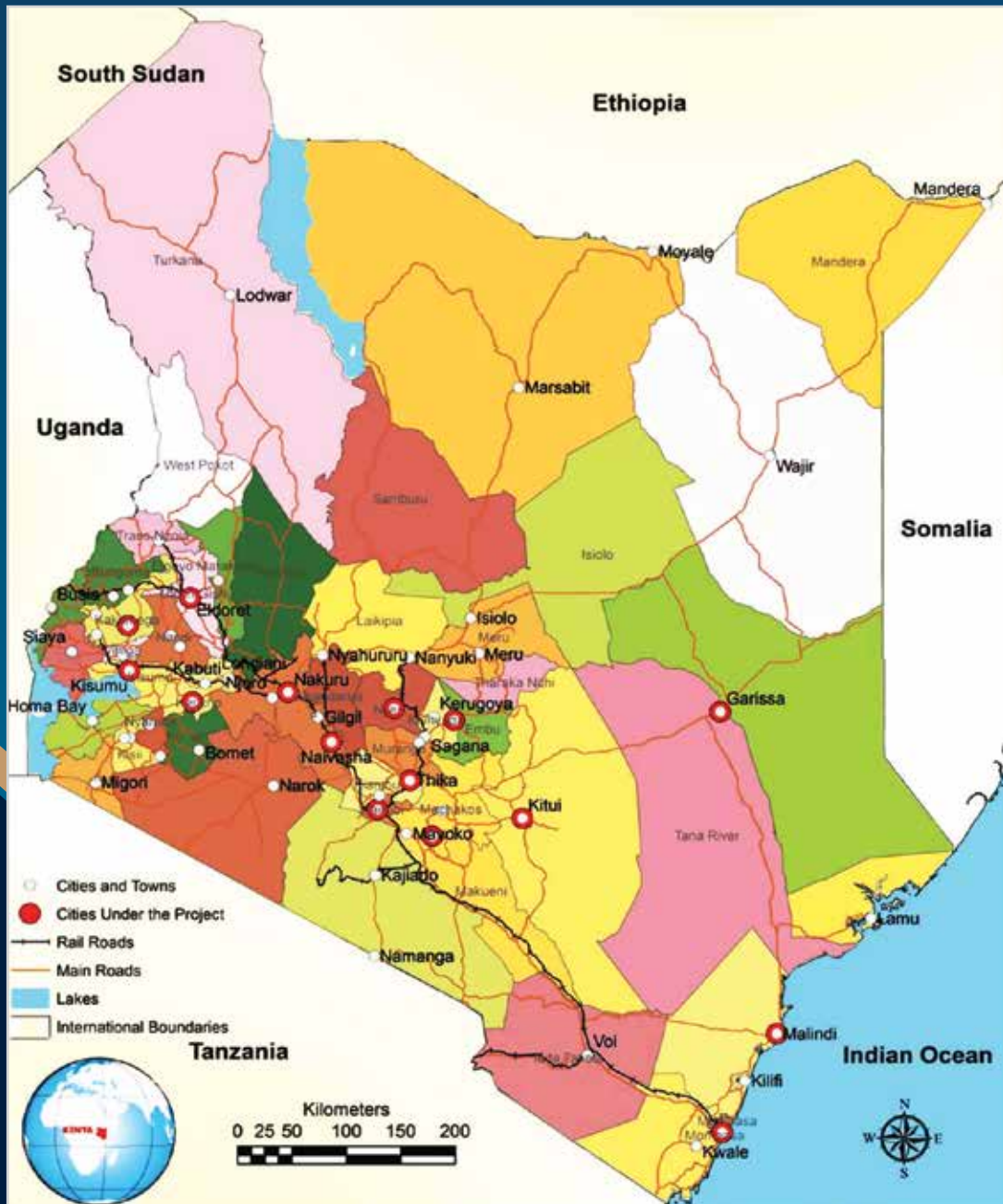


Kenya

STATE OF THE CITIES



THIKA



WORLD BANK GROUP

KENYA STATE OF THE CITIES BASELINE SURVEY

STATISTICAL ABSTRACT FOR THIKA, KENYA

CONTENTS

Abbreviations	i
Kenya State of the Cities Survey: Cities Covered	ii
Acknowledgements	iii
Introduction	iv
Background	iv
Methodology	iv
Questionnaire	v
Data Quality	v
Table Presentation	v
Part A: Household Characteristics	1
A.1 Household Demographic Composition	1
A.2 Household Education Characteristics	2
A.3 Household Health Profile	4
Part B: Household Economic Profile	4
B.1 Household Occupational Composition	4
B.2 Household Income/Expenditure Levels	6
B.3 Household Wealth Composition	9
B.4 Household Finance	10
B.5 Household-Owned Business Profile	11
Part C: Dwelling Tenure, Security, and Characteristics	13
C.1 Household Dwelling Characteristics	13
C.2 Home and Land Ownership	13
C.3 Distribution of Housing Values and Rents	16
C.4 Neighborhood Social Capital and Civic Participation	17
Part D: Infrastructure Services	19
D.1a Water Access	19
D.1b Water Quality	19
D.2a Electricity and Waste-Disposal Services	22
D.2b Access to Sanitation Services	22
D.3 Access to Transport	24
D.4 Access to Communications	25
D.5 Access to Infrastructure Indicator	26

LIST OF TABLES

Table 1: Description of formats used to denote statistical significance	vii
Table A.1: Household demographic characteristics	2
Table A.2: Household education characteristics	3
Table A.3: Household health characteristics	4
Table B.1: Household members' main activity	6

Table B.2a: Monthly household spending power, as measured by expenditure	7
Table B.2b: Monthly household spending power, as measured by income	8
Table B.3: Household wealth composition	10
Table B.4: Household finance	11
Table B.5: Household-owned business profile	12
Table C.1: Household dwelling characteristics	14
Table C.2: Household residence and land tenure.....	15
Table C.3: Distribution of housing values and rents	16
Table C.4a: Neighborhood social capital and civic participation	17
Table C.4b: Neighborhood social capital and civic participation	18
Table D.1a: Water access	20
Table D.1b: Water quality	21
Table D.2a: Access to electricity and waste-disposal	23
Table D.2b: Access to sanitation	24
Table D.3: Access to transport	25
Table D.4: Access to communications	26
Table D.5: Access to infrastructure indicator	26

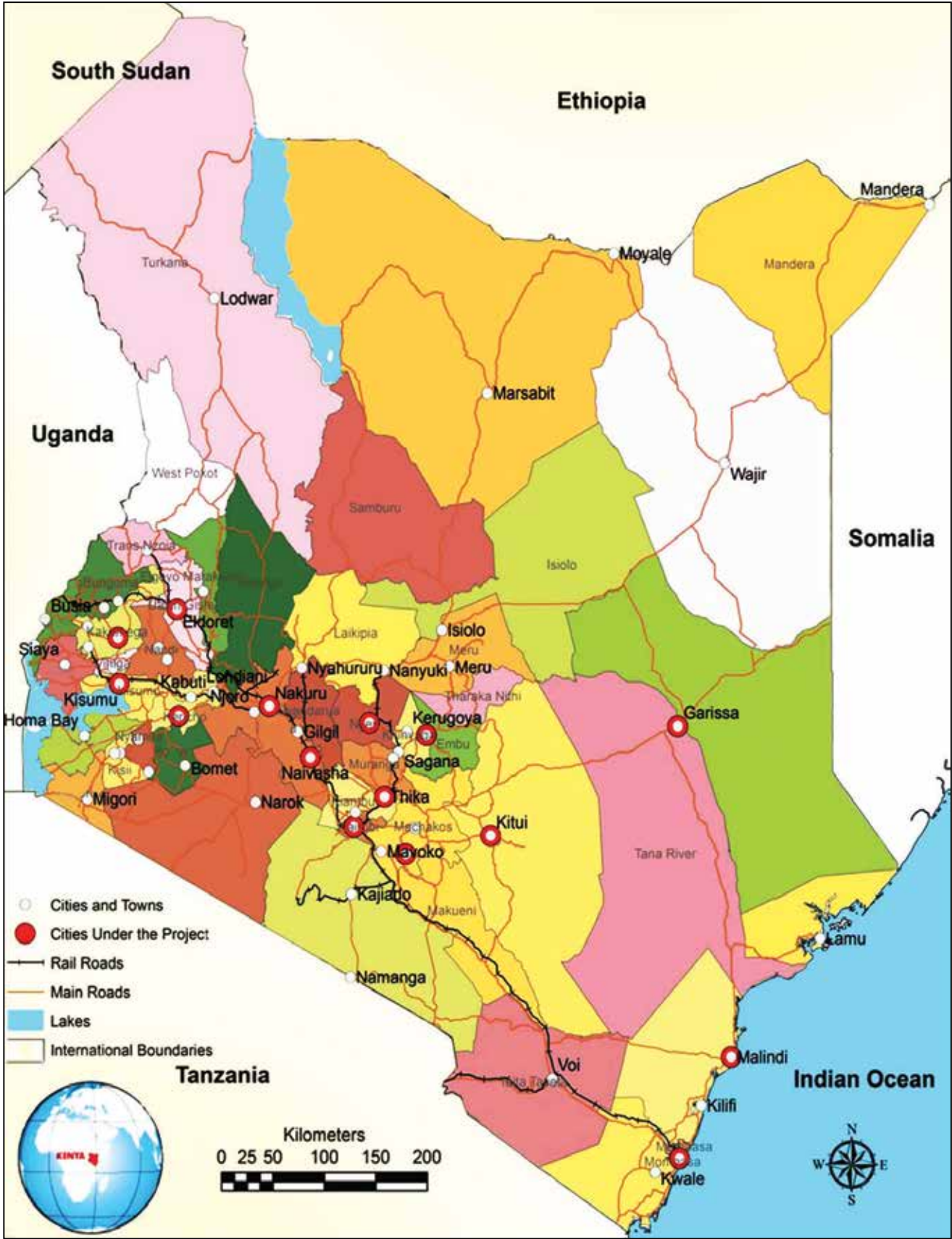
LIST OF FIGURES

Figure 1: Development diamond.....	27
Figure 2: Infrastructure polygon.....	27
Figure 3: Living conditions diamond.....	28

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 Specialist), 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.

