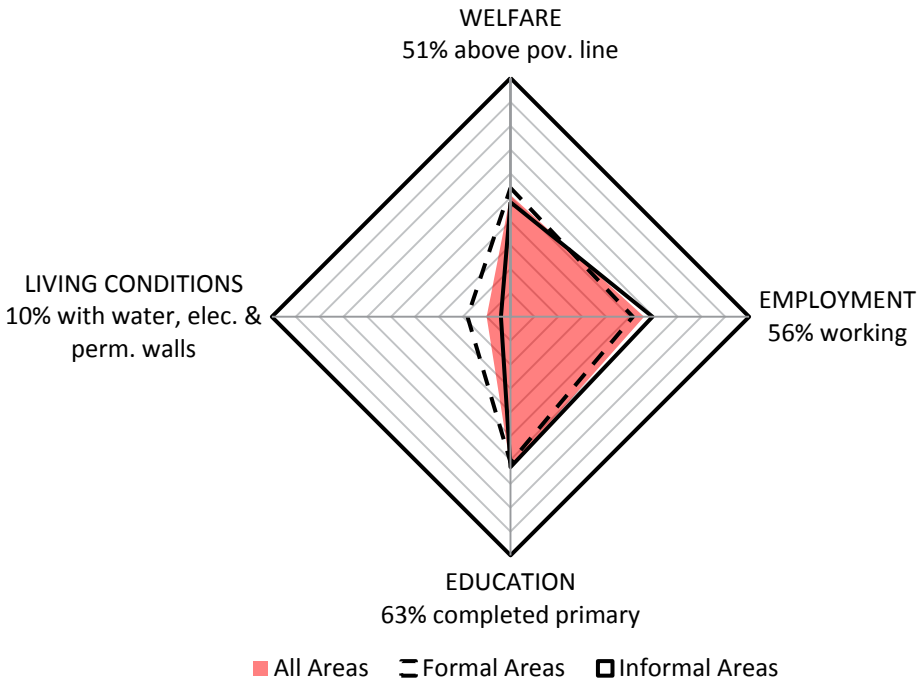

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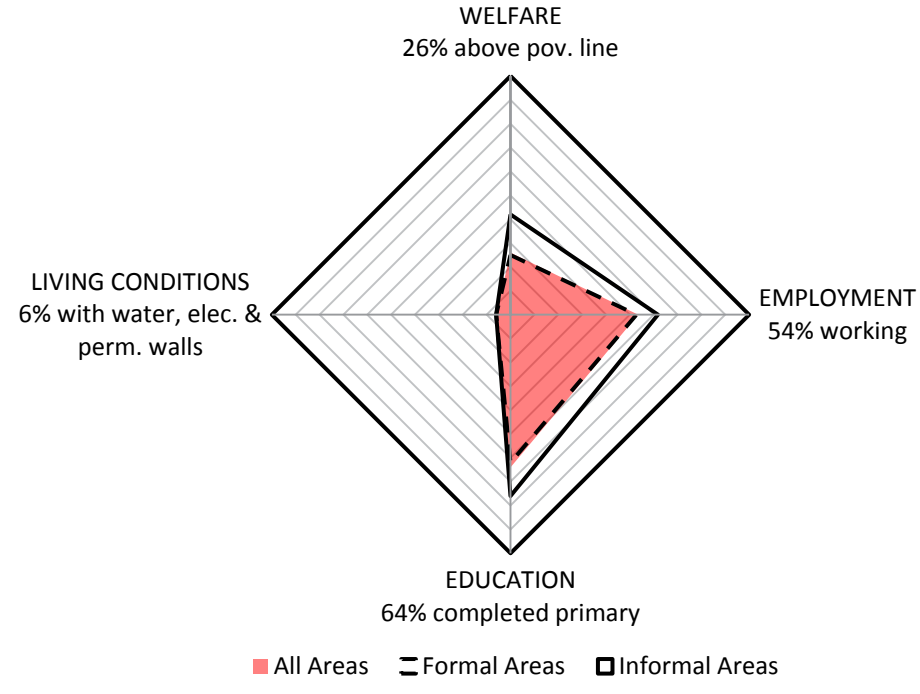

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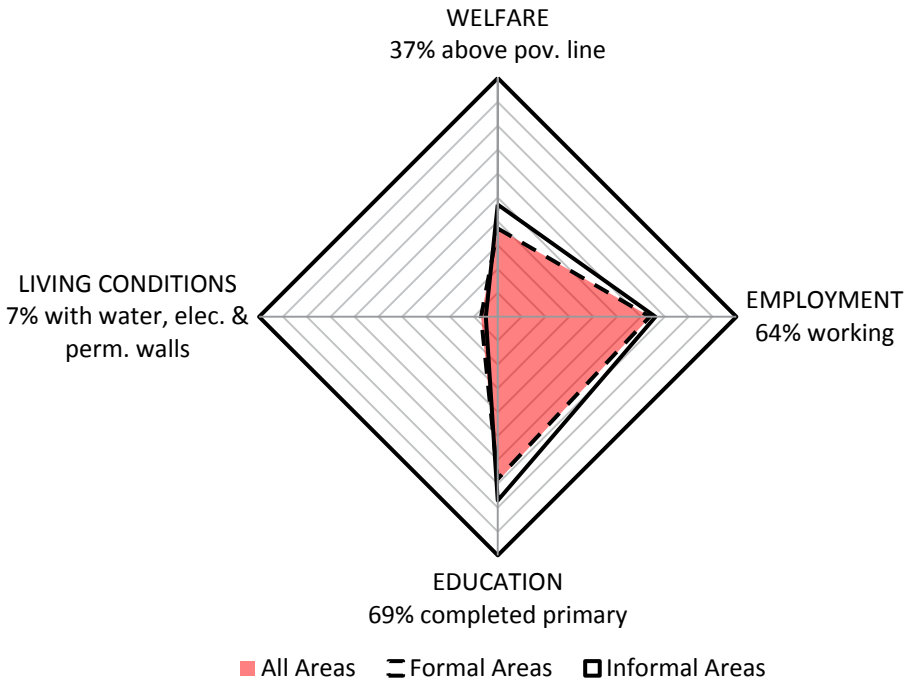

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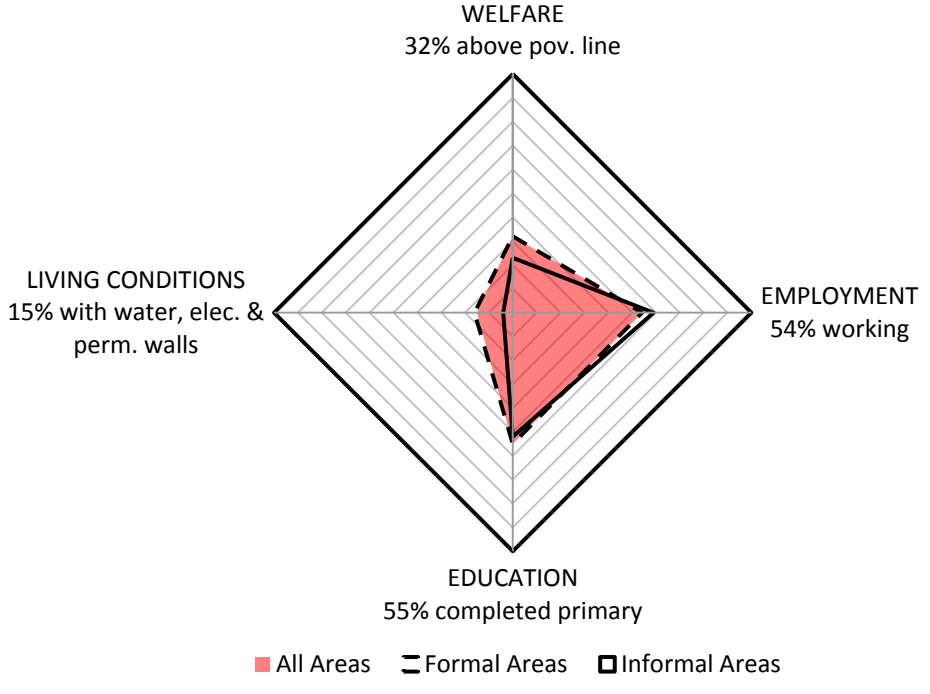

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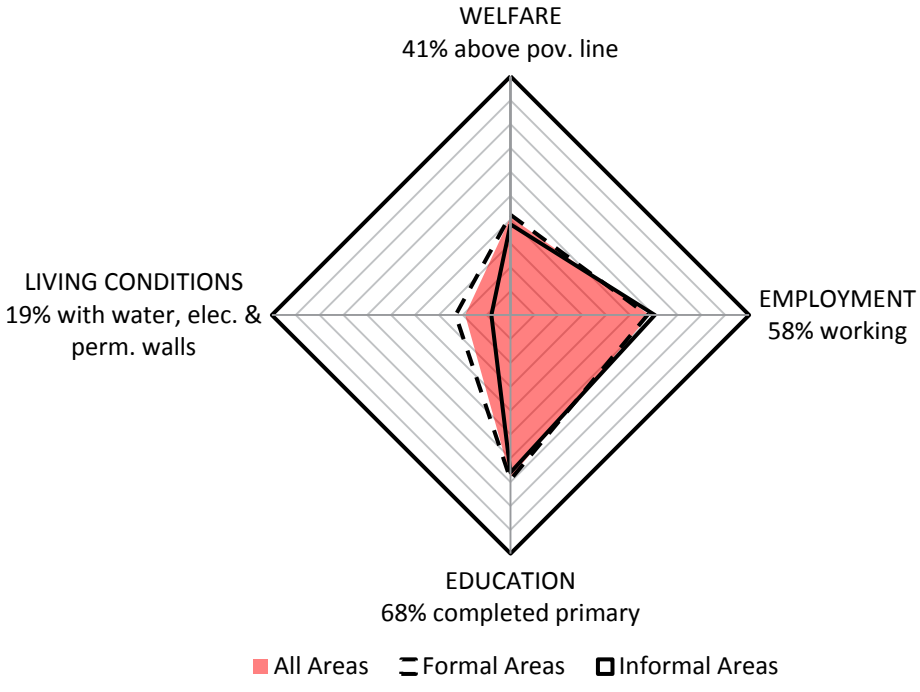

