Research Article

Does the Informal Sector in Kenya Have Financial Potential to Sustainably Prepay for Health Care? Implications for Financing Universal Health Coverage in Low-Income Settings

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Abstract—Kenya currently lacks evidence on whether income in the informal sector is sustainable and predictable and therefore able to support financing of universal health coverage (UHC). This article demonstrates the financial potential of informal sector entities to sustainably finance UHC in Kenya. Data were collected using a standardized questionnaire on the following topics: nature and sustainability of informal sector entities, indicators of financial potential, and socioeconomic status. Both descriptive and multivariate analyses were used. The findings indicate that income in the informal sector is generally low although investors in health/medical, stationery, entertainment, manufacturing and craft as well as transportation tend to have higher and more consistent incomes than most others in both sites. Mean monthly incomes ranged from 16.7 USD (lowest) to 786.5 USD (highest). The urban informal sector recorded higher mean monthly incomes of 195.8 USD compared to 77.9 USD in the rural area (P < 0.001). The most sustainable entities in the urban area included stationery (67%), repair and maintenance (50%), food vending (49%), shopkeeping (48%), and clothing and beauty products (43%). Farming (90%), manufacturing and craft (86%), and health/medical (100%) were the most sustainable in the rural area. Key predictors of sustainable informal sector entities include monthly expenditure patterns, gender, marital status, household structure, number of employees in an entity, and land ownership in the rural area and number of entities owned. Informal sector entities are mostly unsustainable, meaning that the majority of premium contributors will not be consistent in payment and will likely to require subsidies.

INTRODUCTION

The World Health Organization promotes development of mandatory prepaid health financing systems involving
contributory and noncontributory arrangements to progress toward universal health coverage (UHC). However, questions have been raised regarding the feasibility of the contributory approach involving premium contributions in contexts such as sub-Saharan Africa where the informal sector dominates.

The International Labor Organization defines the informal sector as all types of nonformal employment involving workers who are not protected by national labor laws. They also are not subject to income taxes and have no social protection or entitlement to certain employment benefits such as gratuity, notice of dismissal, severance pay, paid leave, and bonuses. The International Labor Organization definition is more a description of informal employment than the sector itself. As shown in Figure 1, the informal sector can be described as a parallel unregulated economy operating within a legal and social structure and whose enterprises and particularly workers are not subject to official labor laws.

In Kenya, the informal sector is estimated at almost 80% of the total workforce. It is believed that the informal sector holds substantial financial resources that can be tapped into for financing UHC; for example, Ncube estimates that the sector contributes about 55% of gross domestic product in sub-Saharan Africa. The official Kenya government position is that UHC would be approached through a contributory mechanism as the primary source of revenue where both formal and informal sector workers contribute premiums to an insurance scheme. This policy direction is partly informed by the belief that the informal sector has resources and therefore the ability to prepay for health care through regular insurance contributions. However, the informal sector is diverse with varied socioeconomic status (SES) and it would be unjust to assume that all can prepay for health care. Moreover, there is very little contextual evidence in Kenya on the true financial position of the informal sector in particular.

Currently, Kenya is piloting UHC in sections of the country. It is expected that lessons learned from the pilot will consider evidence on long-term financing of UHC in a setting with large informal sector populations. Whereas the pilot is funded from noncontributory sources (tax revenue and donor agencies), the national health financing policy emphasizes financing from premium contributions. Coverage is generally low in the informal sector and the majority of those enrolled in the National Hospital Insurance Fund are largely inactive.

The aim of this article is to critically examine the financial potential of informal sector entities, assessing their ability to prepay for health care and guide decisions regarding the most appropriate approach to financing UHC in Kenya.

FIGURE 1. A Graphical Distinction of the Informal Sector Economy from Other Sectors of the Economy
METHODS

Survey Design
This was a cross-sectional study. Rural and urban sites were selected to provide comparative information on the financial potential of the informal sector. To measure financial potential, the first phase of the study involved qualitative interviews with key informants and informal sector workers to identify indicators of informal sector entities that have better financial prospects and are therefore better placed to consistently prepay for health care. These indicators were quantitatively measured in the second phase of the study reported in this article. The exercise was essentially a community self-assessment of their economic entities to confirm indicators that best predicted financial status. Subjective self-assessment is reliable in predicting various social parameters, including income, SES, and health-related factors.10–12

Sampling
Two counties, Mombasa (urban) and Nyeri (rural), were purposively selected for the study. Mombasa County was chosen mainly to provide data diversity about the urban informal sector because most previous studies13–15 concentrated on Nairobi. The choice of Nyeri County was based on its agricultural activity as well as a related study that was ongoing at the time and offered logistical support. Mombasa County is a coastal city with tourism as the single largest source of income. Nyeri County, on the other hand, is in central Kenya, with agriculture as the main source of income.

