General Article

Gender, Social Change and Urbanisation in Four North Indian Clusters

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Abstract

Urbanisation in India is reshaping established social and economic patterns of behaviour in ways that scholars are struggling to analyse. This article introduces this special issue presenting new empirical research on the interconnections between gender, social change and urbanisation in India. It does so by relying on a unique dataset drawn from nearly 15,000 households across four consequential urban clusters—Dhanbad, Indore, Patna and Varanasi—in North India. The collection of articles in this issue informs new inquiries into women's employment, women's agency and the construction and shaping of social attitudes. Specifically, the articles disentangle the practical barriers to women's economic empowerment, measure how employment and household dynamics shape women's agency and explore ways in which status hierarchies and variation in access to information colour women's social attitudes and political preferences. Collectively, they demonstrate the uneven nature of gender empowerment in the shadow of an urbanising, but highly stratified economy and society.

India's Urban Future

By the end of the first decade of the twenty-first century, for the first time in human history, over half of the world was living in urban areas. The share of urban dwellers rose to 56 per cent in 2020 and is expected to further increase to 68 per cent by 2050. In the next three decades, the global urban population is predicted to grow by 2.5 billion, while the world's rural population is expected to shrink further (United Nations, Department of Economic and Social Affairs, Population Division, 2019).

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Nowhere is this transition more apparent than in India, which is expected to see its urban population rise from 338 million (as per official census data) in 2010 to 875 million in 2050 (Dhar, 2012). The projected increase of around half a billion between 2010 and 2050 will be the largest rural-to-urban transformation in the world, with the increase surpassing China's massive urban transformation during this period. One study examining the fastest growing cities in the world between 2019 and 2035 (as measured by the size of their economies) found that all 10 top-ranking cities were located in India (Wood, 2018).

India's urbanisation is both 'messy and hidden' (Ellis & Roberts, 2016). It is 'messy' in that, as per India's 2011 Census, 65.5 million Indians lived in urban slums and about one-eighth of the total urban population lived below the national poverty line. India's urbanisation is also 'hidden' in that commonly used metrics routinely underestimate its extent. India's official definition of urbanisation is unique in that it is based on the intersection of three parameters—size, density and economic activity—whose exacting criteria almost certainly discount how urbanised India really is (Denis & Marius-Gnanou, 2011; Roy & Pradhan, 2018; Uchida & Nelson, 2010).

Given the sheer demographic magnitude of urbanisation unfolding in India, understanding the political, economic and social implications of this massive structural shift is vital for the country's future.

Theoretical Motivations

Urbanisation is as much a social process—transforming behaviour, culture and social institutions over time—as it is an economic and spatial process. Urbanisation has the power to transform core societal organisations such as the family, the nature and density of social interactions, the types of work and diversity of occupations, and personal autonomy. Cities are sites of social change that offer possibilities for social mobility by disrupting the social stratifications of rural societies (Kapur, 2017). By social change, we refer to the ways in which the rules governing a given social structure undergo redefinition or reinvention on account of endogenous and exogenous changes.

India's rapid urbanisation begs the question: What does the transformation of settlement patterns mean for social hierarchies and social cleavages in the country? Will some hierarchies be amplified, and others attenuated or transformed? In particular, how will urbanisation affect the social norms and practices that govern the economic, political and social agency of women, who account for about half of India's population?

This special issue attempts to locate answers to these questions in order to provide an overall assessment of how gender, urbanisation and social change intersect in twenty-first-century India. The articles draw on data from a survey undertaken during January–August 2019 by the Center for the Advanced Study of India at the University of Pennsylvania, with support from the Ford Foundation. The sample consists of approximately 15,000 randomly sampled households across four north Indian urban clusters: Dhanbad (Jharkhand), Indore (Madhya Pradesh), Patna (Bihar) and Varanasi (Uttar Pradesh). Our definition of an urban cluster captures the core city, small urban areas in the periphery, as well as peri-urban villages that are economically dependent upon the city. Therefore, the analyses look at the variation across settlement types spanning the rural–urban spectrum. Details about sampling strategy, sample demographics and survey instruments can be found in Appendix A.