INTRODUCTION

Background

The Kenyan government, with the support of development partners, is increasing its investments in urban infrastructure and services. To support these efforts, the World Bank has contracted NORC at the University of Chicago to carry out a baseline study of the demographic, infrastructure, and economic profiles of fifteen Kenyan municipalities: Nairobi City, Mombasa, Naivasha, Nakuru, Malindi, Eldoret, Garissa, Embu, Kitui, Kericho, Thika, Kakamega, Kisumu, Machakos, and Nyeri. This was undertaken in order to deepen understanding of the cities' growth dynamics, and to identify specific challenges to quality of life for residents. The study, called the "Kenya State of the Cities Baseline Survey," collects and analyzes household survey data to produce key statistics and identify differences in conditions among types of households—especially differences between those living in informal versus formal settlements. The ultimate goal is to use the information to establish development priorities for infrastructure and service investments and, eventually, to track the effectiveness of these investments.

Prior to the State of the Cities survey, there were little data available to support the design of programs to improve infrastructure and related services in most Kenyan cities. While there have been several household surveys of Nairobi's informal settlements and numerous analyses using the data, few surveys or analyses have been carried out in other Kenyan municipalities or for modest-income areas in Nairobi.

To facilitate access to the rich datasets generated by the survey, three written products were commissioned: a Statistical Abstract (such as this one) for each city, a City-at-a-Glance for each city (a two-page summary of the Abstract), and an Overview Report (a more comprehensive discussion of the topics in this Introduction, a topic-by-topic comparative analysis of the fifteen cities, and appendices with the survey instrument). The Abstract's objective is to provide comprehensive but easily accessible information on the wide range of municipal conditions covered in the survey, as reported by households. Some information in the Abstract also comes from secondary sources, such as the national Census and the Kenya Integrated Household Budget Survey (KIHBS). 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.

Methodology

For this baseline household survey, NORC used a two and three-stage, stratified, clustered sampling design intended to be representative of poor and non-poor households living in formal and informal settlements in the fifteen cities included in the study. The first-stage sampling frame was based on Kenya's 2009 census frame of enumeration areas (EAs). In the census sample frame, EAs are identified as urban, peri-urban or rural. EAs are further identified as containing formal or informal settlement types. For the first stage sampling, NORC selected EAs from strata identified as informal (slum), urban-formal, peri-urban-formal and rural. In cases where the EAs were "large" (200 to 700 households), they were divided in half, thirds, or quarters and one segment was randomly selected.

For the final stage of sampling, NORC carried out a full household listing in each selected EA (or segment, as the case may be) and randomly selected ten households for interviewing.¹ Because expected response rates were unknown prior to data collection, interviewers were given a target to complete at least seven interviews in each EA. In Thika, 143 EAs were selected in the first stage.² In the second stage, a total of 9,946 households were listed and 1,423 households were selected.

The data for this report are based on 976 completed interviews carried out in Thika from November 12, 2012 to February 18, 2013 by a team of eight interviewers and one supervisor. Among eligible households,³ the completion rate was 69.50%.⁴ Data collection took place in both formal and informal settlements simultaneously; 435 interviews were completed in informal settlements and 554 were completed in formal settlements.

Questionnaire

The Kenya State of the Cities baseline questionnaire was developed iteratively using a base set of questions developed by the World Bank and refined to capture the key variables related to infrastructure access and municipal services of interest to the Kenyan government. The final fielded questionnaire is available in Volume II of the Overview Report. The household listing form and the questionnaire were programmed for use as a Computer-Assisted Personal Interview (CAPI) and both were carried out using 7-inch Samsung Galaxy Tab tablet computers which transmitted data to project servers via the mobile phone network. Interviewers used the tablet computers to capture GPS coordinates once during listing and again at the end of each interview.

Data Quality

Recorded administration time of the CAPI instrument showed a median duration of 17 minutes in Thika (21 minutes across all municipalities). However, duration values may have been compromised by transmission problems and supervisor reviews, which may have overwritten timestamps. Despite the uncertainty of exact durations, data quality measures do not show systematic interviewer-related errors in the final data. Approximately one-third of all interviews underwent validation, including call-backs by supervisors or central office staff (in-person and by phone).

Table presentation

Each city's Abstract includes a set of tables 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 Abstract 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.

¹ A complete description of the sampling design is found in "Kenya Municipal Program State of Cities: Overview Report," NORC, August 2013.

² 137 EAs were included in the listing activity. Two EAs were found to be located in a Government Parastatal, the authority refused access. Two EAs were located in school compounds, and as data collection coincided with a teacher strike, the EAs could not be listed. Two EAs were located in affluent estates whose management refused to allow access, despite the help of local authorities.

³ Eligible households are defined as occupied dwellings with at least one resident age 18 or older who is present during the field period.

⁴ The completion rate is the number of households that successfully completed an interview over the total number of households assigned.

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 of each table generally list the household characteristics (e.g., size of household, percentage of children in school). The columns present statistics for the entire city, then show 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.⁵

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.⁶ “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 row) 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 rows denoted by “N”. Cells with no observations are indicated with hyphens (-).⁷ The table, below, summarizes the formatting used in tables throughout the Abstract: 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

⁵ 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).

⁶ Statistical significance is noted when a test achieves a p-value ≤ 0.05 .

⁷ Regarding issues of non-response, both observational and item-specific, see Section 4, below.

underlining-still means that a significance test was performed but that the values under comparison were not statistically significantly different from each other.

There is one caveat to the formatting rules that must be addressed regarding the significance testing of distributions. While the absence of italics sometimes means that the distribution was tested and was not found to be statistically significant, this is often not the case—i.e., there are many distributions which were not tested for significance. To avoid confusion, the comprehensive list of distributions which were tested for significance follow.

- **Table B.2a:** Expenditure ranges by location, tenure, water connection, business, skilled/unskilled head, and gender of household head (in informal areas)
- **Table B.2b:** Income ranges by location, tenure, water connection, business, skilled/unskilled head, and gender of household head (in informal areas)
- **Table C.3:** Distribution of home value ranges and rent ranges by location, tenure, water connection, business, skilled/unskilled head, and gender of household head (in informal areas)
- **Table D.1a:** Percent of households with a piped water connection inside their dwelling by security of ownership; percent of households with a piped water connection inside their compound by security of ownership; percent of households close to piped water access by security of ownership; cost of water by security of ownership; most important water source by security of ownership; reasons for no connection by security of ownership
- **Table D1.b:** Water source by water quality; water provider by water quality; water treatment buy water quality; treatment methods by water quality.

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.⁸

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.

The core of this abstract comprises a set of tables divided into chapters. Each chapter contains a textual summary of each table and highlights some of their implications. The tables are divided into four groups:

- A. Household characteristics – 3 tables
- B. Economic profile – 5 tables
- C. Tenure, tenure security, dwelling characteristics – 4 tables
- D. Infrastructure services – 7 tables

⁸ 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 A.1 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 B.2 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.
<i>Italics</i>	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 B.2, 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.
<u>Underline</u>	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 B.3 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.

Notes:

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 hypothesis test. Note that this does not imply that the respective table values are based on just one household or even just one EA.

Notes to the tables are identified by small letters appearing as superscripts at the end of each table. All tables present weighted figures at the household level, unless otherwise noted, to reflect the total population of the respective table cell. The N values, however, present the unweighted number of households, unless otherwise noted.

The final chapter of this abstract contains a series of three “Development Polygons”. These complement the detailed tables presented in sections A through D by illustrating an “overall” sense of the state of the city. The figures included are the Development Diamond, the Infrastructure Polygon, and the Living Conditions Diamond.⁹

While the tables generally have a common set of column headings, there is some variation. 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.

⁹ The basic format for all three figures appear 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.

- *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 NORC (August 2013), “Kenya Municipal Program State of the Cities: Overview Report” for a more detailed description.
- *Household Poverty* – 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 CHARACTERISTICS

This section presents basic household characteristics. Table A.1 provides information on household size and household member distribution by age category. Table A.2 details the level of education of the members of household, as well as the proportion of children and adults of different ages who were currently in school at the time of the survey. Finally, Table A.3 presents household health characteristics, including the proportion of children under 15 who have received the BCG vaccine (an immunization against tuberculosis), a major public health concern given that Kenya is a high-tuberculosis-burden country.¹⁰ Table A.3 also includes the number of household members with an illness or injury in the two weeks prior to the survey, the proportion of those members who visited a health practitioner, average household medical expenditures for the month preceding the survey, and the percentage of households that have health insurance. All of these figures are given comprehensively and broken down by location type, the household's poverty status, and the gender of head of household (among informal areas).

