Published in final edited form as:
Soc Sci Med. 2007 March ; 64(5): 1019–1031.

Details for Manuscript Number SSM-D-04-00268R3 "Urban-Rural Differences in the Socioeconomic Deprivation—Sexual Behavior Link in Kenya"

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Abstract

We compare the impact of socioeconomic deprivation on risky sexual outcomes in rural and urban Kenya. Quantitative data are drawn from the Demographic & Health Surveys (DHS) and qualitative data from the Sexual Networking and Associated Reproductive and Social Health Concerns study. Using two separate indicators of deprivation we show that, although poverty is significantly associated with the examined sexual outcomes in all settings, the urban poor are significantly more likely than their rural counterparts to have an early sexual debut and a greater incidence of multiple sexual partnerships. The disadvantage of the urban poor is accentuated for married women; those in Nairobi's slums are at least three times as likely to have multiple sexual partners as their rural counterparts. The implications of these findings are discussed.

Keywords

Poverty; rural-urban differences; sexual outcomes; multiple partners; condom use; Kenya

Introduction

Sub-Saharan Africa's ongoing urbanization is occurring amid what are arguably the worst economic circumstances of any world region. This is the only region of the world where poverty is increasing, with close to half of Africans living on a dollar a day (World Bank 2004). Africa is also the only region where income inequality is worsening (Firebaugh 2004). Economic hardship is acknowledged to compound women's sexual vulnerability (Carael & Allen, 1995; Ulin, 1992), and is associated with early onset of sexual activity, extramarital sex, and multiple sexual partnerships, all of which have serious implications for the spread of HIV/AIDS. Against this backdrop, it is surprising that little attention has been paid to the HIV-related implications of urban poverty.

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The influence of community context on onset of sexual intercourse and prevalence of multiple partnerships is well understood in the developed world (Brewster, 1994a; 1994b; Klitsch, 1994). Contributions of community factors such as socioeconomic status, female unemployment, youth idleness, social hazards (drug abuse, gangs, etc.), proportion of sexually active men, and single parentage, to group differences in sexual behavior have been documented. In Africa, the preponderance of demographic and health research remains on rural areas not only because they are home to majority of the population, but also because they have been considered relatively deprived in terms of access to resources and services (HABITAT, 1996). Mounting evidence, however, points to a growing vulnerability of an increasingly marginalized and burgeoning slum population that merits attention apparently because poverty and its attendant lack of access to basic amenities have greater sexual health implications for urban residents (Brockerhoff, & Brennan, 1998; HABITAT, 1996; Oberai, 1993; Todaro, 1989; White, 1996). Economic stresses associated with low wages, unemployment, and increasing poverty presumably incline many women to use sex to generate income for basic needs, provoking early initiation of sexual activity and high incidence of multiple sexual partnerships (Carael, & Allen, 1995; Ulin 1992). These conditions also prompt men to exploit women's economic vulnerability by paying very little for sex and subjecting women to domestic violence (Ezeh, & Gage, 2000; Oppong, 1995).

A handful of recent studies from Kenya intimates an urban poverty disadvantage insofar as sexual outcomes related to HIV are concerned (Dodoo, Sloan, & Zulu, 2003; Zulu, Dodoo, & Ezeh, 2002; 2003). Zulu, Dodoo, and Ezeh (2002), in particular, provide empirical evidence that slum residence is unique in its adverse impact on sexual outcomes, presumably because monetary currency is central to existence in cities where difficult economic circumstances coerce women to use sex as a means of survival. Yet, that finding is based on analysis of Nairobi data alone, thereby precluding assessment of whether the impact of deprivation is truly unique to urban settings, or more generally attaches to deprived groups in other contexts. This question is particularly germane, given the call to shift resources from rural areas, where considerable poverty remains and traditional arrangements foster early marriage and sex among networks of physically proximate extended kin (Airhihenbuwa, 1991; Geelhoed, 1991). The current paper examines the relationship between economic circumstances and sexual outcomes—onset of sexual activity and multiple sexual partnerships—across urban and rural space, and asks whether deprivation translates into sexual outcomes differently in rural and urban settings? Such a study is particularly useful in contexts where condom use with regular sexual partners is evidently unpopular.

Background

Growing attention to the urban poor accompanies the substantial population shifts from rural to urban areas. About 90 percent of global population growth in the first quarter of the 21st century will stem from urban growth in developing countries, with Africa expected to become majority urban within the next two decades (United Nations, 1998). Some African cities, including Nairobi, have grown at rates close to five percent annually over the last three decades (Obudho, 1997; Todaro, 1989), with severe implications for health outcomes (Brockerhoff, & Brennan, 1998). Inflows of poor migrants from rural hinterlands have much to do with this trend and the resulting growth of slum populations (HABITAT, 1996; Oberai, 1993; Todaro, 1989). At least 60 percent of Nairobi's 2.7 million residents live in slums referred to as informal settlements to reflect governmental non-recognition and neglect (East African Standard, 1998; Matrix Development Consultants, 1993). Residents of these informal settlements have limited access to basic amenities (water, electricity, appropriate sanitation, garbage and sewage disposal, etc.), and to health and educational services.