Primary sampling units were identified through stratification (Figures 2 and 3). Expert opinion guided the location of potential enumeration areas (EAs) that had the highest concentration of informal sector entities.

The village was the EA for the rural site. Because the subcounties were homogenously engaged in agriculture, one subcounty with a large market was purposively selected to obtain a mix of the agricultural and nonagricultural informal sector in rural areas. In the urban site, a list of estates was obtained from the city authorities from which four purposively selected EAs were chosen because they had the largest concentration of informal sector entities and thus provided the best opportunity to capture a large diversity in the type and size of the entities.

Informal sector entities in the EAs were mapped \( N = 2537 \) (urban = 1739 and rural = 798) followed by a random sample of 500 entities (rural = 150 and urban = 350). Up to 455 (91%) entities (rural = 129 and urban = 326) participated in the study. The allocation (rural = 150 and urban = 350) was based on a mapping of informal sector entities, which showed that for every informal sector entity in the rural site there were about 2.3 entities in the urban site with a likely lower response rate in the urban area.
Data Collection

Data were collected by a team of trained interviewers under the supervision of senior research team members from May 2013 to April 2014. A standardized questionnaire was used in data collection. Key parts of the tool, particularly those assessing sustainability or vulnerabilities in informal sector work, were developed from information gathered through qualitative interviews during the first phase of the study. The data collected relevant to this article included the sociodemographic characteristics of respondents, the conditions of the informal sector entities, monthly expenditure, as well as sustainability or vulnerabilities in informal sector work.

Analysis

Data were double-entered into predesigned data entry spreadsheets in FoxPro and transferred to Stata Version 11 for analysis. They were categorized and grouped to give a summary of results using descriptive and multivariate statistical methods. Descriptive statistics are expressed in summary tables and graphs. Multivariate analysis provided an understanding of the important patterns and underlying relationships between the dependent variable (sustainability) and a list of independent variables. Sociodemographic data such as age, gender, marital status, household size, and SES, among others, were collected to understand who comprises the samples and variations between urban and rural areas and to assess how these variables, among others, influence sustainability of informal sector entities.

The first measure of financial potential of the informal sector involved estimation of monthly expenditure by industry and region. Monthly expenditure for every informal sector entity was calculated using reasonable recall periods of one to four weeks to avoid recall bias. Expenditure was measured in terms of money generated from the sampled informal entities and spent at the enterprise, household, or individual level. In most informal sector work, no distinction exists between expenditure at the household level and expenditure at the enterprise level because these are not usually separate entities. The expenditures were categorized and aggregated by type of industry and mean monthly expenditure calculated.

The study sought to understand whether informal sector entities have the financial endowment (financial potential) to prepay for health care and whether such potential is short term (nonsustainable) or long term (sustainable; i.e., an informal entity has lasted five years or more). Wanjala and Were suggested that, whereas nonagricultural informal entities generally have short life spans, those that tend to be sustainable have been in operation for at least five years. On the other hand, sustainability of the agricultural informal sector was assessed based on questions around whether a farmer had experienced losses such as total crop failure or death of a milk cow that made them unable to meet their basic expenses in the past five years.

The study identified indicators of (non-)financial potential of the informal sector through qualitative interviews and existing literature. These indicators were quantitatively verified for reliability by the use of a Likert scale in which study participants were asked to respond whether they strongly agreed, agreed, disagreed, or strongly disagreed with each of the indicators. Analysis of financial potential for the rural informal sector was divided into nonagricultural and agricultural informal sectors because they had different indicators as identified through qualitative interviews. Indicators of financial potential for the rural nonagricultural informal sector were similar to those of the urban informal sector.

Sustainability of informal sector entities is vital for UHC financing because it guarantees consistent payments to a pool of funds. In this regard, the study explored factors that best predict an enterprise that is likely to be sustainable or not. The life span of an enterprise was taken as the dependent variable. Sometimes individuals change enterprise types and there are moments of disrupted financial inflow as the new enterprise takes shape. The study therefore measured the life span of an entity, not the length of time an individual has operated in the informal sector.

Using stepwise logistic regression, a number of independent variables were included in the analysis: gender, age, household structure, marital status, level of education, employment status, household size, enterprise ownership, type of industry, type of structure (none, temporary, permanent), number of entities owned, number of employees, registration status, utility costs, number of rooms occupied, membership in a savings/health scheme, entity location, monthly income, ownership of land, size of land, and main crop grown.

