

Understanding and Quantifying Value Capture and the role of Information in Migration Decisions: A case of the Ahmedabad - Mumbai Corridor, India

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Submitted to the Department of Urban Studies and Planning
in Partial Fulfillment of the Requirements for the Degrees of

Master in City Planning
at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
June 2019

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ABSTRACT

The Thesis attempts to unpack how rural residents across India make decisions to migrate to urban centers in the Ahmedabad –Mumbai corridor and analyze if those decisions are concomitant with helping them achieve their migration intents. The study uses both qualitative and quantitative methods to analyze 52 origin – destination pairs of migration.

The qualitative methods, based on 52 field interviews, help understand the nuances of how and why people migrate. In analyzing patterns here, the study also heavily references the existing literature to establish departure points for quantitative studies. Basing itself on the model that these migration decisions are a trade-off between the wage differential and the social cost of being uprooted from one's native place, it attempts to quantify the gain and see if the gains proportionately increase with increased compromises on the migrant's social ties to their native place. It relies on geo-spatial analysis and several regression models to analyze the above mentioned phenomenon and offer a nuanced understanding of where value is captured/lost in the process of migration. Finding that housing rents significantly offset wage differentials, a key part of understanding the value capture has been achieved through an analysis of housing rental data. The data analysis includes data collected via web-scraping and the gathering of about 25,000 datapoints, as well as rental and income data from 52 field interviews of migrants – primarily working in the informal sector.

In concluding its findings and analysis, the Thesis finds that solving information asymmetry , addressing integration of migrants into urban life whilst also maintaining their social ties with their native places, and state subsidies/policies for cost effective and flexible rental housing may be the most critical pieces to improve the socio-economic mobility of migrants. The Thesis forms a basis for an entrepreneurial venture 'Bandhu'- by the author.

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Acknowledgements

This study has been made possible owing to the wonderful support from several individuals.

Firstly I would like to thank my advisor Prof. Siqi Zheng, who beyond her insightful academic inputs, was a source of constant support and encouragement for my other allied endeavors – including my start-up. Her immense patience and extensive engagement with my work was heartening.

I would also like to thank my reader Prof. Sarah Williams, for her engagement with my subject through the semester, getting me excited about the datasets I had on hand, poring over my GIS files and helping me clear the muddle in trying to narrow my Thesis.

For enabling my fieldwork in India, I owe it to-

Michael and Ganesh for the deep dive into Dharavi, ,, activists – Michael, Anand, Swati, Sagar Rabari, Raju Purohit, among others.

The Managing Director GCMMF (Amul) -Mr. Sodhi, several other business owners, workers and rural residents that I interviewed, for the hospitality and generosity to share their stories with me.

My friends at DUSP – The D & C group in particular.

Niharika for being a constant inspiration.

Last, but not the least, the Fulbright program and DUSP for making all of this possible.

I dedicate this Thesis to my 'Nana' (maternal grandfather)- the biggest inspiration in my life.

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1. INTRODUCTION AND BACKGROUND

The study is based in India, with the western states of Gujarat and Maharashtra being the focal points of inquiry. It began as a study to probe how people made migration decisions, and whether the highspeed rail (bullet train project) between Ahmedabad and Mumbai would have any decongestion effects in Mumbai, and to understand how its net financial benefit was perceived by the people. In the process of interviews, there was a realization that people were not necessarily making the most economically rational decisions, besides gaining an understanding of the variety of other considerations that impact such migration decisions.

The interviews included people from various income groups, across several distinct cities along the Ahmedabad-Mumbai corridor. It included migrants in varying degrees of being urbanized.

Need for the Study

There has been substantial debate on the 'rural versus urban', and on whether rural-to-urban migration is the most desirable for the people. Several economists (Glaeser, 2014) believe that urbanization will pull people out of poverty and that migrants try to make wage differential maximizing decisions (Harris-Todaro, 1970). Glaeser (2008) suggests that any model of urban economics must begin with understanding the 'decision making agents'. As much as it is about firms, it is equally about labor – about the individuals who make the choices of location and wage – claims Glaeser (2008).

In places like India, much of the urbanization is driven by rural migrants working in the informal sector. Often, beyond the anecdotal information, it becomes hard to understand if they are indeed making wealth maximizing decisions. Other questions arise: that if they are not making the most efficient choices, what is the loss? Under what avenues is value captured?

With urbanizing having very high barriers to entry in terms of access to stable jobs and affordable housing, one also observes a prevalent system of seasonal migration wherein people spend a portion of the year in an urban center for low wage jobs or jobs having a low entry barrier, all in an attempt to offset agrarian distress. This simultaneity of urban and rural existence is hard to capture in methods such as the census that require an individual to be counted only once in one of the two places of residence. Chain migration – a nature of migration driven by social and community ties to people having made the same origin to destination trip for migration continues to be the nature of India's urbanization.

Concerns such as – are cities going to be able to handle the burden? Does outsized demand make housing unaffordable and life difficult, such that migrants may be better served by moving to another destination? Could the destination be the first move rather than the result of multiple unsuccessful migration attempts? For whom and for how many to plan for – this is a question that keeps plaguing policy makers. Policy makers in cities like Mumbai are often vocal about the unsurmountable pressure on land and infrastructure. The infrastructure development risks, and the ability to anticipate demand, are of concern to infrastructure investors as much as to governments. This leads us to the question that, if migrants are indeed not making the most useful decisions for themselves, could we nudge them to make the best decisions for themselves?

The question is also a key guiding question for the author's start-up venture 'Bandhu' that is being launched from MIT's Design X accelerator. Besides unpacking some of the phenomenon of wage differential gain and value capture in the migration decision, the study aims to serve as a key basis for this entrepreneurial venture.

2. CONTEXT & CASE

Choice of Case:

The figures below illustrate the magnitude and flows of migration in India. The migration destination bias towards the states of Gujarat and Maharashtra, particularly in the railway corridor between Ahmedabad and Mumbai, as well as my familiarity with the context, led to the decision of selecting the same as a context for primary field research.

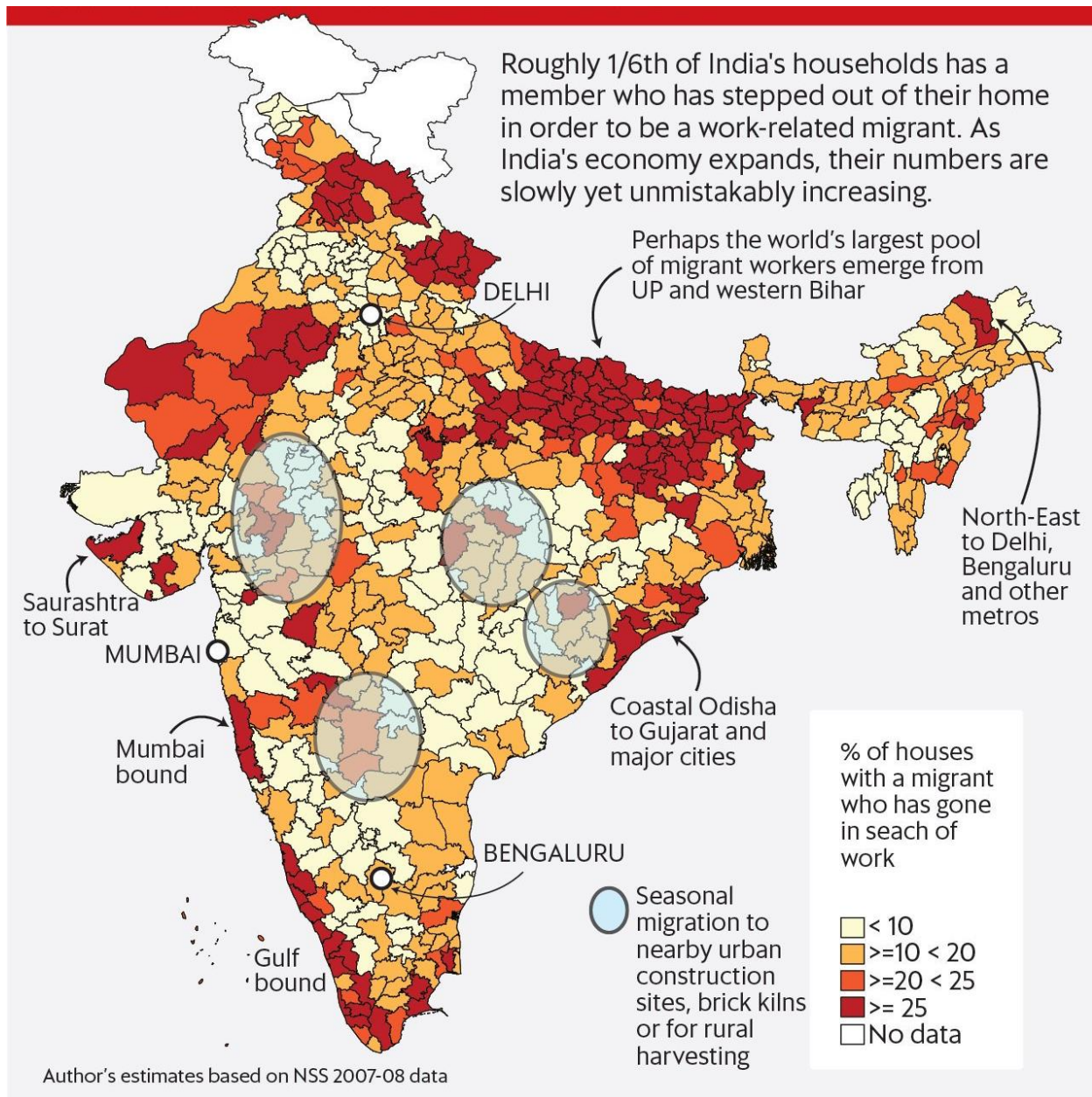


Figure 2-1: HOTSPOTS OF MIGRATION. Source: Milan Vaishnav

The map above indicates how the northern states of Uttar Pradesh (UP) and Bihar have a very large number of families where members have migrated in search of work. The other phenomenon it points to is that of seasonal migration within a region the map classifies as 'nearby'.

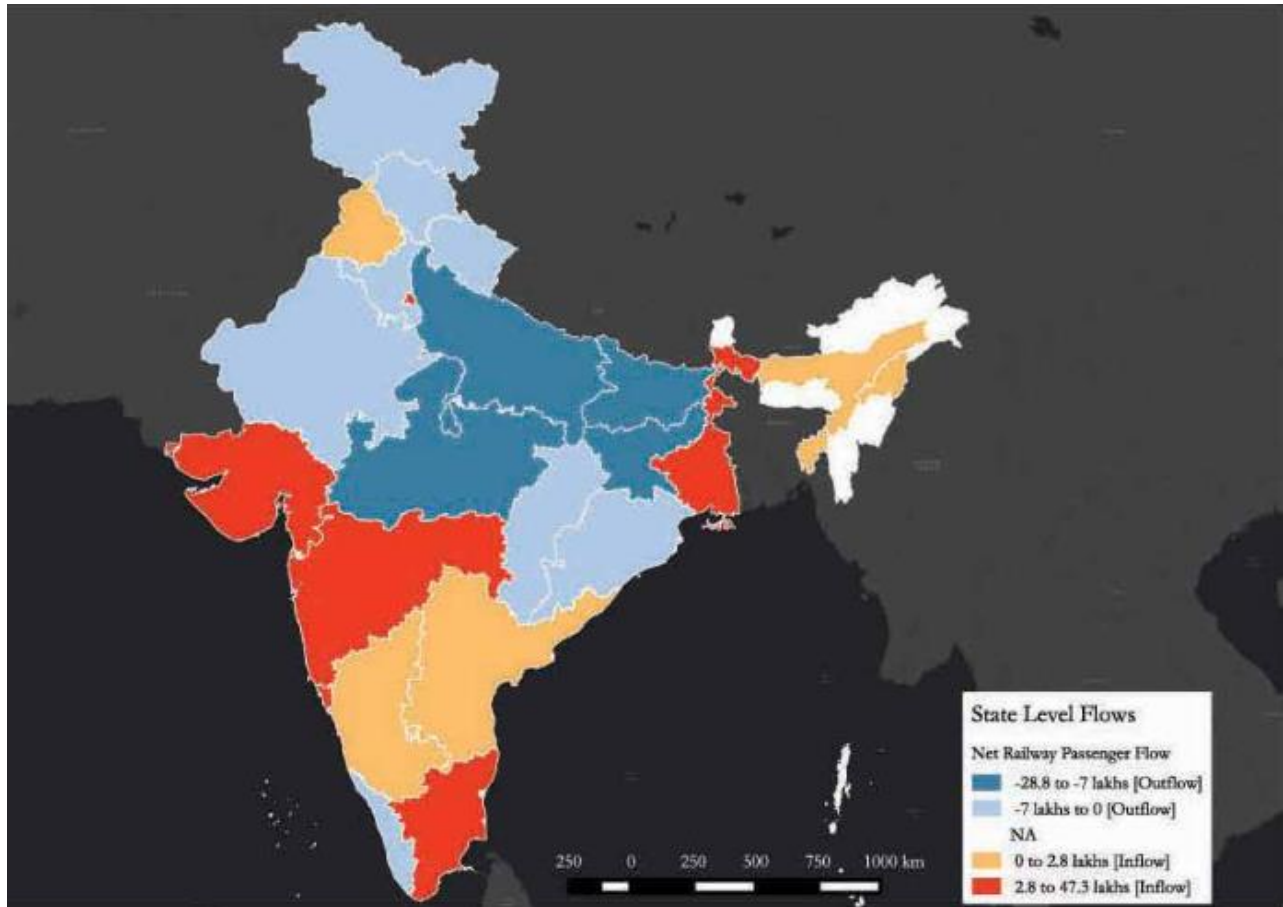
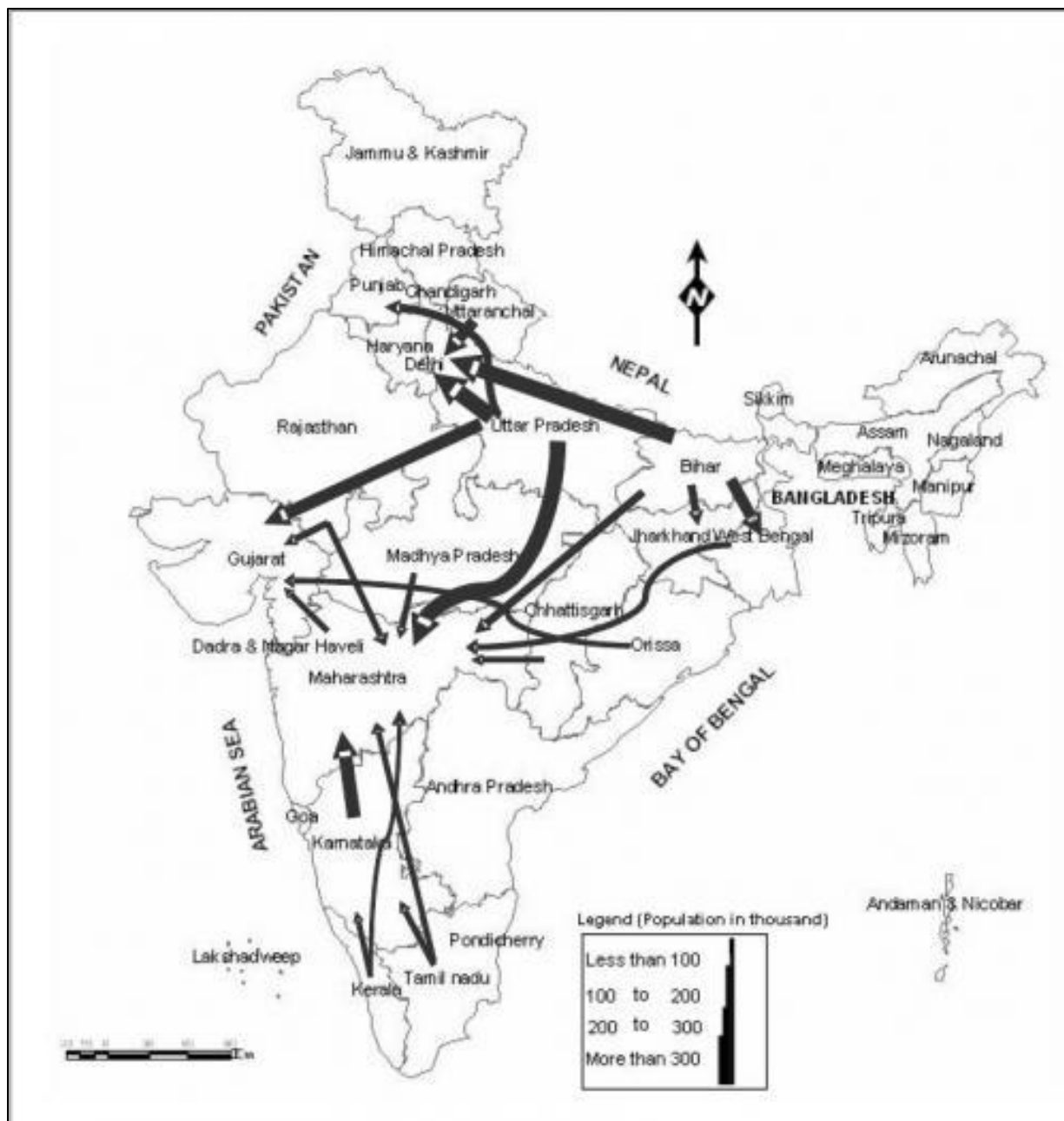


Figure 2-2: STATEWISE HEATMAP ON RAILWAY PASSENGER FLOWS 2016-17. Source: indiabudget.gov.

The map above makes the same point about the flow of migrants by highlighting which states had a net inflow or outflow of rail passengers. This could be a reasonable proxy for understanding migration patterns, since national rail is heavily subsidized and the primary means of movement for long distance migrants. This also co-relates with migration studies and does reflect the change in migration patterns in 15 years since the 2001 census. The migration patterns apparent in the 2001 census show how there are major flows from Tamil Nadu to Maharashtra. While even in 2016, Maharashtra continues to be a net receiver of migrants, once sees Tamil Nadu has also become a net receiver. This correlates with the growth of industry in Tamil Nadu in the last decade.



Source: R.B. Bhagat and S. Mohanty, "Emerging Pattern of Urbanization and the Contribution of Migration in Urban Growth in India," *Asian Population Studies*, vol. 5 no. 1 (2009): 5-20.

Figure 2-3IC [3]IC [3]: Migration trends in India, 2001

The Case: The Ahmedabad – Mumbai Rail Corridor

The Ahmedabad–Mumbai corridor has been a fairly industrialized zone. Mumbai had developed as a major port city during the 18th century. There were several other ports along the corridor including Bharuch and Surat that were critical trading points for European markets. Hence the corridor comes with a history of connectedness and of extracting goods and agglomerating them. The first rail connection in India, constructed by the British colonists, was between Ahmedabad and Mumbai. Ahmedabad was seen as a railhead to accumulate all the production from north India and be funneled out through Mumbai. In the current day, this is also the focus of India’s much touted industrial and freight corridor project – the DMIC (Delhi Mumbai Industrial corridor) with ancillary projects such as the Dholera Aerotropolis (on hold) and India’s first High Speed rail (HSR) project (Image overleaf).

¹ Source: <https://indianexpress.com/article/explained/bullet-train-project-land-acquisition-narendra-modi-mumbai-ahmedabad-bullet-train-5254273/>



Figure 2-4 : Night Light image : A'bad - Mumbai corridor (Source; NASA)

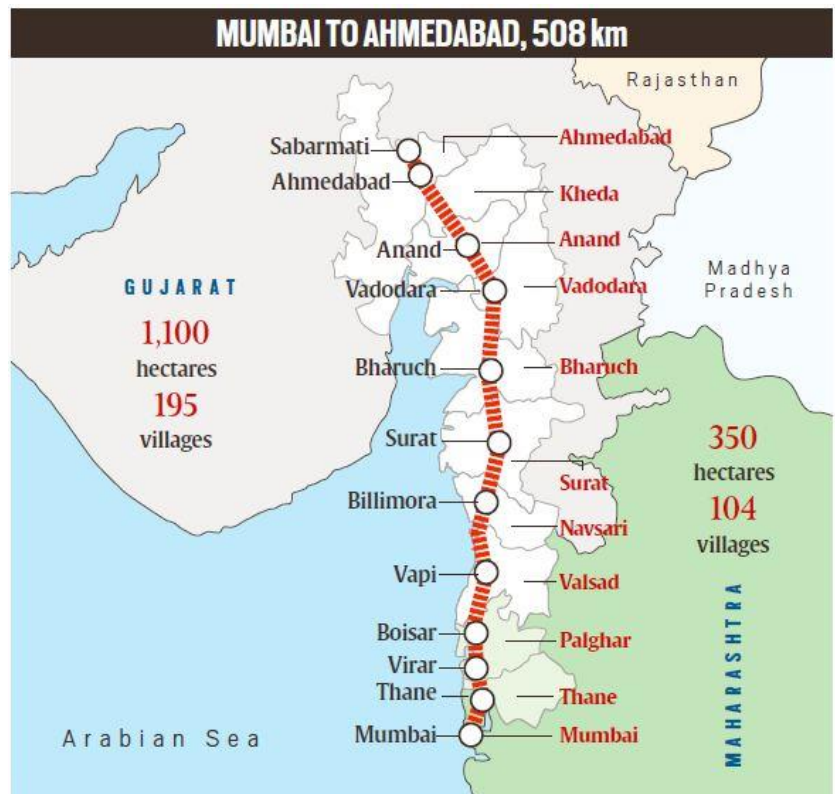


Figure 2-5 : The High Speed Rail project (Ahmedabad – Mumbai)

The HSR project, planned for completion in the year 2022, hopes to cut down travel time from Ahmedabad to Mumbai from 6 hours to 2 hours, and also connect two other major cities of Gujarat along the line. A daily ridership of 36000 people is expected on opening. While seen as a forwarding looking project, it has also faced protest owing to land acquisition issues, and its fares have been deemed uncompetitive to flights managing the same distance in 1 hour. There needs to be a major subsidy on fares to make it a viable option for commute.

Defining the urban agglomerations:

In trying to understand migrants trying to make a choice between various cities in the Ahmedabad-Mumbai corridor, wherein several of them have lived as migrants in more than one city in this corridor, one needs to understand the corridor as a contiguous entity connected by a single rail line. Jean Gottman (1961) first suggested the idea of the megalopolis. The megalopolis could be defined by 'functional gravities of commerce' rather than political boundaries (Gottman, 1961). Building on

this with Parag Khanna's ideas (Khanna 2016), a megalopolis could be defined as a contiguous cluster of urban settlements, wherein all settlements are hyper-connected through economic/transportation networks. The McKinsey global institute² suggests that global growth will be evenly distributed between megacities, middle cities connected to hinterlands, and rural/small settlements, in a proportion of thirds by 2040. This does point to a strong interrelationship between the three, rather than there being outsized growth of the largest urban centers.

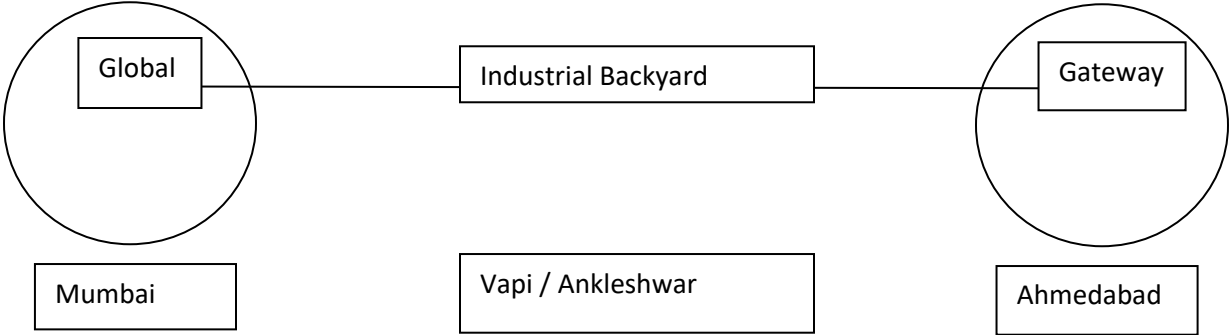


Figure 2-6: The Tripartite Hyperconnected Agglomerations

Much like with the Hong Kong–Shenzhen–Guangzhou link, I see the case of the Ahmedabad–Mumbai corridor as a phenomenon of 'Tripartite hyper-connected' agglomerations that consist of a financial center / erstwhile port, a city well connected to the hinterland and an industrial backyard that could eventually fuse to form a megalopolis. The crux of such a tripartite distinction is that, beyond the obvious hierarchy of population and density, there are functional specializations within the three. The primary function of the Global city is to interact with global capital and, hence, it has a demand for higher skilled workers, accompanied by higher wages and higher real estate prices. This clearly poses major barriers to entry to those wanting to migrate to it. The Gateway city is better integrated with the hinterland. The lower living costs and socio-economic connections with the hinterland make it easier for migrants to move. By virtue of its hyper-connectedness,

²

https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Urbanization/Urban%20world%20Cities%20and%20the%20rise%20of%20the%20consuming%20class/MGI_Urban_world_Rise_of_the_consuming_class_Full_report.ashx

economically and through transport, the Gateway city leverages the financial opportunities of the global cities. Since real estate values in both are not conducive to the use of urban land for manufacturing, the situation necessitates the existence of an 'industrial backyard' that serves both cities.

This phenomenon seems to repeat within the subsets if one is to start looking at smaller clusters of 200km, such as the zone between Ahmedabad to Baroda that has the agrarian economies of Kheda and Anand. One sees the Baroda to Surat agglomeration having Ankleshwar as its industrial backyard. This nature of clustering has been used to construct the further analysis in this study.

In all of the above, it is also important to recognize that, with rapid urbanization and expansion of transport linkages, the rural and urban dichotomy may not hold (Cohen, 2004). One may need to define an urban agglomeration as the extent of residential zones servicing the daily workforce. The study takes cognizance of this phenomenon.

3. RESEARCH QUESTION & METHODS

3.1 Research Question and Objectives of Study

The study limits itself to the informal sector workers, or some who are on the verge of tiding over to the formal sector³. It includes the entire plethora from short term seasonal migrants to the nearly permanent migrants.

RESEARCH QUESTIONS –

What are the key determinants of their migration choices?

What are the key trade-offs made in the migration decisions in terms of social and economic costs?

Are their choices financially rational? What are the barriers?

What is the role of information?

What is the magnitude of value lost by the migrant in these processes? Where is most of the value lost?

What makes a city 'attractive' to a migrant?

OBJECTIVES –

To understand migration decision making processes.

To understand the wage differential maximization in migration decisions.

To quantify the value capture in migration decisions.

To explore and attempt to quantify the avenues of value capture in migration within the informal sector.

3.2 Methods of Research for the Thesis

The study uses a combination of qualitative and quantitative methods for research. The qualitative interviews are intended to understand the nuances of migration decision-making. This is to be analyzed in light of the literature on the subject. The leading questions from the qualitative methods would be probed further through quantitative methods using national level government and privately accessed datasets as well as data points collected through interviews. Results from both methods would be reconciled and discussed to arrive at conclusions.

³ Informal sector entail people who are part of the economy where transactions are not legally recorded.

Methodology for Qualitative Interviews

The Qualitative Research: Field Interviews

Methods:

Two sets of interview questions were designed.

One was meant for the migrants/workers. This involved using a base of interview questions to understand the interviewee's story of arriving in the current location, their daily life, as well as key data on their housing rent and approximate salary figures if possible.

The second set was targeted towards employers/business owners. This involved questions on reasons for locating business there, cost of employees, location related costs of doing business, rents etc.

Interviews began with accessing experts working in rural affairs, politicians, grassroots activists, real estate developers, industrialists and resource people to understand the scenario. This was followed up by charting out a route to speak to migrants.

The mode of accessing the interviewees was mixed. I primarily relied on personal networks and introductions through my network to organize the interviews. There were also a few cold call emails that led to introductions. I began with interviewing activists, planning practitioners and rural development practitioners who have a phenomenological understanding of migration. The next step was to access the employers and workers through a source they trusted. This allowed them to be quite free with me in terms of how much information they were willing to reveal.

The places of origin for the migrants in my sample set were affected by the points of access. The pool of workers I got access to through a workplace came from a diverse range of native places. However, people accessed through a place of residence tended to have a similar place of origin. This was an obvious consequence of residential zones being segmented by community and language groups, whereas workplaces would cluster people by profession. This bias or noise of the sample set is to be acknowledged when analyzing the results. Of 60 interviews, 52 were with workers, of which 42 were able to provide extremely detailed interviews, of which 39 were willing to share personal details such as salary and the rents they pay. One of them had to be removed from

analysis since her reason for migration was very peculiar to her personal circumstances and could not be used as a measure of the phenomenon I was trying to analyze.

Interviews lasted between 35 minutes to 3 hours. Though they tried to follow the base structure, they would flow organically as per the interviewee's narrative.

The interviews were split between rural and urban zones. The geographies included –

- 1) Ahmedabad – Gandhinagar (Rural and Urban)
- 2) Baroda (Urban)
- 3) Anand (Urban)
- 4) Mosda – Dediapada (Rural)
- 5) Bharuch – Ankleshwar (Urban and Peri Urban)
- 6) Dahej (Industrial SEZ)
- 7) Surat (Urban)
- 8) Bilimora – Vapi (Urban) (Phone interview)
- 9) Mumbai (Urban)

All of the above are major stops on the railway line between Ahmedabad and Mumbai, with the exception of Mosda, which happens to be a remote forested area that provides low skilled/semi-skilled labor to the industrial zones of Bharuch, Ankleshwar and Dahej.

*Some names have been reduced to initials to protect identities. Others who were comfortable with sharing details have been referred to by name. Not all interviews have been described in the qualitative interviews section, but the ones illustrating the key phenomenon have been used as representative cases.

The Quantitative Research methods are described in detail in section 6, however the broad structure is briefly illustrated below-

Measure if the choice is an optimal wage differential maximizing choice.

- Analyze choices using economic characteristics of region (the typical choice)
- Analyze choice using data unique to the individual.

Understand what influences wage differential maximization and what are the major barriers offsetting it.

- Understand differences between migration with and without information.
- Quantify the value lost or gained in the process.

4. SUMMARIES OF SELECTED CASES FROM THE INTERVIEWS:

4.1 Summaries : Learning from the experts

Sagar Rabari, a prominent farmer-rights activist and general secretary of KSG (Khedut Samaj Gujarat) finds that wealthier farmers who have larger land holdings tend to migrate to district headquarters for better access to markets and improved quality of healthcare and education for their children. They tend to only periodically travel to their villages to monitor the fields. Several farmers also end up giving their land on lease to their near-relatives for an agreed-upon share of the produce. This is usually given to relatives over whom they had some kind of social power, so that they can be sure that their land will not be usurped. In three of my interviews, the yield share figure stood between 20% to 25%. Rabari suggests that the push to become urban may not always be in the look-out for a wage differential, but may in fact emerge from the need to relinquish the agrarian lands. Key reasons include –

- a) Educated children do not want to come back to the village.
- b) Getting the right price for land, capturing speculative value from impending urban development.
- c) Small holdings are unsustainable, so there is a need to liquidate and use the money in other avenues.
- d) There is a need to meet emergency expenses such as illnesses and marriage.
- e) People have too many children and this leads to splitting of land into unworkable and financially infeasible land parcels.

Swati, Anand and Michael, who have been activists working in the Baroda, Rajpipla and Narmada districts, among others in South-Central Gujarat, find that access to roads and markets are more de-tribalized compared to other communities. Other communities that fall under OBC category (Other Backward Classes), such as Vasavas and Tadvis, who have historically occupied the plain as against the tribals who occupied hill forests, are much faster in integrating with urban ways of life. They also underpin the role of television in changing perceptions towards urban life, and its role in boosting urbanization.

At the same time, they claim that the falling levels of public transport service in the GSRTC buses (Gujarat State Road Transport Corporation) has led people to try and invest in motor vehicles such as motorbikes, thus making them more footloose.

4.2 Summaries on Migrants:

Mumbai:

Suresh works as a freelance mechanic in Santacruz West in Mumbai. He has operated there for more than 15 years. He left his native village near Kanpur, Uttar Pradesh, because his father had ventured to Mumbai for a short stint and knew some people. However, his father returned to the village and, along with Suresh's brother, still continues farming in the village. Though his business is not doing well these days and he expressed his struggles with paying rent and educating his children, he could not think of, and was not aware of, any other place where he could make a living. When asked for his second choice of migration decision, if not Mumbai, he said he would go back to his village. His limited education (upto 5th grade) and inability to speak the local language of Mumbai may have a role to play in his ability to make decisions.

Michael's (Chauffeur) village in the Tirunelveli district of Tamil Nadu has historically been seeing massive out migration. He belongs to the Nadar caste (lower socio-economic group), which they still identify with, despite having been converted to Christianity. Driven by drought, Michael landed up in Mumbai as a result of chain migration, after his father followed his uncle there, such that eventually the family permanently moved to Mumbai. While the family started off living in Sion and Kamatipura⁴, they eventually settled in Dharavi.

When asked that if he hadn't chosen to live in Dharavi, where would he like to settle, he immediately points to his native village and to Chennai – the largest city in his native state of Tamil Nadu.

In contrast, his brother and sister-in-law, who are much more educated and hold higher paying jobs, suggest that if they were not in Mumbai, they would rather move to Bangalore. The reasons are the need to get out of this lower socio-economic neighbourhood without offending the close-knit family. They also have information about the scope for their professional career in Bangalore.

Several members of this extended family occupy houses in the same neighbourhood in Dharavi. However, based on the time spent in Mumbai, and the income levels, the nature of housing tenures are different.

⁴ Locales in Mumbai

A note on Dharavi Real Estate:

While Michael still lives in a rented house, paying Rs 6500 per month, he was able to buy⁵ a three-storied house for 2 million rupees. It yields him a rent of Rs 6500 for the ground floor and Rs 5000 and Rs 4000 for the upper two levels respectively. These are the standard rates in the area. Technically, his annual yield (revenue) could be calculated as 9.3% on the property.

Most neighbors pay similar rates of monthly rents. However, for the same size of house in an MHADA (Maharashtra Housing and Development Authority) property, the rents would hover around Rs 8000 per month. Such properties are completely formal in terms of legality and paperwork. However, it is hard to get them and they are usually allotted through lotteries.

Another model of rental housing in Dharavi:

Christopher lived in a premise in Dharavi where, instead of the usual Rs 6500 per month and one month of brokerage, they had paid Rs 450,000 upfront to the landlord under a 'heavy deposit' system. This prevented eviction from the property for 10 years. Also, no rent is to be paid anymore. It appears both the residents and landlords in Dharavi prefer this model of rental housing.

Walking through these areas shows how clusters in Dharavi are geographically segmented along language, religion and native tongue. However, what is common is that housing price remains similar across the segmented communities and neighborhoods.