Although historical development biases have created "islands of privilege" in urban areas (Harrison, 1982; Lipton, 1976), there is a growing sentiment that economic stagnation has made some urban areas in the developing world worse off than even rural areas insofar as unemployment, cost of living, poverty, and access to health and related facilities are concerned (Brockerhoff, & Brennan, 1998; Crossette, 1996; Todaro, 1989; White, 1996). Recent evidence also documents the disadvantage of certain segments of urban areas vis-à-vis health, mortality, and even schooling outcomes (Brockerhoff, & Brennan, 1998; FAWE, 1999; Potts, 1997). Schooling data, for example, show that despite having the highest completion rates of all Kenyan districts, Nairobi has the lowest enrolment rates (56.9%) besides the largely nomadic Northeastern province (FAWE, 1999; Gachukia, 2000). The capital's low enrolments have much to do with the large slum population that has little access to formal schooling.

As indicated above, the small but growing literature on urban slums in Kenya argues that it is the extraordinary economic stresses associated with urban poverty that elevate levels of HIV-susceptible behavior. The argument is that in difficult conditions people sometimes have no other economic options but to turn to exchanging sex to obtain money to cater to the basic needs of their families (Zulu, Dodoo, & Ezeh, 2002; 2003). Further evidence posited that, beyond the purely economic factors, other social conditions contributed to higher levels of sexual activity in the very poor slum communities: young children were socialized into sexual behavior because of; a lack of alternate recreational opportunities; residential conditions that precluded privacy for adult sexual activity, even among adults in their own homes; and role modeling by adults who either transacted sex for money or were, more generally, involved in casual sexual activity (Dodoo, Sloan, & Zulu, 2003).

Despite sub-Saharan Africa's rapid urban growth, the continent remains predominantly rural. It is also the only continent where the *number* of rural dwellers will not decrease before 2030 (United Nations, 1998). Generally, rural areas are considered "bastions of traditional life whereas urban centers are influenced heavily by modernization and Westernization" (Dodoo & Tempenis 2002: 51). The idea is that rural areas are sheltered from the 'vices'—and media representations of such—presumed to be prevalent in urban areas. Similarly, individuals are not as isolated as their urban counterparts from extended family networks; these lineage-based supports also present sanctions for deviating from traditional normative behaviors, such as extramarital sexual activity. It also makes sense that even the same economic difficulty might provoke more economic-based deviance in urban than in rural areas where cash is not as indispensable.

Yet, the rural poor, too, are exposed to the economic deterioration Africa has experienced over the last three decades. Compounding this is the lack of access to social and health facilities (Harrison, 1982; Lipton, 1976). In this regard, then, the health implications of lower age at first sex and multiple sexual partnerships related to economic deprivation (Zulu, Dodoo, & Ezeh, 2002), are potentially as relevant in rural areas. Wherever economic need compels females into earlier sexual debut, or to have more sexual partners than they otherwise would, there must be concern about HIV-related implications.

Devoid of a rural comparison, however, the preceding argument of a unique urban effect is not altogether convincing because it overlooks the possibility that the rural poor and counterparts in towns that are not quite the largest cities might be similarly affected. Fully recognizing that representing the rural-urban spectrum as a dichotomy is an analytical simplification, our goal in this paper is to compare the rural poor to their counterparts in both Nairobi (the capital and largest city) and other urban areas.[1] This comparison, then, permits the evaluation of whether the adverse effects are uniquely related to *urban* stresses or are a more general outcome of poverty. If they attach more generally to poverty, we should expect a similar pattern—of worsening sexual outcomes with deprivation—in all three settings. Also of interest will be a

comparison of the poor across residential type; that should inform about whether the rural poor have sexual outcomes that are significantly different from those of their urban poor counterparts. These clarifications should facilitate better understanding of the implications of the resource variations by residential context, while providing guidance on appropriate responses.

The Current Study

We examine the relationship between HIV-related sexual activity outcomes—specifically age at first sex and multiple sexual partnerships—and socioeconomic deprivation in rural and urban Kenyan settings. Because heterosexual contact represents the primary transmission mode, behavior change remains fundamental to stemming HIV spread (Caldwell, 2000; Cleland, & Ferry, 1995; Hope, 1995). Not surprisingly, much effort has been expended to understand the predictors of condom use (Cleland, & Ferry, 1995; Dodoo, & Ampofo, 2001). However, given women's limited influence on men's condom use (Caldwell, Caldwell, & Quiggin, 1989; Dodoo, 1993; 1998; Ezeh, 1993) and men's typical preference for non-use, it is pertinent to study other behavioral outcomes, and particularly those that women may have greater control over.