The model:

\[ \logit(p) = \log(p/(1-p)) = \beta_0 + \beta_1 \cdot x_1 + \ldots + \beta_k \cdot x_k \]

Principal components analysis was used to classify informal sector respondents into wealth quintiles through the aggregation of household durable assets and household living conditions for urban and rural households.

Limitations of the Study

The study setting involved two fairly well-off counties in Kenya, so the financial potential as presented in the results did not capture perspectives from poorer counties and should be interpreted with this in mind. As the first study to estimate financial potential of informal sector entities in Kenya, the tool may be refined in the future to capture other factors that could indicate financial potential in the sector. Potential
RESULTS

Overview of the Nature of the Informal Sector

Food vending (20.6%) is the dominant nonagricultural informal sector entity in the urban area, followed by manufacturing/craft (16.6%) and hotel and food kiosks (10.4%). In the rural area, transportation and manufacturing/crafts dominate the nonagricultural informal sector (Table 1). In terms of sociodemographic characteristics for both study sites, most workers (73.2%) in the informal sector were household heads and the majority (70.6%) were married. Average household sizes ranged between 4.4 members (urban) and 4.8 members (rural).

There were more males (65.7%) than females (34.2%) working in the informal sector in the two counties; however, the difference in the gender of informal sector workers was significant only in the urban site (P < 0.001). Most of the workers in the informal sector (79%) owned their economic entities and about 21% were employees. The mean age of workers in the informal sector was 51.7 years and 36.4 years in rural and urban sites, respectively.

Educational attainment in the study sites (rural = 7.5 and urban = 8.0 years) was higher than the national average of 6.3 years. The majority in the informal sector (54% rural and 42% urban) were ranked in the second wealth quintile (Table 2).

Potential of the Informal Sector to Support Financing of UHC

The majority (90%) of informal sector workers depended on their respective economic entities as their only sources of income. The analysis of expenditure (Figure 4) captured other potential sources of expenditure, including enterprises elsewhere not included in the sample.

The minimum recorded monthly expenditure by an informal sector entity was 16.7 USD and the maximum was around 786.5 USD (Figure 4). Urban informal enterprises spent more than rural entities with a mean monthly expenditure of about 195.8 USD compared to about 77.9 USD for the rural area. Expenditure among urban informal sector entities was much higher than that of their rural counterparts; that is, about 34% of urban informal sector workers were spending over 111.1 USD.

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**Table 1. Number and Proportion of Informal Sector Entities Participating in the Survey**

| Industry category          | Rural | %   | Urban | %   | Total | %   |
|----------------------------|-------|-----|-------|-----|-------|-----|
| No. | No. | %   | No. | %   | No. | %   |
| Food vending               | 1     | 0.8 | 67   | 20.6| 68   | 15  |
| Shopkeeping                | 3     | 2.3 | 27   | 8.3 | 30   | 6.6 |
| Entertainment              | 1     | 0.8 | 25   | 7.7 | 26   | 5.7 |
| Telecommunications         | 1     | 0.8 | 11   | 3.4 | 12   | 2.6 |
| Manufacturing/crafts       | 7     | 5.4 | 54   | 16.6| 61   | 13.4|
| Clothing and beauty        | 1     | 0.8 | 49   | 15  | 50   | 11  |
| Health and medical         | 3     | 2.3 | 2    | 0.6 | 5    | 1.1 |
| Repair and maintenance     | 0     | 0   | 10   | 3.1 | 10   | 2.2 |
| Hotel/food kiosk           | 6     | 4.7 | 34   | 10.4| 40   | 8.8 |
| Transportation             | 8     | 6.2 | 16   | 4.9 | 24   | 5.3 |
| Farming and livestock      | 97    | 75.2| 1    | 0.3 | 98   | 21.5|
| Construction               | 1     | 0.8 | 9    | 2.8 | 10   | 2.2 |
| Energy                     | 0     | 0   | 11   | 3.4 | 11   | 2.4 |
| Stationery                 | 0     | 0   | 3    | 0.9 | 3    | 0.7 |
| Others                     | 0     | 0   | 7    | 2.2 | 7    | 1.5 |
| Total                      | 129   | 100 | 326  | 100 | 455  | 100 |