Other Residents of Dharavi:

Ganesh, who lives in a MHADA house in Dharavi, but in a Marathi-speaking cluster, speaks of similar economics of housing. The family moved to Mumbai from their village in Ratnagiri owing to the fact that his father was a skilled leather worker and there was paucity of work in the village. On being asked where he would like to move, if not Mumbai, he pointed to Mumbai's suburbs of Thane and Dombivli. There is no major city that's better connected to his village than the urban agglomeration of Greater Mumbai,

⁵ The interviewee was not willing to disclose the exact nature of his hold/ownership over the property, but the understanding is that it was not completely formal.

Another Maharastrian migrant living in Dharavi comes from Shri Gonda in Ahmednagar District in Maharashtra. Although Pune, another major city, is not far from his village, he has chosen to come to Mumbai. He has a 3 year contract to fulfil with Mahindra & Mahindra Automobiles' manufacturing facility, after which he hopes to get a permanent job there. His cousin fixed this temporary job for him in Mahindra & Mahindra since he was already working there. With his older brother looking after the family farm, his joint family sees this as an extra source of income. For the time being, he has managed to find a room through his relatives. However, he complains of the untenable rents and wishes he could get a room under a 'heavy deposit' model.

Dharavi's unique location near two major railway stations, as well as the main road connecting the length of Mumbai, has made it a prime location for informal real estate and the rents mirror the formal sector.

The Ratnagiri migrants to Mumbai – a consequence of direct rail connectivity?

Sucheta lived on a land near Chiplun, in Ratnagiri District of Maharashtra, which was on a hilly and rocky slope. It took quite some effort to plough it with a bullock. They did not own any bullocks any longer and had to rent them. However, the economic competitiveness of tractor-ploughed farms viz a viz the cost of tractors had changed, and the yields far outweighed bullock-ploughed farms. Tractors could not be used on their sloping land. This, along with the hard rocky soil and falling water tables, made farming wholly unsustainable. She is not the only one who cited this reason for migrating; many others I spoke to also stated that people farming on sloping land are most likely to migrate due to agrarian distress.

Sucheta had earlier lived and worked in Mumbai in a lawyer's office, soon after completing her high school. However, after marriage, she was forced to move back to a village to look after her elderly in-laws. This entailed tremendous trouble in accessing water and other basic necessities. Eventually, the need for the children to have education, along with an increase in her husband's wage that allowed them to afford a room all to themselves, enabled her to move back to the city. The place found near Kalyan (Suburb of Mumbai) allowed her to access her workplace in South Mumbai through rail connectivity. Though the journey takes 1.5 hours one way, the rent is only Rs 1500 per month as against their combined family income of Rs 20,000. They offset a large part of this rent by allowing a neighbor from her native village to live with them in the same house, in exchange for Rs

1200 per month. She also provides meals to the paying guest as part of the deal, though the relationship is almost like one shared with a family member.

Living in another informal house in Dharavi, much closer to work, would entail a rent of Rs 6500. This makes Dharavi an almost premium rental housing market among the lower socio-economic groups. It is most often only within the reach of second or third generation migrants or even young professionals who have white collar jobs.

Pooja and Karishma too come from Chiplun in Ratnagiri. Both work in a ceramic art unit. Both are fairly educated and find no opportunities in their village. After high school, Karishma came to Mumbai with a group of three high school friends who decided to rent a room together. After coming to Mumbai, they tried looking for jobs. Karishma eventually moved in with her aunt to save on rent and food costs. Her second choice of migration destination is Pune.

Of the several interviews, it appears that people with higher levels of education, who speak the same language and are within distance of an overnight rail journey, seem to be able to make more well-informed decisions about migration.

Ahmedabad:

The migrants interviewed in Ahmedabad chose the city due to proximity – they could travel to the city by overnight bus journeys from their native villages. They were also forced to venture out of their village, owing to irregular irrigation on their farms. These people come from regions in southern Rajasthan. They are involved in a variety of work ranging from construction, to being peons in offices, serving as domestic help, etc. Being able to return to their village at a moment's notice – effectively 4 to 6 hours allows them to maintain strong social ties with their native regions. This appears to be a key concern for several people, even in Mumbai, who seek to move to a city permanently. This also reflects in their second choice of migration destination.

Some others who have come from Godhra district in Gujarat are seasonal workers. They travel to Ahmedabad usually during the summer months. They are primarily engaged in unskilled construction work. This works for them because their native region faces water scarcity in the summer months, making farming untenable. This also coincides with the construction cycle of soil excavation which requires low wage workers. This work also needs to be finished before the monsoon lest the excavated pits be flooded with rainwater, This is exactly when the Godhra

workers go back to the village for the rice-sowing season, after duly completing their construction stint in the city.

Baroda, Anand and Kheda district:

The flow of migrants here from Rajasthan and Godhra is not unlike the patterns observed in Ahmedabad. The low sample size here prevents any nuanced observations with any certainty.

However, a critical interview here was with the MD of Amul (GCMMF – Gujarat Co-operative Milk Marketing Federation Limited), which afforded a substantial understanding of the nuances of the financial decision making of individuals involved in the agrarian economy. They (GCMMF) had identified that milk production was the best hedge that farmers had against uncertain farm yields. It could also overcome limitations of an increasingly common scenario that farmers would find themselves in – not having adequate land to cultivate. The risks of animal husbandry were significantly offset due to the relatively easy and cost effective procurement of fodder through purchase or grazing the commons in the event of being a ‘landless’ farmer.

The Industrial Zone : Ankleshwar, Bharuch , Jhagadia & Dahej SEZ.

The Industrial zone on the Narmada river has traditionally absorbed workers from Gujarat. However, as Mr Shah, who has run his engineering company for several years in the areas, observes – *“Local labor has almost completely been replaced by labor from UP and Bihar.”*

This observation is echoed by several other industrialists who were interviewed. Rajasthani migrants choose the nearby cities of Ahmedabad and Baroda so they can be close to their families. The industrialists however, fret that local labor keeps going back to their villages for the smallest of issues in their families, and this makes the labor force undependable in executing time-bound jobs. Consequently, it also does not make sense for the industrialists to train local labor since attrition rates are high.

An interview with a migrant from Siwan, Bihar, revealed that he had been migrating seasonally to Gujarat for the last 6 years and had sought work in 3 different cities, before deciding on Ankleshwar where his wages had risen by nearly 75% over the course of those 6 years. He now spends 11 months of the year in Ankleshwar and goes back to his native village once a year. His wife, parents and children live in the village. His brother too works in Ankleshwar. They left the village because there was no employment. In Ankleshwar, he and his brother share their room with 3 other people and

manage very large savings every year – effectively maximizing their wage differential. The locality they live in is a known area for migrants from the states of UP and Bihar. Single male migrants who are nearly permanent residents of this zone, with families in the village, are quite a common phenomenon in Ankleshwar.

Two workers in the construction sector, who hail from Kabirdham and Valod in Chattisgarh, stated their migration decision making rationale quite simply – the wages in Bharuch are nearly twice as much as those in Raipur – a large city that lies closest to their native villages. Neither of them had ventured to any other cities as a migration destination over their lifetime, since their sources of information were limited to the contractors they knew and trusted.

Mosda Village: Tribal Societies and Industrial Places of production connected by the Narmada River

Mosda is very well connected to the industrial zones of Ankleshwar and Bharuch which are seen by most locals as the most obvious choice of migration for earning an urban wage. They echo the industrialists' observations that they find it harder to get work now. One of the locals, by his own admission, said that he broke his two-year contract terms, just one month shy of securing a permanent position, in order to attend to his father who suffered a snake bite. He lost his job but says that familial ties and a well-knit social fabric are most critical to him. "The land in Mosda provides enough to eat and the air is fresh as compared to the polluted industrial cities" – in his opinion. His view is echoed by several others in the village.

Most of the villagers prefer that their children be sent closer to the district headquarters to get a good education, and then move to higher skilled jobs in a city. However, for themselves, they prefer the lower wage and socially fulfilling rural life. The lack of 'cash' income is supplemented by contracted jobs for harvesting sugarcane in the region.

The interviews also revealed how this community of tribals – The 'Vasavas' – are connected to several other Vasava communities and to related tribes upstream in the Narmada valley. The social links between these tribes continue to be the network for rural-to-rural migration and chain migration. One of the persons interviewed had not lived in Mosda for very long. He was from Dhapaar, Dabka – a village further upstream in the valley, and had moved to Mosda because of land ownership issues. He also got better access to the district headquarters and road connectivity, in Mosda.

Some of the people interviewed still did not have roads to their villages and usually trekked over mountain paths to get to a bus stop. Some also claimed that their children would have to stop going to school during the monsoon, since the rivulets would swell and isolate their village.

Surat

Surat is fairly well connected with Mumbai by rail and sees a fair number of people who live in Surat and work in Mumbai. Business connections between the cities are strong too. Amongst the interviewees, most have strong ties with the Saurashtra region of Gujarat. This also contributes strongly to chain migration flows. Several migrants come from communities traditionally involved with skilled work. Due to the successive droughts in Saurashtra and the economy subsequently collapsing, they found work in Surat.

Some used their community ties to Surat to migrate, primarily in order to get a better education than is available in their native regions. Though a city like Ahmedabad is closer to Saurashtra, people are driven by known community ties to Surat. They continue to live in Surat even if they have to commute 3 hours each way to Bharuch or Vapi for industrial jobs.

There is one peculiar case of a migrant who comes from a cattle-rearing family. His family, while escaping drought in Saurashtra, walked with their cattle to Surat and settled there, and have now expanded into other professions.

Several of the other migrants interviewed see Surat as a place where rapid growth is possible. All of them come from over 1400 kms away – from Bihar, Odisha and West Bengal. All came because there is no source of livelihood for them back home. Within the span of 10 years, some of them have managed to rise from being unskilled construction workers, to skilled workers, to eventually becoming contractors. All have since brought their entire families to Surat, except for one who still has substantial farm lands back home. The rents they pay are nearly a third of what it would cost in Dharavi, while the income is comparable with Mumbai.

It certainly does appear that Surat is a place where people can reap high wage differentials.

Cases where the choices lie beyond the aspiration for a higher income:

There was a detailed interview with 'C' in her hut in the village of Mosda. As I began to ask her about her story, she started tearing up, before she composed herself. Unlike several other families in

Mosda, she is not able to avail the easily accessible urban economy of Ankleshwar and Bharuch. In large part, this is owing to the fact that she is a widow – a single parent. She had been part of the urban economy and lived with her in-laws, but after the death of her husband, the bitter relationship with her in-laws forced her to move back to her father’s village with her children and work on a very small piece of land with a few goats in a subsistence existence.

The fact that her in-laws were there made it difficult for her to live with her community in the city. Such settlements are highly segmented on the basis of community and place of origin. This was the easiest place to migrate to, and there was no other place she knew. As a result, her children cannot avail the good education that they could have had a chance at when they were in the city.



Figure 4-1: Farming in Mosda



Figure 4-2: C's small patch of corn

Delhi to Mumbai – A peculiar choice? (Urban to Urban)

In a scenario, contrasting the narratives described earlier in this study, 'D' moved from Delhi to Mumbai along with her mother and sibling, after the death of her father. Her reasons were compelling. Being the oldest, she had to leave her studies and start working. Working long hours as a woman in Delhi made her feel unsafe, and there were other issues associated with being in Delhi that she was uncomfortable to speak about. Being well educated, she concurred that Mumbai was a city that was fairly safe for women, provided access to sufficiently high salaries and thought that there were several opportunities. She also knew a relative who lived in Mumbai. She now lives in formal housing in Mumbai and pays a rent of Rs 8500 per month for a formal sector house, which is no different from what Lazar pays (Rs 8000) for a formal – MHADA house in Dharavi.

Not a conventional wage differential –

Kanhaiyan works as a mason in Ahmedabad. His village is near the station of Chhapra, Bihar. However, working in the city does not take away from his agricultural income. Here, his rural income does not reduce the wage differential, but actually adds to it. For the time he spends

working as a mason in Ahmedabad, he has planted the fast-growing eucalyptus trees on his land. This idea occurred to him after he found out that the trunks of these trees fetched as much as Rs 1000 per shaft in Gujarat's construction industry. Eucalyptus is a low maintenance, fast growing, high yield crop for him. However, the shift to Eucalyptus would not have been sustainable for him earlier, since he would not have been able to sell the timber unless he had access to the high-value Gujarat construction market. Such cases are unique in terms of a double wage differential benefit and the benefits of access to a market. However, such cases are not taken in the statistical model since they are not the norm.

A construction contractor from Ganjam district, Odisha, who has worked all over Gujarat over the last 10 years, is now settled in Surat. He has lived in Mumbai earlier, but life was not easy there and expenses were very high. Having left farming a decade ago, he says that there isn't enough revenue from farming, but lower caste workers/ landless farmers continue to till his lands. He himself belongs to the 'Mistry'⁶ caste. The social power and influence he holds over people from the lowest castes mitigates the risk of his land being usurped and, at the same time, he can earn 25% of the yields from his farm.

⁶ Traditional Craftsman

**5. INFERENCES AND ANALYSIS OF THE INTERVIEWS -
CONNECTING TO THE LITERATURE**

A key reason for synthesizing the literature review with inferences from the interviews is that there is a variety of literature that resonates with the findings. However, not all the inferences can be completely explained by the existing theory. At times certain theoretical constructs are at odds with the phenomenon unraveled through the interviews. Structuring a discussion between the two, through this sub-chapter, creates pointers for issues to be analyzed further.

Much of Glaeser's (2008) argument that cities attract people who are trying to escape poverty, and that marginal productivity of labor in rural areas is almost zero, could be said to echo a lot of what the interviews found. The observation that some migrants from Chattisgarh were aware of the exact wages for their work in their home state as against Gujarat, also gives credence to the Harris-Todaro (1970) model that the migration is response to a disequilibrium of income differentials (Bhattacharya, 2002). This strongly reflects neo-classical economics and models of 'push pull theory' (Lee, 1966). The observations also resonate with Bertaud's (2014) construction of cities as 'labor markets'. Several experts on migration (King, 2012) claim that internal migration as a phenomenon is too diverse and multifaceted (King, 2012) for a single theory to be constructed (Arango, 2004).

King's (2012) categorization of migration models includes –

- 1) Push-pull theory and the neoclassical approach;
- 2) Migration and development transitions;
- 3) Historical-structural and political economy models;
- 4) The role of systems and networks; the 'new economics' of migration.

This thesis is not about theorizing migration, but rather about understanding the decision-making process of the individual – who is seen as representative of the family unit – and measuring the value gain/capture in the process. In its understanding, it also incorporates the fact that migration is not an individual decision, but something that offers most value to a family collectively (Madheshwaran & Parida, 2011). For example, if the older sons have been helping on the farm and enabling the family to have more wealth at their disposal, this wealth may be funneled into the younger son's education and he may be expected to migrate to a city and seek an urban job to contribute a share of his income to the family.

The premise of 'wage differential' maximizer and neo-classical models:

Understandably, such a study would refer to the neoclassical approach, wherein economists see migration as a result of decisions by 'rational actors who make the most wealth maximizing decision based on the information that they have about the options. However, given my case interviews, a key rider is that the migrants do not have adequate information of the options and hence may not be able to make the most rational decisions. At the same time, I would refute Marxist analyzes that the value capture due to lack of information creates a wealth polarization amongst the binary of the capitalist and worker. I would rather argue that, due to the presence of middle men / labor contractors, there is an information gap between the market's willingness to pay for the good, versus the workers perceived self-worth/valuation. The value here is captured by caste fellows who have progressed further along in their access to, and embeddedness in, the urban markets. Other literature that tries to unpack the sources of 'information' often favorably attributes this to the networks of kinship and community (King, 2012) commonly known as chain migration networks. The networks are seen favorably as having a multiplier effect on migration and providing a social and financial safety net in the migration destination (Arango, 2004). Seeing them as a social capital that has knowledge embedded in the network (Massey, 1998) (King, 2012) may not be the most accurate way of looking at it, since the middlemen or the bearers of information, often use the information asymmetry to their own advantage. Clearly, the migrant may find his/her life better than earlier, but the repositories of information (the caste fellows/ middlemen) take an outsized chunk of value in the process. The theory also fails to account for information that may exist outside of these networks and thus may skew the ability to make 'rational' decisions. The larger wisdom to move to a different location may lie with the 'collective intelligence' of the network as a whole – which is akin to entering a new underserved market where they can maximize their earning potential.

The New Economics of Labor migration (De Haas, 2006) also hints towards the rational actor hypothesis suggesting that migration is an option in a family's portfolio' to mitigate risk away from likely eventualities such as crop failure, drought etc. (Deshingkar, 2014)(King, 2012). Other options on such a portfolio may include animal husbandry (milk and meat production). Thus, when evaluating the determinants of migration and analyzing the decision making process, one needs to

see the whole approach as part of a portfolio of options. Assuming migrants wish to maximize gains from the options available, it would be worthwhile to try and understand the magnitude of gains.

My thesis, with an objective to understand and quantify the value capture in the process, finds most affinity to the Stark & Fan (2007) models that draw on the pull-push model. It works with an assumption and limitation that the other factors do reflect in the pull-push model when measuring value differentials. i.e. the value differential should be able to reflect the cost of the confounders.

While we understand the determinants of migration, and there is substantial literature and econometric studies to identify factors that are statistically significant, we don't quite know if the particular migration decision of an individual/family is the best way to overcome their issues.

Assuming microeconomic choices are not rational, how do we measure them ?:

Literature that has built off the Harris-Todaro (1970) model assumes that people migrate to maximize the rural-urban wage differentials. However, that may not be achieved for a variety of reasons, as discussed earlier, such as the point that the person may not be 'rational' in decision-making, that there may be information asymmetry in the migration choice, that there may be other family compulsions that the econometric models cannot capture. Some studies recognize these constraints (Madheshwaran & Parida, 2015) and build on similar migration studies from China's example (Stark & Fan, 2007) to create a model to try and quantify some seemingly intangible reasons. Madheshwaran & Parida's (2015) study assumes that when a migrant is moving away from his native land, he is giving up on his social capital – on his ties to family and community, which often do serve as a safety net. This is assuming that the migrant is the primary income source for the family and has intentions to 'maximize the well-being of the family' (Madheshwaran & Parida, 2015). Thus, assuming there to be a trade-off between capturing a wage differential and social capital, they construct a model of the utility of migration –

$$U = f(C,S) = C-S$$

*C is the consumption of the migrant's family(welfare gain)

*S is the cost of separation from family (includes transport cost).

A tangible example of giving up social capital (Stark & Fan, 2007) is evident in examples from China about the 'left behind' generation of children that were brought up by their grandparents ("China

raising a generation of left-behind children,” 2010) while their parents pursued an urban wage. Such studies in India (Madheshwaran & Parida, 2015) (Deshingkar, 2014), do recognize that migration is not a one-time choice, but is, in fact, a process that is repeated multiple times over the years. The iterative seasonal migration is necessitated by several reasons – key reasons being barriers to entry to becoming urban, fear of disrupting their social capital and rural assets, as well as the fact that this is a low-risk transition rather than a risky bet.

This coincides with their agrarian cycles, droughts, festivals etc. For example, farmers not having large enough landholdings sow critical consumption crops which are tended to by the family, and spend 8 to 10 months in a year earning an urban cash income. This is also the case with farmers who do not have access to irrigation (who practice rain-fed agriculture).

Assuming that the time spent away is a good measure of ‘cost of separation’, the adapted utility of migration model (Madheshwaran & Parida, 2015) (Stark & Fan, 2007) is expressed as –

$$U = W_d \cdot t + W_o(1-t) - S \cdot t$$

* W_d = wage in destination

W_o = wage in origin

t = time

S = Cost of separation (from family).

Another way to capture loss of ‘social capital’:

While the above model does include time, the model fails to recognize the role of distance from native place. Time is not a very credible parameter when understanding these migrants, since they do not always behave in a rational manner by not going back home in the middle of a work stint. While time does play a role, it does not account for the cost and difficulty of maintaining ties with the native place. In my interviews in the Ahmedabad-Mumbai corridor, industrialists/ employers, as well as migrants, spoke about distance from native place as a key aspect. The distance parameter bakes in the cost and difficulty aspects and can also be a proxy for time. This becomes a key point to build a migration model to be explored empirically.

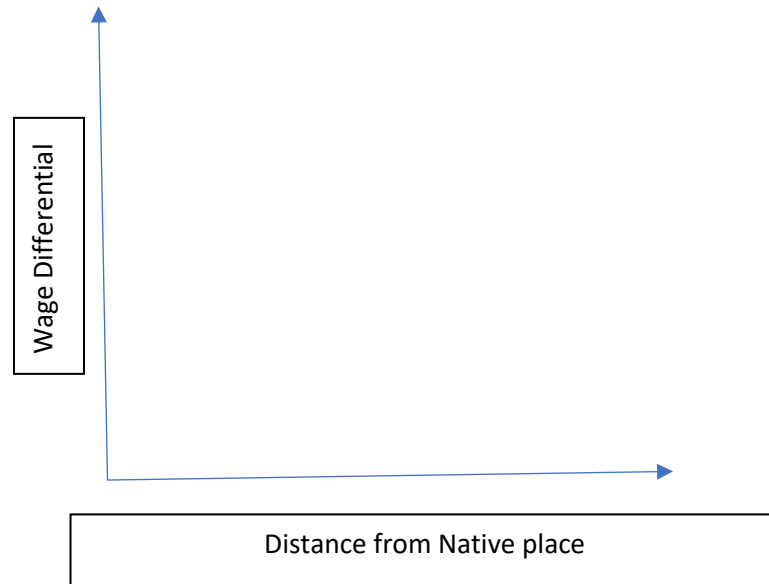
Applicability to inferences from interviews:

Based on 52 interviews, a general observation to be made is that people are notionally moving from less industrialized to more industrialized zones, from smaller villages to larger cities in other regions.

Chain migration and word of mouth play a crucial role in determining migration destinations. This also aligns with what the literature has found. The role of the Indian railways, which heavily subsidize travel, seems to be a major force allowing for migration. Sustained migration flows seem to be along railway corridors that directly connect to major cities – such as the link between Ratnagiri district and Mumbai, as well as the link between Surat and Burhanpur in Madhya Pradesh.

The allure of being close to family and societal networks that the migrants have grown up with is critical. It is a trade-off that's usually made with a short-term intent, as is also reflected by the migration literature (Deshingkar, 2014). Often, as is the case in Bharuch, social ties trump economic opportunity. This explains why the workforce in Bharuch has been replaced with people from UP and Bihar. The perspective and role of the industrialists in choosing migrants that come from longer distances, since attrition is lower, is important to take note of. At a microeconomic level too, for long distance migrants, the cost of returning back to their native place is also fairly high for them to consider taking leave from work. This has helped shape the labor market in favor of long distance migrants, and also results in better pay.

Tying back to the Stark & Fan model, in an ideal case, as a migrant gives up more and more of his social capital by moving further away from his native place, he/she should be able to proportionately increase their wage differential. If this does not happen, it may be assumed that value is lost to information asymmetry or other such parameters.



The information asymmetry component may also be useful to explain a disproportionate capture of the wage differential in costs, such as in urban housing, etc. A wage differential that's commensurate with the social capital that's been given up, as well as the potential to maximize wage differential in the same city over a period of time, are useful parameters to describe the attractiveness of a city to a migrant. The idea of 'attractiveness' is also something that is not well illustrated in the migration literature on India, as it primarily focuses on determinants of migration.

Determinants of migration:

Several studies find age to be a strong determinant of migration, with 17 to 35 years of age being the peak time for being a seasonal migrant. Beyond this period, either they manage to bring their family to the urban life, or if they are unable to make the urban transition, they return to rural life. The fact that, for those who are from a lower caste, urban life offers much lesser discrimination and better opportunities, also contributes to migration likelihood. Having more than one brother, or having a wife who is capable of farming – wherein there are other hands on the farm – are also strongly correlated to being a migrant. While having sufficient agency is necessary to migrate, since it requires taking a risk, studies have also found that the absolute poor and landless find it very hard to migrate (Shah, 2005) (Deshingar, 2014). Expert opinions (Amul) differ and suggest that, faced with absolute distress, the landless do find a way to migrate. There also appear to be distinctions between people migrating to escape dire circumstances versus those migrating to maximize income and escape

poverty. Deshingkar and Start (2003) attribute the former reasons to unskilled labor in construction and the latter to unskilled labor.

Factors measurable from census 2001 data have also been analyzed empirically to understand the probability of migration (Parida & Madheshwaran, 2011).

<i>Variables</i>	Predicted Probability of Being a Migrant		
	<i>Predicted Probability from Probit Results</i>		
	<i>ST</i>	<i>SC</i>	<i>OBC</i>
Education (Below Primary)	0.1745	0.1871	0.2187
Education (Primary)	0.1775	0.1903	0.2222
Education (Middle School)	0.2152	0.2294	0.2648
Education (Secondary)	0.2420	0.2572	0.2946
Education (Higher Secondary)	0.2465	0.2619	0.2996
Education (Graduation)	0.2265	0.2412	0.2775
Education (P.G. and above)	0.2307	0.2455	0.2821
Education (Diploma/Certificate course)	0.3450	0.3628	0.4056
Marginal Farmer HH	0.1425	0.1536	0.1817
Small Farmer HH	0.0301	0.0335	0.0427
Semi-medium Farmer HH	0.0291	0.0324	0.0414
Medium Farmer HH	0.1361	0.1469	0.1742

Figure 5-1; (Source: Parida & Madheshwaran, 2011)

The most critical aspect to note in the above table is the probability of how migrating peaks off after Higher Secondary (Grade 12) education, and declines after further levels of education. However, a technical skill or certification has the highest probability of enabling migrating. Such jobs would usually put you in the blue collared sector where income mobility is not high. However, it is a sure way to escape poverty and enables intergenerational socio-economic mobility. Several of the people interviewed in the study did have similar experiences with intergenerational mobility. Besides being a certified skilled worker, even being in a traditional craft like carpentry, is seen to increase likelihood of migration and absorption into allied white collared professions such as architecture, construction / civil engineering, etc.

Determinants of the Migration Decision in India

Variables	Mean	SD	Probit Results	
			Coefficient	ME (dy/dx)
Intercept	---	---	-0.143 (-0.59)	---
Age	35.41	12.64	0.0431 (15.66)**	0.0129 (15.73)**
Age squared	1414.04	977.89	-0.0005 (-15.54)**	-0.002 (-15.61)**
Monthly Wage	488.61	1308.3	0.00031 (14.81)**	0.0001 (14.73)**
Education (Below Primary)	0.10	0.30	0.1154 (5.31)**	0.0357 (5.15)**
Education (Primary)	0.15	0.36	0.1345 (7.08)**	0.0417 (6.87)**
Education (Middle School)	0.18	0.39	0.3013 (16.65)**	0.0965 (15.8)**
Education (Secondary)	0.11	0.32	0.3742 (18.03)**	0.1234 (16.77)**
Education (Higher Secondary)	0.06	0.25	0.3670 (14.54)**	0.1221 (13.43)**
Education (Graduation)	0.09	0.29	0.3045 (11.05)**	0.0992 (10.32)**
Education (P.G. and above)	0.03	0.18	0.2989 (7.4)**	0.0984 (6.85)**
Education (Diploma/Certificate course)	0.02	0.15	0.6414 (17.48)**	0.2281 (15.84)**
Married	0.72	0.44	0.1553 (9.17)**	0.0453 (9.49)**
Scheduled Tribe	0.13	0.34	-0.3242 (-17.62)**	-0.088 (-19.71)**
Scheduled Caste	0.23	0.42	-0.2994 (-18.96)**	-0.084 (-20.41)**
Other Backward Caste	0.35	0.48	-0.1858 (-13.98)**	-0.055 (-14.31)**
Belong to Marginal Farmer HH	0.94	0.24	-0.4443 (-1.9) †	-0.1505 (-1.73) †
Belong to Small Farmer HH	0.04	0.20	-0.8636 (-3.54)**	-0.1791 (-6.02)**
Belong to Semi-medium Farmer HH	0.02	0.13	-0.85835 (-3.39)**	-0.1743 (-6.04)**
Belong to Medium Farmer HH	0.00	0.06	-0.0532 (-0.17)	-0.0156(-0.17)
Household Size	5.06	2.49	-0.3195 (-8.7)**	-0.0958 (-8.69)**
Household Size Squared	31.82	37.10	0.0103 (13.41)**	0.0031 (13.37)**
(Household Size)* (Marginal Farmer HH)	4.65	2.64	0.0408 (1.16)	0.0123 (1.16)
(Household Size)* (Small Farmer HH)	0.26	1.39	0.0657(1.79) †	0.0197 (1.79) †
(Household Size)* (Semi-medium Farmer HH)	0.11	0.93	0.1016 (2.71)**	0.0305 (2.71)**
(Household Size)* (Medium Farmer HH)	0.03	0.50	0.0061 (0.13)	0.0018 (0.13)
No. of observations (N)				73538
Wald χ^2				7743.93***
Pseudo R ²				0.1274
Maximum Log Likelihood				-36143.159

Note: Absolute value of Z-statistics are given in parentheses and **, * and † implies the level of significant at 1%, 5% and 10% respectively.

Figure 5-2 (Source: Parida & Madheshwaran, 2011)

Having social clout and being able to lease your land to landless farmers is also emerging to be another determinant that I found through my interviews. However, much of the studies work with the assumption that migration is primarily driven by socio-economic deprivation such as caste (Parida & Madheshwaran, 2011) (Refer fig 5-1 on 'Probability of being a migrant').

Other Determinants identified in interviews, not captured in census data:

What much of the literature does not identify is how India's growing GDP per capita PPP is making tractors and other mechanical farm equipment more prevalent, and boosting productivity. However, tractors cannot run on steep terrain and terracing is expensive. Thus families that farm sloping land using oxen find farming economically unsustainable. The land is such that it cannot even be leased to other landless farmers. This case was apparent in interviews with migrants from Ratnagiri, Maharashtra, as well as Mosda, Gujarat. It is worth noting that people relegated to sloping land have historically been the more disadvantaged.

Barrier to Entry for Urbanization:

A lot of earlier literature (Lee, 1966) on migration put substantial weightage on the barriers to urbanize. The interviews lead to inferring the barriers and possible avenues for value capture as -

- Affordable Housing (Financial and social barriers)
- Access to urban employment networks (Information Assymetry)
- Not Reaping the demographic dividend (Skill/Education deficiencies)
- Agrarian vs Urban "Time, Work Discipline" - Cultural barriers (Thompson, 1967).

However, I would argue that in my sample region, excellent road and rail connectivity, as well as historical links between markets makes it more of a level playing field. For those coming from very far, the barriers may be in terms of information asymmetry, but those do get resolved in the span of a few years. The bigger barriers that now exist relate to sustaining the urban life.

Most migrants interviewed stated that rent took away the largest part of their income and was often the reason they had to abandon the plans to urbanize. When accessing urban areas, they need access to stable employment and housing. Their biggest expenditure is on housing rental. The salary and ability to pay rent also affects whether or not they share a room with a few other single male migrants or can afford to pay for the whole place for their spouse, and at times, for kids. This indirectly affects the demographic dividend around whether their kids can access good quality education and healthcare in cities.

High costs of Informal Rental Housing as a key barrier:

Rental remains a key mode of accessing housing, though after spending a large number of years in a certain location, there is a yearning to own a house. Often it is not a linear process, but starts with paying a 'heavy deposit' for a 10 year lease in Dharavi and finally being able to buy a house. The ratio of heavy deposit to purchase value is between 5 and 5.5 times the value of the deposit. Again, the purchase is not based on completely legal paperwork and the interviewees aren't willing to be very transparent about what it actually is. In effect, the 'purchase' gives them the right to occupy and lease out the property.

The rents per square foot in the informal sector in Dharavi are extremely high - almost at par with high end housing at 30 Rs/ sq ft. This is not at odds with several business studies that find that smaller footprints rent for much higher, per square foot. Larger properties do not get into these business models since it drives down the quality of the product - since it invites overcrowding and a low income audience at a low price point. However, if one can convert this into a high throughput, membership model it has worked very well to provide high quality spaces. This model 's apparent success can be evidenced by Generator Hostels as well as ventures such as WeWork.

Some people like the housemaid from Chiplun, Ratnagiri, reduced rent per square foot to Rs 8.3/ square foot / month, by choosing to live 2 hours away from her place of work. Here, rent as a proportion of household income is less than 10%. This is in stark contrast to others who pay almost 20%. This rental cost is also offset in her case by having a tenant in the room who pays Rs 1200/month for boarding and lodging. The tenant is a younger boy from the maid's native village and a long term neighbor. She has been instrumental in getting him to the city by assuring him of housing. Since she cooks for her family anyway, having one additional member isn't much of a burden, but the income received from him is substantial for her family that makes only Rs 20,000 per month. The trade-off is compromised privacy for the family, but this offsets the rent and provides an extra hand to help out at home.

In contrast, the average household income in Dharavi is found to range between 40,000 to 55,000 Rs per month. This effectively could be termed a premium location slum, due to its central location

between the major business hubs of south Mumbai and the Bandra Kurla Complex⁷ and excellent public transport connectivity.

The allure of the large city is in part due to the ability to live at very low costs, and work in a place that can provide relatively high wages. A city like Mumbai, where the suburban train system is highly subsidized, it allows people to capture this wage differential at the cost of their time which is not valued as very high. This is much in line with classical models of the bid-rent curve.

This finding points to the question: Are cities that have more disparity more attractive to migrants – since they may offer greater chances of mobility? Does it become more attractive if the extremes are available along a public transit corridor? There may be several ways to understand and measure this ‘disparity’ which also becomes a critical point to probe.

It was found that for much of the people living in informal settlements, the last mile connectivity costed almost 8 to 10 times that of the suburban rail pass which helped them cover the greatest distance. The value capture in these shared auto rickshaws, who are often allowed to ply along in overcrowded states by bribing the local authorities, is another scope for research that my thesis will not delve into. However, it does give credence to measuring within the influence zones of public transport corridors.

Information accumulated through experience leads to better ‘wealth maximizing’ choices:

Based on the interviews, I identified that people who had spent a substantial amount of time (8 to 10 years) in the corridor as seasonal migrants, increasingly made financially rational decisions and identified where their wage differentials could be maximized. Their range could include industrial towns in the Saurashtra Peninsula of Gujarat, Mumbai and Ahmedabad, and then they were found to eventually move to industrial hubs of Ankleshwar and Bharuch. In the latter two towns, high pollution and poor infrastructure makes rents very low, but the demand for skilled workers is always very high. This enables them to earn wages equivalent to Mumbai.

An Income to Rent ratio linked to the progression to becoming urban:

The interviews also helped identify a certain logic of progression of a seasonal migrant becoming a permanent migrant based on a salary to rent ratio. For example, a temporary migrant seeking to

⁷ A Central business district in Mumbai

offset a bad agrarian season travels with groups of 4 to 5 friends and rents a standard 10ft by 12 ft room together, where the rent liability per person is between Rs 250 to 500 per month. Often, the friends take turns to sleep if they are able to co-ordinate day-night industrial shifts. As the worker moves higher up in skillsets and wages and tries to become more urban, they settle for a room not shared by more than two individuals – paying between Rs 900 to 1500 per month as rent. When a worker is able to afford an entire room by himself (Rs 2500 to Rs 4500 per month), he brings his wife over to the city and plans a family. This sequence is not always linear and often one observes people moving two steps forward and then a step back.

