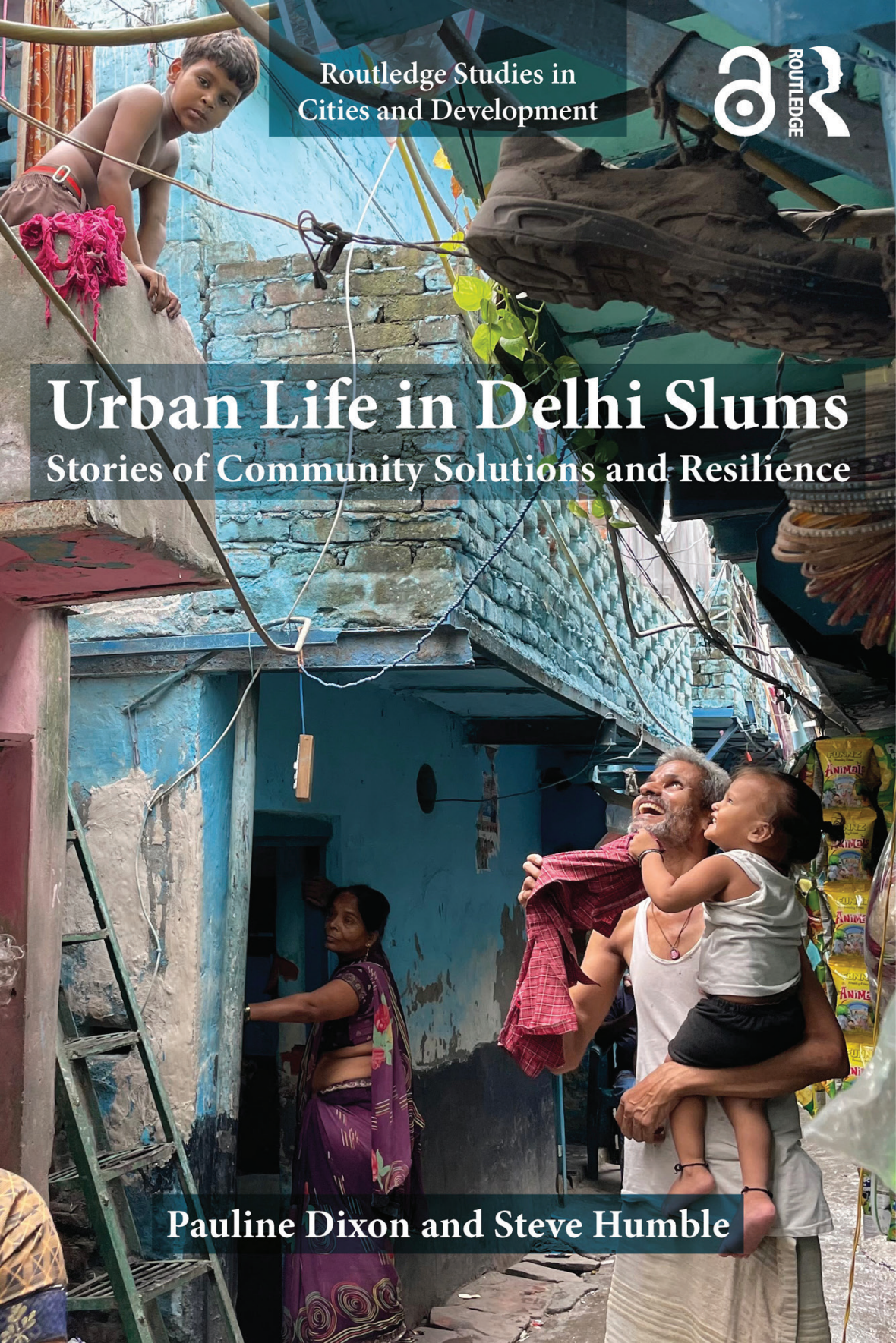
Routledge Studies in
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Urban Life in Delhi Slums
Stories of Community Solutions and Resilience
Pauline Dixon and Steve Humble

Urban Life in Delhi Slums

This book investigates urban life in the slums of Delhi, demonstrating how individuals and communities self-organise to solve problems that arise in their neighbourhoods.

Around one-quarter of the world's urban population live in informal, slum and squatter settlements, representing a significant economic and cultural force. Despite this, settlements are often perceived as marginal, homogenous places, overlooking the resilience and agency of the diverse actors, networks and social groups working collectively within them. This book draws on extensive qualitative and quantitative data from squatter and resettlement colonies in and around Delhi, foregrounding the voices of residents to build a bottom-up picture of place and urban development. The book analyses the contexts in which households operate within their communities and the adaptiveness of individuals living in different slum types, with differing levels of governance. In doing so, the book demonstrates the effect which different institutional agreements and governance systems have on enterprise, empowerment, resilience, trust, dignity and engaging in a life that has purpose and meaning.

