

## Preventing COVID-19 Amid Public Health and Urban Planning Failures in Slums of Indian Cities

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*The COVID-19 pandemic has brought renewed attention to the lack of urban planning and its public health implications in developing countries. Slum communities face the dual challenges of chronically poor residential environments and the acute effects of a pandemic and the preventive measures that follow. In this paper, I assess the effectiveness and implications of social distancing, frequent hand-washing, and lockdown in the context of slums in Indian cities, where overcrowding, lack of access to water and sanitation, and dependence on daily wages for sustenance and livelihood are common. Using data from multiple sources, I demonstrate that not only will these measures be hard to achieve in slums in the short term due to specific characteristics of these habitats, but they will bring new challenges in the long term due to disproportionate impacts on the urban poor. Lessons learned from this pandemic will require us to rethink public health responses and urban planning practices that could better prepare our cities for future pandemics.*

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**KEY WORDS:** COVID-19, slums, India, urban health, urban planning

### Introduction

There are over one billion people living in slums in cities of the global South today, which are characterized by overcrowded homes and lack of access to such basic services as water and sanitation. Slum population estimates for India range from 65.5 million (Open Government Data Platform India, 2015) to 121 million people (United Nations, 2015). At the time of this writing, the number of COVID-19 cases in India remains comparatively low, but several slums have already become hotspots. The preventive measures in India are implemented at a full scale that includes complete lockdown and geographic quarantine of areas, along with the standard guidelines for social distancing and frequent handwashing. However, existing vulnerabilities of slum communities are only exacerbated by these measures. We assess preventive measures implemented in India against the unique realities of slums to understand the effects of these measures on the lives of slum-dwellers in the short term and adverse implications on slum-dwellers' livelihoods in the long term. We conclude with listing innovative strategies that have emerged in slums and cities as coping mechanisms and hope for urban planning practices that could make our cities more resilient for future pandemics.

### Public Health Responses to COVID-19 in India: An Overview

The first three cases of COVID-19 in India were in students returning from Wuhan, China, and 41 days after the first reported case on 30th January, the total cases had reached 50 (Rawat, 2020). Most of the infected individuals had a travel history or a contact with a person with a travel history, so the first public health response was screening at the airports for passengers arriving from COVID-19 affected countries and home quarantining them for 14 days. When community spread became evident in the rapid spread of the disease, cities and states started taking such measures as quarantines and increased testing. However, the most stringent measure, a complete national lockdown for 21 days, was announced on March 24th with very little notice and eventually extended to May 3rd and has been applauded by the World Health Organization envoy Dr. Nabarro as “early, far-sighted and courageous” (Sharma, 2020). According to Oxford University’s Government Response Tracker data, India’s response is one of the most stringent, with a Stringency Index score of 97 on a scale that ranges from 0 to 100 and reflects seven different measures (Figure 1). Another recent policy is geographic quarantining, where areas with large numbers of cases are earmarked and subjected to stringent lockdowns with policing and close monitoring by health officials (Patranabis, Gandhi, & Tandel, 2020). While the impact of these measures on disease spread will become evident in time, we examine how these preventive measures have affected marginalized populations in the context of the unique realities of urban India in general and slums in particular.

