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Human Settlements Working Paper Series

Poverty Reduction in Urban Areas - 27

Broadening poverty definitions in India: Basic needs in urban housing

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December 2010

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ISBN: 978-1-84369-795-4

This paper can be downloaded free of charge from http://pubs.iied.org/10589IIED.html. A printed version of this paper is also available from Earthprint for USD20 (www.earthprint.com)

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ABSTRACT: This paper considers how the official poverty line in India would have to change, if it were to be set at a level that allowed urban households to afford minimally adequate accommodation. It discusses the difficulties in incorporating housing needs into poverty lines, noting that households that rent accommodations are treated differently in India's poverty statistics from those who are owners. Drawing on data from two very large, official, nationally-representative surveys, the paper shows that a substantial percentage of urban households have unmet housing needs even when they are above the poverty line. Controlling for household living standards, unmet needs are greatest in unlisted slums, but substantial in listed and non-slum communities as well. Data from renting households are used to calculate the costs of housing with minimally acceptable characteristics. These costs are estimated to be approximately one-quarter of the official urban poverty line. The paper argues that in view of the size of the housing component, the urban poverty line should be reconfigured to reflect the costs of basic needs for accommodation.

SUMMARY: Poverty lines in India have been established with some allowance for basic nutritional needs, but have neglected basic needs in housing. In urban areas, expenditures on housing take a sizable share of household budgets, even without adjustments for the quality and adequacy of accommodations. Substantial percentages of urban Indian households live in housing that falls well short of meeting basic needs, especially in non-notified `slum' communities. Using data on housing characteristics from renting households, this paper estimates the costs of minimally adequate urban housing at about one-quarter of the official urban poverty line, using a strict standard that would classify as meeting basic needs even those households which live in ‘slums’ without water piped to the home or a private toilet. Because the costs of meeting basic needs in housing have been ignored in the official poverty lines, urban poverty in India is likely to have been seriously underestimated.

This paper discusses the difficulties in translating an assessment of the adequacy of housing into a monetary amount that can be incorporated into the poverty line. Housing needs include a range of characteristics that affect individual and family well-being, including security of tenure, the physical conditions of the dwelling, whether the household has access to adequate drinking water, sanitation and drainage, the social and environmental risks presented by any given location and (especially important in urban contexts) the access to employment it provides. If housing needs are to be expressed in monetized form, to allow their incorporation into a poverty line (as with basic nutritional needs) then the money costs of these bundled characteristics must be estimated. The translation into money terms is difficult enough even for renters where there is a clear monetary payment for housing. It is even more difficult to do this for those that own their dwelling; deducing the equivalent of rents for them adds another layer of difficulty.

This paper reviews the findings from two large official surveys from the National Sample Survey Organization that were nationally representative to see what they show about housing and poverty in urban areas in India. Key findings from this include the following.

The surveys showed almost all of the urban population living in three types of communities: notified slums; non-notified slums; and non-slum neighbourhoods. Notified slums are areas classified as such by government bodies; they house 8.6% of the urban population. Non-notified slums are home to 5.3% of the population; these communities have not been officially classified as slums but similar or worse

characteristics than the notified slums– for instance, poorly built housing, mostly of a temporary nature with inadequate sanitary and drinking water facilities in unhygienic conditions. As shown in the findings reported below, notified slums generally have better conditions than non-notified slums because notification imposes obligations on local government to provide some services and upgrading (although the findings reported below show how inadequate this provision is, even if conditions are generally better than in non-notified slums). Only a very small number of households interviewed were in squatter settlements or without homes. However, there is evidence of a considerable under-reporting of 'slums' in many cities, as many settlements with very poor quality housing are not included in official lists of slums.

A high proportion of households below the official poverty line and just above this line do not live in settlements officially classified as slums (either 'notified slums' or 'non-notified slums'). Although this may be in part because of the omission of so many 'slums' from official lists, it also suggests that a significant proportion of the urban poor do not live in 'slums' – so that slum dwellers and the urban poor are not synonymous.

The proportion of the population below the official poverty line was 51.7% for non-notified slums, 44.4% for notified slums and 23.4% for non-slum settlements.

Over a quarter of households in notified slums have expenditures that are 1.5 or more times that of the official poverty line, as do 18.2% of households in non-notified slums. This could be taken as evidence that many non-poor households live in slums or of the poverty line being set too low.

In regard to housing quality:

Households living in *dwellings judged to be unsafe* by interviewers: 35.5% of non-notified slum dwellers live in such dwellings, with this proportion much higher among those below the official poverty line; for notified slum dwellers it is 15.4% and for non-slum dwellers 9.4%. For these too, the proportions tend to be higher for those below or close to the official poverty line.

Households that have experienced *flooding* in the five years preceding the survey: only 6.9% of the households in the full urban sample had experienced flooding, by comparison with 21.2% of non-notified slums households and 8.2% of notified slum households.

Dirt flooring is still very common in the homes of the poorest households in both types of slums and in non-slum housing although the percentages fall sharply with monthly per capita expenditures.

Bad ventilation as assessed by the interviewer affected 57.5% of households in non-notified slum, 40.6% of notified slum households and 16.4 percent of non-slums; a substantial proportion of those well above the poverty line had bad ventilation.

Access to electricity was generally good for households above the official poverty line but generally very limited for those below the line, especially for those in non-notified slums.

The proportion of households *without access to drinking water in the building* was very high for both types of slums – even for those above the official poverty line. For instance, more than three-quarters of

households in non-notified slums were without such access – and this was the case for households above the official poverty line as well. Some 60% of those in notified slums and 27% of those in non-slums lacked such access (with higher proportions among those below the official poverty line).

The proportion of households *without any arrangements for solid waste collection* is 36 percent for non-notified slums, 19% for notified slums and 19% for non-slums. It is also much higher than these figures for households below the official poverty line.

Thus, there are some housing indicators for which the official poverty line in urban areas serve as an effective demarcation point separating those whose basic housing needs are not met from those that have sufficient margin to satisfy their needs; in other dimensions, the urban poverty line is much less successful as a marker of housing needs and a high proportion of household above the official poverty line have inadequate housing.

In considering how much the official poverty line would have to be modified to make it a more accurate demarcation point in regard to housing, the paper reviewed a sample of renters to see at what point rental payments were sufficient to satisfy basic housing needs. This examination showed the influence of rent levels on housing – for instance the conditions of the dwelling were a significant factor in rent levels. Rent levels tended to be lower in slums and for households that had reported flooding in the five years preceding the survey. As expected, rents were also lower for housing with lower quality services or less access to them (e.g. the nature of access to drinking water, type of toilet, quality of drainage and interviewers assessment of ventilation).

From this analysis of renters, the rent levels for "basic needs" housing were estimated. The standards for such basic needs housing were set low – it was for accommodation in a notified slum where the condition of the housing was judged to be satisfactory, where there had been no flooding experienced in the 5 years preceding the survey, where the dwelling was first rented in 1997 or later, where household has sufficient drinking water throughout the year and has access to water in the building (but not a pipe to their own dwelling space), had electricity, shared a toilet with other households in the building (although this included septic tank and pit or service latrine), had open pucca drainage, a kitchen (but without a water tap), non-dirt floor, ventilation judged to be satisfactory but not good and total floor area of rooms in sixth decile.

The monthly rent levels for such accommodation were around 124 rupees per person; this is equivalent to around a quarter of the official poverty line and if incorporated into the official poverty line would increase it considerably, because the official poverty line includes very little allowance for housing costs.

Broadening Poverty Definitions in India: Basic Needs in Urban Housing

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1 Introduction

Low- and middle-income countries are continuing to urbanize, but in only a few of these countries are the changing demographic realities being reflected in national poverty reduction strategies (Baker and Reichardt, 2007, Baker, 2008). India is one of the forward-looking examples, and its experience may well prove to be instructive. Over the past five years, two sizable initiatives have been mounted in India to improve living conditions among poor city-dwellers. The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was launched in 2005 with the aim of ensuring that the poor benefit from basic services. A complementary program, termed the Urban Infrastructure Development Scheme for Small and Medium Towns, focuses on the often-neglected needs of secondary cities (Kundu, 2006). As these initiatives take shape and move to the intervention stage, their success will depend in no small part on the methods that are used to measure urban living standards, identify the urban poor, and monitor their progress.

In India as in many other countries, the urban poverty line is the principal mechanism through which poverty is quantified. In this paper, we ask whether the official poverty definition in India gives sufficient attention to basic needs in urban housing. When the Indian poverty lines were worked into their current form in 1979, the procedure that was used was based on a nutritional norm, and it provided some assurance that households living at the poverty line would have the means to consume a minimally adequate level of calories (Government of India, 1979, 1993). But the definition left unresolved whether households officially classified as non-poor would have adequate resources on hand to meet their non-food needs, whether in housing or in other dimensions of need. [1]

The Indian statistical authorities have long cautioned that the official poverty lines are framed more narrowly than non-specialists tend to believe, and although they are

* Acknowledgments: We thank the IIED for supporting this research, which has also benefitted from an award from the William and Flora Hewlett Foundation to the Population Council and by a fellowship to the first author sponsored by the Fred H. Bixby Foundation.

[1] See Satterthwaite (2004) for an overview of urban poverty lines and Bapat (2009) for an insightful account of the debates surrounding these lines in India.

reluctant to depart abruptly from past practice, there is evidence of receptivity to a broader conceptualization of poverty that would take basic non-food needs into account. Even so, for the moment no consensus exists on how to proceed. Among all non-food needs, those in housing present especially vexing problems, because the term "housing" is shorthand for a number of shelter-related characteristics that affect individual and family well-being. In addition to security of tenure, these include the physical condition of the dwelling, whether the household has access to adequate drinking water, sanitation, and drainage, the social and environmental risks presented by any given location, and the access to employment that it provides. If housing needs are to be expressed in monetized form (as basic nutritional needs have been) then the money costs of these bundled characteristics must somehow be estimated. The translation into money terms is difficult enough to effect for renters, but as we will show, high percentages of the Indian urban poor say that they own their dwellings and deducing the equivalent of rents for them adds another layer of difficulty to the exercise.