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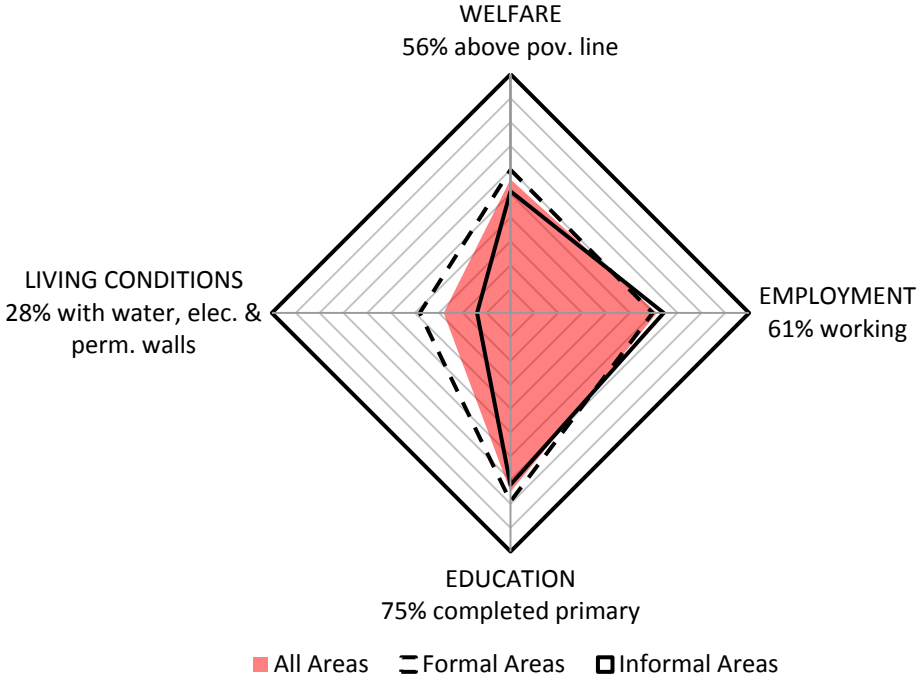

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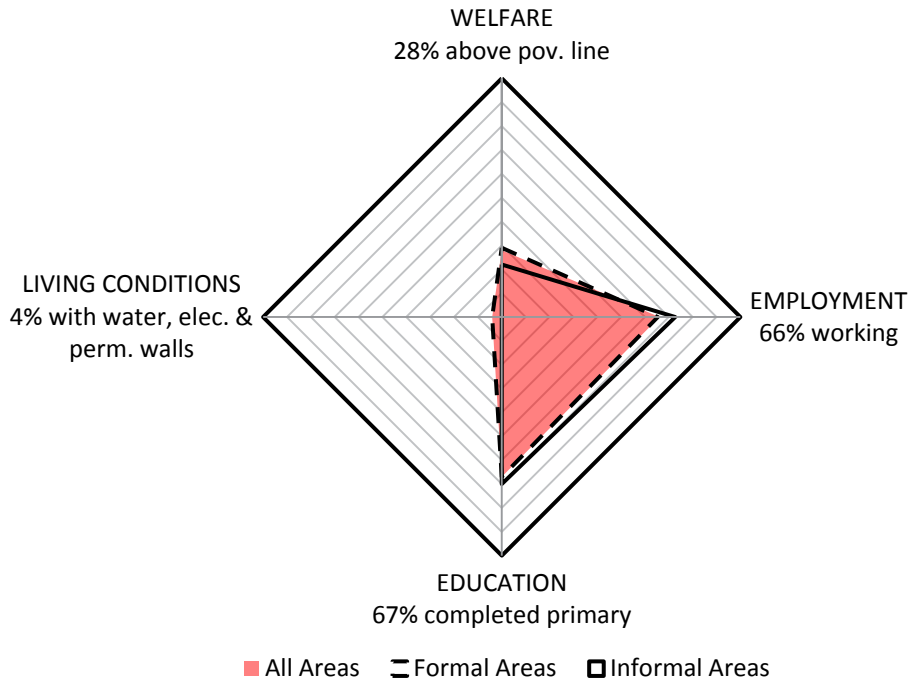
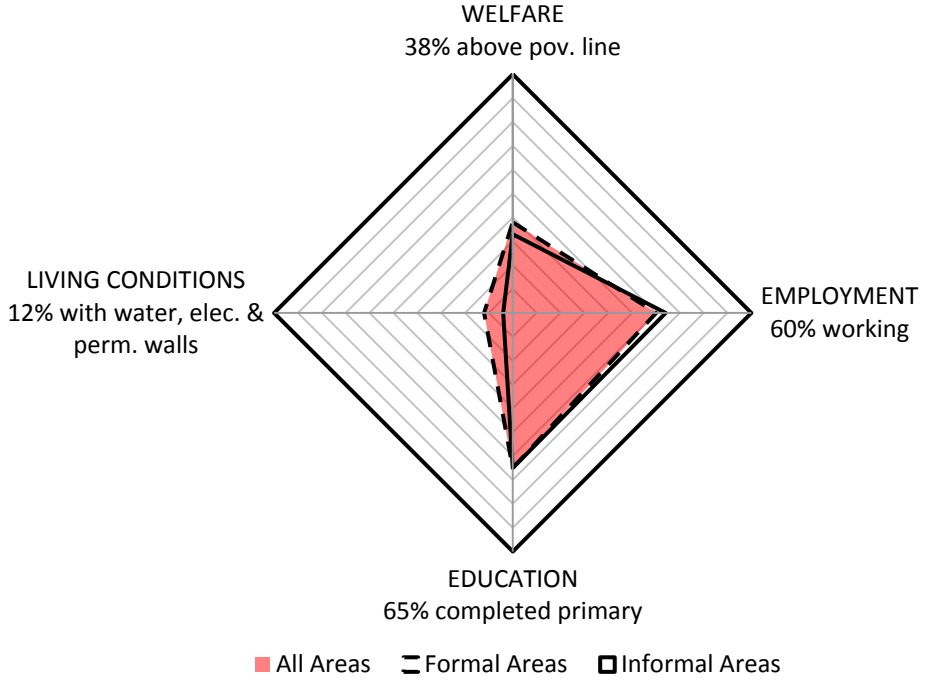
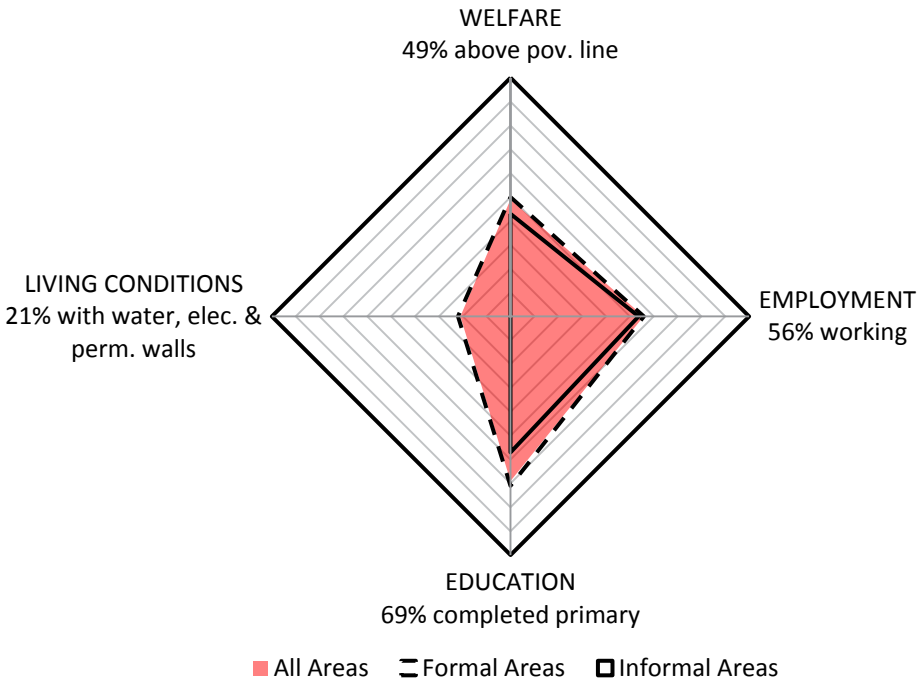