A lot of the above phenomenon is able to point towards some trends, and the anecdotal data begs to be probed quantitatively.

(*The cases under the heading 'Not Quite a conventional wage differential' are seen as aberrations and hence not included in the quantitative analysis using spatial statistics in Chapter 6.)

6. QUANTITATIVE ANALYSIS

6.1 Data and Methodology for Quantitative Analysis

Need for quantitative analysis:

The analysis of the qualitative interviews and subsequent inferences provide some pointers and questions to probe further quantitatively. While the literature understands the phenomenon, and identifies determinants of migration, it still does not provide enough nuance into what allows a migrant to urbanize. What makes some people successfully urbanize and others remain in cyclical seasonal migration?

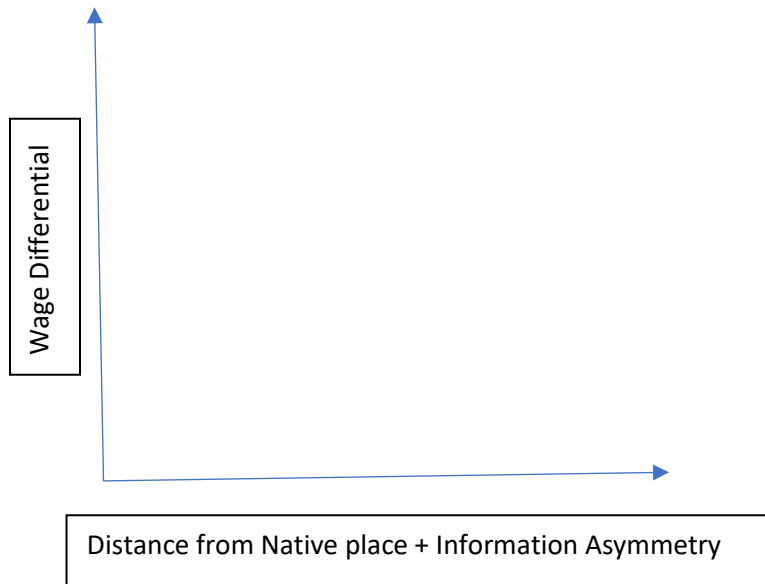
A lot of work has been done on migration and informality. What is also clear is the established links between how they play a role in shaping the process of urbanization in Indian cities. However, little work has been done to quantify the 'value' of 'insecurity of tenure', and of the 'cost of mental distress due to separation from family'. What is the wage differential that justifies such choices? Are such choices made in a state of stark information asymmetries? Or a lack of choices? Or in a situation/context where there exist high search costs?

The qualitative analyzes provokes a further unpacking of the 'black box' and quantifies the differences among the various migration decisions made by the people included in interview sample set.

Based on the above, we try to measure the following -

1. If a migrant has chosen a destination over his native regions, this certainly becomes a leading question of further inquiry and prompts one to measure what trade-off they are making by accessing a market like Mumbai versus a big city close to his/her native place?

2. If they are giving up social capital, we should see a proportionate increase in wage differential. If that is not the case, we assume that there is value lost in information asymmetry. This model is explained by the figure below



When running a co-relation test for people with and without information, what are the results for their specific case versus that particular choice of migration decision based on the characteristic of the Destination and origin agglomerations ?

3. Most migrants said housing was their biggest cost. Hence, we will also try and measure how informal housing markets (real estate) capture value, inferring from the fact that most lower wage migrants do not access formal housing. How do these compare to formal markets?

Data Used & Sources:

Thus the data required for such a study is categorized into –

a. Migration Data

- Census of India 2001, 2011

- Geo spatial Open Street Maps (OSM) data on roads, railways lines, transport stations/hubs.
- CSSO (Central Sample Survey Organization, 64th round) GDP/ income data for 2006, 2017 (projection)
- Night light data as a proxy for GDP and population density at a 1km x 1 km pixel level – as sourced from IDFC institute’s github repositories (geo-spatial and financial tabulation)
- Statistical data from data.gov.in on HDI (Human Development Index) of states in India over last 15 years.
- Studies on determinants of migration – quantifying cost of separation from native place – based on 64 CSSO survey (Parida & Madheshwaran, 2011 & 2015)

b. Real Estate (Housing) data.

- Attained by web-scraping rental housing listings from a prominent company in India that physically verifies listings on ground. (*name of resource withheld due to privacy concerns)

6.1.2 Methodology

The key aspect of the trade-off between ties to native place and wage differentials could be explained through a statistical analysis delineating some characteristics of the origin and destination of these migrants. The migration decision that they make is not unique to them, since most of them reach through chain migration and this also becomes a basis for others in their native region to make the same decision. Each one may have different skills and characteristics and hence a difference in wage differential (visible in the plot) – however, one may have to analyze the economic characteristics of the region to understand the general scenario.

(The cases under the heading ‘Not Quite a conventional wage differential’ are seen as aberrations and hence not included in the quantitative analysis using spatial statistics.)

Key points:

Extensive interviews with 52 migrants who made 24 distinct origin--destination choices led to an inference that most use chain migration and prefer to live close to their native place rather than a distinct city. The same interviews also pointed out that certain people were earning a much lower wage for a high cost of living in their current migration choice as against other obvious migration choices, primarily because they did not know such an opportunity existed. The value capture would represent two things – the cost of social separation from family and ‘cost of making an inefficient decision’. Existing studies use ‘time’ spent in an urban area during one year as a metric to measure the cost of separation from family (social capital). However, this does not account for the difficulty of the transition. It also does not account for the fact that migrants who come from nearer areas often return home for short holidays or on weekends, though technically they are listed as working in an area for 10 months of 12 in a year. Thus, based on the analysis from the qualitative section, distance becomes a better metric to measure ‘social capital’. If we are to consider that the cost of social separation increases with distance, in an ideal scenario, the wage differential should also increase. Some studies have tried to quantify the cost of social separation in migration decisions in India. However, little work has been done in trying to quantify the value capture due to other reasons. So to analyze if they are indeed making the most value maximizing decisions, we need to evaluate the differentials they have reaped.

In India, granular data for economic geography is often hard to find. However, there have been several studies attempting to make use of night light data. A substantial study on South Asia, published in 2015 (Zhou and Hubacek) found that using night light data as a proxy for GDP parameters was a valid method. Their results were statistically significant and has an R square of 0.87. Several others (Ghosh, 2010) (Ma, 2014) (Bhandari, 2011) concur with using night lights as a proxy for GDP and population density at a granular level for countries such as India where other sources of granular data are scarce and usually lag by 8 to 10 years. The IDFC institute in Mumbai used these methodologies to extract granular data on population and GDP on a pixel size of 1 km by 1 km. Figures 6-10 to 6-13, illustrate how such granular data can provide a much more nuanced understanding of value distribution within an urban agglomeration, as against a case of GDP data normalized over an entire administrative boundary. It is important to note that this study is from 2014. After 2014, due to a rapid investment in electrification in India, night lights as a proxy for GDP tends to be unreliable.

Based on the datasets collected from IDFC Git-hub repositories, open street maps and the Census of India 2011, the following methods of spatial analysis were used.

1. Identifying a 100 km buffer around each origin and destination
(This accounts for the discrete choice, because qualitative interviews found that migrants prefer to find a place within such a range of their native village, because it allows them to remain close to their families. The other alternative is to find a region within the same culturally or linguistically contiguous region. In these cases, such a discrete choice was also considered. The centre point of the buffer was the major railway station of the area. In case of smaller villages, the nearest bus station or railway station within 25 km was considered.)
2. Using spatial statistics in GIS, and after executing a spatial join between the GDP per sq km and population density, GDP per capita per sq km was calculated.
3. Taking granular values within 2.5km buffer of rail infrastructure, and 1.5km of highway infrastructure and 1 km of major roads, datasets were created for the critical transport infrastructure. (This method was used, assuming that migrants would move to well connected areas, when moving out of their native place. Being able to reap the wage differential offered by an urban agglomeration was possible for a lower wage migrant only if it had access to major public transport networks. Some sample tests showed that, indeed, the transport buffers accounted for most of the GDP and population values of the total dataset.)
4. Thus, we have a spatial and statistic dataset so clipped for all origins and destinations.

From here-on, the data was exported in R for statistical analysis

1. Subtraction was carried out between each destination and origin pair, assuming the migrants reap a wage differential by moving away from their native place. (This helps quantify the value of the choice.)
2. A statistical differential (subtraction) was executed for each destination and origin set.
3. Variety of parameters were analyzed using box plots to see if there was a 'gain' / wage differential due to migration. The various models tested, based on the parameters used, included -

1. For “Wage Differential’ - GDP per capita per sq km - 1st Quartile, 3rd Quartile, Mean, Median
2. For Market size – ‘Total GDP’, ‘Total Population’
4. Using pair plots, co-relations were sought.
5. Plausible independent variables were regressed over ‘distance migrated’ to understand if moving further away from one’s native place led to higher gains.
6. Next, the dataset was separated into - people who made migration decisions with adequate information and those who did it without adequate information. (People who did not have information were also less educated.) Based on the segregated datasets, regressions were run to understand the relation between distance from native place and migration decision.
 1. A binomial logit model was used to check for statistical significance of ‘Information’ on a beneficial migration decision.
7. To further illustrate the value captured by informal real estate markets, an analysis of the wage saved, and the rent-to-income ratios, etc. was conducted with respect to distance from native region. This was to understand if proximity to the destination, information asymmetry, etc. had any role to play in increasing wage differentials.

6.1.3 Limitations:

1) Migration Data

- In the interviews, a lot of people may not have mentioned the actual villages they hail from, since they want to identify with bigger places that more people can recognise.
- Since I got in touch with people through introductions, it is possible that clusters of people from similar places are included in the sample set.
- The last NSSO round – the 64th round – happened in 2006, hence there is no more granular data on GDP which is updated.
- There is NSSO per capita income from 2011 census, which is projected to 2017, at a district level.
- The available datasets had broken geometries, so it was not possible to calculate network distances.
- Values have been taken from only within buffers – from impact zones of major transport infrastructure. This is because migrants were found to rely heavily on the transport options

along major road and rail routes. Based on the visualizations created, it was observed that GDP values peak along transport lines.

- I did a 'spatially representative' survey across the Mumbai and Ahmedabad Corridor. However, the number of, and nature of, interviews in each place depends on the individuals and the social networks they have been accessed through. Interviews accessed through place of work provided much greater diversity in terms of origins, whereas, ones accessed through place of residence tended to have similar origins – reflective on how residential zones are segmented by caste, community, language group, native place etc.
- For defining agglomerations in the AHMEDABAD-MUMBAI CORRIDOR, based on the contiguous urban extents visible, they were clustered together and the buffered regions of the respective districts were joined as:
 - 1) Ahmedabad, Gandhinagar, Mahesana
 - 2) Anand and Kheda
 - 3) Vadodara
 - 4) Bharuch-Ankleshwar
 - 5) Surat Navsari (Because residents and developers saw it as an extension of their zone of influence and part of the Surat Market)
 - 6) Mumbai

This clustering was based on anecdotal data from interviews, as to what business heads and workers perceived to be the extents of their work geographies. The agglomerations are defined by the distance from the main city up to which a substantial share of workforce resides and commutes daily from.

2) Real Estate Data

- a. Focus was on rental data, since rental is a more realistic marker of the market, as against sale prices, which tend to be very speculative on listing sites.
- b. Through pair plots and exploratory data analysis methods, it was clear that certain values for size of property, as well as rent, had been erroneously entered on the listing. Some indications of this included the listing of a 10,000 sq ft apartment as a 2

bedroom unit, or instances where an extra zero had been added to the asking price of the rental.

- c. For this reason, all properties having rental price above Rs 300/sq ft in Mumbai and 100/sq ft in Ahmedabad were eliminated.
- d. All properties having a quality scale below 3 were eliminated.
- e. All properties having a size greater than 10,000 sq ft were eliminated.
- f. All of the above led to the elimination of about 53 values across the total dataset of 24423 data points. The total breakdown eventually considered is: AHMEDABAD - 2397, MUMBAI - 21651, VAPI VALSAD - 100, SURAT - 17, BARODA - 191.

6.2 Quantitative Analysis and Discussion

6.2.1 Visualizing the Geo-spatial Data available on India (GDP and Population Density)

Comparing with figures in section 2, migration is observed from the high population density Gangetic plains to the major urban centres of Delhi and the Ahmedabad-Mumbai corridor

POPULATION DENSITY 2011 - DIVA GIS

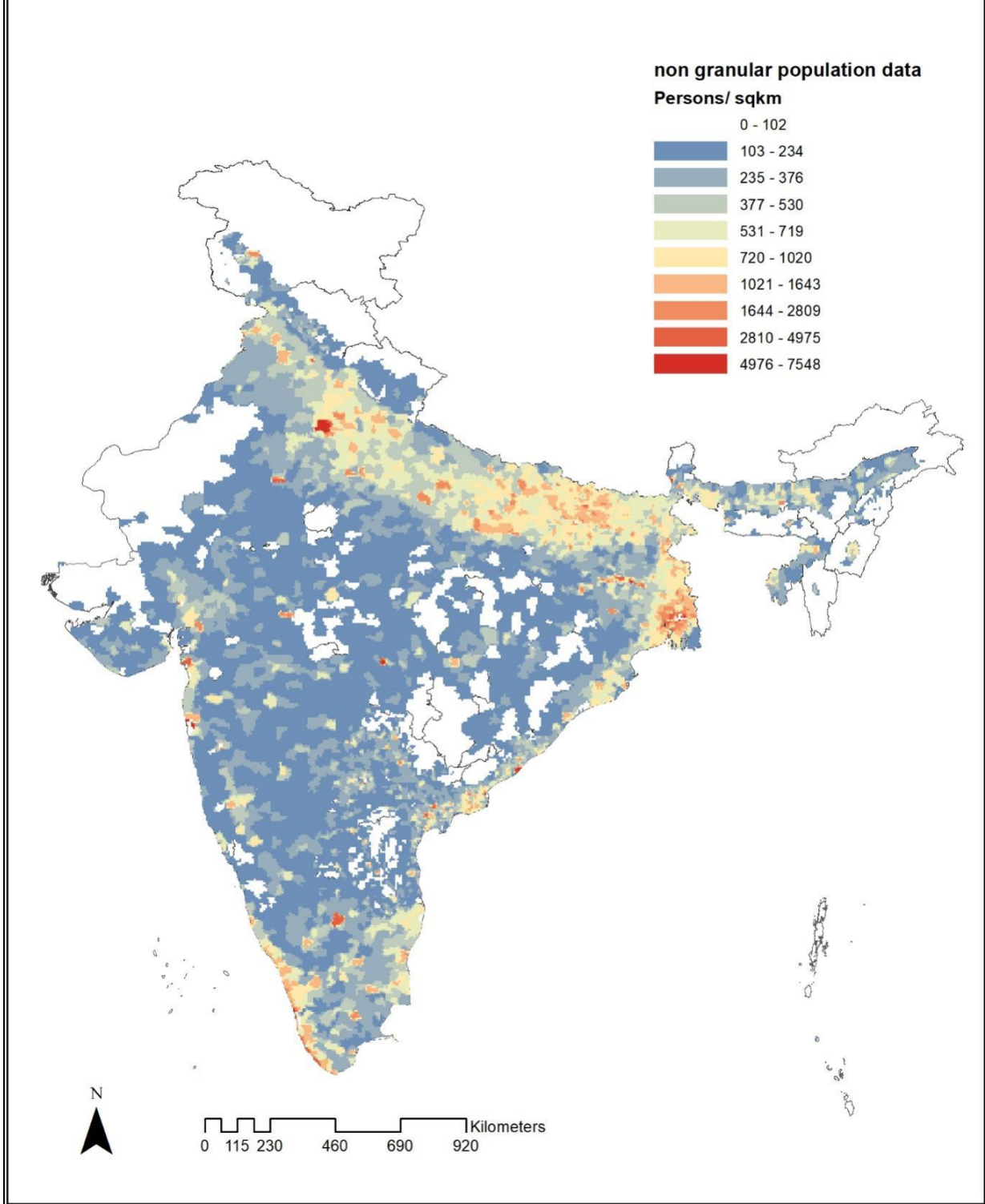
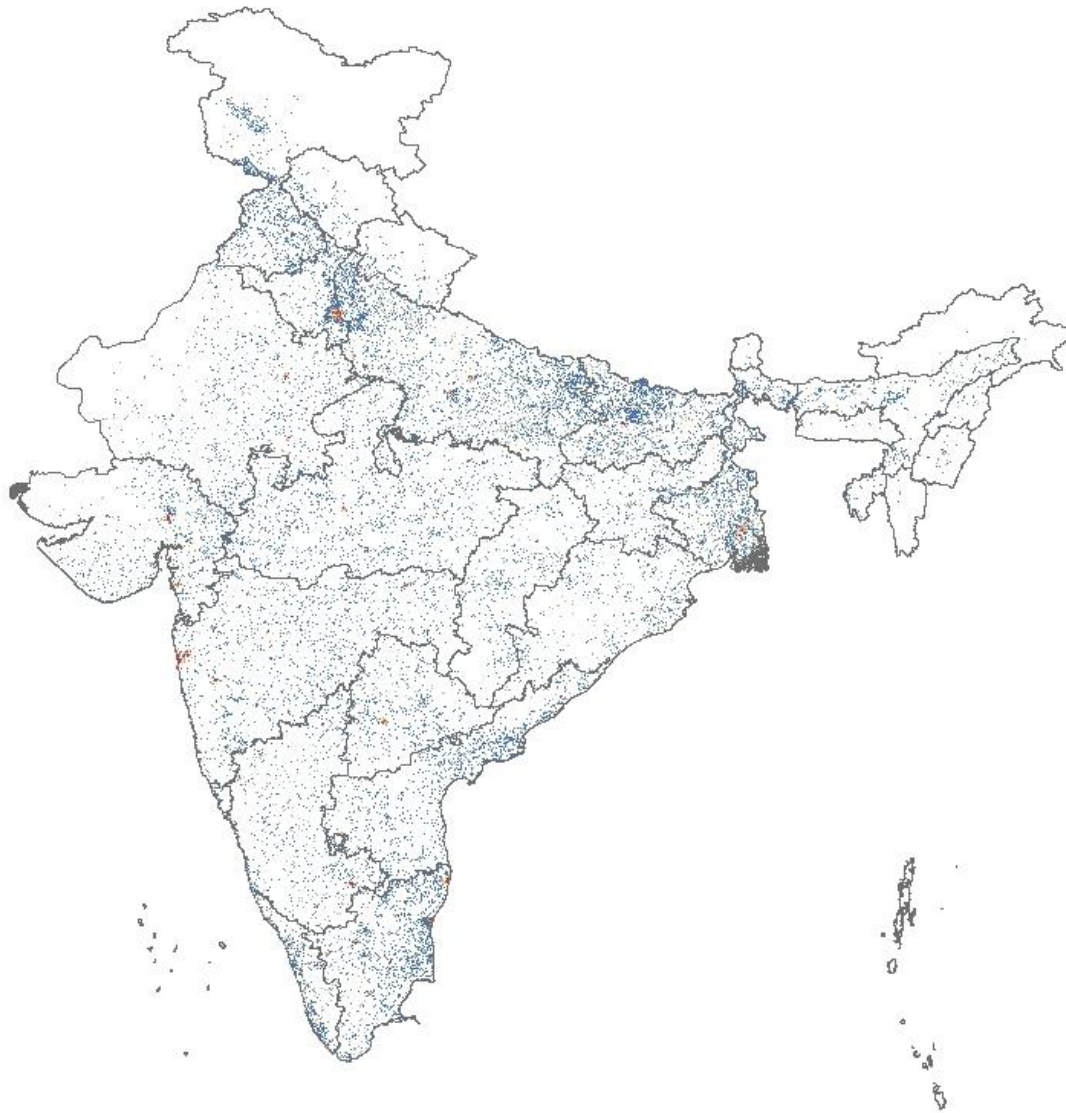


Figure 6-1: Population Density as per electoral boundaries (Talukas).

INDIA POPULATION DENSITY 2014 - NIGHT LIGHT DATA EXTRACT



Population Density

Persons / sqkm

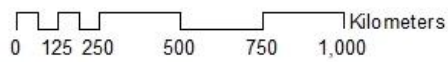


Figure: 6-2

GDP - GRANULAR - NIGHT LIGHT EXTRACTED DATA 2006 NSSO

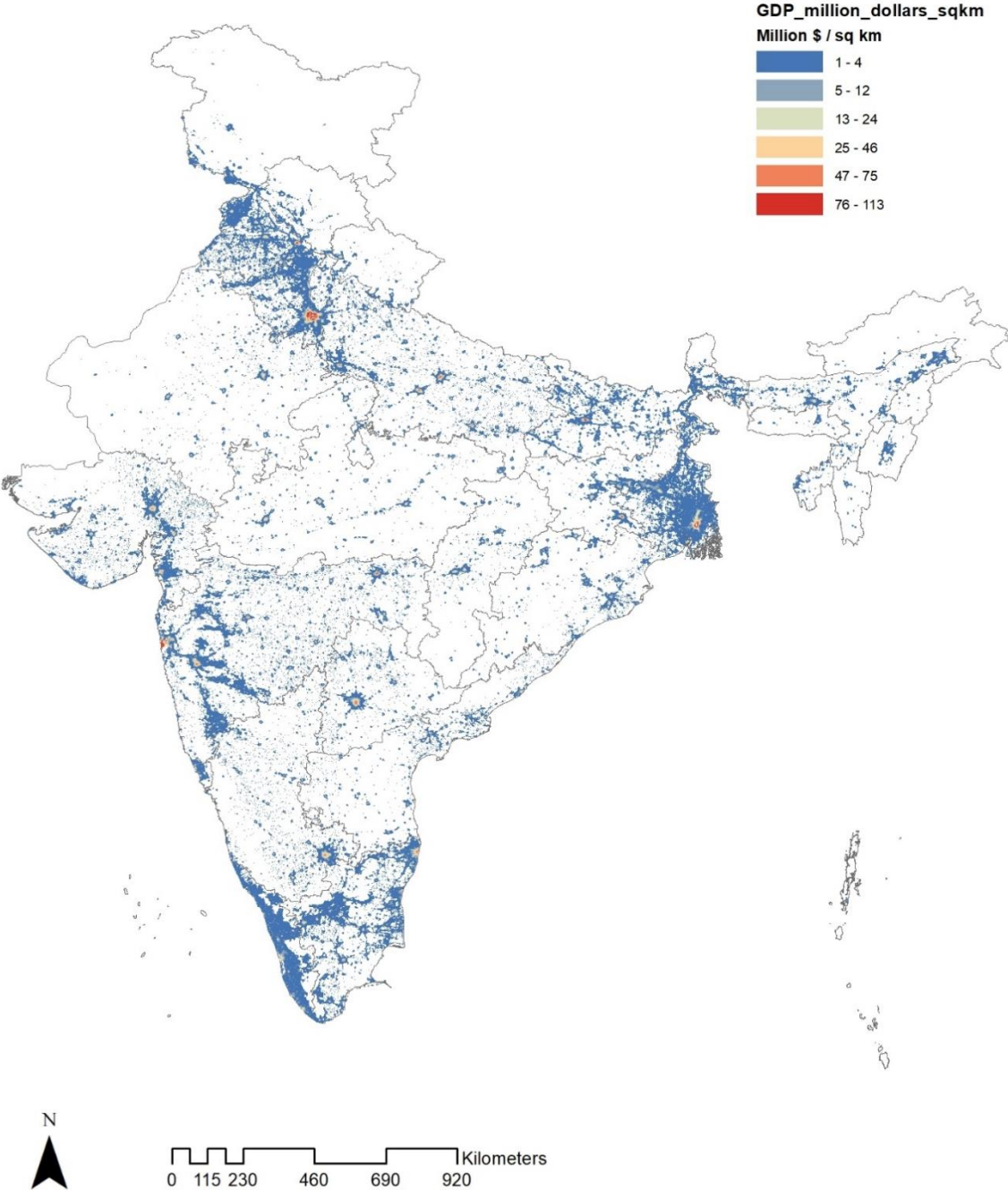


Figure: 6-3

GDP PER CAPITA PER SQ KM - NIGHT LIGHT DERIVED

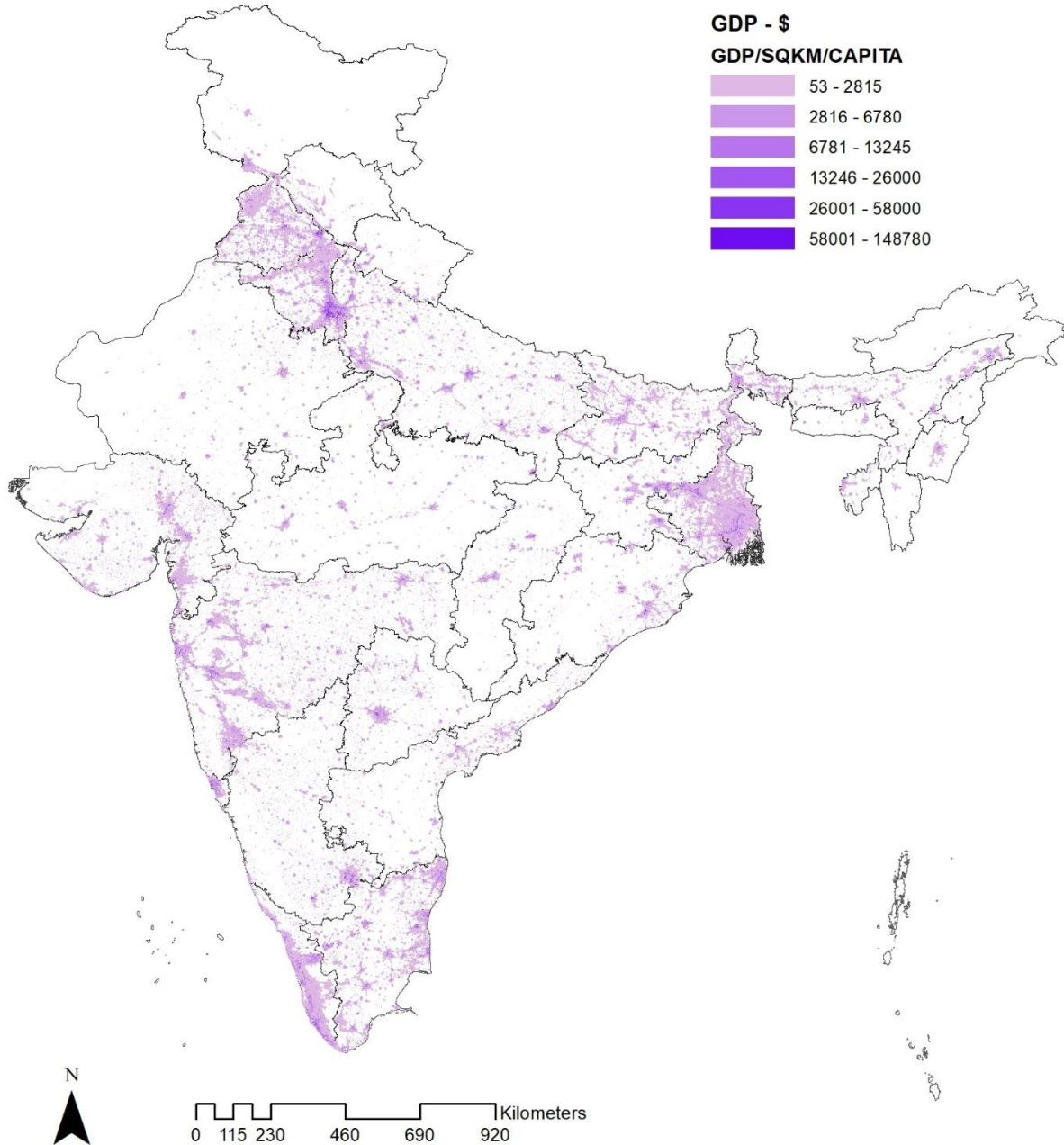


Figure: 6-4

DISTRICT LEVEL PER CAPITA INCOME -2017 PROJECTIONS NSSO

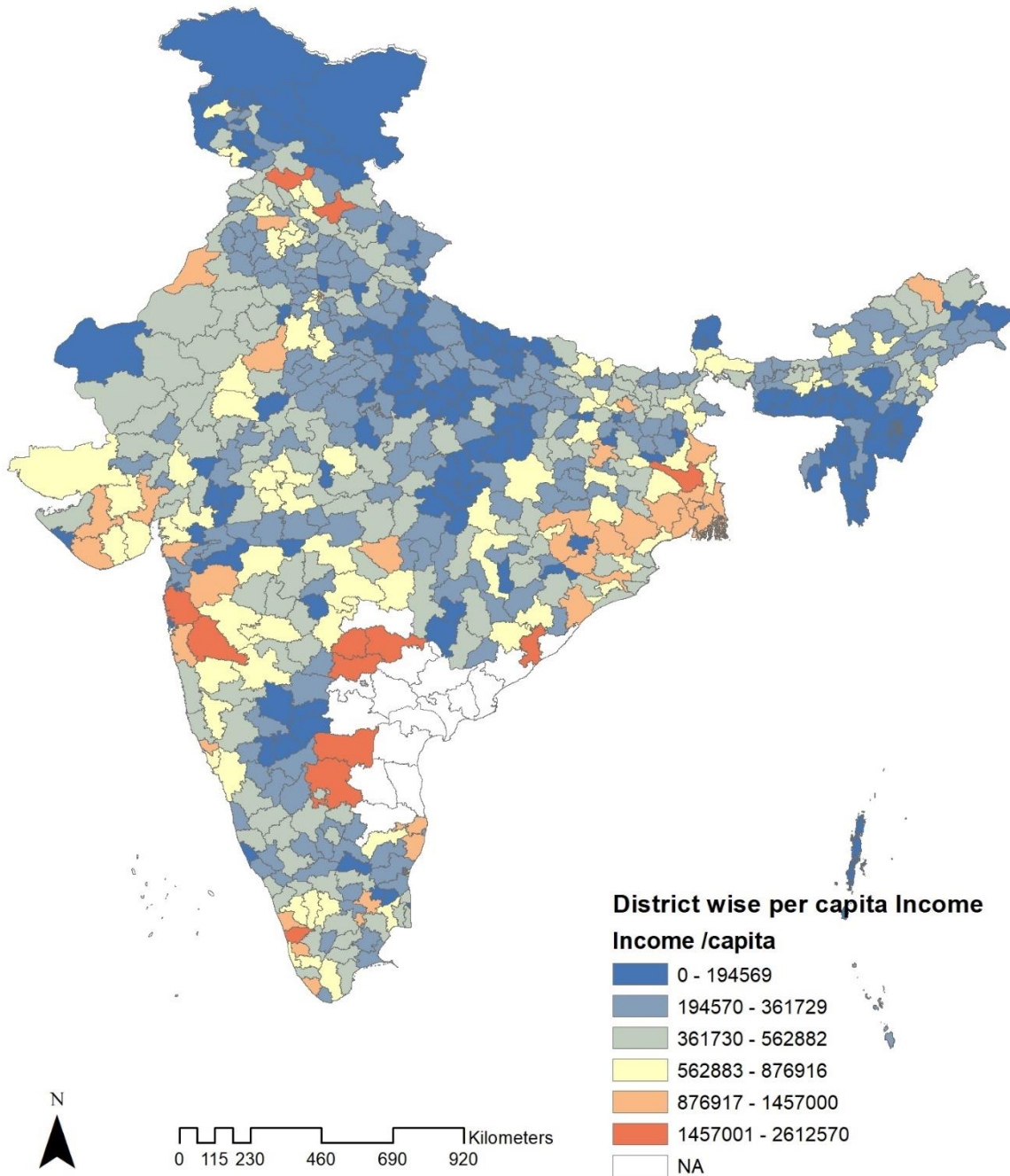
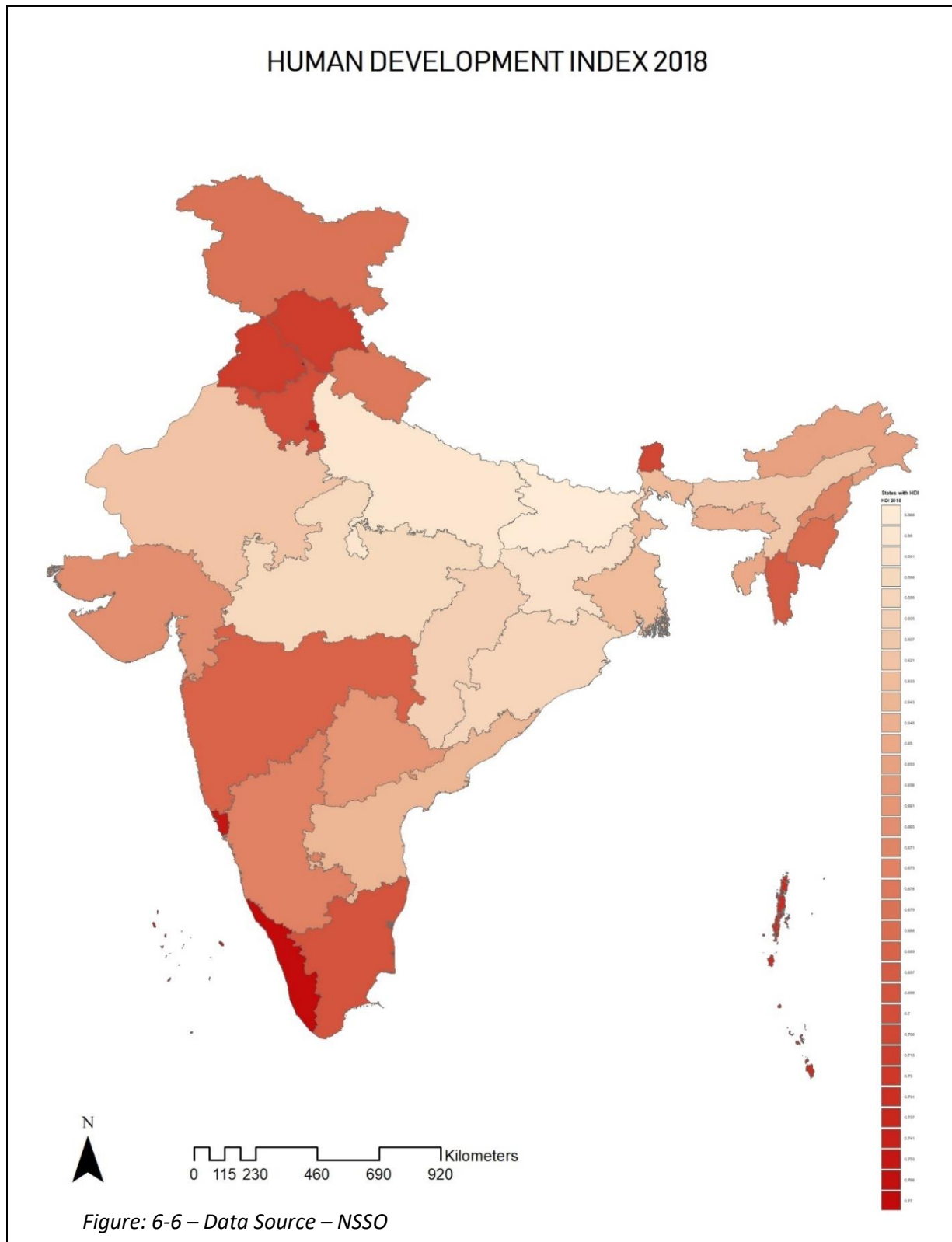