We address these issues using two very large, nationally representative surveys fielded by India's National Sample Survey Organisation (NSSO). The 61st Round of the NSSO's expenditure survey, conducted from July 2004 to July 2005, provides us with a summary view of urban food and non-food budget shares according to poverty status. The main part of our analysis draws upon a detailed NSSO survey of housing conditions, which was fielded in 2002 in the 58th Round of the NSSO program. This survey provides considerable detail on the links between urban rents and housing quality as indicated by access to water, sanitation, and other measures. It also distinguishes three types of communities—non-slum communities, notified slums, and other slums (which we term non-notified)—across which housing and socioeconomic characteristics significantly differ.

Using these materials, we first demonstrate that a substantial percentage of urban households have unmet housing needs even if they live above the official poverty line. We then make use of statistical models to estimate the costs of meeting these basic needs. Our calculations suggest that minimally-adequate urban housing would require Indian households to make outlays equivalent to about one quarter of the official urban poverty line. In closing, we discuss the implications of these findings and set out suggestions for a program of further research.

2 Measures and trends in urban poverty

India's urban population stood at 288.4 million in 2000, a total that makes India home to 1 of every 7 city-dwellers in low- and middle-income countries as a whole (United Nations, 2010). The United Nations projects that by 2025, 37 percent of India's population will be urban and forecasts a further rise to 54 percent by 2050. The extent of urbanization varies considerably across states. At the time of the Indian census in 2001, Tamil Nadu and Maharashtra were the most urbanized of the major states, with 44 percent and 42 percent of their respective populations living in urban areas (Sivaramakrishnan et al., 2005: 5–6). By contrast, the states of Bihar and Orissa were less than 11 and 15 percent urban. About 38 percent of the country's urban population lives in the 35 cities with populations of 1 million or more (the so-called million-plus

cities), and its 393 Class I cities, a group that includes the million-plus cities, account for over two thirds of all urban residents (Sivaramakrishnan et al., 2005: 7).

India has made significant progress over the past quarter-century in reducing the share of its population living in poverty as India has officially defined it. In 1983, nearly 46 percent of the rural population and 41 percent of the urban population lived below the poverty line (Government of India, 2002). By 2004–05, the incidence of rural and urban poverty had declined to 28.3 and 25.7 percent, respectively (Government of India, 2007). Over this period the total number of rural poor declined by 31.0 million while the number of urban poor rose by 9.9 million in spite of the decline in the urban poverty rate. Much the same pattern can be seen in studies using internationally-defined poverty lines that focus on extreme poverty. Ravallion et al. (2007: Table 3) find that the percentage of Indian urban dwellers living on something less than $1.08 per day fell only slightly from 1993 to 2002 (from 40.1 percent to 36.2 percent) even as the number of urban poor rose from 93.3 to 106.6 million. [2]

In what follows we give a brief account of the procedures by which poverty lines are defined for urban India by the national authorities, insofar as these procedures bear on our own work. The poverty line benchmark for urban India was established by the 1979 Task Force on Projections of Minimum Needs and Effective Consumption Demand (Government of India, 1979). In 1993, the Expert Group on Estimation of Proportion and Number of Poor (Government of India, 1993) carried out a thorough review of the assumptions and methods that had been used by the Task Force and suggested further refinements. The most recent in the series of Expert Group reviews—that of Government of India (2009), known as the Tendulkar Report—recommended a number of reforms in methods and data sources that have had the effect of increasing estimates of rural poverty while leaving (on aggregate) the level of urban poverty almost unchanged.[3] The Tendulkar Report did not, however, come to grips with the issues surrounding basic needs in urban housing.[4]

The 1979 Task Force took the view, subsequently reaffirmed by the two Expert Groups, that living standards and poverty measures could be based on household consumption expenditures. The theoretical basis for this approach—it is now conventional, at least among economists—is that in a world of perfect financial markets in which households can easily borrow and save, the level of consumption is a truer guide to the household's well-being than is the variable level of income. This rationale is not entirely convincing when applied to urban India, where households face financial markets that are riven by imperfections and are constrained in many respects in borrowing and saving, but consumption expenditures provide at least a defensible starting-point for the measurement of poverty.

To specify a poverty line for urban households, the 1979 Task Force examined data from a large 1973–74 NSS survey on household food consumption and overall

[2] The trends are less clear when poverty is measured using the less-extreme $2.15 poverty line, under which some 82 percent of Indian urban dwellers lived in 1992 (and 78 percent in 2002), with rural poverty rates also showing little real improvement.

[3] The revised poverty lines estimated the percentage of rural dwellers in poverty to have been 50.1 percent in 1993–94, declining only to 41.8 percent in 2004–05. Urban poverty rates, estimated at 31.8 percent in
1993-94 using the new methodology, fell slightly over the period, to 25.7 percent.

[4] For rents and transport, it advocated using actual expenditure shares to devise state-specific poverty lines.

Table 1: Components of Monthly Per Capita Expenditure (MPCE) Measured in the NSS Datasets.

No.	Item	No.	Item
30-Day Recall			
1	Cereals	14	Pan
2	Cereal substitutes	15	Tobacco
3	Pulses and products	16	Intoxicants
4	Milk and milk products	17	Fuel and light
5	Edible oil	18	Medical (non-institutional)
6	Eggs, fish and meat	19	Entertainment
7	Vegetables	20	Personal effects
8	Fresh fruits	21	Toilet articles
9	Dry fruits	22	Sundry articles
10	Sugar	23	Consumer services, excluding conveyance
11	Salt	24	Conveyance
12	Spices	25	Rent
13	Beverages	26	Consumer taxes and cesses
30-Day and 365-Day Recall			
27	Clothing	30	Education
28	Bedding	31	Medical (institutional)
29	Footwear	32	Durable goods

consumption expenditures. It converted food consumption by item and quantity to calories consumed per household member. Consumption expenditures were then totalled across the range of goods and services listed in Table 1, some of which are measured over a 30-day recall period and the remainder on both a 30-day and a 365-day basis. (The table shows only the summary categories.) To arrive at an estimate of monthly expenditures, the Task Force summed the spending on items 1–26 in Table 1 and to this subtotal added expenditure over the 30-day period on durable goods (items 27–32). The total for the household as a whole was then divided by the number of household members to obtain monthly per capita expenditures, for which MPCE is the usual acronym.[5] These procedures continue to be followed with minor variations (but on proposed changes in reporting periods, see Government of India, 2009).

Having constructed measures of per capita calorie consumption and monthly expenditures in this way, the 1979 Task Force proceeded to apply a simple statistical method to estimate the level of MPCE at which a household would be expected to consume 2100 calories per person per day.[6] In 1973–74, the implied level of MPCE was about 57 rupees in 1973–74 prices. When expressed in real terms—that is, with

[5] This measure is sometimes termed MPCE-URP for "uniform reporting period". An alternative version of the MPCE is obtained by multiplying the annual expenditures on items 27–32 by 30/365 to obtain a monthly equivalent.

[6] The 2100-calorie norm emerged from the work of the 1968 Nutrition Expert Group, which calculated that for urban households this would suffice to meet minimum daily nutritional requirements (Government of India, 1993: 9).

Table 2: State-Specific Poverty Lines in 2004–05, Expressed in Rupees of Expenditure per Capita per Month (MPCE).

	Rural	Urban		Rural	Urban
Andhra Pradesh	292.95	542.89	Kerala	430.12	559.39
Assam	387.64	378.84	Madhya Pradesh	327.78	570.15
Bihar	354.36	435.00	Maharashtra	362.25	665.90
Chhattisgarh	322.41	560.00	Orissa	325.79	528.49
Delhi	410.38	612.91	Punjab	410.38	466.16
Goa	362.25	665.90	Rajasthan	374.57	559.63
Gujarat	353.93	541.16	Tamil Nadu	351.86	547.42
Haryana	414.76	504.49	Uttar Pradesh	365.84	483.26
Himachal Pradesh	394.28	504.49	Uttarakhand	478.02	637.67
Jammu and Kashmir	391.26	553.77	West Bengal	382.82	449.32
Jharkhand	366.56	451.24	Dadra and N.Haveli	362.25	665.90
Karnataka	324.17	599.66	All-India	356.30	538.60

adjustments for state price differences and changes in prices over time—this level of the MPCE continues to serve as the official benchmark for the all-India urban poverty line. To update the benchmark over time and estimate equivalent expenditure levels across states, the composition of consumption among the poor—often termed the consumption "basket"—has been fixed at its 1973–74 configuration and to this basket an average of two urban price indices is applied.[7] Table 2 presents the state-specific urban (and rural) poverty lines for 2004–05, which we will use in what follows.[8]

Known limitations of the poverty measure

In India the merits and limitations of the official poverty measure have long been the subject of spirited debate. The 1993 Expert Group acknowledged and set in context a number of the important criticisms that had been leveled at the measure, as can be seen in the accompanying box.

Limitations of the Indian Poverty Line: Views of the 1993 Expert Group

- The poverty line is not a true indicator of malnourishment which it might be mistaken for.

[7] This reliance on the 1973–74 consumption basket has proven to be controversial; see Deaton (2008) for a sharply critical review. Even at the time of the 1973–74 benchmark, significant differences across states were evident in the composition of consumption. Since then, the composition of food consumption, in particular, has departed substantially from what it was in the benchmark year. Taking these criticisms into account, Government of India (2009) recommended that the consumption baskets be re-set to their composition in 2004–05 to bring the benchmark into alignment with current consumption patterns.

[8] Housing costs are included in the price indices although they are given a relatively low weight among all categories of consumption expenditures, around 2–3 percent.

- Normative and behavioral elements are compounded in the poverty line in as much as, while being based on the calorie norm, it is derived from the actual expenditure pattern. Related to this: (a) the proportion of non-food expenditures on essentials (rent, fuel, clothing, health care, etc) is not normative but empirical and likely to be seriously inadequate with reference to normative standards, (b) per contra-consumption of what might normatively be considered as inessentials (e.g., alcohol and intoxicants) is accommodated. This conflates primary and "secondary" poverty.