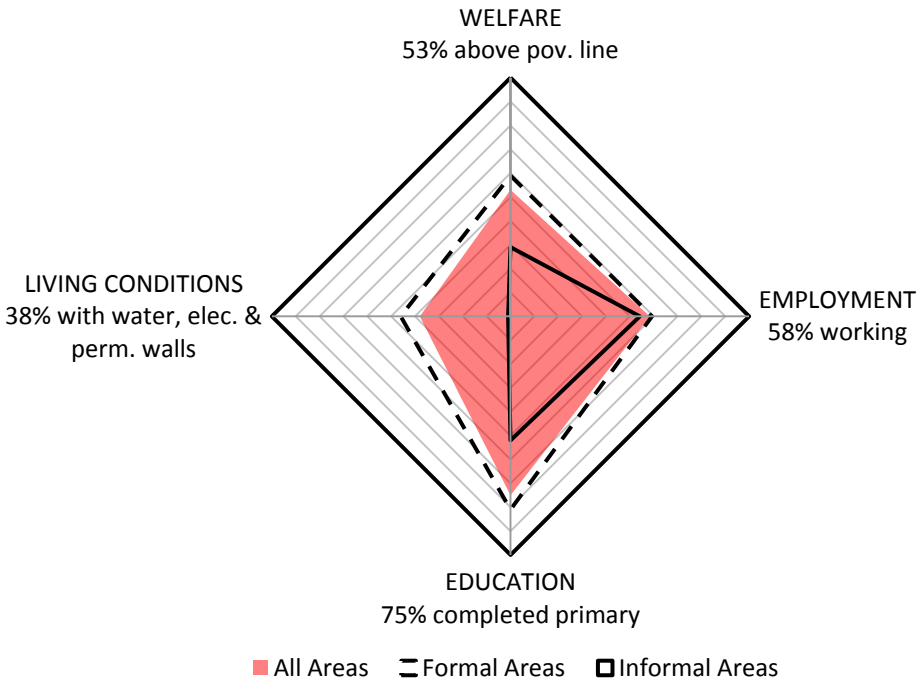
NAKURU



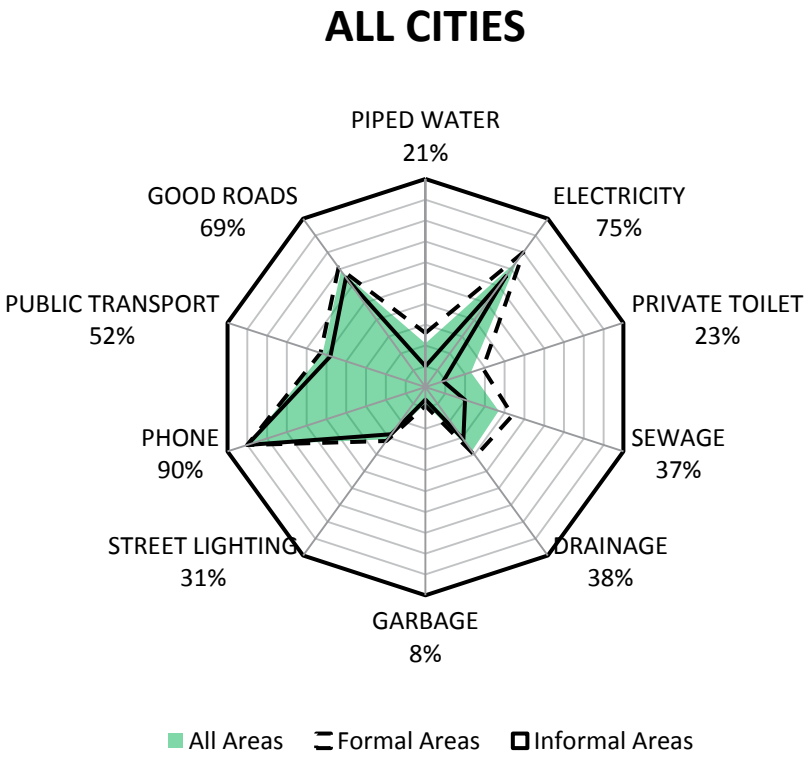
NYERI

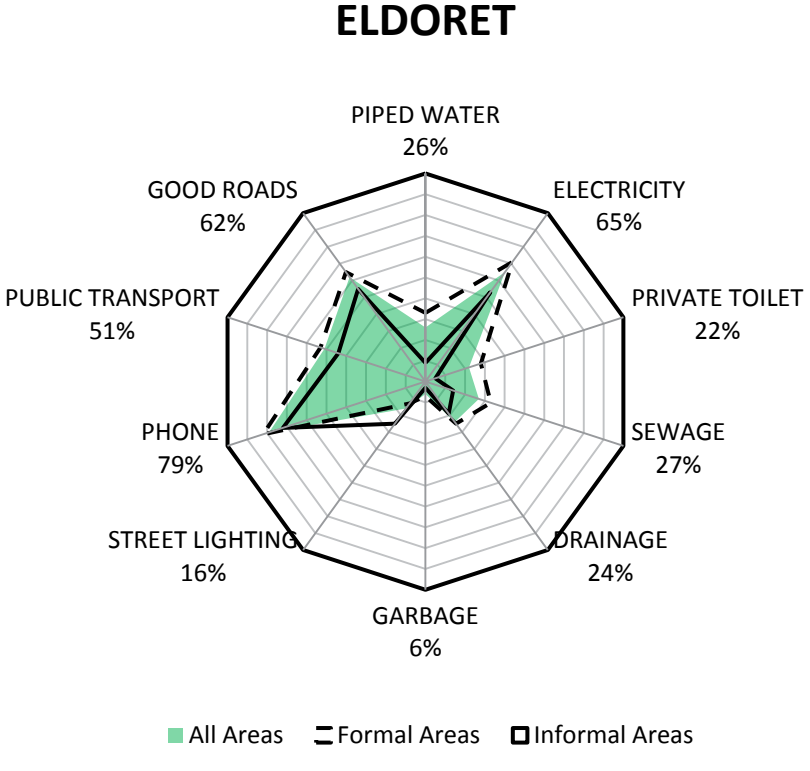

WELFARE
49% above pov. line
EMPLOYMENT
56% working
EDUCATION
69% completed primary
LIVING CONDITIONS
21% with water, elec. & perm. walls
All Areas
Formal Areas
Informal Areas

THIKA


WELFARE
53% above pov. line
EMPLOYMENT
58% working
EDUCATION
75% completed primary
LIVING CONDITIONS
38% with water, elec. & perm. walls
All Areas
Formal Areas
Informal Areas

Infrastructure Polygons





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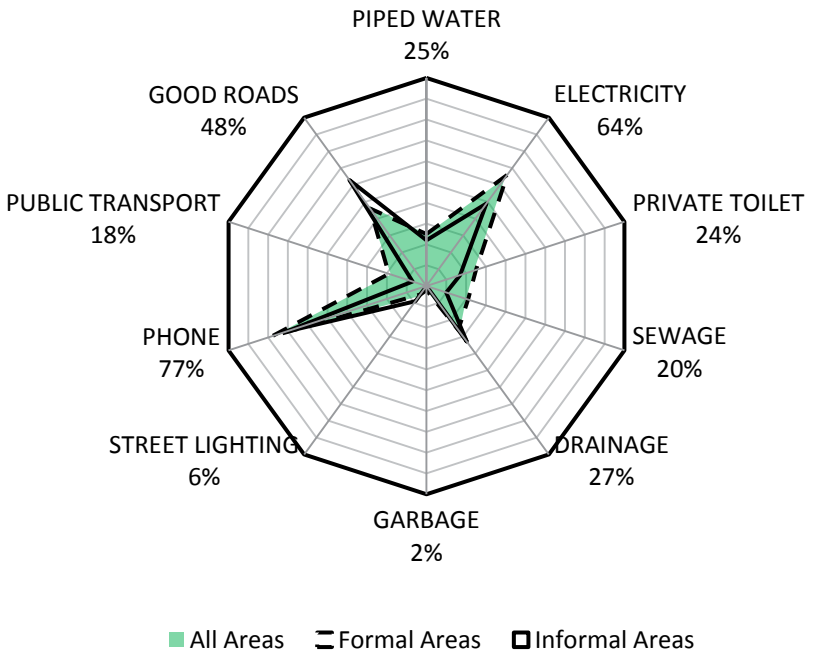

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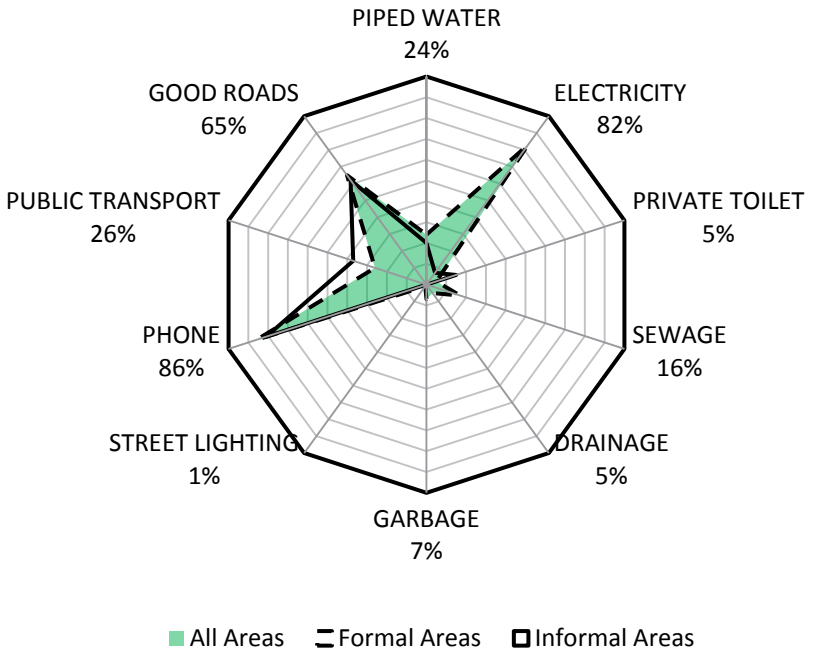
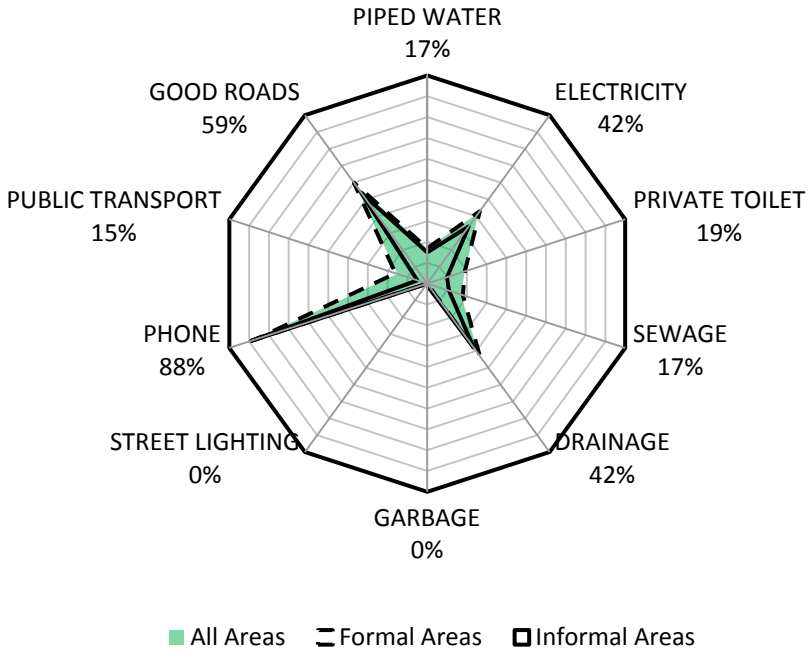
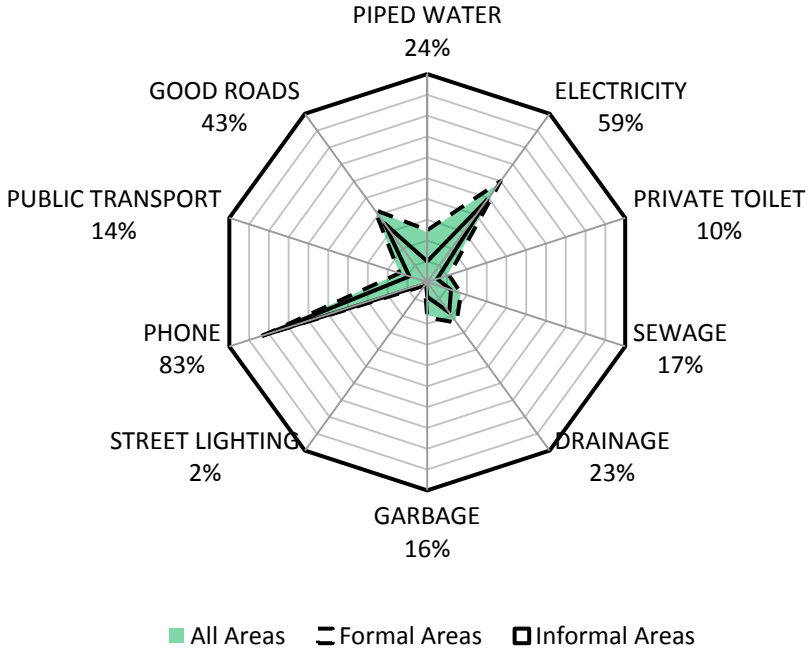


