Children's Schooling in Developing-Country Slums: A Comparison of Egypt and India

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According to United Nations (2003) forecasts, by the year 2030 the world's population will exceed today's total by some 2 billion persons. Almost all of this population growth—1.9 billion people—is expected to be absorbed by the cities and towns of Africa, Asia, and Latin America. Although it has not yet succeeded in forcing a recognition of urban poverty—often overlooked in country development strategies and international lending—the continuing urbanization of the developing world is inexorably reshaping the spatial composition of national poverty and, in time, can be expected to recast the terms upon which national poverty debates are conducted. This paper explores the implications of urban poverty for children's educational attainment, a central measure of human capital that has a well-documented and pervasive influence on later-life demographic and labor force behavior. We compare levels of children's schooling in Cairo and urban Egypt with those of Allahabad, India, a rapidly growing city of some 1.1 million persons in the northern state of Uttar Pradesh, looking for poverty effects at both household and neighborhood levels.

In both settings data are available on slum populations, that is, on spatial concentrations of the urban poor. For Egypt, we draw upon the 2003 Egypt Interim Demographic and Health Survey (EIDHS), which includes a large supplementary sample of slum-dwellers in the Greater Cairo region. The Allahabad analysis rests on data that were also collected in 2003 in 14 of this city's registered slums. The slum definitions employed in these surveys are sensible-sounding and thoroughly conventional, resembling the definitions used across much of the developing world (UN-Habitat 2003). But however sensible and conventional, these definitions need to be viewed with a critical eye. We will assess whether the definitions used in Greater Cairo and Allahabad add analytic value in understanding the conditions of children's lives. In particular, we ask how successful the slum definitions prove to be in capturing the spatial concentration of urban poverty. We then ask whether the spatial concentration of poverty exerts additional influence on children's schooling when the household's own poverty status is held constant.

To pursue these issues, we must devote much of our analysis to basic issues of measurement: how to measure poverty in the absence of data on income and consumption. Despite decades of attention to developing-country poverty, surprisingly few data sets have given educational researchers much purchase on the concept of living standards. Although exceptions exist—notably the World Bank's Living Standards Measurement Surveys—surveys with detailed information on children's schooling have not often gathered comparably detailed data on household incomes and consumption expenditures. In consequence, researchers interested in poverty and children's schooling have had little recourse but to use a grab-bag of proxy indicators for living standards.

We make use of one of the more promising approaches for distilling such proxies into a living standards index, termed MIMIC models, which are a variant of confirmatory-factor analysis (Montgomery and Hewett 2004). The MIMIC approach requires variables serving as *indicators* of living standards to be distinguished from those serving as *determinants* of living standards. In this way the method brings a helpful theoretical structure to the estimation of living standards indices and imposes a measure of discipline on the empirical results. Using the MIMIC approach, we examine whether relative living standards for urban households are associated with children's schooling attainment, net of other factors. We also investigate whether living standards in the neighborhood exert additional influence on children's schooling.

The paper is organized into four sections. Section 1 sketches the theory of neighborhood effects and reviews related empirical evidence. Section 2 provides an overview of models and statistical issues in measuring living standards. Section 3 compares living standards and poverty measures for households with summary measures that are calculated at the sampling cluster or community level. The aim here is to understand how closely household and neighborhood living standards are linked. The data and specification of the schooling models are presented in Section 4. The multivariate results for the schooling measures are also included in this section, with a comparison of models based only on household living standards factors with those based on both household and neighborhood factors. The paper concludes with thoughts on an agenda for further work.

1 Household and Neighborhood Effects: A Sketch

Neighborhood and related contextual effects could influence schooling and other demographic outcomes through multiple pathways. In its recent volume, the Panel on Urban Population Dynamics (2003) provides an extensive review of the relevant theory, with attention to the implications for neighborhood poverty (or living standards) and individual demographic behavior in the cities of developing countries.[1] In brief, the theory suggests that in the developing-country context,

[1]Montgomery and Hewett (2004) and Montgomery and Ezeh (2005) briefly summarize this panel's argument and review more recent research concerned with neighborhood effects on health. Montgomery and Hewett (2004) investigate whether, in a set of 85 developing-country Demographic and Health Surveys, the health of urban women and children is affected by both household and neighborhood standards of living. Their analysis shows that both household and neighborhood standard of living can make a substantively important difference to health. Szwarcwald et al. (2002) examines a type of multilevel model in Brazil, in which infant mortality and adolescent fertility rates at the census-tract level are posited to depend on the proportion poor and the dispersion of poverty rates in the larger geographic areas within which tracts are nested. The authors find that higher levels of infant mortality and adolescent fertility at the tract level are associated with higher mean poverty rates in the larger areas.

education to the secondary and higher levels still has something of the character of an innovation, entailing substantial resource committments on the part of parents, the returns to which are uncertain and perhaps poorly understood. Among other things, the once-secure connection between a secondary school diploma and a good public sector job is today highly uncertain, and in the absence of such jobs, it may not be obvious to the parental generation just how schooling secures a good living for their children. In addition, parents who have not themselves had much education may only dimly grasp what is required to prepare their children for success at the middle, secondary, and higher levels of schooling, i.e., what parental committments of time and close supervision are needed, and why tutors and other supplements are required when local schools fail to provide adequate instruction.

To gauge the full range of costs, risks, and benefits associated with children's schooling, parents may well draw information from their own social networks and from a variety of local reference groups, which can supply vivid demonstrations of the life-course paths associated with schooling.[2] When they make plain the link between schooling and upward mobility, these individual histories can enhance the sense of personal efficacy on the part of parents and their children. But when they show that schooling does not assure mobility, such local personal examples can undermine the sense of efficacy and provoke feelings of frustration, hopelessness, and resentment. In addition to serving as behavioral models and sources of information, educated neighborhood residents can also act as a source of beneficial social control, helping to keep a supervisory eye on neighborhood youth. Such residents may also have enough by way of political clout to direct public resources to their neighborhoods, improving local educational and other public services (Sastry 1996). In this way, schooling can be viewed from the perspective of social epidemiology, which emphasizes how local reference groups, local behavioral models, and other forms of social comparison, information exchange, and social influence can shape fundamental perceptions and attitudes.

In the United States and other high-income countries, where most people live in cities, there is keen research and programmatic interest in the effects of household and neighborhood living standards on schooling and other demographic outcomes. The writings of Wilson, Coleman, and colleagues on social interaction, exclusion, and social capital in poor U.S. neighborhoods (Wilson 1987; Coleman 1988; Massey 1990, 1996; White 2001; Sampson et al. 2002) have provided a powerful stimulus to this line of research, and multiple-level analyses of households and neighborhoods in the cities of rich countries are now plentiful. It is very curious, in light of this scholarly interest in the West, that so few researchers

[2]It is often suggested that in developing countries, better-educated parents have wider social networks, a plausible hypothesis that is yet to be empirically tested.

have pursued these issues in the cities of developing countries. To be sure, the Latin American urban literature has long been engaged with the theory of social exclusion, social comparisons, and inequality—but where empirical measures of these concepts and multi-level statistical applications are concerned, even the Latin American literature remains surprisingly thin.

Defining neighborhoods and slums

A fundamental difficulty in assessing the neighborhood aspects of social epidemiology is how to measure the concept of neighborhood. The geographical units in which surveys are fielded have boundaries that need not correspond closely, or indeed at all, with the sociological boundaries of neighborhoods as determined by patterns of social interaction, information exchange, and social comparison.[3] In this paper, as in most of the literature on neighborhood effects, the definitions of neighborhood are forced upon us by the nature of the available data. For lack of alternatives, we will refer to the sampling clusters of the Egyptian Demographic and Health Survey as "neighborhoods" and will also describe the 14 slum communities of the Allahabad survey in this way—but in both cases there is reason to question whether neighborhood is the appropriate designation for the spatial units in question. (See Montgomery and Hewett (2004) for further discussion on the extent to which DHS sampling clusters represent neighborhoods.)