A.1 Household Demographic Composition

The 2009 census estimated that the municipality of Thika had a population of 136,917, a 28% increase over the figure reported in the 1999 census; this represents of a 2.52% annualized average growth rate.¹¹

The average household size in Thika, as reported by survey respondents, is 2.6 members. On average, about 87% of households' members are aged 5 to 60 years old—10.7% are between 5 and 14 years old, 76.6% are between 15 and 60. The head of household is male in 70% of all households, and this does not change significantly by location or poverty status. Seventy-nine percent of female-headed households are located in formal areas, and about half of female-headed households are poor, i.e. given their household size they have monthly expenditures below the poverty line. A significant difference was found in the mean percentage of 15 to 60 year olds—it was higher in male-headed vs. female-headed households, and the mean percentage of 5 to 14 year olds was significantly higher in poor areas compared to non-poor areas.

¹⁰ World Health Organization Global tuberculosis report 2012, retrieved June 12th 2013 from http://www.who.int/tb/publications/global_report/en/

¹¹ From Statistical Abstract 2010 and Statistical Abstract 2006, Kenya National Bureau of Statistics.

Table A.1: Household demographic characteristics

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Number of households							
Weighted	30,535	5,539	24,996	14,207	16,052	3,516	1,891
N (unweighted)	985	434	551	543	435	283	141
Size of household	2.60	2.73	2.57	2.76	2.46	2.82	2.54
N	985	434	551	543	435	283	141
Mean percent of household members aged:							
Total	100	100	100	100	100	100	100
Under 5	8.4	8.1	8.5	9.4	7.7	7.4	9.8
5 to 14	10.7	13.1	10.2	13.5	8.4	11.8	15.5
15 to 60	76.6	74.4	77.2	75.3	78.1	77.2	68.6
Over 60	1.8	3.0	1.5	0.9	2.6	1.8	5.4
N	985	434	551	543	435	283	141
Proportion of households...							
Male-headed	70	65	71	70	69		
Female-headed	30	35	29	30	31		
N	960	488	472	653	303		
Female-headed distribution		21	79	47	53		
N		308	306				

A.2 Household Education Characteristics

Thika was part of the Central Province, where in 2009 primary classrooms had an average class size of 36 students and secondary classrooms had on average 33 students. Student-teacher ratios in the former Central Province were, on average, 34.5 for primary schools and 21 for secondary schools.¹²

The first panel of Table A.2 presents statistics on the education of all individuals aged 5 years and older within the surveyed households. About half of all individuals have completed secondary school or higher—a figure that is likely skewed by the fact that the majority of household members are between 15 and 60 years old—and 75% completed primary or higher. A significantly higher percentage of individuals in informal areas had some primary school or completed primary than did so in formal areas; on the other hand, significantly more household members in formal areas completed a secondary or higher education (61% for formal vs. 16% for informal areas). Having “no education” is rare at 2%, and differs significantly by location and poverty status; 6% of individuals in informal area households had no education and only 1% in formal areas had no education, while only 3% among poor households had no education and only 1% among non-poor households. In informal areas, male-headed households are more likely to have completed secondary school.

¹² Provinces no longer exist in Kenya. This data is based on the Kenyan Institute for Public Policy Research and Analysis 2009 Economic Report, Table A3.16, pg. 192, per Ministry of Education statistics, http://www.marsgroupkenya.org/pdfs/2009/10/Kenya_Economic_Report_2009.pdf Section

The second panel of the table shows the highest grade completed of adult individuals over 18 years within each household. This is done to show intra-household educational levels among households' adult members. We find that on average, fully 66.8% of a household's adults have completed secondary school or higher (28.7% completed secondary, while 38.1% completed higher education). Only about 2% of a household's adults had no education whatsoever. The other 30.2% completed some primary, all of primary, or some secondary schooling. We also found interesting differences between households in formal and informal areas. In informal areas, a significantly higher percentage of household's adults completed some or all of primary school, while a significantly lower percentage completed higher education past secondary. In informal areas, a significantly higher percent of households' adults had no education (6.8% versus less than one percent in formal areas).

Table A.2: Household education characteristics

Characteristic	All	Location		Household poverty		Gender (Informal)	
		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	2	6	1	3	1	5	6
Some Primary	23	43	18	29	17	40	47
Completed primary	14	26	12	19	10	27	26
Some secondary	9	10	8	9	8	10	9
Completed secondary	24	12	27	24	24	14	8
Higher	28	4	34	17	39	4	4
N	2,253	1,024	1,229	1301	936	698	297
Mean percent of household's adults over 18 with highest grade completed:							
Total	100	100	100	100	100	100	100
None	2.0	6.8	0.9	3.3	0.8	5.7	8.3
Some Primary	8.2	31.3	3.1	12.6	4.5	29.3	34.9
Completed primary	14.8	30.0	11.5	21.3	9.0	31.6	28.5
Some secondary	7.2	10.3	6.5	7.4	6.9	10.5	10.2
Completed secondary	28.7	14.9	31.7	29.5	28.1	16.9	10.2
Higher	38.1	4.9	45.5	25.1	49.5	4.2	6.3
N	976	432	544	541	429	282	140
Percent of individuals in school by age group:							
5 to 14	91.5	89.7	92.0	89.5	94.1	89.9	91.0
N	301	147	154	190	110	95	48
15 to 18	66.0	46.4	71.7	62.9	70.0	37.9	60.3
N	143	70	73	84	58	41	25
Over 18	11.8	2.4	13.9	5.8	17.3	1.8	3.6
N	971	430	541	539	426	280	140

Among individuals aged 5 to 14 years old, 91.5% are currently in school; this figure is 66% for individuals 15 to 18 and 11.8% for individuals over 18. The percentage of individuals over 18 that are currently in school is significantly and numerically much higher among non-poor households than poor households (17.3% vs. 5.8%) and among households in formal areas than in informal areas (13.9% vs. 2.4%).

A.3 Household Health Profile

Thika was part of Central Province, which in 2005 had an average of 7.7 doctors and clinical officers per 100,000 residents and 38.4 nurses per 100,000 residents.¹³ Thika had 17.7 medical facilities per 100,000 residents, including hospitals, clinics, dispensaries, and other types of facilities.¹⁴

Table A.3: Household health characteristics

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of household's children under 15 having received BCG immunization	89	80	92	83	97	80	79
N	443	195	248	267	174	124	66
Percent of households with an injured/ill member, previous two weeks	18	24	17	15	20	25	23
N	985	434	551	543	435	283	141
Percent of ill household members that visit a health practitioner, previous two weeks	79	76	80	71	85	72	88
N	183	100	83	89	93	67	32
Household medical expenditures (KSh), previous month	607	301	677	173	940	322	281
N	954	430	524	533	415	281	139
Percent of households with health insurance	30	6	35	12	45	7	4
N	1,014	137	877	470	537	88	43

Overall, 89% of households' report their children under 15 have received BCG (tuberculosis) immunizations. Eighteen percent of households had a sick or injured household member in the two weeks prior to the interview, a number which is significantly higher in informal areas than formal areas. Of those who were ill, 79% visited a health practitioner. Rates of health insurance coverage are about 30, and vary significantly by area type (35% in formal areas vs. 6% in informal areas) and poverty (45% in non-poor households vs. 12% in poor households).

¹³ 2004/2005 numbers of healthcare providers obtained from Partners for Health Reformplus 2006 Report, Table A1, pg. 39, Annex A, statistics obtained from Rep. of Kenya. www.healthsystems2020.org/files/1654_file_Tech101_fin.pdf. Per capita figures calculated by dividing by 2005 (estimated) population obtained from the Kenya Integrated Household Budget Survey, Table 3.1, [http://www.knbs.or.ke/pdf/Basic%20Report%20\(Revised%20Edition\).pdf](http://www.knbs.or.ke/pdf/Basic%20Report%20(Revised%20Edition).pdf).

¹⁴ Based on most current (undated) figures from Kenya Bureau of Statistics Open Kenya online database, <https://kenya.socrata.com/Health-Sector/Health-Facility-Pie-Chart/yr4-763w>. Per capita figures calculated by dividing by 2009 census population, obtained from 2010 Statistical Abstract, Kenya National Bureau of Statistics.

HOUSEHOLD ECONOMIC PROFILE

B.1 Household Occupational Composition

Table B.1 presents the current occupation, or main activity, of household members. The first panel shows the percent of all adults over 18 in each of the occupations. The five most prominent occupation categories are casual employee, regular employee, self-employed, homemaker, and student, which together comprise about 84.3% of all adults in Thika over 18 years old. Individuals in formal areas are significantly more likely to be employers, regular employees, and students than individuals in informal areas, while individuals in informal areas are significantly more likely to be casually employed, self-employed, or unemployed. There are similar significant occupational differences between poor and non-poor households. A larger percentage of adults in poor households are casual employees, unemployed looking for work, and homemakers, while a larger percentage of non-poor households are regular employees, students, and earning income from investments.