**Table 2. Sociodemographic Characteristics of Informal Sector Workers**

| Variables                | Rural (%) | Urban (%) | Total (%) |
|--------------------------|-----------|-----------|-----------|
| Household heads          | 84 (65.1) | 249 (76.4) | 333 (73.2) |
| Marital status           |           |           |           |
| Married                  | 98 (76)   | 222 (68.5) | 320 (70.6) |
| Single                   | 15 (11.6) | 87 (26.9)  | 102 (22.5) |
| Divorced/separated       | 4 (3.1)   | 8 (2.5)    | 12 (2.7)   |
| Widowed                  | 12 (9.3)  | 7 (2.2)    | 19 (4.2)   |
| Household size           |           |           |           |
| 1–2 members              | 45 (34.9) | 124 (38.0) | 169 (37.1) |
| 3–5 members              | 60 (46.5) | 159 (48.8) | 219 (48.1) |
| 6–10 members             | 22 (17.1) | 38 (11.7)  | 60 (13.2)  |
| 11+ members              | 2 (1.2)   | 5 (1.5)    | 7 (1.5)    |
| Gender                   |           |           |           |
| Male                     | 65 (50.4) | 234 (71.8) | 299 (65.7) |
| Female                   | 64 (49.6) | 92 (28.2)  | 156 (34.2) |
| Employment status        |           |           |           |
| Owner                    | 119 (92.3)| 240 (73.9) | 359 (79.1) |
| Employee                 | 10 (7.7)  | 85 (26.1)  | 95 (20.9)  |
| Age                      |           |           |           |
| <24 years                | 7 (5.4)   | 55 (16.7)  | 62 (13.6)  |
| 25–50 years              | 59 (45.7) | 254 (77.9)| 313 (68.8) |
| 50+ years                | 63 (48.8) | 17 (5.2)   | 80 (17.6)  |
| Level of education       |           |           |           |
| None or preschool        | 8 (6.2)   | 15 (4.6)   | 23 (5.1)   |
| Primary                  | 61 (47.3) | 137 (42.2)| 198 (43.6) |
| Secondary                | 48 (37.2) | 135 (41.5)| 183 (40.3) |
| Postsecondary            | 12 (9.3)  | 38 (11.7)  | 50 (11.0)  |
per month compared to 6% in the rural area. The differences in expenditure among informal sector entities between rural and urban areas was found to be strongly significant ($P < 0.001$), which suggests that in terms of financially supporting UHC, the urban entities are stronger sources of revenue than rural entities. The differences in expenditure by industry were significant, Pearson's chi$^2$ $(28) = 57.45, P = 0.001$, within the urban site and Pearson's chi$^2$ $(20) = 66.45, P < 0.001$ within the rural area.

There were striking similarities as well as differences in monthly expenditures for specific informal sector industries between rural and urban study sites. For example, in both study sites, industries such as manufacturing and crafts, entertainment, health and medical services, and transportation had very narrow differences in expenditure. Health and medical services industry appears to have some of the highest expenditure in both rural and urban sites, which could be based on demand for and utilization of health services among low-income populations. However, major differences in expenditure existed in industries such as food vending, clothing and beauty, shopkeeping, hotel/food kiosk, telecommunications, and construction. In these entities, higher expenditures favored the urban area.

A list of various indicators of financial potential of informal sector entities was provided to the interviewees. Their Likert-scale responses are presented in Tables 3 and 4 for the urban and rural sites.

From Table 3, the majority of respondents in the urban area strongly agreed that the indicators identified in the qualitative component were accurate measures of financial potential of informal sector entities. Strong indicators of financial potential in the urban informal sector include ownership of more than one business (77% strongly agreed); businesses with utility costs such as electricity, water, and telephone (71%); businesses occupying large spaces (more than one standard room; 68%); enterprises with employees (62%); and enterprises whose owners belonged to a savings or health scheme (62%). Overall 77.2% of respondents either strongly agreed or agreed that the listed variables were accurate measures of financial potential of urban informal entities.

In the analysis of financial potential for the rural informal sector, the findings show that about 67% of study participants either strongly agreed or agreed that the characteristics of rural nonagricultural informal enterprises as stated were appropriate measures of financial potential. The indicators of financial potential for the rural nonagricultural informal sector with which most strongly agreed were strikingly similar to indicators in the urban area. These included ownership of more than one entity, entities with utility costs, entities with employees, as well as those whose managers were members of a health insurance or savings scheme.

For the agricultural informal sector (Table 4), strong indicators of lack of financial potential included inability...
of children to attend school, lack of land, and structure of the household where large households and those with elderly members or a number of young children were more financially strained.

The study results reveal that sustainability of nonagricultural informal sector entities was about the same for rural (44.4%) and urban (43.2%) study sites. About 90% of the rural agricultural informal sector was sustainable.

The study further analyzed industries that were likely to be sustainable in terms of surviving for five years or more (Figure 5). The five most sustainable industries in the urban area included stationery shops (67%), repair and maintenance (50%), food vending (49%), shopkeeping (48%), and clothing and beauty (43%). In the rural area, the most sustainable entities were farming and livestock (90%), manufacturing and crafts (86%), and health and medical (100%).