The United Nations Millennium Declaration has singled out slum neighborhoods of developing countries as especially deserving of attention.[4] However, no consensus has yet been reached among researchers as to how "slum neighborhoods" should be defined. Very little knowledge exists of the relationship between urban poverty overall and the living standards of slum populations. For instance, the proportion of the developing-country urban poor who live in slums is not known; neither is the proportion of slum dwellers who are poor in terms of income or other socioeconomic criteria (UN-Habitat 2003; Montgomery and Hewett 2004).

Egyptian slums

In Cairo, slums are defined to be unauthorized settlements on areas that were not intended for housing and residential use, such as the unplanned areas (which

[3]See Wellman and Leighton (1979) for a discussion on the lack of overlap between social interactions taking place in local neighborhoods and those taking place in individual social networks involving connections outside the neighborhood.

[4]The United Nations Millennium Declaration specifies a target of achieving by 2020 "significant improvement in the lives of at least 100 million slum dwellers" under the broader goal of ensuring environmental sustainability (See www.un.org/millenniumgoals for further information on the Millennium Declaration and its associated goals, specific targets, and research programs.)

lack basic services and adequate sanitation facilities) that have emerged in agricultural zones, government areas, and unsettled areas in violation of existing laws. Although there is broad agreement on the main characteristics of slums, the boundaries of slum areas in Cairo have not been clearly and unambiguously marked.

Three main lists have been compiled of slum communities within Greater Cairo.[5] These lists were developed by the Ministry of Health and Population, the Ministry of Local Communities, and the Central Agency for Public Mobilization and Statistics (CAPMAS). The EIDHS Greater Cairo slum sampling frame drew upon the CAPMAS list of slums, mainly to be consistent with the non-slums sampling frame for the DHS survey, which was also obtained from the CAPMAS. An area was included in the CAPMAS slum list if it was unplanned, the majority of its building were constructed without permits, streets were unstructured, and it lacked basic services—including health, education, and sanitation facilities. We will examine the associations between neighborhood living standards as measured through the MIMIC approach and the formal designation of slums adopted by CAPMAS.

Indian slum data

The data for the Allahabad analysis come from an intervention study conducted in the slums of this city. Allahabad, located some 600 kilometers from Delhi, is the sixth-largest city in Uttar Pradesh, with nearly one million residents according to the 2001 census (see www.census.india.net). The city, which is situated at the confluence of two sacred rivers, the Yamuna and the Ganges, is best known as the site of the Kumbh Mela, a Hindu pilgrimage held every 12 years.

The Allahabad data were gathered jointly by CARE India and Population Council to aid in the evaluation of an experimental reproductive health and livelihoods intervention for slum girls aged 14–19 years. CARE divided the city's 143 designated slum communities into seven wards. Two comparable wards were chosen, one to serve as the project's experimental site and the other as the control site. From these two wards, 14 slum areas were randomly selected for the project.[6]

The Allahabad slum data pertain to the city's "registered" or "notified" slums, as is the case with much urban poverty research in India. But there is reason to think that conditions in non-notified slums—those not granted official recognition—

[5]Greater Cairo includes the three governorates of Cairo, Giza, and Kalyubia.

[6]For a detailed discussion of data collection, including an analysis of the differences in coverage of the slum areas in the project's 2001 baseline and 2003 endline surveys, the differences between respondents interviewed in the two surveys, and the incidence of inconsistent responses for those interviewed in both, see Mensch et al. (2004). The baseline-endline differences are substantial, and appear to stem from differing emphases in the fieldwork that raise doubts about the advisability of merging these surveys for longitudinal analysis. The endline survey was fielded with closer attention to fieldwork procedures, and we believe it to be reliable.

could well be worse than in the notified slums. As Parker et al. (2003: 23) describe their experience in identifying slums elsewhere in Uttar Pradesh,

> The most significant and serious urban disadvantages were encountered in settlements whose existence is not recognized by government. Many of these settlements are vast and have been in existence for twenty years or more. Officially, however, they do not exist and the land they occupy is identified as "vacant." Since there is officially no one there, local government is under no obligation to provide public services. Water, sewerage, electricity, schools and health facilities are therefore absent from unrecognized settlements except when they have been established by NGOs or community initiatives.

Similar problems are found in many settings. In Indore, the largest city in the Indian state of Madhya Pradesh, a careful census conducted by a local research team found there to be 539 distinct slum communities, of which over 100 had gone officially unrecognized (USAID-EHP Urban Health Program 2004b,c). A similar study of Agra (USAID-EHP Urban Health Program 2004a) uncovered about as many unregistered as registered slum communities. Unfortunately, we lack the data for Allahabad that would enable us to compare registered and unregistered slums in this city.

The analysis here is based on the project's endline survey, which was conducted in the spring of 2003. The 2003 fieldwork began with a full census of the households in the 14 slum areas. The data collection teams contacted 6,856 households and completed basic household rosters for 6,547 of them. Of the households with rosters, 3,853 were found to include adolescents of age 15–21 years. The next phase of the fieldwork focused on the households with such adolescents. The household roster identified 7,572 eligible young people; of these, 6,148 (or 81.2 percent) were contacted and completed an adolescent survey. An attempt was made to interview all eligible adolescents in the household. The adolescent questionnaire included detailed items on schooling including age when first enrolled, current enrollment status, exam grades for the year before the survey and, for those no longer enrolled, age when left and last grade completed. A separate questionnaire was developed for the parents of the adolescents; this included educational attainment for all household members as well as items on ownership of consumer durables and indicators of housing quality.[7] Both adolescent and parental questionnaires are available for 6089 Allahabad adolescents in 3276 households; when cases with missing values on key variables are removed, we are left with an analysis sample

[7] The parental survey was completed by the adolescent's mother or father in 86.3 percent of cases; in the remaining 12.8 percent of cases another adult responded on behalf of a parent.

Figure 1 Classifying the approaches to measuring living standards

	Non-Statistical Approaches	*Statistical Approaches*
Loosely Structured	Counts of all durables owned	Principal components or factor analysis of durables alone
Tightly Structured	Judgment-based weighted indexes of durables	MIMIC specifications

of 5,992 adolescents. Note that although the fieldwork began with a full census of all households in the 14 slums, the project's focus on adolescents yields an analysis sample that is restricted to the households with an eligible adolescent.

2 Statistical approach: The MIMIC model

It may be useful to preview our MIMIC approach by situating it among the various strategies that have been applied to the problem of measuring living standards with collections of proxy variables. Figure 1 presents one scheme for doing so, in which we distinguish highly-structured from less-structured approaches, and also draw a distinction between approaches that are statistically-based and those that rely solely on investigator judgment. In separating determinants from indicators, the MIMIC approach brings more structure to bear on the problem than do the comparatively unstructured principal components and simple factor-analytic methods. But judgment-based approaches, in which detailed knowledge of local conditions is applied to form weights for each consumer durable or indicator, are also highly structured and they also bring outside information to bear on the problem of defining living standards.

The specifications to be explored here take the form of equation systems in which the grades of schooling attained by a child are of main interest. Expressed in latent-variable form, the schooling equation is

$$Y^* = W'\theta + f\delta + \varepsilon, \tag{1}$$

where Y^*, the latent schooling outcome variable, represents the grades of school that a child will eventually complete. The determinants of Y^* include a vector of explanatory variables W and an unobservable factor f that we will take to represent the household's standard of living. Another unobservable, ε, serves as the disturbance term of this structural equation.

