



# **Gender and Work Patterns in Indian Cities: A Socio-Spatial Analysis**

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# Gender and Work Patterns in Indian Cities: A Socio-Spatial Analysis<sup>1</sup>

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## Abstract

Using an original household survey conducted in Hyderabad and Mumbai that identifies intra-city spatial coordinates of residents, we present a socio-spatial analysis of gender and paid work. We show that the ease of movement through the city, allocation of care work related considerations and educational attainment are all crucial to understanding the labor force participation patterns of urban women. A gender lens identifies key facets of access and mobility characterizing urbanization in developing countries. Spatial heterogeneity of residence has very different outcomes for the labor force participation of women and men.

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*Geography matters to the construction of gender, and the fact of geographical variation in gender relations, for instance, is a significant element in the production and reproduction of both imaginative geographies and uneven development.*

- Doreen Massey (1994, p. 2)

## **1. Introduction**

Global urbanization has been driven by cities in developing countries, but literature in economics has disproportionately focused on cities in the Global North.<sup>4</sup> Urban planning in developing countries reflects a gender-insensitive framework, with adverse consequences (e.g., Ballal (2020)). We address these gaps by focusing on gender relations in cities. We make a case for exploring the mutual relationship between gender and space in the spirit of intersectionality (Collins 2019). Specifically, we analyze how cities function as gendered spaces, wherein gender and space mutually shape each other. We do this by focusing on the female labor force participation rate (FLFPR).<sup>5</sup>

Our study is the first to document variation in Indian intra-city FLFPR estimates.<sup>6</sup> We have two findings in this paper. Our first finding is that there is a variation in FLFPR across cities. This is not an unexpected result although it still needs explanation, which we provide in section 3. Our second finding is more striking. FLFPR varies quite significantly across different sub-city zones, while male LFPR is nearly uniform. We analyze this variation by investigating how gender

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<sup>4</sup> See Davis (2005). UN (2015) presents trends and projections, according to which, six of the world's ten largest cities will be in the Global South.

<sup>5</sup> We want to state categorically that we are not privileging paid employment (labor force participation) over not participating in the labor force for women. However, FLFPR is a particular manifestation of gendered city spaces and we are simply using it as a reflection of how gender and space mutually determine each other.

<sup>6</sup> Throughout the paper, we use "labor force" to refer to *paid* labor force. We distinguish between paid and unpaid care work and include the former in the labor force, while the latter is typically performed in the household and is not included in the official definition of labor force. When we use the expression care work/care burden in the paper, we typically refer to the latter unless specified as paid care work. In general, richer data are available for cities in the developed world. For the US, data on work and labor force for cities is available from the Bureau of Labor Statistics: <https://www.bls.gov/sae/>.

interacts with space and other social cleavages (class, caste and religion). As we show in an econometric investigation (in section 4), the variation across the city is explained by commuting burden, care burden and educational attainment of women.

Gruesome incidents like the *Nirbhaya* case have brought to the forefront the lack of safe transportation for women in Indian cities<sup>7</sup> and challenges to urban mobility for women have been highlighted by academic studies. Yet detailed location data needed for analysis are not provided in any databases (including the National Sample Survey (NSS), see section 2 for a detailed description).<sup>8</sup>

Our socio-spatial approach (see Chetty et al. (2014) for an early application in economics) conceives space as a product of socioeconomic and historical processes. Drawing on the work of feminist geographers (e.g. Massey 1994), we show how gender relations vary within and across Indian cities (policy implications are discussed in section 5). We designed and conducted an original household survey in Hyderabad and Mumbai with detailed information on intra-city spatial units (residence and work).

There is considerable debate about FLFPR in India. Economists have largely focused on trends from surveys on Employment and Unemployment Situation of NSS. In rural India, a declining trend has been observed in recent decades. Some scholars (e.g. Rangarajan et al. 2011) attribute the decline in rural FLFPR to development, namely, to increased enrollment in education and rising household incomes, but the explanation is contested (e.g. Kannan and Raveendran 2012). Hirway (2012) argues for time-use data as a more accurate source for

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<sup>7</sup> *Nirbhaya* (“fearless”) is the name given by Indian media to the sexual assault and murder of Jyoti Singh, a physiotherapy student in New Delhi in 2012. This case garnered widespread attention and resulted in protests throughout India. Six people were convicted (<https://timesofindia.indiatimes.com/topic/nirbhaya-gang-rape>).

<sup>8</sup> Other common databases are: National Family Health Survey (NFHS), India Human Development Survey (IHDS) and decennial Census. Census contains some information on intra-city spatial units and presents transport patterns at the district level. However, it allows limited scope for individual or household-level analysis and restricts analysis on other dimensions (e.g., caste).

understanding women's work, given the nature of participation of Indian women (e.g. "sporadic", "irregular").<sup>9</sup> Studies on urban India (e.g. Klasen and Pieters 2017) document a low and stagnant trend and identify both demand-side and supply-side factors as culprits. Some studies (e.g. Naidu 2016; Rao and Vakulabharanam 2018) emphasize care obligations, arguing that women bear a disproportionate share of unpaid care work which precludes labor force participation.<sup>10</sup> We bring fresh perspective to this debate by incorporating intra-city space.

## 2. Description of Data

We use data from a spatially representative survey that we conducted in the large cities of Hyderabad and Mumbai during 2015-17. Mumbai, a global mega-city is the capital of Maharashtra state (see Figure 1) and the financial capital of India. Hyderabad is the capital of Telangana state. The Indian Census uses the following spatial hierarchy: Urban Agglomeration (UA), District, Census Ward and Enumeration Block (EB). Our survey covers Hyderabad and Mumbai UAs, by focusing on Hyderabad, Mumbai and Mumbai Suburban districts.<sup>11</sup> It contains information on several topics: demographic characteristics (e.g. household size, caste, religion), education, income, consumption, migration, work etc. Our sampling design was a multistage and stratified one. Hyderabad district is divided into sixteen Subdistricts, which we used as strata and selected 1000 households spread across 100 EBs (10 per each EB). Mumbai and Mumbai Suburban districts (together) are divided into twenty-four Municipal Wards. These are different

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<sup>9</sup> Only one time-use survey covering all regions of India exists (Hirway and Jose 2011).

<sup>10</sup> Lahoti and Swaminathan (2016) test for a U-shaped relationship between economic development and FLFPR.

