

Studying the Real Slums of Bengaluru

May 2018



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Context

Lack of basic information on the nature and diversity of informal settlements and about how informal property markets operate represents an important limitation on the capacity of policy-makers to develop appropriate policies aimed at improving the lives of the urban poor. An extensive study in Bangalore undertaken over seven years, including interviews with more than 4,500 slum residents living in a vast variety of slums, helped uncover hitherto little-known facts that lead to important policy recommendations.

Methods

- **Satellite image analysis was used to identify slums and distinguish slum characteristics**

We successfully trained machine learning algorithms to detect informal settlements in the Bengaluru metropolitan area. We find slum neighborhoods are distributed throughout the Bengaluru metropolitan area. Satellite image analysis helped identify slums that were further verified through field observation. Informal settlements come in many different types, and built environments in these settlements vary along a continuum. The worst-off slums consist of temporary structures – four poles and a rough tarpaulin roof – but there are three-story concrete structures at the other end of the continuum. The worst-off slums are clearly distinguishable from formal settlements, though the machines can at times confuse them with bare earth. The best-off informal settlements that include single or multi-story structures blend with the low end of formal structures. In order to detect these and other finer shades of difference across informal settlements, image analysis needs to be supplemented with ground surveys. By looking at images from different years, we can determine if a new slum has formed or if some slum area has been cleared through evictions. The extent to which these methods are generalizable to other cities remains to be determined. Our first set of extensions (using Google Earth data) found that classification was more effective in Jaipur than in Patna. In a companion policy brief, written by the data scientist and the urban geographer on this team of researchers, we consider the extent to which reliable population estimates can be developed based on satellite data.

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Methods, Cont.



Different conditions along the continuum of slums

- **Extensive household and neighborhood surveys provide insight into on-the-ground realities.**

We started this study in 2010 with an initial study of 14 notified slums. We found that this list excluded the worse-off slums. From analysing satellite images, we created a more complete list of slums in Bangalore. Three additional waves of slum surveys followed 40 slums in the 2015 wave, 48 in 2016, and another 50 in 2017. In each surveyed slum, we randomly selected 30 to 40 households for detailed interviews. The total number of household respondents across waves is **4,522**, spread across a continuum of slum types, representing the most complete coverage to date of the entire range of slum conditions. We also undertook neighborhood surveys, collecting information from focus groups in each neighborhood, interviewed local leaders (formal and informal), and in a separate module, designed to study how informal housing markets operate, we interviewed property brokers and lawyers who assist with these transactions. We consulted with government officials at different operating levels in the Karnataka Slum Development Board (KSDB) and the Bruhat Bengaluru Mahanagara Palike (BBMP), the city's municipal corporation.

Key Findings

- **Official maps are incomplete. Official lists severely undercount the existing slums.**

A large number of the slums that we detected through image analysis and ground verifications are not demarcated on official maps. Different government departments maintain separate slum lists and there is little agreement among these different official listings of slums. We compared three official lists – KSDB’s list, BBMP’s list, and a third list maintained by the Department of Municipal Administration (DMA). Of the 211 slums that we studied, we selected a sample of 75 slums to compare with these official lists. Only one slum appeared on all three lists. The official lists tend to contain information on slums in the higher part of the continuum. Twenty-nine of our 75 slums (39%), all lower-end ones, were *unlisted* entirely.



A newly established slum, near the bottom of the continuum.

- **There is no one-size-fits-all policy for slums. Slum conditions steadily improve along a wide-ranging continuum and policy must be responsive to their specific needs.**

Slums vary considerably in their economic wellbeing and access to services. In the least well off areas, residents live in single rooms with mud floors and tarp roofs. Among the neighborhoods in the bottom decile of the continuum, not a single resident has access to piped water, only 9% have toilets, and 1% report having access to electricity. The majority of residents do not possess voter IDs or ration cards. In contrast, at the top end of the continuum, 61% have piped water, 100% have metered electricity and private toilets. All have voter ID cards, and 92% have the ration cards needed to access government entitlements. Better living conditions correspond with higher education levels, more assets, and stronger connections with government officials. In between, there is a variety of slums with different degrees of informality and diverse levels of service provision.

Policy needs vary along the slum continuum. In the bottom quartile, the most pressing public needs are access to drinking water (27%) and toilets (25%). The top quartile of slums have different concerns – waste management (30%) dominates, followed by employment training (14%). Policy must be nuanced and responsive to the continuum of slums.

Key Findings, Cont.

- **Slum notification – or the lack of it – leads to households collecting a variety of property documents as proof of their residence in the neighborhood.**

The Slum Act lays out the processes required to declare a settlement as a notified slum. Official agencies ‘recognize’ that a slum exists once it is notified, and are required to extend it civic amenities and public services. Property titles can be given out only in slums that exist in official papers, thus notification is a necessary first step before obtaining property titles.

The process of notification and the subsequent process of titling have a number of discrete stages, involving surveys and public hearings, and a vast variety of papers have been generated as these stages were implemented. We counted 18 different types of paper that we classified into four broad types. Each successive type corresponds to a greater degree of formal property rights.