While the articles in this special issue are motivated by a concern with India's low (and, according to some measures, declining) female labour force participation (FLFP), they also focus on the larger ecosystem within which labour markets function.[1] In doing so, they bring to light new gender-disaggregated data on labour markets, social attitudes, empowerment and individual agency and media exposure (see Raman [2020] for a discussion of how the lack of gender-disaggregated data in India hampers policymaking efforts).

This compilation is driven by the recognition that a comprehensive study of women in the labour force requires a nuanced understanding of multiple complex issues. These include social norms, intra-household inequalities, patterns of mobility, social and political preferences and structural changes such as urbanisation and shifting labour markets and occupational changes (McKinsey Global Institute, 2015). Rather than isolating one or two of these factors, the intellectual approach of the authors in this special issue is to understand how these factors act in equilibrium, that is, how these factors are interconnected and how they inform the problem as a connected whole.

Case Selection

According to the 2011 Census, the 'Hindi belt'—the region in India where the majority of the population speaks the Hindi language as its mother tongue—had a population of a little over 562 million, accounting for nearly half of India's population. At the same time, only 24 per cent of the Hindi belt lived in urban areas, well below the all-India average of 31 per cent, according to the 2011 Census.

While the Hindi belt as a whole remains a laggard in terms of urbanisation and economic development, there is significant variation in economic dynamism across the region. Most importantly, the Hindi belt fares poorly both in terms of FLFP and women's empowerment. Thus, the Hindi belt is a particularly interesting region to understand the complicated interplay between urbanisation, economic growth and gender inequality.

This study examines four urban clusters: Dhanbad (Jharkhand), Indore (Madhya Pradesh), Patna (Bihar) and Varanasi (Uttar Pradesh). The differences—in terms of age, economic dynamism and geography—across these four urban clusters allow us to unpack variations in social change across different economic conditions.

Patna and Varanasi are among the world's oldest continuously inhabited cities, stretching over nearly three millennia. As ancient cities on the banks of the Ganges River, their extensive histories over multiple millennia provide rich resources from which to draw, but both cities have seen their economic vitality weaken. Patna's principal economic ballast comes from its status as the capital of the state of Bihar, with government jobs being the principal well-paying formal sector jobs. Varanasi's pilgrimage status had made it a major tourist destination for both domestic and foreign tourists, and the attendant service sector jobs are its major economic drivers. It has one large public sector manufacturing industry (Banaras Locomotive Works) and rich traditional artisan and crafts industries, but some of them (e.g., the Banarsi sari) have seen declining fortunes.

On the other hand, Dhanbad and Indore experienced a rapid economic rise in the twentieth century, particularly after India's independence, although their core economic activities—finance and trading in Indore, and mining and steel in Dhanbad—are very different. These differences have contributed to radically different urban growth rates, with Indore being the fastest growing urban area in the sample in recent years and Dhanbad the slowest.

Indore's founding dates to the sixteenth century. It was part of the princely Holkar state and, after its merger into the Indian Union, was briefly the summer capital of the state of Madhya Bharat. Following the reorganisation of Indian states in 1956 and the creation of the state of Madhya Pradesh, the state capital moved to Bhopal and Indore emerged as the state's commercial capital.

The youngest city in the sample is Dhanbad, whose history is less than a century old. Its rise was largely due to the discovery of rich deposits of coal in the proximity of the city. Two coal public sector units (PSUs) are the city's largest employers. As is often the case with mining and minerals, there is evidence that they have ushered in a local 'resource curse'. Dhanbad has long been plagued by a 'coal mafia' and the related gang wars and violence have undoubtedly stymied the city's growth.