<sup>11</sup> For Maharashtra, see: <https://www.maharashtra.gov.in/1128/Districts>. Mumbai UA is spread across Mumbai and Mumbai Suburban districts and parts of Thane district. At the time of our survey, Hyderabad UA was spread across Hyderabad district and parts of Rangareddy and Medak districts. Telangana was reorganized recently, see: <https://www.telangana.gov.in/about/districts>.

from and larger than Census Wards, and we used them as strata and selected households as in Hyderabad (1000 households in 100 EBs).<sup>12</sup>

### **Insert figure 1 here**

To understand the interaction between gender and other cleavages, we divide the population into groups based on space, social group (caste and religion) and class. Space is described in detail in the next section. Caste is an important social cleavage in India with Scheduled Tribes (STs), Scheduled Castes (SCs), and Other Backward Classes (OBCs) being the historically deprived groups.<sup>13</sup> As is sometimes done, we group STs and SCs together as *Dalits*. In Indian cities, Muslims are another deprived group. Gaynor and Jaffrelot (2012) and other scholars have highlighted this fact and also shown that the deprivation of Muslims is higher in urban areas (as compared to rural areas). Given this, we classify individuals into four *social groups*: Dalits (STs and SCs), OBCs, Muslims, and Others.<sup>14</sup> In the regression analysis, we use a two-fold classification, combining the first three groups as *deprived*.

Another important social cleavage in India is class. There is a well-developed literature on countries in the Global North (e.g. US, UK) that divides the population into classes using frameworks influenced by Marx and Weber (Giddens (2009) presents an overview). A comparatively smaller literature exists on India, some studies being: Patnaik (1987), Bardhan (1992) and Vakulabharanam (2010). The first two studies focus on rural/agrarian classes, whereas the third develops separate class schemas for rural and urban areas. Like in other

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<sup>12</sup> In Mumbai, we were able to administer the survey to 980 households. The data from the survey, with all relevant information and details, will be made available online in the coming weeks.

<sup>13</sup> The literature on caste is too large to summarize here. See Gupta (2000), Dirks (2001), Rawat and Satyanarayana (2016) and the references therein.

<sup>14</sup> It is important to note that “others” have a much higher proportion in Mumbai than in Hyderabad. This has a historical origin. In early modern Maharashtra, a local leader, Shivaji, mobilized a multi-caste alliance and gave them a new common identity – Marathas, who are all included in Hindu others. Maharashtra and Mumbai, therefore, have a higher proportion of others than most states in India.

countries in the Global South, the informal sector plays a substantial role in India, particularly as a source of employment (NCEUS 2008). Sanyal (2007), an influential study on the informal economy in developing countries, argues that the formal (“accumulation economy”) and informal (“need economy”) sectors are separate but also interdependent – the latter subsidizes the former (cheap labor) while also benefiting from it, through employment. We follow a broadly Marxian framework that builds on Vakulabharanam (2010) and Sanyal (2007) to divide the population into the following six classes: three in the accumulation economy (Elite, Professionals and Formal Workers); two in the need economy (Informal Owners and Informal and Self-Employed Workers) and Others (a residual category that includes retired workers). We use the information on occupation to classify individuals. We adopt an analytically convenient approximation (O’Laughlin 1999) that makes a case for household level investigations, by combining the public/domestic divide. In our analysis, for a household, we assign the highest class among its individual members to the household, e.g. elite, if the household has a member in the elite class and another in the formal worker class. At the same time, we can identify paid (and unpaid) work patterns of different individuals in these households both inside and outside the domestic space.

We present the descriptive statistics of some important variables in the next section, where we discuss gendered spaces.

### **3. Gendered Spaces of Indian Cities**

We analyze gendered city spaces at two levels. First, we distinguish among different historically constituted spaces within a city from a gendered perspective and we examine gendered intra-city mobilities, i.e., how women move from one space to another, public or

private transport and economic or cultural processes. Second, we compare across cities to show that the city-specific interaction of space and gender becomes a centrally defining feature of the city. Massey (1994) demonstrates the central role of region-specific gender relations in determining regional development in England. In the same spirit, we make comparisons across Hyderabad and Mumbai in the context of paid employment.

### **3.1 Gendered Spaces within Cities**

#### ***Gendered city-space in Hyderabad***

Hyderabad is more than 400 years old and belongs to a class of Indian “walled cities”, in which a physical wall protected the urban core.<sup>15</sup> During the colonial period, India consisted of regions that were directly administered by the British and indirectly administered kingdoms. Hyderabad was the capital city of the largest of the latter group: the Nizam kingdom. A representative (administrator) of the colonial state was resident in the city.

As a first cut at dividing the city space of Hyderabad based on its historical evolution, we divide it into four zones: Old-Walled city, Nizam’s city, British-Resident city, and Neoliberal city. As its name suggests, the first zone (Old-Walled city) is the oldest region that was constructed by the Qutub Shahi dynasty in the 16<sup>th</sup> century. It is also the poorest (lowest average per-capita income in our survey). The second zone (Nizam’s city) emerged during 18<sup>th</sup>-19<sup>th</sup> centuries when Hyderabad state was ruled by the Nizam, who broke away from Mughal rule. The third zone (British-Resident city) emerged during 19<sup>th</sup>-20<sup>th</sup> centuries and includes the area where the British resident and army (Cantonment) were stationed. Finally, we term the area

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<sup>15</sup> See Alam (1973) for a history of Hyderabad.



where the new economy emerged (a process that started in the 1970s) as the Neoliberal city.

These zones and the subdistricts of Hyderabad are depicted in figure 2a.<sup>16</sup>

### **Insert figure 2a here**

As a second cut, we draw on how axes like class, caste and religion inscribe themselves on these historically constituted zones (Table 1a). Our earlier work showed that the poorest Old-walled city and the prosperous Neoliberal zone are the least diverse in terms of class, caste or religion. The other two zones, Nizam's city and British Resident city, have more mixed neighborhoods and deliver better education and lower poverty levels for their residents.