Four types of property documents

- * **Type 0** (no documents – illegal settlements, some under litigation, mostly oral rental agreements);
- * **Type 1** (the most basic document issued after an official survey has been undertaken, e.g., Biometric Card, Parichaya Patra, Gurutina Chitthi, and Thiluvaike Patra; some oral, mostly written rental agreements)
- * **Type 2** (issued after slum notification – conveying not only a recognition of possession but also a right to an absolute sale deed after the specified period which varies from 10 to 20 years, incl., Hakku Patra, Possession Certificate, Lease deed, and Hanchike Patra; written rental agreements)
- * **Type 3** (the best and ultimate type – absolute sale deed or patta; written rental “agreements)

Instead of being an either-or proposition, the acquisition of property rights occurs through a series of incremental gains in slums of Bangalore.

The regular procession that one would expect – first a Type 1 paper, then slum notification, and only later a Type 2 or Type 3 – is often wrongly sequenced. We came upon slums that are not notified but where a significant share of residents have Type 2 or Type 3 papers. Contrarily, there are instance of notified slums whose residents have been given only Type 1 papers.

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Key Findings, Cont.

- **An active informal market-place exists that produces quasi-official documents and helps buyers and sellers transact informal properties, overcoming the limitations of their property papers.**

We draw on interviews with area leaders and property brokers to provide evidence on housing sales. On average, fewer than two percent of properties were purchased in a given year. The average price of a standard one-BR unit varies depending on the quality of services available in the slum, its location in the city (central, middle or distant), and type of paper – in that order. From a low of Rupees one lakh in a distant slum with poor-quality services and Type 0 papers, it goes to a high of Rupees 53.5 lakhs in central slum with good services and Type 2 papers, with an average price of Rupees 15 lakh in our sample. Rental values in these two slums are 450 rupees and 4,850 rupees, respectively.

In theory, only properties with Type 3 papers can be sold, but in practice we found that all types of properties are freely transacted. The usual vehicle is a General Power of Attorney executed between the seller and buyer, with an annex in which the seller transfers all future rights to the buyer and promises to help the seller with these transactions in the future. Every family member signs, their photos and IDs are attached, there are witness – and always, there are lawyers. Perceptions of legality are produced that become the lived reality, transacted by established brokers and embedded in social networks.

- **Slum notification has a significant impact on housing prices, foregone property tax revenue, household wellbeing, and tenure security. Despite notification, these households continue to have limited linkages with formal financial markets, especially housing finance. Moreover, the incremental returns for households with “titles” are disappointing.**

We find that the legal status of entire settlements themselves has a large impact on housing prices, foregone property tax revenue, household wellbeing, and tenure security, even higher than individual household “titling”- given that property documents of four different Types exist, and ordinary people are usually unable to tell the difference among types, particularly since the lived experience is such that even non-titles can be freely negotiated.

Interviews with property brokers and key informants suggest that the largest increase in sale prices occurs when slums are notified; there is no sharp increase in prices even if households believe they hold private titles. To the extent property taxes are tied to the value of homes, this means that failure to notify slums has a significant impact on foregone revenues. Households in notified slums are more than 50% wealthier—as measured by asset accumulation—when compared to residents of non-notified settlements. Households who perceive that they have titles are very slightly wealthier than those living in notified settlements but who do not have a “title”.

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Key Findings, Cont.

We find across multiple waves of surveys that slum notification has a large *positive* impact on perceived tenure security, while household “title” has a modest *negative* impact on perceived tenure security. This finding might result from the nebulous character of “titles,” or the difficulty of enforcing private property rights for poor owners in a setting with weak rule of law, or because, in Bangalore’s booming property market, titled properties provide a target for property developers and promote market-driven displacement and gentrification. Further research is required to determine the underlying cause.

Almost no one – in notified or non-notified slums - financed their homes with the help of the formal financial sector. Though 36% of households have access to formal savings, neither slum notification nor “title” documents are associated with a substantive increase in engagement with formal financial markets.

- **Rather than being a conveyor belt leading to urban middle-class status, the preponderance of evidence points to very low upward mobility prospects in slums.**

The variation in the slum continuum seems to tell a story of *assortative residential selection* – slums and their residents enter the continuum at different points and tend to remain where they had started. Comparing satellite images over the 15-year period, 2000-2015, of a random sample of 40 slums, we found that in 24 of them there was no change in essential physical characteristics (including building height, roofing materials, external roads, width of inner lanes, etc.). Another 10 slums experienced small positive changes: in some of these slums, paved road replaced unpaved roads; in others, roofs changed from a brown color (signifying cheaper construction) to a gray or white color (showing better roofing material). These changes aren’t emblematic of large improvements in lifestyles, and even these small changes have occurred gradually. In only 3 out of 40 cases was there evidence of substantial improvement. These 3 settlements moved up the slum typology, becoming a better type of habitation. Simultaneously, some other slums, which had existed 15 years earlier, ceased appearing in recent satellite photos – and in three settlements there were signs of deterioration.