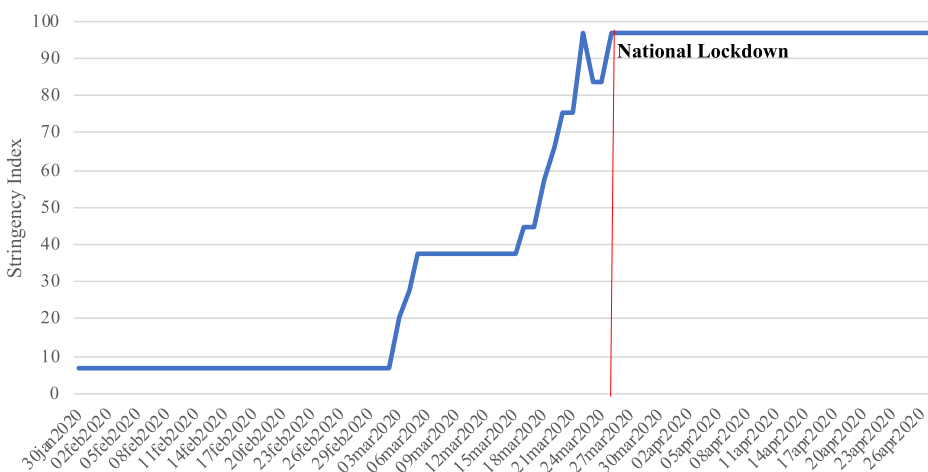


Figure 1 Trends in Stringency of Public Health Measures in India (Data Source: Hale, Webster, Petherick, Phillips, and Kira [2020]).

## Data and Methods

This paper combines quantitative analyses of large-scale datasets with qualitative observations from news and media reports to assess the effectiveness and implications of the public health measures in the slums of India. The quantitative datasets include (i) the National Family and Health Survey 2015-16 that gives household level information for slums and non-slums for eight major cities in India (International Institute for Population Sciences [IIPS] and ICF, 2017), (ii) the Census of India Housing Microdata Sample 2011 that provides representative sample of urban India, and (iii) the Housing Stock, Amenities & Assets in Slums Series of Census 2011 that provides statistics from the slum houses and households for 2,397 cities of India (Census of India, 2011a). The news and media reports are from leading newspapers around the world along with blogs and newsletters from grassroots organizations and think tanks focusing on the issue of slums and COVID-19. In addition, the paper also draws insights from the sparse but emerging academic literature on the subject of COVID-19 and slums.

### Effectiveness and Implications of Public Health Measures

#### *Social Distancing*

People are required to follow social distancing guidelines in public places and wherever they come in contact with other human beings to curb the spread of the disease. However, unique living conditions in slums pose several challenges to practicing social distancing. In particular, highly dense residential environments and inevitable visits to places such as a community water sources or community toilets make it difficult to practice social distancing guidelines. One of the largest slums in Asia, Dharavi in Mumbai, has between 800,000 and one million people within a square mile, which is 12 times denser than the already dense city of Mumbai and roughly 30 times denser than New York City. Unlike Manhattan, the low-rise and high-density environments manifest in smaller dwellings, little or no space between dwellings, and very narrow access lanes that make it difficult to maintain the recommended 2 m distance. This is exacerbated by the fact that a large proportion of slum households are compelled to traverse their neighborhoods for such basic needs as water and sanitation. Census of India (2011a) data reveals that 43 percent of slum households do not have access to water on premises and 34 percent do not have access to a toilet on premises. NFHS-4 data reveals the extent of multiple deprivations: 11 percent of households do not have water on premise, and they share a toilet with other households. Extreme cases include slums such as Dharavi in Mumbai, where estimates suggest one toilet per 1,440 people (United Nations Development Programme, 2006). These realities, where reliance on community level resources is a norm rather than exception, make it harder to maintain social distancing. The quote in a news story on CNN (Sur & Mitra, 2020) by Mahinder, one of the residents of the Valmiki Slum in Mumbai captures this issue clearly, "The lanes are so narrow that when we cross each other,

we cannot do it without our shoulders rubbing against the other person, we all go outdoors to a common toilet and there are 20 families that live just near my small house.”

*Home Quarantine*

People returning from COVID-19 affected countries and family members of the confirmed positive cases are asked to home quarantine per the guidelines provided by the Ministry of Health and Family Welfare (2020). A key expectation is that a home-quarantined person will stay in a separate room for 14 days and will not come in contact with other family members aside from a designated member who will provide care and support. While nationwide data on dwelling size in terms of square footage is not available, remote-sensing studies have established that dwelling size in India's slums is small (Kit, Lüdeke, & Reckien, 2012). Analysis of NFHS-4 data reveals that homes in cities are overcrowded: an average slum household has 3.2 persons per room, while an average nonslum household has 2.9 persons per room. An average home in the slums has 1.7 rooms for 4.7 persons. About 86 percent of sampled slum dwellings have two or fewer rooms and 43 percent of them do not have a separate kitchen. When rooms are shared by multiple family members and used for multiple purposes (e.g., cooking in the daytime and sleeping at nighttime), it is extremely challenging to follow home quarantine guidelines. According to Census data, the most common dwelling type is a single-room dwelling (45 percent of all housing stock in slums), dwellings with two or fewer rooms constitute 79 percent of the total housing stock in slums, and