The second panel shows the average percent of adults over 18 within each household that are occupied in each of the categories. This is done to show intra-household occupational status among households' adult members. The results here are similar to those in the first panel above. Here, we find that on average, 58.7% of a household's adult members are either regular employees, casual employees, or self-employed. About 18% are homemakers, 10% are unemployed, and 8.5% are students. Our survey found that in formal areas, the average percent of households' adults who are regular employees is almost eight times the average percent in informal areas (28.7% vs. 3.8%, a significant difference); households in formal areas also have a higher mean percentage of students, while households in informal areas have a higher mean percentage of casual employees, self-employed, unpaid family workers, people who are sick/unable to work, unemployed (not looking for work), and homemakers. Female-headed households contain significantly higher average percentages of adults who are self-employed than in male-headed households. Trends among poor vs. non poor households are similar: non-poor households have significantly larger mean percentages of regular employees, students, investment earners, and sick, while they have significantly fewer casual employees, unemployed (looking for work), and homemakers.

Table B.1: Household members' main activity

Occupation ^a	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of adults over 18 with occupation:							
Employer	0.9	0.1	1.1	1.2	0.7	0.1	0.0
Regular employee	24.1	3.5	28.6	15.4	31.8	4.0	2.6
Casual employee	21.2	33.2	18.6	25.6	17.6	35.0	29.7
Self-employed	11.6	16.2	10.5	12.5	10.8	14.6	20.9
Unpaid family worker	0.5	1.1	0.4	0.3	0.7	1.3	0.7
Apprentice	0.1	0.1	0.1	0.1	0.0	0.1	0.0
Student	9.1	4.2	10.1	6.1	11.8	3.1	6.6
Pensioner/investor	1.9	0.0	2.3	1.3	2.3	0.0	0.0
Earning from investments/ property	0.4	0.3	0.5	0.1	0.8	0.2	0.6
Sick/unable to work	0.4	0.6	0.4	0.2	0.7	0.6	0.8
Unemployed looking for work	9.0	13.5	8.0	11.4	6.8	12.5	17.2
Unemployed, not looking for work now	1.9	4.8	1.3	1.7	2.1	5.2	2.3
Homemaker	18.3	21.5	17.6	23.6	13.3	22.7	18.0
N	1,643	722	921	921	710	508	194
Mean percent of household's adults over 18 with occupation: ^b							
Employer	1.1	0.1	1.3	1.2	0.9	0.1	0.0
Regular employee	24.1	3.8	28.7	14.3	32.6	4.3	3.0
Casual employee	23.4	37.0	20.4	27.3	20.3	39.6	32.9
Self-employed	11.2	16.6	10.0	11.7	10.9	14.3	21.6
Unpaid family worker	0.4	0.9	0.3	0.3	0.3	1.2	0.5
Apprentice	0.1	0.1	0.1	0.2	0.0	0.0	0.0
Student	8.5	3.0	9.7	6.0	10.7	2.0	4.7
Pensioner/investor	1.4	0.0	1.7	1.1	1.6	0.0	0.0
Earning from investments/ property	0.7	0.4	0.7	0.1	1.2	0.2	0.9
Sick/unable to work	0.4	0.6	0.3	0.2	0.6	0.7	0.3
Unemployed looking for work	8.3	11.7	7.5	11.5	5.5	11.9	12.1
Unemployed, not looking for work now	1.8	3.9	1.3	1.5	1.8	4.0	2.2
Homemaker	18.1	21.3	17.4	24.0	12.8	21.1	21.3
N	976	432	544	541	429	282	140

Notes:

a. The category "Other" has been omitted.

b. These numbers are obtained by first computing the percentages of each household's members in each category, and then taking the mean of these percentages over all households.

B.2 Household Income/Expenditure Levels

There are two general approaches to measure spending power: expenditure and income, both of which are shown in the tables below. In the survey, 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 practice, the expenditure approach is usually more accurate because most respondents, making purchases daily, recall their expenses better. Income, on the one hand, can be problematic because it can be subject to respondent misreporting (e.g., desire to impress the enumerator) and, with non-wage income; respondents do not generally make a clear distinction between revenue (sales) and income (revenue minus expenses). Using both methods, therefore, provides an additional level of verification.

Table B.2a: Monthly household spending power, as measured by expenditure

Characteristic	All	Location		Household has...			Household head is ^c		Gender (Informal)		Value of transfer (row pct.) ^d
		Informal areas	Formal areas	Tenure ^a	Water connection	A business ^b	Skilled	Unskilled	Male-headed	Female-headed	
Percent of household below poverty line	47	71	41	50	36	36	30	56	72	71	
N	978	434	544	53	270	147	241	737	283	141	
Mean expenditure (monthly KSh)	16,678	9,592	18,248	39,988	22,483	23,751	21,848	13,971	9,810	9,136	
N	985	434	551	54	276	147	245	740	283	141	
Percent of households with expenditure: ^d											
Less than 3,000 KSh	1	4	1	2	1	0	0	2	5	3	5,203 (11%)
3,001-6,000 KSh	10	29	6	1	4	5	2	15	28	32	3,394 (9%)
6,001-9,000 KSh	16	25	14	6	12	11	8	21	24	29	4,792 (19%)
9,001-30,000 KSh	23	21	23	6	21	23	20	24	22	18	5,535 (28%)
13,001-18,000 KSh	20	12	22	19	18	20	21	20	12	12	5,103 (37%)
18,001-30,000 KSh	20	6	23	37	27	26	32	14	6	5	5,951 (44%)
31,001-75,000 KSh	8	3	9	19	14	11	15	4	3	2	8,128 (47%)
Above 75,000 KSh	1	0	1	11	3	4	1	1	0	0	21,816 (83%)
N	985	434	551	54	276	147	245	740	283	141	281
Cash transfers(e)	5,003	2,482	5,193	3,000	6,490	6,328	4,196	5,392	1,317	4,326	
N	111	31	80	3	43	20	21	90	13	16	

Notes:

- Household possesses deed or other officially recognized document conferring ownership of the structure, land, or both.
- "Business" refers to a self-employed activity that may or may not entail household or wage employees.
- Includes those self-declared as "skilled" as well as "professional".
- 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 of the Overview Report. No significance test performed on this column.
- 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

Characteristic	All	Location		Household has...			Household head is ^c		Gender (Informal)		Value of remittance (row pct.) ^e
		Informal areas	Formal areas	Ten-ure ^a	Water connection	A busi-ness ^b	Skilled	Un-skilled	Male-headed	Female-headed	
Proportion of households with income: ^d											
Less than 3,000 KSh	3	16	0	0	0	2	0	5	16	17	6,808 (9%)
3,001-6,000 KSh	10	30	6	3	3	9	4	14	29	32	6,947 (10%)
6,001-9,000 KSh	9	16	8	13	6	15	4	11	16	14	7,247 (10%)
9,001-30,000 KSh	13	12	13	1	8	11	10	15	10	16	12,051 (9%)
13,001-18,000 KSh	16	8	18	7	14	11	16	16	8	6	3,666 (8%)
18,001-30,000 KSh	27	14	30	28	35	17	33	23	15	11	17,182 (7%)
31,001-75,000 KSh	18	4	21	28	29	26	27	13	5	2	45,852 (6%)
Above 75,000 KSh	3	0	4	19	6	9	7	1	0	0	23,527 (33%)
N	798	358	440	36	209	128	195	603	227	122	68
Cash remittances ^e	17,376	5,860	18,878	24,784	25,428	18,492	20,422	16,579	6,461	5,466	
N	111	31	80	3	43	20	21	90	13	16	

Notes:

- Household possesses deed or other officially recognized document conferring ownership of the structure, land, or both.
- "Business" refers to a self-employed activity that may or may not entail household or wage employees.
- Includes those self-declared as "skilled" as well as "professional".
- 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.
- Remittances are cash inflows over last three months averaged over households with such flows (equal to proportion of row households in parentheses).

Overall, 47% of all households have monthly expenditures below the poverty line, as determined by the household composition. This proportion is significantly and numerically much lower in formal than informal areas (41% vs. 71%), and when the household has a water connection, owns a business, or has a head that works in a more "skilled" profession compared to when it does not.

Income distributions are skewed slightly higher than expense distributions. On average, 63% of households have expenditures between 9,000 and 30,000 KSh per month. By income, 74% of households fall between 9,000 and 75,000 KSh per month. Expenditure distributions vary significantly depending on type of settlement, tenure status, water connection, business ownership, and whether the household head is skilled, but not by gender. Skilled households and those in formal areas generally have more households at the higher end of the income and expenditure distributions than unskilled households and those in informal areas.

On average, households who sent money to individuals outside their household sent around 5,000 KSh in the three months prior to the interview, and those that received money received, on average, almost 17,400 KSh in the same period. Households were more likely to send money than to receive it, and wealthier households were much more likely to send money—83% of households in the top expenditure category sent money to friends or relatives, compared to only 11% of those in the bottom. However, there are no large differences in the proportion of households receiving remittances (transferred income) across categories, except for the top income category, in which 33% of households are remittance recipients.

B.3 Household Wealth Composition

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 (indicated in brackets, in USD), converting to KSh, and dividing by 1,000; so the average of 30.6 means that the average household owned approximately 30,600 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.

This value is significantly higher in formal than informal areas, non-poor vs. poor households, and male- vs. female-headed households (in informal areas). There are significant differences by area type and poverty status in the holdings of all goods save for animals.

Home values are relatively concentrated, and average 1,878,600, and very few households own their land (only 13 respondents). The high number of missing or don’t know responses to this question means that the averages shown are drawn from a relatively small group and tests of statistical significance were not possible.