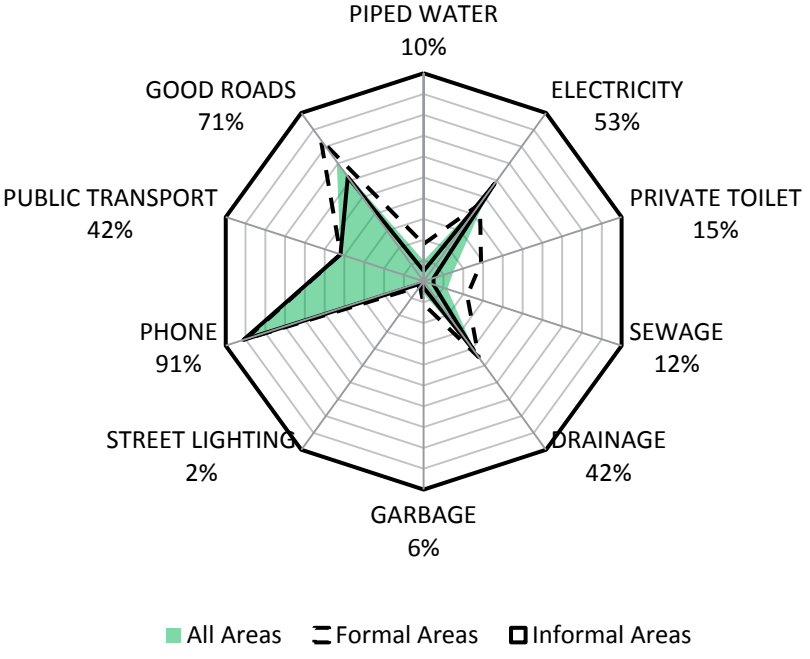
KAKAMEGA



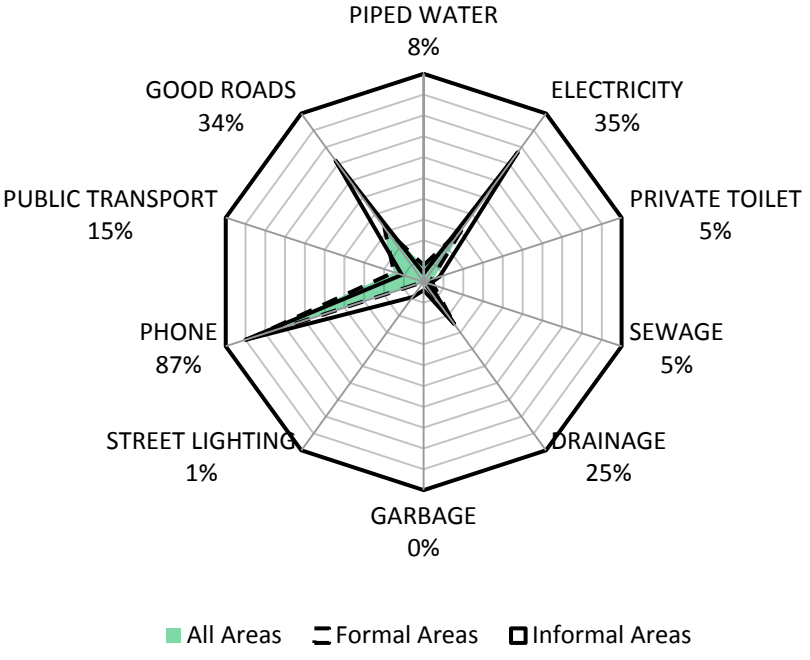
KERICHO



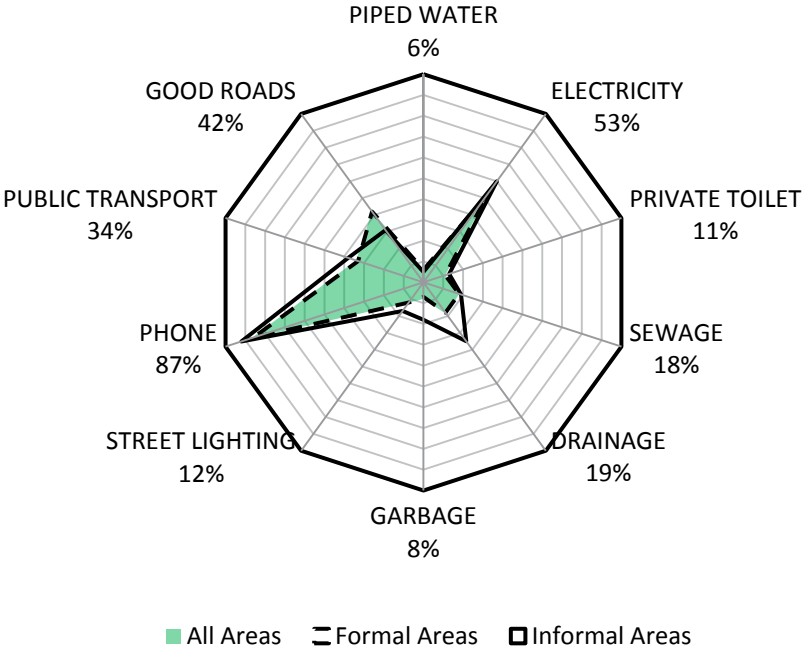
KISUMU



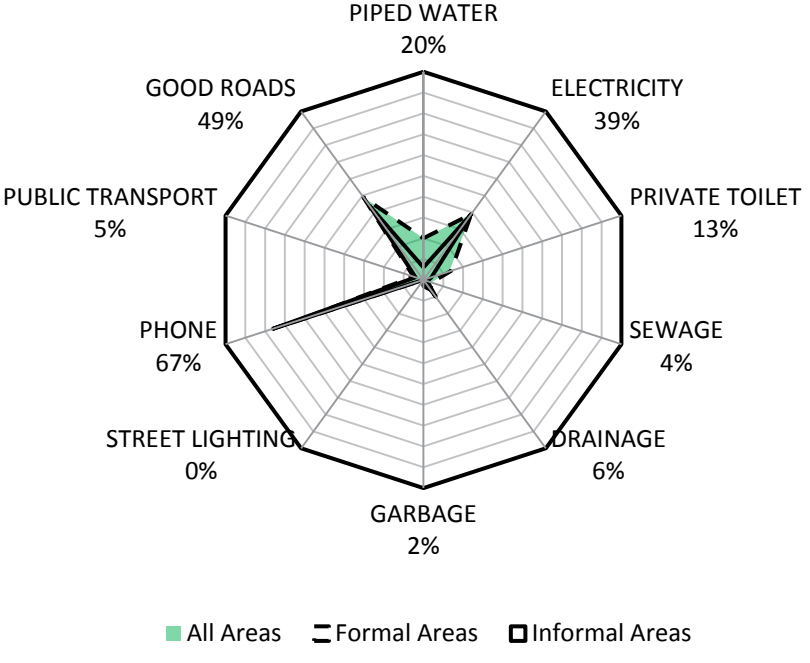
KITUI



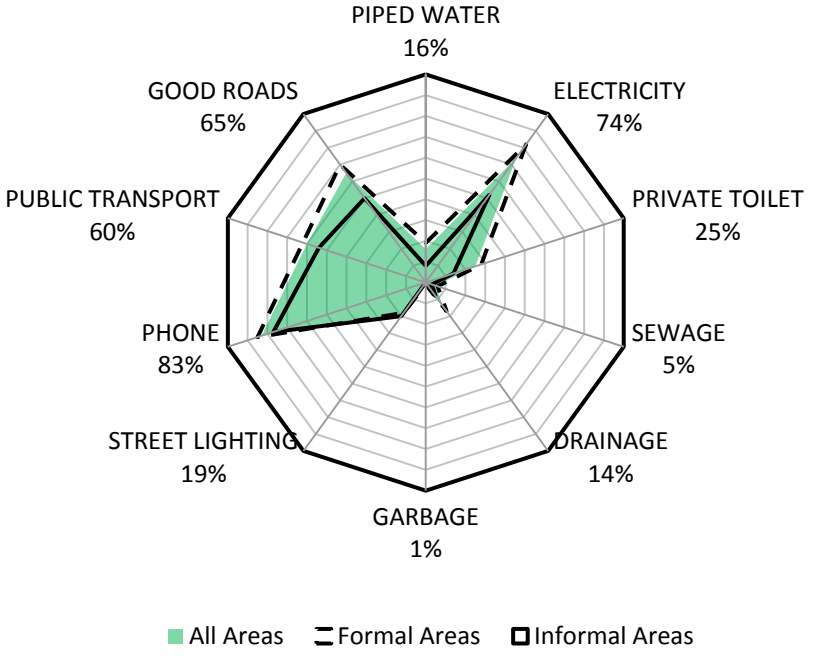
MACHAKOS



MALINDI



MOMBASA



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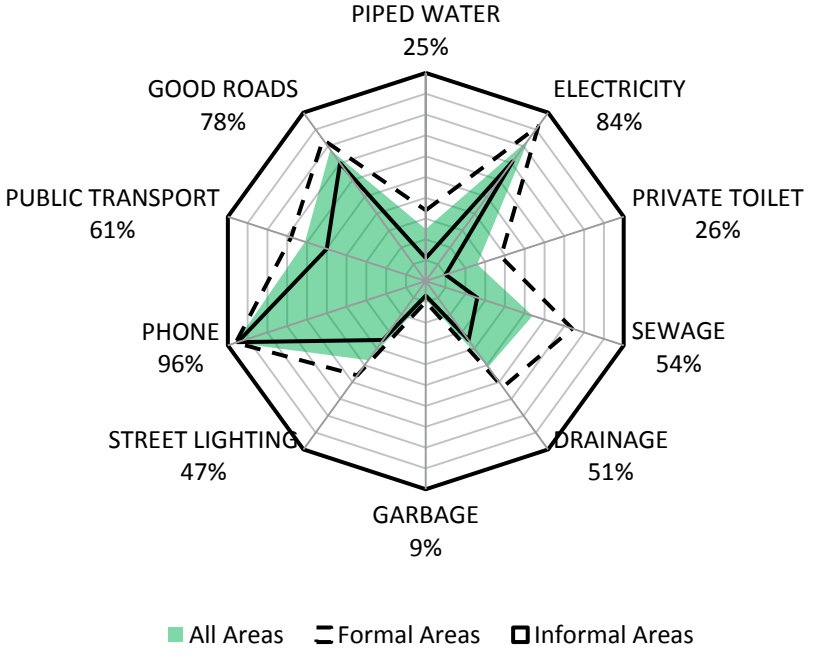

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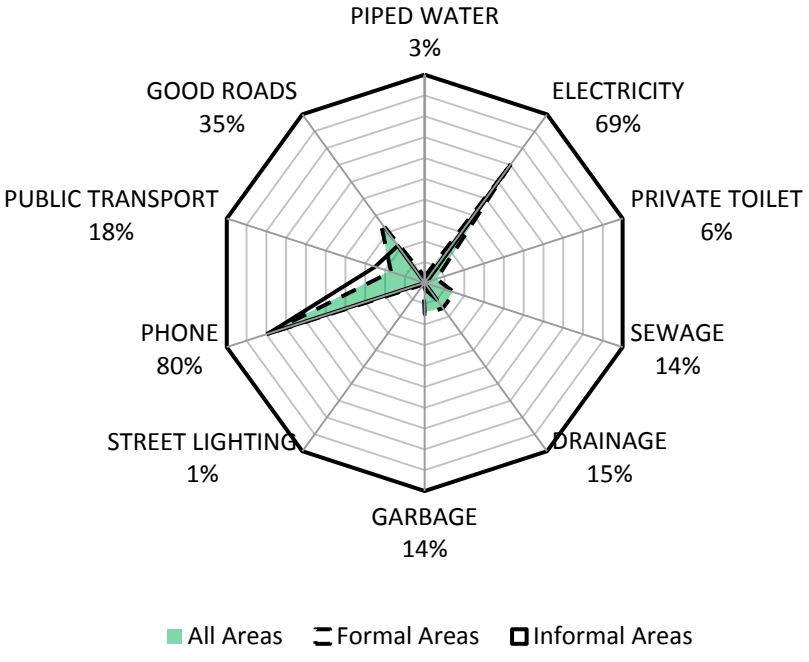