As a third cut, when we turn to FLFPR differences across city spaces, additional insights emerge. Table 1a shows that the summary of paid employment for Hyderabad city, FLFPR (30.9%) is much lower than its male counterpart in our survey (>80%). Another notable feature is that while male LFPR is almost uniform in various zones of the city, there are significant differences in FLFPR across zones. FLFPR is lowest in the Old-walled city, highest in the Neoliberal city, and has intermediate values in the two zones that developed in the 18<sup>th</sup> and 19<sup>th</sup> centuries. The Old-walled city zone (with a high proportion of Muslims) has been excluded from the economic dynamics of the developing city, turning it into a ghetto - table 1a shows low representation of the elite and professional classes/occupations, and informal/self-employed worker households dominate. This zone also lags behind the rest of the city in the educational attainment of women, as well as employment that is somewhat women-oriented.<sup>17</sup> Commuting

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<sup>16</sup> According to the latest (2011) Census, the populations of these zones (in millions) are approximately: Old-Walled (1.60), Nizam (1.01), British Resident (1.03) and Neoliberal (0.31).

<sup>17</sup> India uses a National Classification of Occupations (NCO) that has one-digit, two-digit and three-digit codes for various occupations. According to the latest (2018-19) labor force survey, occupations with one-digit codes 2 (Professionals) and 3 (Technicians and Associate Professionals) are the top two in urban India in terms of the relative prevalence of women (difference between the proportions of men and women involved). Hence, we consider these as "women-oriented" jobs. Some examples of such jobs are: computer professionals, college and university teachers, nurses, and school teachers. 4 (Clerks) and 9 (Elementary Occupations: low-paid/working-class) also have

costs tend to be higher for women located in this part of the city given the limited nature of public transport and the range of available jobs. In contrast, the Neoliberal zone has much higher educational attainment for women, and nearby opportunities for women-oriented employment. There is a high proportion of Elite, Professional and Formal Worker households. Even in the affluent Neoliberal city, there is evidence of dependent informality (Motiram and Vakulabharanam 2020) – a high enough proportion of women come from informal labor or self-employed households. Public transport is not as prevalent in this zone as in the middling zones, but private transport such as household cars, Uber and shared auto-rickshaws contribute to mobility and FLFPR.

The two middling zones are distinct, with Nizam's city having a higher FLFPR than British Resident city. Nizam's city has emerged as the main employment hub of Hyderabad and continues to provide employment both to its own residents as well as to residents of other zones in the commercial and professional domains (including government employment). Well-developed public transport and the prevalence of commuting within this zone and between this and other zones results in a higher FLFPR than the British Resident city. The British Resident city is also a major center of military establishments, which are mostly male-dominated.

The more positive results for mixed neighborhoods from our earlier analysis does not neatly correlate with FLFPR. This puzzle can be made sense of as follows. First, it is clear from the table that the higher the formal sector presence of women (elite, professional and formal worker classes), higher the FLFPR (e.g. Neoliberal zone). Second, heightened class inequalities play an important role in increasing FLFPR at the lower end of the occupational ladder (Arruzza et. al. 2019). Women working in the formal sector tend to typically transfer the care burden they

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relatively high prevalence of women, but less so than 2 and 3. Needless to say, all jobs can be performed by both women and men.

face to informal sector women workers in their neighborhood, who are hired to perform that labor (Ehrenreich and Hochschild 2004; Beneria and Floro 2006). The physical and social isolation of the Old-walled city limits access to employment as paid care workers in professional households with working women. This lack of access increases the isolation and confinement of women in the walled city indicated by the much lower FLFPR for that zone. Low paid informal work, especially paid care work, is more easily undertaken when proximity or convenient transport makes the work consistent with performing care work at one's own home. A gender and paid employment perspective, therefore, further complicates city space. It brings care work and mobility considerations into sharper focus. We elaborate on this in section 4 using regression analysis.

**Insert Table 1a here**

### *Gendered City Space in Mumbai*

Mumbai is a newer and larger city than Hyderabad. It emerged in the early colonial era and was directly administered by the British.<sup>18</sup> As we discussed above, at present, Mumbai city is spread over two districts: Mumbai and Mumbai Suburban. The city emerged in the southern portion, which is in the former district. Population pressure, land-markets, and state policies resulted in the spread of the city towards the north and into the suburban district. 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 city. These zones are depicted in figure 2b.<sup>19</sup>

As a first cut analysis for Mumbai, we look at the historical processes that constituted these five zones. British city is the southernmost part of Mumbai, where British residents were

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<sup>18</sup> For a history, see Dwivedi and Mehrotra (1995) and Dossal (2010). The city's name was changed from Bombay to Mumbai in 1995.

<sup>19</sup> According to the latest Census, the populations of these zones (in millions) are approximately: British Neoliberal (1.22), Old Industrial 1 (1.87), Western Neoliberal (3.34), Northern Neoliberal (3.09) and Old Industrial 2 (2.93).

located during the colonial rule along with various business establishments. We added the adjective neoliberal to this zone because during and after the 1990s, this is the space that became a very important location for many of the multinational corporations that entered India in the wake of market-oriented reforms of the 1990s. Old Industrial City 1 and Industrial City 2 housed the factories and worker-residences that were created during the long waves of industrialization (mainly the cotton textile industry, but also for production of other commodities) that happened in Bombay during 1870-1940. The Western Neoliberal city (Bandra-Kurla area being an important part) is the city space that was restructured in the 1990s to incorporate financial firms and headquarters of other kinds of multinational and national businesses.<sup>20</sup> The Northern Neoliberal city developed in the 1990s from a broadly residential zone to one including information technology, films, finance and other new industries that came up after that.

**Insert figure 2b here.**

With a second cut analysis that incorporated axes like class, caste and religion, across city zones we found patterns similar to Hyderabad. In Mumbai too, the zones that have more mixed neighborhoods tend to have better development outcomes. In a different paper, using an instrumental variable regression approach, we show that the patterns of older industrialization in Mumbai that created mixed residential neighborhoods in terms of class, caste and religion have a positive impact on the development outcomes of an individual resident in various neighborhoods. The key point is that the more homogeneous neoliberal zones do not fare the best in terms of enhancing economic development for an average resident.

As a third cut (with FLFPR lens), we present some relevant details for Mumbai in table 1b. While FLFPR is higher than in Hyderabad, it is lower (35.41%) than its male counterpart

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<sup>20</sup> On Bandra-Kurla-Complex (BKC), a major business center in this area, see Lewis (2018).

