Intra-City Inequalities, Neighborhoods and Economic Development

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Abstract

How do neighborhood characteristics influence economic development? How do social cleavages operate within cities in developing countries? This study is among the first of its kind to be conducted in the developing world, and focuses on India to provide answers. Given the limitations of publicly available sources of secondary data, we rely on a spatially representative household survey that we designed and conducted in the cities of Hyderabad and Mumbai. We conduct an inequality decomposition exercise to show that a substantial portion of intra-city income inequality is explained by social cleavages such as classes and social groups (caste and religion). While urban inequalities are stark, we show that spatial co-existence of classes and social groups (a phenomenon that we term as "Grayness") is pronounced. At the neighborhood level, Grayness has a strong and positive impact on development outcomes. We establish this result by using an instrument that captures intra-city variations in the history of industrialization in these two cities. We discuss the policy implications of our findings.

Preliminary. Please do not cite. Comments are Welcome.

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"*Indian cities in general are strikingly low in the incidence of violent crime by world standards… Kolkata has, among other causal factors, benefited from the fact that it has had a long history of being a thoroughly mixed city, where neighbourhoods have not had the feature of ethnic separation that exists in some cities …*"

– Amartya Sen (2008)

1. Introduction

The world today is predominantly urban, driven largely by urbanization in developing countries, a trend that is expected to continue into the distant future.[1] In China and India, two developing countries that are of immense interest to both scholars and the general public, urbanization has been accompanied by an increase in inequality, particularly in urban areas (e.g. Vakulabharanam and Motiram 2012; Subramanian and Jayaraj 2014; Anand and Thampi 2016; Vakulabharanam 2018). However, little is known about the extent of inequality among individuals and groups (e.g. classes, religious groups) within cities, and the factors shaping them. As we discuss below, substantial economics literature exists on neighbourhood characteristics and their impacts in the cities of the developed world (e.g. Cutler and Glaeser 1993; Ludwig et al. 2013; Chetty et al. 2014). Compared to this, the literature on developing countries is sparse, virtually non-existent for India. The purpose of this paper is to address the above important gaps.

As we discuss in detail in the next section, existing publicly available sources of data make it difficult to analyse inequalities within Indian cities. We therefore draw upon a spatially representative household survey that we designed and conducted in two Indian cities viz.,

[1] According to the World Urbanization Prospects report of the United Nations (UN 2015), global urban population overtook global rural population in the first decade of the present century. Projections suggest that while the rural population will stagnate, urban population will continue rising. For the role of developing countries in this process, see the above report and Davis (2005).

Hyderabad and Mumbai, during 2015-17. Mumbai is a large ("mega") city located in Maharashtra state in Western India, whereas Hyderabad is a smaller (but still a large) city located in Telangana state in Southern India.[2] The location of these cities within India is shown in Figure 1, These cities have different historical trajectories (more on this below), which makes their comparison interesting. We present estimates of interpersonal income inequality for these two cities. We also develop a framework that groups individuals into different classes and that incorporates important features of developing countries, e.g. informality. Using this framework and a decomposition analysis, we show that class explains a considerable share of income inequality in both Hyderabad and Mumbai. One of the important social cleavages in India is caste. Historically disadvantaged groups are Scheduled Tribes (STs), Scheduled Castes (SCs), and Other Backward Classes (OBCs). STs and SCs are sometimes grouped together as *Dalits*.[3] Several scholars (e.g. Gaynor and Jaffrelot 2012) have also highlighted the deprivation of Muslims in Indian cities. In fact, Muslims are one of the few groups in India whose poverty is higher in urban areas, as compared to rural areas. We therefore classify individuals into five "social groups" – STs, SCs, OBCs, Muslims, and Others. We show that social group membership explains a significant share of income inequality in Hyderabad, but less so in Mumbai.

Insert Figure 1 here

While spatial inequality in developing countries has received some attention (e.g. Kanbur and Venables 2005), "space" itself has been treated in a somewhat simplistic manner. Spatial

[2] Mumbai and Hyderabad Urban Agglomerations have populations of 18.4 million and 6.81 million, respectively, according to the latest (2011) Indian Census (http://censusindia.gov.in/2011-prov-results/paper2/data_files/india2/Million_Plus_UAs_Cities_2011.pdf).

[3] The literature on caste is too voluminous (and growing) to be summarized here. Caste is one of the issues that has seen contributions from scholars belonging to different social sciences. Some classic and recent references are Srinivas (1996), Gupta (2000), Dirks (2011), Rawat and Satyanarayana (2016).

units are usually pre-determined, administrative entities. In general, there is an underappreciation of the idea that space is a product of historical and socioeconomic processes, and not just an inert entity (e.g. Soja 2002). To address this, in our analysis, we use not only administrative spatial units (e.g. Census Wards), but also spatial units that we have identified based upon the concrete histories that have shaped these two cities. While we document considerable inequality among individuals and groups, we also find considerable spatial co-existence of different classes and social groups. In a previous paper (Motiram and Vakulabharanam 2019), we argue that existing measures and notions of segregation fail to do justice to such spatial co-existence. We term this co-existence as "Grayness", conceptualize it as a combination of two components (spatial integration of income and identity groups), and develop a measure. For reasons that will be elaborated upon later, we use the second component in our analysis here.

Several scholars have highlighted the mixed character of Indian cities and the beneficial outcomes resulting from this feature, see e.g. Sen's (2008) observation about Kolkata quoted above. However, there is hardly any study that has addressed this issue in a rigorous manner. We therefore explore the impact of neighbourhood integration (Grayness) on monetary and non-monetary outcomes (poverty and education, respectively). Our hypothesis is that higher neighbourhood-level Grayness leads to better development outcomes (lower poverty and more education). Of course, Grayness could itself be endogenous, so we draw upon the literature on industrialization in Indian cities (e.g. Alam 1973; Rao 2007; Chandravarkar 2009; Adarkar 2012) to address endogeneity. This literature suggests that while patterns of industrialization were dictated by exogenous considerations (such as availability of land, promotion and larger development goals), they affected Grayness. This allows us to construct an instrument for

Grayness based upon differences in the extent and nature of industrialization within cities. Using this instrument, we establish that Grayness does lead to better development outcomes. We discuss the mechanisms that link spatial integration to welfare (which are different from those in developed countries) and suggest some policies.