Of course, Y^* is not observed for all children in the dataset. Let g represent the grades of schooling attained by a given child as of the survey date. For a child who is no longer enrolled in school, we have $Y^* = g$, as that child's schooling history can be regarded as complete. However, for one who is still enrolled in school and whose schooling attainment is thus right-censored at g, we know only that $Y^* \geq g$. The coefficients θ and δ can be estimated consistently using a censored regression model with a censoring point given by g for the children who are still enrolled at survey.[8]

We posit a model of the factor f such that $f = X'\gamma + u$, the value of f being determined by a set of exogenous variables X and a disturbance u. Although f is not itself observed, its probable level is signaled through the values taken by $\{Z_k\}$, a set of K indicator variables. These are binary indicators in our application, and it is conventional to represent them in terms of latent propensities Z_k^*, with $Z_k = 1$ when $Z_k^* \geq 0$ and $Z_k = 0$ otherwise. We write each such propensity as $Z_k^* = \alpha_k + \beta_k f + v_k$, and, upon substituting for f, obtain K latent indicator equations,

$$\begin{aligned} Z_1^* &= \alpha_1 + X'\gamma + u + v_1 \\ Z_2^* &= \alpha_2 + \beta_2 \cdot X'\gamma + \beta_2 u + v_2 \\ &\vdots \\ Z_K^* &= \alpha_K + \beta_K \cdot X'\gamma + \beta_K u + v_K. \end{aligned} \tag{2}$$

In this set of equations, the β_k parameters show how the unobserved factor f takes expression through each indicator.[9] Whether f is actually interpretable as a living standards index depends on the signs that are exhibited by these parameters.

The full equation system thus comprises the schooling equation (1) and equations (2) for the living standards indicators. In setting out the model in this way, with latent factors embedded in structural equations, we follow an approach that has been recommended by several researchers (notably Sahn and Stifel 2000; McDade and Adair 2001; Tandon et al. 2002; Ferguson et al. 2003). Filmer and Pritchett (1999, 2001) have developed an alternative approach based on the method of principal components. Although useful in descriptive analyses and very easy to apply, this method is perhaps best viewed as a data-reduction procedure whose main virtue is the ease with which the researcher can collapse multiple indicators into

[8]Ideally, such a model would be estimated using the method of ordered probit with an allowance for censoring. We have written estimation programs for this model. However, the programs have not yet been generalized to allow for robust estimates of standard errors, which are needed for correct inference when family and community unobserved effects give rise to correlations among children from a given family and to within-neighborhood correlations. For the purposes of this paper, we therefore use the censored regression `intreg` routine that is available in STATA, which, though less flexible than ordered-probit, does allow robust standard errors.

[9]Note that no β_1 coefficient appears in the first of the indicator equations: It has been normalized to unity. Further normalizations are also required. In latent variables models such as these, the sizes of the variances σ_u^2 and $\sigma_{v_k}^2$ are not identifiable. For the indicator equations, we apply the normalization rule $\beta_k^2\sigma_u^2 + \sigma_{v_k}^2 = 1$ so that the variance of $\beta_k u + v_k$ equals unity in each equation.

a single index. The principal components approach is otherwise rather limited—it does not cleanly separate the determinants of living standards from the indicators of living standards, and it lacks a firm theoretical and statistical foundation. As a result, the method is not readily generalizable to structural, multiple-equation models such as ours (Montgomery et al. 2000; Montgomery and Hewett 2004).

For this paper, we will take a two-step approach to estimating the full equation system. Assuming that the disturbances are normally distributed, we estimate the parameters α, β, and γ of the indicator equations (2) by the method of maximum likelihood, using routines that we have written for this purpose. An estimate $\hat{f} = \mathrm{E}[f|X,Z]$ of the factor is derived from these indicator equations alone. The predicted $\hat{f}$ is then inserted into the structural equation (1) just as if it were another observed covariate. Conventional statistical methods are applied to estimate the parameters θ and δ of the structural model.[10]

Modeling the living standards factor: Urban Egypt

With the living standards factor specified as $f = X'\gamma + u$, how should the X variables of this equation be chosen and what relation, if any, should they bear to the W variables that enter the main schooling equation? How are the X variables, posited as determinants of living standards, to be distinguished from the $\{Z_k\}$ variables that serve as indicators of living standards? In Table 1 we present our classification scheme for urban Egypt and give descriptive statistics on the indicators and determinants.

As Montgomery et al. (2000) note, there is little consensus in the literature about how best to define and model the living standards measures found in surveys such as those fielded by the DHS program, which lack data on consumption expenditures and incomes. With proper consumption data lacking, we think it reasonable to define the set of living standards indicators $\{Z_k\}$ in terms of the consumer durables and housing-quality items for which data are gathered. Using these indicators, we construct what McDade and Adair (2001) have termed a "relative affluence" measure of living standards. Access to electricity is now all but universal in urban Egypt, so this determinant can be excluded from our statistical analysis.

Producer durables are deliberately excluded from the $\{Z_k\}$ set of indicators, because while they may help determine final consumption, producer durables are not themselves measures of that consumption. They are a means to an end, or, to put it differently, producer durables are better viewed as inputs in household produc-

[10] As in other two-step models with "generated regressors," the standard errors of the estimators $\hat{\theta}$ and $\hat{\delta}$ should be corrected for the use of an estimated $\hat{f}$ in the second step. As noted above, we employ robust standard errors, which should adequately address this and other sources of heteroskedasticity. See Montgomery and Hewett (2004) for a fuller account of statistical issues and estimation techniques.

Table 1 Mean values of household living standards variables, urban Egyptian households, 2003. (N = 8,462 households.)

Proportion of Households Owning Indicator	
Car, Van, or Truck	0.098
Bicycle or Motorcycle	0.143
Radio with Cassette	0.889
Television	0.954
Satellite Dish	0.081
Telephone	0.584
Mobile Phone	0.234
Video	0.223
Computer	0.089
Electric Fan	0.929
Air Conditioner	0.044
Refrigerator	0.903
Freezer	0.043
Gas or Electric Stove	0.786
Automatic Clothes Washer	0.278
Other Clothes Washer	0.800
Water Heater	0.594
Adequate Living Space[a]	0.530
Good Flooring[b]	0.129
Mean Values of Determinants	
Owns Dwelling	0.514
Feels Little Risk of Eviction[c]	0.959
Owns Land	0.045
Owns Animals	0.118
Has Sewing Machine	0.097
Proportion of Adults with Primary Schooling	0.162
Proportion with Secondary Schooling	0.473
Proportion with Higher Schooling	0.171
Head's Age (years)	45.862
Head is a Man	0.874
Household Lives in Cairo	0.356
Lives in Alexandria	0.070
Lives in Giza	0.106
Lives in Kalyubia	0.144

[a] Household defined to have adequate living space if the number of persons per room is less than the (weighted) median value for all urban households of about 1.25 persons per room.

[b] Household has flooring covered with parquet or polished wood, ceramic or marble tiles, or wall-to-wall carpeting.

[c] Household either owns its own dwelling, or reports no or very little risk of eviction.

tion functions, rather than as measures of the consumption drawn from household production. By this logic, producer durable variables should be included among the X covariates—we have included ownership of a house or land, ownership of animals, and possession of a sewing machine. We have also made use of a variable measuring security of housing tenure, as expressed in household perceptions of the likelihood of eviction risk. (To judge from the responses, relatively few urban Egyptian households feel themselves to be at risk of eviction, a situation quite unlike what is seen in other urban areas of the developing world.) Although city size may be only a distant proxy for the many other factors that determine consumption—among them, access to multiple income-earning possibilities and heterogeneous labor and product markets—we include dummy variables for Cairo, Alexandria, and Kalyubia to account for such effects, relegating other towns and small cities to the omitted (reference) category.