Table 5 presents a full model analysis of predictors of sustainable urban informal sector entities. It shows that gender significantly influenced sustainability of enterprises; that is, enterprises that were owned/managed by men were 2.12 times more likely to be sustainable than those owned/managed by women ($P = 0.01; \text{confidence interval (CI), 1.18–4.24}$).

To some extent, marital status of urban informal sector workers had an impact on sustainability of the enterprises because, as suggested in the table, enterprises managed by single workers were 84% (0.16 times) less likely to be sustainable compared to those run by married workers. This difference is significant ($P < 0.001$) and the narrow confidence interval (CI, 0.08–0.35) indicates a very close association. However, for widows and separated workers, there was no significant difference in sustainability of the entities. Entities that were managed by workers whose households had no children were found to be 47% less sustainable than those managed by workers whose households had children. This difference was significant ($P = 0.05; \text{CI, 0.28–1.01}$). The findings therefore indicate that married, widowed, or separated informal sector workers are more likely than single workers to have children in their households. This relationship could relate to children being dependent on informal sector workers for support, so they had to ensure that they had sustainable sources of income. It could also reflect the workers being able to draw on the support of children to run their entities.

### Table 3. Indicators of Financial Potential in Urban and Rural Nonagricultural Informal Sector Entities

| Indicator | % Strongly agree | % Agree | % Disagree | % Strongly disagree |
|-----------|-----------------|--------|-----------|--------------------|
| 1. Physical structure in which business is conducted (permanent versus temporary) | 37.0 | 28.7 | 27.8 | 6.5 |
| 2. Licensed as opposed to unlicensed enterprises | 43.8 | 26.5 | 23.2 | 6.5 |
| 3. Enterprises with employees | 62.0 | 23.8 | 12.0 | 2.2 |
| 4. Legal location of enterprise | 61.7 | 28.7 | 8.0 | 1.5 |
| 5. Membership of a health scheme or a saving scheme, formal or informal | 61.7 | 28.7 | 8.0 | 1.5 |
| 6. Businesses with utility costs | 70.7 | 23.2 | 4.9 | 1.2 |
| 7. Ownership of more than one enterprise | 76.8 | 20.4 | 2.5 | 0.3 |
| 8. Size of space occupied by enterprise | 68.1 | 18.0 | 10.2 | 3.7 |

### Table 4. Indicators of Lack of Financial Potential in Rural Agricultural Informal Sector

| Indicator | % Strongly agree | % Agree | % Disagree | % Strongly disagree |
|-----------|-----------------|--------|-----------|--------------------|
| 1. Lack of land | 56.7 | 16.5 | 15.5 | 11.3 |
| 2. Households with elderly members and children | 52.6 | 21.1 | 19.0 | 7.4 |
| 3. Residents of rented dwellings | 41.7 | 16.7 | 15.6 | 26.0 |
| 4. Nonmembership of a health scheme or a saving scheme, formal or informal | 28.1 | 18.8 | 16.7 | 36.5 |
| 5. Inability of children to attend school | 61.9 | 26.8 | 10.3 | 1.0 |
| 6. Small size of land under cultivation (<1.0 acre) | 29.9 | 26.8 | 23.7 | 19.6 |
Having at least one employee was also found to be a strong predictor of enterprise sustainability. However, as the table shows, an enterprise with more than ten employees has reduced sustainability. Although this may appear to be a contradiction, it could be explained by the fact that there were very few of such relatively large informal sector enterprises in the sample, which reduces chances of accurate prediction of their sustainability. Measured against own-account enterprises (enterprises with the owner as the only worker), enterprises with one to two employees were 4.2 times more sustainable than own-account enterprises (P = 0.03; CI, 1.13–15.47). For the other categories (i.e., enterprises with three to four employees and five to ten employees), although they showed the likelihood of greater sustainability than own-account enterprises, the differences were not significant.

The findings in the urban area further suggest that enterprises whose owners engaged in more than one type of industry (diversified entrepreneurship) at the same time were less sustainable than those whose owners concentrated on one type of industry. For enterprises whose owners engaged in two or three different types of industries, sustainability decreased by 48% and 95%, respectively, and the differences in the latter were significant (P = 0.01; CI, 0.01–0.5).

Monthly expenditure patterns and SES were also regarded as important predictors of sustainability. Table 5 indicates that, compared to enterprises that spent less than KSh 5,500 per month, sustainability of enterprises in the monthly expenditure categories of KSh 5,500 to 10,000 and over KSh 10,000 significantly decreased by 65% and 54%, respectively (P = 0.002; CI, 0.18–0.68 and P = 0.03; CI, 0.23–0.92, respectively). In terms of SES, compared to quintile 1, sustainability decreased for enterprises ranked in quintile 2, quintile 3, and quintile 4 but increased for those ranked in quintile 5. These differences were significant only for quintiles 2 and 3 (P = 0.001; CI, 0.10–0.42 and P = 0.02; CI, 0.19–0.84, respectively).