To the best of our knowledge, our paper is the first to present estimates for income inequality for Indian cities and explore the impact of neighborhood characteristics on development outcomes. It therefore fills an important gap in the literature on economic development and urban economics (which has largely dealt with developed countries). Some studies on cities and neighborhoods in developed countries have come to similar conclusions as us. For example, Cutler and Glaeser (1999) examine racial segregation in the United States (US) and find that blacks living in more segregated neighborhoods are worse-off/less successful. Chetty et. al. (2014) find that residential segregation is one of the five characteristics of an American neighborhood that contributes to mobility. These studies are unable to identify the mechanisms driving their results.[4] While we highlight the benefits of integration, the mechanisms that we identify are likely to be different.

The remaining portion of the paper is organized into three sections. The next section describes the data that we use. Section 3 documents the considerable inequality that exists among individuals, classes, and social groups. Section 4 presents an analysis of space and neighborhoods to show that while inequality is high, there is also spatial co-existence, and this

[4] Cutler and Glaeser (1999) argue that: "We are left with the conclusion that segregation is extremely harmful for blacks, but we do not have an exact understanding of why this is true."

contributes to development. Section 5 concludes with a discussion of the policy implications of our analysis.

2. Description of Data

Many researchers working on India and Indian policy makers have relied upon the surveys conducted by the National Sample Survey Organization (NSSO) on consumption expenditure and employment and unemployment situation. These surveys can be used to provide estimates for large cities, with a population of more than a million (Vakulabharanam and Motiram 2019). However, they do not contain income data or information on spatial units within cities. A second publicly available source of data that has become particularly popular recently is the India Human Development Survey (IHDS) conducted by the National Council of Applied Economic Research and the University of Maryland. While this survey has data on household incomes, it also suffers from lack of information on units within cities. The decennial Census is a third source that has been used widely. The Census does have information on spatial units within cities (e.g. Census Wards), but does not have information on either income or consumption. Moreover, there are severe restrictions on information available within the city, e.g. data on religious groups is not available at the Census Ward level. Also, only three caste groups are enumerated: Scheduled Castes (SC), Scheduled Tribes (ST) and Others. Other Backward Classes (OBC) are not enumerated separately, but included in the residual category (Others). Overall, existing publicly available sources of data do not allow us to meaningfully analyze inequality or poverty for intra-city units. The picture of city-level inequality that one gets from these is also quite limited.

In light of the above, we use data from a spatially representative survey in Hyderabad and Mumbai. We designed and conducted this survey during 2015-17 based upon the spatial

organization that is used by the Census. According to the latest (2011) Census, Urban Agglomerations (UA) are spread across several "districts", which are further divided into "Census Wards", and finally into Enumeration Blocks (EBs). Hyderabad UA is spread across the districts of Hyderabad, Rangareddy, and Medak. While Hyderabad district is completely urban, the other two districts comprise of both rural and urban areas. Mumbai UA is spread across Mumbai, Mumbai Suburban, and Thane districts. Mumbai and Mumbai Suburban districts are completely urban, and before the 2001 Census, were combined into one district called Greater Bombay. Our survey focuses on Hyderabad, Mumbai, and Mumbai Suburban districts, which cover a substantial portion of the Hyderabad and Mumbai UAs. The Census divides Hyderabad district into sixteen Sub-districts. Mumbai and Mumbai Suburban districts have been divided for administrative purposes into twenty-four Municipal Wards (not to be confused with Census Wards, which are smaller). We used a multistage, stratified sampling design with Sub-districts and Municipal Wards as strata in Hyderabad and Mumbai, respectively. In both the cities, we selected 1000 households spread across 100 EBs (10 for each EB).[5] We administered a detailed household schedule to each of the selected households, collecting information on demographic characteristics (e.g. household size, caste, religion), income, consumption, interpersonal income and occupational dynamics, intergenerational occupational mobility etc. We present descriptive statistics for some important variables in table 1. As we can observe, the average income of Other (Upper or Forward Caste) Hindus is higher than the same for both Muslims and lower castes. Both cities have a sizeable proportion of Muslims, although Hyderabad has a higher share. STs have a low level of urbanization in India, and this is reflected by their percentage in the sample.

[5] However, despite our best efforts, we were able to collect data from only 98 EBs and 980 households in Mumbai.

Insert table 1 here

3. Analysis of Inequality

For developed countries like the United States and Great Britain, several studies (for a survey, see Giddens 2009) have used an approach influenced by Marx and Weber to divide the population into various classes. For India, some studies that have attempted a similar exercise are Patnaik (1987), Bardhan (1992), and Vakulabharanam (2010). One of the important features of India and other developing countries is the substantial role played by the informal sector.[6] We therefore build upon Vakulabharanam (2010) and use information on occupation and sources of income to construct the following class scheme: Elite, Professionals, Formal Workers, Informal Workers, Owners. Self-Employed and Others. This scheme follows a broadly Marxian framework and is different in its underpinnings from income-based classifications, e.g. Upper-class, Middle-class etc. A seminal study on the nature of the informal economy in developing countries is Sanyal (2007), which argues that the formal and informal sectors feed upon each other. The informal sector depends upon and benefits from the formal sector, while simultaneously subsidizing it. Sanyal characterizes the formal and informal sectors as being part of the "accumulation economy" and "need economy", respectively. From this perspective, the accumulation economy comprises of the first three classes (Elite, Professionals, Formal Workers) and the need economy comprises of Informal Workers, Owners, and Self-Employed.

We use the technique of decomposition to understand the influence of classes and social groups in shaping inequality. This is a well-known technique in the analysis of inequality, and in the interests of space, we present a brief non-technical description here. For the technical details, we refer readers to Yitzhaki (1993) and Shorrocks and Wan (2005). In this analysis, overall

[6] See the report of the National Commission on Employment in the Unorganized Sector (NCEUS 2009).

inequality is decomposed into two components: within component and between component. The share (percentage) contributed by the between component to overall inequality can be interpreted as the inter-group inequality. We use two different measures of inequality – the Gini index and the Theil index. In the case of the Gini Index, the between component also involves and "Overlapping component".