- Since the poverty line in India is based on consumption, not income, it obfuscates dependence on debt, use of common property resources, and informal social security.

- Poverty line derived from personal consumption patterns and levels do not take into account items of social consumption such as basic education and health, drinking water supply, sanitation, environmental standards, etc. in terms of normative requirements or effective access.

- The poverty line, quantified as a number is reductionist. It does not capture important aspects of poverty—ill health, low educational attainments, geo- graphical isolation, ineffective access to law, powerlessness in civil society, caste and/or gender-based disadvantages, etc.

- The poverty line approach, as practiced, usually freezes the notion of poverty, as it were, by not taking into account that even what is considered as absolute poverty need not be immutable over time: what are wants today can become needs tomorrow because of changes in perceptions, legitimate aspirations, taste, technology, etc.

- The notion of absolute poverty is inadequate because relative poverty is also an equally important aspect of poverty and is, in fact, a determinant of absolute poverty at a given level of national income.

- There are also a number of issues and problems related to the primary data base (sampling and non-sampling errors in NSS) and to data and statistical procedures used in estimation (choice of deflators, data used in construction of deflators, interpolation procedures).

Source: Quotations excerpted from Government of India (1993: 11–12)

As the 1993 Expert Group repeatedly emphasized, although it is often interpreted in terms of nutrition, the official poverty line is not in itself a measure of nutrition. The statistical method used to link calories consumed to household expenditure was termed "inverse linear interpolation" by the 1979 Task Force (Government of India, 1979, 1993). We understand this phrase to mean that the Task Force fitted something akin to a regression model to the data, with calories consumed per capita C_i being the dependent variable for household i and monthly per capita consumption expenditures

$MPCE_i$, or a simple function of these expenditures, serving as the independent variable. That is, the model estimated by the Task Force was evidently of the general form $C_i = \alpha + \beta MPCE_i + \varepsilon_i$, with ε_i standing in for all factors other than the MPCE which influence calorie consumption. It would appear that the variation in calorie consumed net of the MPCE (which would be represented in the variance term σ_ε^2 of the regression model) played no role in the definition of the poverty line.

Hence, even at the outset in the benchmark year of 1973–74, some households living at or above the poverty-line value of the MPCE would have consumed fewer than 2100 calories per member, and presumably others with lower levels of expenditure consumed more than 2100 calories. The 1979 Task Force and the 1993 Expert Group have acknowledged (if not documented) this variability. In defending their method, they have emphasized that the poverty definition refers only to averages, and have insisted that a household's position vis-à-vis the poverty line is not to be interpreted literally as an indicator of its nutritional status. As the 1993 Expert Group (Government of India, 1993: 10) reiterated:

> The concept of poverty line used here was partly normative and partly behavioural. This way of deriving the poverty line, while being anchored in a 'norm' of calorie requirement, does not seek to measure the nutritional status, and more specifically the incidence of malnourishment or under-nourishment in the population. It focuses rather on the purchasing power needed to meet the specific calorie intake standard with some margin for non-food consumption needs.

In summary, even where basic needs in nutrition are concerned, there is no guarantee that such needs are being met in households officially classified as non-poor. As for basic needs other than food, the official method of defining poverty is utterly silent on the question of whether these needs are met.

Urban housing is handled in a curious fashion in the poverty-line procedures. Durable goods, among which housing is an especially complex example, are generally viewed as "stocks" that produce a flow of "services," and it is these services that enter into consumption. The difficulty is how to assign the services a defensible monetary value. For renters of housing, the problem is addressed by including monthly rents in consumption expenditures. (As with other goods and services, controls for differences in prices across locations and over time are used in an attempt to convert money expenditures into real terms.) At one time, a similar approach must have been under consideration for households that own their dwellings. The NSSO has long instructed its interviewers when dealing with home-owners, to estimate the rent that would be charged for an equivalent dwelling, according to the interviewer's judgment and knowledge of local conditions. But the efforts of the NSS interviewers would appear to go for naught: the estimated rents are excluded from the consumption totals that determine the household's poverty status. The rationale for this treatment of housing is not well articulated, and as will be seen shortly, the decision to exclude imputed rents affects well over half of all urban households, and even higher percentages of the poor [9]

[9] Borrowing to finance the purchase of housing—taking on mortgage debt or the local equivalent—is also treated differently from debt incurred to acquire other durable goods. The main NSSO consumption surveys.

Evidently, then, the problems posed by housing and other non-food needs have not been ignored by the Indian statistical authorities, but to date the authorities have not moved decisively to incorporate such needs in the poverty lines. The situation is not unlike what is seen in the United States, where despite the urgings of two influential reports on poverty by the National Research Council, the national poverty lines continue to treat food and non-food needs quite differently (National Research Council, 1995, Iceland, 2005). In neither country has a consensus formed among researchers and policy-makers on precisely how to conceptualise and measure non-food needs.

3 Data sources

To understand the composition of food and non-food expenditure in urban India, we draw on the recent consumer expenditure survey carried out in the 61st Round of the NSS program, from July 2004 to June 2005. This survey covered 45,346 urban (and 79,298 rural) households.[10] The official poverty estimates for 2004–05 were generated using this data set. The NSS consumption surveys unfortunately do not provide much usable information on household location—failing to distinguish, for instance, between slum and non-slum communities—and they are not designed to be statistically representative at the district or city level. Perhaps for this reason, little effort has gone into studies of urban consumption differences by size or type of city.[11] The general consumption surveys provide little detail on housing characteristics, for which we must turn to more specialised surveys.

In the analysis that follows, we describe urban living standards in relative terms, using a measure that comes from dividing each household's monthly per capita expenditures by the state-specific urban poverty line.[12] We term this ratio the relative MPCE and report its value according to the ranges that are shown in Figure 1. The figure depicts the distribution of relative MPCE across all urban Indian households, of whom only 2 percent have consumption levels below half the state's poverty line; at the other extreme, 13.9 percent of households consume at levels that are triple the poverty line and higher.

Table 3 documents the shares of household consumption going to food, fuel and light, and several other categories. As would be expected, the food share is highest for the poorest urban households—food accounts for 64 percent of spending for households living at less than half of the state poverty line—and the share steadily declines with relative MPCE, reaching 34.1 percent among the best-off urban households. Expenditure

do not collect information on mortgage payments, perhaps because the forms of payment can be too various to measure. For other durable goods, however, considerable effort goes into recording repayment for items purchased on credit; see NSSO (2004: C-12, C-27). The consumption surveys do gather information on payments made by households (over the preceding 30 and 365 days) to repair their dwellings, so there is evidently interest on the part of the statistical authorities in how households refurbish and improve the quality of their housing stock.

[10] For detailed information on the sampling design and estimation, see NSSO (2006).

[11] Only recently, it seems, has experimentation with district-level estimates been attempted, although these efforts are yielding promising results. Satyr (2003) examines NSS district-level data and Bapat (2009) shows how much can be learned from longitudinal data on an individual city.

[12] The translation to a relative poverty measure has another virtue: it provides a crude control for differences across states in relative prices.

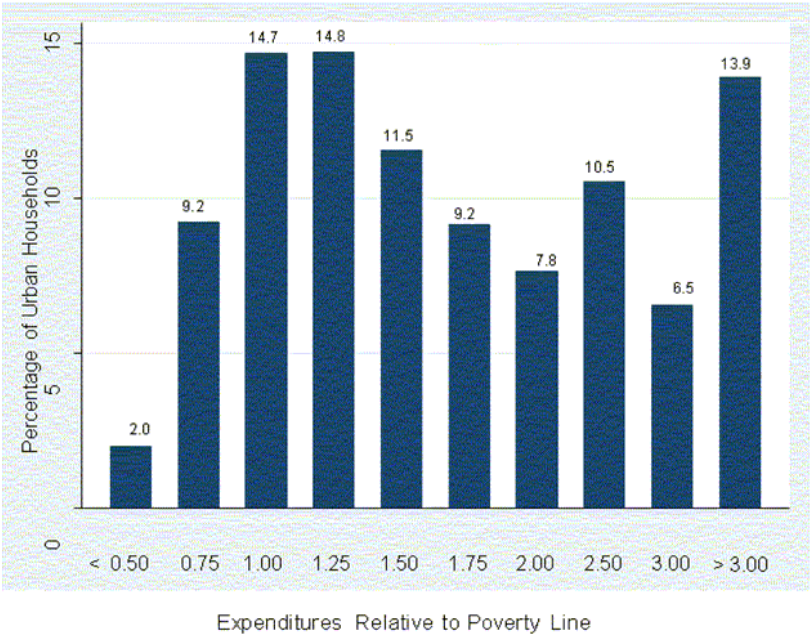

Figure 1: Distribution of Monthly Per Capita Expenditure (MPCE) Relative to the State Urban Poverty Line. Source: 61st Round Consumption Survey

Table 3: Percentage of Consumption by Category and Relative MPCE. Source: 61st Round Consumption Survey.