Figure: 6-5 (*All units in Rupees per annum)

6.2.2 Visualizing the Origin and Destination Pairs (source: field interviews)



PLACES OF ORIGIN OF SURVEYED MIGRANTS

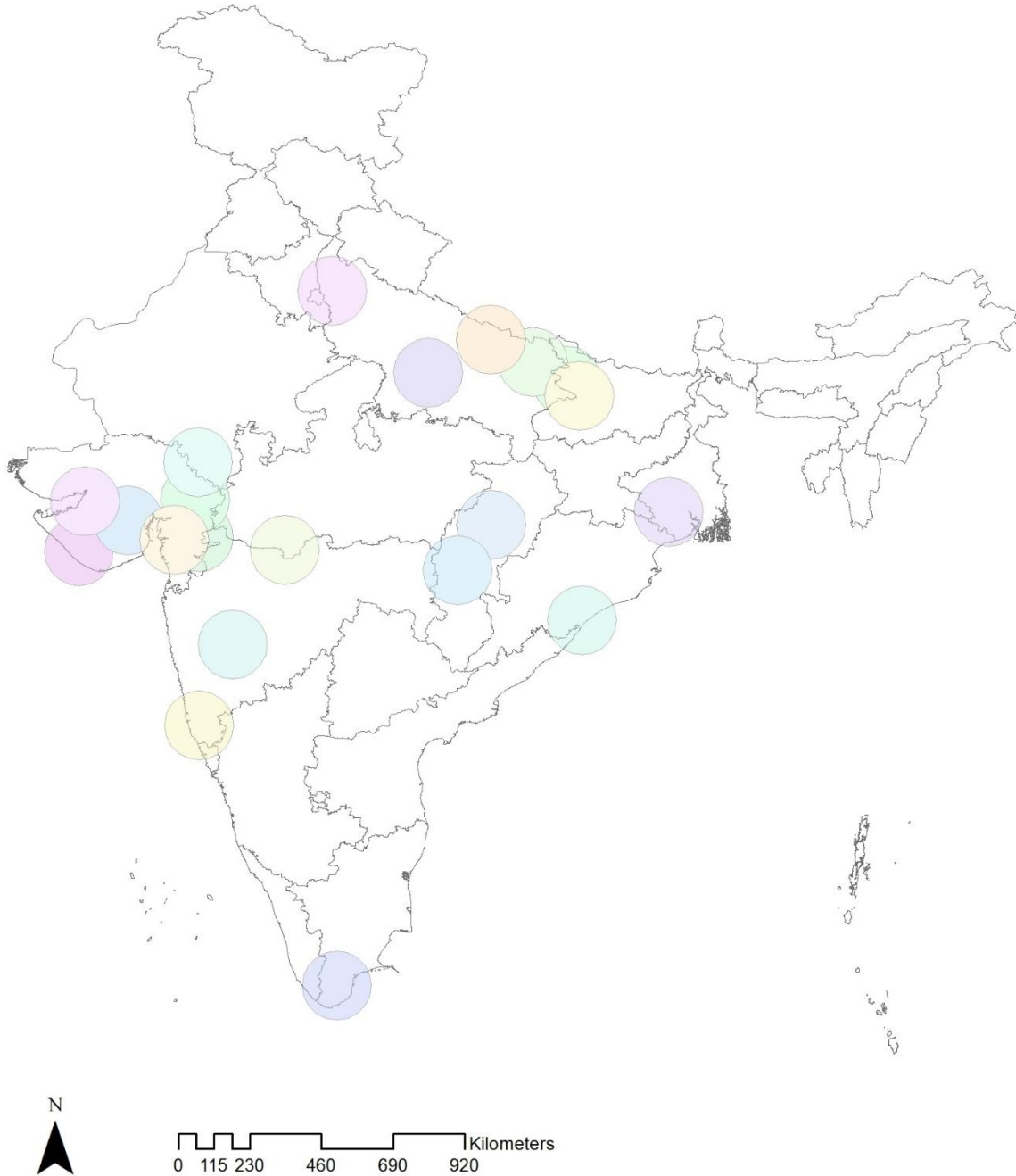
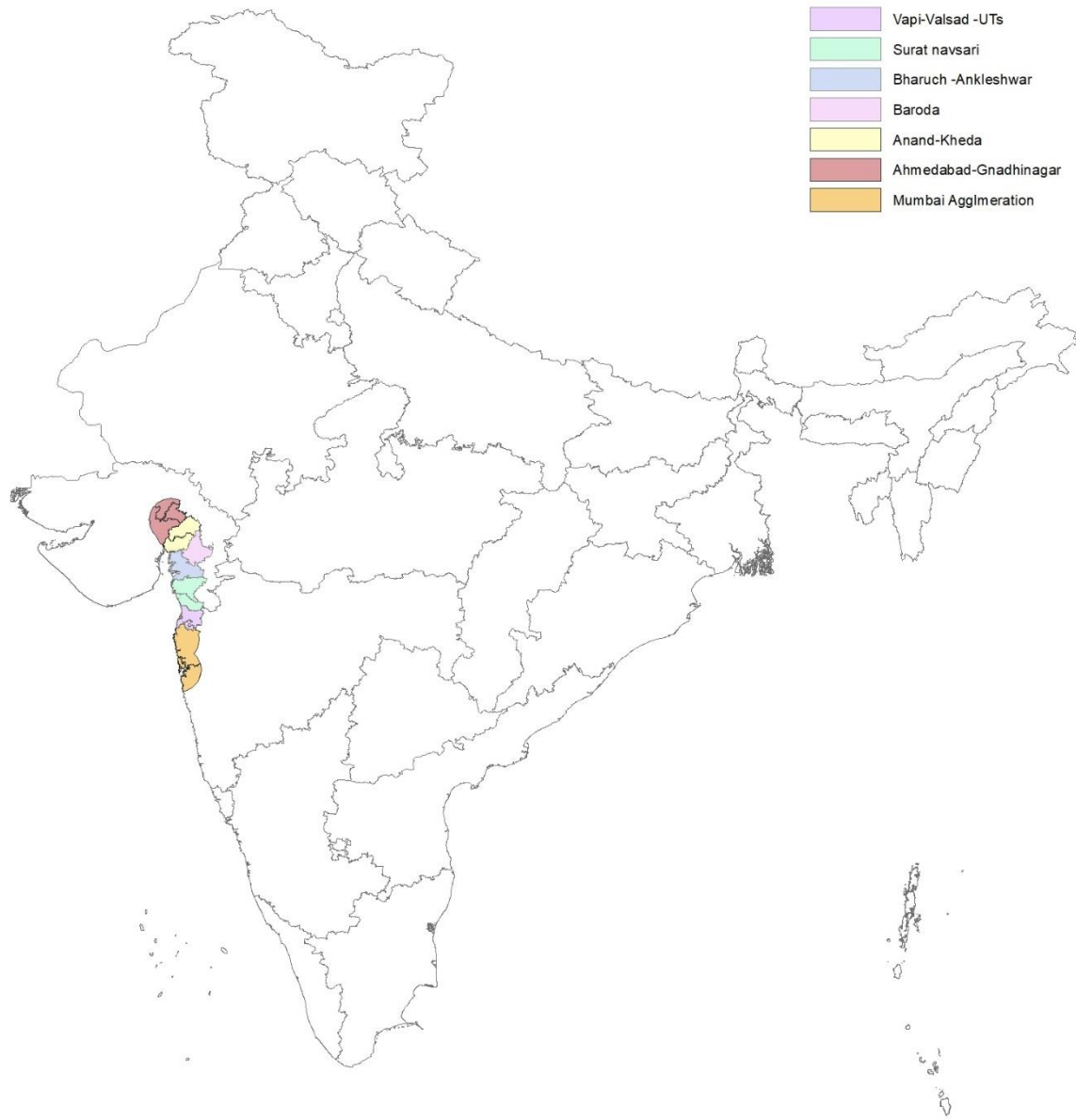


Figure: 6-7

MIGRANT DESTINATIONS - SURVEYED



0 115 230 460 690 920 Kilometers

Figure: 6-8

MIGRANT ORIGIN AND DESTINATION - WITH RAILWAY LINES

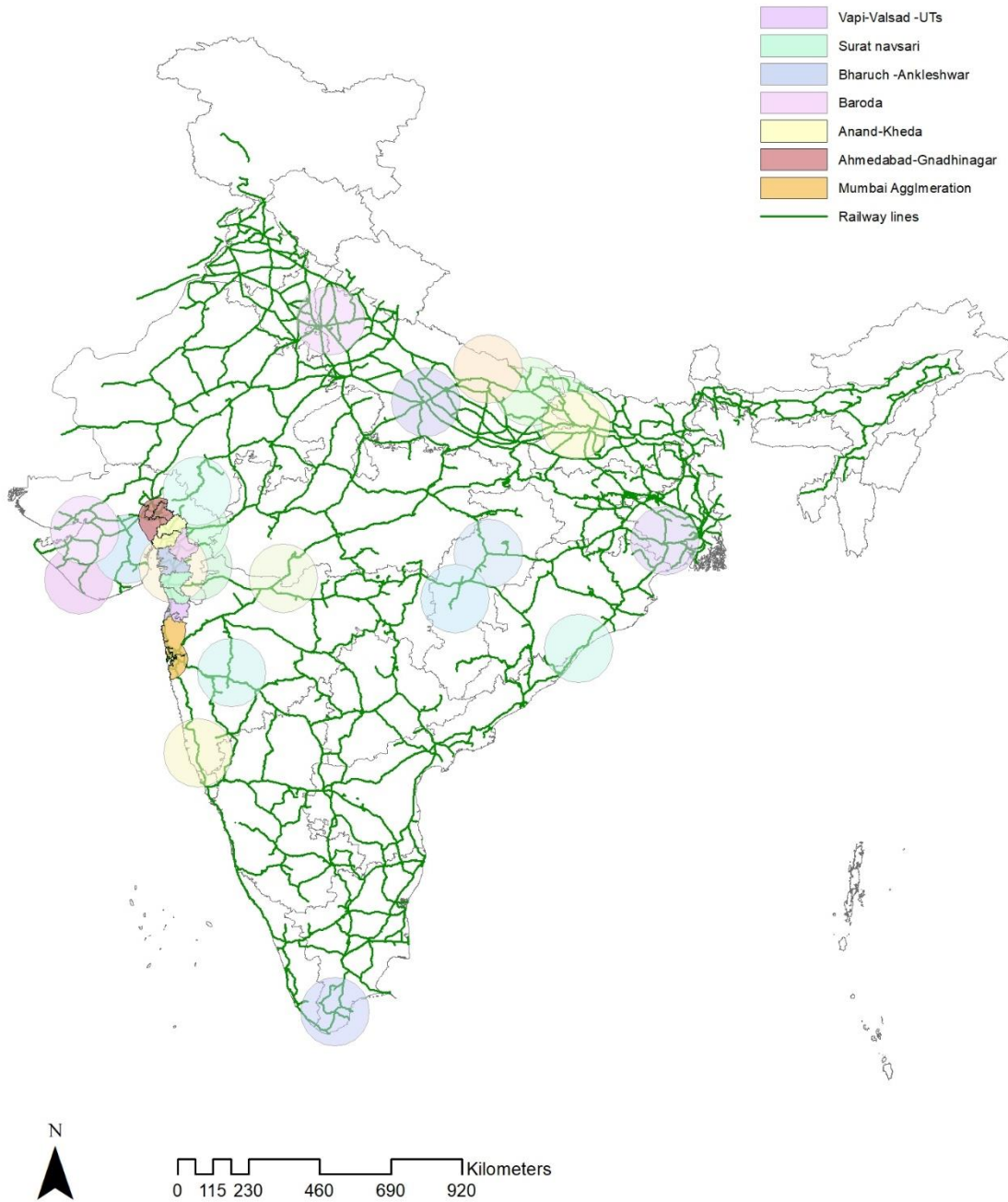
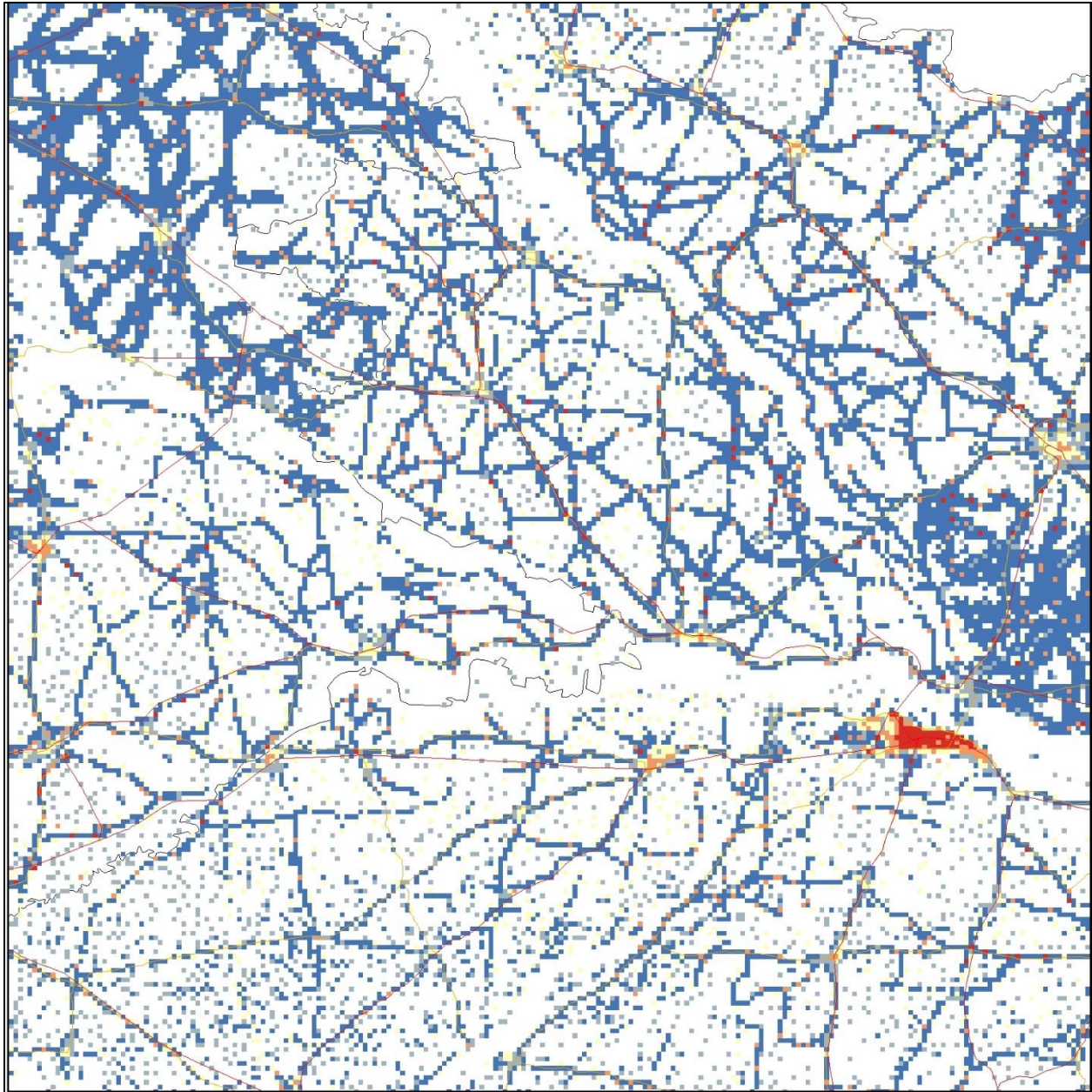


Figure: 6-9

It is apparent that migrants move from places of low per capita income and low human development index, to destinations where those parameters are higher.

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POPULATION DENSITY 2011 - UP - BIHAR BORDER

Highways
Railway lines

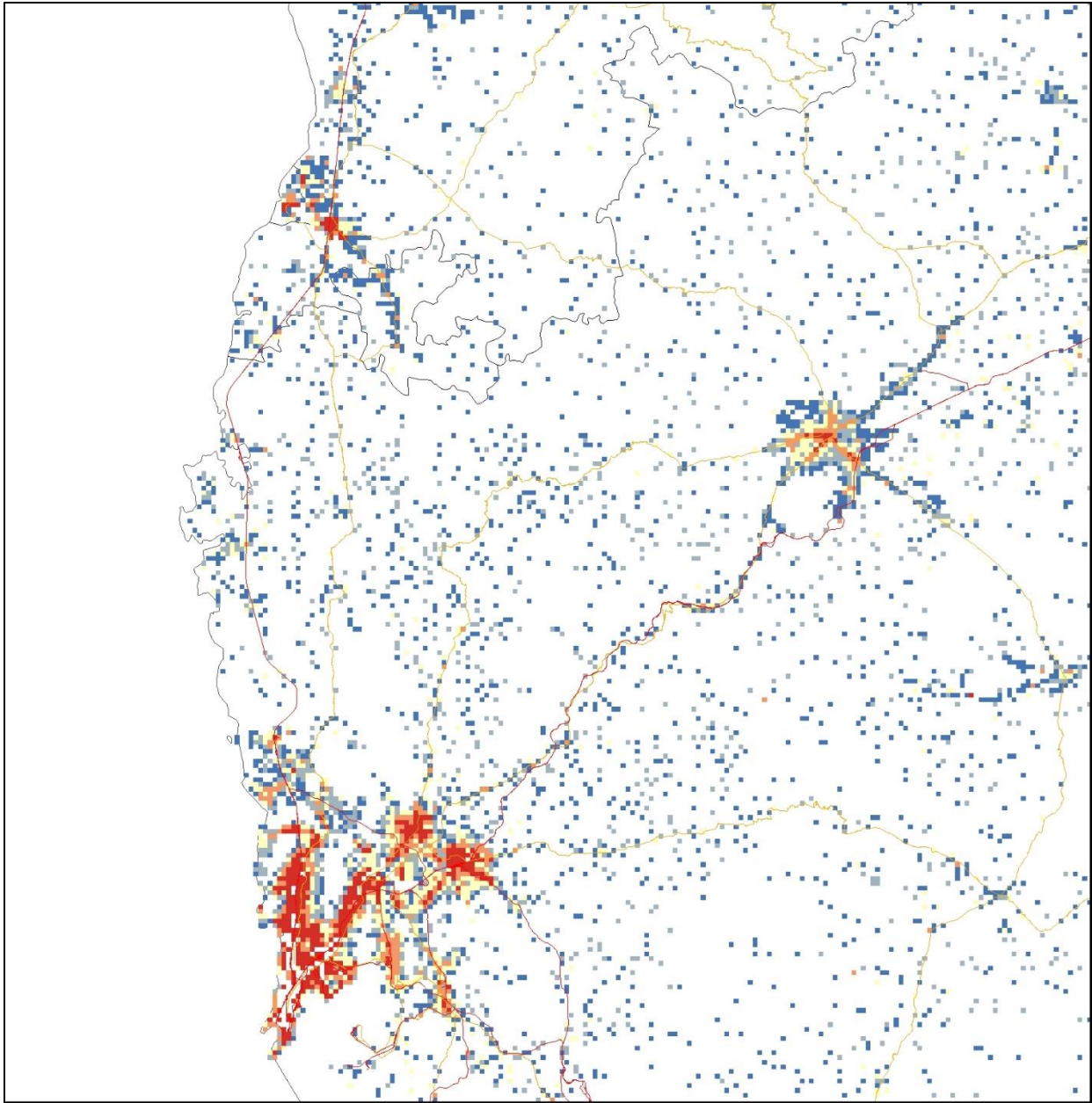
Population Density
Persons / sqkm

- 400 - 1316
- 1317 - 3697
- 3698 - 7924
- 7925 - 14745
- 14746 - 46288



0 5 10 20 30 40 Kilometers

Figure: 6-10 – Visible Built form density along roads



POPULATION DENSITY 2011 - A'BAD - MUMBAI CORRIDOR

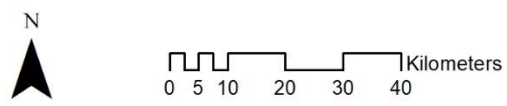
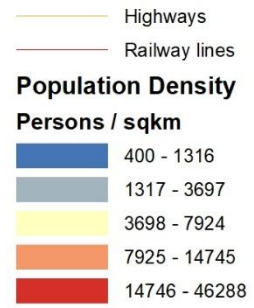
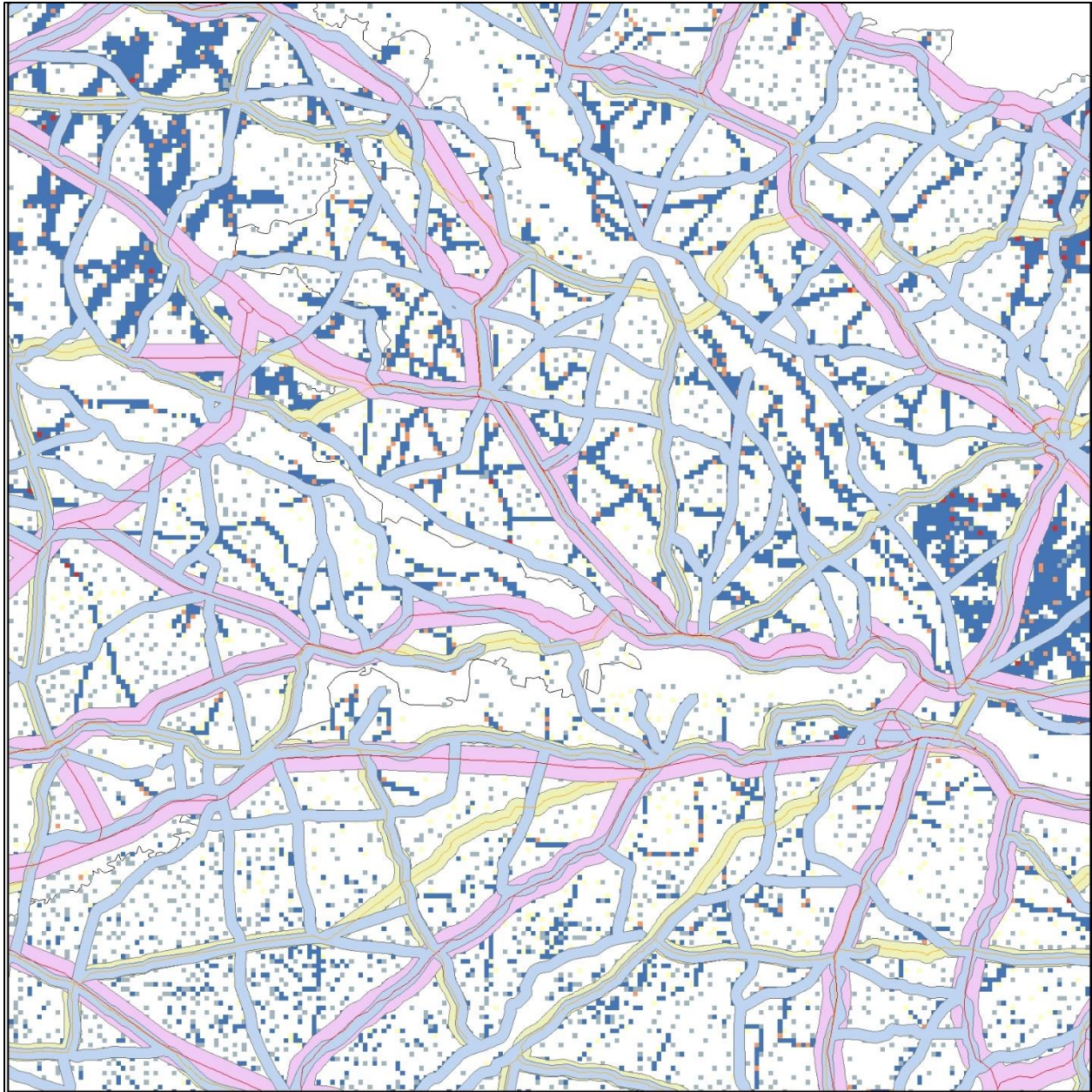









Figure: 6-11 -- Visible Built form density in - Spock and wheel model



POPULATION DENSITY 2011 - UP - BIHAR BORDER

-  Highways
 -  Railway lines
- Population Density**
Persons / sqkm
-  400 - 1316
 -  1317 - 3697
 -  3698 - 7924
 -  7925 - 14745
 -  14746 - 46288

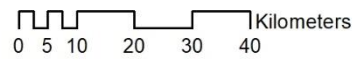
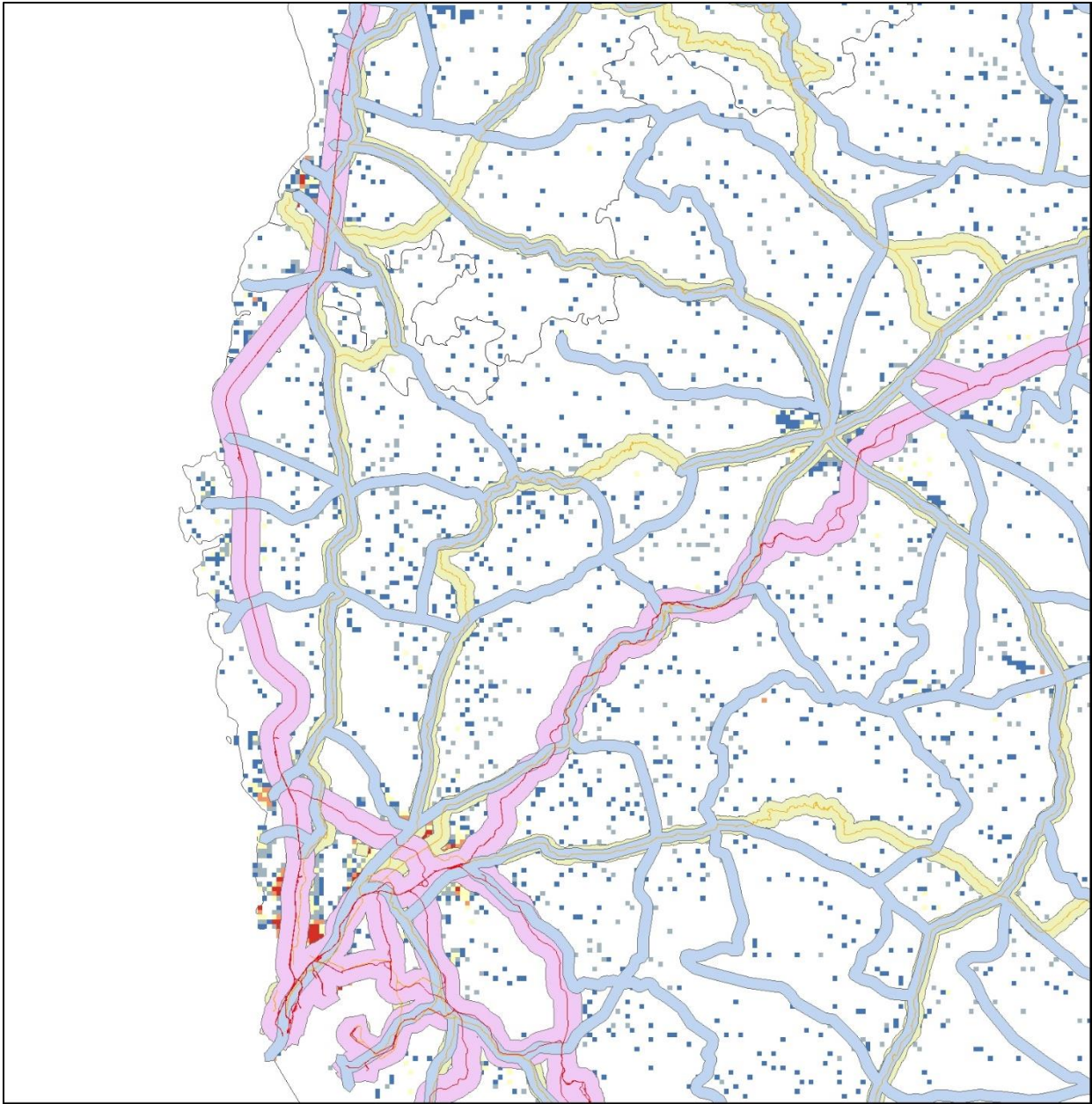


Figure: 6-12 – With Transport Buffers



POPULATION DENSITY 2011 - A'BAD - MUMBAI CORRIDOR

Highways
Railway lines

**Population Density
Persons / sqkm**

- 400 - 1316
- 1317 - 3697
- 3698 - 7924
- 7925 - 14745
- 14746 - 46288

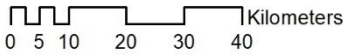


Figure: 6-13- With Transport Buffers

6.2.3 Visualizing parameters in the Destination zone – The Ahmedabad-Mumbai corridor.

PER CAPITA INCOME 2017 - AHMEDABAD - MUMBAI CORRIDOR

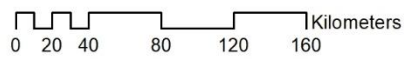
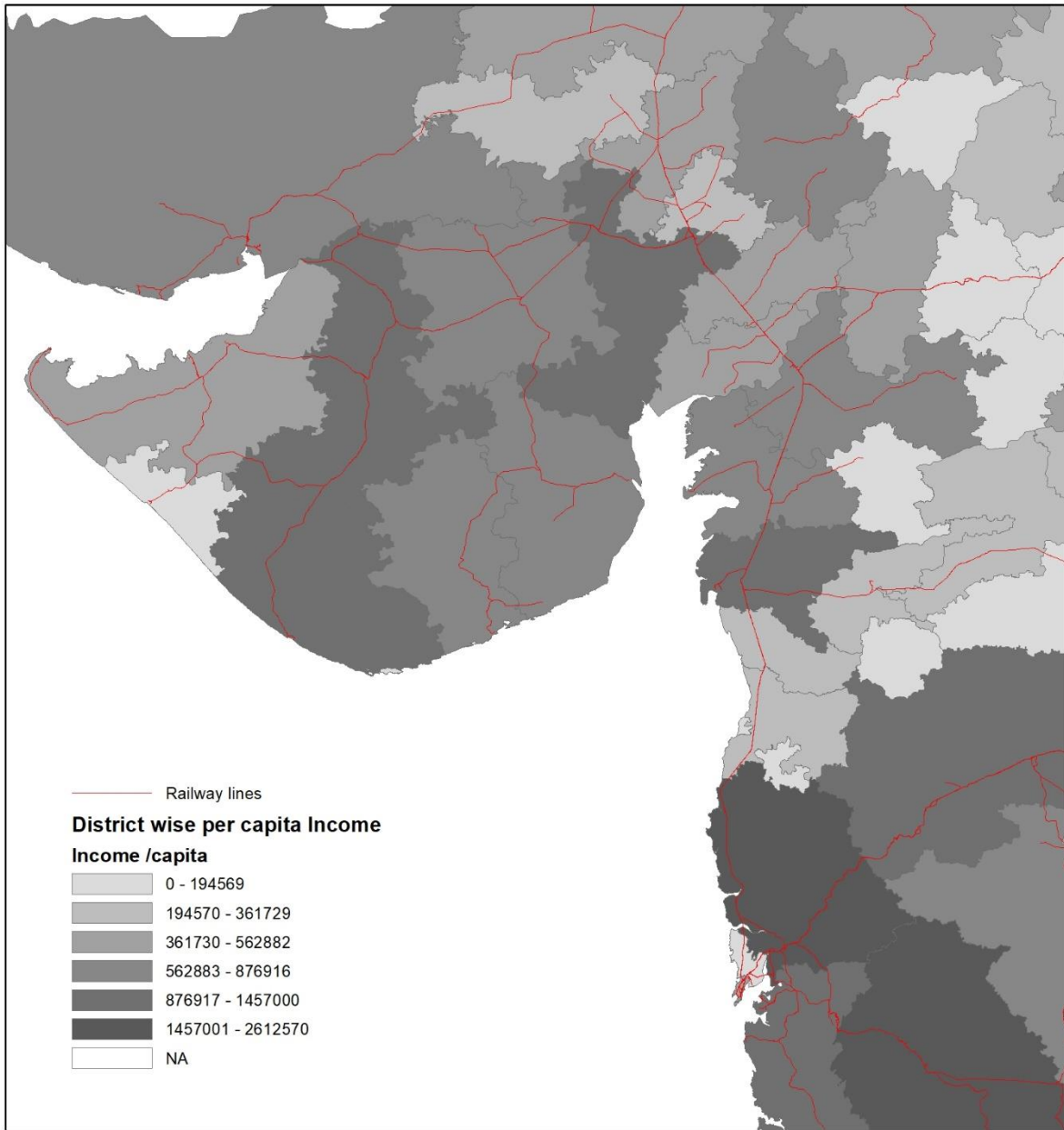
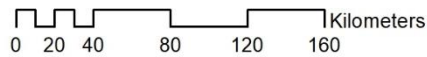
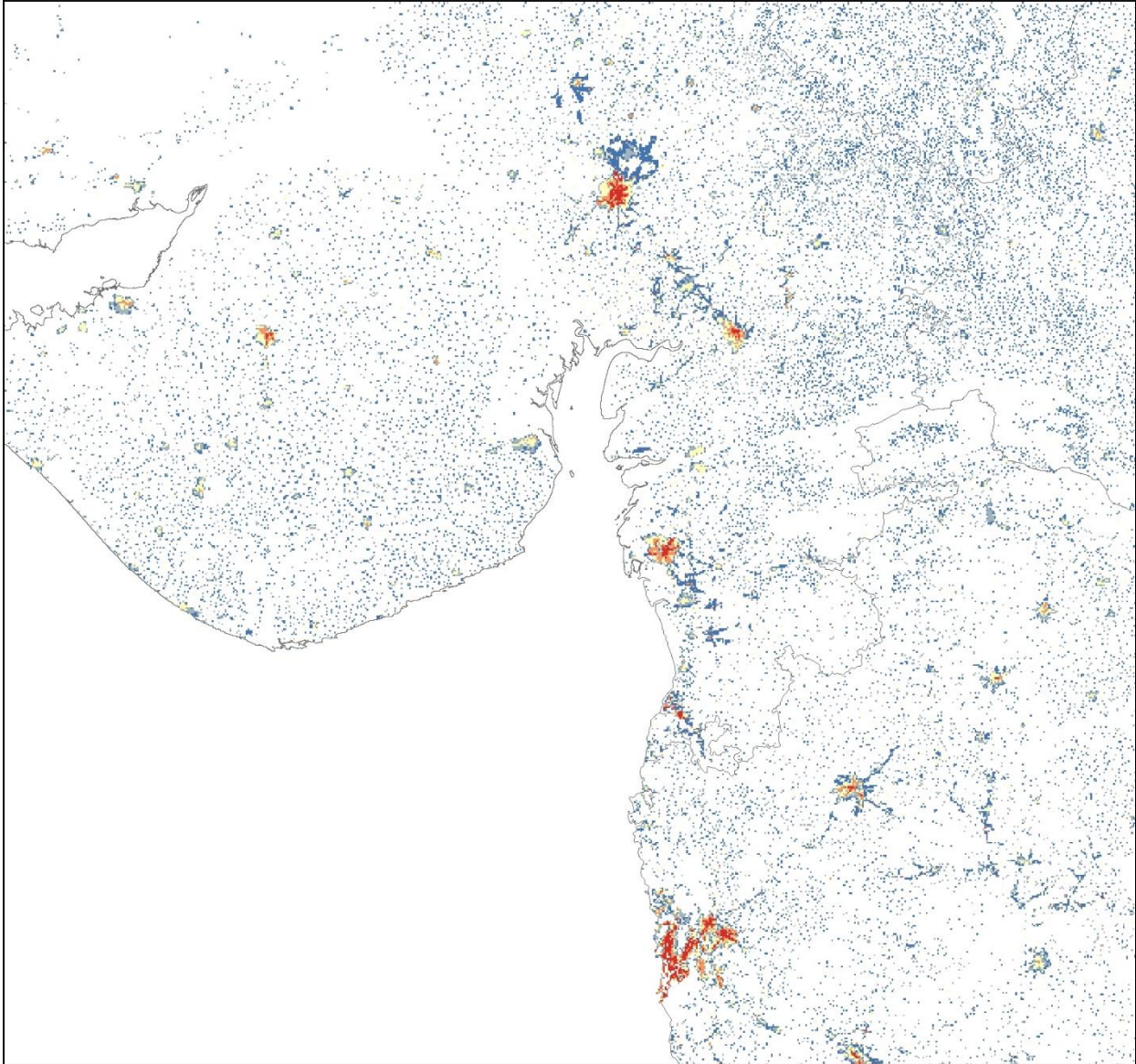