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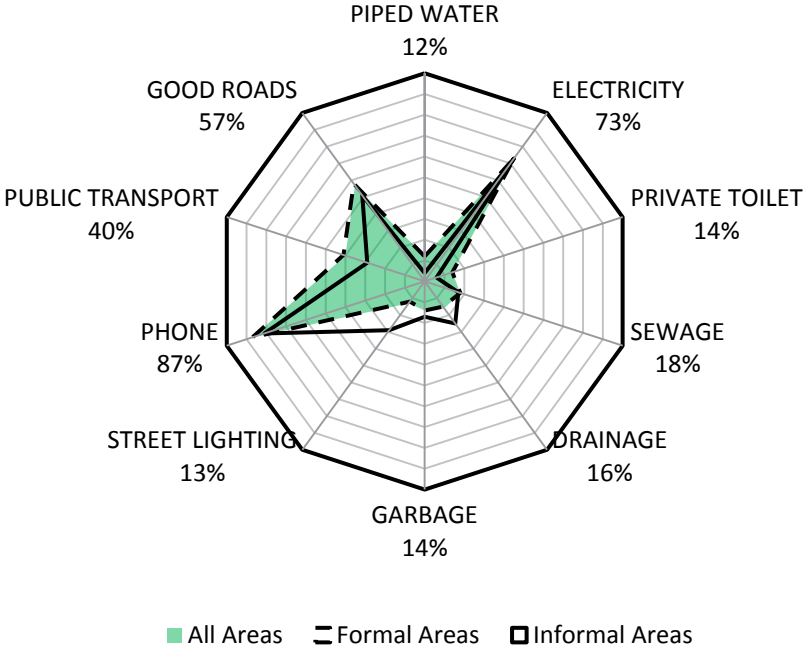
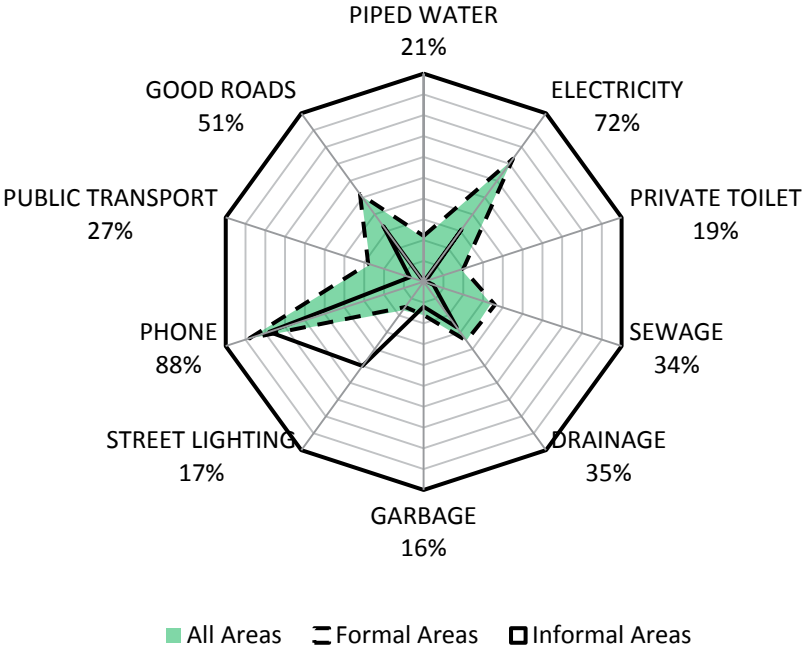
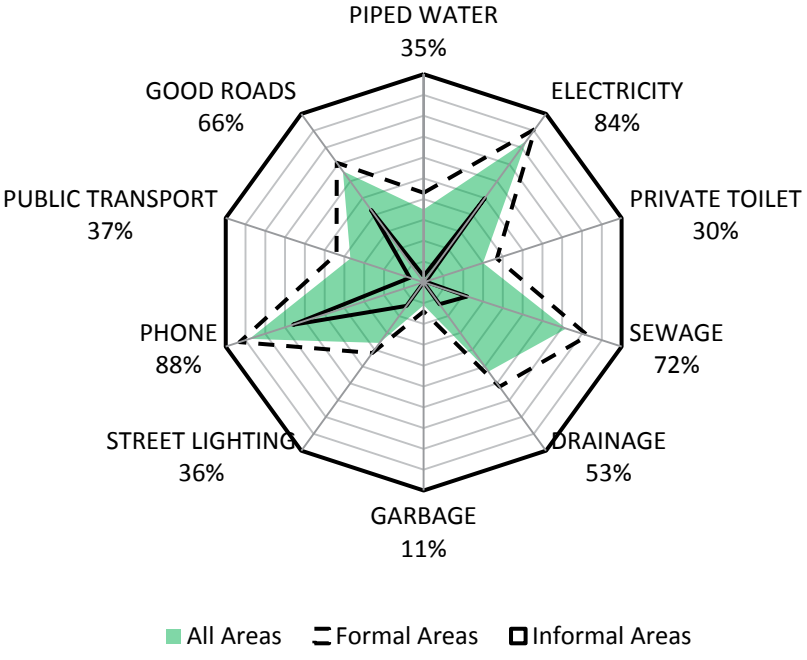


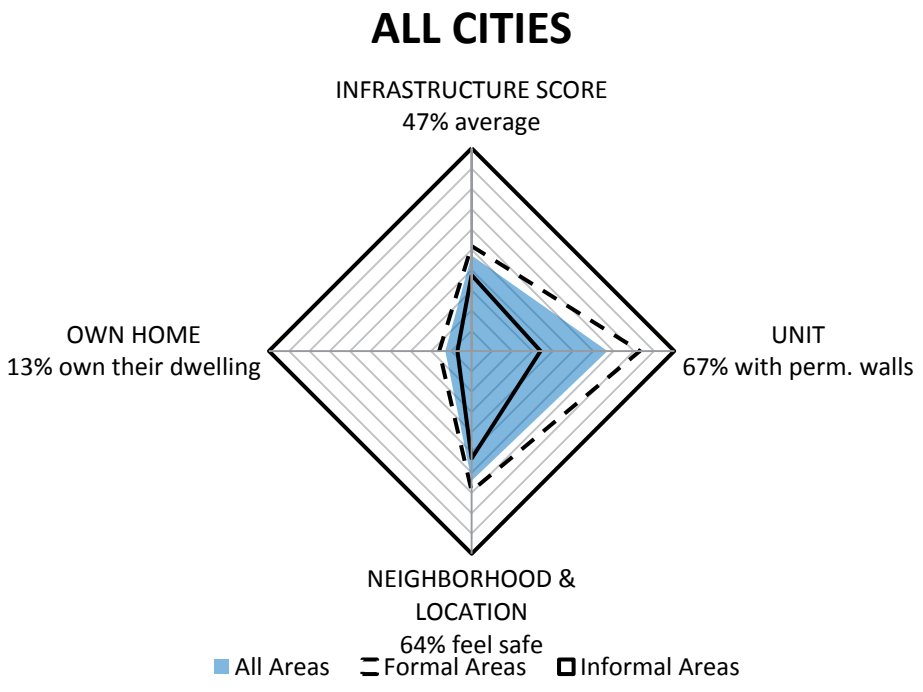
NYERI

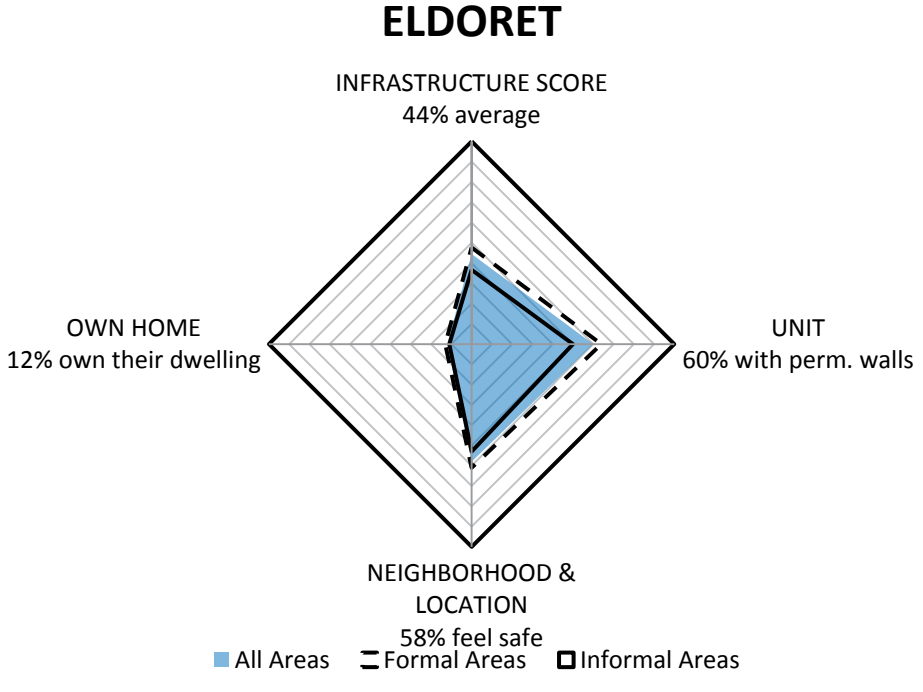

PIPED WATER
21%
ELECTRICITY
72%
PRIVATE TOILET
19%
SEWAGE
34%
DRAINAGE
35%
GARBAGE
16%
STREET LIGHTING
17%
PHONE
88%
PUBLIC TRANSPORT
27%
GOOD ROADS
51%
All Areas
Formal Areas
Informal Areas

THIKA


PIPED WATER
35%
ELECTRICITY
84%
PRIVATE TOILET
30%
SEWAGE
72%
DRAINAGE
53%
GARBAGE
11%
STREET LIGHTING
36%
PHONE
88%
PUBLIC TRANSPORT
37%
GOOD ROADS
66%
All Areas
Formal Areas
Informal Areas

Living Conditions Diamonds





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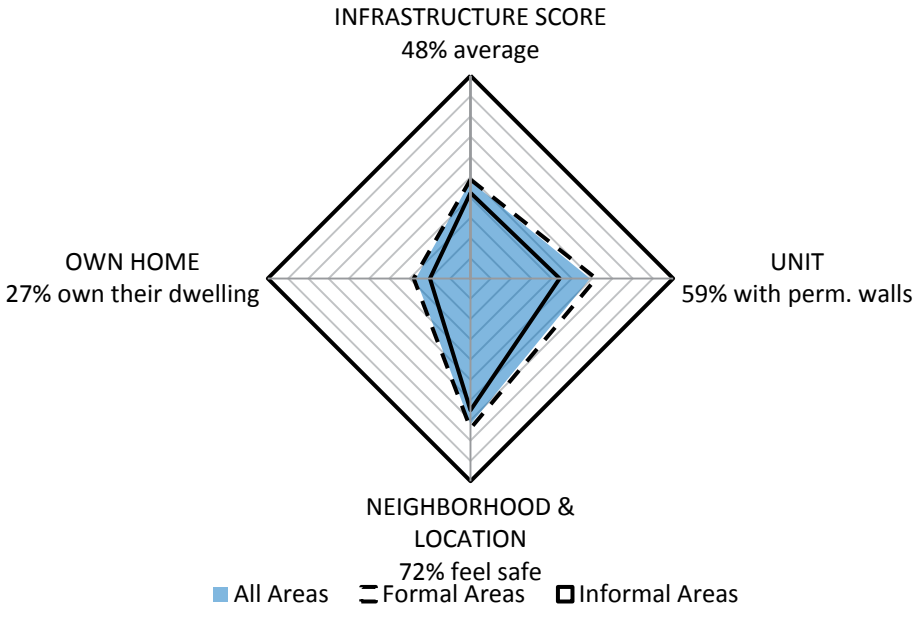