It is not unreasonable to liken adult education to a producer durable, education being a type of long-lasting trait that produces a lifetime stream of income and consumption; on these grounds we include the age of the household head and measures of adult educational attainment for all adults in the household in our specification of the X determinants. In doing so, we are mindful of the "dual roles" played by education in demographic behavior (Montgomery et al. 2000; Montgomery and Hewett 2004). Education is both a determinant of living standards and a conceptually separable influence on behavior via its links to social confidence, to the ability to process information, and to the breadth and nature of individual social networks. In short, education measures belong with the W variables of the schooling equations as well as in the set of X variables that act as determinants of living standards. Model identification is not threatened by variables that are common to both X and W, but we hope to strengthen the empirical basis for estimation by using a summary measure of education for adults in the living standards model (the proportions of all adults in the household having various levels of completed education) and a more detailed specification, involving levels of the head's education, in the children's schooling models. The sex and age of the household head is also included among the determinants of living standards.

Estimates of urban living standards: Egypt

Table 2 summarizes the estimated $\hat{\beta}_k$ factor loadings on the indicators of living standards, and also presents the $\hat{\gamma}$ estimates on the determinants. As can be seen in the table, the $\hat{\beta}_k$ coefficients are always positive and statistically significant. This is encouraging, in that it supports the interpretation of the factor as an expression of the household's standard of living. The table also presents a summary of $\hat{\gamma}$, the effects of the X determinants. These effects are very much in line with expectations. The adult education variables are strongly and positively associated with

Table 2 Estimates of the indicator and determinants coefficients of the MIMIC living standards model, urban Egyptian households, 2003

	Coefficient	*Z value*
Coefficients $\hat{\beta}_k$ of the Indicators		
Bicycle or Motorcycle[a]	0.191	6.803
Radio	1.105	30.693
Television	1.398	33.698
Satellite	1.129	29.523
Telephone	2.052	42.021
Mobile Phone	1.182	32.744
Video	1.392	38.144
Computer	1.773	41.640
Electric Fan	1.282	35.127
Air Conditioner	1.178	28.255
Refrigerator	1.597	39.383
Freezer	1.227	33.150
Gas or Electric Stove	0.822	29.039
Automatic Clothes Washer	1.571	39.955
Other Clothes Washer	0.393	18.368
Water Heater	1.578	39.731
Adequate Living Space	1.778	42.159
Good Flooring	0.953	27.695
Coefficients $\hat{\gamma}$ of the Determinants		
Own Dwelling	0.032	7.331
Little Risk of Eviction	0.346	25.796
Owns Land	0.238	21.896
Owns Animals	−0.103	−14.696
Has Sewing Machine	0.288	30.201
Proportion of Adults with Primary Schooling	0.103	16.678
Proportion of Adults with Secondary Schooling	0.425	38.103
Proportion of Adults with Higher Schooling	0.846	40.905
Head's Age[b]	0.055	31.353
Head's Age, Squared	-0.48^{-3}	−29.253
Head is a Man	0.240	25.766
Household lives in Cairo	0.105	19.166
Lives in Alexandria	0.046	5.123
Lives in Giza	0.115	15.115
Lives in Kalyubia	−0.066	−9.206
ρ	0.227	21.014

NOTE: For specification of variables, see Table 1 and text.

[a] The β coefficient on ownership of a car, van, or truck has been normalized to unity.

[b] According to the age coefficient estimates, the positive effect of head's age on household living standards rises to a peak at age 57 and then declines.

living standards in urban areas; and, consistent with age profiles of productivity, we find that urban living standards increase with the head's age up to about age 57, and decrease thereafter.

Among the producer durables, ownership of a home and land are positively associated with living standards, but ownership of animals is negatively associated. Other producer durables—possession of a handcart and sewing machine—are positively and significantly associated with living standards in both urban and rural settings. Interestingly, although some 95 percent of urban Egyptian households believe themselves to be at little risk of eviction from their homes, this variable is positively associated with living standards. The city-specific dummy variables suggest that with other things held equal, living standards are generally higher in Cairo (and weakly so in Alexandria) by comparison with Egypt's towns and secondary cities. On the whole, the results presented in Table 2 provide good statistical support for the proposition that the proxy variables collected in the Egyptian DHS can be interpreted as indicators of the household's standard of living.

Estimating urban living standards: India

The Allahabad data refer only to selected slum communities in this one city, and are additionally selective in providing data only on households containing at least one adolescent of age 15–21. To estimate the MIMIC model of living standards, we therefore thought it sensible to use data from a nationally-representative survey, the 1998–99 National Family Health Survey (NFHS) for India, which covers over 30,000 urban households. Fortunately, the consumer durables and housing quality indicators collected in the Allahabad parental questionnaire closely resemble those of the NFHS.[11] Because the NFHS was designed to provide a representative sample of urban households across India, we estimate MIMIC models of living standards for urban India using these NFHS data, and then apply the coefficients derived from the NFHS analysis to the household data collected from Allahabad slum households. Hence, the living standards estimates for Allahabad slum households serve to mark their relative positions among all urban Indian households.

The MIMIC specification for urban India is very similar to that for urban Egypt. In India, access to electricity is not a given even in urban households and we include electricity in the Indian specification of living standards determinants. The Indian model also includes dummy variables for scheduled caste and tribe as well as other

[11] A few indicators were gathered in one survey but not in the other. The NFHS gathered data on household ownership of a clock or watch, chairs, beds and cots, tables, water pumps, pressure cookers, ownership of a house, and acres owned of arable or irrigated land. The Allahabad survey did not cover these items, but collected information on ownership of VCRs, cameras, CD players, air coolers, supply of gas, the condition of the building, and a few other measures that were not included in the NFHS.

Table 3 Estimates of the indicator and determinants coefficients of the MIMIC living standards model, urban Indian households, National Family Health Survey, 1998–99. (N = 30,405 households).

	Coefficient	*Z value*
Coefficients $\hat{\beta}_k$ of the Indicators		
Motorcycle[a]	0.923	63.437
Bicycle	0.202	25.954
Black-and-White Television	−0.022	−2.499
Color Television	1.126	66.857
Radio	0.549	53.063
Telephone	1.239	67.936
Fan	0.760	56.342
Refrigerator	1.266	69.310
Use Gas or Electricity for Cooking	1.137	66.724
Adequate Space[b]	0.488	49.282
Separate Room for Kitchen	0.699	56.569
Coefficients $\hat{\gamma}$ of the Determinants		
Electricity	1.101	38.457
Own Sewing Machine	0.526	43.924
Own Agricultural Land	−0.026	−2.150
Own Animals	−0.105	−7.258
Scheduled Caste	−0.291	−18.682
Scheduled Tribe	−0.278	−14.810
Other Backward Caste	−0.131	−11.281
Percent of Adults with Primary Schooling	0.295	10.989
Percent of Adults with Secondary Schooling	0.950	38.633
Percent of Adults with Higher Schooling	1.898	58.913
Age of Head	0.032	15.056
Age of Head, squared[c]	-0.2^{-3}	−9.783
Head is a Man	0.096	6.466
Small City	0.016	1.280
Large City	0.206	19.290
ρ	0.401	36.545

[a] The β coefficient on ownership of a car, van, or truck has been normalized to unity.

[b] "Adequate" in that the number of persons per room is less than the (weighted) median for urban Indian households.

[c] According to the age coefficient estimates, the effect of head's age on household living standards is positive throughout the age range of the data.

backward caste, these being social classifications that continue to shape economic opportunities for significant numbers of households even in urban India. As with the Egyptian specification of city size, we include a control for city size in the Indian specification, using the DHS classifications of city size.[12] The results of the MIMIC estimation are shown in Table 3. As can be seen, where they can be compared, the Indian estimates are qualitatively similar to those for Egypt. The β coefficient for one living standards indicator—ownership of a black-and-white television—is estimated to be negative, but it is very small by comparison with the other indicator coefficients, which are all strongly positive. (The enormous sample size confers statistical significance on almost all coefficients of the model.) Among the determinants of living standards, electricity has the expected positive sign, and the scheduled caste, scheduled tribe, and other backward caste indicators take negative signs, also as expected. Unexpectedly, ownership of agricultural land and animals are estimated to be negatively associated with the household's standard of living, but (as in Egypt) this may reflect the need for poorer urban households to insulate themselves, at least to a degree, from market price variation in basic foodstuffs.