Figure: 6-14 (*All units in Rupees per annum)

POPULATION DENSITY 2014



Population Density

Persons / sqkm

400 - 1316

1317 - 3697

3698 - 7924

7925 - 14745

14746 - 46288

Figure: 6-15

TOTAL GDP VALUES - AHMEDABAD - MUMBAI CORRIDOR

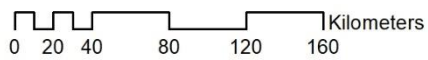
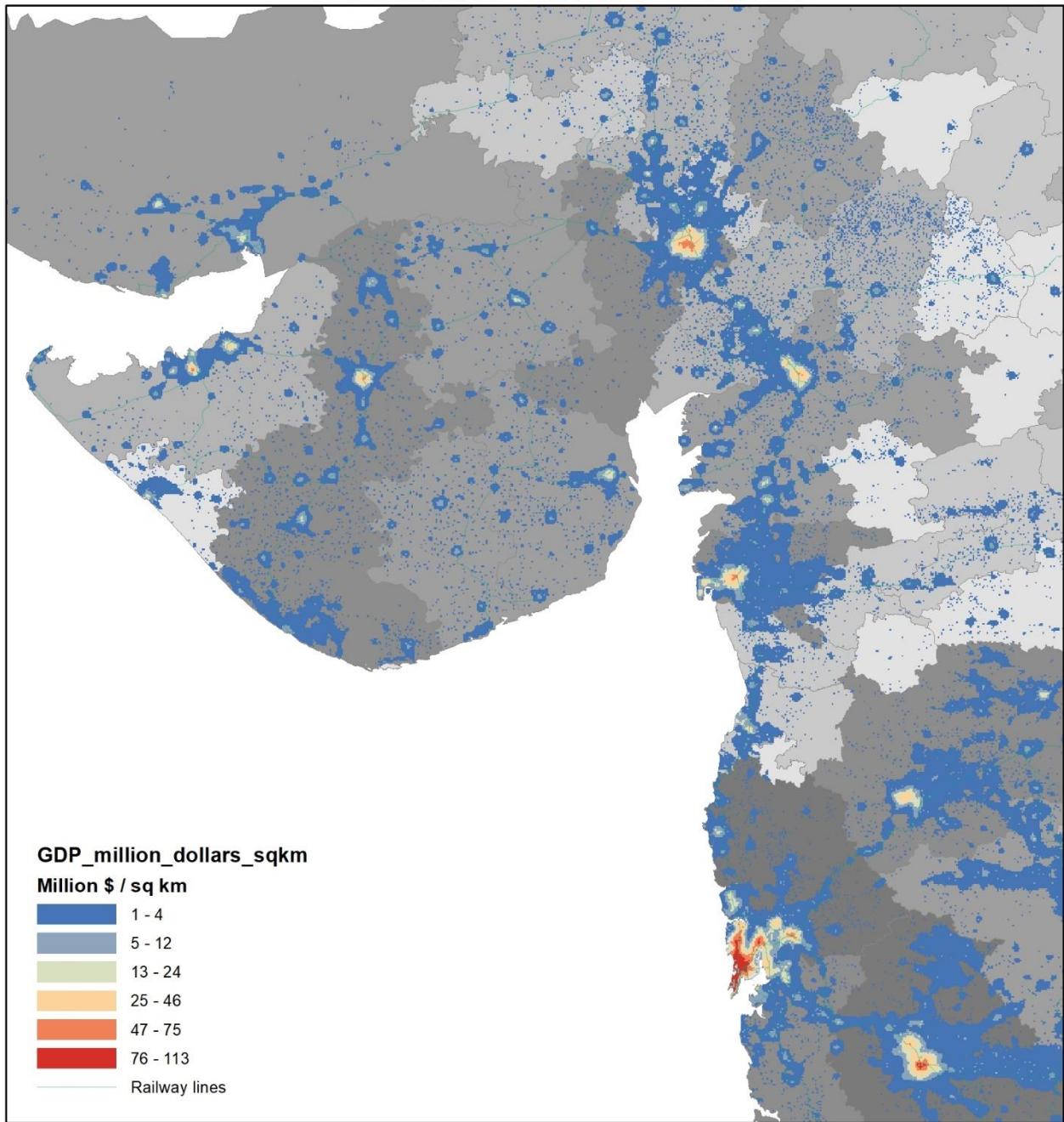


Figure: 6-16 (*Units in Rupees unless specified)

GDP PER CAPITA - AHMEDABAD - MUMBAI CORRIDOR

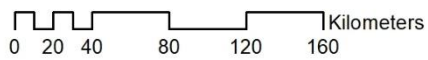
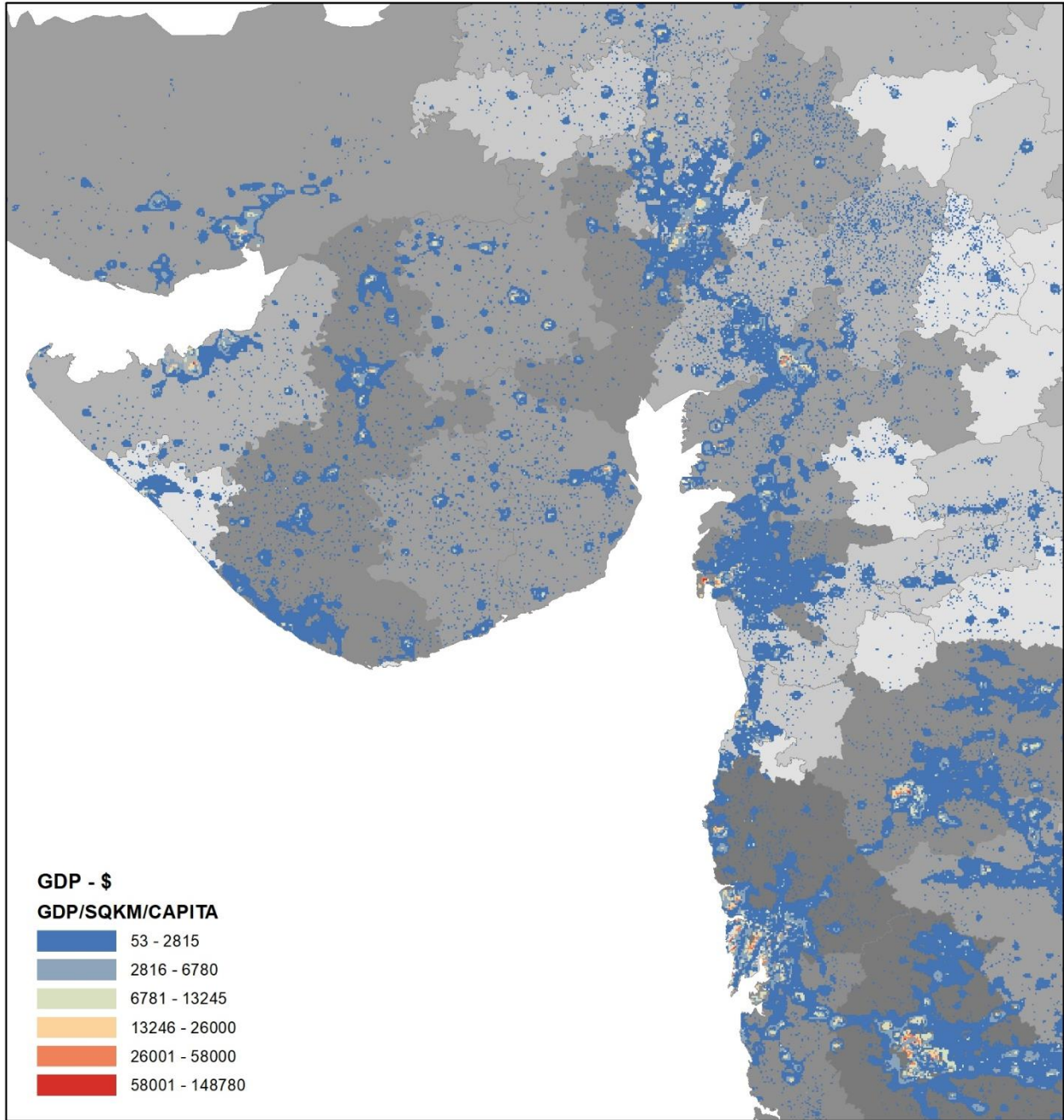


Figure: 6-17 (*Units in Rupees unless specified)

URBAN AGGLOMERATIONS ACCESSIBLE FROM MAJOR RAIL AND ROAD NETWORKS

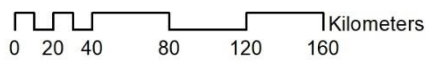
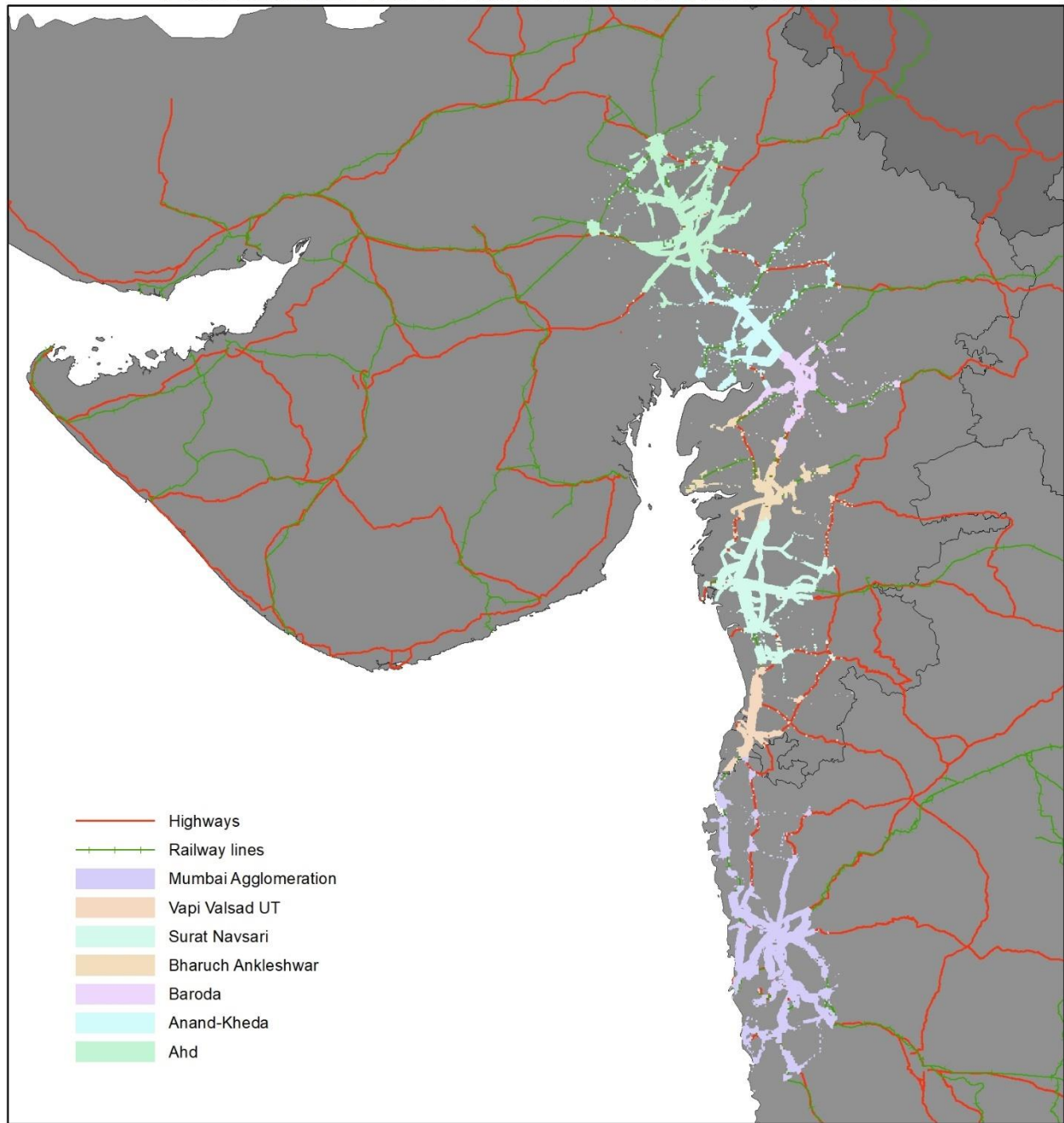


Figure: 6-18

6.2.4 Visualizing & Analyzing the spatial statistics on economic ‘differentials’ for unique origin-destination pairs, based on characteristics of the agglomerations.

Migrants chasing higher wages?

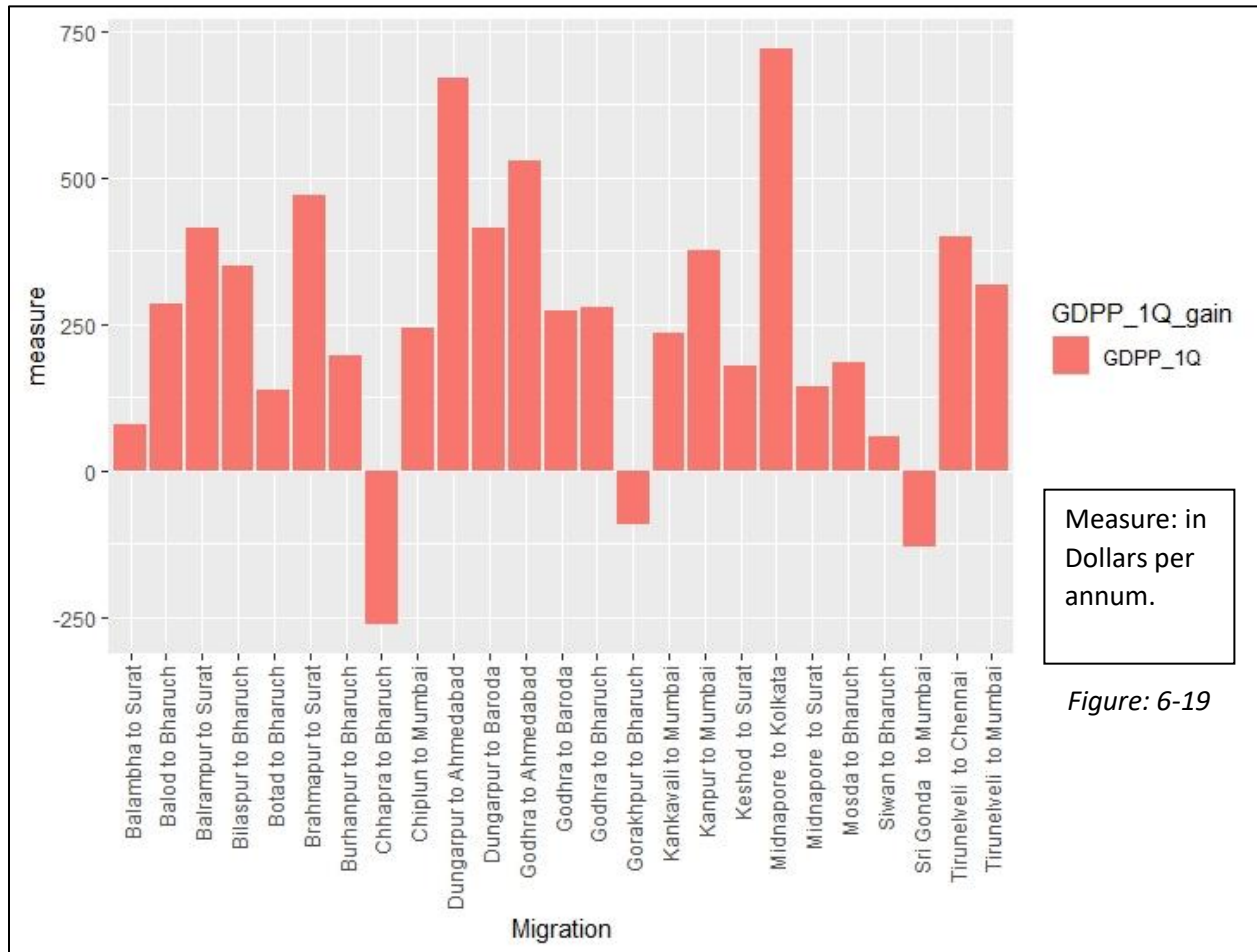


Figure: 6-19

From the figure above, it is observed that in nearly all the cases, migrants moved from an agglomeration where the 1st Quartile of all values of GDP per capita per square kilometer was lower than the 1st Quartile in the destination.

This observation is bolstered by the fact that most migrants, driven by wage differentials, belong to the poorest section of the population, most likely falling within the bottom quartile. Though still within the bottom quartile, there appears to be a substantial gain in going from origin to destination.

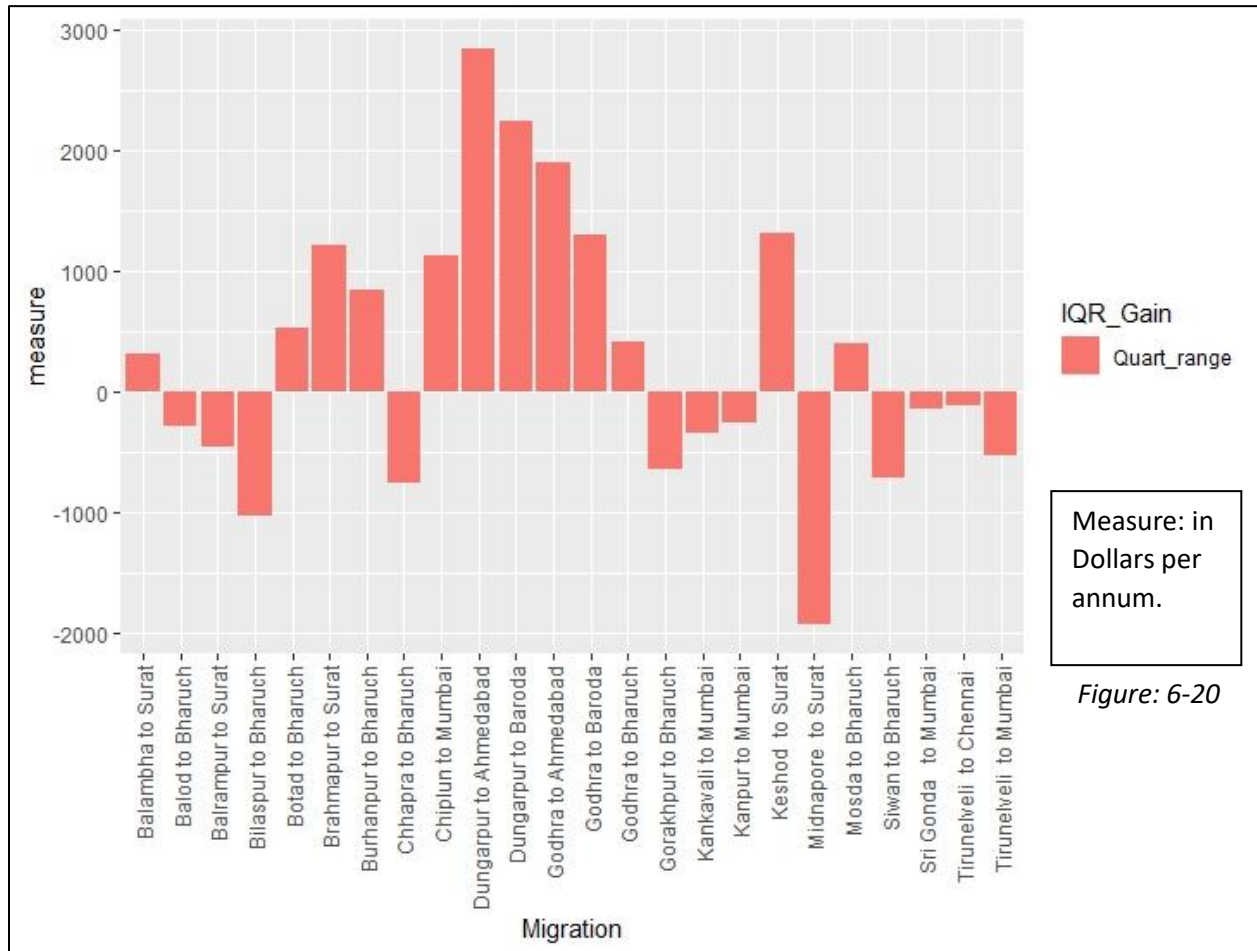
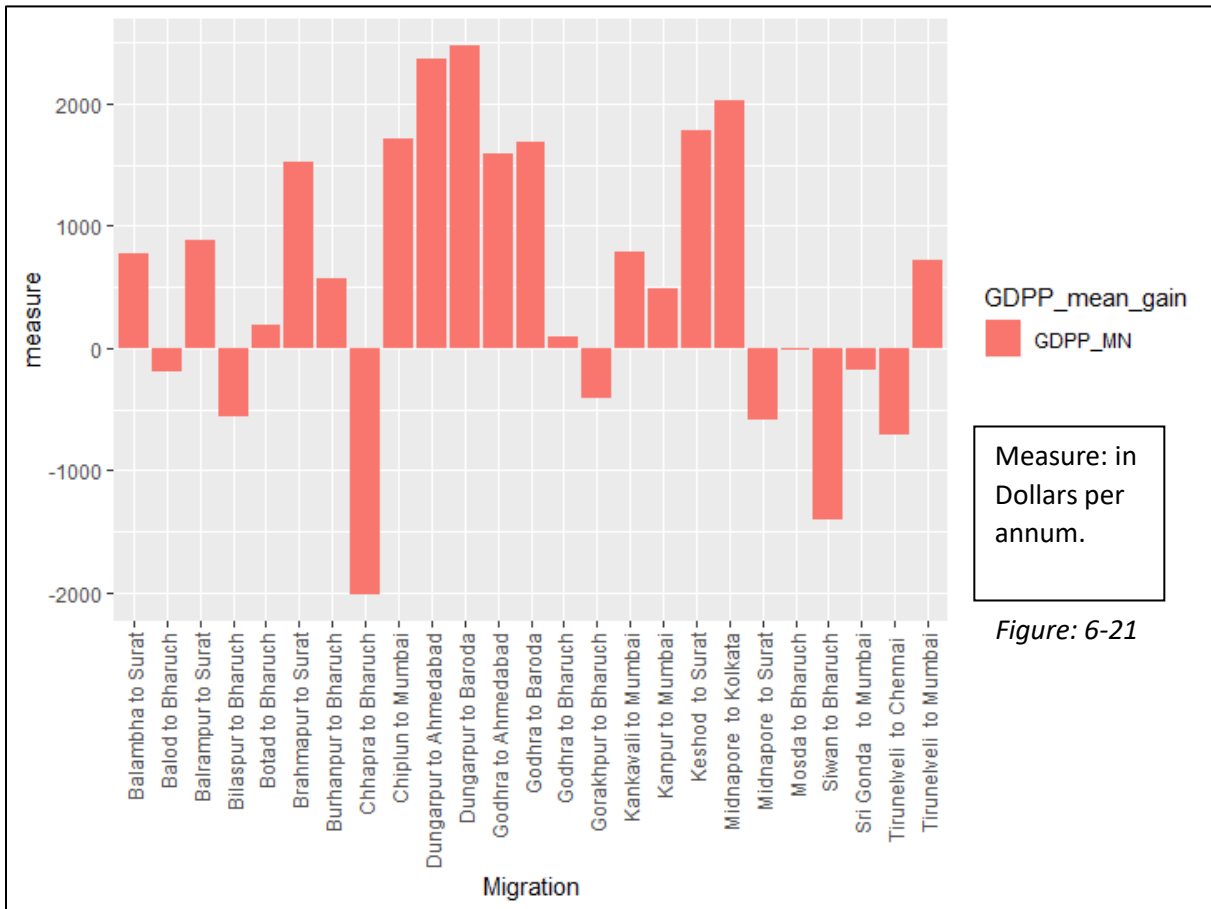


Figure: 6-20

From the figure above, it is observed that in about half the cases, the inter quartile range of GDP/capita/sq km, within the destination agglomeration is much higher than that in the origin agglomeration. An inference that can be drawn from here is that the potential for socio-economic mobility over the years/inter-generationally in the destination is a key attraction for migrants. However, one sees that more than half these decisions do not seem to reflect that. The decisions where one sees a positive gain are in origin-destination pairs that happen within a close geography and linguistic continuity. This remains an aspect to be tested further through further statistical analysis.

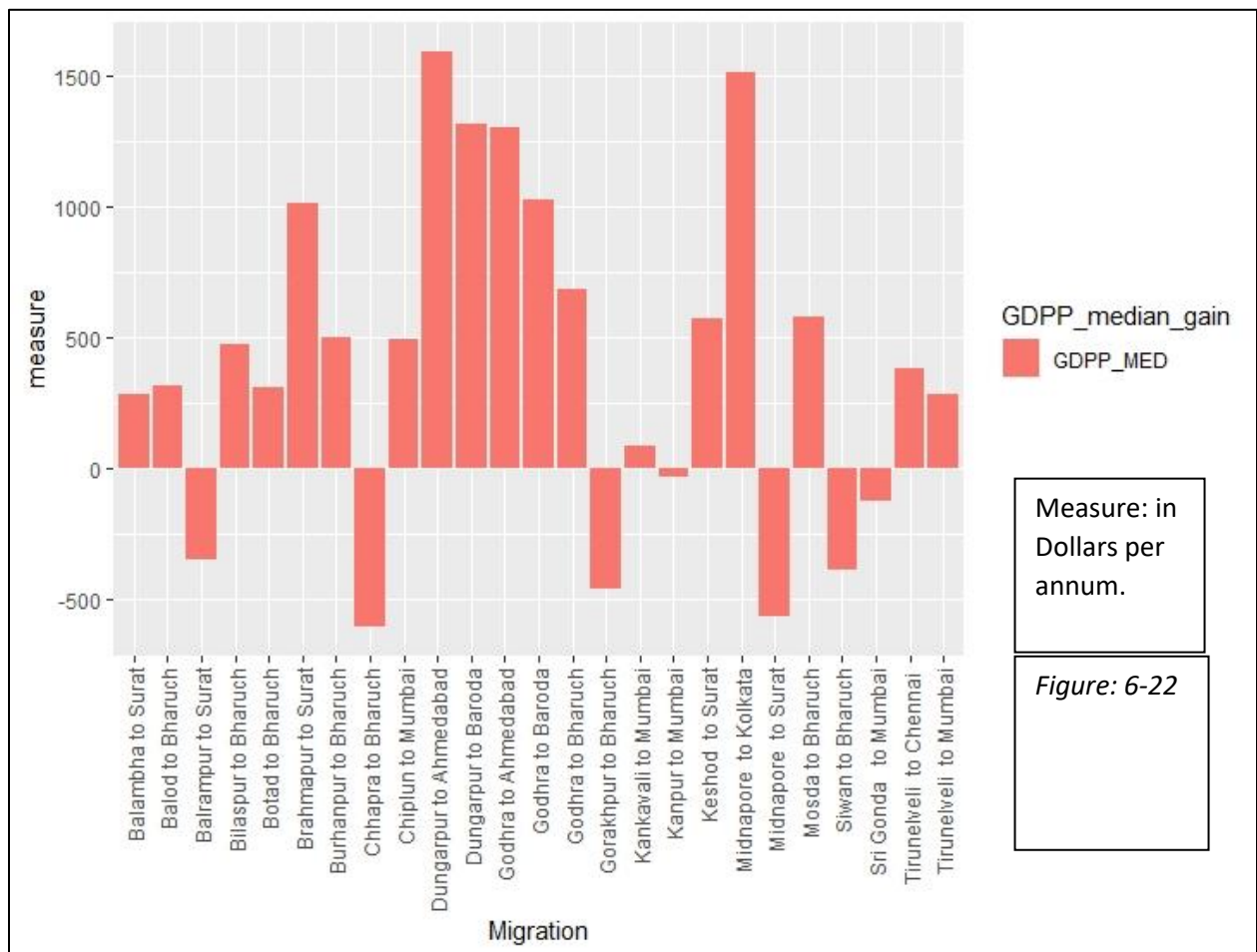


Measure: in Dollars per annum.

Figure: 6-21

From the figure above, it is observed that in nearly all the cases, the gain in mean GDP/capita/ sq km, in going from origin to destination, is high.

Even the median gain in this figure is high for most origin-destination differentials, as per the figure below.



Moving towards higher Market Potential?

It may appear that migrants were in general, moving from a smaller agglomeration to a larger agglomeration – effectively trying to access a destination with much higher market potential. However, there were several results that contrasted with such an understanding. For example, as per the figure below, in more than half the cases, there was no gain in the total GDP, or the total population of the agglomeration, when moving from origin to destination.

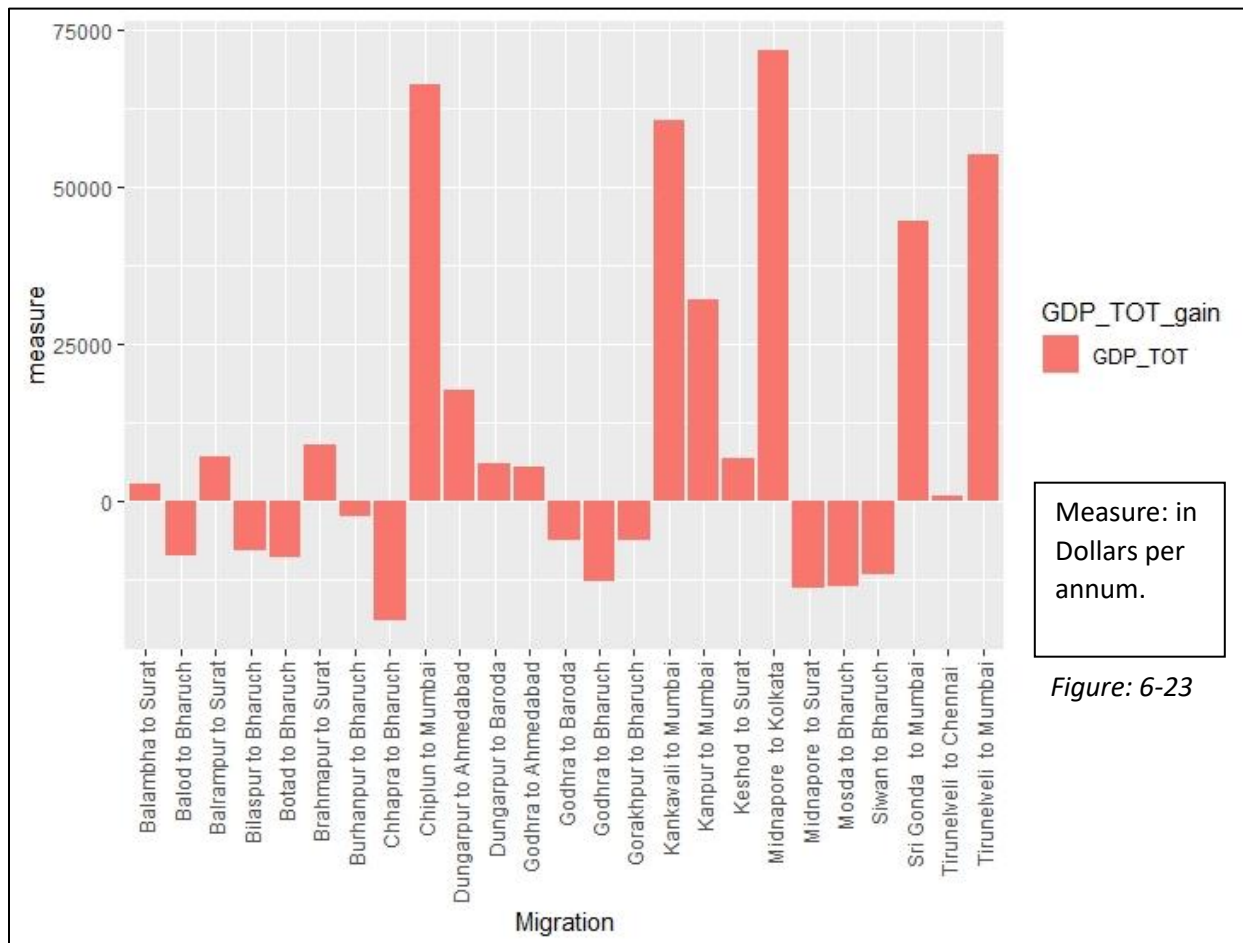


Figure: 6-23

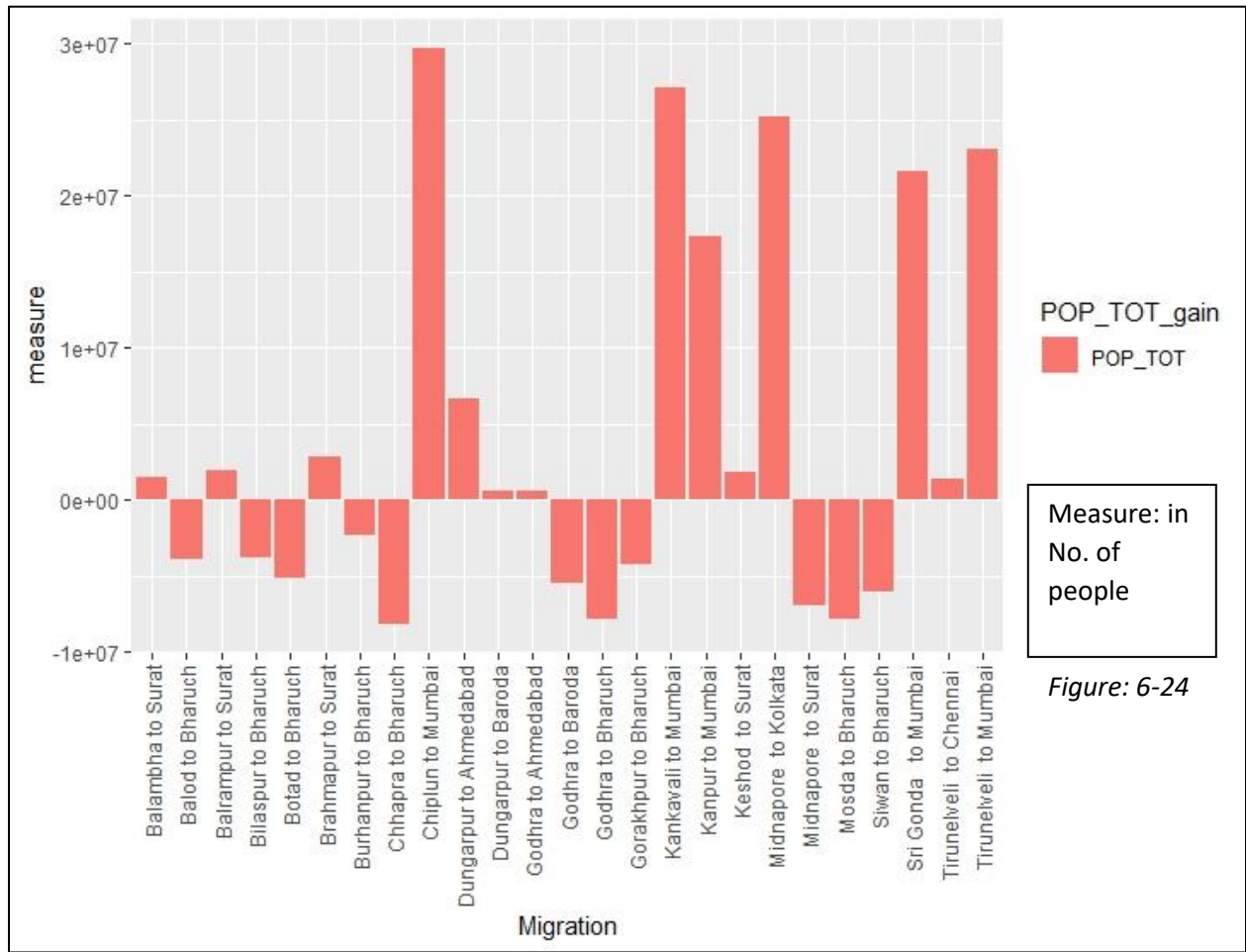


Figure: 6-24

Mumbai remains an exception in both cases wherein one would assume higher 'market potential' apparent through higher population and higher total GDP. But this leaves us with a question of why is one seeing migration to smaller urban centers, with Mumbai being the exception here.