In table 2, we present inequality estimates and decomposition results for both the cities. These estimates are likely to be underestimates of the true inequality given that household surveys typically underrepresent the high-income or high-wealth groups. Particularly given this, the inequality in both the cities can be considered as high. We will first focus on decomposition results for social groups. As we can observe, the contribution of the between component is quite high in Hyderabad. This attests to the importance of social group as a major cleavage in Hyderabad. Contrary to Hyderabad, the contribution of the between component is low in Mumbai. This is due to the specific features of Hindus in the state of Maharashtra (where Mumbai is located). In this state, there is considerable variation among the OBCs, which results in a high share for the within component.[7] Coming to class analysis, we can observe that the contribution of the between component is high in both the cities. This attests to the importance of class in shaping inequality.

Insert table 2 here

4. Analysis of Neighborhoods and Grayness

We think of space in terms of both administrative units and as shaped by concrete history. Hyderabad is a "traditional" walled-city, which is more than four centuries old.[8] When India

[7] For an analysis of caste relations in Maharashtra, particularly the dominant "Maratha" caste, see Palshikar and Deshpande (2017).

[8] In such cities, there was a physical wall protecting the inner core of the city. For a description of the evolution of the spatial organization of the city of Hyderabad, see Alam (1973).

came formally under the British Crown, it comprised of many kingdoms and areas directly administered by the British. Hyderabad was part of the Nizam kingdom, the largest of such kingdoms, and had a colonial administrator resident in the city. We divide Hyderabad into four zones based upon its historical evolution from pre-colonial to modern times: Old-Walled city, Nizam's city, British-Resident city, and Neoliberal city. The Old-Walled city is the oldest and poorest part of the city. The emergence of Nizam's city began during 18th-19th centuries; British-Resident city comprises of the British resident and Cantonment areas and emerged during 19th-20th centuries; the Neoliberal city is associated with the emergence of the new economy which started in the 1970s. These zones and the subdistricts of Hyderabad are depicted in figure 2.

Insert figure 2 here

In contrast to Hyderabad, Mumbai is a much larger "modern" city with a different history (Dwivedi and Mehrotra 1995; Chandravarkar 2009; Dossal 2010). Unlike Hyderabad, Mumbai was directly administered by the British as part of Bombay presidency.[9] The modern city of Mumbai originated in the southern part (which is in Mumbai district today) and spread geographically starting in the colonial period. The suburban part of Mumbai became densely populated over time due to various factors including population pressure, land markets, and state policies. We divide the city into five zones: British and Neoliberal City, Old Industrial City 1, Old Industrial City 2, Western Neoliberal City, and Northern Neoliberal Hub & Suburbs. The names of these zones are self-explanatory and the zones are shown in figure 3.

Insert figure 3 here

[9] The name of the city was changed from Bombay to Mumbai in 1995.

In figures 4-7, we present the percentages of various social groups and classes in the zones that we identified in the two cities. As we can observe, in every zone and in both cities, there is a co-existence of social groups and classes, attesting to the mixed nature of these cities.

Insert figures 4-7 here

In Motiram and Vakulabharanam (2019), we discuss how standard notions like segregation do not do justice to such co-existence. We call this co-existence "Grayness", and conceptualize it as a combination of two components representing spatial integration in terms of income and group-identity. Consider a city that can be divided into N (≥ 2) spatial units and which comprises of G (≥ 2) identity groups (e.g. races or caste groups). Let $p_g^c (0 < p_g^c < 1)$ and $p_g^m (0 < p_g^m < 1)$ denote the shares of the population belonging to group g $(= 1,2, \dots, G)$ living in the city and in the spatial unit m $(= 1,2, \dots, N)$, respectively. Let s^n $(0 < s^n < 1)$ denote the share of the population living in spatial unit n $(= 1,2, \dots, N)$. We develop an index of Grayness (GI) that satisfies several desirable properties, and that takes a "mean-variance form" as given below:

$$GI = \frac{(GC + IC)}{2} - \beta \left[\frac{(GC^2 + IC^2)}{2} - \left(\frac{GC + IC}{2} \right)^2 \right]$$

β $(0 \leq \beta \leq 1)$ is a parameter and IC is the Income Component given by:

$$IC = (1 - \frac{Gini_a}{Gini_t})$$

$Gini_t$ is the Gini index for the income distribution of the city and $Gini_a$ is the Gini index for the distribution of mean incomes of spatial units. $\frac{Gini_a}{Gini_t}$ is the spatial inequality for the city and therefore $(1 - \frac{Gini_a}{Gini_t})$ can be interpreted as the degree of spatial integration. The Group Component (GC) is given by:

$$GC = 1 - [\frac{\sum_{g=1}^{G} p_g^c \sum_{m=1}^{M} \sum_{n=1}^{N} s^m s^n \left| \frac{p_g^m}{p_g^c} - \frac{p_g^n}{p_g^c} \right|}{2 \sum_{g=1}^{G} p_g^c (1 - p_g^c)}]$$

The term in the square brackets is the Gini index of segregation and therefore *GC* can be interpreted as the degree of spatial integration of identity groups.[10] Note that unlike the Duncan-Duncan dissimilarity index (a widely used measure of segregation), the Gini Index can be used even if the number of groups is greater than two. This is particularly useful for us because we are dealing with a situation with five social groups. The Grayness Index and its components can be computed by treating either households or individuals as the basic units.

We have already seen from figures 4-7 that both Hyderabad and Mumbai are mixed. In figure 8, we present a comparison of the Grayness Index of these cities with two American cities. As we can observe, the Indian cities are much more spatially integrated than their American counterparts.