The emerging distinction in health and mortality outcomes between large cities and other urban areas found in recent research (Brockerhoff, & Brennan, 1998; Dodoo, Sloan, & Zulu, 2003; Zulu, Dodoo, & Ezeh, 2002; 2003) leads us to distinguish sexual outcomes in rural areas from those in Nairobi and other urban areas. Across these three settings, we employ two different measures of deprivation to compare sexual outcomes of the poorest female respondents to those of wealthier counterparts; a basic amenity index and a wealth index.

For the basic amenities index, we compare residents of homes that have all three amenities to those that have none; a third (residual) category comprises the intermediate one of homes with either one or two of these basic amenities. This is an appropriate measure given the high likelihood that households that simultaneously lack piped-in tap water, electricity, and flush toilets are located in slums, and was of interest to retain comparability to the Zulu, Dodoo, & Ezeh (2002) article that posits a uniqueness of the urban effect.

Although the absence of these basic amenities in metropolitan households plausibly connotes informal or slum location, such a correlation between wealth and amenities is not necessarily likely in rural settings, where the relationship is likely confounded by spatial disparities in water or electric supply uncorrelated to wealth. For instance, the availability of basic amenities in certain jurisdictions may have more to do with proximity to the national grid or with the presence of a dynamic or influential local politician, than with wealth. The pivotal role of political affiliation in determining availability of health and productive resources in Kenya has been demonstrated (Weinreb, 2000). It has also been argued that electricity is a community-dependent, rather than household-based good (Knodel, & Wongsith, 1991). It is likely, then, that wealthy people exist in various rural areas who have neither piped water nor electricity in their homes, whereas relatively poorer people in other areas do.

The aforegoing inclines us to also consider a more standard measure of poverty for rural areas, a linear asset (wealth) index generally based on "three sets of measures: access to water and the nature of toilet facilities, indications of housing quality, and ownership of selected consumer durables" including bicycles and cars (Montgomery, Gragnolati, Burke, & Paredes,

[1]Across the 10-year period covered by the three surveys, Nairobi was the only municipality designated a city in Kenya. In 2002, Mombasa and Kisumu were designated cities. The classification used in this study, therefore, represents an attempt to improve on the simple rural-urban dichotomy.

2000: 6). The index was weighted by principal components in a factor analysis that aggregated 22 variables computed from household water source, toilet facility type, electricity access, household floor type, and ownership of radios, TVs, refrigerators, bicycles, cars and a household size proxy measured as the number of household members per sleeping room. This procedure has the advantage of compressing an assortment of variables into a few key factors, taking into account the correlations between them, and assigning appropriate weights to each of the observed variables in the form of factor scores. A set of mutually uncorrelated components of the data is derived, and the first principal component is interpreted as the linear index of the underlying variable that captures the most common variation among them (Filmer & Pritchett, 1999). We then recoded the factor scores into wealth quartiles and, as with the basic-amenity measure, we focus our study comparisons on the wealthiest versus most deprived quartiles; the two middle quartiles are lumped together as an intermediate category.

Because it makes sense to think that many of these variables have different meanings for wealth status in rural and urban areas, the factor analysis was initially executed separately for each of the three settings (Nairobi, other urban, and rural areas), and for each survey year. Subsequently, we compared factor loadings to examine whether the first factor translated similarly across space and time. Finding this was generally the case across the various datasets and settings, we proceeded to implement the factor analysis with the pooled dataset, but separately for each of the three residence types. The decision to implement the factor analysis separately for the three settings is also based on the uneven distribution of the sample across setting (about 80% of the sample is rural), and the study goal of comparing the poor and non-poor within residential type. Such an approach is also suitable for comparing the poor in each setting to the poor in other settings (e.g., the Nairobi poor to the rural poor), as the poor can be represented as the bottom socio-economic group in each of the settings.

Table 1 presents the distribution of respondents on the two deprivation measures. Clearly, the basic-amenity measure represents the vast majority of rural respondents (over 85%) as being in the most-deprived category compared to only 25% of Nairobi residents. The wealth index, on the other hand, categorizes similar proportions of Nairobi, other urban and rural populations in the richest and poorest deprivation categories.

Data and Analysis

Our data come from the Demographic and Health Surveys (DHS) of Kenya. Given the small urban samples found in the DHS (and, by extension, even smaller samples for Nairobi), we follow Zulu et al. (2002; 2003) in pooling the first three waves of the DHS—1989, 1993, and 1998—to obtain reasonable sample sizes for Nairobi and other urban areas. Repeated surveys can be pooled to increase sample size so long as the effect of the study variable is relatively invariant over the period (Firebaugh, 1997).[2] It is also worth noting—given the drawbacks of pooling data—that we aim to assess the relationship between deprivation/residence and sexual outcomes, rather than to draw inferences about how these outcomes vary over time.