3 What do the slum designations mean?

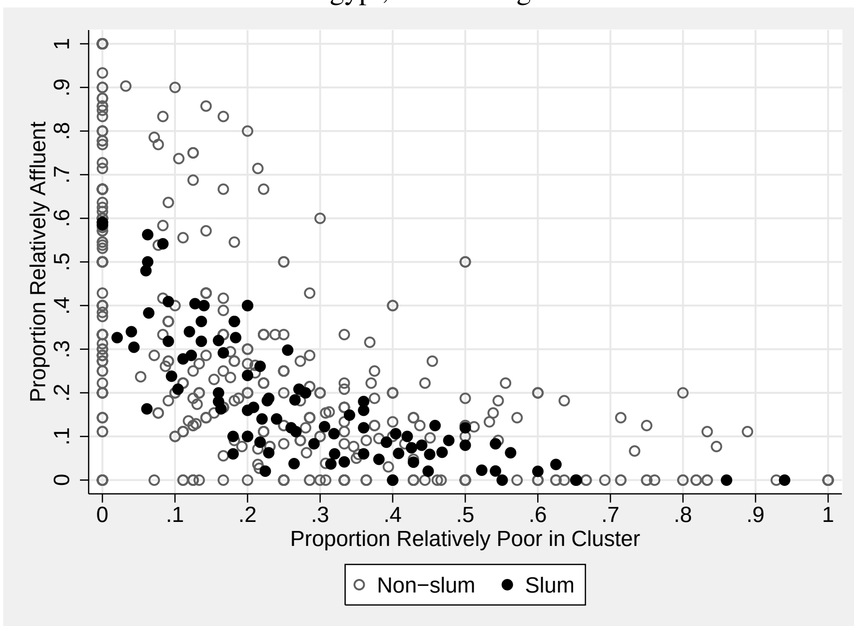
To make use of the estimated factor scores derived from the Egyptian and Indian MIMIC models, we convert the factor scores into percentile form, giving each household a ranking that accords with its relative position in the distribution of all urban scores. (Sampling weights are used to correctly characterize the full urban distribution.) We label this percentile the household's "Relative" standard of living, with the reference group being composed of all other urban households in the country.

For convenience in what follows, households falling into the lowest quartile of the urban factor scores will be termed "relatively poor" and those in the uppermost quartile termed "relatively affluent." To classify the neighborhoods (i.e., sampling clusters or slum communities) in which households live, we take simple averages of the "Relative" variable across households residing in the cluster, and also compute the cluster proportions relatively poor and affluent.

How effectively does the Egyptian CAPMAS definition of slum perform in identifying spatial concentrations of the urban poor? We generate several graphs showing how the designated slum clusters compare with other clusters in their proportions poor and affluent, and also in terms of the average percentiles. For Egypt, the differences between the designated slum and non-slum clusters, although per-

[12] See Panel on Urban Population Dynamics (2003) on the weaknesses of the DHS classification system.

Figure 2 Proportions of relatively poor and affluent households by cluster, slum and nonslum clusters in urban Egypt, 2003. Weighted means.



ceptible, are not especially striking. Figure 2 depicts the proportions relatively poor and affluent in all urban clusters, with the clusters termed "slums" by CAPMAS shown in the dark circles. Were these slum clusters almost uniformly poor (in relative terms), they would all be found grouped in the lower right portion of the figure. It can be seen at a glance that on average these slum clusters do contain lower proportions of relatively affluent households, as would be expected, but it is not obvious that they contain much greater proportions of poor households. Table 4 quantifies things by providing the mean values for slum and nonslum clusters (calculated with sample weights) for the average living standards percentiles of all households in the cluster, and the proportions of relative poor and affluent households. There are differences apparent, to be sure, and they are in the expected direction, but the differences are not as large as we would have anticipated. At least in terms of our consumption-based measure of living standards, then, the slum–nonslum differences are small enough that they cast some doubt on the value of the CAPMAS slum designation.

We have undertaken further empirical exploration of the slum–nonslum differences for Egypt, and also examined the extent of heterogeneity evident within both types of clusters. An important question is whether cluster averages and propor-

Table 4 Average household percentiles, proportions relatively poor and proportions affluent by cluster, slum and nonslum clusters in urban Egypt, 2003

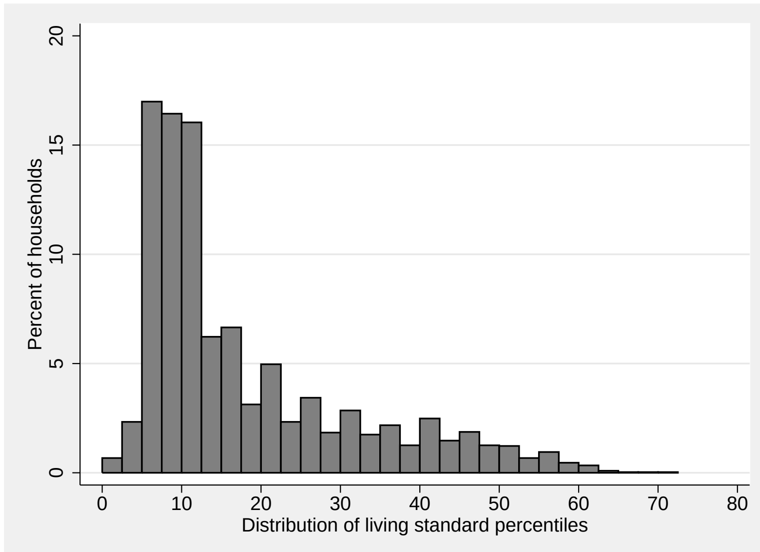
	Slum	Nonslum
Average Household Score in Percentiles	46.4	54.3
Average Proportion of Poor Households	28.0	23.4
Average Proportion of Affluent Households	18.6	31.5

tions are well predicted by the poverty status of individual households, and, reversing the direction of inquiry, whether cluster characteristics are good predictors of the poverty status of households. The results (details not reported here) show considerable heterogeneity in the poverty composition of clusters, and document positive but surprisingly low correlations between individual household poverty and proportions poor in the cluster apart from that household. Likewise, the negative but modest correlations are found between individual household poverty and the proportion nonpoor in the cluster.

For India, the coefficients of Table 3 were applied to household data for Allahabad, and each household's score was converted to the corresponding percentile in the distribution for all urban India. Figure 3 depicts the results. As can be seen, the Allahabad slum households are mainly massed in the lower living standard percentiles, and no household is assigned a percentile placing it in the top-most quartile of urban India. Thus, the picture is quite different from what was seen in Figure 2 for the Egyptian slums, which appear by contrast to contain substantially more affluent households than is evident in Allahabad. The slum designation employed in Allahabad would thus appear to be more effective in identifying the urban poor than the designation employed in Egypt. Note, however, what would seem to be an under-representation of the extreme poor in the Allahabad data, that is, the relative absence of households below the 5th percentile. Perhaps the most desperately poor Allahabad households do not live in the city's registered slums.

Nevertheless, in Allahabad as well as in urban Egypt, slum communities are marked by considerable internal heterogeneity in household living standards. Figure 4 depicts this using a box-and-whisker plot for each of the 14 slum areas in the Allahabad sample. The slum communities are ordered (from left to right) according to the median living standards percentile in the community. For Tula ram bag, the least poor of the slum communities by this criterion, with a median just over the 20th percentile, the inter-quartile range of living standards reaches from 14th to the 40th percentile. In general, the distributions of living standards within slum

Figure 3 Distribution of household living standards in Allahabad slums sample, 2003. Estimates based on coefficients of Table 3 applied to Allahabad household data.