It is also important to note that these urban clusters have formed around so-called 'tier-2' cities in India—reasonably large urban agglomerations with surrounding rural areas—with populations of approximately 1 to 2 million in the core city according to the 2011 Indian Census. India's tier-2 cities are important as they are large enough cities to draw labour from surrounding areas, but they are not major destinations for migrants all across India such as the 'megacities' of Ahmedabad, Bengaluru, Chennai, Delhi, Hyderabad, Kolkata, Mumbai and Pune. These cities are, therefore, natural locations to assess the impacts of often haphazard urbanisation without major selection effects on the population due to high in-migration from outside the state.

Economic and Population Dynamics

To illustrate the variation in economic and demographic dynamism of the four cities, in the absence of direct economic measures, we explore three variables: population, built up land area and night lights. The data are primarily sourced from satellite imagery.[2]

The most straightforward measure of dynamism is the population growth in an urban cluster, which we measure through the Census and gridded population from satellite imagery. But these measures suffer from the need to define administrative boundaries. As we describe in Appendix A, much of the population that is connected to a city is not counted in Indian administrative definitions.

Accordingly, we use two other measures to characterise the dynamism of our urban clusters: night light data and land use data. Night light data from satellite images is a commonly used measure to assess the delivery of public goods and economic activity (Donaldson & Storeygard, 2016). However, it is hard to determine whether changes in economic activity are due to the changing composition of the underlying population, or due to changes in economic productivity and public service provision. On the other hand, land use data, in particular the proportion of built-up area from satellite images, is an effective way to measure changing densities and growth in the population but may be less effective for understanding changes in underlying economic productivity.

While any single measure may have its drawbacks, taken together, these three measures provide a more comprehensive picture of how the urban landscape has changed in our sites of study.

Population

In 2001, Patna was the largest of the four cities (with a population of around 1.7 million living in the urban agglomeration of Patna), due in part to its long history and its status as the capital of Bihar (Table 1). Indore, with 1.5 million people, was the second largest city in our sample. Between 2001 and 2011, Indore enjoyed the highest growth and, as of 2011, was the most populous city in the sample with a population of 2.2 million compared to Patna's 2 million.

Although Patna's population also grew—in the aftermath of the bifurcation of Bihar in 2000—the state was left with relatively few industrial clusters. This, together with the state's continued rapid population growth (the highest in India), and improvements in the state's economy—especially after 2010—have led to the city's expansion.

Varanasi grew less rapidly in this period; it added just over 200,000 inhabitants to its population in the decade between 2001 and 2011. Unlike Patna, which is more than four times larger than the next biggest city in Bihar (Gaya), Varanasi is the sixth largest city in Uttar Pradesh. While Uttar Pradesh's economic growth has been anaemic, its population growth rate is one of India's highest, which is likely the principal driver of Varanasi's population growth. However, since 2015, the city has served as Prime Minister Narendra Modi's parliamentary constituency, and new infrastructure investments have given the city fresh momentum.

Table 1. Census Population of Sample Cities, 2001–2011

Urban Agglomeration	2001	2011
Patna	1,697,976	2,049,156
Varanasi	1,203,961	1,432,280
Indore	1,506,062	2,170,295
Dhanbad	1,065,327	1,196,214

Source: Census of India, 2001 and 2011

Dhanbad is the second largest city in Jharkhand, sandwiched between the industrial city of Jamshedpur and the state capital, Ranchi. This might be a reason why it has had the lowest population growth among the four cities in our sample.

One gets a different impression of the four cities in our sample if one refers to population estimates derived from census data calculated through 1-kilometre (km.) grid cells, as captured by satellite imagery (Table 2). This dataset, compiled by the United States National Aeronautics and Space Administration (NASA), distributes population data from census and administrative units to 30 arc-second (approximately 1 km.) grid cells.[3] According to this data, both the levels and growth of urbanisation in our four clusters are notably higher. As of 2010, Patna had the largest population (4.6 million), more than twice as large as Indore. And, by 2020, that gap had not closed much despite higher growth in the latter.