The two dependent variables employed in the study are age at first sexual intercourse and prevalence of multiple sexual partnerships. In each survey, respondents were asked how old they were at first sexual intercourse. Of the 22,497 women with responses to this question, 14.74% had never had sex, 10.57% initiated sex upon marriage (meaning age at first marriage proxies age at first intercourse), 0.54% did not know their age at first sex, and 2.6% gave

[2]We tested for this in Models 4 of Table 3 and Models 4 of Table 5. For Table 3, the joint tests for all the 16 interaction terms for each model are not significant (χ^2 for basic amenity index is 8.3 and 18.0 for the wealth index). For Table 5, the χ^2 for the basic amenity index is 3.8 and 4.0 for the wealth index – each with 8 degrees of freedom. These results suggest that the relationship between deprivation/residence and each of the two dependent variables has not changed across the survey years.

inconsistent responses. This leaves 18,476 women who reported an age, and 3,317 women who had not had sex at the time of the respective surveys. We use a Cox proportional hazards model to assess how deprivation and residence simultaneously influence age at first sex, as the model indicates the hazard of virginity loss by age. Delaying sexual debut is fundamental to controlling the spread of sexually transmitted diseases and HIV (UNAIDS, 2000).

Married women were asked to indicate how many different partners they had sex with other than their spouse (or the man they were living with) in the 12 months preceding the survey.[3] Married women with no extramarital partners are scored “one” on this variable and, because the question to women in union asked for number of sexual partners “other than” the husband or cohabiting partner, we add one partner (to account for the spouse/cohabiting partner) to their response. Single women were simply asked "how many different persons" they had sex with over the reference period. The question on multiple sexual partnerships was not asked in 1989; the two surveys yield a total of 15,421 cases, of which 15,315 have valid responses on number of partners. We employ logistic regression to analyze how deprivation and residence affect the odds of having multiple partners.

The independent variable of interest is a nine-category measure cross-referencing the three residence types (Nairobi city, other urban areas, and rural areas) with the three categories of socioeconomic deprivation. We assess the simultaneous impact of deprivation and residence on multiple partnerships, with the omitted category being the most deprived rural residents. This variable also permits comparison of the impact of deprivation *within* residence; for instance, we can assess the impact within Nairobi by comparing the three deprivation categories in the city and the trajectory of change in sexual outcomes (e.g., age at first sex) across them. We can also compare the most-deprived in Nairobi to their counterparts in other urban or in rural settings. In the analysis, we control for relevant variations in the following factors that potentially impact sexual behavior: childhood residence (which speaks to their upbringing), religious affiliation, age, years of schooling, and survey year.

Sexual activity, particularly extra-marital sex, is normally underreported by women, and even more so by adolescents (Mensch, Clark, Lloyd, & Erulkar, 2001). Data from special adolescent sexuality surveys and DHS for three Latin America countries show that DHS data greatly understate sexual activity among adolescents. The proportion of women who report premarital sex in the DHS ranges from three to five percent in the three countries, while the Center for Disease Control special adolescent surveys report 15–16% of adolescent women having sex before marriage (Mensch, Bruce, & Greene, 1998). Many respondents are reluctant to disclose details of their sexual activity to interviewers (Adegbola, & Babatola, 1999). Suspicions surrounding discussion of sexual matters diminish in ethnographic interviews where respondents and interviewers get to know each other better. Fortunately, our goal is not to establish absolute levels of multiple sexual partnerships. Rather, given that we have no basis to think underreporting varies systematically across these settings, we compare the relative occurrence of sexual outcomes across deprivation/residence categories.

Qualitative data from the Sexual Networking and Associated Reproductive and Social Health Concerns study, an exploratory study of four slum settlements in Nairobi is also used in the discussion section to provide some insight into sexual behavior in urban slums. The study sites —Embakasi, Kahawa North, Kibera, and Majengo—were purposively selected from a list of 19 slum communities identified in the 1989 census to reflect diversity in size, geographic location, marital status, as well as ethnic, gender, and age composition. In each slum,

[3]Note that the reference period for which sexual activity was measured changed from the last six months in 1993 to the last 12 months in 1998. The phrasing of the question also changed between the two surveys. These differences may partly account for the change in multiple sexual partnerships reported across the two surveys.

informants helped researchers from the African Population and Health Research Center select individuals into 10 focus groups. Discussions were held separately for females and males in four different age groups (13–17 year olds, 18–24 year olds, 25–49 year olds, and those aged 50 years and above), as well as among two groups identified as service providers and community leaders. Although the qualitative data collection exercise was unrelated to the quantitative survey data analyzed in this paper, they can still help explicate how urban poor contexts might provoke the behavioral outcomes studies here (Dodoo, Sloan, & Zulu 2003; Zulu, Dodoo, & Ezeh, 2003).