Insert figure 8 here

Since we are interested in the impact of neighborhood characteristics on poverty, which depends upon income, we will only use the Group Component in our analysis and treat it as a measure of Grayness. We will also use the terms Grayness and Spatial integration interchangeably. We will now analyze the impact of neighborhood characteristics. Let Y_i denote the outcome of interest for a household or individual *i*. We estimate the following model:

$$Y_i = \alpha_1 + \beta_1 X_i + \gamma_1 GC_i + u_{1i}$$

$$GC_i = \alpha_2 + \beta_2 X_i + \gamma_2 Z_i + u_{2i}$$

[10] In the Gini index of inequality for incomes, a comparison is made between all income pairs, i.e. incomes of individuals in every pair. Here, the comparison is between all pairs of spatial unit-city ratios ($\frac{p_g^m}{p_g^c}$) for every spatial unit (*m=1,…,M*) and every group (*g=1,…,G*). Other ideas, e.g. Lorenz curve, follow from this.

X_i is a vector of characteristics of i, GC_i is the Grayness (Group Component) of the neighborhood in which i resides, Z_i is an instrument for GC_i, and u_{1i} and u_{2i} are independent and identically distributed error terms.

To identify an instrument for *GC*, we draw upon the literature on industrialization in the cities of Hyderabad and Mumbai. In Mumbai, industrialization started in the colonial period with the establishment of textile mills. In the early decades of industrialization, in both cities, the central (federal) and state governments, established industries and "industrial zones" in certain areas. In keeping with the emphasis on capital-intensive industrialization, these industries were in sectors like pharmaceuticals, chemicals, defence, atomic energy etc. Later decades, particularly after India embarked upon economic reforms in the early 1990s, saw the emergence of services like Information Technology, Business Process Outsourcing, Finance etc. In Mumbai, the textile industry also declined by the end of the 1980s. Essentially, in both these cities, three distinct geographical areas can be identified – non-industrialized, newly industrialized, and those influenced by older industrialization. The location of manufacturing and service industries was based upon considerations like availability of land, initial settlement patterns, and geographical features like presence of forests and lakes. In other words, these factors are exogenous and unconnected to spatial integration. However, there is considerable evidence (see e.g. Alam (1973) and Adarkar (2012)) that industrialization, particularly of the older form contributed to integration by bringing together different communities. Hence, we construct the instrument *Z* in the following manner: $Z_i = 0$ (no industrialization), 1 (newer industrialization), and 2 (older industrialization).

In Hyderabad, we will use Subdistricts as neighbourhoods, and in Mumbai, we will use Municipal Wards (combining small wards). The first outcome that we will examine is poverty. In

India, there has been considerable debate and controversy about the official poverty line. The poverty line prescribed in 2009 by the committee appointed by the Planning Commission (chaired by Dr. Suresh Tendulkar) was widely criticized and deemed to be too low (Subramanian 2012; Motiram and Vakulabharanam 2013). The Planning Commission appointed another committee (chaired by Dr. Rangarajan) which came up with a new poverty line (Subramanian 2014). However, even this new poverty line was widely criticized. The National Democratic Alliance, which came to power in 2014, abolished the Planning Commission and replaced it with a think tank – National Institute for Transforming India (NITI) Aayog. The NITI Aayog has not arrived at an official poverty line or updated estimates of poverty. Given this, we rely on a commonly used relative poverty line, which is half the median per-capita income of a city.

In table 3, we present results of a two-stage instrumental variable probit regression of the probability that a household is poor. We control for the deprived group status, informal status apart from the Grayness of the neighborhood. As we can observe, the instrument passes the test of validity. The positive sign and statistical significance of the instrument verifies the intuition that the nature of industrialization influences Grayness and older forms of industrialization foster it. The coefficient on the measure of Grayness is statistically significant and has the expected sign. Individuals living in neighborhoods that are more integrated are less likely to be poor. The result for informal work status is also on the expected lines. To examine magnitudes, rather than examining marginal effects (which would reflect the impact of small changes), it would be more useful for policy to consider somewhat bigger changes. So, to evaluate the magnitude of the impact of Grayness, we consider the following thought experiment. An informal household belonging to deprived status moves from one neighborhood to another. We consider two cases: (i) from the worst (lowest Grayness) neighborhood to one of average (median) Grayness, and (ii)

from average to the best (highest Grayness). The results for both social-group Grayness and class Grayness are shown in table 5. These results reflect the high magnitude and policy significance of Grayness. For example, the probability that the household is poor decreases by about 21 percentage points when it moves from a neighborhood that is average in terms of social-group Grayness to the best neighborhood. The corresponding decrease for class Grayness is also high at about 38 percentage points.

Insert table 3 here

In table 4, we present results of a two-stage instrumental regression on the number of years of education of an adult. Again, we can observe that the instrument passes the test of validity and has the right size, sign and statistical significance. The positive and statistically significant coefficient on the measure of Grayness indicates that individuals living in neighborhoods that are more integrated are more educated. The results for the other coefficients are as expected. To evaluate the magnitude of the impact of Grayness, we conduct thought experiments similar to the ones in the case of poverty. These are reported in table 5. Moving from an average neighborhood to the best neighborhood in terms of social-group Grayness increases the years of education by almost one year. The corresponding figure for class Grayness is as high as 3.3 years. Again, this attests to the high magnitude of the impact of Grayness.

Insert tables 4 and 5 here

We carried out several checks to ensure that our results are robust. We ran different model specifications, identified the poor using other reasonable thresholds, and considered other measures of educational achievement. One example is provided in the Appendix.[11] What explains the result linking neighborhood Grayness to better development outcomes? It is not due

[11] We have not reported these results in the interests of space, but they are available upon request.

to schooling, which varies across neighborhoods in developed countries like the US. In fact, one of the major shortcomings of India's development strategy is the failure of the state in providing quality education, particularly at the primary level (PROBE 1999). As a result, even the poor take resort to private education. There are three explanations that can be suggested. First, literature highlights certain positive effects of closer integration. Studies of Mumbai's *chawls* argue that they facilitated a more politically active and integrated consciousness.[12] Tighter spatial integration could also produce better relationships among communities, tolerance, and "cosmopolitanism" – a phenomenon identified with mutual co-existence of communities in South Asia, which has been theorized as distinct from modern forms of tolerance (Nandy 2010). Datta (2019) presents a fascinating ethnographic account of the co-existence of multiple communities in Jammu city in North India. Jammu is not a metropolis, and is in fact, a much smaller city than both Hyderabad and Mumbai. Given this, and our quantitative methodology, the findings from Jammu complement ours.