In the rural area (Table 6), an important predictor of sustainability of informal sector entities was ownership of land. As shown in the table, there is a close association between owning land and being able to sustainably prepay for health care (P ≤ 0.001; CI, 0.01–0.14).

**DISCUSSION**

The study provides important insights on informal sector involvement in financing UHC in Kenya and similar settings. The results indicate that regardless of the financing approach, there are substantial sections of the informal sector that are sustainable. The findings also highlight the importance of diversification in reducing sustainability, possibly due to increased financial burden and reduced focus on any single industry.

For some industries, although showing 100% or zero sustainability, their true positions could be weak because only a few, sometimes just one member, was represented in the sample. These include health and medical services, farming and livestock (urban site), and food vending and construction in the rural site.

**FIGURE 5. Sustainability by Type of Informal Sector Entity/Industry**

For some industries, although showing 100% or zero sustainability, their true positions could be weak because only a few, sometimes just one member, was represented in the sample. These include health and medical services, farming and livestock (urban site), and food vending and construction in the rural site.
The difference in this study could be most shared similar findings in which men dominated cer-

2.24 0.35 0.41 0.05 0.01 0.005

P

Analysis of Predictors of Sustainable Urban Informal Sector Entities (Full Model)

| Variables measuring sustainability | Odds ratio | 95% Confidence interval |
|------------------------------------|------------|------------------------|
| Gender                             |            |                        |
| Male                               | 2.12       | 0.01                   |
| Marital status                     |            |                        |
| Single                             | 0.16       | <0.001                 |
| Divorced/separated                 | 1.83       | 0.47                   |
| Widowed                            | 0.67       | 0.65                   |
| Household structure                |            |                        |
| No children                        | 0.53       | 0.05                   |
| Number of employees                |            |                        |
| 1–2 workers                        | 4.19       | 0.03                   |
| 3–4 workers                        | 2.24       | 0.35                   |
| 5–10 workers                       | 1.65       | 0.14                   |
| 11+ workers                        | 0.92       | 0.96                   |
| Number of businesses               |            |                        |
| Two                                | 0.52       | 0.28                   |
| Three                              | 0.05       | 0.01                   |
| Monthly expenditure                |            |                        |
| KSh 5,500–10,000                   | 0.35       | 0.02                   |
| KSh 10,000+                        | 0.46       | 0.03                   |
| Socioeconomic status               |            |                        |
| 2nd Quintile                       | 0.21       | 0.001                  |
| 3rd Quintile                       | 0.40       | 0.02                   |
| 4th Quintile                       | 0.40       | 0.24                   |
| 5th Quintile                       | 1.04       | 0.99                   |

*Number of observations = 312; LR chi²(20) = 84.5; Prob > chi² = 0.0001; pseudo-R² = 0.198; log-likelihood = 171.7. The likelihood ratio chi-square of 171.7 with a P-value < 0.0001 means that the model as a whole fits significantly better than a null model.

TABLE 5. Analysis of Predictors of Sustainable Urban Informal Sector Entities (Full Model)*

sector that will struggle to prepay for health care and therefore will require significant government subsidies to be included in a prepayment system. In addition, the large variations in expenditure in the informal sector suggest that though some entities can afford the approximately 5 USD monthly premium required by the National Hospital Insurance Fund, many others will hardly cope with this type of payment. The study therefore highlights vulnerabilities in the informal sector; for example, the entities are largely operated by own-account workers, which indicates that they are small in size with low capital investment. The urban area has a younger population working in the informal sector compared to the rural area, which suggests a rural–urban migration with informal sector work being a last resort for job seekers. As explained in some studies, most migrants end up in the urban informal sector largely because of the slow growth rate of the formal labor market or because job seekers lack skills required for formal employment.

There is also the gender dimension of vulnerability in the informal sector. Men dominated not only the informal sector in the urban study site but also some of the entities with better financial returns and hence had greater ability than women to prepay for health care. However, global estimates indicate that more women than men work in the urban informal sector. The difference in this study could be explained by the sampling strategy; that is, the sampling design in this study was meant to capture the diversity of informal sector enterprises, whereas other studies may have sampled according to the distribution of informal sector enterprises in a particular location. As the results indicate, men particularly dominated manufacturing and craft, transportation, and repair and maintenance. These entities also had the best financial returns and potentially require higher capital investment. In a study in South Africa, Tshuma and Jari shared similar findings in which men dominated certain industries, including mechanics and welding, whereas women dominated clothing and beauty, hairdressing, and street vending. A disproportionately large number of women was found in the street food vending industry, which is associated with low income; in addition, women’s enterprises are less likely to be sustainable than men’s. These indicate a high likelihood that women in the informal sector would find it more difficult than men to cope with prepayments for health care, especially if such payments are designed in the form of regular social contributions to a health insurance scheme.