Findings

Initiation of sexual intercourse

Table 2 presents median ages at sexual debut across the three surveys and the nine area categories based on level of deprivation and urban/rural type (and the associated 95% confidence intervals for the medians). The medians derive from life table survival functions whereby virgins, at the time of the respective surveys, represent censored cases. For both deprivation indexes, these data show a consistent inverse association between level of deprivation and age at first sex in each of the three residential zones. The median age at initiation of sexual activity did not change significantly across the three survey years. For both wealth measures, however, women in the poorest category are significantly more likely to initiate sex at younger ages compared to the wealthiest category. This is true across the three residence types although the differences are more pronounced in urban areas, where women in the poorest quartile generally initiate sex three to four years earlier than their richest counterparts.

How do these deprivation-residence variances change when control variables are introduced? Models 1–3 of Table 3 present within-residence type trajectories of the relationship between deprivation and age at first sex and show how deprivation is associated with the hazard of virginity loss. For both the basic amenity measure and the wealth index, we observe a trend where, net of the control variables and consistent for each of the residence types, the most extreme deprivation is significantly associated with earlier onset of sexual activity. In each of the three settings, the most deprived category is significantly more likely to initiate sexual activity earlier than the intermediate and wealthiest categories.

Model 4 presents estimates of the hazard of dropping out of the virgin pool across the nine deprivation/residence categories, thereby permitting comparisons between the urban and rural poor. We find that women in the two most deprived urban categories—i.e., those from Nairobi and from other urban settings—are the only ones with significantly higher hazards of early onset of sex compared to the rural poor.[4] This finding holds true for both measures of deprivation. The corollary is that, again for both deprivation indexes, tests of differences between pairs of coefficients indicate that Nairobi's poorest have significantly earlier onset of sexual activity compared to all the other categories, except the poorest in other-urban settings; the latter category being the only one for whom, compared to the Nairobi poor, statistical tests prove insignificant.

Multiple partnerships

Do the results for multiple sexual partnerships paint a similar picture of disadvantage for the poor? Table 4 presents the prevalence of multiple sexual partnerships across the nine deprivation-residence categories. The wealth index evidences significant association between deprivation and engagement in multiple sexual partnerships across all three settings. Again, the differences are most pronounced for Nairobi where the proportion of the poorest quartile

[4]The hazard for the Nairobi intermediate category (basic amenity index) is also higher but only marginally significant at the 10% level.

engaging in multiple sexual partnerships is more than three times greater than among their wealthiest counterparts. Similar results are observed for the basic amenity measure, except in rural areas where the association is not significant. The pattern of results is almost identical for currently married women (albeit at lower levels of partnership), whom we would least expect to engage in multiple sexual partnerships, not only because of their marital vows but also because they may have less need to rely on sex for economic survival.

Table 5 uses logistic regression to examine the relationship between multiple sexual partnerships and deprivation/residence, net of other covariates. Models 1–3 focus on within-residence type comparisons for all women, while Model 4 allows for relative assessment of the effect of deprivation across the three spatial contexts. For the basic amenity index, Models 1–3 show Nairobi to be the only setting where the most deprived have significantly higher incidence of multiple sexual partnerships compared to their better endowed counterparts. The wealth index measure, which is a more appropriate measure for rural areas, evidences similar deprivation trajectories (i.e., between poor and wealthy) across the three residence types.

As indicated above, Model 4 permits direct comparison of the three residential contexts and shows, for both indexes, the association of urban poverty with the sexual outcome. For the basic amenity index, we see only three categories where there is a significantly higher incidence of multiple partnerships relative to the omitted rural poorest category: the poorest in other urban areas as well as the poorest and intermediate categories in Nairobi Statistical tests show the difference between the poorest in Nairobi and those in other urban areas to be insignificant. The findings from the wealth index, although not identical, are not dissimilar and highlight the Nairobi poorest as the sole category with a significantly higher incidence of multiple sexual partnerships, relative to the rural poorest.

Because the emerging literature from Nairobi's slums suggests a high level of multiple sexual partnership even among *married* women (Dodoo, Sloan, & Zulu, 2003; Zulu, Dodoo, & Ezeh, 2003), Model 5 presents a model for currently married women. Regardless of index, Nairobi's poorest have uniquely worse sexual outcomes than any other category. This is the only category that evidences a statistically significant higher incidence of multiple sexual partnerships compared to the rural poor.[5] For the basic amenity measure, Nairobi's poorest are more than six times as likely as their rural counterparts to have multiple sexual partners. The wealth index measure shows the odds of engaging in multiple sexual partnerships to be three times higher for the poorest quartile in Nairobi compared to the poorest quartile in rural areas.

A basic finding emerging from the quantitative analysis is that deprivation is associated with poor sexual outcomes across residential settings. But, there is clearly also evidence of a particular disadvantage of the urban poor. What other evidence is there to buttress the argument of a unique urban (and, perhaps, big city) poverty effect? Also, what plausible explanations exist for such outcomes among the poorest?