Table B.3: Household wealth composition

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Index of household wealth ^a	30.6	15.1	34	24.3	36.1	16.1	13.4
N	985	434	551	543	435	283	141
Household's average holdings of:							
Class-1 durables (furniture, pans, iron, mosquito net) [7]	6.0	4.4	6.4	5.6	6.3	4.4	4.4
Class-2 durables (stove, sewing machine, fan, wheelbarrow, water storage tank) [60]	1.3	0.9	1.4	1.1	1.5	0.9	0.9
Class-3 durables (refrigerator, washing machine, electric generator, bicycle) [100]	0.2	0.0	0.2	0.1	0.3	0.1	0.0
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]	2.0	0.8	2.3	1.7	2.3	0.9	0.7
Motorized transport (motorcycle [400], car [1,000])	0.0	0.0	0.1	0.0	0.1	0.0	0.0
N	985	434	551	543	435	283	141
Value of primary residence, not its land (in 1,000 KSh) ^b	1,879	136	5,000	117	3,447	85	85
N	23	22	1	15	8	11	10
Value of primary residence and its land (in 1,000 KSh) ^b	2,207	1,858	2,543	1,858	2,543	3,874	200
N	13	5	8	5	8	4	1
Value of other land and/or residence (in 1,000 KSh) ^c	3,527	169	4,517	19	4,271	120	233
N	15	10	5	3	12	6	4

Notes:

- 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 [].*
- About 96% 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. Note that values in the last three rows of the table are divided by one thousand.*
- 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.*

B.4 Household Finance

Around 70% of all households in Thika have a bank account, a number that differs significantly across location (80% in formal areas vs. 22% in informal areas) and poverty status (81% for non-poor households vs. 57% for poor households) but not by gender of head of household. However, the percentage of households with loans is extremely low, and most loans (8% of households) are obtained from banks. Consistent with findings mentioned above, far more households (37%) sent money to people not living at the household than received money (14%). Significantly fewer poor households send and receive money than non-poor households, and significantly fewer households in informal areas send or receive transfers than in formal areas. Male-headed households are twice more likely to send money than female-headed households, while female-headed households are three times as likely to receive money than male-headed households; these differences are significant.

Table B.4: Household finance

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with a bank account	70	22	80	57	81	23	19
N	979	431	548	541	431	280	141
Percent of households with a loan	14	8	16	8	20	8	6
N	972	427	545	541	424	278	139
Percent of households with a loan from a...							
Bank	8	1	10	3	12	23	19
Microfinance institution	0	0	0	0	1	0	0
Savings/credit group or co-op	2	0	3	1	4	1	0
Relative/friend	2	3	2	2	2	4	3
Informal lender	1	1	1	1	1	1	2
N	985	434	551	543	435	283	141
Percent of households receiving cash from those not now living at residence ^a	14	9	15	10	18	5	14
N	983	433	550	543	433	283	140
Percent of households sending cash to those not now living at residence ^a	37	15	42	30	43	19	8
N	982	434	548	542	434	283	141

Notes:

Over the previous twelve months.

B.5 Household-Owned Business Profile

Fourteen percent of households own a business, most of which (61%) engage in some form of selling. These businesses tend to be fairly new and quite small, as the average age for a business is less than a two years and the average number of employees is two—in fact, the business owner is the sole employee in many cases. Nearly all businesses are registered either with a local authority (41%) or not at all (53%), and 30% of businesses do not pay fees or taxes. The relatively low number of businesses means that it is not possible to perform tests of statistical significance for most of Table B.5.

Table B.5: Household-owned business profile

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of household with business ownership, last 12 months	14	18	13	11	17	16	21
N	983	434	549	542	435	283	141
Type of business: ^a							
Manufacturing	15	12	17	18	14	16	6
Selling	61	63	61	67	58	57	73
Transport	3	7	2	1	4	12	0
Professional (including Internet)	0	0	0	0	0	0	0
Other (barber, cleaning, etc.)	21	21	21	13	25	20	21
N	147	83	64	69	78	51	30
Years in operation	1.5	1.4	1.5	1.6	1.4	1.4	1.5
N	143	79	64	66	77	49	28
Number of employees	2	1.5	2.2	1.9	2.1	1.6	1.4
N	147	83	64	69	78	51	30
Which are...							
Household members	1.3	1.4	1.3	1.4	1.2	1.4	1.2
N	146	82	64	68	78	51	29
Non-household members	0.8	0.2	0.9	0.5	0.9	0.2	0.2
N	147	83	64	69	78	51	30
Revenue in previous month ^(b)	20,101	8,592	24,247	15,151	22,079	10,668	6,921
N	88	53	35	34	54	29	22
Registration status:							
Local authority (municipal or city council)	41	11	51	26	50	15	6
Kenya Revenue Authority	7	1	10	7	8	2	0
Registrar of Companies	18	0	23	6	24	0	0
None of the above	53	88	42	70	43	84	94
N	147	83	64	69	78	51	30
Share of businesses making fiscal contributions:							
Daily market local fee	17	6	21	17	17	10	0
Single business permit local fee	46	10	58	30	56	14	4
Value Added Tax	7	1	9	4	9	2	0
N	147	83	64	69	78	51	30

Notes:

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.

DWELLING TENURE, SECURITY, AND CHARACTERISTICS

C.1 Household Dwelling Characteristics

On average, households in Thika have 1.9 people per room, a ratio that significantly differs by area type, household poverty, and the gender of household head. Households have less than one bathroom on average, and twenty-seven percent of households have a kitchen; both vary significantly by location and poverty status, but not gender (in informal areas).

Most households in Thika cook with paraffin/kerosene, charcoal or gas. Using electricity for cooking fuel is rare, but more common in formal areas than informal areas. Significantly higher percentages of households in formal areas and that are non-poor use gas, while a significantly higher percentage in informal areas and that are poor use charcoal and firewood. A significantly higher proportion of female-headed households use firewood than male-headed households.

Most households are renters (90%), with only a small percentage (6%) owning their land and structure. Significantly more households in formal area are renters than in informal areas. Interestingly, 17% in informal areas own their structure only, compared to only 1% in formal areas, where households are more likely to rent.

Households in informal areas of Thika report that they are significantly more susceptible to natural and manmade hazards than households in formal areas. Seventy-three percent of households in informal areas report that the area around their dwelling floods during heavy rains, 53% say they live within a ten-minute walk of a formal or informal garbage dump, and 54% state that they are exposed to factory pollution in their neighborhood.

Quality of housing varies widely across location. Eighty-seven percent of households in informal areas have an earth or clay floor, compared to 1% of those in formal areas – a significant difference. Almost all households have an iron or grass roof, though the proportions are significantly different in formal vs. informal areas. In formal areas nearly all households have stone or brick walls, while only 7% do in informal areas.

C.2 Home and Land Ownership

Most households are renters (90%), with only a small percentage (10%) owning their land or structure. Seventy-nine percent of households owning their structure reported feeling secure in their ownership.

Most household owners (76%) reported having a freehold title for their land, while 19% reported no land possession documents whatsoever. Two percent of households reported being evicted.

Table C.1: Household dwelling characteristics

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Number of persons per room	1.9	2.1	1.9	2.2	1.7	2.2	1.9
N	985	434	551	543	435	283	141
Number of bathrooms	0.7	0.3	0.8	0.8	0.6	0.3	0.4
N	985	434	551	543	435	283	141
Proportion of residences with kitchen	27	7	32	19	34	7	7
N	985	434	551	543	435	283	141
Primary cooking fuel:							
Electricity	2	1	3	3	2	1	0
Paraffin or kerosene	34	35	34	31	36	38	28
Gas	40	4	47	32	46	3	4
Charcoal	23	55	16	32	15	55	56
Firewood	1	6	0	2	1	3	12
N	951	408	543	518	426	258	141
Proportion of households that:							
Total	100	100	100	100	100	100	100
Owens the land only	0	0	0	0	0	0	0
Owens structure only	4	17	1	5	3	16	20
Owens land and structure	6	3	7	7	6	3	4
Rents	90	79	92	88	91	81	76
Squats	0	0	0	0	0	0	0
N	985	434	551	543	435	283	141
Pct. of HHs in areas subject to ^a :							
Flooding ^b	51	73	46	49	53	74	72
Mudslides ^c	15	21	13	18	12	19	23
10 minute walk to formal or informal garbage dump	37	53	33	36	37	53	52
Factory pollution (air, water, noise)	33	54	28	28	38	55	52
N	985	434	551	543	435	283	141
Housing quality:							
Pct. with earth/clay floor	17	87	1	26	9	86	90
Percent with corrugated iron roof	94	100	93	95	94	100	100
Percent with grass roof	0	0	0	0	0	0	0
Percent with stone/brick/block walls	82	7	99	72	91	9	5
N	985	434	551	543	435	283	141

Notes:

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

Table C.2: Household residence and land tenure

Characteristic	All	Location		Household poverty		Gender (Informal)	
		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	4	17	1	5	3	16	20
Own land and structure	6	3	7	7	6	3	4
Rent	90	79	92	88	91	81	76
Squat	0	0	0	0	0	0	0
N	985	434	551	543	435	283	141
Percent of households that feel secure in ownership	79	56	81	76	85	49	66
N	54	19	35	23	30	12	7
Variability of households feeling secure ^a	0.10	0.01	0.16	0.17	0.55	0.65	0.00
N	54	19	35	23	30	12	7
Percent of households that experienced eviction	2	2	2	4	1	3	2
N	985	434	551	543	435	283	141
Proportion of household owners by type of land-possession document:							
Total	100	100	100	100	100	100	100
None	19	75	10	23	15	71	76
Freehold title	76	14	86	72	80	15	16
Temporary occupation license	0	3	0	0	1	5	0
Share certificate	0	0	0	0	0	0	0
Government certificate of title ^b	3	0	4	5	2	0	0
Letter from chief (provincial administration)	1	7	0	0	2	7	8
Other	0	2	0	0	0	3	0
N	68	29	39	33	34	18	9
Neighborhood mobility							
Years in dwelling	6.2	9.7	5.5	6.2	6.3	5.5	8.3
N	973	426	547	535	432	557	279
Years in neighborhood	7.3	11.5	6.3	7.1	7.4	6.4	9.9
N	971	426	545	535	430	279	137
Home loan payment as a percent of spending power ^c	2	2	-	-	2	10	0
N	3	3	0	0	3	1	2

Notes:

- Computed as the intra-class correlation coefficient, where the "class" is the EA. This measures the extent to which households within an EA resemble each other in their feelings of security in ownership. No significance tests performed on this row.
- Long-term lease from City council/Government.
- Computed only for those with a housing loan.