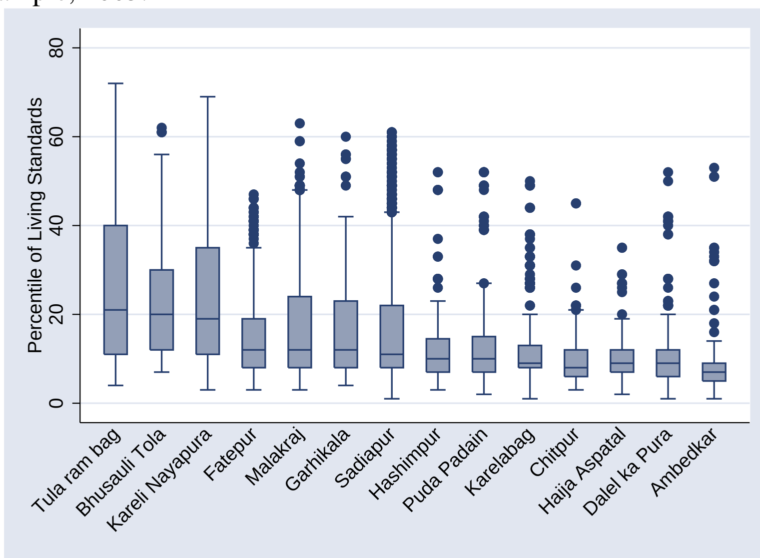


communities become more compressed—that is, the residents are more uniformly poor—the lower is the median living standard.

The relative position of the slum communities according to median living standards corresponds with what is known from our secondary sources of other community characteristics. Tula ram bag and Ambedkar Nagar, the slums with the highest and lowest relative living standards, are also among the slum communities with the greatest and lowest proportion of household heads who have ever attended secondary school or higher (78 and 34 percent, respectively). Likewise, these two communities represent the range of housing construction methods: 95 percent of dwellings in Tula ram bag are constructed from durable materials (cement, brick or stone), whereas 49 percent of dwellings in Ambedkar Nagar are assembled from dirt, mud, or clay. However, not all communities fit neatly into this pattern; in Chitpur over half of household heads have attended secondary school or higher and in Hashimpur 22 percent of dwellings were constructed from dirt, mud or clay.

Likewise, some characteristics are specific to only a few communities. Better-off slum communities such as Tula ram bag and Kareli Nayapura had the largest proportions of high caste Hindus (47 and 27 percent, respectively), while Bhusauli Tola had the largest proportion of households classified as backward caste Hindu (38 percent). Garhikala was the only slum community with a large Muslim popula-

Figure 4 Distribution of household living standards by slum community in Allahabad sample, 2003.



tion (43 percent), although Muslims accounted for 15–20 percent of the households in Kareli Nayapura, Ambedkar and Dalel ka pura. In summary, from the survey data available to us, the differences across slum communities are only partly explicable. A more qualitative, ethnographic approach than ours would be needed to get a sense of the character of these places.

We have been emphasizing the internal heterogeneity of urban neighborhoods, especially evident in Egypt, and perhaps on reflection it is not greatly surprising that urban neighborhoods in developing countries are heterogeneous. Some of the tools used to enforce social exclusion in high-income countries—i.e., exclusionary zoning—are either unavailable or ineffective in developing-country cities, and affluent families in these cities benefit from the spatial proximity of the poor, who provide them with a ready source of domestic labor and other services. Moreover, as the Latin American literature shows, social exclusion can be enforced aggressively and effectively through non-spatial means (Caldeira 1999, 2000). Even for the United States, it has long been known that spatial segregation by income has been less severe on the whole than has segregation by race (e.g., White 1987; Hardman and Ioannides 2004). But much of the urban poverty literature for developing countries depicts slums as if they were uniformly poor, and shows little recognition of the extent of heterogeneity and its social and economic implications.

4 Children's Schooling: Data and Model Specification

To what extent do household living standards, and the living standards of other households in the surrounding community, exert an influence on children's schooling? Recall that the models of grade completion are based on censored regressions for the i-th child in household h in sampling cluster (or slum community) c, which are expressed as follows. For children who are still enrolled in school with g grades completed as of the survey date, the contribution made to the sample likelihood is the probability $\Pr\left(Y^*_{ihc} \geq g\right)$ conditional on explanatory covariates. For children who are no longer enrolled and have attained g grades, we use the density $\Pr\left(Y^*_{ihc} = g\right)$ conditional on the covariates. Among these covariates, greatest interest attaches to $\hat{f}_{hc}$, which represents the estimated living standards percentile for the household. For the Egyptian specification, we also include $\hat{f}^c_h$, the average of these percentiles over all except the h-th household in the cluster. For the Allahabad schooling model, we have only 14 slum communities, and this is too few to support the use of community averages as explanatory variables. Instead, we include dummy variables for the slum communities, taking Tula ram bag, the least poor of the communities according to our living standards estimates, to represent the omitted category. Robust standard errors are employed throughout this analysis.

A small set of socioeconomic controls in addition to the living standards measures is included in the schooling models. Descriptive statistics for these variables and the schooling measures are presented for Egypt in Table 5. The age of the child is coded in single years. To examine the effect of the child's relationship to the household head, a dummy variable is included that takes the value 1 if the child is the direct son or daughter of the household head and is 0 otherwise. The educational attainment of the household head is summarized in three dummy variables: the first indicates whether the head has some or completed primary education; the second indicates whether the head has some or completed secondary schooling, and the third variable indicates whether the head has some or completed higher education. Residence in a large city or the country's capital is represented in a dummy variable for residence in Greater Cairo. For Allahabad, Table 6 provides similar descriptive statistics. Note that the age range of children is much smaller in this case, covering adolescents aged 14–19 only.

Models with Household and Cluster Factor Scores: Egypt

Table 7 presents the censored regression results. The model is estimated first with only the household's living standards percentile (together with other socioeconomic controls). Two additional models are then estimated, the first of which includes the average living standards percentile within the cluster (the household's

Table 5 Descriptive statistics on schooling measures and socioeconomic controls among those aged 6–25, urban Egypt, 2003.

Variable	Mean
Grades Attained (0–18)	6.831
Still Enrolled	0.700
Child is Male	0.545
Child's Age	15.286
Son or Daughter of Head	0.940
Head is Male	1.108
Head's Age	48.157
Head has Primary Schooling	0.272
Head has Secondary Schooling	0.334
Head has Higher Schooling	0.131
Relative Living Standard Percentile	45.067
Cluster Average Percentile	47.656
Percentage of Cluster Relatively Poor	27.823
Percentage of Cluster Relatively Affluent	21.109
Greater Cairo	0.600

own percentile is removed from the calculation), and the second with the cluster proportions relatively poor and relatively affluent.

The household living standards variable, which indicate the household's relative position in relation to other urban Egyptian households, is a highly significant and positive influence in each of these schooling equations. The size of the coefficient is very little affected by the inclusion of cluster measures. When it is included in the specification, the cluster-level average percentile is also estimated to be positive and significant, although its effects are smaller in magnitude than the household-level effects. The third model, which replaces the cluster average with the proportions relatively poor and relatively affluent, indicates that the cluster proportion poor has a negative and significant effect on children's schooling, but the proportion affluent has no discernible effect. Finally, we examined the effects of adding the CAPMAS slum designation to the model (results not shown). The CAPMAS slum variable is stubbornly insignificant whether entered with or without additional controls for living standards in the cluster. Evidently this seemingly sensible classification does not succeed in capturing the effects of spatially concentrated poverty.