Discussion

This paper set out to evaluate whether deprivation is associated with sexual outcomes in city, other-urban, and rural contexts and whether this association also varies across these various settings. Two basic findings consistently emerge. First, poverty is significantly related to risky sexual outcomes, as evidenced in the analysis of age at sexual debut in which, regardless of residential setting, we see a consistent within-residence deprivation gradient whereby the poorest have worse outcomes compared to the wealthiest. The wealth index presents similar findings for the incidence of multiple sexual partnerships (and for the basic amenity index the

[5]For both indexes, the difference between the poorest in Nairobi and in other urban areas is not statistically significant.

same holds true but only for Nairobi). Second, although the poor generally have worse sexual outcomes, we find that the *urban* poor are considerably more disadvantaged than their rural counterparts, a disadvantage that appears accentuated in Nairobi where, even among currently married women, the Nairobi poor have the worst outcomes compared to all other categories including the rural poor.

These results support the hypothesis that, insofar as sexual behavior is concerned, urban settings are particularly disadvantaged in their manifestation of deprivation compared to rural contexts: poor urban women are more likely (and, perhaps, more vulnerable) than their rural counterparts to engage in risky behaviors. Unfortunately, the quantitative data examined here can not explain *why* the urban poor participate in higher levels of risky sexual behavior.

The qualitative data from the Sexual Networking and Associated Reproductive and Social Health Concerns study document how high unemployment, unstable wages, financial insecurity, and the desperate need to have money might predicate sexual behavior that is risky:

> "Money, there is nothing else. But if you understand, you cannot accept that. Now when your problems are solved, you will never know whether you got a disease or not. That time, you might not be thinking about the diseases because you have problems. That is the problem that girls have… So, when I get an illness is when I will come to regret" (Embakasi Slum Female, 18–24 year old group)

A social context that appears to be permissive of prostitution also has a socializing, if not role-modeling, influence:

> "When you look around most of these women have children and their children mingle with our children. Their children will know that business of theirs and show our children. Some of our children have already caught this habit." (Majengo Slum Community Leaders group)

> "Maybe I stay with them (prostitutes) and they depend on that. It is a business, and if I stay with them, I see them clean and they live well. Then I will envy them; I will therefore be influenced to start that job." (Embakasi Slum Female, 18–24 year old group)

Indeed, the economic circumstances may be so desperate that some parents may be implicated in their daughters turning to the street to help augment household budgets:

> "#1 'Even some parents contribute to this because they ask their children to get them this and that.'… #2: 'Sometimes it is we parents to blame. If I ask my daughter that I want a certain thing and she is a student and she does not have money, where will she get it? She will go roaming (prostitution)'" (Majengo Slum Community Leaders group)

> "#1: 'For girl-prostitution, there are some parents who send their girls to do this thing so as to contribute to the house budget'; ... #2: 'These people here especially mothers who have absolutely nothing, they usually tell their children to go where the other children go. Even this prostitution comes like that, you hear mothers telling their children to go there. #3 'Now you see, other children are told to go and come with meat. They do not care where this meat comes from. But when the mother comes and finds the meat on the table she goes ahead to cook. All these things are brought by poverty'" (Kahawa North Slum Community Leaders group)

To increase the likelihood that their sexual encounters yield profit, these young girls inevitably have to seek trysts beyond the deprived slums with wealthier men, who are likely to be older, more sexually experienced and, thus, more likely to infect them:

> "You find that here we have so many girls and so many boys. Some of these girls are very beautiful but you find that the boys have nothing to offer. That is when you find so many girls going out with outsiders (men who live outside the slums) who have money… Some of these men are very promiscuous and they end up transferring the disease to these innocent girls." (Kahawa North Slum Community Leaders group)

Even the small sizes of the residential units—residents typically live in single-room houses where the room serves as sleeping quarters, kitchen, living room, and not infrequently, the bathroom—contribute to socializing children into sexual activity. Because they share sleeping rooms with their children, parents lack privacy for sexual activity. Some try to protect their children's innocence by waiting for them to sleep before initiating sex, raising the volume on their radios, or even dividing the single room with a curtain. Invariably, however, children are exposed to sex as early as their infancy:

> "Some people even sleep on the same side (of the curtain) with their children. There is only one room. Therefore, the parents sleep here and the children are spread just there on the floor. You will find that the kitchen is here and the table is just here. Will you fail to (have sex and) give birth because the other children are here?" (Kahawa North Slum Community Leaders group)

> "… You see, these houses of ours are small and children see a lot of wonders. That is why you see a child of 13 years is pregnant and it is because the parent did that and she saw and she went and tried it with another boy..." (Kibera Slum Female Service Provider group)

Ultimately, the lack of sexual privacy serves to undermine the moral authority parents have over children, who move out of their homes early, generally during the critical adolescent years:

> "#1 'Here, parents ask their children who are over 16 to leave because they will disrupt her comfort with her husband' #2 'So if one has been sent away by the mother and the same mother is here trying to ask one not to misbehave, how do you expect them to listen?" (Majengo Slum Female, 18 to 24 year old group)