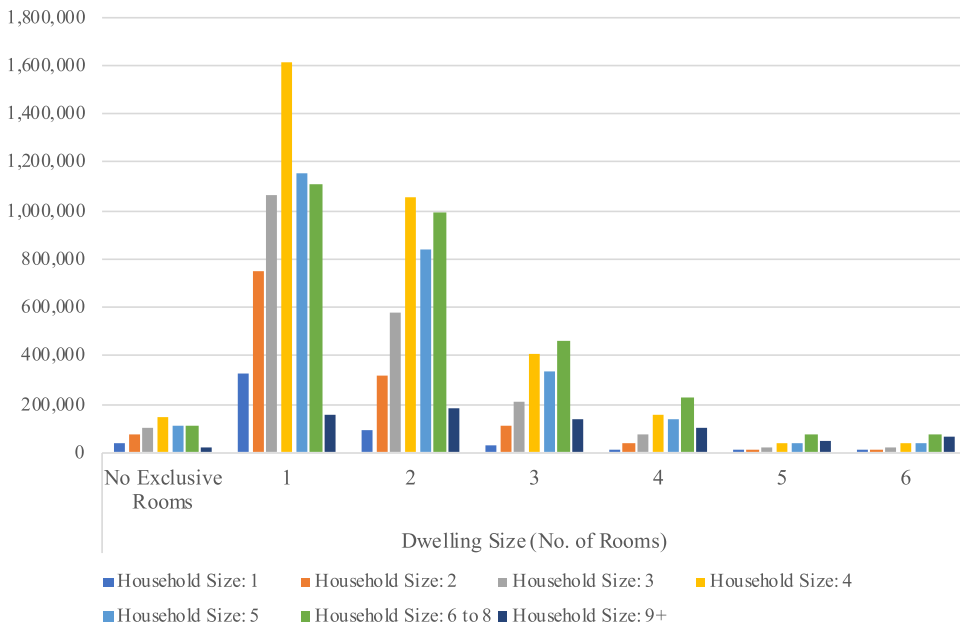


Figure 2 Household Size by Dwelling Size per Census of India (2011a) Data.

67 percent of dwellings are occupied by households of three or more members (Figure 2). Households are often composed of multiple generations living together, meaning that such vulnerable populations as infants and elderly persons live in the same single-room dwelling. As an unintended consequence, it is also possible that prevailing airborne diseases in slums such as tuberculosis might spread faster as a result of the close and prolonged contact of family members under home quarantine guidelines.

### *Frequent Handwashing*

Frequent handwashing with clean water and soap is considered one of the best personal protections against the COVID-19 infection. However, lack of access to water and sanitation facilities in slums makes it difficult to follow this guideline. About 15 percent of households lack access to improved source of water, whereas 16 percent of households lack access to improved sanitation, and 5 percent of the entirety of urban India lack access to both. In slums, these proportions are 2 percent higher for water and 12 percent higher for sanitation compared with non-slums and the differences are statistically significant at  $p < .01$  level as NFHS-4 survey data reveal. These are likely underestimates because even with access to water, supply is sporadic, quantities are limited, and often requires a payment that many poor households cannot afford. In addition, availability of soap varied by twofold between slums and non-slums ( $p < .01$ ): 14 percent of slum households reported that they did not have soap at home compared with 7 percent in non-slums. Consequently, lack of access to water combined with unavailability of soap at home makes it harder to follow this guideline in slums. One of the residents of a single-room shanty in Lakhapura slum of Meerut in a news story (Agarwal, 2020) reportedly said, "How will we wash hands inside the home? We will have to step out to fill water. Or is there also some method to wash hands without water? Tell me," and "We used to buy water for Rs 20 every day earlier. But now it is getting difficult with no income. Sometimes some kind people give us some water. That's how we are surviving."