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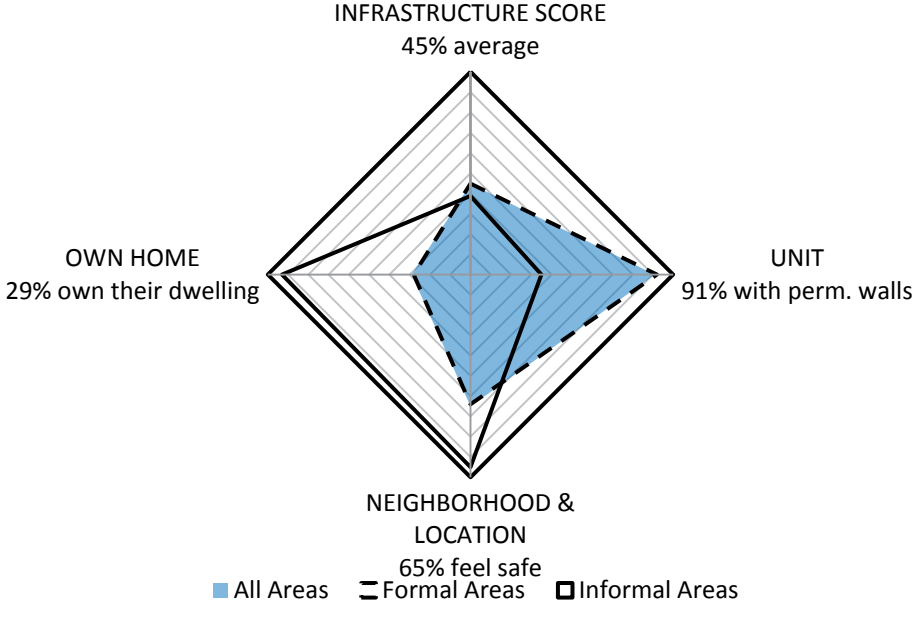
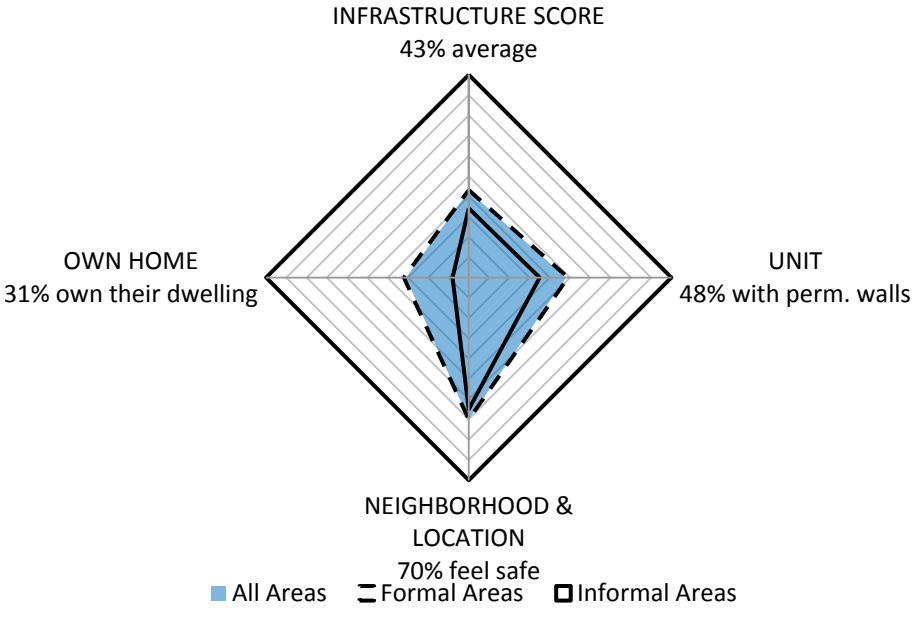


KAKAMEGA



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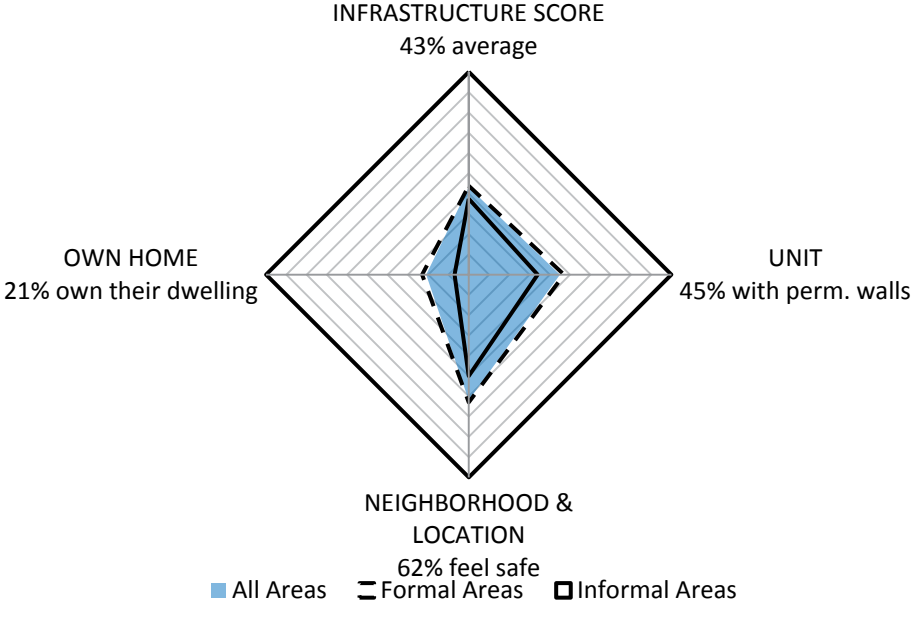
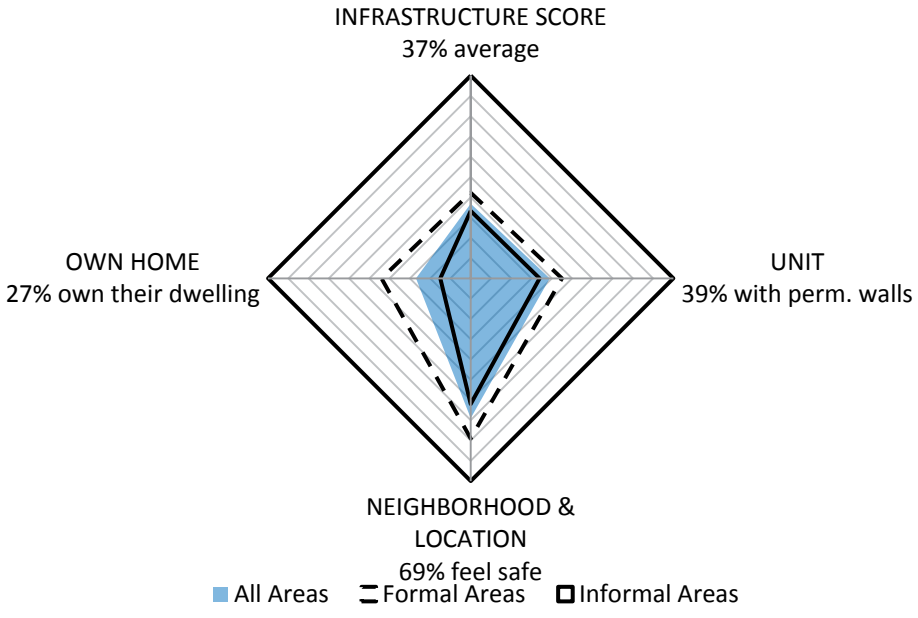
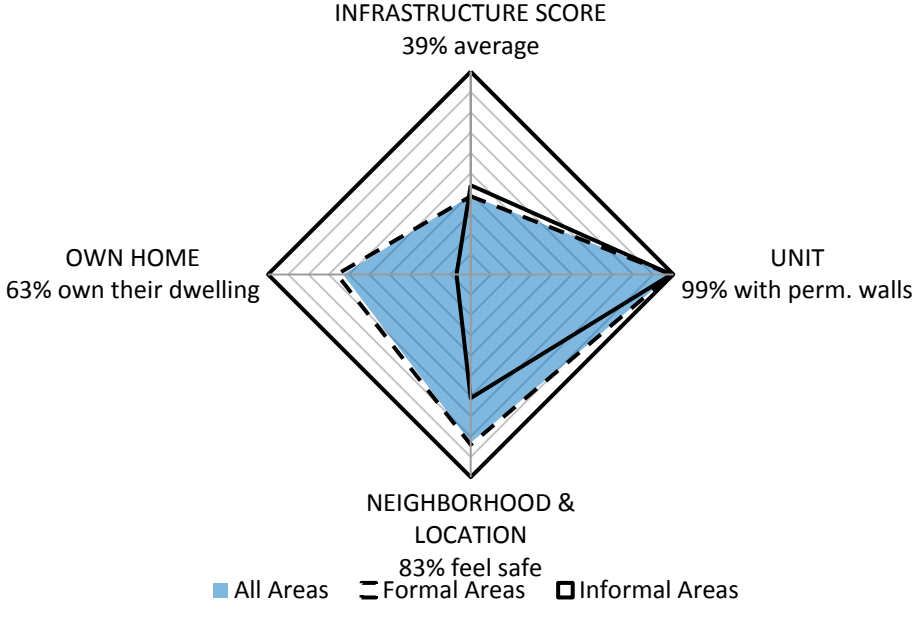