It can also provide better job opportunities through exchange of knowledge. Second, grayer neighborhoods could provide better economic opportunities to the poor and informal workers – a phenomenon referred to as "dependent informality" (Sanyal 2007). Finally, more integrated neighborhoods could also improve outcomes through the provision of better consumptive public goods (e.g. transportation, waste disposal etc.).

5. Conclusions and Policy Implications

In the above analysis, we have drawn upon a spatially representative survey from two Indian cities (Hyderabad and Mumbai) to document income inequality and the contribution of

[12] *Chawls* are communal residential structures that arose to house workers in the textile mills, but that continue to exist even today. A description of life in a *Chawl* will help illustrate our point: "Mumbai's Chawls …are an essential part of the city's culture. The residents, despite the cramped spaces, have a strong sense of community. They celebrate festivals together and lend a helping hand to each other in times of crises." (Patil 2017).

class and social group status to it. We demonstrate that class is an important determinant of inequality in both the cities and social group is an important determinant in Hyderabad. We show that Grayer neighborhoods (which are better integrated) perform better on development indicators and provide explanations for this result. The literature on urban economics has largely focused on developed countries, so our study fills an important gap. The literature on economic development has placed excessive emphasis on the rural sector, arguing that insights from this sector are applicable to the urban informal sector too. We believe that such emphasis is misplaced and the urban sector needs to be focused upon more seriously. The above analysis has to be seen as an important step in this direction.

In the past three decades, India has been going through a process that has been described as "neo-liberal" urbanism. This process has been eroding Grayness in Indian cities through changes occurring at the levels of the state, market, and civil society. The state has been contributing to an increase in segregation through changes in policies for land use, displacement of people, and endeavors like the promotion of "entrepreneurial cities" (Gooptu 2011).[13] The civil society has been accomplishing the same objective through middle-class activism which attempts to displace those in the informal sector, e.g. street vendors (Harriss 2006). Finally, markets contribute through rising costs of housing and gentrification.

Our analysis indicates that the above changes are not only inequitable, but also lead to inferior development outcomes. The main policy implication of our findings is that these changes should be reversed or at least arrested. Real estate and land markets should be better regulated, curbs should be placed on actors/processes that displace the poor/disadvantaged social groups from the city, and commons should be preserved and their access should be open.

[13] The rise of right-wing Hindu nationalist ideology, particularly under the auspices of BJP (Bharatiya Janata Party) is also a contributing factor. The abovementioned study from Jammu city, furnishes a good example.

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Tables and Figures

Table 1: Descriptive Statistics of Some Important Variables

	Mean (Std. Dev)
Household Size	4.03 (1.96)
Monthly Per-Capita Income (PCI)	Rs. 5996.51 (5527.45)
	Mean PCI (% Share)
Caste	
Scheduled Tribes (ST)	Rs. 7059.76 (3.10%)
Scheduled Castes (SC)	Rs. 5713.15 (13.42%)
Other Backward Classes (OBC)	Rs. 5794.12 (28.85%)
Hindu Other Castes	Rs. 7565.29 (30.21%)
Others	Rs. 4317.55 (24.42%)
Religion	
Hindu	Rs. 6727.15 (61.32%)
Muslim	Rs. 4304.79 (32.94%)
Christian	Rs. 8125.76 (3.27%)
Others	Rs. 7528.06 (2.45%)

Source: Authors' computations from household survey data.

Notes: 1. Average household size calculated over 1,972 households.

2. Mean per-capita income and shares calculated over 7,948 individuals.

3. Rs. – Indian Rupees.

Table 2: Decomposition of Income Inequality

	Hyderabad		Mumbai	
	Class	Social Group	Class	Social Group
Theil				
Within	0.248 (73.4%)	0.282 (83.4%)	0.228 (89.0%)	0.248 (96.8%)
Between	0.090 (26.6%)	0.056 (16.6%)	0.028 (11.0%)	0.008 (3.2%)
Total	0.338	0.338	0.256	0.256
Gini				
Within	0.306 (71.3%)	0.355 (82.04%)	0.340 (87.88%)	0.374 (96.5%)
Between	0.123 (28.7%)	0.074 (17.96%)	0.047 (12.12%)	0.013 (3.5%)
Total	0.429	0.429	0.387	0.387

Source: Authors' computations from household survey data.

Table 3: Instrumental Variable Probit Analysis
(Dependent Variable: 1 if Household is poor and 0 if not)

	Social Group	Class
Grayness	-3.374*	-7.398*
	(1.032)	(1.361)
Deprived Group	-0.091	-0.074
	(0.092)	(0.080)
Informal Worker	0.344*	0.382*
	(0.097)	(0.094)
Constant	0.130	3.070*
	(0.428)	(0.908)
Instrument	0.053*	0.015*
	(0.005)	(0.005)
Chi^2	15.07	7.99
(Prob> Chi^2)	(0.0001)	(0.0047)

Source: Authors' computations from survey data.
Notes: 1. Standard errors in parentheses. * denotes that the coefficient is statistically significant at 99% confidence level.
2. Grayness for social group is computed with household as the unit and with four groups: Dalits, OBCs, Muslims, and Others.
3. Grayness for class is computed with household as the unit and with two groups: Informal workers and Others.
4. Deprived Group: 1 if household is Dalit, OBC or Muslim; 0 otherwise.