The indicators and estimates of financial potential in the informal sector as outlined in the study give a fairly accurate picture of the financial situation of informal sector entities. It is important to note that indicators of financial potential of nonagricultural informal sector were similar for both rural and urban study sites. However, the indicators of financial potential of agricultural and nonagricultural informal sectors
were quite different. Income generation in the informal sector generally is capricious.\textsuperscript{17,18,21,22} As demonstrated in this study, although land is an important asset especially in an agriculturally productive setting, the monthly earnings can be quite low for most rural subsistence farmers, averaging about 40 USD but as low as 14 USD. On the other hand, urban nonagricultural informal enterprises are financially better off, with monthly expenditure averaging about 236 USD. Studies in Kenya\textsuperscript{23} and Zimbabwe\textsuperscript{22} noted very similar results; that is, earnings of up to 206 USD and 250 USD per month in the nonagricultural informal sector, respectively. In other settings such as South Africa, Tshuma and Jari\textsuperscript{21} have recorded relatively higher incomes in the informal sector of up to 444 USD per month. Even though nonagricultural informal sector enterprises registered higher expenditures than the agricultural informal sector, they were also the least sustainable at 44\% overall; that is, up to 56\% of non-agricultural informal sector enterprises lack reliable incomes and are unlikely at some point to be able to regularly contribute to a health insurance scheme.

In financing UHC in Kenya and other low- and middle-income countries (LMICs) where the informal sector dominates, the question that policy makers should be asking is whether informal sector populations have the financial ability to prepay for health care and, if so, what form the payment should take. Karnani\textsuperscript{24} argues that there are no worthwhile financial resources at the bottom of the pyramid and that finding fortune among this population group is “a mirage.” The bottom of the pyramid is largely represented by the informal sector. However, it would be false to assume that everyone in the informal sector is too poor to pay toward the cost of health care. As demonstrated in this study, the nonagricultural informal sector, particularly in the urban area, has expenditures above the minimum income tax threshold (about 120 USD per month in Kenya). Although the informal sector does not pay income tax, a good proportion of the sector controls significant financial resources and can afford to prepay for health care.

The concern for health sector stakeholders in Kenya is how to collect revenue from the informal sector in ways that are efficient, maximize the equity impact, and pool revenues collected to finance progress toward UHC. The UHC financing policy direction in Kenya favors mandatory social insurance contributions from both formal and informal sector workers as the main financing mechanism, complemented by general government tax revenues. However, collecting revenue through premium contributions from the informal sector to finance prepaid health care and achieve UHC has proven very problematic in many LMICs.\textsuperscript{2,25,26} Some authors\textsuperscript{2} explicitly state that revenue collection through premium contributions as a means of financing UHC in most LMICs is currently impractical. This is largely because efficient collection of insurance scheme contributions requires high levels of formal employment, given the administrative difficulty of identifying informal sector workers, assessing their individual ability to pay, and collecting contributions from them.\textsuperscript{25} Though this study identifies critical indicators of financial potential of informal sector entities, using such indicators to implement a contributory financing system would be most useful in settings where the informal sector is more organized and there are progressive efforts to formalize labor. However, in Kenya and other similar settings, such a financing system would remain very difficult given the high levels of unorganized informal employment. Because of administrative difficulties, countries that choose to go this route usually introduce flat contribution structures; given the considerable range of potential incomes among informal sector workers identified in this study, it is evident that flat rate contributions would be highly regressive.

To the extent that UHC is achievable under low levels of formal labor in LMICs, there is increasing focus on funding health care mainly through general government revenues and complemented by social contributions. This can be achieved by various taxes, particularly indirect taxes, as the means to generate revenue from the informal sector. However, the tendency of direct taxes to be progressive and indirect taxes regressive\textsuperscript{27,28} should be a key concern because financing social services through revenues generated from progressive sources promotes equity to the greatest extent.\textsuperscript{25} Most LMICs rely heavily on indirect taxes to raise revenue for the economy.\textsuperscript{25,29} The reliance on indirect taxes is mainly because a narrow formal sector tax base and high enforcement costs limit the scope of direct taxation.\textsuperscript{25,29}