(>85%). As in Hyderabad, male LFPR in different zones is nearly uniform across the city. FLFPR is relatively higher in three zones (>35.41%): British, Western and Northern Neoliberal cities and it is lower in Old industrial city 1 and 2. The neoliberal zones have a relatively high proportion of educated women and concentration of households in the formal sector (elite, professional and formal worker). In the three neoliberal zones that are huddled together in FLFPR terms, the percentage of women-oriented jobs is also relatively high. In Old Industrial cities 1 and 2, which house the poorer residents of Mumbai (e.g. Industrial city 2 includes M ward, where Dalits were settled in a concentrated population), FLFPR is lower. In Industrial city 2, the educational attainment of women is also the lowest among all the five zones, and a high proportion of households are in the informal sector.

It is noteworthy that all of the relatively far-flung neoliberal city spaces in Mumbai exhibit relative homogeneity in terms of FLFPR. This is mainly because of the commuting distinctions between Hyderabad and Mumbai that are explained below. As in the case of Hyderabad, higher formal sector presence (elite, professional and formal worker classes) of women in the neoliberal zones and the dependent informal paid employment that it generates is the main explanation for the higher FLFPR in these neoliberal zones, a complex intersection of class, gender and space.

**Insert table 1b here**

### **3.2 The Differently-Gendered Cities of Hyderabad and Mumbai**

In popular lore, as well as in the academic literature (World Bank 2011), Mumbai has always been considered to be a safe city space for women. This has been attributed to a wider prevalence of safe public transport, and a much longer history of urban experience that allows women to travel longer distances and even late into the evening. Commuting patterns of men and

women are similar in Mumbai (trains, buses and private transport), unlike in other Indian cities (Rukmini 2019). This does not mean that women do not suffer from indignities or harassment during travel, but in relative terms, Mumbai is better than most other Indian cities. In contrast, Hyderabad lacks decent public transport. In fact, until 2016, local trains did not cover a wide network, so much of the commuting still happens through buses or shared auto-rickshaws.

The first point of comparison concerns levels of FLFPR in the two cities. Our a priori expectation was that there would be a higher FLFPR in Mumbai as compared to Hyderabad. We see this in the survey data: 35.4% (Mumbai) as compared to 30.9% (Hyderabad). The greater safety of commuting in the city and the higher demand and supply of women-oriented jobs, both at the higher and lower ends of the class ladder (Table 2b) are the main reasons. Mumbai has a higher proportion of working women from the informal and self-employed classes (Table 2b) compared to Hyderabad (Table 2a). Many of these are slum dwellers, with Mumbai having a much higher proportion (41.3%) than Hyderabad (31.9%).<sup>21</sup>

A second interesting comparison between the two cities is the within-city differences in FLFPR. As compared to Mumbai, Hyderabad has larger variation of FLFPR for women across the zones. We attribute this to the fact that commuting is harder for women in Hyderabad, and they tend to work less if it entails a longer commute. In Mumbai, on the other hand, commuting in local-transit trains has a much longer history and women have converted necessary commuting into a complex socio-spatial phenomenon. Local trains in Mumbai have compartments/carriages that are exclusively for women. References in media and popular culture (and discussions with Mumbai women commuters) indicate that women in Mumbai have adapted to their commutes by transforming an inert movement between points A and B into a rich socio-

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<sup>21</sup> Figures from 2011 Census: [censusindia.gov.in](http://censusindia.gov.in) › On\_Slums-2011Final

cultural space. First, women use this space to construct social networks, and as a pleasurable “women’s only space” where they can share consumption of various home-made items or compare fashion purchases.<sup>22</sup> Second, women tend to perform some of the care-related work (e.g. cutting vegetables for evening meals) during their commutes.<sup>23</sup> Third, women also produce commodities that can be sold among themselves (e.g. embroideries or night gowns). Overall, commuting is not merely a necessary evil but becomes a space of new expectations, fulfilment and even pecuniary benefits.

Table 2a (Hyderabad) and 2b (Mumbai) report the FLFPR share of the population, and share of the female labor force for sub-groups (classes or social-groups).<sup>24</sup> A sub-group may be overrepresented (underrepresented) in the labor force relative to its population share. We focus on women belonging to different social-groups and classes below.

In Hyderabad, for social groups, we observe that Dalit and OBC women are overrepresented in the labor force, whereas Others are underrepresented. The former (lower castes) are involved in less-remunerative occupations. Muslims are significantly underrepresented in the labor force. When it comes to class, the notable observation concerns women from informal and self-employed worker households, who have a much lower LFPR than the ones in the formal sector.

### **Insert table 2a here**

In Mumbai, Dalits are slightly underrepresented, OBCs are slightly underrepresented, and Others are represented at their proportion. The truly notable result is that Muslims are over-

<sup>22</sup> E.g., *Ladies Special* (<https://www.imdb.com/title/tt1719849/>), a TV program.

<sup>23</sup> E.g., <https://scroll.in/video/804816/the-unique-rhythms-of-life-on-mumbai-s-local-trains;>  
<https://www.cntraveller.in/story/mumbai-local-train-7-things-i-miss-andheri/>

<sup>24</sup> Consider a population that is divided into  $G (>1)$  subgroups. Let the size, share and  $FLFPR$  of sub-group  $g$  be denoted:  $N_g$ ,  $s_g$  and  $FLFPR_g$ , respectively. Total  $FLFPR = \sum_{g=1}^G s_g FLFPR_g$  and contribution of  $g$  is:  $\frac{s_g FLFPR_g}{FLFPR}$ .

represented unlike the case in Hyderabad. Coming to classes, women from elite and professional households tend to have higher LFPR. Women from informal and self-employed households have lower LFPR, although they participate much more than their counterparts in Hyderabad.

**Insert table 2b here**

In both Hyderabad and Mumbai, gender interacts with class, caste and religion in significant ways. Three points need emphasis in the overall comparison. Muslim women are under-represented in Hyderabad's labor force (not so in Mumbai). Muslim women's participation shows that mobility and access (more than religion or "cultural choice") determines FLFPR. The fact that the walled city in Hyderabad that has high Muslim concentration has been ghettoized while Muslims are not as ghettoized in Mumbai, is the key to making sense of this. Second, Dalits are overrepresented in Hyderabad but not in Mumbai, again reflecting ghettoization (in Mumbai's M Ward) as compared to Hyderabad, increasing the commuting burden for them. Third, Mumbai has overall a higher proportion of women from informal and self-employed families in paid employment in comparison to Hyderabad.