How do these circumstances differ from rural contexts? The rural poor likely do not face the same *degree* of challenge and survival pressures as the urban poor (HABITAT, 1996). For instance, the majority of rural people probably do not have to worry about paying rent in cash and many of them grow all or part of their food. The social environment in which children are raised also differs. Indeed, while urban poor parents worry about their children being socialized into sex at very early ages, at the same time that they feel deprived of moral authority over their children because housing arrangements force them to have sex in the same rooms their children sleep in (Dodoo, Sloan, & Zulu, 2003), poor rural parents perhaps hardly contend with such problems, or not to the same extent. Further, the socialization difficulties of slum children are exacerbated by the prevalence of prostitution in these settings.

What this study hopefully evinces is that considerable, if not specific, attention needs to be paid to urban poverty, and particularly so because of the rate of slum growth, not only in Kenya but across the continent. Often, as in Kenya, governments neglect urban slums, meaning that public services are typically absent. The implications of the sexual behaviors noted in this study for the spread of HIV/AIDS and STIs are clear. The foregoing results suggest that attempts to deal with the health implications of such sexual outcomes in urban slums may require going beyond merely providing health services and information, to considering means of alleviating or addressing the economic or livelihoods needs of residents.

Acknowledgements

The authors wish to acknowledge support from the National Institute of Child Health and Human Development (NICHD) and the Office of AIDS Research (OAR) through grant # 1 R01 HD044236-01A1, the Rockefeller Foundation through grant #. 2001 AR 095, and the Hewlett Foundation through grant # 2004-9699).

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Table 1

Distribution of the survey population by area categorized by level of deprivation by basic amenity and wealth indexes and residence

	Basic Amenity Index			Wealth Index		
Level of Deprivation	**Rural**	**Other Urban**	**Nairobi**	**Rural**	**Other Urban**	**Nairobi**
Most Deprived (Poorest)	85.34	37.84	25.11	23.92	24.74	26.89
Intermediate	13.81	35.63	32.34	49.06	50.03	47.43
Least Deprived (Richest)	0.85	26.53	42.55	27.02	25.23	25.67
N	18027	2899	1645	17929	2866	1636

Table 2

Median age at first sexual intercourse (life table)

		95% confidence interval for median		
	Median	**Lower Limit**	**Upper Limit**	**N**
ALL WOMEN	16	16	16	21793
YEAR	16	16	16	6465
1989	17	16	17	7468
1993	17	16	17	7860
1998				
DEPRIVATION/AREA of RESIDENCE CATEGORY				
BASIC AMENITY INDEX	16	16	16	14860
Rural Poorest	17	17	17	2418
Rural Intermediate	19	18	20	149
Rural Richest	16	16	16	1064
Other Urban Poorest	17	17	18	991
Other Urban Intermediate	19	18	19	746
Other Urban Richest	15	15	16	385
Nairobi City Poorest	16	16	16	503
Nairobi City Intermediate	18	18	19	677
Nairobi City Richest				
WEALTH INDEX	16	15	16	4173
Rural Poorest	16	16	16	8452
Rural Intermediate	17	17	17	4704
Rural Richest	15	15	16	681
Other Urban Poorest	17	17	17	1380
Other Urban Intermediate	19	18	19	707
Other Urban Richest	15	15	16	404
Nairobi City Poorest	16	16	17	746
Nairobi City Intermediate	19	19	20	406
Nairobi City Richest				

Table 3

Cox regression hazard ratios of deprivation/residence on age at first sexual intercourse (standard errors in parentheses)

DEPRIVATION/AREA of RESIDENCE CATEGORY	COX REGRESSION (All women, including virgins)			
	MODEL 1	MODEL 1	MODEL 3	MODEL 4
BASIC AMENITY INDEX	Reference	Reference	Ref	Reference
Rural Poorest	0.86 (.02) ***	0.73 (.04) ***	0.84 (.06) **	0.86 (.02) ***
Rural Intermediate	0.62 (.06) ***	0.55 (.03) ***	0.57 (.04) ***	0.62 (.06) ***
Rural Richest				1.14 (.04) ***
Other Urban Poorest				0.85 (.03) ***
Other Urban Intermediate				0.65 (.03) ***
Other Urban Richest				1.28 (.07) *
Nairobi Poorest				1.10 (.05) ***
Nairobi Intermediate				0.74 (.03)
Nairobi Richest				
N	16895	2698	1543	21136
LR Chi2(df)	(12) 1774.85	(12) 440.28	(12) 266.19	(18) 2533.83
WEALTH INDEX	Reference	Reference	Reference	Reference
Rural Poorest	0.88 (.02) ***	0.77 (.04) ***	0.814 (.05) ***	0.88 (.02) ***
Rural Intermediate	0.83 (.02) ***	0.52 (.03) ***	0.522 (.05) ***	0.83 (.02) ***
Rural Richest				1.13 (.05) ***
Other Urban Poorest				0.87 (.03) ***
Other Urban Intermediate				0.59 (.03) ***
Other Urban Richest				1.20 (.07)
Nairobi Poorest				0.98 (.04)
Nairobi Intermediate				0.62 (.04) ***
Nairobi Richest				
N	17409	2798	1564	21771
LR Chi2(df)	(11) 1652.18	(11) 434.27	(11) 257.63	(17) 2394.30