Relative MPCE	Food	Fuel and light	Medical Care (Institutional)	Medical Care (Non-Institutional)	Education	Conveyance
< 0.5	64.0	14.4	0.0	2.2	1.4	1.7
0.5–0.75	62.4	13.6	0.2	3.0	1.6	2.2
0.75–1.0	59.0	13.1	0.1	3.7	2.2	2.7
1.0–1.25	55.2	12.6	0.2	3.7	2.8	3.8
1.25–1.5	52.7	11.8	0.1	3.9	3.8	4.5
1.5–1.75	49.2	11.4	0.3	4.1	4.3	5.1
1.75–2.0	47.0	11.1	0.5	3.8	4.8	5.9
2.0–2.5	44.6	10.3	0.7	4.5	5.2	6.5
2.5–3.0	41.7	9.7	0.5	4.1	5.7	7.2
> 3.0	34.1	8.4	1.7	4.2	6.8	8.6
Total	50.2	11.5	0.5	3.9	4.0	5.0

Table 4: Ratio of Actual and Imputed Rents to Consumption, in Percentages, by Relative MPCE. Source: 61st Round Consumption Survey

Relative MPCE	Rent[a]	Imputed Rent[b]
< 0.5	12.0	23.8
0.5–0.75	11.3	23.1
0.75–1.0	12.6	23.5
1.0–1.25	13.1	24.7
1.25–1.5	13.3	25.4
1.5–1.75	14.1	27.5
1.75–2.0	14.1	28.2
2.0–2.5	15.2	31.1
2.5–3.0	16.2	31.6
> 3.00	16.9	32.0
Total	14.5	26.7

[as] For renters only: the figures shown are the percentages of rents in consumption expenditures, which include rents. [b] For owners only: the figures are the ratios (expressed in percent- ages) of imputed rents to consumption expenditures, which do not include imputed rents.

shares for fuel and light also decline with the relative MPCE, although not as sharply as do the food shares. Despite expectations, however, the share of spending on conveyance— which would include trips to and from work—is very low among the urban poor (under 3 percent) and rises with the relative standard of living. We find the level and pattern of conveyance expenditures somewhat surprising in light of qualitative reports on the lives of the urban poor, which have often stressed the money and time costs of transport that the poor must bear to gain daily access to employment. We revisit this issue in our concluding section, when we discuss needs for further research.

Table 4 shows the percentage shares of consumption that go to pay rent and also reports the ratio of imputed rents (for owners) to total consumption expenditures. (Recall that imputed rents are not included in total consumption.) Renters devote between 11 and 17 percent of consumption expenditures to rent, an amount that tends to increase somewhat with the overall level of consumption. For owners, imputed rents are substantially larger in relation to consumption, reaching nearly one-third of consumption expenditures among the better-off groups, and like actual rents, the imputed rents increase with the level of consumption. Of course, levels of expenditure as such shed no

light on whether the expenditures satisfy basic needs.

To probe further into housing conditions by settlement type than it is possible to do with the consumption survey, we turn to the NSSO integrated survey of housing conditions in urban and rural India. This survey was fielded in July to December 2002 (the 58th NSS Round), and supplemented information on housing characteristics and rents with data on consumption expenditures.[13] This survey interviewed a total of 41,916 urban households. Among these were 6,138 slum households and squatters and 35,703 households from non-slum communities. Although the housing data are statistically representative at the state level, the sample sizes are too small to be representative of NSS regions within states, and like the main consumption surveys, these data cannot be said to give a representative picture of any given city.

The NSSO distinguishes between two types of slum communities, notified and non-notified, according to the following criteria (NSSO, 2005: 8–9):

> Certain areas notified as slums by the respective municipalities, corporations, local bodies or development authorities were treated as notified slums. Apart from these, any compact area with a collection of poorly-built tenements, mostly of temporary nature, crowded together, usually with inadequate sanitary and drinking water facilities, in unhygienic conditions, was considered as a non-notified slum if at least 20 households lived in that area.

The notified and non-notified slums typically differ in levels of infrastructure and services, in part because notification imposes obligations on local government to provide some services and upgrading.

Table 5 presents the distribution of relative living standards—again indexed by the relative MPCE—according to the type of settlement in which the household lives.[14] A very small number of households in squatter settlements (N = 316) were interviewed in the housing survey; we present results for them only for completeness. As can be seen, the vast majority of the survey respondents lived in notified slums, non-notified slums, or non-slum communities.

The table reveals substantial differences in relative standards of living across the three main types of settlements. As would be expected, households in the non-notified slums are far more likely than their counterparts in non-slum settlements to fall into the lowest ranges of the MPCE, with the households in notified slums occupying the middle position. Over half (51.7%) of non-notified slum households live below the urban poverty line, whereas the corresponding figure for notified slum households is 44.4 percent. In addition to these differences across settlement types, it is important to recognize the heterogeneity that exists within each type of settlement. Substantial

[13] For detailed information on the sampling design and estimation procedure see NSSO (2002a, b, 2005). In the years between the rounds of the large consumption surveys, smaller expenditure surveys such as this one are undertaken, with the data collected from these described as the "thin sample". There is considerable debate about the accuracy of the estimates of poverty generated on the basis of the thin sample. However, when we calculate the distribution of relative MPCE using the housing survey data and compare it with the distribution shown for the large consumption survey (Figure 1), we find that the two distributions are nearly identical.

[14] There are a few households (59 in total) without any homes at all; because the number of such households is so small, we do not include them in the analysis.

Table 5: Monthly Per Capita Expenditure Relative to State Urban Poverty Line, by Settlement Type. Source: 58th Round Housing Survey.

Relative MPCE	Settlement Type				
	Non-Notified Slum	Notified Slum	Non-Slum	Squatter	Total
< 0.5	6.5	3.3	1.6	1.1	1.9
0.5–0.75	21.2	17.2	8.3	21.7	9.4
0.75–1.0	24.0	23.9	13.5	15.7	14.6
1.0–1.25	19.6	18.4	14.8	15.4	15.2
1.25–1.5	10.5	10.2	11.0	13.7	10.9
1.5–1.75	8.1	10.4	9.4	3.8	9.4
1.75–2.0	4.9	8.7	9.2	5.2	9.0
2.0–2.5	3.9	4.3	11.5	6.5	10.8
2.5–3.0	1.0	2.1	7.1	7.6	6.5
> 3.0	0.3	1.4	13.6	9.3	12.3
Total	100.0	100.0	100.0	100.0	100.0
N	2,230	3,584	35,624	316	41,754

poverty exists in non-slum communities, with 23.4 percent of households in these communities falling below the poverty line. Despite what is commonly assumed, slums are not populated exclusively by poor households. Over one quarter of the households in notified slums (26.9%) have MPCEs that are one-and-a-half times the poverty line or higher, as do 18.2 percent—nearly one in every five households—of those in non-notified slums.

We note in passing one surprising and even disconcerting feature of these data: the relatively low percentage of all poor urban households who live in slum communities. In these data, considering only the households with expenditures at or below the urban poverty line, some 6.7 percent of poor households are estimated to live in non-notified slums and 11.4 percent in notified slums. If these estimates are accurate—suggesting that only 18.1 percent of India's urban poor live in a slum of either type—they would be strikingly at odds with the view that slum-dwellers constitute a majority of the urban poor.

We have not been able to discover any feature of the NSSO sampling frame that would systematically exclude slum communities. Even so, the percentage of slum-dwellers among the poor is no doubt much greater than the survey results would indicate. Careful city-specific mapping exercises undertaken by the Urban Health Resource Centre and its partners have uncovered many slum communities that were not included even in lists of non-notified slums (Agarwal and Taneja, 2005, Agarwal et al., 2008, Agarwal, 2010a, b). As Agarwal (2010b) shows in an analysis of Agra, Dehradun, Bally, Jamshedpur, and Meerut, the total listed slum populations of these cities is 1.27 million, a count that omits some 727,000 residents of communities not covered in the government's lists. We suspect, therefore, that the NSS figure of 18.1 percent is severely

Table 6: Proportion of Households Whose Dwellings Require Major Repairs to be Habitable, by Relative MPCE and Settlement Type.

Relative MPCE	Settlement Type				
	Non-Notified Slum	Notified Slum	Non-Slum	Squatter	Total
< 0.5	0.611	0.195	0.273	0.376	0.304
0.5–0.75	0.450	0.195	0.221	0.331	0.237
0.75–1.0	0.321	0.170	0.180	0.272	0.188
1.0–1.25	0.357	0.122	0.116	0.212	0.128
1.25–1.5	0.254	0.112	0.080	0.145	0.088
1.5–1.75	0.278	0.148	0.074	0.006	0.085
1.75–2.0	0.188	0.162	0.055	0.334	0.065
2.0–2.5	0.281	0.197	0.045	0.086	0.052
2.5–3.0	0.296	0.052	0.032	0.038	0.033
> 3.0	0.147	0.034	0.010	0.000	0.010
Total	0.355	0.154	0.094	0.197	0.107

understated—although even if it were too low by half, this would not put slum-dwellers into the majority of India's urban poor. Taken together with the data shown in Table 5, the NSS results underscore a distinction that is too often ignored: "slum-dwellers" and "the urban poor" cannot be taken as synonymous. Unfortunately, to probe further into this issue would divert us from the core concerns of this paper.

Returning to our main theme on housing, we now ask the key question: Do urban households living near the poverty line meet their basic housing needs? The detail collected in the survey allows multiple dimensions of housing to be examined with this question in mind. To begin the analysis, we consider Table 6, which describes the overall condition of the dwelling as recorded by the NSS interviewer. A dwelling is classified as being in need of major repairs if, in the judgement of the interviewer, going without these repairs would leave it unsafe for habitation or might require the structure to be demolished (NSSO, 2002a: 89). In the full sample, 10.7 percent of urban households live in dwellings requiring major repairs to be made safe. Significant proportions of slum-dwellers, especially among those living in non-notified slums, inhabit such unsafe dwellings. Of all households in the non-notified slums, 35.5 percent live in dwellings that the interviewer judges to be unsafe, as do 15.4 percent of households in the notified slums. In these slum communities, consumption levels that are well above the urban poverty line provide no guarantee of acceptable quality housing. For instance, among households living in notified slums whose consumption is two to two-and-a-half times the poverty line, some 19.7 percent live in unsafe housing. In non-slum communities, by contrast, relatively few households above the poverty line inhabit dwellings requiring major repair.

A similar pattern can be seen in Table 7, which shows the proportions of households that have experienced flooding in the previous five years. In the full urban sample, only 6.9 percent of households report that flooding has occurred, whereas 21.2 percent of

Table 7: Proportion of Households Experiencing Any Floods in Last 5 Years.