We find that gender is central to the experience and development of the cities of Hyderabad and Mumbai. Walled cities, ghettos, transportation infrastructure and class inequalities weigh heavily in the determination of FLFPR. In the next section, we establish how space affects gender outcomes through an econometric investigation of FLFPR.

#### **4. Econometric Analysis of FLFP**

In the analysis above, we have looked at how gender interacts with class, social group and space. However, a multivariate analysis that simultaneously incorporates spatial and individual- and household-level variables can shed more light on participation of women in the



labor force. At the individual and household levels, key variables are education, care burden, main occupation/source of income for the household and the social group to which the household belongs. More education makes one eligible for better-paid jobs, potentially in the formal sector. One would also expect that better-educated women are more desirous of paid work. Women are, by norm in a patriarchal society, disproportionately obligated to undertake household care work. The need to do more care work for one's own household hinders the ability to participate in the labor force (unless transportation or proximity enables participation in paid care work that is consistent with own-household care work). All else being equal, high income from other sources (e.g. husband's employment) alleviates the necessity for paid work and may raise the reservation wage, making withdrawal from the labor force preferable to low-wage labor. Social norms and discrimination can have differential impacts on the ability/desire of women belonging to different social groups. Therefore, it is important to control for this household characteristic. The second set of factors is spatial.<sup>25</sup> If safe and adequate transport facilities are available in the neighborhood (zones, discussed in section 3), and the commuting is not too costly in terms of time, then this would facilitate participation of women in the labor force because women can commute to work with ease. This would also increase their ability to combine paid work with the performance of care work.

Given these two sets of factors, to shed further light on the determinants of female labor force participation (*FLFP*), we estimate the following model:

$$FLFP_i = \alpha_1 + \beta_1 X_i + \gamma_1 S_i + u_i \quad (1)$$

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<sup>25</sup> These could also be described as “demand-side”, i.e., related to availability of jobs and amenities, most importantly transport infrastructure. We prefer the adjective “spatial” because what is important is that these jobs and amenities are available in the neighborhood/spatial unit of residence.

$i$  indexes individuals.  $FLFP_i = 0$  if  $i$  participates in the labor force and 0 otherwise.  $X_i$  is a vector of characteristics of the individual  $i$  and the household to which she belongs.  $S_i$  describes the spatial unit that  $i$  resides in, and  $u_i$  is an idiosyncratic error term. As discussed above, under  $X_i$ , we include a variable that captures care burden and dummies for education, occupation of the household and deprived status. We controlled for the occupation of a household by including a dummy for whether the household is an informal and self-employed one or not.<sup>26</sup> We model the care burden with the ratio of the number of children and male adults in the household to the number of adult women, a version of the dependency ratio that captures both the need for care and the potential of shared care across other women in the household.<sup>27</sup> Under  $S_i$ , we include the commuting ease/burden. Given the importance of zones (discussed in section 3), we proxy for commuting burden using the average distance to work in terms of zones traveled by men living in the neighborhood. We use the average for *men* to avoid the problem of endogeneity. We use Enumeration Block (EB) as the neighborhood because it is the lowest spatial unit and since commuting options (e.g. public transport) are similar for residents of the same EB.

Table 3 presents results from probit regressions. The results for deprived status of the household are on the lines that we described in the decomposition analysis. The positive and statistically significant coefficient on educational attainment confirms our prior expectation that better educated women are more likely to be part of the labor force. The dummy for occupation is not statistically significant.<sup>28</sup> The negative and statistically significant coefficient on dependency ratio also confirms our hypothesis that care work hinders FLFP. As we discussed

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<sup>26</sup> Note that this dummy depends largely upon the occupation of a male member (e.g., father or husband) and therefore whether a woman participates in the labor force or not has no bearing on it (i.e., no issue of reverse-causality).

<sup>27</sup> We considered individuals younger than 18 years as children. For an overview of care work in developing countries and its impact on economic development, see Folbre (2018).

<sup>28</sup> The result on education is consistent with some studies (e.g., Kannan and Raveendran 2012) and in conjunction with the result on occupation casts doubts on the idea that increased incomes are resulting in withdrawals.

earlier, women face many difficulties in traveling to work within Indian cities. As we can observe from table 3, in both cities, women living in areas characterized by a high commuting burden are less likely to participate in the labor force.

**Insert table 3 here**

What can we say about the magnitudes of the impact of care and commuting? To address this question, we consider a woman who has higher secondary or higher education, belongs to a deprived household, is in the informal or self-employed sector, has an average dependency ratio, and lives in an average commuting neighborhood.<sup>29</sup> The marginal effects for dependency ratio (about -0.04) are comparable for the two cities and imply that a unit increase in the dependency ratio decreases the probability of being in the labor force by about 4 percentage points. The marginal effects of commuting are also similar for the cities (about -0.2). Increase in commuting burden by a unit (i.e. average distance by a zone) decreases the probability of being in the labor force by about 20 percentage points.<sup>30</sup>

## 5. Discussion and Conclusions

Our analysis above establishes how space and gender influence each other and how social cleavages like caste and class interact with gender. We would like to reiterate our findings that FLFPR varies across cities as well as different zones within cities. Neoliberal city zones have higher FLFPR, mainly because they have a higher proportion of women coming from households with privileged class and social backgrounds that tend to have higher FLFPR. These households also provide paid care work to informal female workers. Yet, these zones fare worse in overall

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<sup>29</sup> Note that since this is a probit regression, we cannot just examine the coefficient of the variable that we are interested in (care or commuting), but we must consider the values of other variables.

<sup>30</sup> We performed several robustness checks (e.g., different model specifications) and our main results go through. We do not report these in the interests of space, but they are available on request.

development indicators (e.g. education and poverty) than those neighborhoods that are more mixed along class and social group axes. State policies should address heightened class-inequalities within neoliberal zones and target neighborhoods (particularly ghettos) left behind by neoliberal economic policies.

The three factors that emerge from our econometric investigation to understand FLFP are: commuting ease, care burden in households, and women's education. These findings resonate with women's experiences in cities everywhere, both in developed (e.g. Barbanchon et al. 2019) and developing countries (Quiros et. al. (2014) for Argentina; Anand and Tiwari (2006) for India).

For commuting, the role of public transport, and the emergence of a commuting culture among women may prove crucial. Public transport can add to the objective and subjective understandings of safety and access to work, especially for women who don't own private vehicles.<sup>31</sup> The policy conclusion of this analysis is that cities in general (and Indian cities in particular) should improve their systems of public transport for several reasons (e.g. environmental, traffic congestion), but also to encourage women's voluntary paid work.