Notes

1 Coefficients are net effects, net of the effects of: religion, place of childhood residence, age, and years of schooling

*** = p< 0.01;

** = p< 0.05;

* = p< 0.10

Table 4

Percentage of women with multiple sexual partners

	All Women		Currently Married Women	
	Percent	N	Percent	N
All WOMEN	3.3	15397	1.7	9412
YEAR	3.7 ***	7524	1.8	4568
1993	2.8	7873	1.6	4844
1998				
DEPRIVATION/AREA of RESIDENCE CATEGORY				
BASIC AMENITY INDEX	2.9	10834	1.6	6874
Rural Poorest	2.9	1753	1.5	1029
Rural Intermediate	3.3	120	2.8	71
Rural Richest	6.4 **	687	3.0 *	397
Other Urban Poorest	4.5	708	1.2	402
Other Urban Intermediate	3.2	432	0.9	223
Other Urban Richest	9.1 *	143	8.5 **	94
Nairobi Poorest	6.3	238	2.0	147
Nairobi City Intermediate	4.0	400	2.3	175
Nairobi City Richest				
WEALTH INDEX	3.8 ***	3303	2.3 ***	2198
Rural Poorest	2.5	5839	1.4	3636
Rural Intermediate	2.7	3538	1.2	2077
Rural Richest	6.0 *	353	3.2 *	221
Other Urban Poorest	5.5	966	2.0	545
Other Urban Intermediate	3.1	484	0.4	244
Other Urban Richest	10.7 **	122	6.4	78
Nairobi Poorest	5.8	415	3.4	238
Nairobi City Intermediate	3.0	237	2.1	96
Nairobi City Richest				

Notes:

[1] A Pearson chi-squared test was done to test the significance of the difference between deprivation and multiple sexual partnerships for each residence type and study year

*** = p< 0.01;

** = p< 0.05;

* = p< 0.10

Table 5

Odds ratios of deprivation/residence on multiple sexual partnerships (standard errors in parentheses)

DEPRIVATION/AREA of RESIDENCE CATEGORY	All Women MODEL 1	MODEL 2	MODEL 3	MODEL 4	Currently Married Women MODEL 5
BASIC AMENITY INDEX	Reference	Reference	Reference	Reference	Reference
Rural None	1.04 (.17)	0.76 (.20)	0.61 (.27)	1.03 (.16)	1.08 (.31)
Rural 1–2	0.95 (.50)	0.56 (.20)	0.36 (.16) **	0.97 (.51)	2.43 (1.81)
Rural 3				1.87 (.34) ***	1.70 (.57)
Other Urban None				1.36 (.28)	0.89 (.43)
Other Urban 1–2				0.83 (.25)	0.35 (.37)
Other Urban 3				3.01 (.97) ***	6.18 (2.45) ***
Nairobi None				1.98 (.56) **	1.50 (.90)
Nairobi 1–2				1.07 (.30)	2.00 (1.08)
Nairobi 3					
N	12355	1722	724	14877	9078
LR Chi2 (df)	(18) 213.72	(17) 97.4	(17) 46.63	(24) 335.74	(21) 65.39
WEALTH INDEX	Reference	Reference	Reference	Reference	Reference
Rural None	0.63 (.08) ***	0.88 (.26)	0.44 (.18) **	0.62 (.08) ***	0.66 (.14) **
Rural 1–2	0.68 (.10) **	0.48 (.20) *	0.26 (.15) **	0.68 (.10) ***	0.66 (.17)
Rural 3				1.27 (.34)	1.25 (.54)
Other Urban None				1.13 (.21)	0.97 (.35)
Other Urban 1–2				0.51 (.17) **	0.23 (.24) **
Other Urban 3				2.51 (.81) ***	3.03 (1.5)
Nairobi None				1.13 (.28)	1.33 (.60)
Nairobi 1–2				0.59 (.24)	1.41 (1.07)
Nairobi 3					
N	12,399	1742	695	14,880	9157
LR Chi2 (df)	(18) 218.62	(18) 93.14	(17) 50.66	(24) 349.30	(22) 67.80

Notes:

[1] Coefficients are net effects, net of the effects of: year of study, religion, marital status (for all women), female household headship, childhood place of residence, current working status, age, and level of education

[2] The 1993 survey asked about the number of sexual partners in the last six months while, in 1998, the reference period was the past 12 months

*** = p< 0.01;

** = p< 0.05;

* = p< 0.10