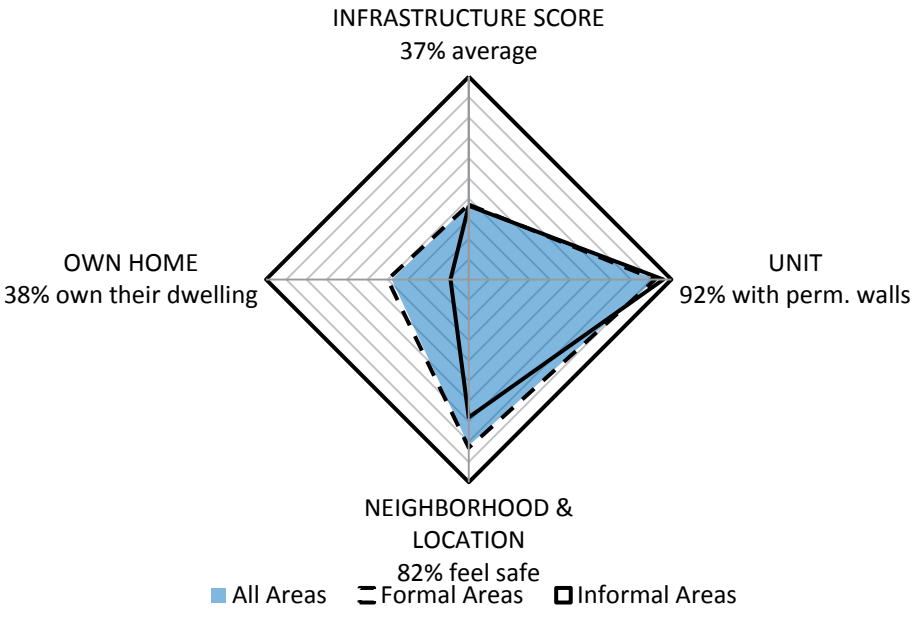
KISUMU



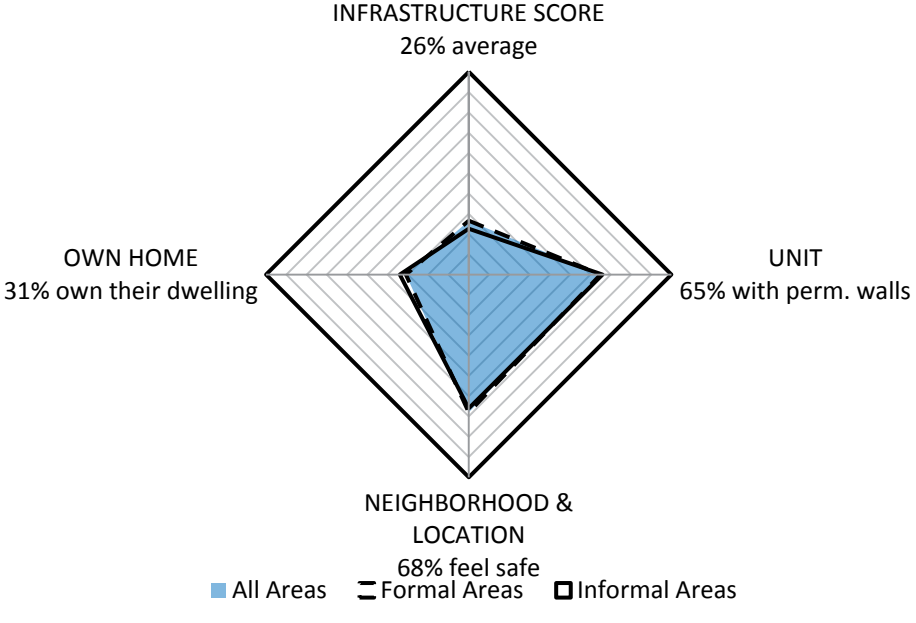
KITUI



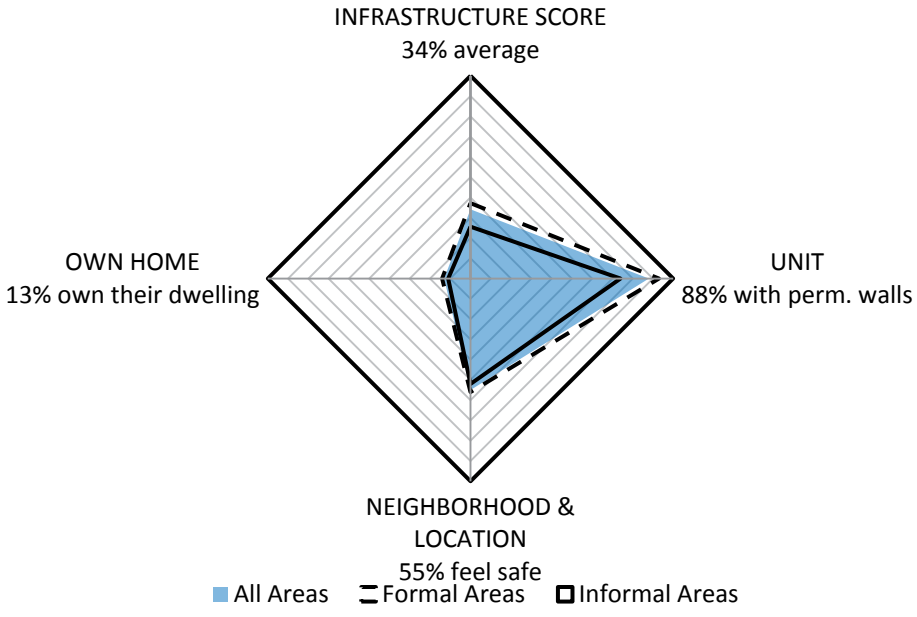
MACHAKOS



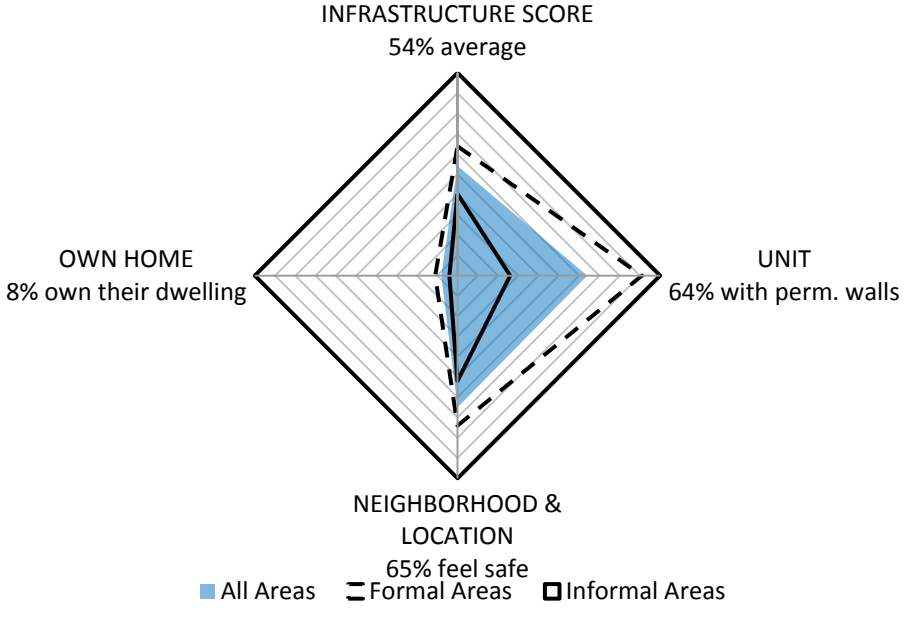
MALINDI



MOMBASA



NAIROBI



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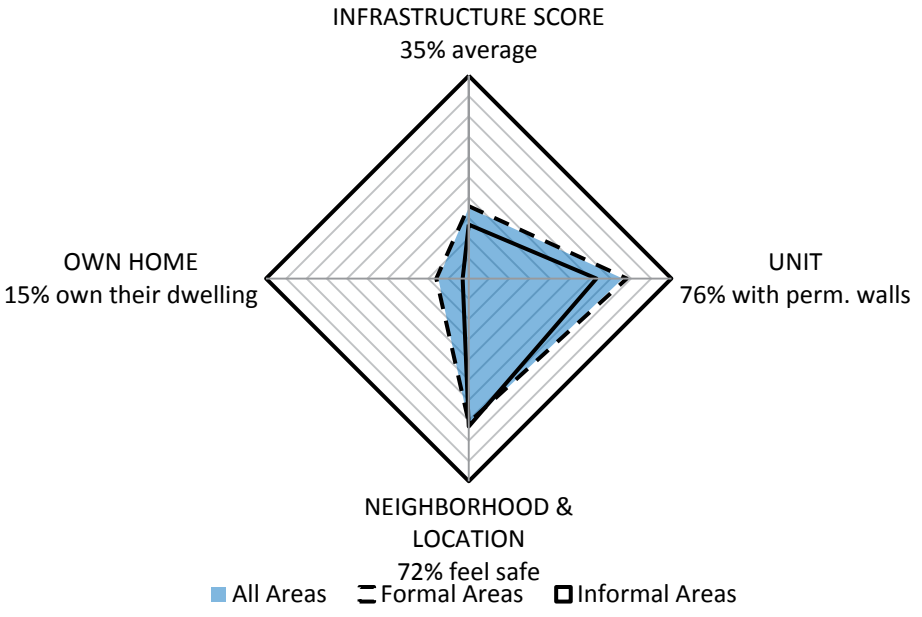
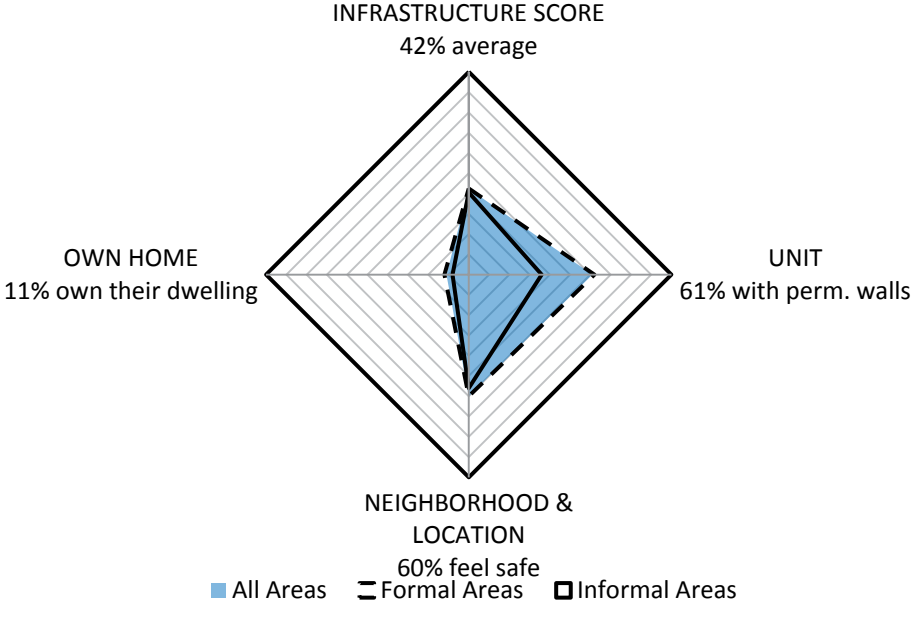
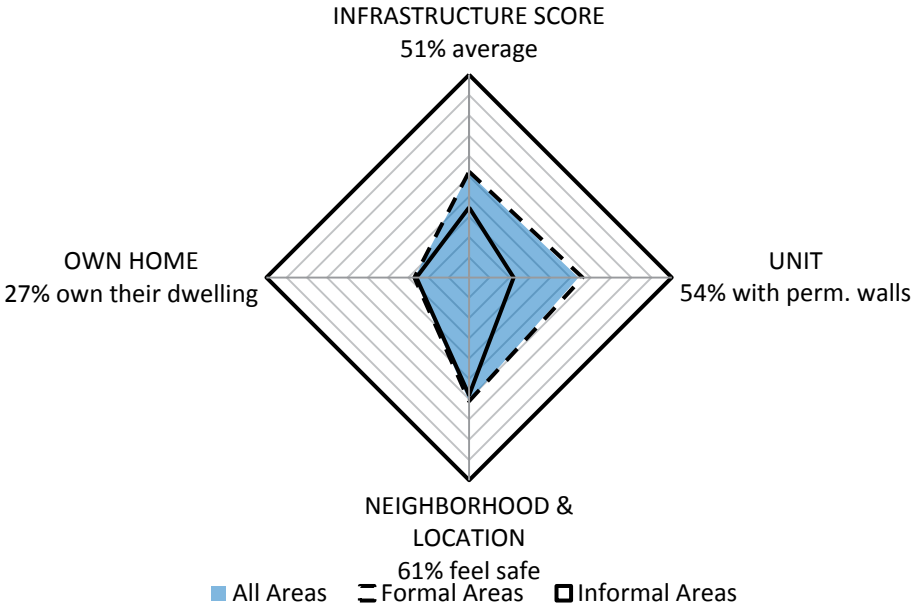