The bottom portion of Table C.2 focuses on neighborhood mobility. Households reported living an average of six years in their present dwelling, and about seven years in their present neighborhood. On average, informal area and female-headed households reported living in the neighborhood significantly longer than formal area and male-headed households.

C.3 Distribution of Housing Values and Rents

Approximately 50% of respondents reported their home values to be between 9,000 KSh and 2.5 million KSh; the average value was about 2.04 million. Note that very few households—36 in total—reported home values, so these results are likely unreliable.

Average rent is 3,612 KSh per month. Most of the housing value data could not be tested for significance.

Table C.3: Distribution of housing values and rents

Characteristic	All	Location		Household has...			HH head is...(c)		Gender (Informal)	
		Informal areas	Formal areas	Tenure	Water connection	A business	Skilled	Unskilled	Male-headed	Female-headed
Average home value (1,000 KSh) ^a	2,041	518	2,943	2,207	2,749	2,670	2,206	1,987	847	178
N	36	27	9	13	4	16	6	30	15	11
Distribution of home values: Total	100	100	100	100	100	100	100	100	100	100
1-8,999 KSh	6	0	10	12	0	11	0	8	0	0
9,000-299,999 KSh	32	85	0	2	0	18	0	42	80	88
300,000-999,999 KSh	3	8	0	3	0	5	0	4	7	12
1,000,000-2,499,999 KSh	13	5	17	25	14	0	40	4	9	0
2,500,000-250,000,000 KSh	47	2	73	58	86	66	60	42	4	0
N	36	27	9	13	4	16	6	30	15	11
Average monthly rent (tenants) ^b	3,612	725	4,152		6,178	2,889	5,252	2,705	699	758
N	846	336	510		240	104	223	623	222	108
Distribution of monthly rents: Total	100	100	100		100	100	100	100	100	100
1-899 KSh	18	84	6		1	17	10	23	84	84
900-1,499 KSh	9	9	9		6	5	3	12	9	8
1,500-1,999 KSh	16	3	19		11	21	16	16	4	1
2,000-3,499 KSh	23	2	27		17	35	17	26	2	3
3,500-150,000 KSh	34	2	40		64	22	54	23	2	3
N	846	336	510		240	104	223	623	222	108

Notes:

- 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?").
- Excludes imputed owner-occupied rents.
- Includes those self-declared as "skilled" as well as "professional".

C.4 Neighborhood Social Capital and Civic Participation

Respondents that own their homes are more likely than renters to participate in their community. Twenty-one percent of owners attended local councils (compared to only 7% of renters) and 24% attended neighborhood forums (compared to 10% of renters); both proportions are significantly higher than the corresponding proportion of renters. Turnout for local elections tends to be fairly low (23% on average), but in the 2007 general election and 2010 referendum it was nearly 60%. Those with better access to infrastructure are more likely to have voted in all types of elections, and the differences are statistically significant. Households in formal areas are more likely than those in informal areas to vote in local elections and the 2010 referendum, while owners are more likely than renters to vote in the 2007 election. The percent of households with an informal community or neighborhood leader is significantly higher (21%) in informal areas than in formal areas (9%) and among owners (27%) than renters (9%). Very few respondents (5%) said that they had participated in a public demonstration or protest.

Table C.4a: 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
Civic participation									
Percent of households... contacting local council	8	8	8	6	9	9	7	21	7
N	983	434	549	412	571	283	141	117	866
attending a neighborhood forum	12	12	12	8	13	13	8	24	10
N	983	434	549	412	571	283	141	117	866
Social activism									
Percent of households voting in...local election ^c	23	16	25	16	26	18	14	27	23
N	984	434	550	412	572	283	141	117	867
2007 general election ^c	59	59	59	41	65	62	53	72	57
N	985	434	551	412	573	283	141	117	868
2010 referendum ^c	61	54	63	39	68	57	49	70	60
N	985	434	551	412	573	283	141	117	868
Percent of households with informal community or neighborhood leader	11	21	9	11	11	20	23	27	9
N	967	427	540	404	563	280	138	117	850
Percent of households that took part in a public demonstration or protest	5	2	5	3	5	2	2	8	4
N	984	434	550	412	572	283	141	117	867

Notes:

- Defined by dividing the population in half based on a score assigned using responses from thirteen infrastructure-related questions (see Section 3 of Introduction).
- Alternatively, this could be the length of time living in the neighborhood: less/more than (say) 2 years.
- Out of all households and not just those registered to vote.

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, and whether people in their neighborhood look out for each other. On both questions, the results were positive. When asked if people in their community would cooperate if asked by an official, the results averaged three on a four-point scale (where 4=“very likely” and 1=“very unlikely” to cooperate). When respondents were asked if they agreed that people look out and trust each other in their neighborhood, answers averaged 3.7 on a five-point scale (where 1=“strongly disagree” and 5=“strongly agree”). On both questions, there were only slight differences between formal and informal areas, and people with high and low access to infrastructure, although the differences were statistically significant. Only 52% percent of respondents said they felt safe in their own neighborhood. Only 24% said they felt safe in informal areas while only 36% among households with low access to infrastructure felt safe, and the differences by area and infrastructure were statistically significant.

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	Fe-male-headed	Own	Rent
Social capital									
Average household response to:									
People in my neighborhood cooperate if asked by an official ^c	3.0	2.9	3.0	3.0	3.0	2.9	2.9	3.0	3.0
N	975	432	543	409	566	282	140	117	858
People in my neighborhood look out for/trust each other ^d	3.7	3.4	3.7	3.4	3.7	3.4	3.5	3.6	3.7
N	983	434	549	412	571	283	141	117	866
Proportion of households feeling safe from crime in own neighborhood	52	24	58	36	57	25	21	46	52
N	985	434	551	412	573	283	141	117	868

Notes:

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

INFRASTRUCTURE SERVICES

D.1a Water Access

Thirty-nine percent of households have a private piped water connection in their dwelling, a proportion which is significantly higher in formal areas (47%) than in informal areas (3%) and among those with secure ownership (75%) vs. those without or who are renters (53% and 37%, respectively). “Secure” represents owners who feel no one could force them to leave without an official legal process in which they would participate, “insecure” represents owners who feel they could be forced out, and “rent” represents those who rent their homes and therefore have no security of ownership as well as squatters and those who own their dwelling but not land. Although 65% have piped water in their compound, this varies significantly and greatly by area type: 78% in formal areas have piped water access in their compound while only 7% in informal areas have piped water access in compound. Finally, 76% of households are close (within 50 meters) to a source of piped water. On average, it takes respondents just about 7.5 hours per month to collect water, including travel to and from the water source, waiting time, and filling time. Water costs an average of 555 KSh a month. There was not enough data at the census tract level to test for statistically significant differences between categories of households for the cost of water in time or money.

Thirty-two percent report that piped water is their most important water source, roughly matching the percent with piped water into their dwelling. Some 44% of households report that a shared yard tap is their most important source of water. Another 19% name water vendors as most important. Non-poor households are more likely than poor households to obtain piped or bottled water and are less likely to use water vendors. Shared taps are significantly more common as a main source in formal areas than in informal settlements, while water vendors were listed as the primary water source by nearly all respondents in informal areas but only by 2% in formal areas; the difference is statistically significant. Of the households that didn’t have access to piped water, the main reason given (65%) was because they rented rather than owned their home and their landlord would not pay for a connection; the second most common reason (17%) was inability to afford the initial connection (although relatively few were unable to afford a water bill). Only 8% said there was no service available.

D.1b Water Quality

Water quality is generally rated “good” especially among those who use piped water or a shared tap (93% and 80% rate their water as good, respectively).

Virtually all respondents purchase their water from a public utility. Only 21% of the households in Thika treat their water in any way; however, among those who rate their water as good, 74% treat, as compared to only 26% of those who rate their water as fair. Treatment is significantly higher in formal areas (25%) vs. informal areas (6%). Of those that treat water, fairly equal numbers boil it (70%) or add bleach or chlorine (69%).