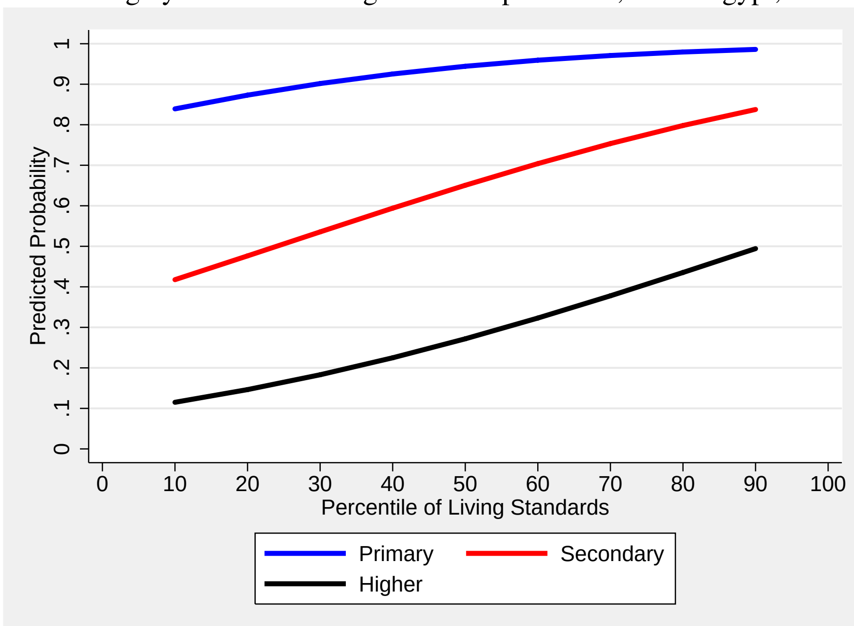
Table 6 Descriptive statistics on schooling measures and socioeconomic controls among eligible adolescents aged 15–21, Allahabad slums, 2003. (N = 5,992).

Variable	*Mean*
Grades completed	7.215
Currently enrolled in school	0.440
Male	0.496
Female	0.504
Age (years)	17.763
Adolescent is Child of Head	0.823
Age of Household Head (years)	48.652
Head is Male	0.840
Head has Primary	0.221
Head has Secondary	0.380
Head has Higher Schooling	0.138
Relative Living Standard Percentile	17.593
Proportion of Slum Relatively Poor	76.773
Slum communities	
Tula ram bag	0.089
Bhusauli Tola	0.043
Kareli Nayapura	0.129
Fatepur	0.049
Malakraj	0.123
Garhikala	0.086
Sadiapur	0.258
Hashimpur	0.016
Puda Padain	0.029
Karelabag	0.076
Chitpur	0.021
Haija Aspatal	0.018
Dalel ka Pura	0.040
Ambedkar	0.024

Table 7 Censored regression results for schooling among those aged 6–25, urban Egypt, 2003.

Variable	Coeff.	Z value	Coeff.	Z value	Coeff.	Z value
Child is Male	−0.468	−3.76	−0.449	−3.60	−0.451	−3.62
Child's Age	2.747	6.49	2.791	6.62	2.804	6.64
Age Squared	−0.153	−5.91	−0.155	−6.04	−0.157	−6.07
Age Cubed	0.003	5.13	0.003	5.24	0.003	5.29
Son or Daughter of Head	0.543	1.66	0.551	1.67	0.538	1.62
Head is Male	0.333	1.55	0.265	1.23	0.282	1.31
Head's Age	0.124	2.76	0.117	2.57	0.117	2.55
Head's Age, Squared	−0.001	−2.59	−0.001	−2.44	−0.001	−2.41
Head has Primary Schooling	1.225	6.54	1.170	6.18	1.156	6.09
Head has Secondary Schooling	2.841	12.71	2.760	12.36	2.753	12.34
Head has Higher Schooling	4.481	15.87	4.212	14.31	4.309	14.85
Greater Cairo	−.821	−4.82	−0.847	−5.04	−0.863	−5.09
Relative Living Standard Percentile	0.073	21.87	0.068	20.10	0.068	20.02
Cluster Average Percentile			0.022	4.11		
Percentage of Cluster Relatively Poor					−0.017	−3.43
Percentage of Cluster Relatively Affluent					0.005^{-1}	0.09
Constant	−11.108	−4.44	−11.804	−4.71	−10.296	−4.10
$\ln\sigma$	1.444	84.74	1.441	84.47	1.441	84.30

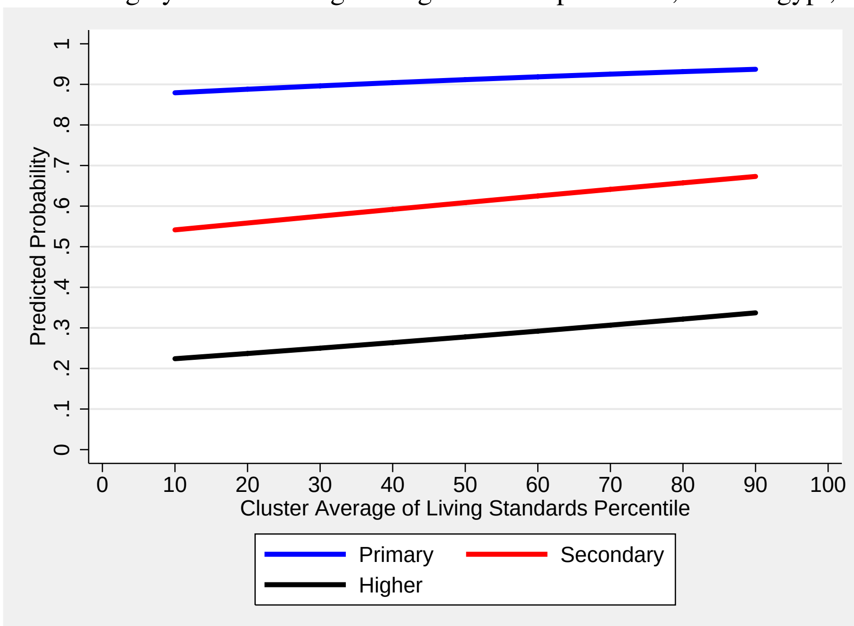
Figure 5 Predicted probabilities of completing primary, secondary, and higher levels of schooling by household living standards percentile, urban Egypt, 2003



Other covariates exhibit consistent signs and significance (or lack of it) across models. Boys are estimated to attain less schooling than girls. Although this finding is not often seen outside Egypt, it is commonly encountered in Egyptian studies. It seems that boys are often encouraged to leave school once they have had sufficient preparation for work, whereas girls (who are less able to leave the home and work than boys) tend to be left in school. This expectation may diminish the dedication and energy that boys bring to their studies, and might cause them to leave school somewhat earlier than girls. The education of the household head is a strong, positive influence on children's schooling attainment, and residence in Greater Cairo is a strong negative influence.

Figures 5 and 6 depict the predicted probabilities of completion of primary, secondary, and (any) higher schooling given the household and cluster average percentile of living standards. (The predictions are formed setting the children's age to a value old enough that the schooling level could be completed.) As can be seen, the effects of the household living standards percentile are much stronger than those of the cluster percentile, showing differences in predicted probabilities of about 40 percentage points for secondary and higher levels of schooling in the

Figure 6 Predicted probabilities of completing primary, secondary, and higher levels of schooling by cluster average living standards percentile, urban Egypt, 2003



case of the household variable, as compared with 10–15 percentage points for the cluster average variable.