Relative MPCE	Settlement Type				
	Non-Notified Slum	Notified Slum	Non-Slum	Squatter	Total
< 0.5	0.239	0.100	0.034	0.006	0.066
0.5–0.75	0.240	0.068	0.084	0.017	0.093
0.75–1.0	0.244	0.059	0.068	0.068	0.077
1.0–1.25	0.129	0.088	0.077	0.009	0.080
1.25–1.5	0.183	0.084	0.066	0.040	0.071
1.5–1.75	0.293	0.101	0.062	0.000	0.071
1.75–2.0	0.120	0.156	0.062	0.000	0.069
2.0–2.5	0.237	0.046	0.056	0.000	0.058
2.5–3.0	0.273	0.067	0.052	0.000	0.053
> 3.0	0.324	0.058	0.042	0.001	0.042
Total	0.212	0.082	0.063	0.021	0.069

all households in non-notified slums (and 23.9 percent in the poorest group of their residents) have endured flooding. The levels of environmental risk in notified slums are substantially lower than this, with the incidence of floods being not very different from what is experienced in non-slum communities.

A well-accepted criterion of adequacy in housing is that the floor consists of something other than dirt or mud, which present health risks (parasitic infections among them) especially for young children. Table 8 shows how relative living standards and settlement type are associated with this dimension of inadequate housing. Dirt flooring is very common among the poorest households (those living at less than half the poverty line) irrespective of settlement type. However, the percentages fall sharply as we move up the MPCE scale, and among households whose per capita consumption exceeds one-and-a-half times the poverty line, for no more than 10–11 percent of households does this basic need go unmet.

A very different picture emerges when we consider the adequacy of ventilation, which is an important determinant of indoor air pollution and thus affects the health risks facing women and young children, especially when poor quality cooking fuel is used. Table 9 shows that bad ventilation (as assessed by the NSS interviewers) is widely prevalent among slum-dwellers whose MPCEs are 1.5 times the poverty line or higher. Over 40 percent of slum-dwellers lack adequate ventilation at consumption levels that are two-and-a-half times the poverty line. Even among the non-slum households who live at 1.5–2.0 times the poverty line, some 14–15 percent suffer from badly ventilated interiors. Evidently, for this dimension of basic housing needs, consumption expenditures well above the official poverty line provide no assurance of adequate quality housing.

In other indicators of basic housing needs, a similarly mixed picture emerges. Access to electricity is generally good for households living above the official poverty line, although there is clearly room for improvement in the non-notified slums (Table 10). By contrast, the need to share access to drinking water (Table 11) persists even among

Table 8: Proportion of Households with Dirt Floors, by Relative MPCE and Settlement Type.

Relative MPCE	Settlement Type				
	Non-Notified Slum	Notified Slum	Non-Slum	Squatter	Total
< 0.5	0.689	0.482	0.438	0.388	0.473
0.5–0.75	0.420	0.327	0.404	0.614	0.398
0.75–1.0	0.269	0.212	0.250	0.186	0.247
1.0–1.25	0.246	0.125	0.157	0.270	0.159
1.25–1.5	0.077	0.079	0.089	0.153	0.088
1.5–1.75	0.048	0.080	0.064	0.011	0.065
1.75–2.0	0.070	0.038	0.027	0.178	0.029
2.0–2.5	0.045	0.041	0.029	0.080	0.030
2.5–3.0	0.105	0.024	0.019	0.000	0.019
> 3.0	0.119	0.017	0.004	0.000	0.004
Total	0.265	0.168	0.121	0.244	0.130

Table 9: Proportion of Households with Bad Ventilation, by Relative MPCE and Settlement Type.

Relative MPCE	Settlement Type				
	Non-Notified Slum	Notified Slum	Non-Slum	Squatter	Total
< 0.5	0.710	0.383	0.334	0.745	0.385
0.5–0.75	0.625	0.462	0.352	0.440	0.387
0.75–1.0	0.593	0.427	0.276	0.307	0.310
1.0–1.25	0.642	0.402	0.212	0.256	0.246
1.25–1.5	0.460	0.322	0.157	0.150	0.177
1.5–1.75	0.510	0.428	0.147	0.046	0.178
1.75–2.0	0.350	0.399	0.143	0.334	0.164
2.0–2.5	0.439	0.458	0.086	0.083	0.100
2.5–3.0	0.353	0.180	0.061	0.038	0.064
> 3.0	0.395	0.152	0.021	0.000	0.022
Total	0.575	0.406	0.164	0.239	0.194

Table 10: Proportion of Households Lacking Electricity, by Relative MPCE and Settlement Type.

Relative MPCE	Settlement Type				
	Non-Notified Slum	Notified Slum	Non-Slum	Squatter	Total
< 0.5	0.527	0.337	0.253	0.016	0.295
0.5–0.75	0.318	0.197	0.239	0.076	0.238
0.75–1.0	0.200	0.145	0.162	0.271	0.163
1.0–1.25	0.182	0.083	0.111	0.152	0.112
1.25–1.5	0.085	0.035	0.053	0.057	0.053
1.5–1.75	0.150	0.019	0.035	0.000	0.037
1.75–2.0	0.088	0.042	0.026	0.178	0.029
2.0–2.5	0.097	0.084	0.013	0.083	0.016
2.5–3.0	0.097	0.002	0.011	0.000	0.011
> 3.0	0.056	0.015	0.003	0.000	0.003
Total	0.216	0.108	0.076	0.105	0.083

non-slum households with MPCEs double that of the poverty line, and is very high in both notified and non-notified slums. Likewise, arrangements for solid waste collection still need to be made even among non-slum households whose MPCEs approach three times the poverty line, as well as among the residents of the non-notified slums (Table 12). Interestingly, notified slum households are better provisioned in this respect.

To judge from this brief summary of unmet needs in housing according to poverty status, there are some housing indicators for which the urban poverty line serve as an effective demarcation point, separating those whose basic housing needs are not met from those having sufficient margin to satisfy their needs. In other dimensions, however, the poverty line is much less successful as a marker of housing needs, and is possibly even misleading in suggesting to the unwary that such basic needs are being met in non-poor households.

To those who understand well the limitations of the official Indian poverty measures, these are not wholly unexpected findings; as we have seen, the 1993 Expert Group warned that non-food needs might go unsatisfied among households living above the official poverty line. Still, we are not aware of any systematic quantitative account of the implications, and more documentation is clearly warranted.

Table 11: Proportion of Households without Access to Drinking Water in Building, by Relative MPCE and Settlement Type.

Relative MPCE	Settlement Type				
	Non-Notified Slum	Notified Slum	Non-Slum	Squatter	Total
< 0.5	0.818	0.791	0.547	0.759	0.608
0.5–0.75	0.906	0.788	0.567	0.782	0.622
0.75–1.0	0.747	0.674	0.465	0.542	0.504
1.0–1.25	0.777	0.556	0.337	0.594	0.375
1.25–1.5	0.755	0.611	0.294	0.535	0.330
1.5–1.75	0.575	0.435	0.189	0.199	0.218
1.75–2.0	0.691	0.399	0.190	0.513	0.213
2.0–2.5	0.737	0.504	0.145	0.270	0.162
2.5–3.0	0.739	0.401	0.099	0.057	0.109
> 3.0	0.477	0.204	0.060	0.127	0.062
Total	0.774	0.600	0.268	0.496	0.308

Table 12: Proportion of Households Without Any Arrangements for Solid Waste Collection, by Relative MPCE and Settlement Type.

Relative MPCE	Settlement Type				
	Non-Notified Slum	Notified Slum	Non-Slum	Squatter	Total
< 0.5	0.704	0.379	0.365	0.500	0.407
0.5–0.75	0.533	0.409	0.331	0.707	0.360
0.75–1.0	0.321	0.242	0.254	0.341	0.257
1.0–1.25	0.293	0.137	0.229	0.418	0.226
1.25–1.5	0.234	0.091	0.219	0.680	0.214
1.5–1.75	0.262	0.047	0.172	0.237	0.165
1.75–2.0	0.121	0.055	0.171	0.227	0.163
2.0–2.5	0.225	0.079	0.138	0.609	0.139
2.5–3.0	0.322	0.013	0.135	0.381	0.134
> 3.0	0.213	0.071	0.068	0.313	0.069
Total	0.358	0.189	0.192	0.487	0.199

4 What determines rents?

We have seen that in urban areas, expenditures above the official poverty line do not guarantee satisfaction of basic housing needs. What, then, are the prospects for revising the definition of poverty so that it provides an adequate allowance for such needs? We cannot provide a complete answer here—that would require a substantial program of research—but we can at least sketch the outlines of a model-based approach that might prove useful. The idea we explore is to quantify the money costs associated with a bundle of housing characteristics that could reasonably be regarded as minimally adequate. Because housing adequacy is a multi-dimensional concept, we must consider multiple housing characteristics, including those described above but going further to the extent that the data will allow.

A fundamental difficulty in pursuing this approach is that, apart from renters, whose payments can be directly linked to the bundle of housing characteristics they consume, there is no straightforward way of imputing rent equivalents for owner-occupied housing. One method is to rely on the NSS interviewers, who are required in each round of an NSS consumption survey to record an estimate of the rent that an owner-occupied dwelling would be expected to command if it were to be rented. The imputation rules they are to follow are not specified in detail, and it seems that much is left to their locally-informed judgement, as indicated in this passage of interviewer instructions (NSSO, 2002a: 92):

> Imputation will be done on the basis of the prevailing rate of rent for similar accommodation in the locality. . . . Imputed rent will be recorded in rupees in whole number. Proper probing and local enquiry is essential to ascertain the rent the dwelling unit may fetch at the prevailing market rate.

Although the imputed rents are not included in the MPCE, they are nevertheless entered into the survey datasets.

An alternative to using the interviewer-imputations method is to apply a model—that is, a multivariate statistical tool—to estimate the money value of the characteristics of owner-occupied housing. With the sample of renters and their housing characteristics, we can estimate what is termed a hedonic regression model whose coefficients can be interpreted in terms of the value that is placed on housing characteristics in the rental market (Sheppard, 1999, Malpezzi, 2000). Once the coefficients from the renter regression have been estimated, they can be applied to housing characteristics data for owner-occupiers, and the implied rents can then be taken as an alternative estimate of rent equivalents. In what follows we explore the hedonic regression approach and compare the predicted rents based on this statistical approach with the judgement-based imputations of the NSS interviewers.