Table D.1a: Water access

Characteristic	All	Security of ownership ^a			Location		Household 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	39	75	53	37	3	47	30	46	2	4
N	985	38	16	931	434	551	543	435	283	141
Percent of households with piped water connection in compound	65	51	73	65	7	78	61	68	5	10
N	985	38	16	931	434	551	543	435	283	141
Percent of households close to piped water access ^b	76	87	100	75	75	83	74	81	76	76
N	411	7	8	396	396	15	296	115	264	124
Monthly cost of water in...Time (minutes) ^c	446	825	149	445	456	358	479	353	468	429
N	399	5	6	388	384	15	288	111	254	122
Money (KSh)	555	626	1,478	532	328	630	370	709	320	340
N	752	36	14	702	413	339	423	323	270	135
Most important water source: Total	100	100	100	100	100	100	100	100	100	100
Piped	32	69	31	30	3	39	25	38	2	3
Bottled	5	4	22	5	0	6	0	9	0	0
Shared tap connection	44	23	27	46	5	53	45	44	4	7
Vendor (kiosk, tanker, other)	19	4	20	20	92	2	30	9	94	90
Neighbor(s)	0	0	0	0	0	0	0	0	0	0
Well/borehole	0	0	0	0	0	0	0	0	0	0
Natural source outside household	0	0	0	0	0	0	0	0	0	1
N	984	38	16	930	434	550	542	435	283	141
No connection due to:	100	100	100	100	100	100	100	100	100	100
Other sources available	9	12	25	9	6	31	6	16	5	9
Renting ^d	65	14	11	67	68	45	69	54	70	64
Can't afford connection	17	49	64	16	16	24	13	27	15	18
Can't afford monthly bill	1	13	0	1	2	0	2	1	1	3
Provider has waiting list	0	0	0	0	0	0	0	0	0	0
No service available	8	12	0	8	8	0	10	2	8	7
Other	0	0	0	0	0	0	0	0	0	0
N	405	7	8	390	391	14	291	114	260	123

Notes:

- 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.
- 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.
- 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.
- Zeros that are significant represent small numbers rounded to zero.

Table D.1b: Water quality

Characteristic	All	Household 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	32	25	38	3	39	93	6	0	100	232	2	3
Bottled	5	0	9	0	6	70	26	4	100	17	0	0
Shared tap connection	44	45	44	5	53	80	20	0	100	320	4	7
Other vendor	19	30	9	92	2	84	15	0	100	410	94	90
Neighbor(s)	0	0	0	0	0	100	0	0	100	1	0	0
Well/Borehole	0	0	0	0	0	-	-	-	-	0	0	0
Natural outside-Household source	0	0	0	0	0	70	30	0	100	2	0	1
N	984	542	435	434	550	839	141	3			283	141
Water provider: Public	100	100	100	100	100	85	15	0	100	574	100	100
Private	0	0	0	0	0	-	-	-	-	0	0	0
Self	0	0	0	0	0	-	-	-	-	0	0	0
Community	0	0	0	0	0	-	-	-	-	0	0	0
N	574	247	320	38	536	497	75	2			19	17
Percent of households treating drinking water	21	19	24	6	25	74	26	0	100	161	6	6
N	985	543	435	434	551	840	141	3			283	141
Treatment method: ^b Boiling	70	77	64	75	70	73	27	0	100	120	79	68
Add bleach/chlorine	69	25	35	22	31	74	26	0	100	40	17	7
Other (sieve, filter, settle)	7	2	11	19	7	75	25	0	100	17	25	10
N	161	69	89	24	137	120	41	0			17	7

Notes:

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%.

D.2a Electricity and Waste-Disposal Services

Eighty four percent of respondents reported access to electricity, a figure that differs significantly by poverty (92% of non-poor vs. 74% poor) and also quite largely by settlement type (91% in formal vs. 50% in informal). Reasons for not having a connection are similar to those for water—the primary reason reported was that households did not own their home and didn’t have a choice (78%), followed by inability to pay for the initial connection (14%). Thirty-six percent of respondents reported functional street lighting in their area, which differs significantly between formal and informal locations (42% vs. 14%).

The average monthly bill for those with electricity is 549 KSh a month. Only 4% of households with electricity do not pay for it. Electricity payments are primarily made to the public utility (75%), but 19% pay their landlord instead. Thirteen percent of respondents experience power outages on a weekly basis or more.

About half of all households reported getting rid of their refuse by dumping it in their neighborhood or compound, while 24% reports using garbage collection and 21% report primarily burning their garbage. Households in formal settlements and non-poor households are significantly more likely to use a collection system than households in informal settlements and poor households, who are more likely to use dumping or burning as their main disposal method. In fact, no households in informal settlements report using garbage collection service, and 68% of them report dumping. Forty-three percent of respondents report they pay for garbage collection service.

D.2b Access to Sanitation Services

Only 31% of households reported that they have a toilet in their home, and this significantly varies by location; whereas 37% of households in formal areas have a toilet at home, only 2% of those in informal settlements have one. Among the non-poor, 40% have a toilet in their home, and among the poor only 20% have one, and the difference is significant. Most households do use a flush toilet (65%), or a public latrine (29%), and formal areas and the non-poor are more likely to use a flush toilet while the informal areas and the poor are more likely to use a latrine. In fact, in informal areas 80% use a public latrine.

The majority of households (68%) share a toilet with several other families. Most toilets connected to a sewage system (72%) and 24% drain to a pit latrine.

“Grey water” (waste water from washing, cleaning, etc.) is generally dumped down the drain (69%). Households in formal settlements are more likely to dump their grey water down the drain than pour it into the street, and less likely to pour it into the latrine.

Table D.2a: Access to electricity and waste-disposal

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Electricity							
Proportion of households with access to electricity	84	50	91	74	92	51	47
N	985	434	551	543	435	283	141
Reason for no connection: Total	100	100	100	100	100	100	100
Renters	78	74	83	79	74	72	80
Firm has waiting list	4	3	5	2	9	3	3
Cannot afford connection	14	18	7	13	15	22	10
Cannot afford monthly bill	4	4	4	5	2	2	6
Other	0	1	0	0	1	1	1
N	257	215	42	192	65	140	72
Percent of households with mostly functioning street lighting	36	14	42	36	37	13	16
N	985	434	551	543	435	283	141
Average monthly bill, KShs	549	411	559	465	615	407	432
N	985	434	551	543	435	283	141
Percent of households not paying for electricity	4	22	3	4	5	25	20
N	538	134	404	248	283	90	38
Payment to: Total	100	100	100	100	100	100	100
Utility	75	66	76	76	74	61	76
Prepaid card	5	5	6	1	9	7	3
Landlord	19	24	18	22	17	26	22
Third party (from utility power line)	0	3	0	0	0	4	0
N	503	108	395	232	264	73	30
Percent of households with outages at least once weekly	13	21	12	11	14	20	22
N	718	216	502	344	367	143	66
Refuse disposal							
Main method:							
Dumping	53	68	50	58	49	69	69
Burying	2	0	2	0	3	0	0
Burning	21	32	18	29	14	31	31
Collection system ^a	24	0	29	12	34	0	0
N	985	434	551	543	435	283	141
Proportion of households paying for collection	43	0	43	33	47	0	-
N	145	1	144	38	103	1	0

Notes:

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

Table D.2b: Access to sanitation

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with toilet in home	31	2	37	20	40	1	3
N	985	434	551	543	435	283	141
Type of toilet system: Total							
Pit latrine (individual)	6	15	3	8	4	14	15
VIP latrine	0	0	0	0	0	0	1
Flush toilet/WC	65	4	79	50	77	4	3
Public/shared latrine	29	80	18	41	19	81	80
Paid shared latrine	0	0	0	0	0	0	0
N	985	434	551	543	435	283	141
Percent of households sharing toilet:							
Doesn't share	32	9	37	24	38	7	11
Shares with 2-9 other households	47	35	49	44	49	35	33
Shares with 10+ other households	21	56	14	31	13	58	56
N	966	415	551	529	430	271	134
Type of disposal system for toilet:							
Total	100	100	100	100	100	100	100
Pit latrine	24	76	12	31	18	78	71
Sewer (legal)	72	23	83	65	77	20	28
Sewer (informal)	4	1	4	3	4	1	0
Septic tank/soak pit	1	1	1	1	1	1	1
N	955	428	527	528	420	278	140
Disposal of "grey water": Total							
Total	100	100	100	100	100	100	100
Dump into drain	69	31	77	50	85	33	27
Pour onto road	28	55	22	45	13	52	62
Pour into latrine	2	9	1	3	1	10	6
Other	2	5	1	2	1	5	5
N	984	433	551	543	434	282	141

D.3 Access to Transport

Most individuals (57%) work or study outside their neighborhood rather than inside. Practically all respondents commute on foot (61%) or via a matatu (29%).¹⁵ People in informal areas and in poor households are significantly more likely to walk and less likely to use a matatu than those in formal areas and the non-poor. Four percent of non-poor household members drove to work or school in their own vehicle.

Average one-way transport time is 19 minutes. Respondents take slightly longer trips to school than to work. Of the respondents that had to pay to travel, the average one-way cost is 67 KSh.

¹⁵ A "matatu" is a 14-seater minivan used throughout Kenya as a form of public transport.