Land

One sees yet another picture using data on built-up land area (Figure 1).[4] Here, we see the maximum expansion in the case of Dhanbad (albeit from a low base), with Varanasi stagnating. Indore, which already had the largest land footprint, has further expanded, while Patna has seen an uptick in more recent years. One may reasonably conclude that many of the differences between the measures of land use and population data are due to the precise set of administrative definitions used.

Night Lights

Another indicator of economic dynamism is the intensity of night light data.[5] Figure 2 plots data for the average radiance in the month of January from 2013 to 2020. The dominance of Indore over the period is clear. Patna, which exhibited the lowest radiance in 2013, has sharply improved, especially in the last few years. Dhanbad, on the other hand, has seen almost no change in this period, while Varanasi displays a more mixed pattern. These patterns are consistent with popular assessments of economic change in our sites of study over the past decade.

Table 2. Gridded Population, 2000–2020 (in thousands)

Year	Dhanbad	Patna	Indore	Varanasi
2000	2,309	3,717	1,616	3,285
2005	2,446	4,139	1,863	3,559
2010	2,591	4,609	2,147	3,856
2015	2,745	5,133	2,475	4,177
2020	2,908	5,716	2,853	4,526
Growth (%) 2000–2020	20.6	35	43.4	27.4

Source: NASA, Gridded Population of the World (GPW) v4.
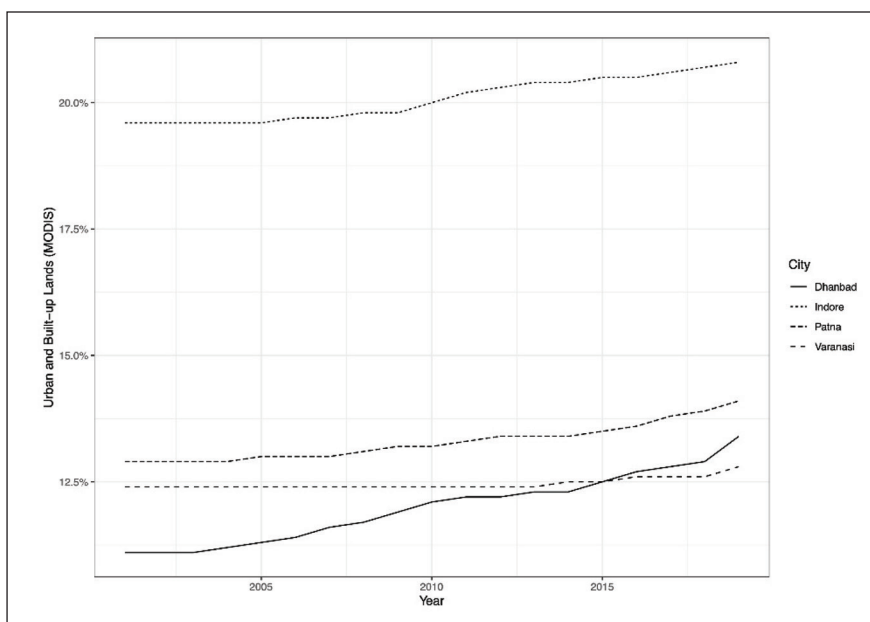
Figure 1. Built-up Land, 2001–2018