Rents and housing characteristics

In the 58th Round housing survey, households were classified into four mutually-exclusive statuses: owning the dwelling in which they reside; inhabiting living quarters provided by an employer; living in hired accommodations (i.e., renting); and a residual category of “other”. The sample includes 26,011 households who own their dwelling,

Table 13: Dwelling Ownership Status, by Relative MPCE.

Relative MPCE	Owned	Employer Quarters	Renters	Others	Total
< 0.5	70.42	1.32	14.81	13.45	100.00
0.5–0.75	74.31	1.40	16.27	8.03	100.00
0.75–1.0	67.59	2.75	23.90	5.76	100.00
1.0–1.25	65.87	3.24	26.19	4.71	100.00
1.25–1.5	60.22	5.07	30.31	4.39	100.00
1.5–1.75	52.20	6.53	34.96	6.30	100.00
1.75–2.0	50.96	8.70	34.26	6.08	100.00
2.0–2.5	51.70	8.57	35.15	4.58	100.00
2.5–3.0	52.90	9.75	33.04	4.32	100.00
> 3.0	54.36	9.56	33.18	2.90	100.00
Total	59.96	5.74	28.99	5.31	100.00

2,765 of which live in employer-provided quarters, and 10,966 renting households; into the residual category fall households whose arrangements could not be classified.[15] Although it would be helpful to know more about the nature of home ownership—in particular, whether the household possesses any formal documentation—the survey did not raise these issues or inquire further about security of tenure.

Table 13 summarizes the percentages of households according to ownership and poverty status. As can be seen, over two-thirds of households living below the poverty line describe themselves as owners of their dwellings. The ownership percentages decline with the relative MPCE, but even in the best-off group, over half of urban households are owners. Conversely, the percentage of renters rises with the MPCE, with about one-third of households being renters by the point at which the relative MPCE reaches one-and-a-half times the poverty line. The percentage of households living in employer-provided quarters is also higher among the better-off urban households. The residual category of "other" accounts for 5 percent or more of the households living below the poverty line.

To provide descriptive background for the regression analysis, we present several tables that describe the determinants of rents, grouping together renters and households living in employer-provided quarters, who are treated similarly in the housing survey. In analysing rents we must exclude the 2,078 households whose rental/ownership status is coded as "other". Not much is said about these households in the NSS documents, but the survey is designed so that no rent-related questions are asked of them.

[15] Some detail on exactly how rent amounts are collected may be in order here. NSSO (2002a: 91) explains that "If the household has paid some amount initially which is adjusted in the monthly rent, the amount adjusted in each month shall also be included in the monthly rent. If the household is residing in employer's quarters . . . , the amount deducted from the salary of the household member for whom the quarter is allotted on account of rent for the dwelling unit plus the house rent allowance the person might have received if he/she had not been provided the accommodation, will be the rent of the dwelling unit. Rent does not include any salami/pugree or any kind of cess payable to local bodies or government or monthly maintenance charges payable to the co-operative society etc."

Table 14: Basic Determinants of Rent Levels

(a) Year First Rented

Year Rented	Median	Mean	N
Before 1987	128.0	288.4	1649
1987–1996	400.0	644.0	2625
1997-2000	500.0	736.3	5232
2001 and after	500.0	737.9	3933
Total	400.0	676.1	13439

(b) Condition of Dwelling.

House Condition	Median	Mean	N
Good	600.0	951.6	6050
Satisfactory	350.0	467.5	6083
Bad	200.0	288.1	1622
Total	400.0	673.3	13755

(c) Age of Dwelling.

Age of dwelling	Median	Mean	N
Less than 1 year	700.0	1127.3	126
1 to 5 years	500.0	847.8	846
5 to 10 years	500.0	808.3	2872
10 to 20 years	500.0	724.2	4444
20 to 40 years	400.0	600.8	3458
40 to 60 years	260.0	416.6	1256
60 to 80 years	160.0	320.2	424
80 years or more	100.0	221.1	333
T	400.0	672.0	13759

(d) Total Floor Area of Rooms. (In square feet, grouped into deciles.)

Floor area in square feet	Median	Mean	N
0-	250.0	312.9	1833
88-	350.0	400.3	1882
105-	400.0	470.5	461
120-	400.0	504.3	2872
160-	400.0	576.0	1365
200-	500.0	696.6	1424
240-	750.0	952.2	1318
300-	750.0	1019.5	1043
375-	1300.0	1512.3	721
500-	1300.0	2109.5	592
Total	425.0	685.4	13511

Table 15: Rent Levels by Settlement Characteristics.

(a) Settlement Type

Settlement Type	Median	Mean	N
Non-Notified Slum	200.0	299.7	517
Notified Slum	250.0	345.7	1092
Non-Slum	450.0	703.0	12044
Squatter	400.0	675.9	107
Total	400.0	673.3	13760

(b) Experienced Flooding in Last 5 Years

Experienced Flood	Median	Mean	N
Excessive Rain	350.0	474.3	537
River, Sea Etc	300.0	392.7	154
No Flooding	400.0	682.8	13076
Total	400.0	673.3	13767

Table 14 shows how monthly rents vary with several core characteristics. A striking feature of the rental market in urban India is that long-term renters pay far less on a monthly basis than do other households, as can be seen in the levels of median and mean rents in panel (a) of this table. This pattern is often if not universally observed in studies of urban rents; it has been described as a "tenure discount" by Malpezzi (2000) and may be explained by the desire of landlords to avoid turnover and vacancies by continuing to lease to tenants with whom they are already familiar. The condition of the dwelling (as summarized by NSS interviewer) is clearly a significant factor in rent levels (see panel (b), with "satisfactory" condition meaning that the dwelling requires only minor repairs, and "bad" condition indicating that major repairs are needed if it is to be made safely habitable). The age and size of the dwelling are also powerful determinants of rents, as would be expected.

Table 15 shows that rent levels tend to be lower in slum than in non-slum communities (the differences by settlement type are greater in terms of mean rents than in the medians). Rent levels also appear to respond to environmental risks, as is evident in panel (b) of the table. Households reporting no flooding in the 5 years preceding the survey pay somewhat higher rents, with the difference being rather small when summarised in terms of medians but larger in the averages. Table 16 summarises the levels of rent according to several health-related characteristics of the dwelling: the nature of access to drinking water; the type of toilet; the quality of drainage; and the interviewer's assessment of ventilation. The variation in rents according to these characteristics are

generally what would be expected, with lower quality services (or less access to them) being associated with lower levels of rent.

Table 17 summarises rent levels according to a composite indicator of housing quality, which takes into consideration the condition of the dwelling, the nature of drainage, and access to drinking water. We classify these dimensions into levels of quality that range from very good to unacceptable. As the table shows, there is systematic variation evident in rent levels, indicating that better-quality housing commands higher rents. We now extend this approach by applying multivariate methods.

Table 16: Rent Levels by Health-Related Characteristics.

(a) Access to Drinking Water

Access to Water	Median	Mean	N
Exclusive Use of Household	700.0	1041.8	4705
Shared in the Building	400.0	576.9	4956
Community Use	300.0	375.0	4107
Total	400.0	673.3	13768

(b) Type of Toilet

Latrine	Median	Mean	N
Own Service Latrine	400.0	583.3	298
Own Pit	500.0	666.4	405
Own Septic Tank	720.0	1064.7	5648
Shared Service Latrine	300.0	375.3	320
Shared Pit	300.0	331.1	411
Shared Septic Tank	350.0	421.6	3562
Public Service Latrine	325.0	361.7	90
Public Pit	145.0	208.2	49
Public Septic Tank	250.0	380.4	1237
Other Latrine	250.0	428.3	156
No Latrine	225.0	247.2	1588
Total	400.0	673.3	13764

(c) Drainage

Drainage	Median	Mean	N
Underground	650.0	990.6	3797
Covered Pucca	500.0	689.2	1870
Open Pucca	400.0	491.8	5002
Open Katcha	300.0	394.6	1161
No Drainage	300.0	441.9	1936
Total	400.0	673.3	13766

(d) Quality of Ventilation

Ventilation	Median	Mean	N
Good	650.0	1005.2	5034
Satisfactory	400.0	528.3	5794
Bad	300.0	351.8	2932
Total	400.0	673.3	13760

Table 17: Rent Levels by Housing Quality

Quality	1st Quartile	Median	Third Quartile	N
Very Good[a]	300.0	700.0	1250.0	5512
Good[b]	200.0	400.0	700.0	545
Satisfactory[c]	200.0	450.0	700.0	666
Minimally Acceptable[d]	200.0	400.0	600.0	1008
Not Acceptable[e]	150.0	300.0	500.0	6023
Total	200.0	400.0	800.0	13754.0

[a] Housing quality is defined to be "very good" if housing condition is good or satisfactory in the interviewer's judgement; drainage is underground, covered, or open pucca; and there is exclusive or within-building access to drinking water. [b] Definition: Housing condition satisfactory; covered or open pucca drainage; exclusive or within-building access to drinking water. [c] Definition: Housing condition satisfactory; open pucca drainage; exclusive or within-building access to drinking water. [d] Definition: Housing condition satisfactory; open pucca drainage; within-building access to drinking water. [e] Definition: Housing condition bad; open katcha or no drainage; community access to drinking water.

Statistical models

In order to take the multiple dimensions of housing into account, we specify two types of hedonic regression models, estimating each on the sample of households that pay rent. To supplement the ordinary least squares (OLS) regression model and protect the results against any extreme rent values, we also estimate a median regression model. The β parameters of the ordinary regression model indicate how a unit change in a given housing characteristic would affect the mean level of rents, with other things held constant. By contrast, as the name of the procedure suggests, the β_m parameters of the median regression provide information on how median rent levels would be affected. The parameters of the two models are therefore not directly comparable, although we expect them to take the same sign assuming that any characteristic that drives up mean rents is also likely to drive up median rents.