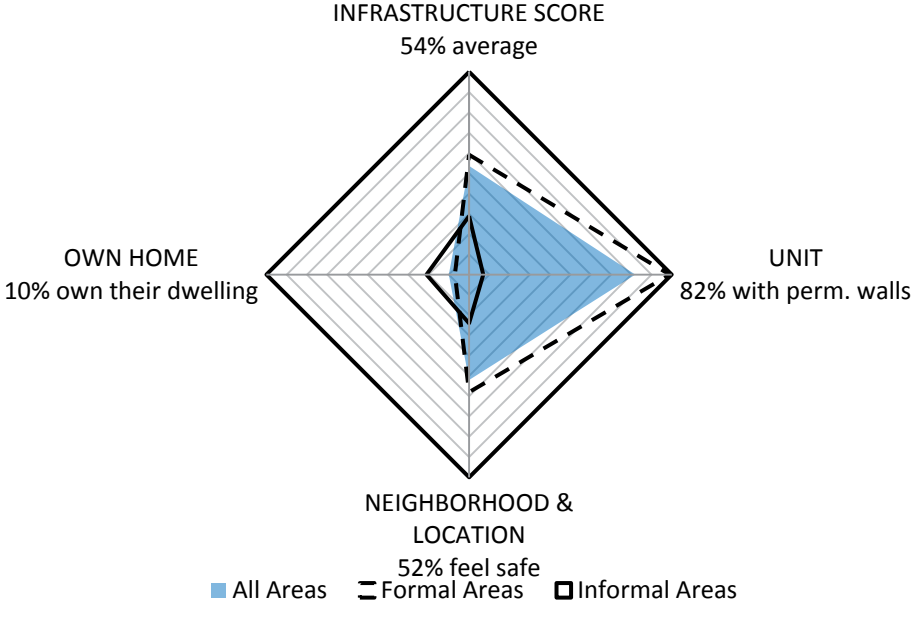
NAKURU



NYERI


INFRASTRUCTURE SCORE
51% average
UNIT
54% with perm. walls
NEIGHBORHOOD & LOCATION
61% feel safe
OWN HOME
27% own their dwelling
All Areas
Formal Areas
Informal Areas

THIKA


INFRASTRUCTURE SCORE
54% average
UNIT
82% with perm. walls
NEIGHBORHOOD & LOCATION
52% feel safe
OWN HOME
10% own their dwelling
All Areas
Formal Areas
Informal Areas

Appendix C: Additional Methodology Tables

Table 1: Allocation of sampled EAs across four Strata for 15 Kenyan Cities

Municipality	No. of Strata	No. of sampled EAs	Count and percentage (in smaller font) of sampled EAs by area type							
			Slum		Urban formal		Periurban formal		Rural	
Nairobi	2	193	96	49.7	97	50.3	-	-	-	-
Mombasa	2	157	78	49.7	79	50.3	-	-	-	-
Kisumu	4	107	52	48.6	25	23.4	20	18.7	10	9.3
Nakuru	2	136	56	41.2	80	58.8	-	-	-	-
Eldoret	2	143	71	49.6	72	50.4	-	-	-	-
Malindi	4	143	19	13.3	99	69.2	15	10.5	10	7.0
Naivasha	4	143	42	29.4	61	42.6	30	21.0	10	7.0
Kitui	4	93	14	15.0	35	37.6	34	36.6	10	10.8
Machakos	4	121	23	19.0	44	36.4	44	36.4	10	8.3
Thika	2	143	69	48.2	74	51.8	-	-	-	-
Nyeri	4	143	14	9.8	74	51.8	45	31.5	10	7.0
Garissa	2	143	3	2.1	140	97.9	-	-	-	-
Kericho	3	143	27	18.9	62	43.4	54	37.8	-	-
Kakamega	3	136	14	10.3	98	72.1	24	17.7	-	-
Embu	3	143	19	13.3	82	57.3	42	29.4	-	-

Table 2: Recommended sample size for two-stage sampling for 15 Kenyan Cities

Municipality	No. of EAs	No. of HHs	Total no. of HHs
Nairobi	193	7	1,351
Mombasa	157	7	1,099
Kisumu	107	7	749
Nakuru	136	7	952
Eldoret	143	7	1,001
Malindi	143	7	1,001
Naivasha	143	7	1,001
Kitui	93	7	651
Machakos	121	7	847
Thika	143	7	1,001
Nyeri	143	7	1,001
Garissa	143	7	1,001
Kericho	143	7	1,001
Kakamega	136	7	952
Embu	143	7	1,001
Total	**2,087**		**14,609**

Table 3: Phases of data collection	
Phase I	**Phase II**
Embu	Kakamega
Eldoret	Kericho
Garissa	Kitui
Kisumu	Machakos
Mombasa	Malindi
Nairobi	Naivasha
Nakuru	Nyeri
	Thika

Table 4: Duration of interviews by city			
City	**Mean duration (minutes)**	**Median duration (minutes)**	**Standard deviation**
Eldoret	22	20	11.68
Embu	31	24	30.66
Garissa	21	18	12.74
Kakamega	23	21	10.99
Kericho	19	16	10.98
Kisumu	33	29	16.47
Kitui	27	23	13.72
Machakos	25	21	18.06
Malindi	22	20	11.30
Mombasa	25	23	15.84
Nairobi	28	25	14.16
Naivasha	26	21	21.39
Nakuru	22	20	12.07
Nyeri	26	20	25.76
Thika	23	17	20.76
Total	**25**	**21**	**17.74**

Table 5: Completion by municipality			
City	**Total no. of completes**	**Total no. of HHs selected**	**Completion Rate (%)**
Eldoret	976	1,442	67.68
Embu	1,014	1,520	66.71
Garissa	1,035	1,517	68.23
Kakamega	967	1,405	68.83
Kericho	1,035	1,453	71.23
Kisumu	740	1,109	66.73
Kitui	660	932	70.82
Machakos	673	1,202	55.99
Malindi	1,026	1,442	71.15
Mombasa	1,093	1,587	68.87
Nairobi	1,182	1,923	61.47
Naivasha	1,072	1,437	74.60
Nakuru	1,095	1,391	78.72
Nyeri	1,024	1,454	70.43
Thika	989	1,423	69.50
Overall	14,581	21,237	68.66

Table 6: Final disposition codes		
Disposition code	**Frequency**	**Percent**
Completed[(a)]	14,583	90.77
No (competent) household member at home	93	0.58
Entire household absent for extended period	184	1.15
Postponed	66	0.41
Refused	334	2.08
Dwelling vacant or address not a dwelling	216	1.34
Dwelling destroyed	28	0.17
Dwelling not found	24	0.15
Security reasons	2	0.01
Interview broken off	536	3.34
TOTAL	**16,066**	**100**

[(a)] Two completed interviews could not be confidently placed to a city/EA, so they were dropped from the analysis.

Appendix D: Detailed Regression Results

Table 2: Recommended sample size for two-stage sampling for 15 Kenyan Cities			
Variable	**Regression on Ln (Wealth)**	**Regression on expenditure**	**Regression on Income**
Eldoret (constant)	-1.258***	0.607***	0.631***
Embu	0.904***	1.287***	0.903***
Garissa	3.705***	2.994***	2.102***
Kakamega	1.841***	2.101***	1.819***
Kericho	1.212***	1.601***	1.519***
Kisumu	-1.640***	-1.214***	-1.370***
Kitui	1.700***	2.143***	2.647***
Machakos	1.764***	1.990***	1.985***
Malindi	2.879***	2.446***	2.310***
Mombasa	0.104	-0.129	-0.154
Nairobi	-0.829***	-0.550***	-1.188***
Naivasha	1.496***	1.615***	1.409***
Nakuru	2.174***	1.884***	1.889***
Nyeri	2.316***	1.943***	1.573***
Thika	0.559***	-0.773***	-1.007***

*** $p<0.01$; ** $p<0.05$; * $p<0.1$

Table 2: Impact of household income on probability of having electricity	
Variable	**Coefficient**
Eldoret*	-3.541***
Embu	-0.416***
Garissa	0.389***
Kakamega	-1.275***
Kericho	-0.450***
Kisumu	-0.209
Kitui	-1.522***
Machakos	-1.052***
Malindi	-1.406***
Mombasa	0.138
Nairobi	0.809***
Naivasha	0.121
Nakuru	0.085
Nyeri	-0.275**
Thika	0.436***
female_hohh	-0.239**
_Islum_1	-3.360***
L_ipc	0.442***
_IsluXL_ipc_1	0.521***

*** $p<0.01$; ** $p<0.05$; * $p<0.1$

Table 3: Impact of infrastructure access on economic well-being			
City	**Regression on Wealth**	**Regression on Income**	**Regression on Expenditure**
Eldoret (const)	1.436	-520.857	-683.2212
Embu	9.200***	205.8988	-191.9769
Garissa	-4.297***	7021.712***	8167.735***
Kakamega	13.576***	2778.679***	3228.164***
Kericho	5.148***	363.5796	1357.311
Kisumu	14.344***	5066.157***	5302.991***
Kitui	20.711***	4329.025***	4281.666***
Machakos	13.787***	7579.717***	4715.594***
Malindi	1.036	743.9826	589.9823
Mombasa	2.856**	1826.308**	999.892
Nairobi	10.546***	8635.922***	7169.781***
Naivasha	7.086***	647.2661	1667.892*
Nakuru	3.950***	1533.704*	1683.381*
Nyeri	9.469***	2742.451***	3866.103***
Thika	2.817*	5294.386***	-670.0998
Formal sector	2.837**	2238.467***	-1330.135
Female HH head	-2.267*	-1827.04***	-1129.508
hhsize1	2.553***	1689.789***	2916.391***
HasElec	6.407***	3541.849***	3138.844***
HasToi	0.750	1448.13	6781.458*
HasElecToi	26.041***	17492.23***	12108.51**
HasPrivWtr	2.249**	1429.612	1862.495**
HasWtrToi	1.312	2541.748	-3542.478
HasWtrEle	0.863	-577.143	-571.2206
HasToiElecWtr	5.427	3951.143	11275.48

**** p<0.01; ** p<0.05; * p<0.1*

Table 4: Effect of increased economic well-being on marginal propensity to consume	
City	**Regression on expenditure**
Eldoret (const.)	-4182.639*
Embu	-4104.372***
Garissa	4904.779***
Kakamega	-2583.226***
Kericho	-1172.786*
Kisumu	213.7742
Kitui	-3950.392***
Machakos	-4446.161***
Malindi	-589.3857
Mombasa	-1441.972**
Nairobi	32.11241
Naivasha	-2238.873***
Nakuru	-1443.794*
Nyeri	-1361.004*
Thika	-4987.132***
Formal sector	5181.828***
Income	0.677594***
NoSlum X Income	-0.1243293
Wealth	484479.4***
NoSlum X Wealth	-200567.7**

**** p<0.01; ** p<0.05; * p<0.1*

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