### *Shelter-in-Place*

The lockdown restricts the movement of people within the city for essential trips, limits operating hours for certain businesses, and complete shutdown for nonessential businesses. Sudden shutdown of businesses has left many informal workers out of work. Estimates from WEIGO, a global network focusing on informal workers, suggests that 85 percent of workers in cities of India are informal workers (Chen & Beard, 2018) and majority of them are home-based workers, street vendors, and waste-pickers. Slum-dwellers get adversely affected with the complete lockdown because they are among the first groups that lose their livelihood and some of it results in permanent loss of income. A rapid assessment by Women in Informal Employment: Globalizing and Organizing (2020) suggests that local governments in India have used lockdown to break up street vending

infrastructure, there is nowhere to sell for street vendors in the absence of people in public places, home-based work has stopped due to the absence of raw materials, waste-pickers do not know when the waste is hazardous because of lack of information on all COVID-19 cases. Losing livelihood also has immediate consequences on food security and access to shelter for renters. Analysis of Census data suggests that little more than a quarter household in slums are renters. These renters may face an immediate threat of eviction if they cannot pay rents in time.

### *Restrictions on Regional Travel*

The sudden halt on internal movement across district and state borders following a national lockdown with a very short notice meant that many migrants who live in slums and cities could not return to their rural origins. Census data reveal that migrants constitute 45 percent of urban population in India (Census of India, 2011b), many of them living in slums. For migrants who work in the informal sector, sustenance and food security are so challenging that they considered walking hundreds of kilometers to their homes in absence of means of any other transportation. Lack of planning for migrants has led to challenges for both those who stayed and those who decided to leave the city. In a news story (Agarwal, 2020), one migrant on his 150 km journey from Noida (New Delhi) to Bhojpur on foot has reportedly said, “There would have been no way for us to survive, we had two options—to either stay in Noida and starve, or try and walk back home.” In another news report, Das, a construction laborer who lives in Dharavi, Mumbai, and is a migrant from Jharkhand has reportedly told, “We have run out of food and neither have money nor ration now. There are 15 of us living confined within three rooms. We have been surviving on the charity of others and cooking whatever the neighbors donate to us. It's hopeless.”

### *Responses from Communities, Private Sector, and the Governments*

While the public health responses have created many challenges for India's slum-dwellers, there have been many responses to address them. For example, the Government of Delhi attempted to provide meals to migrants to encourage them to stay in the city (India Today, 2020) and Swiggy, a private food delivery platform, collaborated with state governments, commercial kitchens, and NGOs to provide food to stranded daily wage employees and migrants during 21-day lockdown (PTI, 2020). India could also learn from many solutions that are being experimented with in slums and cities around the world, such as Rwanda's installation of handwashing facilities at bus stations (Asamba, 2020), communities' own mobilization to create crisis task forces such as in the favelas of Rio de Janeiro (Rio on Watch, 2020) to name a few. A recent article by a team of public health experts, epidemiologists, community leaders, and NGOs provides eight urgent recommendations for governments to reduce the impact of COVID-19 on people living in slums (Corburn et al., 2020).

### *Policy Implications for Public Health and Urban Planning*

One-size-fits-all preventive measures against COVID-19 will not work, particularly for slums, which represent unique characteristics in terms of the socioeconomic status of residents and their residential environments. Given high densities and inadequate services, handwashing and social distancing are luxuries that slum-dwellers cannot afford. Preexisting conditions in slums only exacerbate the vulnerabilities of already marginalized populations. We need to rethink public health measures that work in slum contexts and ultimately prevent spread of the disease without costing lives and livelihoods of slum-dwellers. In addition, cities need to improve living conditions for urban poor that reside in slums to make these habitats livable. We hope that how the city of Surat completely transformed after the 1994 plague (Swamy, Vyas, & Narang, n.d.), the focus on slums and cities amid COVID-19 pandemic will inspire long-term solutions that will reduce the vulnerability of marginalized populations and make our cities resilient.

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#### Notes

Conflicts of interest: None declared

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