We include in the regression models only the characteristics of the dwelling and its neighborhood, deliberately excluding characteristics of the household as such. This is the approach that is commonly taken in hedonic regressions, in which the aim is to discover how the rental market assigns value to various housing features. The hedonic approach is thus quite different from approaches aimed at determining the demand for housing, which would include indicators such as the size and income of the renting household. In future work, as we discuss in our conclusions, we will need to ensure that the hedonic regression estimates are not afflicted by selectivity bias, which would arise if the sample of renters is selective on otherwise unmeasured characteristics.

The regression specification is arranged so that all explanatory variables are coded in yes-no (binary) terms, with the omitted category for each type of housing feature representing the highest quality or most desirable level of that feature. For example, non-slum settlements are the omitted category of settlement type, and the coefficients for notified and non-notified slums should be interpreted as contrasts with this omitted category. The note to Table 18 lists all of the omitted categories.

The OLS and median regressions are generally in agreement, at least for the coefficients that are statistically significant, as indicated in Table 18 by the p-value.[16] One noteworthy finding is that with controls in place for all other housing characteristics, no significant difference in rents emerges by settlement type. Otherwise the results are broadly consistent with the descriptive results of Tables 14–16. For example, households pay less rent when they have no electricity and when they must obtain drinking water via community taps or standpipes, lacking access in the building. Although the size of the estimated coefficients is not always closely associated with level of quality or service inaccessibility, the signs of the coefficients for garbage disposal arrangements, toilet type, drainage, dirt flooring, the size of the dwelling, length of tenure, and the dwelling's general condition are all in accordance with expectations. In each of these dimensions, lower rents are paid for poorer quality dwelling units.[17]

[16] If the p-value is less than 0.05, we say that the associated β coefficient is significantly different from zero at the 0.05 level, and similarly for p-values less than 0.01, which imply that the coefficient is significant at the 0.01 level.

[17] To be sure, some of the estimates are not easily interpreted: flooding risks are associated with lower rents, but not significantly so; insufficient water at some times of the year is insignificant; the need to share a drinking water source with others in the building is either insignificantly different from the base category of having access within the home, or oddly positive in the median regression; and poor ventilation is also

Table 18: Ordinary Least Squares and Median Regression Models of Monthly Rents.[a]

	OLS Regression		Median Regression	
	$\hat{\beta}$	p-value	$\hat{\int}_m$	p-value
Notified Slum	3.464	0.78	14.514	0.16
Non-Notified Slum or Squatter Area	9.148	0.67	1.437	0.91
Experienced Flooding in Last 5 Years	-22.035	0.23	-3.996	0.75
Insufficient Water Sometime During Year	51.225	0.00	25.245	0.00
Water Shared in Building	0.431	0.98	23.905	0.00
Water Shared in Community	-43.687	0.00	-7.838	0.33
No Electricity	-35.289	0.00	-32.952	0.01
Residents Arrange Garbage Disposal	-12.363	0.44	11.900	0.12
Other Arrangements for Garbage Disposal	-112.036	0.00	-34.986	0.00
No Arrangements for Garbage Disposal	-84.289	0.00	-25.203	0.00
Shared Septic Tank, Pit, or Service Latrine	-85.914	0.00	-48.705	0.00
Public Septic Tank, Pit, or Service Latrine	-102.774	0.00	-82.540	0.00
No Latrine or Other Type	-121.908	0.00	-105.221	0.00
Drainage is Open Pucca	-109.051	0.00	-50.578	0.00
Drainage is Open Katcha	-125.315	0.00	-49.653	0.00
No Drainage	-121.022	0.00	-53.275	0.00
Dirt Flooring	-61.795	0.00	-82.025	0.00
Kitchen without Water Tap	-405.232	0.00	-349.465	0.00
No Kitchen	-453.909	0.00	-416.419	0.00
Ventilation is Satisfactory	-18.074	0.22	1.514	0.84
Ventilation is Bad	12.961	0.41	19.998	0.04
Floor Area of Rooms, Decile 9	-463.871	0.00	-156.277	0.00
Floor Area of Rooms, Decile 8	-731.808	0.00	-381.834	0.00
Floor Area of Rooms, Decile 7	-880.689	0.00	-498.817	0.00
Floor Area of Rooms, Decile 6	-963.470	0.00	-550.578	0.00
Floor Area of Rooms, Decile 5	-966.120	0.00	-565.592	0.00
Floor Area of Rooms, Decile 4	-988.177	0.00	-594.439	0.00
Floor Area of Rooms, Decile 3	-1008.322	0.00	-609.358	0.00
Floor Area of Rooms, Decile 2	-1040.821	0.00	-627.291	0.00
Floor Area of Rooms, Decile 1	-1104.903	0.00	-670.818	0.00
Rented in 1987 to 1996	249.411	0.00	218.338	0.00
Rented in 1997 or Later	377.421	0.00	283.488	0.00
House Condition is Satisfactory	-112.315	0.00	-84.980	0.00
House Condition is Bad	-104.833	0.00	-93.987	0.00
Constant	1820.233	0.00	1267.090	0.00
R^2	0.347			

[a] The base categories are as follows: non-slum settlements; no flooding experienced in last 5 years; sufficient drinking water throughout the year; household has exclusive access to drinking water; household has electricity; the municipality, panchayat, or corporation arranges for garbage collection; the household has its own toilet, septic tank, pit or service latrine; drainage is underground or covered pucca; non-dirt flooring; dwelling has a kitchen with a water tap; ventilation is judged to be good; total floor area of rooms is in the top decile (that is, largest); dwelling was first rented before 1987; and house condition is judged to be good.

Estimating rent-equivalents for home-owners

As we saw earlier in Table 4, the imputed rent levels for owner-occupied housing estimated by the NSS interviewers are relatively high, being on the order of one quarter of the household's monthly per-capita expenditure. Although the NSS does not include imputed rents in the MPCE, it is worth considering whether it should do so. Over two-thirds of poor urban households are home-owners (Table 13), and yet unlike renters, their levels of housing consumption go unrecorded in the official poverty line. If the NSS interviewers do an acceptable job in imputing the equivalent of rents, their reports might provide a basis for putting owners on the same footing as renters.

We have analyzed the rent levels estimated by these interviewers, comparing them to the rents that are predicted by the multivariate regression models.[18] Overall, the estimates derived from the statistical models agree well with those provided by the interviewers, with the median difference in rents being only 4.2 percentage points in the full sample of owners. But this apparent agreement conceals a systematic pattern of disagreement that emerges when rent estimates are divided into the lower and upper half of the rent distribution according to the statistical models. For households in the lower half of the distribution, the NSS interviewers provide markedly lower estimates of rent than is implied by the models. In the upper half of the rent distribution, however, the NSS imputations substantially exceed those predicted by the statistical models. In other words, the interviewers tend to supply more extreme valuations of rent at both the low and high ends of the distribution than would be suggested by a statistical model of rents.

Of course this difference does not prove that the statistically-generated estimates should be preferred to those of the field-workers. As they carry out their imputations, the NSS interviewers may well call upon detailed knowledge of local housing conditions, incorporating in their thinking significant features that go unrecorded in the housing survey. Even so, the systematic understatement of field-imputed rents relative to their statistical counterparts at low rent levels, and the apparent overstatement at high levels, is not a pattern that is easy to explain on the basis of local knowledge alone. The possibility of systematic bias, coupled with the fact that the interviewers seem not to be bound by very specific guidelines in this aspect of their work, calls for a more detailed investigation of the NSS imputation procedures.

5 Calculating rents for basic-needs housing

With the results of these regressions in hand, we have a means of calculating the costs of basic-needs housing. The method is simple enough: using the coefficient values shown in Table 18, we set each of the associated explanatory variables to a level that would represent a minimally satisfactory level of housing quality, and calculate the total rent level implied by this combination of coefficients and characteristics. The difficulty lies not so much in the calculations themselves, but rather in securing agreement on what constitutes minimally acceptable housing. We offer in the accompanying box one

insignificant or curiously positive in sign. It is tempting to blame collinearity for these unexpected results, but collinearity diagnostics do not suggest that it presents a serious problem.

[18] Detailed findings are not presented here, but they are available from the authors on request.

definition of basic needs in housing, recognising that other definitions are also sensible.

Definition of Basic Housing Needs:

Settlement Type Household lives in a notified slum.

General Condition House condition is judged to be satisfactory, that is, the dwelling is in need of minor repairs.

Length of Tenure Dwelling was first rented in 1997 or later.

Flood Risk No flooding has been experienced in the last 5 years.

Access to Drinking Water The household has sufficient drinking water throughout the year, and has access to water in the building but not through a pipe to its own dwelling-space.

Electricity The household has electricity.

Solid Waste Collection Residents make the arrangements for collection.

Sanitation The household shares its toilet, septic tank, pit or service latrine with other households in the building.

Drainage is open pucca.

Flooring the dwelling has non-dirt flooring.

Kitchen Dwelling has a kitchen but without a water tap.

Ventilation is judged to be satisfactory, but not good.

Crowding Total floor area of rooms is in the sixth decile. In smaller dwellings than this, we find that the average and median number of persons per habitable room exceeds 3.0, which is a commonly-used criterion for crowding (UN-Habitat, 2008: 69).

The results from applying our definition of minimally acceptable housing are as follows. Monthly rent levels for basic-needs housing are estimated at 495 rupees per household if we calculate them from the ordinary regression model and 518 rupees using the median regression model (the estimated standard errors on these estimates are respectively 30 and 17 rupees). If we translate these figures to per-household-member equivalents, we find that the median basic rent per household member is 124 rupees per person using the OLS results and 130 rupees using those from the median regression. There is variation in rents per member, not because basic-needs rents differ across dwellings, but because households vary in size. (The first quartile of basic needs rents is 83 rupees per member; the third quartile is 162 rupees per member.) It may be instructive to compare these per-member rent levels with the overall and state-specific urban poverty lines that were shown in Table 2. The all-India urban poverty line is 538.6

rupees per household member, and using the median basic-needs rent level, we find that the ratio of basic-needs rents to the official poverty line is in the range of 23–24 percent.