However, it does seem clear in the next bar plot that the destinations are more 'urban' - having a much higher median population density.

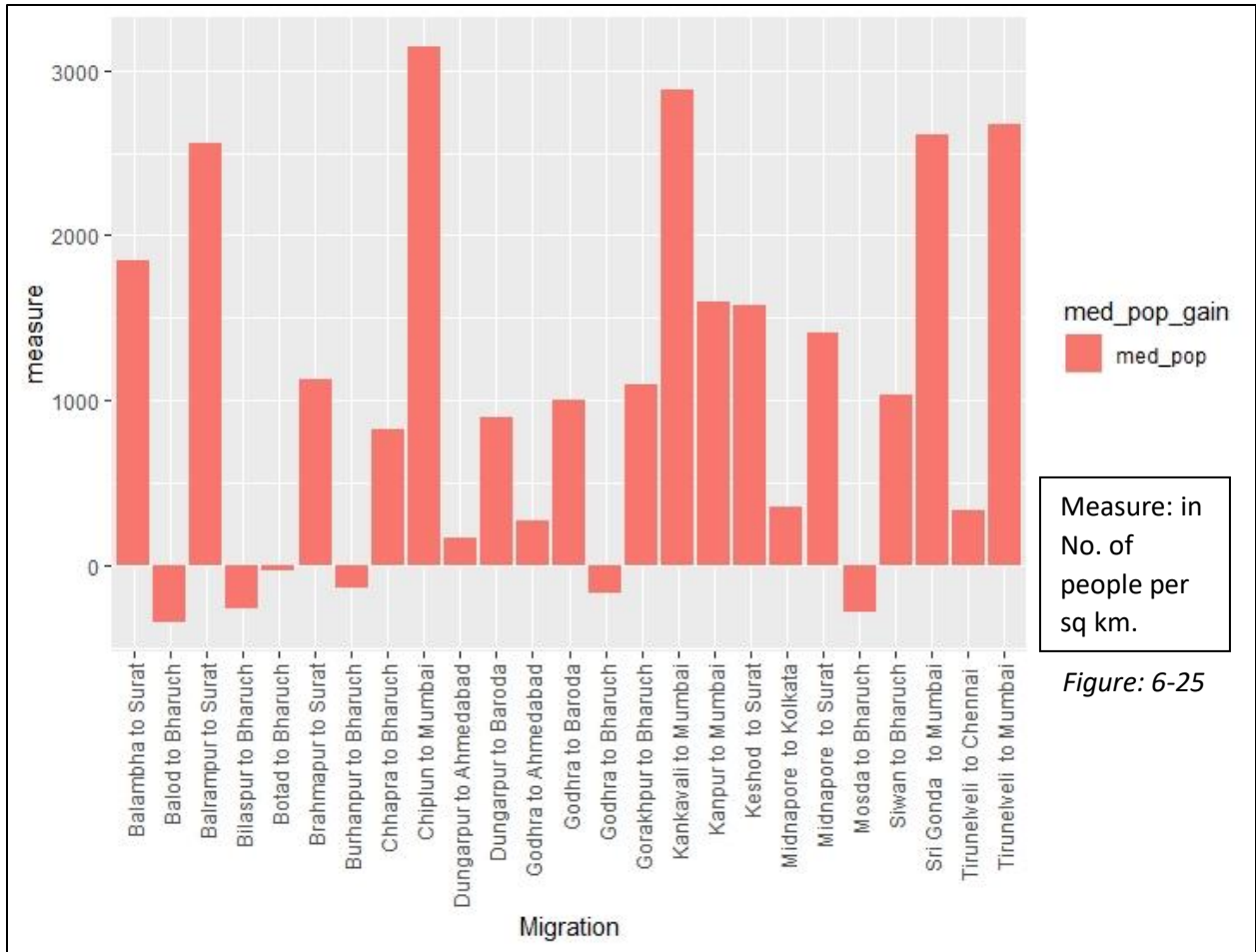
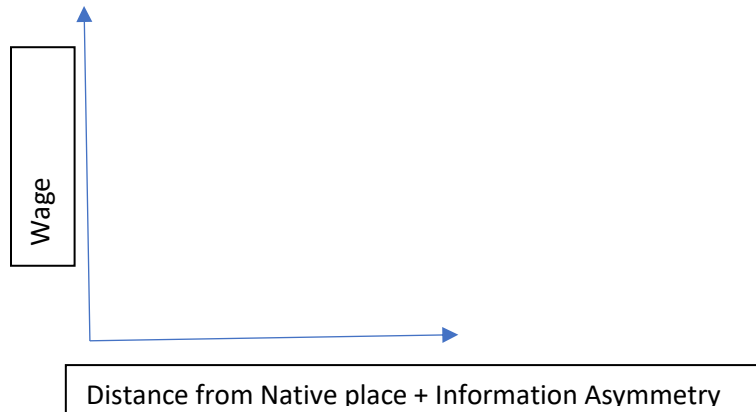


Figure: 6-25

However, it is surprising that this gain in median value of population density does not hold true in a quarter of the choices. Co-relating with the interviews, one finds that this primarily happens when there is a major city close to the native village, which has reasonably high density, but not high enough gains in the first income quartiles. It is the lack of these 1st Quartile gains that perhaps prompt the migration decisions. This leads us to question what the migrants gained by travelling



far away from their native region. Assuming that they gave up on 'social capital' to avail of wage gain, is that commensurate with the distance travelled / social cost incurred?

To evaluate the same, various independent variables were plotted against network distance between origin and destination. The pair plots graph below illustrates the same -

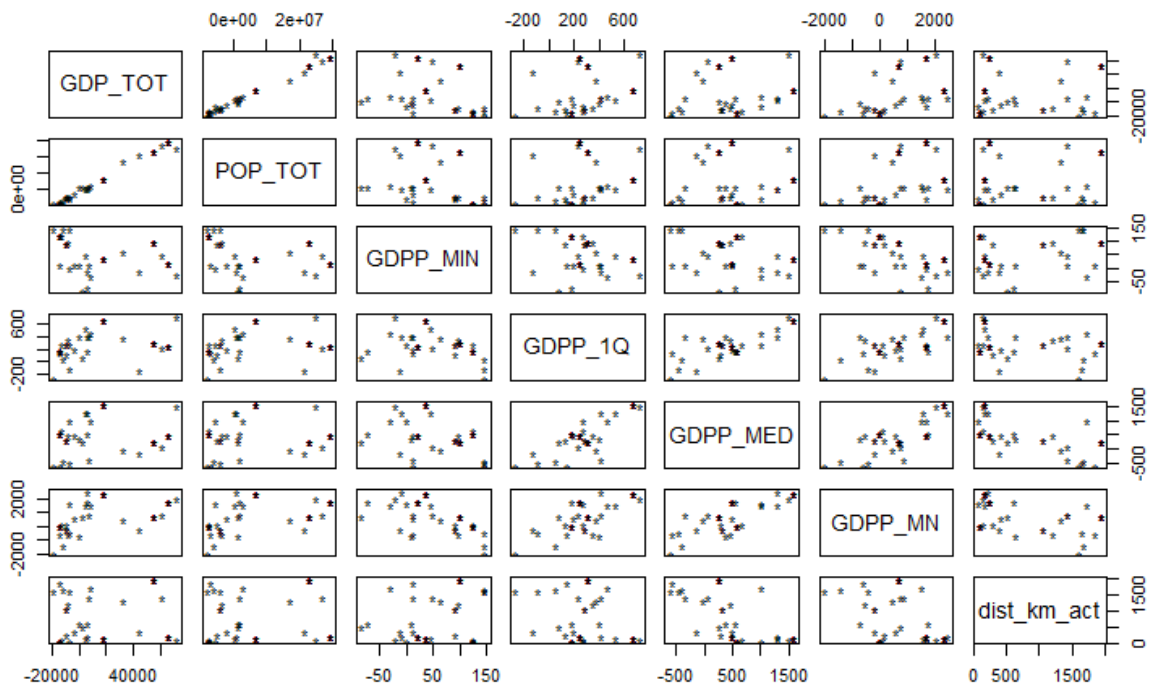


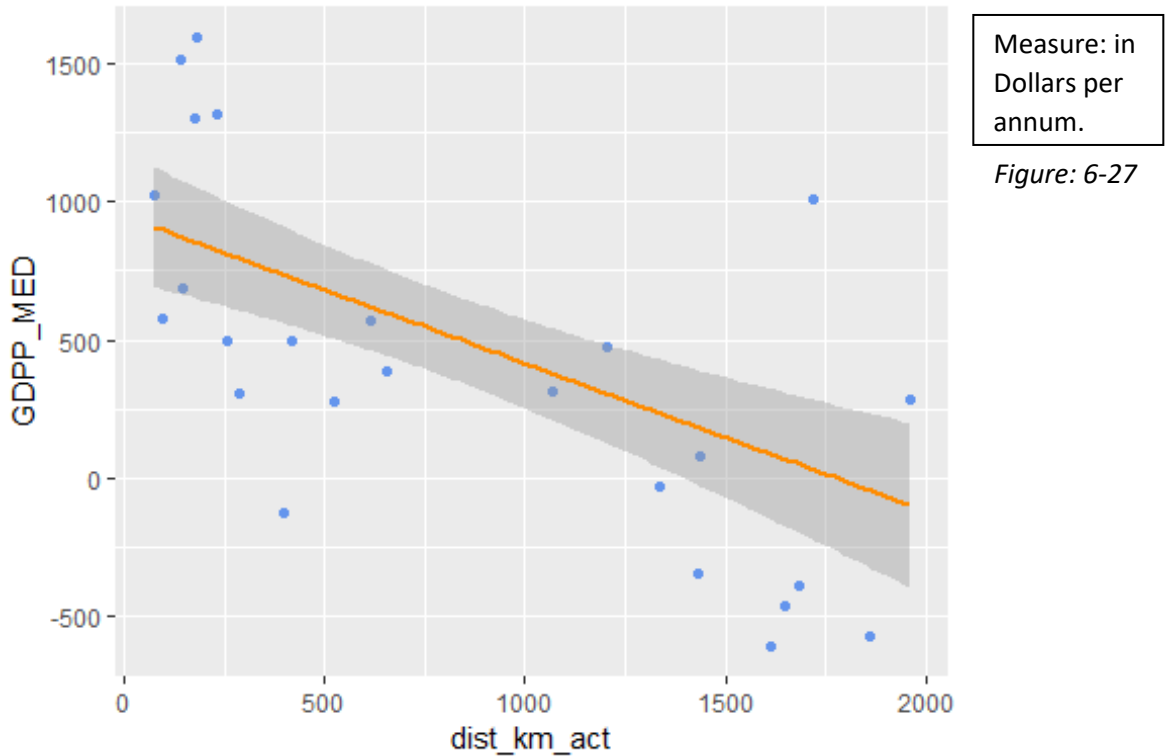
Figure: 6-26

Various co-relation tests were tried, and the independent variables which showed up as statistically significant were analyzed. *The GDP/capita/sq km 1st Quartile gain, or Minimum value gain, that was positive in almost every migration decision, and showed a positive gradient, did not show up as statistically significant – effectively, it did not increase in sync with the distance from native place.*

The 3rd quartile value seems to remain constant irrespective of migration decision or distance.

Similarly, the interquartile gain, which we assumed could be a reason for migration and explain the hope for intergenerational mobility, also showed a constant gain irrespective of distance from native place.

There was a statistically significant co-relation between the median and mean values. However, the coefficients were negative.



Median GDP/capita/sqkm ~ distance from native place

Residuals

<i>Min</i>	<i>1Q</i>	<i>Median</i>	<i>3Q</i>	<i>Max</i>
<i>-865.6</i>	<i>-320.3</i>	<i>-185.3</i>	<i>384.4</i>	<i>981.8</i>

Coefficients

<i>Variable</i>	<i>Coefficient</i>	<i>Std Error</i>	<i>t value</i>	<i>Pr(> t)</i>
<i>(Intercept)</i>	<i>948.3743</i>	<i>112.9994</i>	<i>8.393</i>	<i>2.85e-10 ***</i>
<i>dist_km_act</i>	<i>-0.5338</i>	<i>0.1071</i>	<i>-4.985</i>	<i>1.31e-05 ***</i>

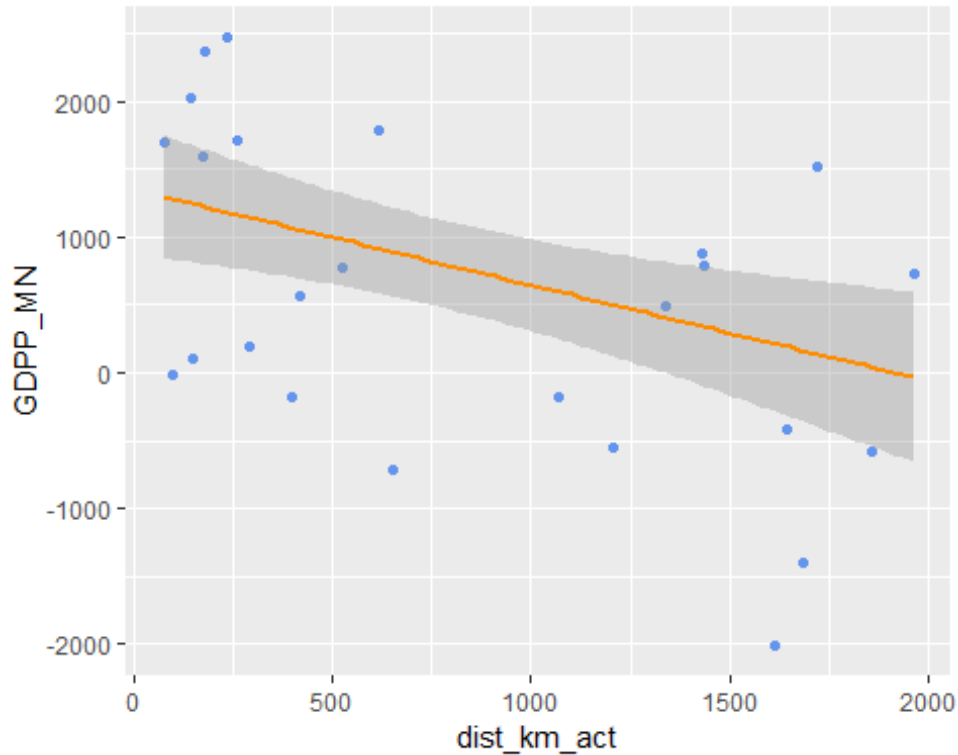
*Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*

Residual standard error: 484.9 on 39 degrees of freedom

Multiple R-squared: 0.3892, Adjusted R-squared: 0.3735

F-statistic: 24.85 on 1 and 39 DF, p-value: 1.314e-05

Assuming migrants are moving to denser urban centres, we may expect median GDP/capita differential figures to increase with distance (giving up social cost). However it declines very strongly. A possible explanation could be one that is supported by Ed. Glaeser's (2008) arguments that cities attract the poorest who aspire to move up the economic ladder, and such an aggregation of aspirants is a reason why rampant poverty is more visible in cities. The high number of low wage migrants in the destination could be driving down the median values ; almost mirroring their economically deprived native areas. Effectively a proxy for income, the phenomenon could be inferred from the presence of a very large number of low GDP generating zones along the transport corridors – along with poor origin areas, leading to the low differentials. The other plausible explanation is that the migrants are not making the best wealth maximizing decisions.



Measure: in Dollars per annum.

Figure: 6-28

Mean GDP/capita/sqkm ~ distance from native place

Residuals

Min	1Q	Median	3Q	Max
-2223.0	-953.0	451.5	759.2	1384.1

Coefficients

Variable	Coefficient	Std Error	t value	Pr(> t)
(Intercept)	1347.5368	237.5800	5.672	1.48e-06 ***
dist_km_act	-0.7025	0.2252	-3.120	0.0034 **

*Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*

Residual standard error: 1019 on 39 degrees of freedom

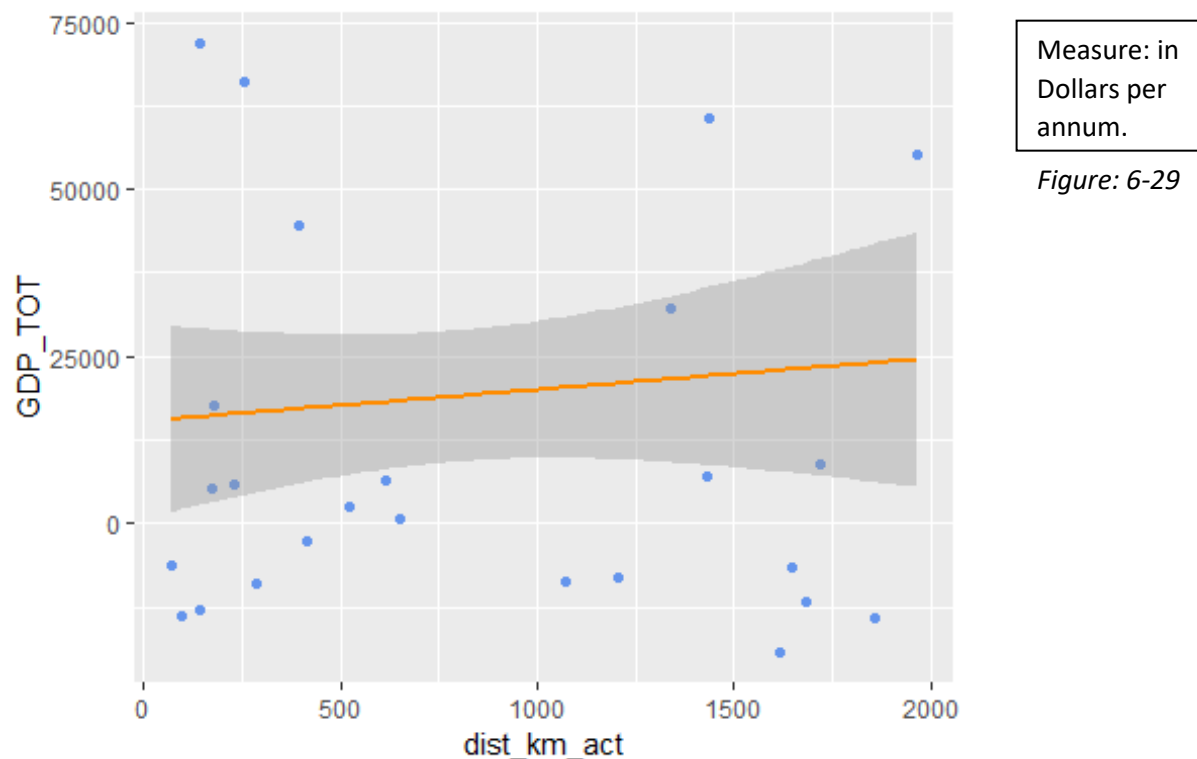
Multiple R-squared: 0.1998, Adjusted R-squared: 0.1792

F-statistic: 9.735 on 1 and 39 DF, p-value: 0.003395

Again, if we are assuming that the migrants are moving to denser urban centres with higher mean GDP and higher wages, we would expect the value to show a positive correlation with distance (social cost). However, it declines. Observing the graph more closely reveals that it is stratified by distance. The ones making the shortest migration – within 250 km – and the ones making a migration within 500 km, seem to have a positive slope to their graph. *However, the graph declines*

steadily after 500km, leading us to the question: are the migrants making the best migration decisions for themselves? And if not, why? Could information asymmetries be preventing them from doing so?

The question of whether distance has something to do with the ability to make a wage maximizing migration decision arises when we look at the gain in **'Market potential'** – as illustrated by total GDP of the area.



Though not statistically significant, we again see a pattern until a distance of about 700 km, in which there is a steady gain in market potential differential between origin and destination. However, advantage does not scale commensurate with distance from native place beyond the 700km range.

One may ask – is a 500 to 700km distance from the destination a threshold for having adequate connections and information about migration decisions?

Impact of information on gaining higher wage differentials

To probe further, we try to evaluate if the decisions were any different based on whether or not the migrant had 'information'.

A value of 0 was assigned for 'no information' and 1 for 'with information' The method to determine which migrant had information is based on the interviews conducted. This was often closely related to how educated the migrant was, and his evolution over successive migration trips.

The parameter most directly connected to the wage differential and the one having consistent gain for almost all migrants – GDP capita/ sq km – 1st Quartile value, was used. 'Info' used as the dummy variable.

Coefficients

<i>Variable</i>	<i>Coefficient</i>	<i>Std Error</i>	<i>t value</i>	<i>Pr(> t)</i>
<i>(Intercept)</i>	<i>250.61101</i>	<i>67.53584</i>	<i>3.711</i>	<i>0.000714 ***</i>
<i>dist_km_act</i>	<i>-0.06957</i>	<i>0.04571</i>	<i>-1.522</i>	<i>0.137038</i>
<i>Info1</i>	<i>143.81298</i>	<i>69.10155</i>	<i>2.081</i>	<i>0.044798 *</i>

*Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*

Residual standard error: 202.1 on 35 degrees of freedom

(3 observations deleted due to missing values)

Multiple R-squared: 0.1599, Adjusted R-squared: 0.1119

F-statistic: 3.332 on 2 and 35 DF, p-value: 0.04736

The results for *information* showed up as statistically significant with a reasonable R square values, given the low number of observations. Thus, one could say that access to information did help a migrant make more efficient migration decisions.

6.2.5 Visualizing & Analyzing statistics on economic 'differentials', based on field interview data

From the regression results above, the role of information has been established, for the typical migrant who is moving from a particular origin to destination, based on economic characteristics of the place. However, the place characteristics do not necessarily reveal much about the specific migrants who were interviewed.

The migrants interviewed were also able to provide data on their wages, on how much rent they pay, and on how much they save and send home every month. Since the basic premise of a migrant's decision is often based on how much money he/she can send back home, 'wage saved' has been identified to be a key parameter to test. Once again, the migrants were divided on the basis of 'having information' and 'not having information'.

Wage saved by a migrant without information, plotted against distance from native place.

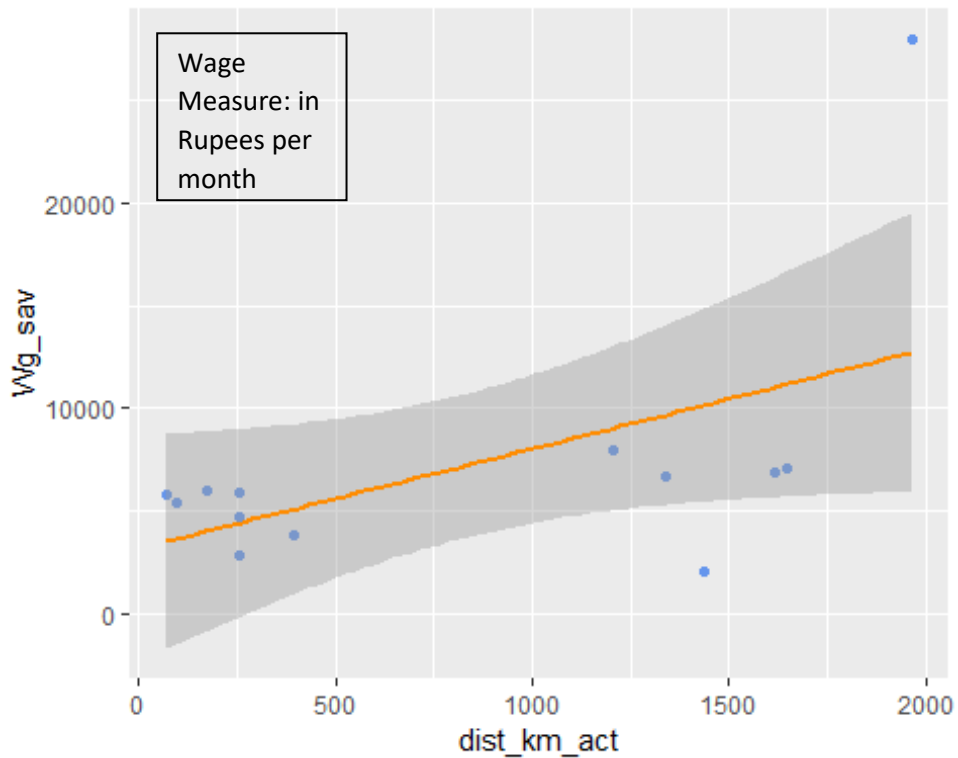


Figure: 6-30 : Wage saved versus Network distance from native place

Residuals

<i>Min</i>	<i>1Q</i>	<i>Median</i>	<i>3Q</i>	<i>Max</i>
-672.3	-492.3	-235.2	543.7	914.1

Coefficients

<i>Variable</i>	<i>Coefficient</i>	<i>Std Error</i>	<i>t value</i>	<i>Pr(> t)</i>
<i>(Intercept)</i>	407.45031	265.05129	1.537	0.1525
<i>Wg_sav</i>	0.05824	0.02792	2.086	0.0611

*Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*

Residual standard error: 628 on 11 degrees of freedom

(3 observations deleted due to missing values)

Multiple R-squared: 0.2835, Adjusted R-squared: 0.2183

F-statistic: 4.352 on 1 and 11 DF, p-value: 0.06106

The results show up as not statistically significant, indicating that the migrant is not reaping an adequate wage saving in proportion to giving up 'social capital'.

Wage saved by a migrant with information, plotted against distance from native place.

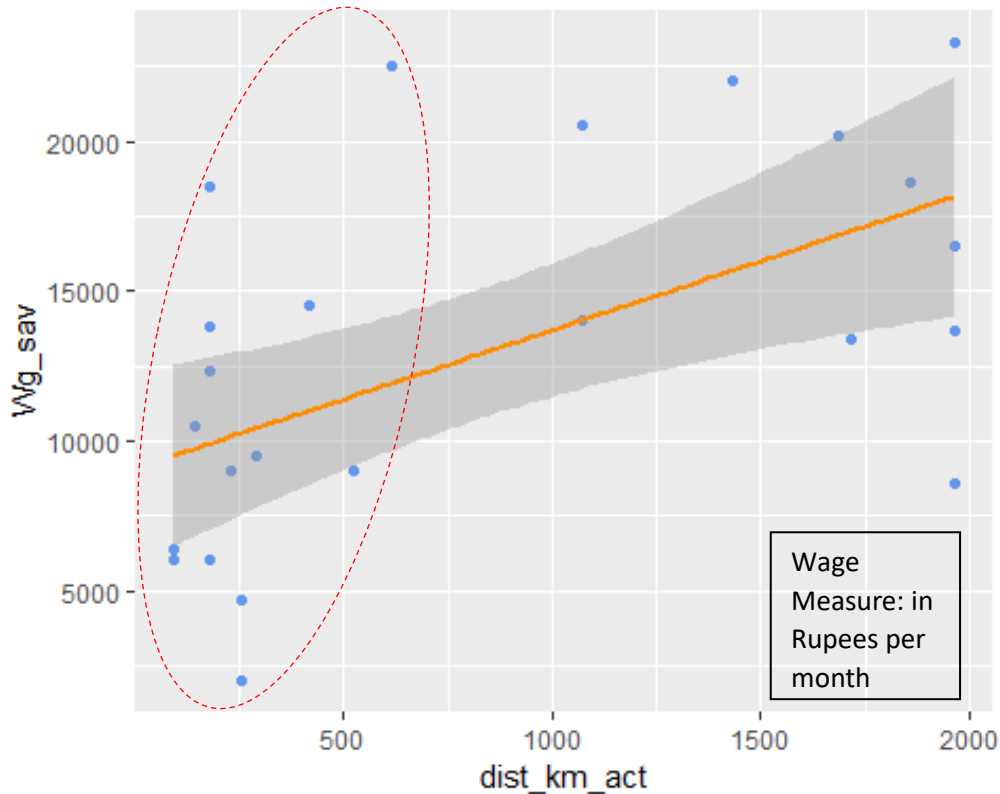


Figure: 6-31 : Wage saved versus Network distance from native place

Residuals

<i>Min</i>	<i>1Q</i>	<i>Median</i>	<i>3Q</i>	<i>Max</i>
-1025.2	-325.8	-174.7	365.2	1433.4

Coefficients

<i>Variable</i>	<i>Coefficient</i>	<i>Std Error</i>	<i>t value</i>	<i>Pr(> t)</i>
<i>(Intercept)</i>	-54.52182	297.97888	-0.183	0.85642
<i>Wg_sav</i>	0.06804	0.02097	3.244	0.00358 **

*Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*

Residual standard error: 634.2 on 23 degrees of freedom

(3 observations deleted due to missing values)

Multiple R-squared: 0.314, Adjusted R-squared: 0.2842

F-statistic: 10.53 on 1 and 23 DF, p-value: 0.003577

The results show up as statistically significant, indicating that the migrant is reaping an adequate wage saving in proportion to giving up 'social capital'.

6.2.6 Housing as the highest cost – Analysing Real Estate Data

Most migrants interviewed indicated that the highest share of their income is spent on rent for housing. It was also observed that the quality and size of housing that a worker can afford is dependent on his/her income. Based on the inferences and data from interviews, rent-to-income ratios were regressed against the distance from native place.

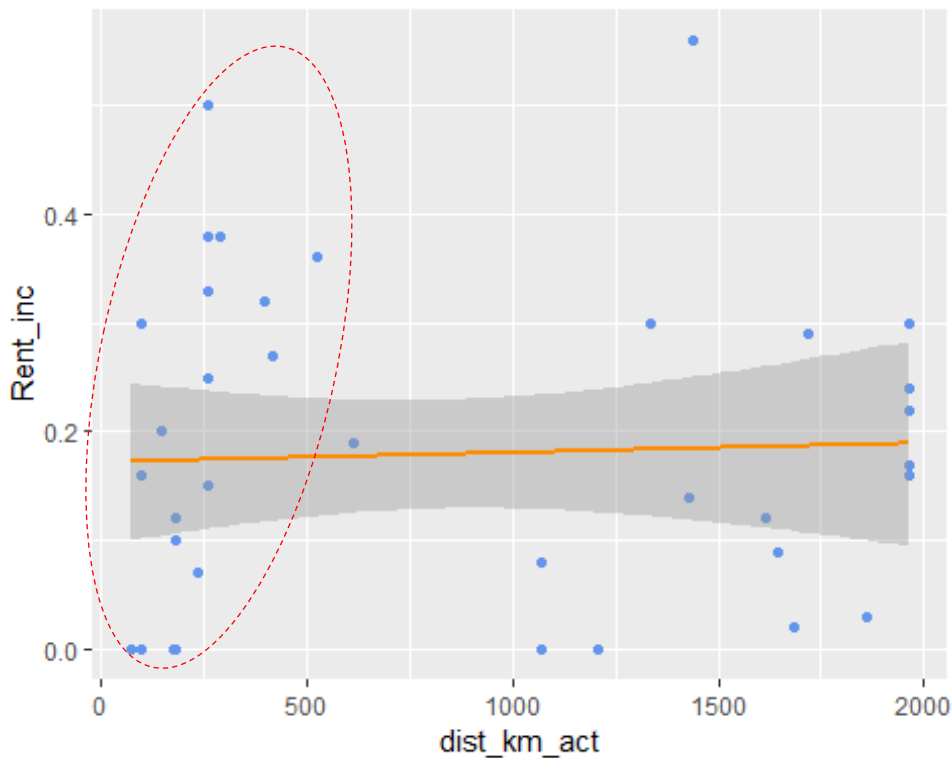


Figure: 6-32 : Rent to income ratio versus Network distance from native place

Coefficients

Variable	Coefficient	Std Error	t value	Pr(> t)
(Intercept)	784.7	187.5	4.184	0.000176 ***
Rent_inc	206.6	808.1	0.256	0.799702

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 736.1 on 36 degrees of freedom

(3 observations deleted due to missing values)

Multiple R-squared: 0.001812, Adjusted R-squared: -0.02592

F-statistic: 0.06534 on 1 and 36 DF, p-value: 0.7997

Based on the above regression results, it is clear that rent-to-income ratio is much lower for workers as they give up social capital (distance from native place). However, once again, we see a steady pattern until 500km and then it becomes scattered. The results did not show statistical significance with or without information as they had in the case of wage differentials/wage saved. However, controlling for the rent-to-income ratio for distances less than 700km yields a statistically significant co-relation.

Part of the reason for this is that workers who hail from far away come with the primary intention of saving on wages, and so they tend to economize on living conditions. Very often, more than 3 working men share a room, each of them having left their families behind in the village. Not being around their social context as strongly, they are also less obliged to spend on clothes, appearances, etc. as compared to migrants from nearby.

When comparing with the regression of 'wage saved' versus 'distance', it is also apparent that migrants from close-by areas reap a higher wage differential for the social cost they give up, as compared to migrants from far-off places.