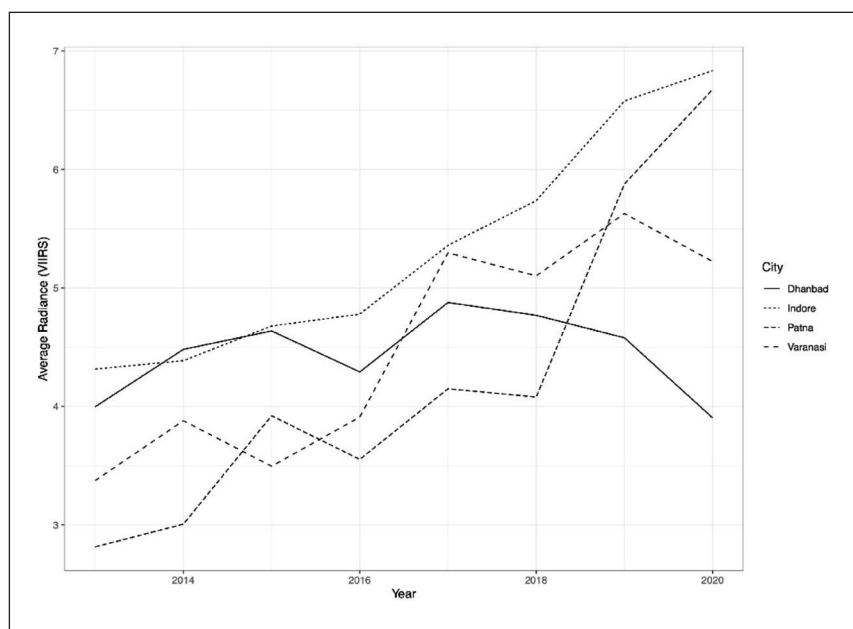**Source:** NASA, MODIS Land Cover Type (MCD12Q1) v6.

Figure 2. Night Light Data, 2013–2019

Source: Earth Observation Group, VIIRS Day/Night Band Nighttime Lights v1.

Outline of the Articles in This Special Issue

The articles in this special issue are oriented around three meta-questions that lie at the intersection of gender, urbanisation and social change. First, what does engagement with the labour market look like? Numerous studies have shown that FLFP is unusually depressed in India, but there is considerable debate around the measurement of women's work and the precise barriers that women face in achieving their economic potential. Second, how much agency do women enjoy, both inside and outside of the household? To what extent do urbanisation and employment affect the ability of women to exercise agency in household decisions or to experience physical mobility outside of the home? Third, how do factors inside and outside the home influence women's attitudes as well as their social and political preferences? How are their views shaped by gender and marital hierarchies within their homes and exposure to media and information from external sources?

Women's Engagement with the Labour Market

The goal of the articles in this part is twofold: to move beyond the simple binary of employment—working/not working—in order to develop an understanding of how different definitions of work yield different inferences about the labour market and to examine the predictors of women's work in a disaggregated fashion.

The article by Devesh Kapur, Milan Vaishnav and Dawson Verley takes as its starting point the robust debate over the 'true' level of female labour force participation in India. In recent years, a diverse array of scholars has argued that official government statistics—based on large-scale sample surveys—do not capture the full picture of women's employment. This article examines challenges to data accuracy posed by two potential sources of error: measurement error and reporting error. Leveraging three sources of data on women's labour market behaviour—a household roster, a detailed survey instrument and a time-use survey—the article sheds light on the scale and nature of measurement error when it comes to accurately capturing women's work. In addition to examining the question of *what* is being measured, it also studies the impact of *who* is doing the measuring. Specifically, it tests and finds evidence for the proposition that the gender identity of the survey respondent has meaningful impacts on the reporting of women's labour market behaviour.

The article by Deepaboli Chatterjee and Neelanjan Sircar examines the predictors of women's employment outside of the home. Previous research has shown that many women in India must negotiate difficult trade-offs between working outside of the home and managing onerous responsibilities inside the home (Fletcher, E. K., et al 2017). This piece employs a survey experiment to disentangle the relative impact of the proximity of a suitable job, a negative income shock and extra assistance in the home on willingness to enter the labour force. A key finding is that the proximity of the place of employment, which tends to be closer in rural areas, is perhaps the most important determinant in a woman's decision to enter the labour market.

Women's Agency Inside and Outside of the Home

The aim of this part is to understand women's agency along two key dimensions: the ability to take independent decisions within the household and the ability to travel outside of the home.