Table 4: Instrumental Variable Regression Analysis
(Dependent Variable: Number of years of education of the individual)

	Social Group	Class
Grayness	1.899*	9.668*
	(0.765)	(4.090)
Age	-0.762*	-0.113*
	(0.116)	(0.004)
Female	-1.667*	-1.678*
	(0.107)	(0.112)
Deprived Group	-0.762*	-1.005*
	(0.116)	(0.148)
Years of Education of head of household	0.628*	0.640*
	(0.010)	(0.011)
Migrant	-0.431*	-0.091
	(0.167)	(0.174)
Constant	8.889*	4.571*
	(0.328)	(2.098)
Instrument	0.105*	0.021*
	(0.003)	(0.003)
F-Statistic (Prob>*F*)	254.74	16.68
	(0.000)	(0.000)

Source: Authors' computations from survey data.
Notes: 1. Standard errors in parentheses. * denotes that the coefficient is statistically significant at 99% confidence level.
2. Grayness for social group is computed with household as the unit and with four groups: Dalits, OBCs, Muslims, and Others.
3. Grayness for class is computed with household as the unit and with two groups: Informal workers and Others.
4. Deprived Group: 1 if household is Dalit, OBC or Muslim; 0 otherwise.

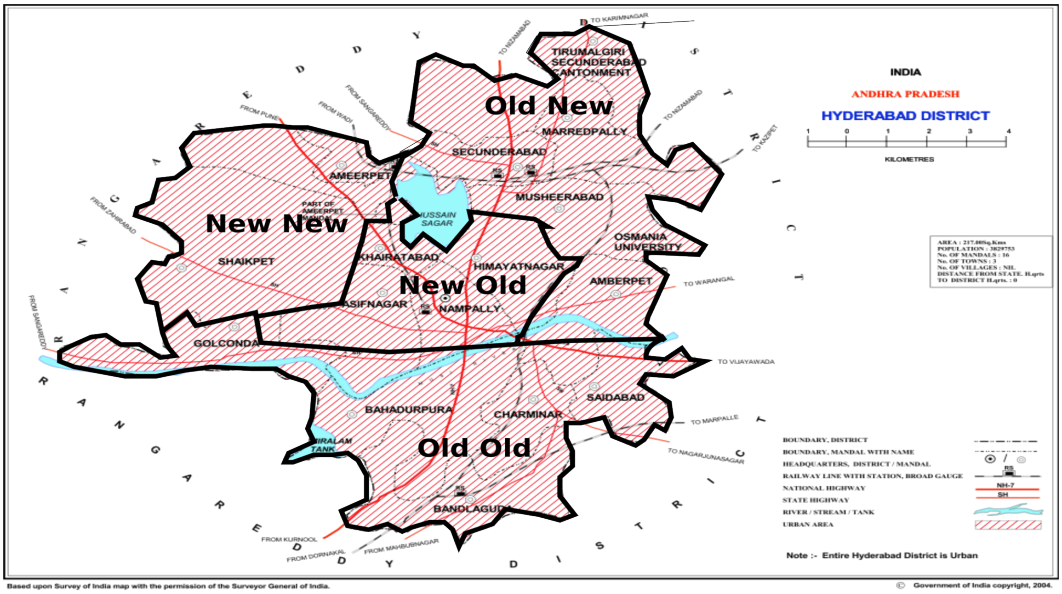
Table 5: Magnitudes for Impacts of Grayness

	Reduction in Poverty (percentage points)		Increase in Education (years)	
	Social Group	Class	Social Group	Class
From worst to average	34.5	57.3	0.53	2.65
From average to best	20.8	38.4	0.93	3.33

Notes: 1. Reduction in poverty is the decrease in the probability that a household will be poor. Computed from estimates in table 3 for an informal household that is of deprived status.
2. Increase in years of education is computed from estimates in table 4.

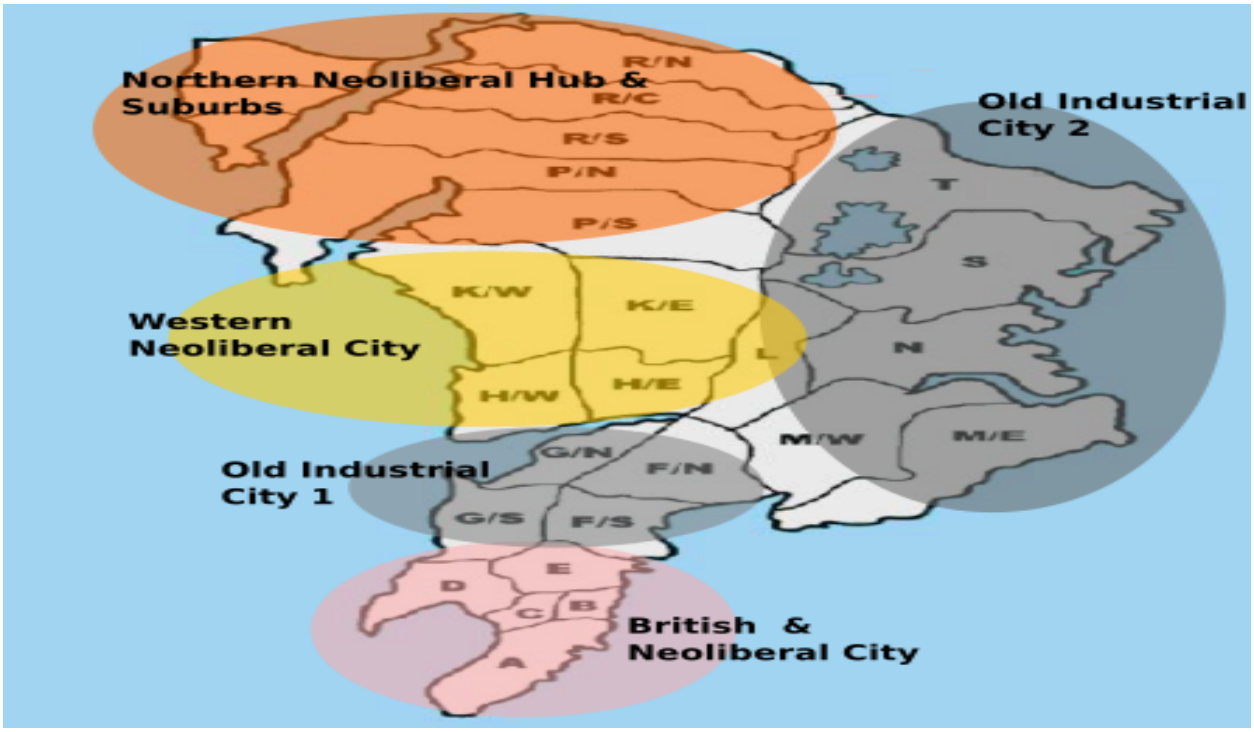
Figure 1: Location of Hyderabad and Mumbai