Another explanation could be that migrants from nearby are more likely to migrate with an intention to permanently urbanize and may thus invest in more permanent/ better quality – effectively more expensive housing and thus higher rent to income ratios.

While we have already established that lack of information is a point of 'value leaks' for the migrant, it appears that housing costs are not rational. The patterns observed within 700 km seem to favor migrants who come from closer, since the rent-to-income ratio climbs rapidly per unit distance.

This prompts a study of the housing rental markets in the region, using data scraped from listing sites that verify their data through physical inspection.

6.2.7 The Case of Real Estate in Mumbai

When trying to collect real estate data for the Ahmedabad–Mumbai corridor, nearly 21000 data points of the total 24000, were in the Mumbai agglomeration. A large part of the interviews in Mumbai also shed light on real estate data in the informal sector. Mumbai is also the source of maximum value in the region, and thus an appropriate area to delve deeply into the housing rental data. Several factors were analyzed against rents per sq. foot – a base unit for determining value.

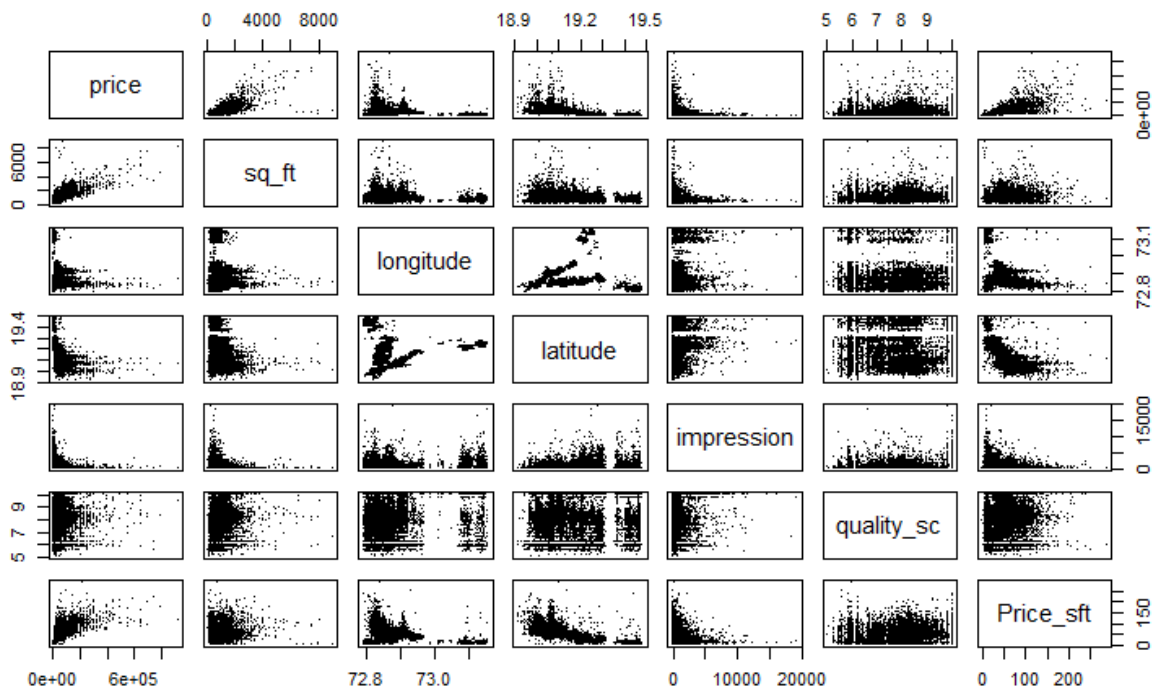


Figure: 6-33 : Mumbai Real estate - per sq ft price influencers (all price units in Rupees)

The co-relation between latitude and per square foot rental prices is very strong, as is also apparent from the maps. Value is dispersed out of South Mumbai – the historic business district – through two major railway lines that draw it up northwards and then further distribute it through satellite towns.

The rail connectivity of the satellite towns to the hinterland make them appropriate gateways to Mumbai, as they have low rents.

GDP PER SQ KM- MUMBAI

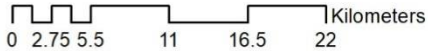
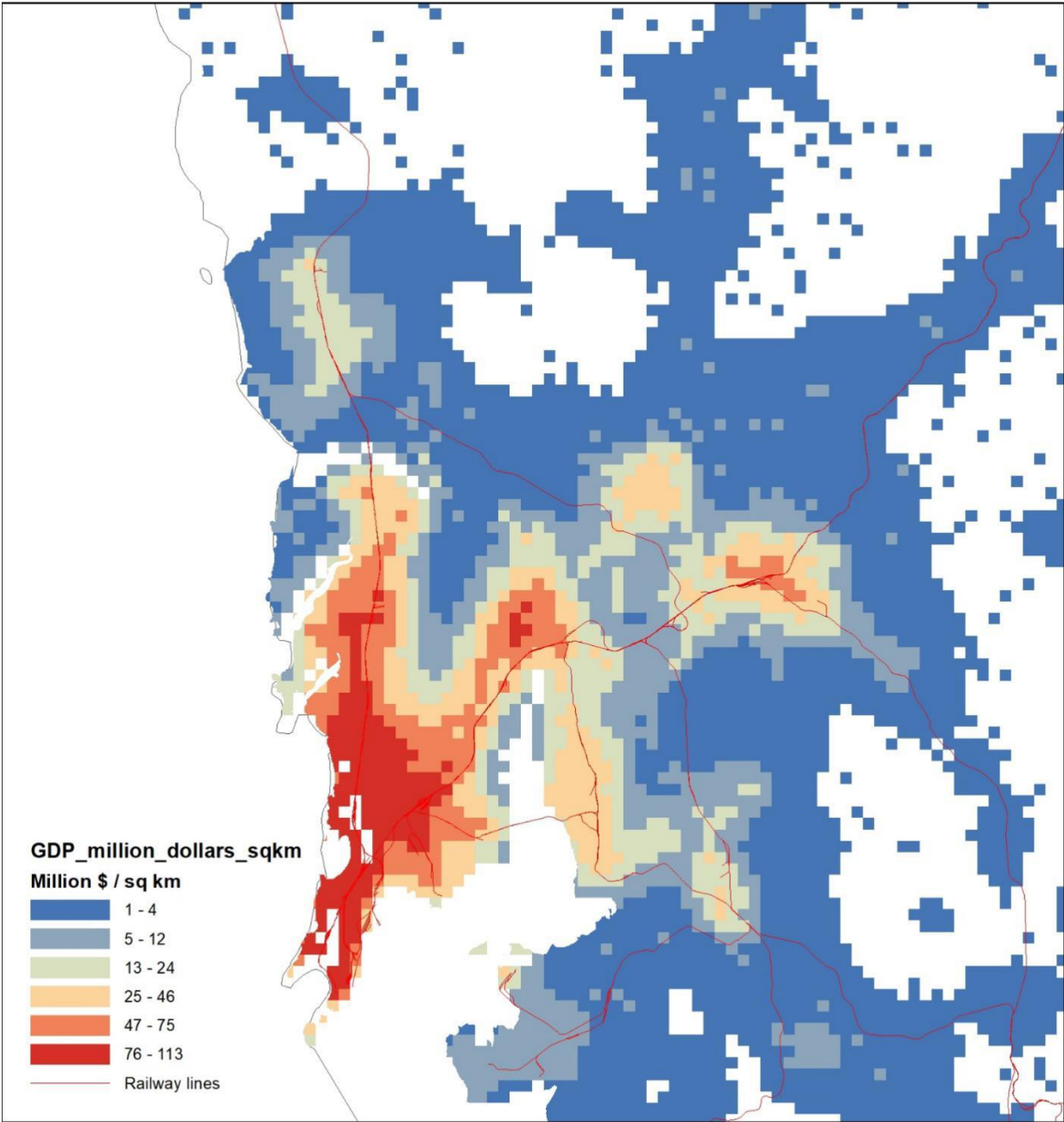


Figure: 6-34

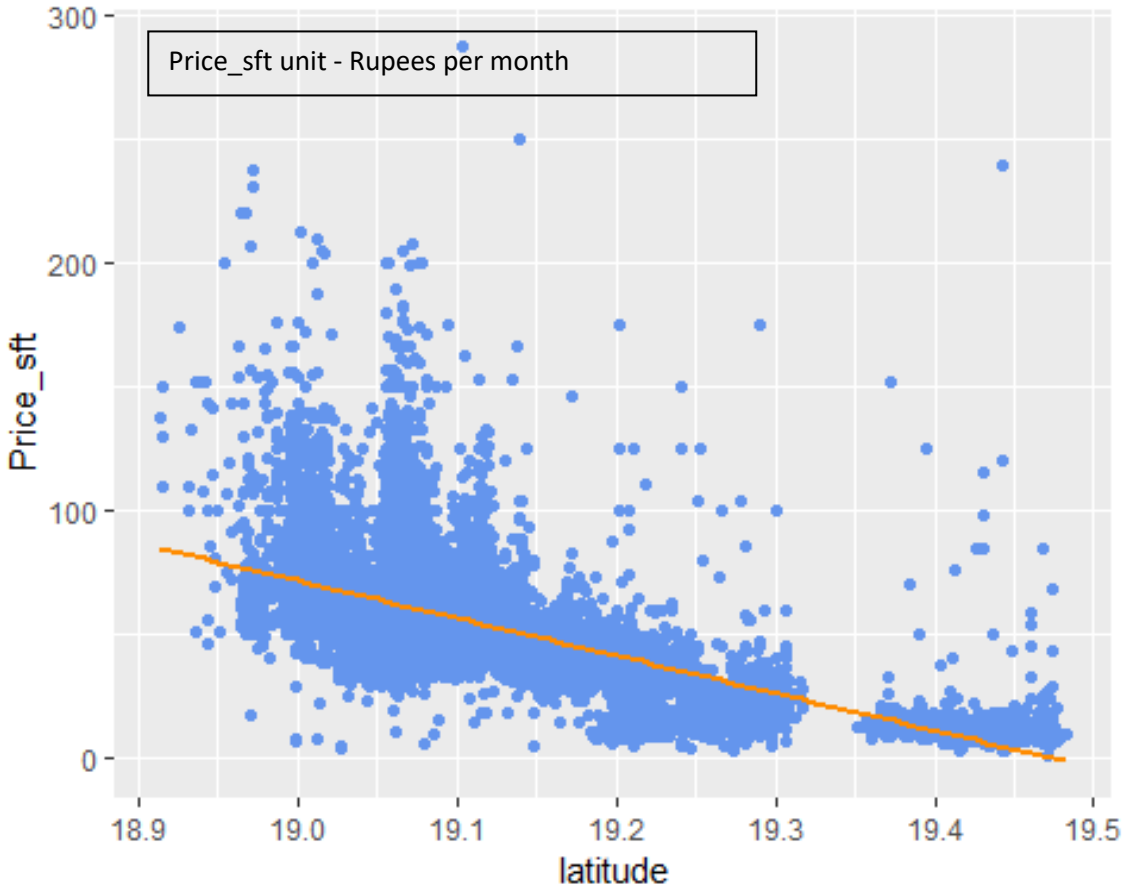


Figure: 6-35

Residuals

Min	1Q	Median	3Q	Max
-64.921	-9.992	-0.253	7.338	235.224

Coefficients

Variable	Coefficient	Std Error	t value	Pr(> t)
(Intercept)	2951.5294	14.5136	203.4	<2e-16 ***
latitude	-151.5634	0.7542	-200.9	<2e-16 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
 Residual standard error: 17.79 on 21649 degrees of freedom
 Multiple R-squared: 0.651, Adjusted R-squared: 0.651
 F-statistic: 4.038e+04 on 1 and 21649 DF, p-value: <2.2e-16

HOUSING RENT PRICE PER SQ FT- MUMBAI -2019

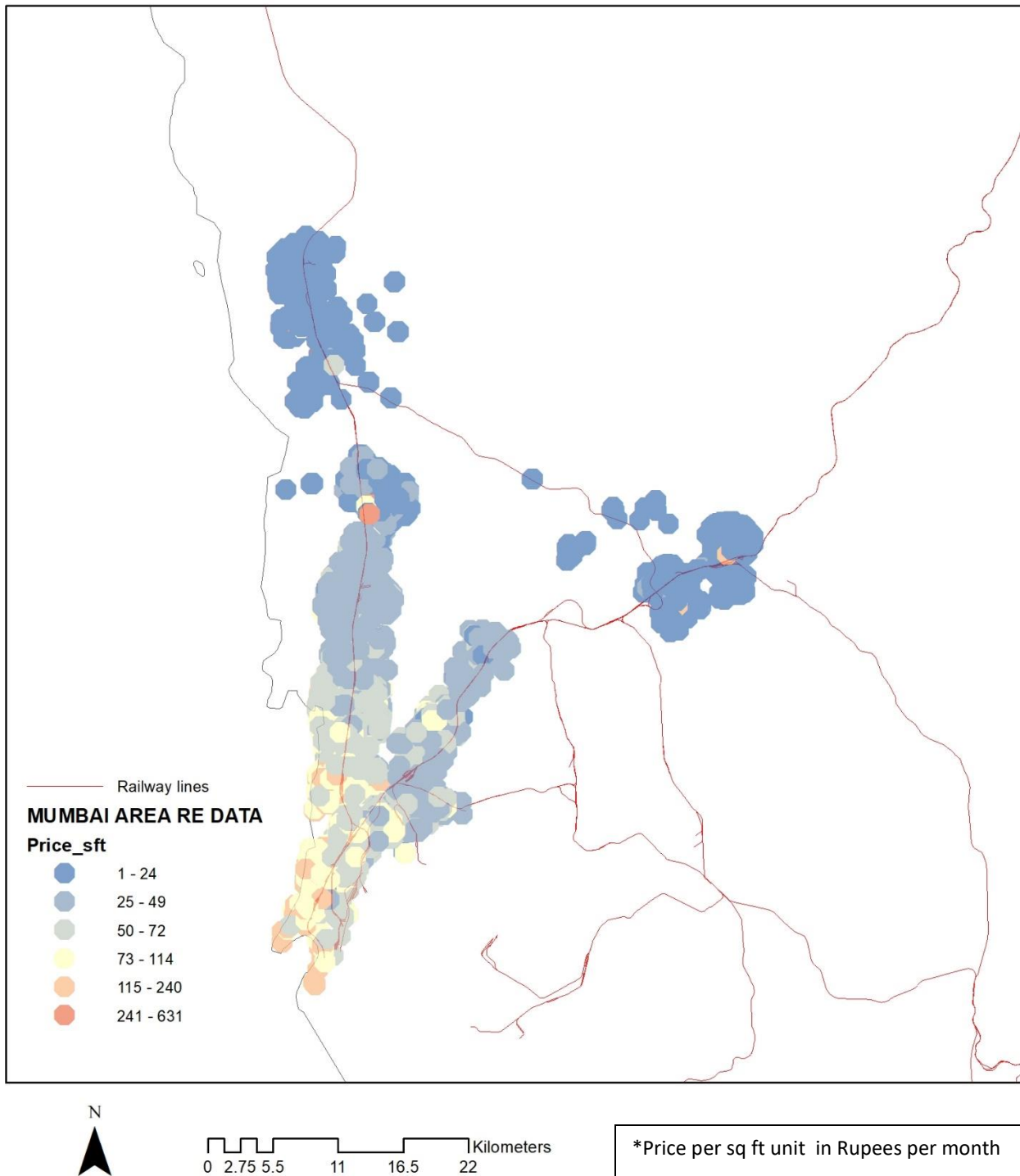
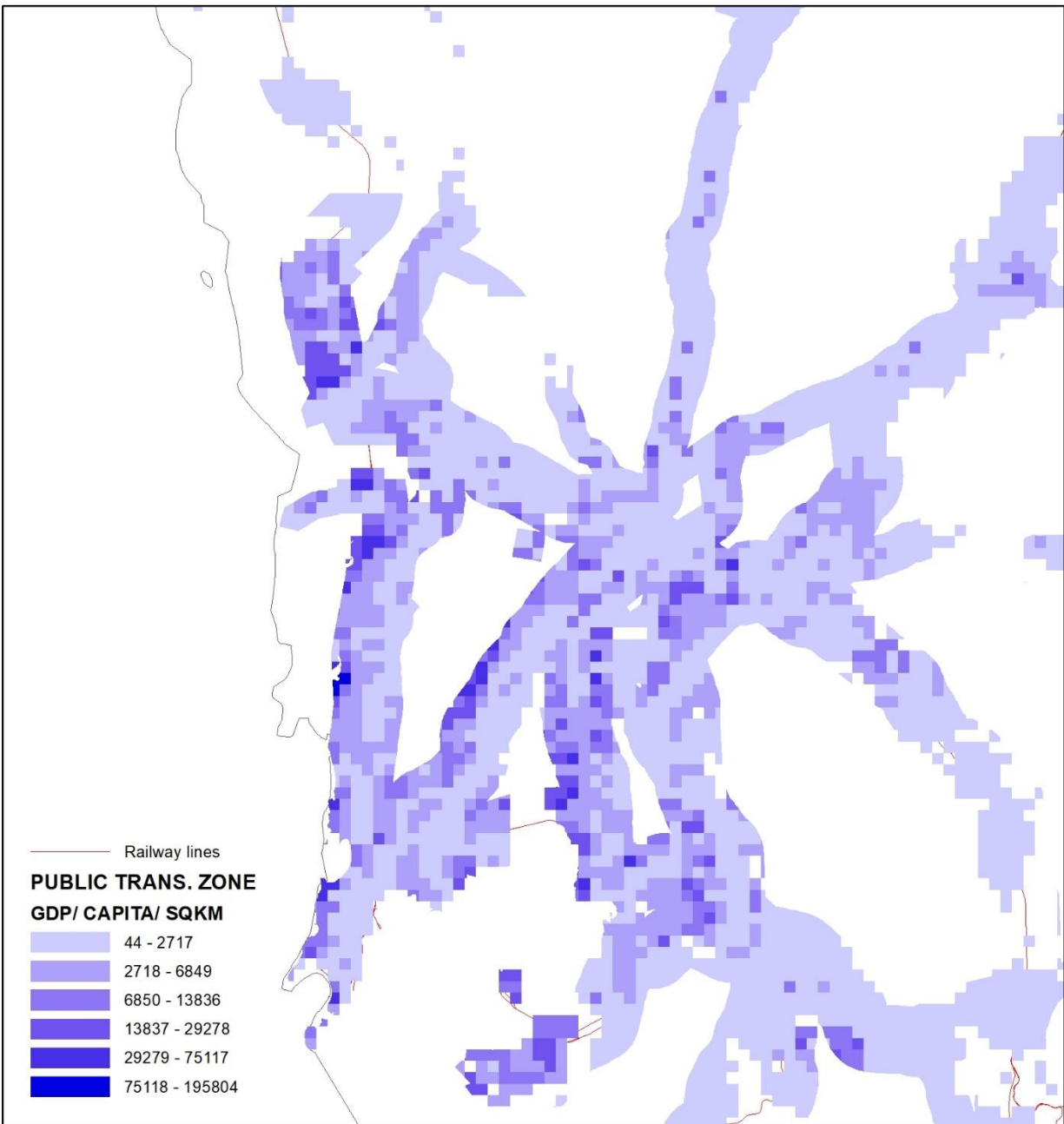


Figure: 6-36

GDP PER CAPITA PER SQ KM - MUMBAI TRANSIT BUFFERS



0 2.75 5.5 11 16.5 22 Kilometers

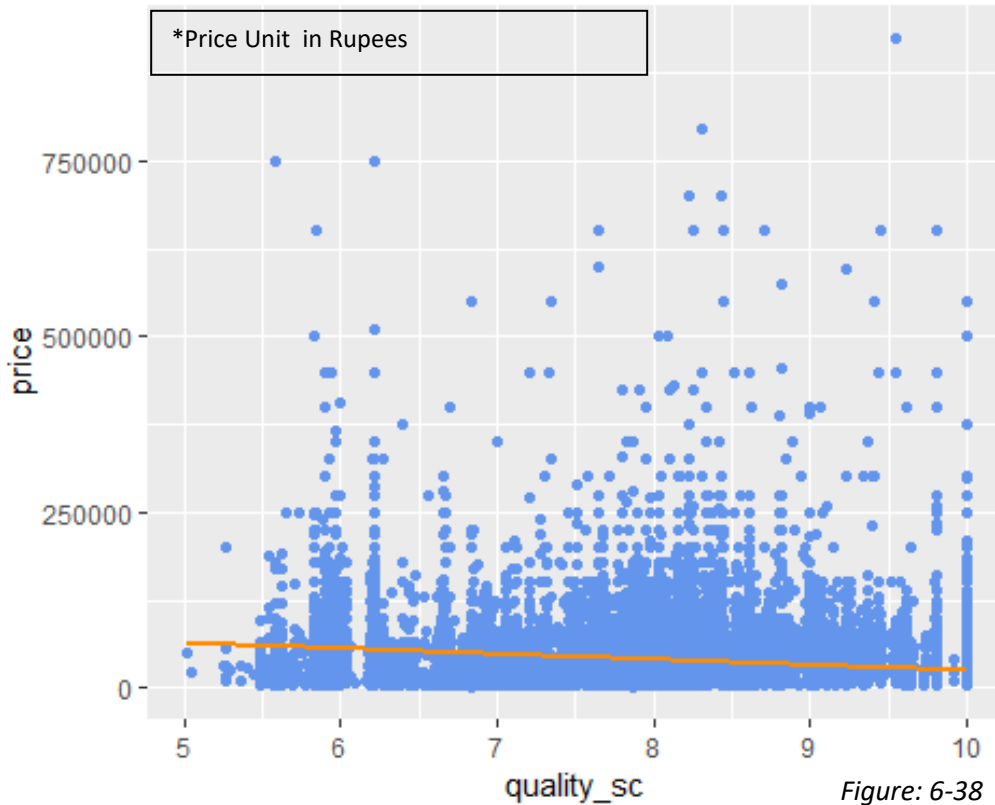
*Unit in Rupees per year

Figure: 6-37

Even though value seems concentrated along the rail lines, when normalized for population

density, we observe that the value may not be that high. Some of this is explained by the map above, but only a statistical analysis that can throw more light on this.

The only other statistically significant co-relation found among the various parameters for real estate is with the Quality scale. The quality scale, as defined by the listing website, includes several aspects including a place's convenience of location and its proximity to transit stations. As against expectations, the quality scale shows a negative correlation to rents per square foot, though the 'r' square values are low.



Residuals

<i>Min</i>	<i>1Q</i>	<i>Median</i>	<i>3Q</i>	<i>Max</i>
-55868	-20417	-15417	11367	896975

Coefficients

<i>Variable</i>	<i>Coefficient</i>	<i>Std Error</i>	<i>t value</i>	<i>Pr(> t)</i>
<i>(Intercept)</i>	102849.0	1923.8	53.46	<2e-16 ***
<i>Quality_sc</i>	-7843.2	223.3	-35.12	<2e-16 ***

*Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*

Residual standard error: 47840 on 21649 degrees of freedom

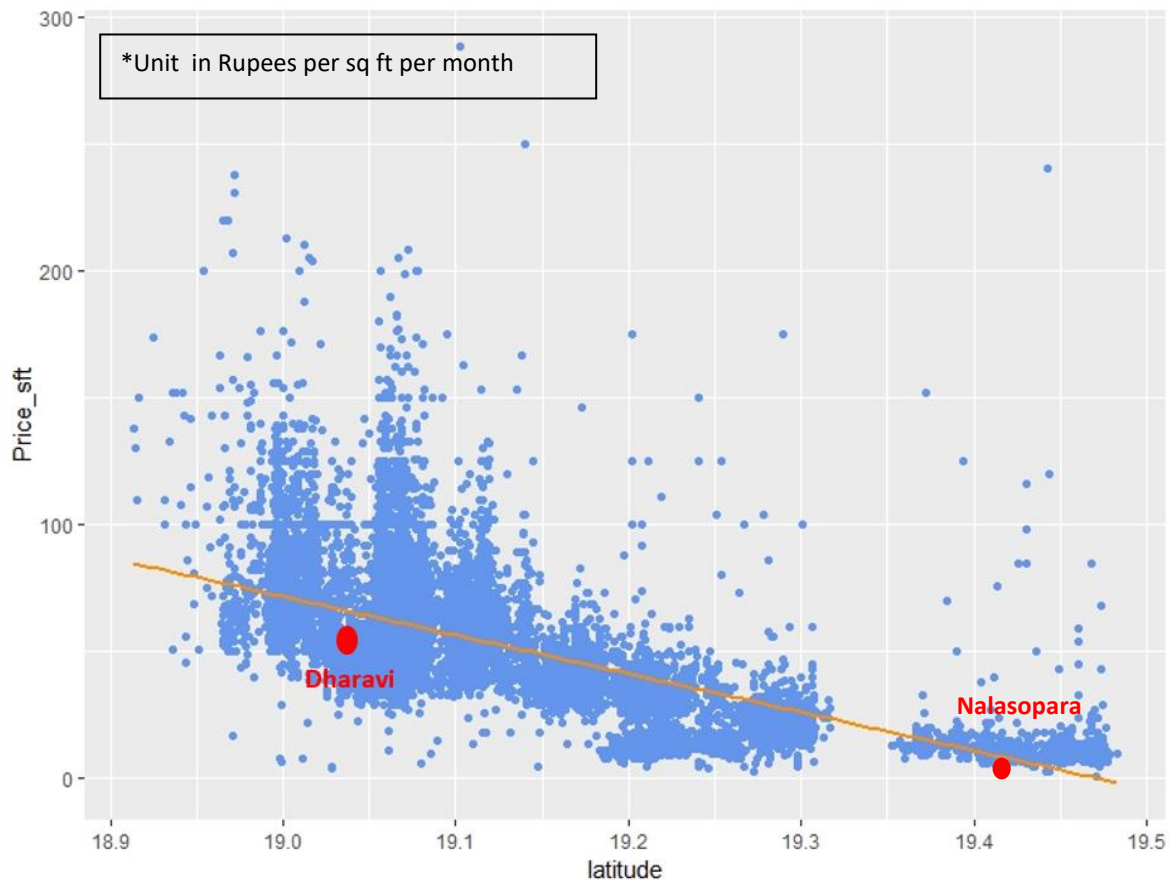
Multiple R-squared: 0.05391, Adjusted R-squared: 0.05387

F-statistic: 1234 on 1 and 21649 DF, p-value: <2.2e-16

Such irrationality in formal real estate markets leads us to question the value capture in informal housing markets where most of the migrants find residence.

The rental price data revealed from interviews puts rents in the informal settlement of Dharavi between the range of Rs 35 to Rs 60 per square foot, with an average hovering around Rs 45 to Rs 50 per sq ft. However, a lot of houses do not have toilets. They have to purchase a monthly subscription to use a privately managed public toilet. However, no such subscription exists for single workers living in the neighborhood, and they have to pay per use. This often makes their effective rent hover around 57 Rs/ sq ft. This is not unlike the trends we see in the formal markets in Mumbai, and it is closely tied to location premium. This gets further credence from the regression of quality scale versus rent per sq ft.

Figure: 6-39



This shows that even though housing tenure may be uncertain, or properties may not be strictly legal, they still command a similar rental price owing to access to transport connectivity. These prices in Dharavi are much higher than you would pay for formal housing in the Nalasopara suburb of Mumbai where average rents hover around Rs 10/sq ft. The suburb of Nalasopara is also primarily occupied by migrants. However, the general profile of the migrants consists of

people who have migrated from the distant north Indian states. Several other regression models were tested, but none showed up as being statistically significant.

The location premium in such informal settlements mirror the formal markets, as is apparent in figure 6-39. This prompts a question – if formal and informal housing costs the same – per square foot, who is capturing value by price inflation of an inferior quality good? In Mumbai's informal real estate market, it was found that the smallest houses often pay the highest per square foot rent, almost equivalent to high-end housing. One rationale could be that as ticket size⁸ reduces, unit prices per sq ft tend to go up. While in the formal markets, this may be compensated by management/ subscription fee – which is seen in the business models of companies such as WeWork, and also of co-living products. The above observations create room for scrutiny of where value is captured in informal housing rental markets.

This leads to the question: who captures the outsized return in this asymmetric market? As one probes for reasons, it is clear that the 'ticket' size is low in Dharavi, but per sq ft rents are aligned with formal markets. **In unravelling the economics of Informal Real Estate for housing in Dharavi**, two financial models for house rental prevalent in informal housing in Mumbai emerged.

- **Model 1**

Monthly rent – Rs 6500, upfront deposit – Rs 20,000

However, people are subject to uncertainty around being able to renew the annual lease in the same place, increase in rent every year and the paying of 1 month's rent as processing charges every time they renew the lease. Effectively, FV^9 – Rs 1,103,383 **Model 2**

No Monthly rent, deposit – Rs 450,000 paid upfront.

This is for a 10 year lease.

Usually both models would be available for the same property.

People (renters) seem to prefer model 2 if they do not have enough upfront money.

Effectively, FV – Rs 1,167,184

⁸ (purchase value size)

⁹ FV – Future Value

(Both models have been analyzed based on an FV - DCF analysis @ 10 % annual interest rate and @ 5 % rent increase annually over 10 years.)

- Clearly, model 2 turns out more expensive for the renter. So why do tenants agree to model 2? It appears the Insecurity of Tenure plays a key role, since being displaced from the house or having unexpected rent increases, disrupts the employment as well as the education of the children. It is seen to severely hamper a sustainable continuous urban existence.
- Why do landlords forgo possibility of rent increase over 10 years, by also preferring model 2?

Upfront cash payments in large magnitudes are hard to come by. When they do, they are seen as opportunities to be funneled into the local micro-credit industry. Micro-credit lending rates in Dharavi average 3% to 5% compounded per month – nearly 72% per annum. So one can see how cost of capital is so high in informal micro-credit. Effectively, FV- Rs 1,49,533,708 (128 Times Model 1 figures). As compared to previous studies on informal real estate markets in Africa and Malaysia (Tinsley, 1993) (Guliyani, 2008), visible premium on security of tenure is lower (7% to 20% as against 45% to 55%). However, the hidden premium is 128 times, much to the favor of landlords. This could be termed as the **true opportunity cost of the security of housing tenure.**

Not just long term rental, but purchase of property in Dharavi, also provides outsized returns.

Yields on 'Purchase' on Dharavi:

- Upfront Purchase Price – Rs 2 million
- Monthly Revenue – Rs 6500 + 5000 + 4000 = Rs 15,500
- Annual Revenue = Rs 186,000
- Yield NNN = Rs 186000 / Rs 2,000,000 = 9.3%

This is very substantial as compared to formal markets in Mumbai, where yields hover around 2.5% (*as per a prominent Real Estate Investment Fund in India, in the absence of freely available data). However, the risk is also higher, since the properties are not completely legal technically. The lowest risk properties are the ones which have a letter stating that if the settlement is redeveloped, the ones holding the official letter would be eligible for a 1 bedroom apartment of a standard size in

the redeveloped scheme¹⁰. It appears that such papers are traded when 'selling' property. There are varying degrees of legality – however, this thesis does not delve into these details. They may be the subject of another focused study on Dharavi real estate. The case being made here is that insecurity of housing tenure can have very high costs, and the enormous value captured by various players in the market may be funneled towards what many in the literature may describe as the 'mafia', 'embedded bureaucrats', etc.

Co-relating the learnings from the qualitative interviews and quantitative results could help unravel the magnitude and mode of value capture in this market.

¹⁰ As per interviewees. The fact could not be independently verified.

6.3 Inferences from Quantitative results and co-relation with Qualitative results

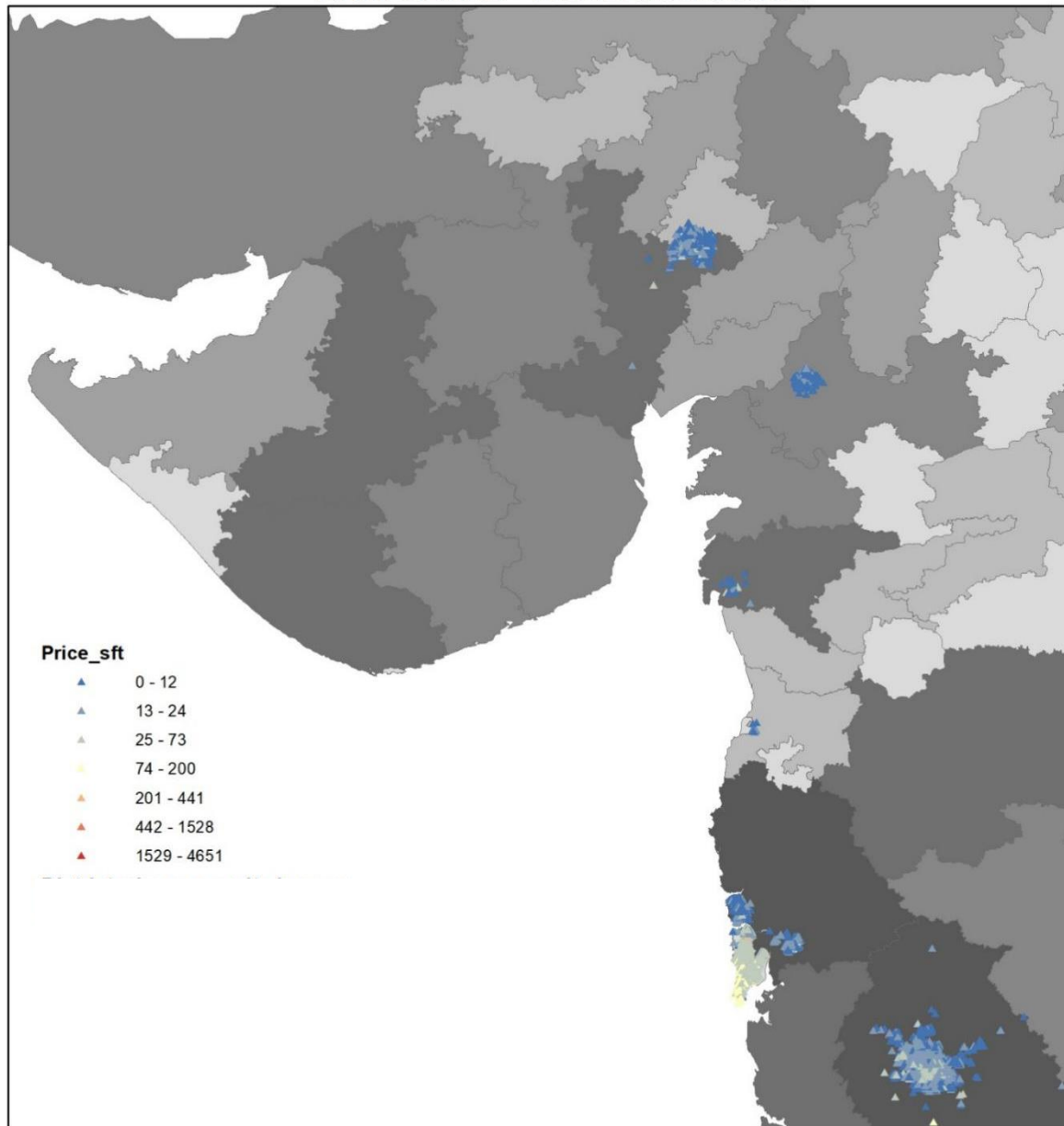
The analysis of the big dataset on rental prices throws up the curious phenomenon of informal real estate pricing being similar to formal real estate pricing, despite the latter being higher risk. It throws up the topic of uncertain legality and Insecurity of Tenure. Migrants usually only have access to informal housing markets due to market segmentation, which is based on historical caste and class barriers. This precludes them from accessing quality housing and renders them prone to exploitation. Some migrants, who have been able to tide over these barriers, including some who have successfully managed to access the formal economy by way of economic mobility, or access to the right kind of information, often place themselves in other cities that are more suitable to offering the best opportunities. The quantitative results that show that migrants have moved where the GDP per capita 1st Quartile is higher than their place of origin would give credence to such a phenomenon of progression. The same cannot be said about the 3rd Quartile or mean or median values. This also explains that these migration patterns may hold true for lower wage rural migrants, but not for higher income migrants or urban to urban migrants.