With its narrow and irregular but paved streets, and its small dwellings constructed of permanent materials, this neighborhood is near the middle of the slum continuum.

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Key Findings, Cont.

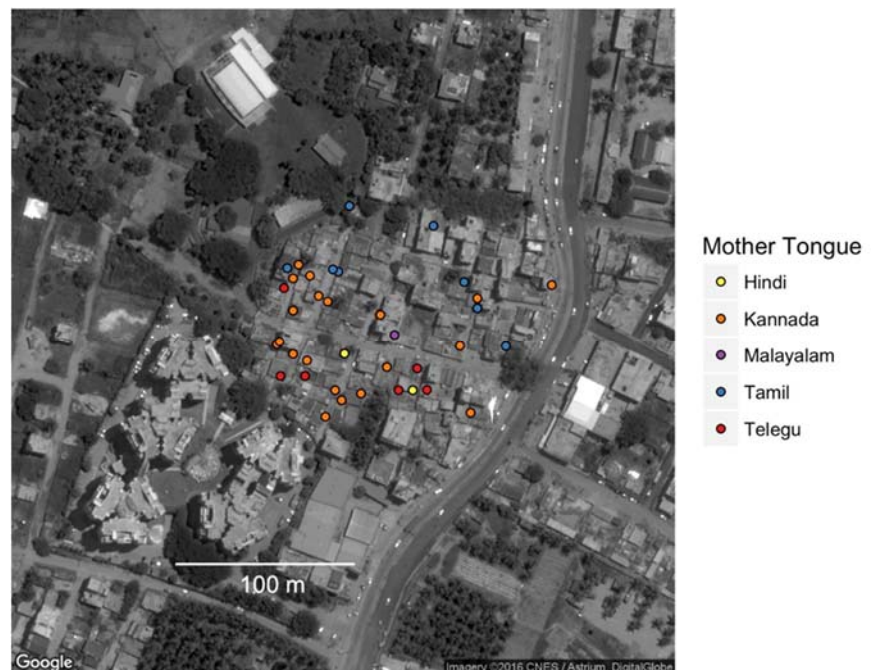
Survey data on households showed little occupational mobility. The daughters of maids, gaining an education, have become shop assistants, secretaries, and data entry operators. Among men, too, some newer occupations had arisen. Younger men are more likely to work as mobile phone repairmen and security guards compared to their parents, who worked more often as peddlers and laborers. But larger gains have been elusive. Even in slums toward the top of the continuum, only a miniscule number of young people are studying to be doctors, engineers, business managers, journalists or professors. Most have followed their fathers and uncles into low-paying informal sector positions. Our evidence also shows that when households move from one slum to another, they usually move *down* the continuum of slums.

Policy Recommendations

- **Use appropriate technology to reduce the time and cost to create comprehensive databases of slums, which in turn can be used for targeted policy interventions.**

Governments rely on manual door-to-door surveys which are expensive and time consuming, resulting in databases that do not have a comprehensive list of slums or their inhabitants. Satellite imagery can be an effective tool to identify and zone in on potential slum areas, which can then be further enhanced by household surveys to build more comprehensive govt. database.

Our findings show that it is important to develop targeted policy intervention for different types of slums that can lead to overall wellbeing of the household. Slums at the lower end of the spectrum are more likely to need water and sanitation facilities, while better off slums may require skills and entrepreneurship interventions.



Our household interviews are geocoded, allowing us to assess the patterns of settlement for each neighborhood. Here the Tamil speakers tend to live on the north side of the neighborhood, while the Kannada and Telegu speakers tend to live on the south side

Policy Recommendations, Cont.

- **Recognize the existence of property transactions within informal settlements and enable the linkage of households with financing institutions for housing finance.**

Our findings show that property transactions exist in informal settlements but are not within the purview of formal registration and taxation or formal housing credit.

Such nebulous and unregulated arrangements littered with quasi-legal documents cause uncertainty about property ownership and tenancy, and can lead to potential conflict and displacement, especially in the face of new real estate development. They also represent loss in revenue for the government. There is a need to consider alternative mechanisms to deal with the situation more effectively and equitably, including possibly maintaining an alternate slum transaction registry which records these transactions, and – mimicking a marketplace that already exists – doesn't have prohibitive expenses or cumbersome procedures, but focuses on keeping updated records and collects stamp duty, which then feeds into a nuanced welfare policy for slum residents.

- **Government policy needs to take a more inclusive approach towards notification of slums, and also create opportunities for upward social mobility, both of which play a key role in the overall wellbeing of the household.**

Our findings suggest that slum notification leads to a number of benefits for the slums and overall well-being of the households. However, even in notified slum communities, households find it difficult to break out of the poverty cycle. It is important for policy makers to take a relook at the existing process and requirements for declaring a notified slum and make it less cumbersome, more transparent, and more inclusive. Separate policy interventions targeted to slums at different points in the continuum are required to address barriers in accessing jobs, skills training, primary education, healthcare and credit.