As many analyses of women's work point out, a disproportionate share of care work is borne by women. This can contribute to women opting out of paid work, even when they are qualified and want to work. Reproductive labor inside Indian households has been shaped by market-oriented reforms that have increased the time needed for women to engage in child care, health care or the procurement of water (water tankers or public water taps that work only during fixed times of the day). There has been a failure to expand state services, especially for informal workers residing in urban slums and squatter settlements. The state should improve the

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<sup>31</sup> In Indian cities, some measures for safety and comfort of women (e.g., through reserved seats) are in place. In our opinion, these are inadequate and need to be expanded.

provisioning of these care services that ease the burden of households. Of course, intra-household work-sharing norms also need to change, to make women's decisions to perform paid or unpaid work a matter of voluntary choice rather than a coerced one.

Educational enrollment and attainment among Indian girls and women have increased considerably in recent years due to state policies.<sup>32</sup> However, effects of these policies will arrive with a lag, in the future. The state has to play a more proactive role in this regard by ensuring a uniform quality of education. Mumbai has performed much better in college education or above for women (Tables 1a and 1b), and this is likely to be due to the early emphasis on girls' education in Bombay presidency (under British rule) from the 1820s by Christian missionaries (American, Scottish and British), linguistic societies (Gujarati, Parsi and Marathi) as well as Hindu Social Reformers (from 1880s onwards). Several incentive schemes were also devised to further women's education, albeit confined to strictly defined women's roles (Anagol-McGinn 1994). The difference between the two cities that started in the colonial/British period continues to the present.

The socio-spatial framework adopted in this paper helps analyze factors such as commuting, care work, availability of female-oriented jobs, women's education and intra- or inter-city space that are all closely intertwined in determining FLFPR. Our key contribution is to show that work patterns of women in cities reflect both socio-economic considerations as well as geography (in the spirit of Doreen Massey (1994)).

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<sup>32</sup> See the studies that we cited in the Introduction, e.g., Rangarajan et al. 2011. This increased enrollment is reflected in the surveys on Employment and Unemployment Situation conducted over various years. The previous Indian governments adopted measures to improve enrollment in education notably Sarva Siksha Abhiyan (Education for All) and Right to Education (RTE) Act.

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**Table 1a: Space, Social Group, Class and Gender (Hyderabad)**

	Old-Walled	Nizam's	British	Neoliberal	Hyderabad
<b>Social Group<sup>a</sup></b>					
Dalit (ST and SC)	12.12	12.67	20.56	16.01	14.58
OBC	27.92	49.81	60.08	43.46	42.37
Muslim	54.05	18.48	4.09	16.99	30.25
Others	5.92	19.05	15.27	23.53	12.80
	100	100	100	100	100
<b>Class<sup>b</sup></b>					
Elite	3.63	9.14	4.79	14.38	6.10
Professional	3.80	18.57	8.28	17.65	9.64
Worker (Formal)	28.42	22.76	34.53	21.90	27.98
Owner (Informal)	13.40	9.9	8.28	6.54	10.77
Worker (Informal) & Self-Employed	43.16	36.66	39.82	31.04	39.82
Others	7.59	2.95	4.29	8.50	5.69
	100	100	100	100	100
<b>Gender</b>					
College or higher <sup>c</sup>	9.54%	13.71%	17.33%	19.08%	13.23%
LFPR (Women) <sup>d</sup>	24.65%	37.88%	31.30%	38.94%	30.91%
NCO 2 or 3 Jobs <sup>e</sup>	14.26%	28.18%	18.04%	28.57%	20.30%

Source: Authors' computations from survey data.

Notes: a. Percentages of adults (older than 18 years, both male and female) who belong to various social groups.

b. Percentages of adults (older than 18 years, both male and female) who belong to various classes of households.

c. Figures for adult women. We included diploma after high school under college.

d. Figures for adult women.

e. One-digit National Classification of Occupations (NCO). 2: Professionals; 3: Associate Professionals and Technicians. Percentage of all (male and female) workers.

**Table 1b: Space, Social Group, Class and Gender (Mumbai)**

	B. Neo	O. Ind 1	W. Neo	N. Neo	O. Ind 2	Mumbai
<b>Social Group<sup>a</sup></b>						
Dalit (ST and SC)	19.04	24.15	16.35	19.49	18.62	19.14
OBC	13.96	19.65	9.70	8.15	20.54	12.86
Muslim	36.55	11.92	19.49	8.90	11.90	15.96
Others	30.46	44.28	54.46	63.45	48.94	52.04
	100	100	100	100	100	100
<b>Class<sup>b</sup></b>						
Elite	10.91	0.64	5.94	4.50	3.84	4.88
Professional	5.58	8.21	9.35	9.00	6.53	8.27
Worker (Formal)	23.86	26.41	26.31	22.12	19.00	23.86
Owner (Informal)	6.09	6.92	7.08	6.00	12.67	7.42
Worker (Informal) & Self-Employed	52.03	55.07	47.99	55.2	55.85	52.73
Others	1.52	2.74	3.32	3.19	2.11	2.83
	100	100	100	100	100	100
<b>Gender</b>						
College or higher <sup>c</sup>	21.31%	21.63%	24.32%	20.08%	14.58%	21.03%
LFPR (Women) <sup>d</sup>	38.89%	32.54%	38.64%	35.43%	28.90%	35.41%
NCO 2 or 3 Jobs <sup>e</sup>	11.56%	12.86%	15.90%	15.49%	12.00%	14.24%

Source: Authors' computations from survey data.

Notes: a. Percentages of adults (older than 18 years, both men and women) who belong to various social groups.

b. Percentages of adults (older than 18 years) who belong to various classes of households.

c. Figures for adult women. We included diploma after high school under college.

d. Figures for adult women.

e. One-digit National Classification of Occupations (NCO) for women in the labor force. 2: Professionals; 3: Associate Professionals and Technicians. Calculated over those who are working (i.e. have an NCO code).