Figure 2: Map of Hyderabad District with Sub-districts and Zones



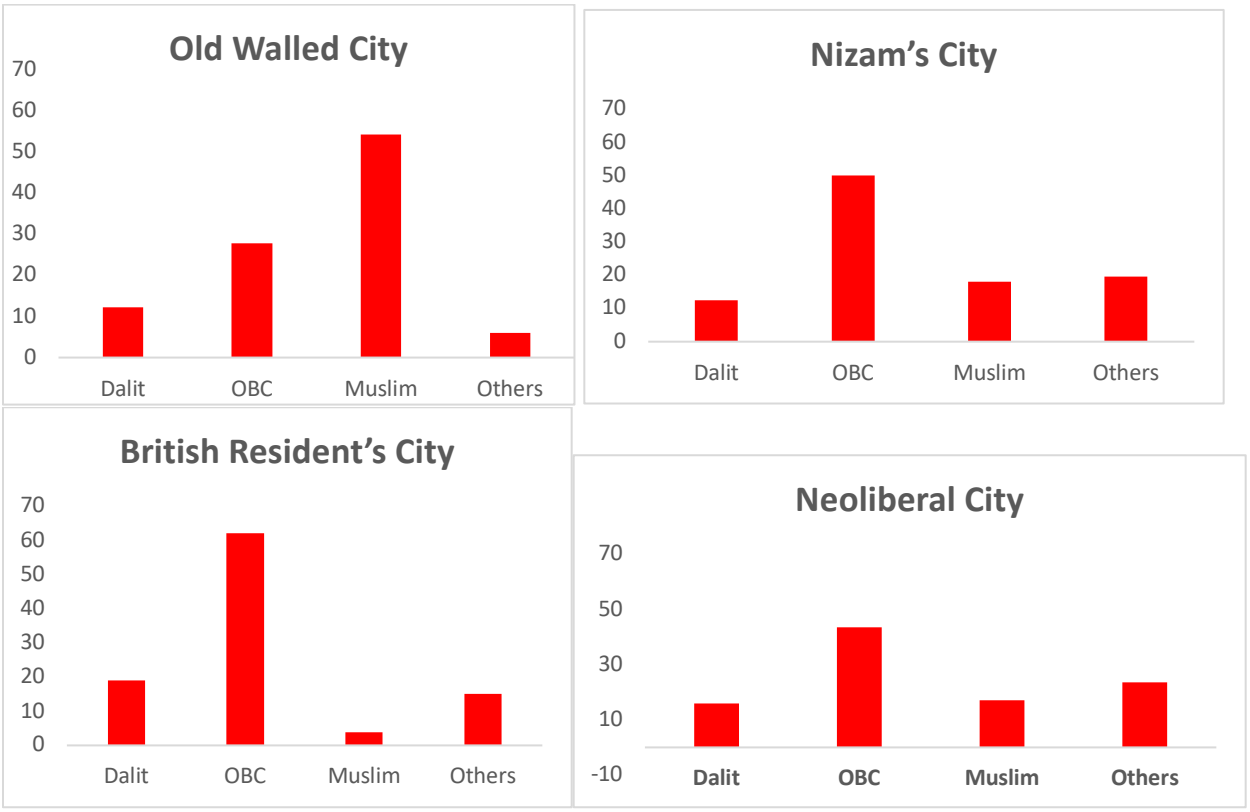
Source: Census of India. We overlaid the zones on the map provided by the Census.

Figure 3: Map of Mumbai with Zones



Source: Census of India. We overlaid the zones on the map provided by the Census.

Figure 4: Spatial Co-existence of Social Groups (Hyderabad)