Indirect taxes involving value-added taxes (VATs) and sales taxes are usually regressive or, at best, less progressive than other components of the tax system.\textsuperscript{30} In countries such as Bolivia and Brazil where cash transfers were established to help low-income groups, indirect taxes almost completely negated the poverty-reducing impact of cash transfers.\textsuperscript{31} However, in some low-income countries, VATs or other sales taxes may be progressive, particularly where there is a large rural population that consumes mainly subsistence agricultural produce or purchases locally produced goods that are not captured in the VAT net. This was the case in Ghana, for example, where indirect taxes involving a 2.5\% extra VAT levy contribute 70\%–75\% of the National Health Insurance Scheme funds.\textsuperscript{32,33} However, with urbanization and greater consumption of purchased goods, the incidence
Thus, a key task for policy makers is to find ways to minimize the regressive impact of indirect taxes to make them a feasible source of revenue in a noncontributory health financing system.

In addition to the national health insurance surcharge on VAT in Ghana, a number of developing countries have come up with innovative and potentially progressive or at least proportional taxation strategies to raise revenue for health care. Gabon, Zambia, and Gambia have shown commitment to innovation in raising revenue to achieve higher financial protection and access to quality health service coverage for the population. Gabon charges a 10% levy on mobile phone companies’ turnover and a 1.5% levy on international money transfers to contribute to health care financing. Zambia taxes investment income to fund coverage for the poor. Taxes on alcohol, tobacco, and air travel have been used by some countries to generate resources for the health sector, although alcohol and tobacco taxes are often regressive. In India, a minimal 0.005% tax on remittances would raise about 370 USD million a year. Oxfam notes that financing from general government revenues has been critical in all UHC success stories and it is unfortunate that many developing countries are preoccupied with social contributions as the default vehicle for financing UHC. Instead, concerted and innovative efforts should be made by LMICs to explore how to generate more tax revenues for health. Every country, regardless of the wealth status, can increase domestic revenue for health by improving efficiency in tax collection, adjusting tax rates, and introducing new progressive taxes as well as innovative financing mechanisms. It is estimated that strengthening tax administration alone increases tax revenue by 31% across 52 developing countries.

In Kenya, coverage is quite low at about 25% of the population, yet the potential for innovative indirect taxes to support increased funding for health care and coverage has not been fully explored. In particular, potential of taxes on mobile telephone use as one strategy to raise revenue for health care needs to be considered. It is estimated that about 42% of Kenya’s gross domestic product is transacted through mobile telephone money services, particularly the M-Pesa. A minimal tax levy of 1.4% on the value of the transactions would raise about KSh 50 billion a year, an amount that is over ten times more than the budget for the national free maternity care program. It is expected that more M-Pesa activities will be realized as incomes increase, which could work toward the progressivity or at least proportionality of this kind of taxation. The fact that VATs and other indirect taxes can be mildly progressive in some LMICs should be a point to consider in the design of indirect taxation in Kenya. Among other health sector stakeholders, Results UK states that rather than rely on contribution-based schemes, which often leave out the majority of low-income populations, more equitable coverage would be achieved if Kenya adopted a tax-based financing system such as that in countries like Sri Lanka and Brazil. According to Oxfam, these countries prioritized the principles of equity and universality and rejected the notion of social contributions, especially from the poor. Thailand, Sri Lanka, and Brazil, among other developing countries, fund UHC largely from tax revenues and have registered important progress.

CONCLUSION

Financing UHC is complex and difficult in low-income countries where the informal sector dominates. Careful consideration of how best to achieve a system that strongly supports equity in financing health care and use of services is necessary before embarking on health financing reforms. In its current economic and structural form, the informal sector in Kenya may not be relied upon to make significant financial contributions through insurance scheme premium payments to support UHC efforts, not least of all because such contributions would be difficult to enforce and would likely have a very regressive incidence. In addition, in the proposed arrangements for UHC financing, even if the informal sector contributes premiums to a mandatory insurance scheme, the contributions may not be adequate to provide for all of their health needs. In short, irrespective of the main prepayment approach for Kenya, additional government revenue will be required for full subsidies to the indigent population, partial subsidies to informal sector workers, and infrastructure and other resource development to meet increased demand for services. It is critical that Kenya, and other LMICs, pay far greater attention to understanding the nature of the informal sector within their country and designing tax systems that draw revenue from both the formal and informal sectors in the most equitable, efficient, and sustainable way to contribute to moving toward UHC.

ETHICAL APPROVAL

The study was approved by the Ethics Review Committee (ERC) of the Kenya Medical Research Institute (KEMRI) (SSC. No. 2058). All study participants provided informed consent and signed a standardized informed consent form.
CONSENT FOR PUBLICATION

All study participants gave written informed consent.

COMPETING INTERESTS

None declared.

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