**Table 2a: Results of Decomposition (Hyderabad)**

	Share	FLFPR	Contribution
<b>Social Group</b>			
Dalit	15.35%	36.28%	18.02%
OBC	43.18%	37.02%	51.73%
Muslim	27.41%	20.57%	18.25%
Others	14.06%	26.40%	12.01%
	100%	30.91%	100%
<b>Class</b>			
Elite	7.49%	40.95%	9.92%
Professional	10.56%	31.08%	10.62%
Formal Worker	29.12%	33.82%	31.87%
Owner (Informal)	9.35%	35.11%	10.62%
Worker (Informal) & Self-Employed	37.12%	29.62%	35.57%
Others	6.35%	6.74%	1.39%
	100%	30.91%	100%

Source: Authors' computations from household survey data.

Notes:

- a. All computations for adult women (older than 18 years).
- b. For details of the decomposition procedure, see section 3.

**Table 2b: Results of Decomposition (Mumbai)**

	Share	FLFPR	Contribution
<b>Social Group</b>			
Dalit	19.01%	34.02%	18.27%
OBC	12.54%	30.19%	10.69%
Muslim	14.91%	42.32%	17.82%
Others	53.55%	35.19%	53.23%
	100%	35.41%	100%
<b>Class</b>			
Elite	5.6%	59.16%	9.36%
Professional	9.15%	35.34%	9.13%
Formal Worker	25%	38.17%	26.95%
Owner (Informal)	7.1%	27.77%	5.57%
Worker (Informal) & Self Employed	49.84%	33.70%	47.44%
Others	3.31%	16.67%	1.56%
	100%	35.41%	100%

Source: Authors' computations from household survey data.

Notes:

- a. All computations for adult women (older than 18 years).
- b. For details of the decomposition procedure, see section 3.

**Table 3: Probit Regression for Female Labor Force Participation**

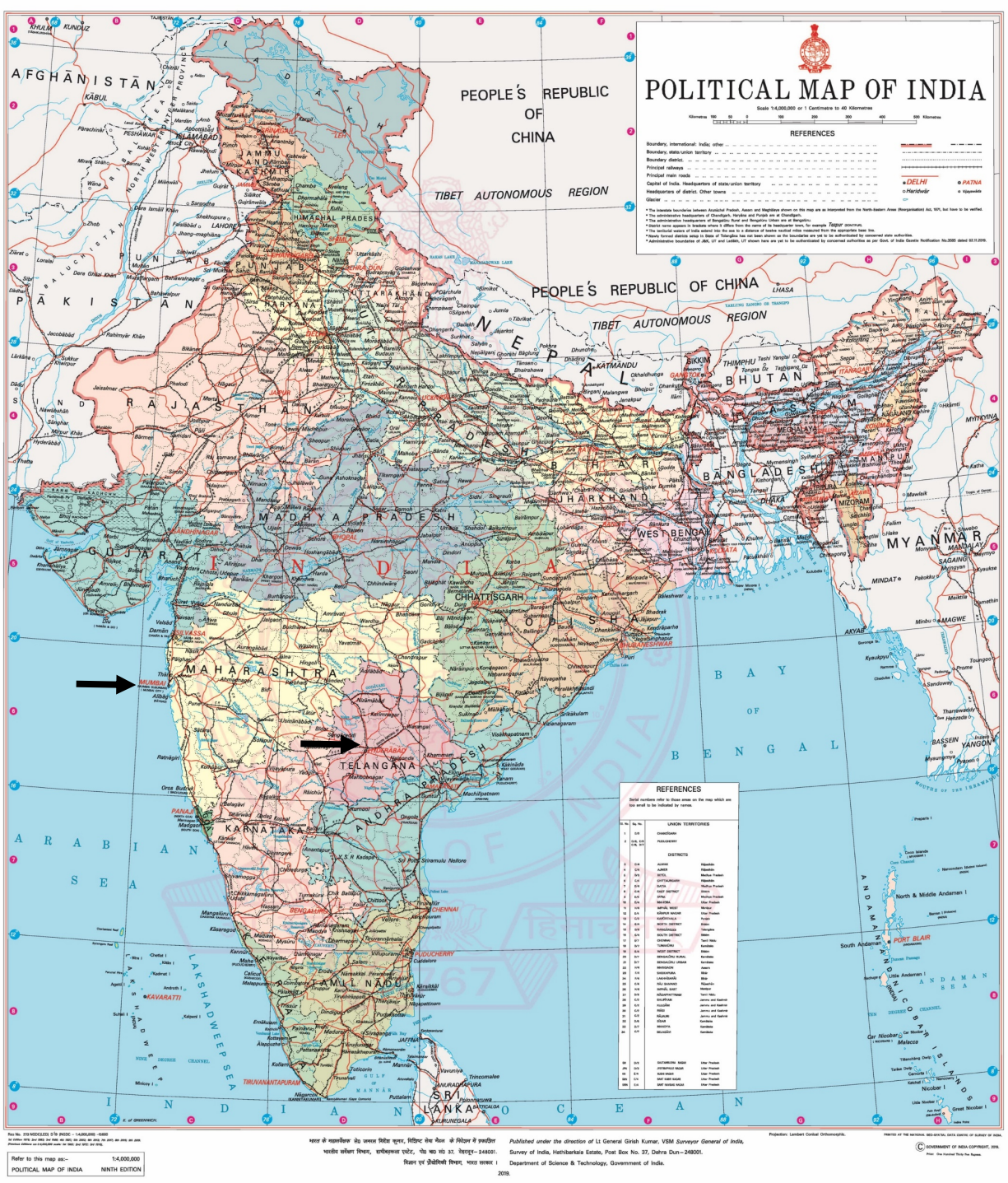
(Dependent Variable: 1 if a woman participates and 0 if not)

	Hyderabad	Mumbai
Belongs to a deprived household	0.240** (0.115)	0.118 (0.078)
Higher Secondary or higher education	0.253* (0.083)	0.155** (0.080)
Belongs to an informal or self-employed household	0.011 (0.082)	-0.007 (0.078)
Dependency Ratio (children and male adults/women)	-0.091* (0.031)	-0.104* (0.034)
Lives in a neighborhood with high commuting burden	-0.502* (0.097)	-0.570* (0.066)
Constant	0.011 (0.181)	0.539* (0.125)
<i>N</i> ( <i>Chi</i> <sup>2</sup> )	1235* (52.38)	1189* (96.37)

Notes:

- a. Sample restricted to women older than 18 and 60 years or younger.
- b. Standard Errors in parentheses. \* Statistically significant at 1%, \*\* Statistically significant at 5%.