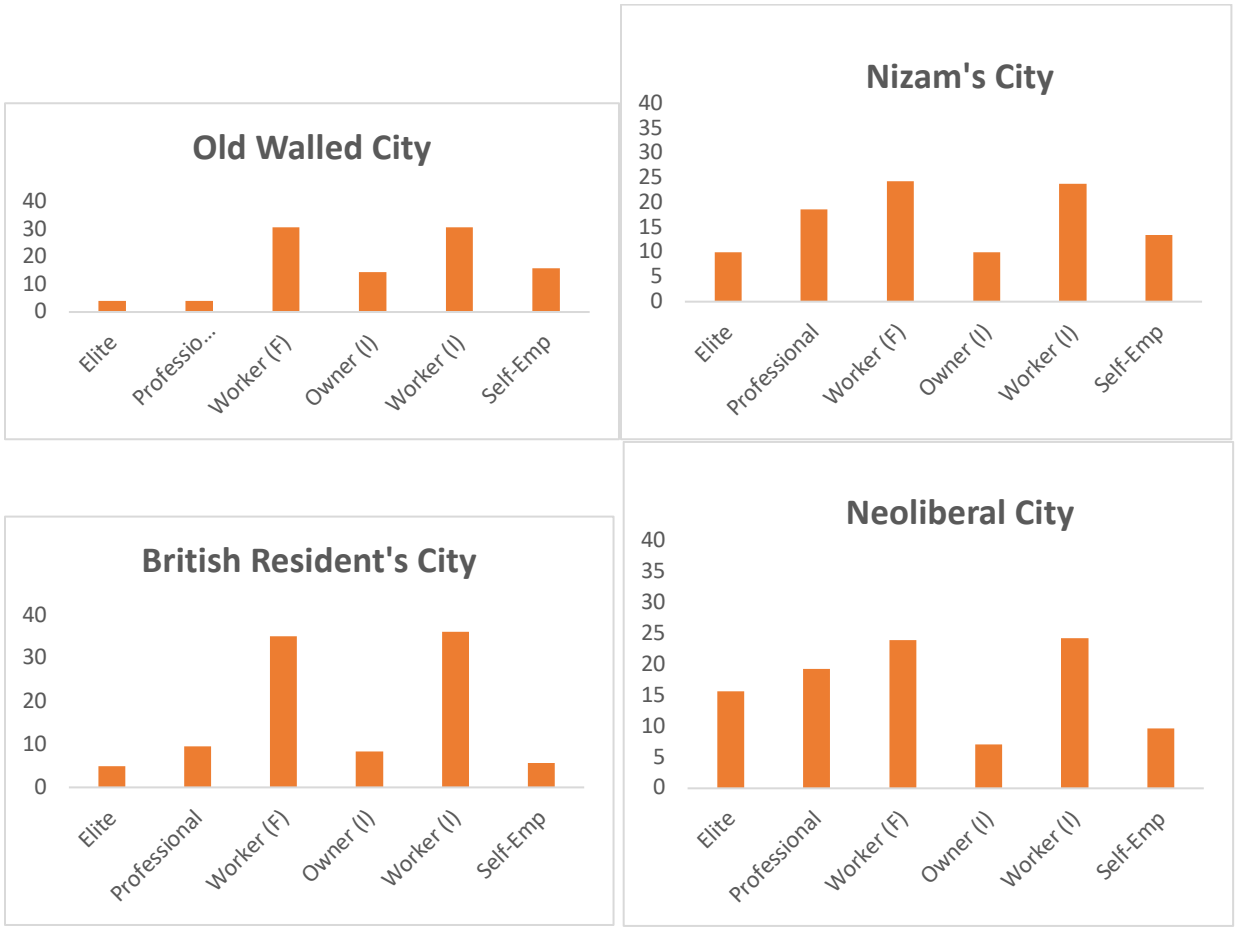


Source: Authors' computations from survey data. For the definitions of these zones, see Figure 2.

Figure 5: Spatial Co-existence of Social Groups (Mumbai)

Source: Authors' computations from survey data. For the definitions of these zones, see Figure 3.

Figure 6: Spatial Co-existence of Classes (Hyderabad)

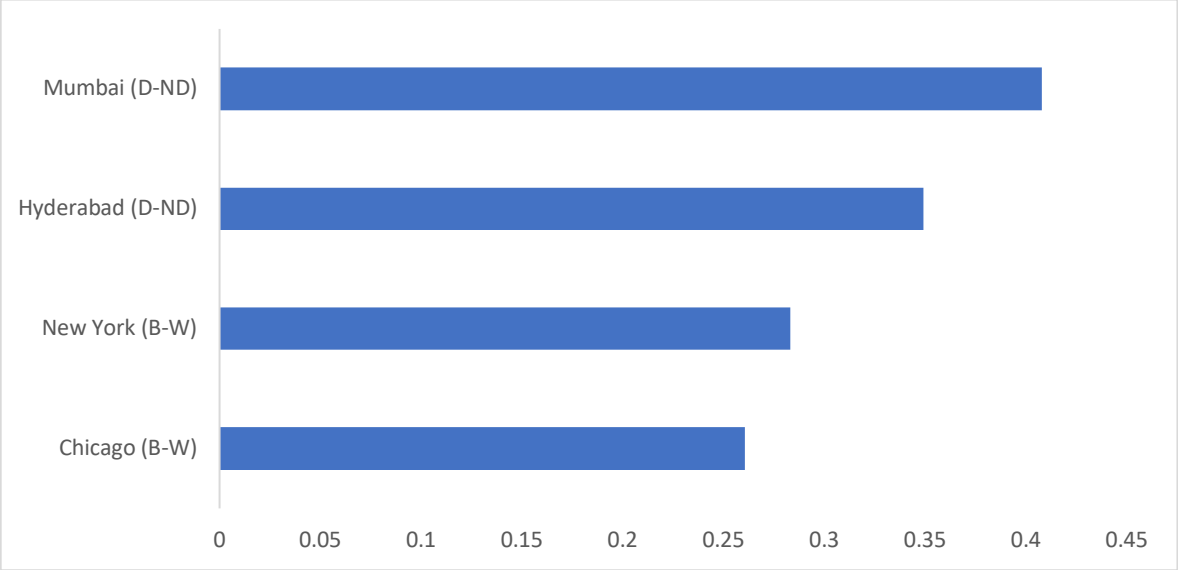


Source: Authors' computations from survey data. For the definitions of these zones, see Figure 2.

Figure 7: Spatial Co-existence of Classes (Mumbai)

Source: Authors' computations from survey data. For the definitions of these zones, see Figure 3.

Figure 8: Grayness Index for Indian and American Cities



Source: Authors' computations based upon household survey data for Hyderabad and Mumbai. For American cities, we used the American Community Survey (ACS) 2016, 5-year estimates. Notes: a. For Hyderabad and Mumbai, the groups are Dalits (ST and SC) and Non-Dalits. For American cities, the groups are Whites and Blacks. b. For both Indian and American cities, *IC* is computed based upon Gini indices for household income.

Appendix: Robustness Checks

Table A1: Instrumental Variable Probit Analysis (Dependent Variable: 1 if Household is poor and 0 if not)

	Social Group	Class
Grayness	-3.458*	-7.514*
	(1.039)	(1.319)
Muslim	0.394*	0.284**
	(0.122)	(0.132)
Informal Worker	0.334*	0.372*
	(0.096)	(0.094)
Constant	0.057	3.064*
	(0.439)	(0.910)
Instrument	0.052*	0.015*
	(0.005)	(0.005)
Chi^2	15.27	8.08
(Prob> Chi^2)	(0.0001)	(0.0049)

Source: Authors' computations from survey data.
Notes: 1. Standard errors in parentheses. * and ** denote that the coefficient is statistically significant at 99% and 95% confidence levels, respectively.
2. Grayness for social group is computed with household as the unit and with four groups: Dalits, OBCs, Muslims, and Others.
3. Grayness for class is computed with household as the unit and with two groups: Informal workers and Others.