Megan Maxwell and Vaishnav focus on the issue of women's agency within the household and whether this varies according to one's employment status. In particular, they look at a range of household deci-

sions that provide variation across both decision types and domains of decision-making. The authors find systematic evidence that working women possess greater agency when it comes to making important decisions around the home. However, their findings are nuanced. The 'work advantage' they uncover exhibits significant variation across decision types, decision-making domains and different definitions of work.

Vidisha Mehta and Harish Sai look at women's agency outside, rather than inside, of the household. They examine women's mobility along two dimensions: (a) those who can leave the home (and to which destinations); and (b) those who require permission to leave the home (and from whom). This nuanced analysis of mobility yields many important insights. Destinations are strongly determinative of whether women can leave the home and employed women display greater mobility, even to destinations other than their place of work. Demographic factors are particularly important; rural women and daughters-in-law display significantly less mobility than other women in the household.

Social Attitudes and Preferences

The goal of this final part is to study how social inequalities, local contexts and media consumption are shaping social and political preference and attitudes.

Shubhangi Karia and Tanvi Mehta examine how selected marital hierarchies—age, education differences and exogamy—impact both partners' ideas about women's work. They do so by providing a nuanced analysis focusing on three distinct issues: the relationship between domestic chores and conventional work; the personal fulfilment possibilities offered by the latter; and the capabilities of women in the workplace. Somewhat surprisingly, women in less hierarchical relationships display greater pessimism about the prospects for work while handling household duties. Women with greater financial authority and freedom of mobility are more optimistic about both the capabilities and acceptance of women in the workplace.

The final article by Sumitra Badrinathan, Chatterjee, Kapur and Sircar examines the implications of information and media exposure for the political independence of women. This article finds a fairly stark gender gap in respondents' media consumption patterns. Women, on average, consume media of all types much less than their male counterparts. When it comes to partisan attitudes, however, the authors find that non-media personal networks play an influential role in the degree of partisan disagreement within the household. Thus, it integrates both gender as well as media and non-media sources of influence in crafting a more holistic framework for understanding political preferences.

Conclusion

Economists believe that rapid urbanisation and the benefits of India's 'demographic dividend' will, individually and collectively, catalyse a dynamic economic era for India in which poverty is further reduced, the ranks of the middle classes swell, and entrenched social inequalities ranging from caste to gender gradually erode. India's experience over the last decade or more has not been encouraging on either score. Urbanisation has proceeded apace, but governance at all levels (national, state and local) has been outmatched by the demands on urban infrastructure, civic amenities and labour markets. Furthermore, the demographic dividend has not yet been realised as India has struggled to move people from agriculture to industry and women's economic potential remains severely unrealised.

The articles in this special issue are based on a household survey carried out in 2019, before the coronavirus pandemic devastated lives and livelihoods across India. It is widely acknowledged that the

labour market effects of the ensuing economic crisis have been much worse for women than men, especially when it comes to wage jobs in urban India (Desai et al., 2021). This is particularly troubling since the fallout of the pandemic is coming on top of an already bleak employment scenario for women in India.

In the years to come, the relationship between urbanisation and social change is unlikely to be a linear one. The extent to which social inequalities are reduced or reinforced will depend greatly on how state and society respond to mounting challenges, many of them self-imposed. This special issue hopes to contribute to our collective understanding of where a significant swath of northern India lies on this spectrum.

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Appendix A: Details on the CASI Survey

This short document covers the basic elements of the study design for the CASI Survey. We note that the sampling strategy and differences in definitions of urban space make it difficult to make exact comparisons to Census data to assess representativeness of our sample. Nonetheless, we believe our sample to be relatively representative of a population within two hours of the centre point of the city in the urban cluster.