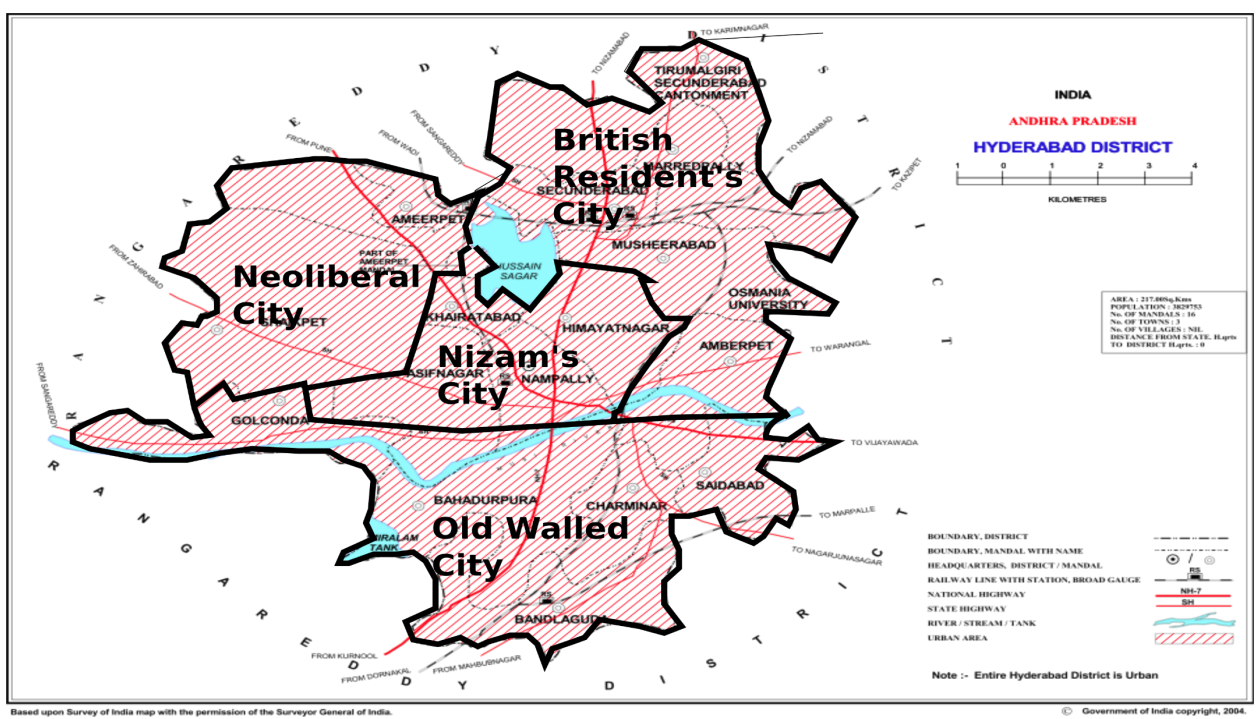
Figure 1: Location of Hyderabad and Mumbai



Source: Survey of India, Government of India

(<http://www.surveyofindia.gov.in/files/Political%20Map%20of%20India.jpg>).

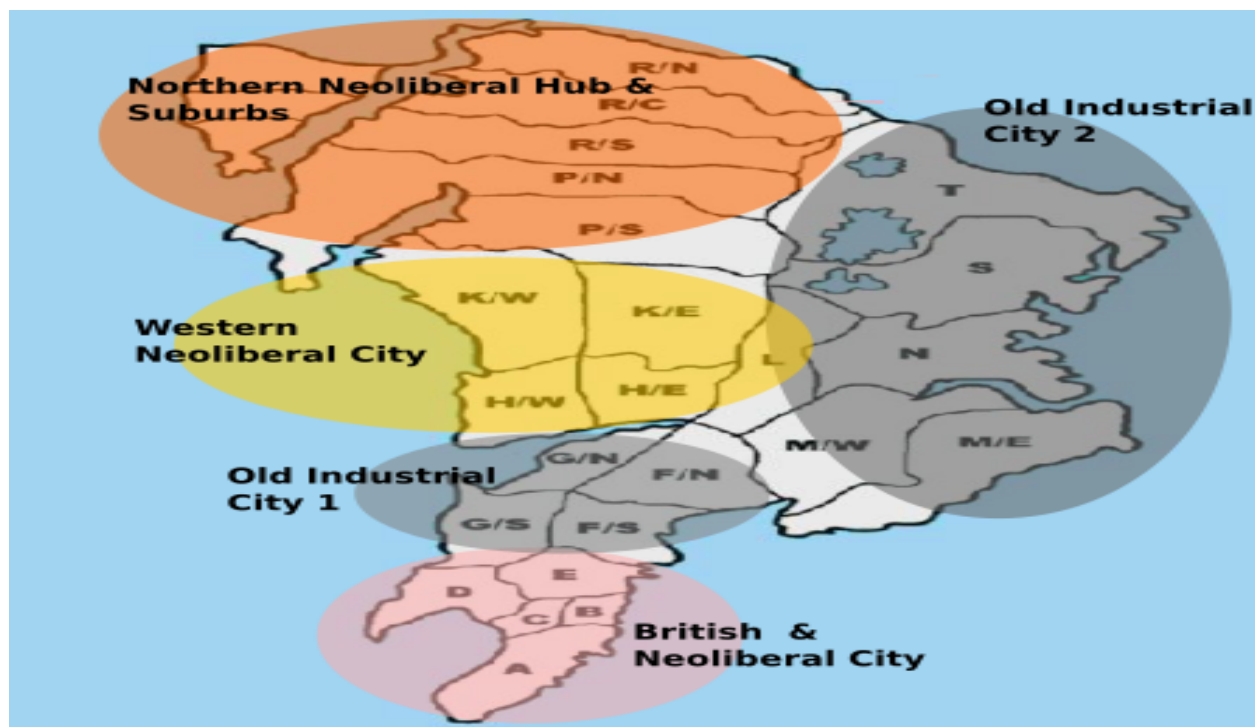
Figure 2a: Map of Hyderabad District with Sub-districts and Zones



Source: District Census Handbook, Census of India 2011. We overlaid the zones on the map provided by the Census.



Figure 2b: Map of Mumbai with Zones



Source: Municipal Corporation of Greater Mumbai (<http://dm.mcgm.gov.in/ward-maps>). We overlaid the zones on the map.