Table D.3: Access to transport

Characteristic	All	Household activity ^a		Location		Household poverty		Gender (Informal)	
		Work	Study	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent who work or study...									
inside the neighborhood	40			49	38	55	29	43	61
outside the neighborhood	57			41	60	42	69	47	30
inside and outside the neighborhood	3			10	1	3	2	10	9
N	1,154			469	685	580	567	321	135
Main mode of travel(b) Walk	61	78	93	84	56	72	52	83	88
Bicycle	1	8	0	5	1	2	1	7	1
Own vehicle	3	0	0	0	4	1	4	0	0
Matatu	29	6	5	5	34	21	36	5	5
Shared taxi	0	0	0	0	0	0	0	0	0
Bike taxi	4	3	0	2	5	2	7	2	2
Municipal bus	1	0	2	1	1	1	2	1	0
N	1,612	147	58	205	1,407	793	809	139	60
Transport time (minutes)	19	17	15	16	19	17	20	17	13
N	1,581	367	299	666	915	854	717	453	197
One-way trip cost to work/school (KSh)	67	32	31	32	68	97	52	36	25
N	417	49	17	66	351	149	260	45	19
Households with road access as: Poor	34			57	29	51	20	58	59
Good	66			43	71	49	80	42	41
N	985			434	551	543	435	283	141
Percent of households with limited road access during rainy season	14			27	11	17	10	27	26
N	984			434	550	543	434	283	141

Notes:

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.

Sixty-six percent of respondents said that their access to roads is generally good, although there are significant differences by location and poverty status. Eighty percent of the non-poor rate their road access as good while only half of the poor do, and 71% in formal areas rate it as good as compared to only 43% in informal areas. Fourteen percent of households have limited road access during the rainy season; informal areas and the poor fare significantly worse than those in formal areas and the non-poor.

D.4 Access to Communications

While land lines are practically nonexistent among households in Thika, mobile phone ownership is widespread. The average household owns 1.6 mobile phones. The number owned varies significantly by area type, poverty status, and, in informal areas, the gender of the household head. A remarkably large number of those with mobile phones use mobile banking (86%), with significant differences by area type (92% vs. 62%), and poverty status.

Table D.4: Access to communications

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with functioning land line	0	0	0	0	0	0	0
N	985	434	551	543	435	283	141
Average number of mobile phones owned by household	1.6	1.0	1.7	1.4	1.7	1.1	0.8
N	982	434	548	542	434	283	141
Percent of households using mobile banking	86	62	92	81	90	65	53
N	982	434	548	542	434	283	141
Percent of households with functioning computer	15	1	18	5	24	1	2
N	985	434	551	543	435	283	141
Percent of households using internet (any means)	22	4	26	6	37	4	4
N	981	433	548	542	432	283	140

On the other hand, relatively few respondents have a computer (15%), though the rate of computer ownership is significantly higher in formal areas (18% vs. 1%) and among non-poor households (24% vs. 5%). Only 22% reported accessing the internet using any means, a figure which is significantly higher among households in formal settlements than informal settlements (26% vs. 4%), among non-poor households than among poor households (37% vs. 6%), but not by gender.

D.5 Access to Infrastructure Indicator

The access to infrastructure 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 9.5.¹⁶ Higher scores represent better access to infrastructure. This indicator provides an overall understanding of a household's infrastructure access. By averaging households' scores on the indicator, we can quickly compare infrastructure access in informal and formal areas, between poor and non-poor households, and between male- and female-headed households in informal areas.

Table D.5 presents household mean scores on the access-to-infrastructure indicator. The mean score across all households in Thika is 5.09. Households in formal areas score significantly higher than households in informal areas, and the difference in mean scores is quite large—nearly double. There are also significant differences between poor and non-poor households (4.53 vs. 5.55) but the magnitude of these differences is far less than the difference between formal and informal areas.

Table D.5: Access to infrastructure indicator

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Mean score on access to infrastructure indicator	5.09	2.74	5.62	4.53	5.55	2.72	2.75
N	985	434	551	543	435	283	141

¹⁶ The 13 subcategories are: piped water (1 point); shared/indirect connection (0.5 points); direct electricity access (1); street lighting (0.5); garbage collection system (1); own toilet (1); shared toilet with less than 20 other people (0.5); legal sewer system for toilet (0.5); grey water not poured onto street (0.5); good road access at dwelling (0.5); road access not limited during rainy season (0.5); no flooding (1); no mudslides (1).

CONCLUSION

The following three figures are “Development Polygons”. These polygons are meant to complement the detailed tables presented in sections A through D by illustrating an “overall” sense of the state of the city. We present information for all areas, along with formal and informal areas, in each of the three figures: the Development Diamond, the Infrastructure Polygon, and the Living Conditions Diamond.¹⁷ In all figures, the value labels included provide the value of the indicator for all areas. The statistics underlying these figures are also in the tables, above. Similar graphics also appear in the City-at-a-Glance Reports and the Overview Report 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 with full coverage would indicate that the city is doing very well in terms of development, infrastructure, or living conditions.

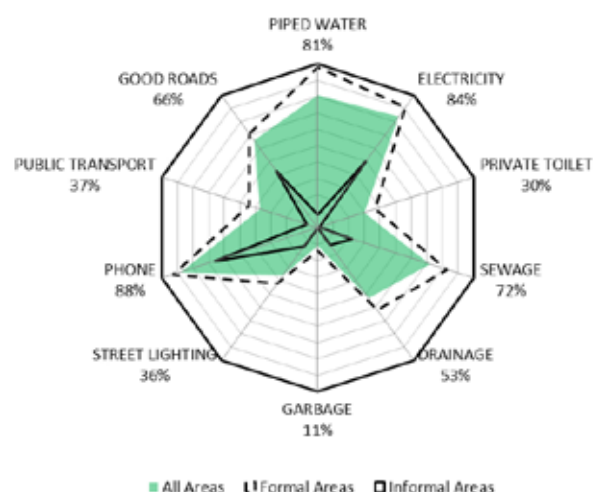
The Development Diamond (Figure 1) maps four indicators of poverty—welfare, employment, education, and living conditions. Fifty-three percent of all households have expenditures above the poverty line—59% in formal areas and 29% in informal areas. Fifty-eight percent of all adults 18 and older reported that they were working (59% in formal areas, 54% in informal areas). The percent completing primary school—75% overall—is much higher in formal areas (81%) than formal areas (52%). Finally, 46% of households in formal areas have permanent walls and access to both piped water and electricity compared to only 1% of households in informal areas.

The Infrastructure Polygon, shown in Figure 2, presents residents’ access to ten different types of infrastructure—piped water, electricity, private toilets, sewage, drainage, garbage collection, street lighting, mobile phones, public transport, and good roads. Access to all services is much better in formal areas than in informal areas. Piped water and electricity are much more prevalent in formal areas (98% and 91%, respectively) than informal areas (8%

Figure 1: Development diamond



Figure 2: Infrastructure polygon

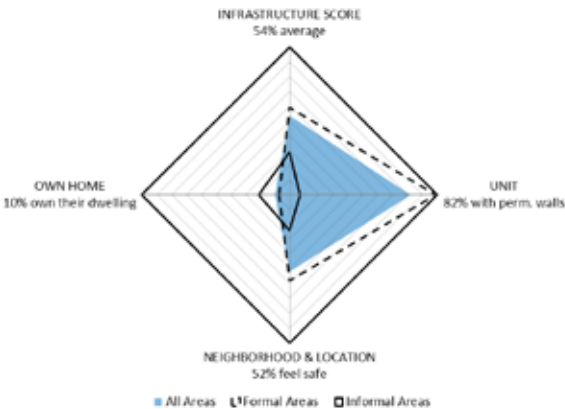


¹⁷ The basic format for all three figures appear in the World Bank Policy Research Working Paper, “Poverty, Living Conditions, and Infrastructure Access” A Comparison of Slums in Dakar, Johannesburg, and Nairobi” by Sumila Gulyani, Debabrata Talukdar, and Darby Jack (2010). We strived to make our own figures as similar as possible, though some deviations, noted in the accompanying text, were necessary.

and 50%). Private toilets are much less common overall (30%), but we still find large differences by area type—only 1% of households in informal areas, compared to 37% in formal areas, have a private toilet. Sewage is quite common overall (72%) but much more prevalent in formal areas (83%) than informal areas (22%). Fifty-three percent of all households report drainage for rain, 62% in formal areas and 13% in informal areas. No households in informal areas—and only 14% in formal areas—report that they have garbage collection. About 36% of all households reported having street lighting. Mobile phone usage is nearly ubiquitous, as 88% of all households own one or more mobile phones—though only 66% in informal areas compared to 93% in formal areas. Thirty-seven percent of all households report using public transport—44% in formal areas and only 7% in informal areas. Finally, 66% of households (43% in informal areas and 71% in formal areas) said that their access road is in good condition.

Figure 3 presents the Living Conditions Diamond. The four axes of this diamond are the infrastructure score (scaled to a percentage of the total possible points), unit conditions, neighborhood and location, and home ownership. Home ownership is higher in informal areas (though quite low overall), and households in formal areas outperform those in informal areas in all other living conditions indicators. The infrastructure score and neighborhood conditions indicators behave almost identically—just over 50% overall, about 60% in formal areas, and about 25% in informal areas. Almost all units in formal areas (99%) have permanent walls, while few households in informal areas (7%) have them. Only 10% of households own their dwelling. In informal areas, however, the rate of home ownership is much higher at only 21% compared to only 7% for formal areas.

Figure 3: Living conditions diamond



World Bank Group

Delta Centre

Menengai Road, Upper Hill

P.O. Box 30577-00100

NAIROBI, KENYA

Telephone: +254-020-2936000

www.worldbank.org/en/country/kenya

BILL & MELINDA
GATES *foundation*

Cities Alliance
Cities Without Slums