Sampling Urban Clusters

In order to study preferences to enter the labour force for women, the principal investigators have undertaken surveys of intra-household inequalities by gender and female labour force participation in the urban clusters of Dhanbad, Indore, Patna, and Varanasi. In each urban cluster, we aimed to sample approximately 3,000–3,500 households. The urban clusters of Patna and Varanasi were surveyed from January to the middle of March in 2019. From March to May 2019, during the Indian national election, the survey was paused. From June to August 2019, the urban clusters of Dhanbad and Indore were completed, along with follow-up and repeat surveys across the four clusters.

An urban cluster consists of a core major (census-defined) city and surrounding areas that constitute the periphery of the city. In this study, we define an urban cluster as all locations within two hours' travel distance—by driving time, according to standard Google transportation algorithms—of the centre point of the major census-defined city.

Our previous experience, as detailed above, has shown that administrative and census definitions of urban and rural space can be highly inconsistent and prone to political manipulation. Furthermore, those living in reasonable proximity to a city cannot often be easily classified as residing in an urban or rural space. It is common (as our data show) for families to engage in 'mixed' economic strategies with certain household members tending to agriculture while others are engaged in labour or business in the city.

Our definition of an urban cluster captures the core city, small urban areas in the periphery, as well as peri-urban villages that are plausibly economically dependent upon the city. The most peripheral of areas display significant agricultural activity. As such, we imagine that our definition of an urban cluster captures a complete 'rural to urban gradient' around the city. In fact, as shown in Table A.1, a majority of our sampled households are in areas administratively designated as 'rural'.

We used the polling booth area as the basis for our sample collection. Each polling booth area contains an average of 1,000 voters and 200–400 households. The Election Commission of India (ECI) publishes electoral rolls which reveal the geographic boundaries of polling booth areas. In order to generate a random sample of polling booth areas contained in an urban cluster, we used an iterative random sampling technique.

The procedure considered polling booth areas from a set of assembly constituencies which plausibly contain all areas within two hours of the city's centre point. We then randomly sampled polling booths with equal probability, mapped them, and used Google transportation algorithms to determine whether they are within two hours' distance using a motor vehicle, and dropped any polling booths that did not meet the inclusion criterion. We then re-drew a random sample of polling booths over a shrunken area which contained all areas within two hours of the city's centre point, mapped and measured transportation distance of the sampled polling booths, and repeated this procedure iteratively until we reached a target number of polling booths.

This guarantees that every polling booth is sampled with approximately equal probability if it is within two hours of a city's centre point. The outcome of this procedure was a random sample of polling booth areas located within our urban cluster boundaries. Because polling booth areas are defined by (voting) population size and not area, the distribution of sampled polling booths hews closely to the distribution of population density across the cluster.

Sampling Households and Respondents

In order to sample the household, we had to map the polling booth area for the selected polling booth (as addresses provided in the voter lists proved to be inconsistent). In practice, if we did not reach a household, we sought a randomly selected household in the vicinity for a replacement. This was done by breaking the mapping of polling booth areas into sub-clusters of nearby households from which we selected one household randomly from the sub-cluster. If this household was unavailable, then we randomly selected a replacement household from the same sub-cluster. If we were unable to locate a household after three attempted replacements, the household was dropped.

In order to understand intra-household inequalities, we sought to interview the (typically male) primary wage earner (PWE) and a randomly selected working-age female (aged 18–59) in each household.[6] We were particularly focused on making sure that we sampled a working-age female for each household in our sample, even if we could not reach the PWE. In order to do so, we used the following protocol:

1. In each household, enumerate working-age females from youngest to oldest.
2. Use a Kish table to sample the female respondent. If the sampled person is not available, use a Kish table for the replacement.
3. If a female is not selected in step 2, then drop the household.
4. If the household is kept, then sample the PWE in the household.

This protocol meant that we sampled a number of households in which we only spoke to a working-age female but could not reach the PWE. In total, we reached 13,832 households across our four sites of study (all with a working-age female). Of those households, we reached a male PWE in 12,579 households (91%).