Interestingly, in half the cases, it was found that the migrants moved to places which had lower total population. And at times, these places had lower total GDP of their native region. However, the population density was much higher. This was also apparent from the spatial patterns, wherein the destinations showed a 'spock and wheel' pattern while the origin regions had a more spread out / dispersed urban form. This explains that the high population and fertility rates are creating disaggregated low income agglomerations, prompting workers to move to higher wage zones, which may often have lesser total population but almost always a higher median population density.

We shall try to understand how rents and potential wage differentials play out across the entire corridor.

Analyzing Differentials across the Ahmedabad–Mumbai Corridor-

GDP PER CAPITA AND RENTS PER SQFT - AHMEDABAD - MUMBAI CORRIDOR



0 20 40 80 120 160 Kilometers

Figure: 6-40

*Units in Rupees

The housing rental market was analyzed using 24,423 datapoints. The prices vary starkly along the corridor, with Mumbai being the primary source of value.

Much of this also co-relates to market potential (Total GDP) of each agglomeration.

GDP TOTAL AND INCOME PER CAPITA - AHMEDABAD - MUMBAI CORRIDOR

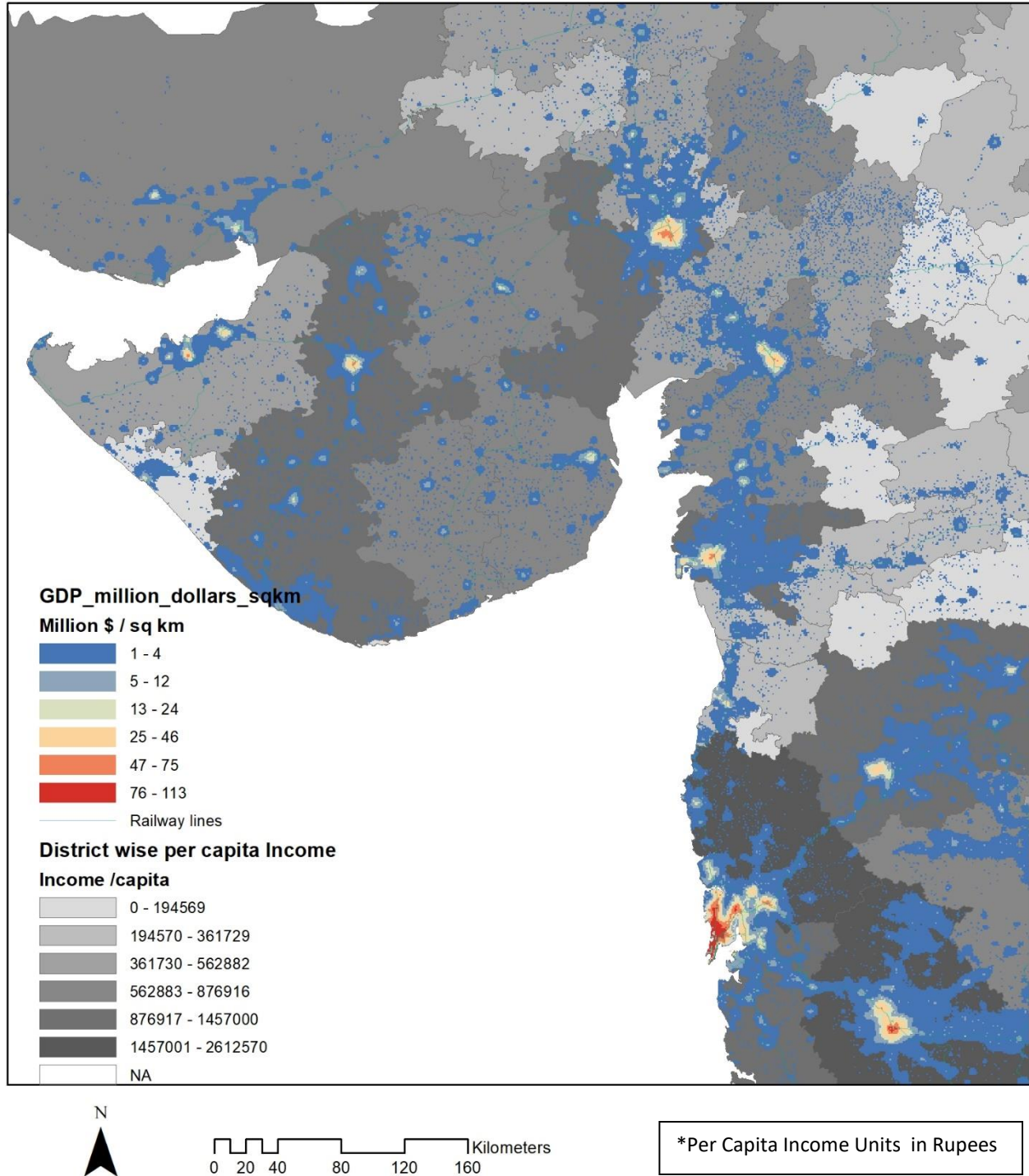


Figure: 6-41

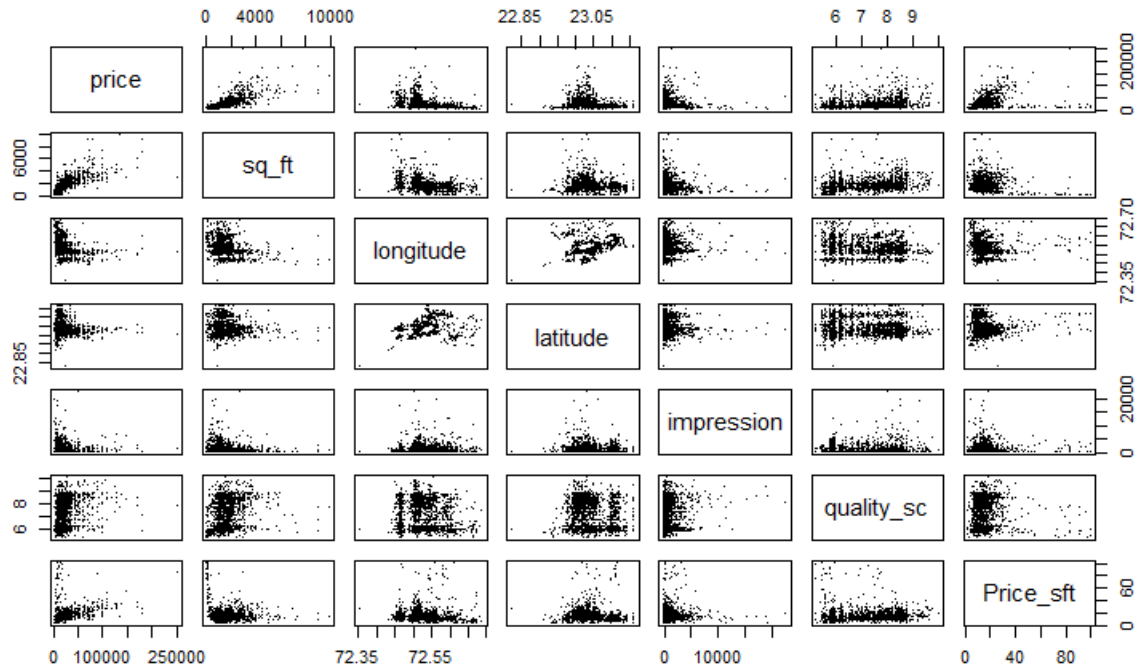


Figure: 6-42 – Descriptive plot of parameters for Housing Rental market in the corridor

In trying to understand the dispersion of value, co-relations were analyzed (as illustrated above) among various parameters, and apparent co-relations with latitude/ location were examined.

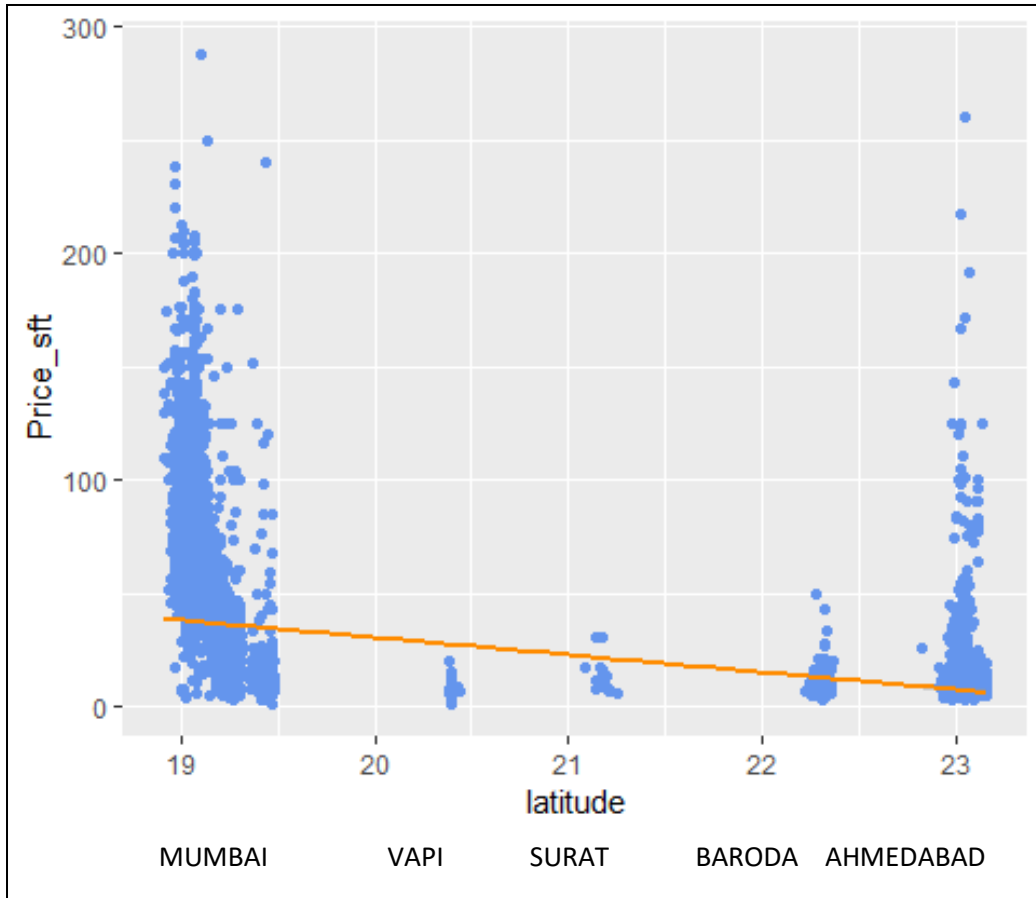


Figure: 6-43

Per square foot price of rent was considered the key parameter to measure the value of the real estate. We observed Mumbai to be a key source of value, and Ahmedabad to be a secondary source of value, with values declining in the zone in between.

HOUSING RENTS PER SQUARE FOOT ACROSS THE AHMEDABAD -MUMBAI CORRIDOR

CITY	MEAN	MEDIAN	INTER QUARTILE RANGE	MEDIAN 'TOTAL PRICE'
AHMEDABAD	17	14	6	18000
BARODA	11	9	4	10000
SURAT	14.4	11	8	15000
VAPI-VALSAD	7.8	7	7	8000
MUMBAI	36	22	42	17000

*All prices in rupees

Table: 6 - 1

An observation of the mean and median rents in the above table also gives credence to the fact that Ahmedabad and Mumbai are key centers. However, the interquartile range in Mumbai suggests that opportunities to find low cost housing and to access a much higher wage are possible. From the example of Dharavi, we know that informal housing prices seem to track formal housing prices in a similar location. To give perspective, Dharavi, with average rents at Rs 40 / sq ft, though socially accessible to the blue collared socio-economic strata, is much more expensive than other migrant housing destinations like Nalasopara that average Rs 10 /sq ft.

Price /sq ft in Nalasopara –

1Q- 8 Rs/sq ft, **Median** 9 Rs /sq ft , **mean** 10 Rs/sq ft , **3rdQ** – 10.2 Rs/sq ft

Price/sq ft in Ahmedabad –

1Q- 11 Rs/sq ft, **Median** 13 Rs /sq ft , **mean** 15 Rs/sq ft , **3rdQ** – 17 Rs/sq ft

However, Nalasopara is at par with formal housing in the most premium areas of Ahmedabad. (The dataset in Ahmedabad is biased because properties in non-premium locations do not easily find their way onto the particular listing sites). Nalasopara scores over Ahmedabad for many migrants, since the subsidized suburban rail connectivity, and 1 hour of travel time to the downtown, affords access to the vast Mumbai market, and the hope of socio-economic mobility, whilst still not clashing with the 'Marathi' (local community) bastions in Dadar and Dharavi. (The thesis, however, does not delve into the complexities of political barriers and assumes them to be expressed under the 'information asymmetry' head, since they are a byproduct of the access the community network has to a particular urban economy.)

Though we may need to consider the inherent biases in the nature of properties that get listed on formal listing sites, this is also in line with earlier observations about how the interquartile range of GDP per capita per sq km allows economic mobility over time, whilst building an improved access to the employment network of the city.

To probe these parameters further, we took differentials between Mumbai and the other cities in the corridor.

	<i>mean_p_sft</i>	<i>median_p_sft</i>	<i>IQR_p_sft</i>	<i>median_price</i>	<i>GDP_TOT</i>	<i>POP_TOT</i>		
<i>A'bad</i>	19.92537	9	36	-1000	50090	22701187		
<i>Baroda</i>	24.18017	13	38	7000	61751	28702852		
<i>Surat</i>	20.74222	11	34	2000	59558	26762320		
<i>Vapi</i>	27.36399	15	41	9000	68430	30628333		

	<i>GDPP_MIN</i>	<i>GDPP_1Q</i>	<i>GDPP_MED</i>	<i>GDPP_MN</i>	<i>GDPP_3Q</i>	<i>GDPP_MAX</i>	<i>GDP_P</i>	<i>LAT</i>
<i>A'bad</i>	-10.50	-114.90	-221.30	229.30	-447.90	9172.60	48.88	-3.9465
<i>Baroda</i>	36.55	141.92	55.48	128.65	422.80	37326.49	-259.11	-3.2312
<i>Surat</i>	36.05	168.60	509.61	835.31	1094.05	30771.72	187.34	-2.0942
<i>Vapi</i>	0.00	245.40	566.40	830.30	-22.40	63822.80	808.37	-1.3133

	<i>LONG</i>	<i>mean_pop</i>	<i>med_pop</i>	<i>IQR_pop</i>	<i>min_pop</i>	<i>max_pop</i>	<i>mean_pop.1</i>	<i>med_pop.1</i>
<i>A'bad</i>	0.3063	4340.955	2223.5	4072	4	19721	4340.955	2223.5
<i>Baroda</i>	-0.3035	5739.047	1495.5	4776	4	56472	5739.047	1495.5
<i>Surat</i>	0.0466	5156.821	1014.5	4848	4	49077	5156.821	1014.5
<i>Vapi</i>	-0.0329	6119.984	2818.5	5646	-3	43874	6119.984	2818.5

	<i>IQR_pop.1</i>	<i>min_pop.1</i>	<i>max_pop.1</i>
<i>A'bad</i>	4072	4	19721
<i>Baroda</i>	4776	4	56472
<i>Surat</i>	4848	4	49077
<i>Vapi</i>	5646	-3	43874

Table: 6-2

The most significant observation is that the Ahmedabad scores had a higher GDP/capita/sq km for Minimum, 1st Quartile and Median values, than Mumbai. This would mean that, for a worker at a very low level, Ahmedabad may offer a higher wage differential. This can be illustrated by the case of Sucheta's interview, where she makes less per hour in Mumbai than she would in Ahmedabad for the same kind of work. However, Mumbai is closer to her native town and family – which is an over-night train journey away. Ahmedabad would take two days in comparison.

This is co-related with the observation that people are making reasonable decisions within a range of upto 700 km from their native place. The ability to be back to the native place and community within 12 hours is deemed a reasonable time – a distance that does not compromise heavily on one's social capital. A key aspect is being able to return for health emergencies in the family, and to attend to the cremation of close relatives.

For a migrant from Uttar Pradesh or Bihar, the distance between Ahmedabad and Mumbai is not very different. However, such a migrant would need to tide over the difficulties of information asymmetry to find the right city for the right skillset and phase in life. Such a ploy may preclude the worker from building a strong network in any one city. The worker may be better off staying in a city with higher potential for economic mobility in the long term. However, making the right choice for migration for a long distance migrant could lead to accelerated economic mobility for his family.

The primary question distinguishing Ahmedabad and Mumbai as an ideal choice for a long distance worker is – does the worker seek to permanently urbanize or seek to keep harnessing seasonal wage differentials to be funneled back to the family in his/her native place?

7. CONCLUSIONS AND RECOMMENDATIONS

The analysis from the interviews made it clear that rural to urban migrants in India are not quite the 'homo economicus' (rational wealth maximizing man). They deeply value their social relations and connections to their native place and culture, and at times it was observed that they had given up a position of economic stability for social/family reasons. The study also found that degree of this trade-off between social capital and family ties could vary from person to person, and almost every migrant was essentially hedging wage differential against the social capital they would give up on. We can conclude on the analyzes as follows -

1. **Migration leads to gain in wage differential, but it is not consistent with social costs incurred.**

In the wage differentials calculated between destination and origin, using GDP per capita as a proxy, the biggest gains were consistently made in the lowest (1st) quartile. This was for the economic characteristics of the region – and thus seen to be representative of a typical migrant making the same decision for that particular destination–origin pair. Since the interviews were with people in the lower income quartiles, it appears that they all do make a decision that provides economic mobility through wage gains. Similar results were found for actual wages at an individual level.

However, the regression analysis showed that migrants were not gaining wage differentials consistently with the social capital they gave up on. There were two plausible patterns found where the trade-off was beneficial to the migrants.

Two patterns of advantage emerge

i. Migrants having adequate information

Regression results show that having adequate information on the destination, before migration is imperative for the migrant to make a beneficial trade-off. They consistently gained wage differential the further they were away from their native place – and this justified the social cost. Their sources of information were most often close family members in the destination, or the experience of having made multiple migrations to the region and identified the right fit, or of being more literate and educated.

Not having information did not lead to similarly substantial gains, even if their native region was close to the destination. This also raises the question that chain migration, though a source of information, may not necessarily be the most effective, even though it offers a social safety net. However, distance also plays a key role in offering an advantage.

ii. Migrants within a range of 700 km of public transit connectivity (regional rail/bus)

The distance between 600km to 700km from migration destination was found to be a threshold for beneficial gains as well. While it may be assumed that being closer to the destination may come with a history of established chain migration flows and an implicit access to information, it was not always the case if people were less educated or belonged to particular castes/communities. However, the key benefit to people who migrated within a range of 700km was that it appeared they had given up nearly negligible social cost. I do not distinguish between seasonal and permanent migrants, since most seem to be making an attempt to permanently urbanize. The period of trying such a process is usually between ages 17 to 35 in concurrence with the literature. Such observations are also supported by other recent reports¹¹ on labor. The strong link that people within 700km have is perhaps best explained by it being within an overnight journey. This has allowed sustained seasonal migration over the years, and also allowed some to make the gradual shift to being permanent urban dwellers, which is often co-related with transitions into white collared or highly skilled jobs.

A threshold distance that allows the simultaneity of urban and rural existence-

This threshold of distance as an overnight journey is also found in their colloquial lingo – “Sat yesterday, reached today”. This finding also gives credence to my argument that measuring wage differential against network distance from native place is better than measuring against time spent in the destination (Stark & Fan, 2007 adapted model), because despite being technically a permanent urban worker, the person is not precluded from rural-social connects.

¹¹<https://www.indiaspend.com/category/indias-job-crisis/>

This is also found to work to their disadvantage. Workers who come from very far away have fewer social connections to the place and perhaps are not as obliged to maintain a minimum standard of living. Hence, they often overcrowd rooms with an intention to save as much as they can. How well-settled their native community was in the city, could determine the premium they had to pay to maintain a socially acceptable 'lifestyle'.

2. Housing was the highest cost object – Unaffordable ownership costs

Housing ownership was usually unaffordable due to a large ticket size, so the informal market evolved other models that are widespread since two decades.

a. Rental

Though rental housing has fewer financial barriers to entry, it is heavily segmented by caste, community, language group, native place etc. When renting to someone from outside the community, there is often a premium added to the usual costs. However, irrespective of the premium, most rental housing has irrational per sq ft costs which are at par with those of formal markets, despite no security of tenure and, effectively, provision of inferior quality good. The fact that the ticket size is low (total rent), and there is tolerance to overcrowding, makes it affordable to the tenants, but also disproportionately benefits the landlord.

b. Heavy deposit (10 year lease for upfront payment)

The 'heavy deposit' model, though seemingly favorable to tenants offering security of housing tenure, effectively has a very high opportunity cost. Accumulation of such capital is hard to come by, and those who can accumulate it more regularly, can divert it to the informal micro-credit industry at predatory compound interest rates. This is another avenue to exploit the vulnerability of the residents.

c. Pseudo ownership (Right to occupy) – High risk – high return option

The fact that legalities of properties 'bought' or sold in such 'slum' neighborhoods comes with the risk of the entire investment being lost, is compensated by very high yield – 9.3 to 10% – as compared to formal housing markets that offer 2.5 to 4%. Only migrants with high risk appetites and access to large pools of capital can benefit from

this model. More often than not, this serves as a mode of income rather than a way to satisfy personal housing needs.

3. Seasonal migration is a method to hedge rural–urban wage differentials, a step in an attempt to permanently urbanize

- a. There are phases by which a seasonal single migrant becomes a permanent migrant
 - i. Temporary single Migrant (3 month/yr)
 - ii. Primarily urban employment (> 9 months) – Single migrant
 - iii. Permanently Urban – Single migrant (family in village)
 - iv. Married Permanent Urban worker – wife & children in village.
 - v. Permanent Urban Migrant Family
 - vi. White Collar – Urban Migrant Family
 - vii. Complete Integration with ‘Urban Middle Class’ society.

The phases of migration are integrally tied to Rent-to-Income ratios. Rent is a key determinant of whether the migrant worker’s wife/ family stay in the village or the city. It also depends on upskilling in the prime working age – up to 35 years of age. Beyond this age, the worker may either ‘make it’ or decide to go back to being rural. This is dependent on the several barriers to entry that they face.

- b. The barriers to entry to being urban
 - i. Affordable Housing (Financial and social barriers)
 - ii. Access to urban employment networks (Information Asymmetry)
 - iii. Not Reaping the demographic dividend (Skill/ Education deficiencies)
 - iv. Agrarian vs Urban “Time, Work Discipline” – Cultural barriers (Thompson, 1967). This has created a certain profile of advantaged labor force and made the others more prone to exploitation, not just by employers but also by previous migrants who now exploit their kinsmen.

One of the central findings of this Thesis is that there is massive value capture in the process to urbanize through the avenues of wage arbitrage and access to housing.

Through much of the modes of value capture – the information asymmetry and exploitative housing models that we observed – one may say that chain migration and social capital, though seen to be positive phenomena, could also be exploitative to them. What is being priced in the migration market is ‘trust’ and a social safety net. However, this allows those with better access to information in the network to exploit those with lesser access to information. However, it remains an accepted fact that the migrants will eventually learn and work their way up the economic ladder. **Social Capital, though well intentioned, can be exploitative because of structural issues and hence there is an urgent need to minimize information asymmetry.**

In looking at the implications of the study, there is a need to improve the process of migration driven urbanization at all stages –

- I. **Initiation** – through reduction of information asymmetries in decision making
- II. **Integration/ transition** – through better integration into urban life whilst sustaining the inherent social capital.
- III. **Sustenance** – through minimizing major barriers such as affordable rental housing models, with security of medium term tenure.

4. Implications of the study – Policy and Business Recommendations –

Based on the learnings from this study, there are opportunities for both government policy as well as private enterprise to have positive impact, with the fundamental assumption proven being that reduced information asymmetry can help migrants make better migration decisions for themselves and reduce pressure on certain cities and markets. More transparency on housing costs in informal markets could also lead to price rationalization in those markets and improve the quality of the built environment.

In a democratic country, a primary mode of doing the above would be through nudging.

a. The merit of nudging migration by providing better information

i. Nudging through a marketplace (private enterprise) –

My entrepreneurial venture ‘Bandhu’ – currently part of MIT’s Design X accelerator as well as the MIT Sandbox spring cohort – is developing a product that would help migrants make a more insightful migration decisions. Our mobile phone platform – ‘Bandhu’ – minimizes the information asymmetries so that low-income migrants can make migration decisions with assurance. It does so by creating matches between employers looking for low/moderate skill workers, potential migrants/workers, and owners/occupants offering informal affordable housing on rent. By providing the potential migrants with competing offers of bundled Employment and Housing, for similar wage differentials*, the ‘Bandhu’ platform can minimize risks for the worker while still leaving the final choice up to him or her. The below flowchart explains the key actors tapped into.

Figure: 7-1

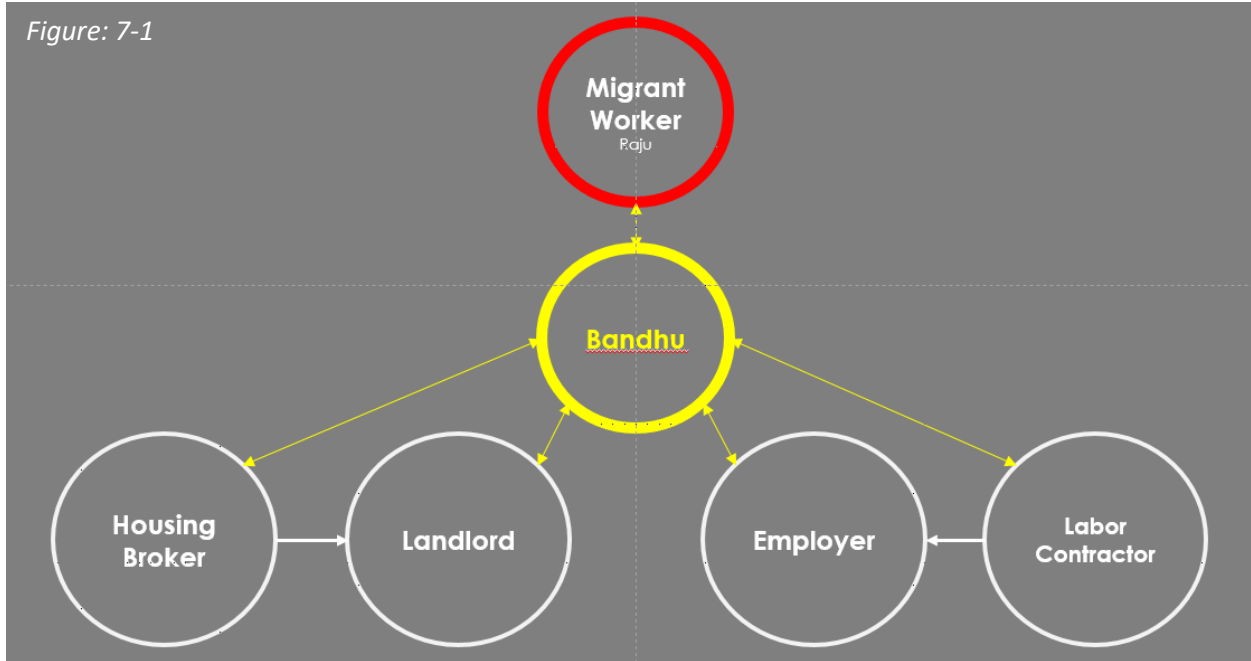
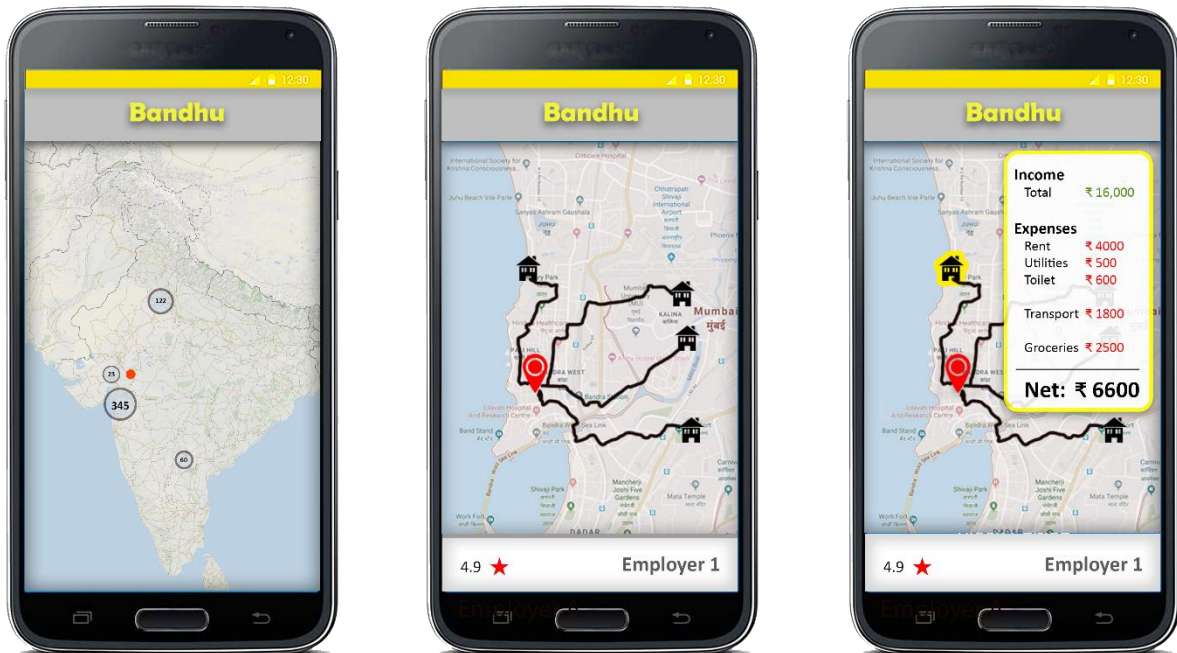


Figure: 7-2



The data generated from such a digital marketplace could even help governments understand migration in real time rather than waiting 10 years to parse the decennial census data.

ii. Nudging through Government subsidies / policies

- More detailed studies in this direction can help the government make more appropriate decisions around infrastructure and affordable housing investment. More rational urbanization patterns and data can reduce risk of investment in infrastructure projects.
- Such certainty on urban development, infrastructure planning and infrastructure investment could be accompanied by governments nudging the migrants through provision of subsidies specific to certain skill areas and income groups – so as to build competitive advantage for each agglomeration, to maximize their unique demographic and geographic characteristics.
- Based on my finding of the threshold of the overnight journey and commensurate gains, governments could look at developing regions within the range of an overnight (up to 8 hour) train journey, and look at functional specialization of clusters based on their competitive advantage. They could encourage migration within the bounds of such clusters to prevent disruption of social capital. Understandably, for some, moving very far from their native place may have outsized gain, and they may continue to do so; however, this decision need not be distress-driven anymore. Through the High speed rail project, the Government intent to develop clusters within 200km ranges was highlighted over the mere end to end connectivity. This assumes that people may be able to live and work within that radius of daily commute and that travel tariffs may be accessible to the lower income quartiles too. The government could bolster such projects by incorporating feeder services to serve villages/ small towns, which may need buses that connect within a travel time of 4 to 8 hours.
- However, the financial feasibility of such policies must be tested against the current trends of misdirected and financially unsustainable public private partnerships for infrastructure projects.

b. Rental Housing policy & Micro-finance policies –

- This study has been able to identify that slums offer low quality, high-price products. By being able to quantify the value capture and the routing into micro-credit markets, such studies should help governments provide better price rental housing policy. The findings suggest that the government needs to look at an integrated approach to rental housing and micro-finance, since both make demands on the same pool of scarce capital. The migrant is effectively always choosing between securing stable tenure, so as to see wages grow over time, versus accumulating capital for big ticket expenses such as education and healthcare emergencies. The lack of tenure diverts precious capital and allows exploitation through money lenders.
- Government housing policy should also be able to provide more flexible and cost-effective housing options to those migrants, in relation with their migration cycles, so that migrants can spend less on housing and more on other aspects, such as education for children, skilling the self, etc. Certain efforts from state governments in Kerala and Delhi, where they have built hostels for migrants, are steps in the right direction. However, governments cannot provide for such large numbers and hence must tackle structural issues in the informal markets through policy.
- Policies can also be better designed to retain the social capital of the migrant and help them build their local community. This could further help them integrate to the local urban life without giving up connections to the native village.

The process of urbanization is not unique to India, and several learnings can be applied to other contexts in the global south.

5. Limitations of the study and scope for further research

Perhaps higher number of origin destination matches across a more diverse group of interviewees could yield different results. More detailed research with at least 300 data points may be needed to find out actual wage differentials, and for my methods to be tested well.

There are likely to be several other confounding variables such as family size, caste , weight of social ties etc.. that could not be controlled for, due to the limited sample size of my study. However, more variables could be tested for when running such an analysis with a much larger sample set. This could reveal new patterns and could also potentially prove or disprove my hypothesis on information being a key driver of wage maximizing migration decisions.

Most of the information is at a high level in order to illustrate the place and magnitude of capture of value for a migrant trying to urbanize or gain from the urban economy. While the research does delve into some of a particularities of the Dharavi settlement in Mumbai, it could not delve in great depth into other informal rental markets in Mumbai. However, this could be a starting point for other research into the pricing of informal rental housing markets.

It may be possible to run some conditional logit regressions for the choice of each migrant within 5 of the cities in the destination region. However, such a study could be in the scope of further research that builds on from this one, since there may be several factors which may not have been captured in the quantitative analysis of this study.

Linguistic and cultural continuity seem to have a role to play. In the scope of this study, I could not give weight to, and statistically determine the role of each of such network factors in reducing information asymmetry. Further studies could help further distinguish the cost of exploitation by delineating the contributions of social capital and the cost of actual information asymmetry.

Analysis in economic geography about the form of cities is another direction of research that could take off from the spatial analysis used in this study. It is seen that point to point connectivity through rail helps disperse value out of cities much better than intricate networks of roads. The dispersion of value could be bunched under distinct typologies of urban morphology.

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