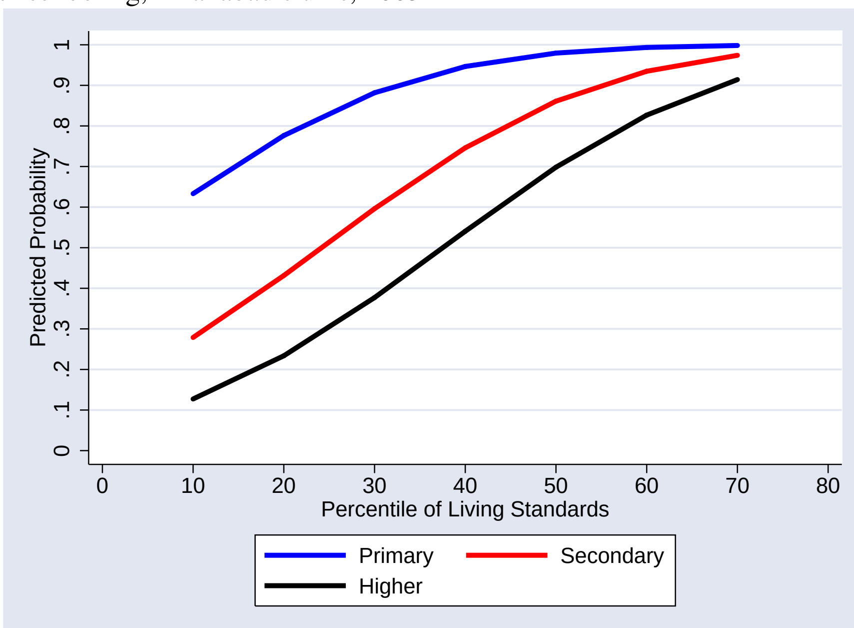
Models with community dummies: Allahabad slums

The results for adolescents in the Allahabad slums are presented in Table 8. In this case, we insert dummy variables to capture effects at the level of slum communities, as there are too few such communities to support the use of community averages as in Egypt. The household's living standards percentile is a strongly positive influence on children's schooling attainment, even in this sample of data limited to slum populations. Although we cannot directly assess the effects of living standards at the community level, the coefficients on the slum dummy variables are all highly significant and negative. Because Tula ram bag serves as the reference community, and it is the least poor of the communities by our reckoning, the uniformly negative coefficients are strongly suggestive of community-level living standards effects. We have re-estimated the model of Table 8 leaving out the community dummies and using in their place slum community averages and proportions poor (results not shown), and found that the community averages were positively and significantly associated with grade completion, and the proportions poor negatively and significantly associated. However, because these variables

Table 8 Censored regression results for schooling among eligible adolescents, Allahabad slums, 2003. (N = 5,992).

Variable	Coeff	*Z* score	Coeff	*Z* score
Male	−0.179	−1.25	−.199	−1.41
Age (years)	10.809	0.84	11.411	0.90
Age Squared	−0.640	−0.88	−.677	−0.95
Age Cubed	0.012	0.92	.013	0.99
Adolescent is Child of Head	0.741	3.38	.670	3.08
Age of Household Head (years)	−0.040	−0.97	−.012	−0.29
Age of Head Squared	0.001	1.81	$.004^{-1}$	1.11
Head is Male	−0.638	−3.31	−.534	−2.83
Head has Primary	1.273	6.85	1.188	6.52
Head has Secondary	4.147	22.59	3.813	20.82
Head has Higher Schooling	6.989	20.43	6.417	18.62
Relative Living Standard Percentile	0.235	27.77	0.224	26.07
Slum communities (Tula ram bag is reference)				
Bhusauli Tola			−2.554	−5.67
Kareli Nayapura			−1.152	−3.03
Fatepur			−1.386	−3.01
Malakraj			−0.897	−2.50
Garhikala			−1.950	−5.04
Sadiapur			−3.154	−9.68
Hashimpur			−2.334	−3.91
Puda Padain			−1.817	−3.46
Karelabag			−3.060	−8.36
Chitpur			−1.769	−3.54
Haija Aspatal			−1.594	−2.79
Dalel ka Pura			−2.497	−5.68
Ambedkar			−3.620	−7.57
Constant	−56.528	−0.74	−57.995	−0.77
$\ln \sigma$	1.562	135.07	1.539	130.52

Figure 7 Predicted probabilities of completing primary, secondary, and higher levels of schooling, Allahabad slums, 2003



contain only 14 distinct values, we cannot be confident about the robustness of such results. Figure 7 depicts the effects of the household percentile variable using results from the model with slum community dummies included. As with the corresponding Egyptian analysis, the figure indicates that living standards have a strong association with completed levels of schooling. Care should be taken not to over-emphasize the upper end of living standards distribution depicted here, because very few Allahabad slum households are found above the 40th percentile of living standards. Strong effects are evident even below this percentile, where most of the data are massed.

5 Conclusions

This paper has examined the role of household and neighborhood poverty as determinants of children's schooling in urban Egypt and in the slums of Allahabad, India. It has been conventional to think of the urban poor as slum-dwellers, and this view provides a rationale for geographic targeting of educational investments in Egypt and elsewhere. But, as this paper shows, when slum communities are closely inspected they are often found to be more heterogeneous than the conventional view would indicate.

We have found strong evidence that household living standards, as measured by MIMIC factor scores converted to percentiles, exert substantial influence on the educational attainment of urban children. For Egypt, measures of living standards at the level of the sampling cluster also attained statistical significance, although the effects were estimated to be substantially smaller than the household-level effects. The Allahabad slums data showed that community-level effects are of substantive importance, but we have too few communities in our sample to allow these effects to be clearly interpreted in terms of living standards. Even so, the results for this city are suggestive of living standards effects operating at the community level. In general, our results indicate that the educational attainment of poor children can depend not only on the standards of living of their own families, but also on the economic composition of their local surroundings.

The two settings differ in the effectiveness with which conventional designations of slums succeed in identifying spatial concentrations of the urban poor. For Egypt, with household living standards controlled, knowing that an area has been designated as a slum (by the eminently sensible CAPMAS definition) does not bring any insight into the prospects for children's educational attainment. Indeed, for Egypt the slum–nonslum differences are small enough that they cast doubt on the value of the slum designation for the design of policy. If resources are to be effectively targeted to Egypt's urban poor, there is good reason to consider supplementing the official slum designation with other classifications of families, such as the one produced by the MIMIC approach of this paper. For Allahabad, our analysis gave less cause for concern: the 14 registered slum communities do indeed appear to be poor when considered in relation to the reference category of other Indian urban areas. There remains some reason to worry about non-registered slum communities in India, which tend not to appear at all in the official accounts of urban poverty.

In our view, policy-makers should pay special attention to the heterogeneity that exists within urban slums, which could have profound implications for the effectiveness of targeting government educational investments on a spatial basis. In mixed slum communities, a considerable portion of the benefits from public educational investments could be captured by the better-off families. The possibility of such "leakages" needs to be factored into decisions about the placement of educational investments.

There are also potential benefits stemming from heterogeneity. When they live in mixed-income communities in which other families provide demonstrations of the payoffs to schooling, poor families may find themselves more motivated to further their children's education than they would be in uniformly poor communities. Poor families may take note of the role that education has played in the economic and social mobility strategies of the community's better-off families, and might thereby gain a keener understanding of the importance of schooling for their own children's lives and the ways in which it could figure into long-term strategies for advancement. The poor in such communities might well prove more responsive to new governmental educational investments than they would be in uniformly poor communities where the prospects for advancement seem unrelievedly bleak.

To be sure, our Egyptian estimates of separate effects for cluster-level poverty and cluster-level affluence indicated no detectable role for cluster affluence, which features prominently in this theory. But we suspect that a more subtle and careful analysis of cluster-level social composition might turn up more evidence on the distinctive effects of neighborhood affluence. The next generation of research on neighborhood effects in the cities of developing countries will require explicitly multi-level designs with both qualitative and quantitative data gathered at the neighborhood level. Conventional survey data of the sort we have used can provide a glimpse of the multi-level effects, but take us no more than one step in the direction of what will be needed.

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