Sample Particulars

Table A.1 provides some basic sample characteristics for the data used in this report.

Table A.1. Sample Demographics

	Dhanbad	Indore	Patna	Varanasi
Hindu (%)	82	88	93	91
Muslim (%)	16	11	7	9
Administratively Rural (%)	60	48	76	81
Scheduled Caste (%)	19	19	24	32
Scheduled Tribe (%)	9	12	3	4
Other Backward Class (%)	54	54	42	50
Average Household Size	4.9	4.8	5.3	5.9
Average Age (Female Respondent)	35	36	36	36
Average Age (Male Primary Wage Earner)	43	40	44	44
Employed Female Respondent (%)	14	21	23	19
Employed Male Primary Wage Earner (%)	94	84	93	96
Both Female and Male Primary Wage Earner (Number of Households)	3,237	2,854	3,041	3,447
Total Sample (Number of Households)	3,539	3,315	3,484	3,494

Source: CASI survey.

Survey Instrument

The survey features three separate questionnaires in addition to a module on time use. Each of the three questionnaires—household, male primary respondent, and female primary respondent—is further subdivided into separate modules.

The household questionnaire was administered to either the male or female primary respondent, depending on their availability. Because the aim was to ensure the most accurate representation of the household's demographics and characteristics, other household members who may have been present were allowed to help complete the common household questionnaire. The household questionnaire captured basic information on membership and composition of the household, background socio-economic characteristics, migration and remittances, ownership of common household assets, experience with economic shocks and associated coping mechanisms, availability to basic public services, and access to government welfare benefits.

The male and female primary respondent questionnaires were nearly identical with a few notable exceptions. The male and female instruments were administered to a male primary respondent (almost always the PWE) and a female primary respondent between the ages of 18 and 59. Enumerators sought to interview the male or female respondent on their own to avoid the risk of social desirability bias or coercion. The female instrument contained 12 modules on:

1. formal and vocational education
2. employment
3. workplace conditions (for those working outside of the home)
4. intra-household decision-making
5. safety and physical mobility
6. perceptions on women's employment
7. family background (related to education, employment, and language)
8. childcare
9. financial access, savings, and credit behaviour
10. voting practices
11. information and social media use
12. political attitudes and polarisation

The male instrument mirrored the female instrument with three exceptions. First, the male instrument contained an additional block of questions about the female primary respondent's employment status. Second, it replicated the module on intra-household decision-making but adapted the framing of the questions such that men were asked about the female primary respondent. Third, the male instrument did not contain a separate childcare module.

The final questionnaire contained a time-use survey that was administered to both male and female primary respondents. For logistical reasons and to limit the length of the survey, the module asked about respondents' activities during a 24-hour period (yesterday or the last typical day) by using meals as key milestones throughout the day. Then, respondents were asked to enumerate their activities in between those milestones.

Notes

1. For more on India's low and declining rate of female labour force particitpation, see Mehrotra and Parida (2017); Afridi et al. (2018) and Chatterjee et al. (2018).
2. The authors are grateful to Dawson Verley for his help in compiling this data. All three estimates assume a 20 kilometre radius around each city centre.
3. According to source documentation, population input data are collected at the most detailed spatial resolution available from the results of the 2010 round of censuses, which occurred between 2005 and 2014. For India, this would be the 2011 Census. Furthermore, the input data are extrapolated to produce population estimates for each modeled year. For more information, visit: https://sedac.ciesin.columbia.edu/data/set/gpw-v4-population-density-rev11/docs.
4. More information on the built-up land measure can be found here: https://lpdaac.usgs.gov/products/mcd12q1v006/.
5. Background on the night light data is available here: https://eogdata.mines.edu/download_dnb_composites.html.
6. We note that in India an individual may be of working age from 15 years of age, but we did not interview any person under the age of 18 due to ethical reasons.

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