6 Conclusions and next steps

Is it reasonable to maintain that basic-needs housing can be secured in urban India for an amount equivalent to about one quarter of the urban poverty line? We present this finding not as being definitive—there is much left to be done—but rather as an opportunity for opening a broader conversation on the multiple dimensions of poverty in urban India. India's remarkable statistical resources enable the issues to be joined here in ways that would be difficult or nearly impossible in other low-income countries. In particular, for education, nutrition, and other dimensions of poverty that have many distinct features needing consideration, model-based approaches such as we have applied to housing are likely to prove essential in estimating the costs of meeting basic needs. These approaches rely heavily on data from surveys and other sources; and few other countries can match the range of data available in India.

On the technical front, there are several issues that need further attention where urban housing is concerned. We have only hinted at the problem of selectivity bias that may afflict the hedonic rental regression models. There are well-known statistical procedures that can be applied to assess the severity of such biases, but these need to be deployed with caution. To grasp the issues, consider one locational housing characteristic that we have briefly mentioned: access to employment. Table 3 presented a disconcerting result: contrary to expectations, the NSS consumption data show that the share of household expenditures spent on transport is very low among the urban poor, accounting for less than 3 percent of their spending, and this share rises with the household's relative standard of living. To be sure, these are only the money costs of transport. The survey does not inquire into time costs as such, but the 2001 housing survey supplies data on the distance from home to the workplace. Examining these reports, we find that for the urban poor, distances from home to employment are typically rather short, generally less than 2 kilometers. Furthermore, in an expanded version of the hedonic rent regressions, we find that the amount of rent paid increases with distance to work, suggesting that more desirable housing is located further from the workplace. This is not consistent with the notion that easier access to employment is positively valued.

We interpret these findings as indicative of selectivity in household locational choices. Poor urban households are constrained, it seems, to living near their workplaces–they cannot in general afford to take the time or spend the money needed to reach work that is further afield. Better-off households, by contrast, can afford to live in neighborhoods that are distant from their places of work and are willing to pay higher rents for these locations, presumably because amenities are found there that are not otherwise measured in the housing survey. If all other things could be held constant, the distance to work may well prove to be a negatively-valued housing feature. If important amenities are not measured, however, then statistical corrections for selectivity will be required.

Another technical issue needing careful thought has to do with the need for more detailed and better justified cost-of-living corrections in the rent data. It has not been common practice to incorporate cost-of-living corrections in cross-sectional analysis of

the NSS surveys, we have not incorporated such corrections in our own study of rents. It is not yet clear that a defensible empirical basis exists for cross-state urban price corrections, to say nothing of the corrections that would need to be made to account for differences by city size within a state.[19]

If the rent regressions (and the rent levels imputed by the NSS fieldworkers) are any guide, housing is a quantitatively important share of overall consumption in urban India and it is difficult to see what factors could continue to justify the selective omission of home-owners from the poverty statistics. But including home-owners would introduce an element of non-comparability in the official poverty measure, and until the technical basis for doing so is fully understood, caution is clearly advisable. Among other concerns, it is far from clear that hedonic regressions can be applied to rural villages, where rental and ownership arrangements are hardly comparable with those of urban areas.

As work proceeds on this front, we would urge that a model-based approach be taken to explore other dimensions of urban basic needs. Even the connection to levels of nutrition, which for the 1979 Task Force formed the basis on which the urban poverty line was defined, now needs careful examination to determine whether households at the poverty line are in fact meeting their basic nutritional needs. Here and in other areas of health, a model-based approach to estimating the costs of basic needs would likely prove to be an essential tool.

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[19] These issues have been explored in over-time comparisons of price level changes, which suggest that urban rents nearly tripled over the 1995–2005 period. These trends are evident in an examination of the components of the Consumer Price Index-Industrial Workers. (For details on the methodology for compilation of the CPI-IW see labourbureau.nic.in/CPIW05Methodolgy.htm.) The index for the housing group is revised twice over the year in January and July. Changes in rent and related charges, which constitute a single item under the housing group, are captured through Repeat House Rent Surveys, which are conducted in rounds six months apart. These surveys cover a sub-sample of dwellings enumerated during the main NSS income and expenditure survey of 1999–2000. Three types of dwellings are considered—rented, rent-free, and self-owned—and these are covered uniformly across all urban centers.

References

Siddharth Agarwal. Community enumeration and assessment in cities. Urban Health Resource Centre, New Delhi, India. Briefing paper prepared for Rockefeller Foundation Roundtable on Urban Living Environment Research (RULER) project, Bellagio, Italy, March 2010a.

Siddharth Agarwal. Slum identification and mapping for better programming and measurement. Presentation prepared for Ford Foundation workshop on urban poverty in India, New York, June 2010b.

Siddharth Agarwal and Shivani Taneja. All slums are not equal: Child health conditions among the urban poor. Indian Pediatrics, 42:233–244, March 2005.

Siddharth Agarwal, A. Satyvada, P. Patra, and Rajeev Kumar. Strengthening functional community–provider linkages: Lessons from the Indore urban health programme. Global Public Health, 3(3):308–325, 2008.

Judy Baker. Urban poverty: A global view. World Bank Urban Papers UP-5, Washington, DC: World Bank, January 2008.

Judy Baker and Iwona Reichardt. A review of urban development issues in poverty reduction strategies. World Bank Urban Papers UP-3, Washington DC: World Bank, June 2007.

Meera Bapat. Poverty lines and lives of the poor: Underestimation of urban poverty—the case of India. Working Paper 20, Poverty Reduction in Urban Areas Series, International Institute for Environment and Development, London UK, February 2009.

Angus Deaton. Price trends in India and their implications for measuring poverty. Economic & Political Weekly, pages 43–49, February 9 2008.

Government of India. Report of the task force on projections of minimum needs and effective consumption demand. Perspective Planning Division, Planning Commission, Government of India. New Delhi, January 1979.

Government of India. Report of the expert group on estimation of proportion and number of poor. Perspective Planning Division, Planning Commission, Government of India, New Delhi, July 1993.

Government of India. National human development report 2001. Planning Commission, Government of India, 2002.

Government of India. Poverty estimates for 2004–05. Planning Commission, Government of India, March 2007. Accessed: http://www.planningcommission.gov. in/news/prmar07.pdf.

Government of India. Report of the expert group to review the methodology for estimation of poverty. Planning Commission, Government of India, New Delhi, November 2009.

John Iceland. Experimental Poverty Measures: Summary of a Workshop. The National Academies Press, Washington, DC, 2005. Planning Group for the Workshop to Assess the Current Status of Actions Taken in Response to Measuring Poverty: A

New Approach, National Research Council.

Amitabh Kundu. Trends and patterns of urbanization and their economic implications. In Anupam Rastogi, editor, India Infrastructure Report 2006: Urban Infrastructure, chapter 2. Oxford University Press, New Delhi, 2006. Accessed at: http://3inetwork.org/reports/IIR2006.

Stephen Malpezzi. Housing. In Margaret Grosh and Paul Glewwe, editors, Designing Household Survey Questionnaires for Developing Countries: Lessons from 15 Years of the Living Standards Measurement Surveys, volume 1, chapter 12, pages 293–314. World Bank, Washington, DC, 2000.

National Research Council. Measuring Poverty: A New Approach. National Academy Press, Washington, DC, 1995. Panel on Poverty and Family Assistance, Committee on National Statistics.

NSSO. Instructions to field staff, Volume II. Socio-economic Survey, NSS 58th Round (July 2002 - December 2002). National Sample Survey Organisation [NSSO], Ministry of Statistics and Programme Implementation, Government of India, June 2002a.

NSSO. Note on sample design and estimation procedure of NSS 58th round. National Sample Survey Organisation [NSSO], Ministry of Statistics and Programme Implementation, Government of India, 2002b.

NSSO. Housing condition in India: Household amenities and other characteristics. Report No. 489, NSS 58th Round (July 2002 – December 2002), National Sample Survey Organisation [NSSO], Ministry of Statistics and Programme Implementation, Government of India, May 2005.

NSSO. Instructions to field staff, volume 1: Nss 61st round, national sample survey organization [nsso]. National Sample Survey Organization [NSSO], Government of India, 2004.

NSSO. Level and pattern of consumer expenditure, 2004–05. Report No. 508, NSS 61st Round (July 2004 –June 2005), National Sample Survey Organisation [NSSO], Ministry of Statistics and Programme Implementation, Government of India, December
2006.

Martin Ravallion, Shaohua Chen, and Prem Sangraula. New evidence on the urbanisation of global poverty. World Bank Policy Research Working Paper no. 4199, Development Economics Department, World Bank. Washington DC, April 2007.

N. S. Sastry. District level poverty estimates: Feasibility of using NSS household consumer expenditure survey data. Economic and Political Weekly, pages 409–412, 25 January 2003.

David Satterthwaite. The under-estimation of urban poverty in low- and middle-income nations. Working Paper no. 14, Poverty Reduction in Urban Areas Series, International Institute for Environment and Development (IIED), London, 2004.

Stephen Sheppard. Hedonic analysis of housing markets. In Paul Cheshire and Edwin S. Mills, editors, Handbook of Regional and Urban Economics, volume 3, chapter 41, pages 1595–1635. North-Holland, Amsterdam, 1999.

K.C. Sivaramakrishnan, Amitabh Kundu, and B.N. Singh. Handbook of Urbanization in India: An Analysis of Trends and Processes. Oxford University Press, New Delhi, 2005.

UN-Habitat. State of the World's Cities 2008/2009: Harmonious Cities. Earthscan, London, 2008.

United Nations. World Urbanization Prospects: The 2009 Revision. United Nations, Population Division, Department of Economic and Social Affairs, New York, 2010.

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