This book's detailed assessment of slum spaces and networks will be of interest to researchers across a range of fields, including international development, geography, urban planning, politics and sociology, as well as to policymakers and civil society organisations.

Pauline Dixon, PhD, FAcSS, FRSA, is a world-class researcher at Newcastle University in the U.K. and a Professor of International Development and Education. She has established herself as a leading authority both nationally and internationally in grassroots research for development in the Global South. Her research advances knowledge and understanding that allows for the provision of creative solutions to solve global problems. Pauline's research is transformative, carried out within and between disciplines. Regarded as a leading global expert by academics and policymakers she has worked in India for over 25 years. Her research has also led her to carry out projects focusing on comparative analysis as well as census and survey fieldwork on a large scale in both Asia and Africa. She is called on to appear on multiple platforms and media, winning awards and accolades from around the world. Her work focuses on dispelling myths and carrying out research that informs policy initiatives that are based on solutions from the grassroots and poor communities themselves.

Steve Humble, PhD, MBE, FIMA, is a Reader in Global Development at Newcastle University in the U.K. He carries out research in India and sub-Saharan Africa, being called upon extensively as an expert in collecting and analysing data from large samples using advanced statistical techniques. Being recognised as a global leader in development policy using statistical inferences, he has been called upon to work with the British government on several committees and initiatives to investigate, support and develop educational improvement and social equity policies. Humble's book, *Quantitative Analysis of Questionnaires: Techniques to Explore Structures and Relationships*, was published by Routledge (2020). Steve was awarded an MBE, a grade within the British order of chivalry – Member of the Most Excellent Order of the British Empire – for Services to Education in the Queen's 2016 New Year's Honours List, conferred upon him at Buckingham Palace by Prince William, the Prince of Wales.

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To Jane Jacobs, Elinor Ostrom and Friedrich Hayek with respect, gratitude and love

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Abbreviations

AAP	Aam Aadmi Party
AAY Ration card	Antyodaya Ration card
AMCE	Average Marginal Components Effect
ATTR	Attraction to Neighbourhood
AYUSH	Ayurveda, Yoga, Unani, Siddhi and Homeopathy
BAMS	Bachelor of Ayurvedic Medicine and Surgery
BJP	Bharatiya Janata Party
BNS	Bharatiya Nyaya Sanhita
BSP	Bahujan Samaj Party
CHC	Community Health Centres
CI	Confidence Interval
DALYS	Disability Adjusted Life Years
DDA	Delhi Development Authority
IAD	Institutional Analysis and Development framework
INC	Indian National Congress
IPC	Indian Penal Code
IRT	Item Response Theory
JJ	Jhuggi Jhopri
JNNURM/BSUP	Jawaharlal Nehru National Urban Renewal Mission/Basic Services to Urban Poor
LMICs	Lower and Middle Income Countries
LSE	London School of Economics
MBA	Master's in Business Administration
MBBS	Bachelor of Medicine and Surgery
MCD	Municipal Corporation of Delhi
MoHUA	Ministry of Housing and Urban Affairs
MPD	Master Plans for Delhi
NCI	Neighbourhood Cohesion Index
NCT	National Capital Territory of Delhi
NEI	Neighbourliness
NFHS	National Family Health Survey
P	Partners
PHC	Primary Health Care Clinics
PHH ration cards	Priority Household ration cards

PrB	Private Benefits
PuB	Public Benefits
RAY	Rajiv Awas Yojana
PMAY	Pradhan Mantri Awas Yojana
PMAY-U	Pradhan Mantri Awas Yojana (Urban)
RRY	Rajiv Rinn Yojana
RWA	Resident Welfare Association
SC	Social Capital
SEM	Structural Equation Modelling
SHG	Self Help Group
SOC	Sense of community
SWB	Subjective well-being
UCLA	University of California Los Angeles
UIDAI	Unique Identification Authority of India
UP	Uttar Pradesh
VAMBAY	Valmiki Ambedkar Awas Yojana
WHO	World Health Organization

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PART I

Neighbourhood cohesion

Source: Pauline Dixon

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1 The draw of the city

Introduction

We are guided into the labyrinths of corridors and alleyways, through the compressed and condensed streets. The visual and audible delights of people, colour, noise and laughter reveal neighbourhoods with strong communities that have evolved organically, with no architects, no planners and no developers. Human energy and determination are palpable. Neighbourhoods are both chaotic and magical. Communities are made up of people from different generations who have a shared pride of place where neighbourhoods provide a safe space for all.

Writing a book is a personal commitment. Behind the chapters, the polished analysis, interviews, tables and figures, conjoint experiments, surveys and equations are untold stories around being in India to collect data to engage the voices of those who tell their stories. Reading over our diary inputs from the past 25 years brings back personal memories not captured through the data, thus typically remaining untold. We thought we'd retell a couple of examples to illustrate what it means to be in India.

India has always held a fascination for us both. Its history, culture, architecture are expertly written about in novels and portrayed in films and television programmes. Reading William Dalrymple's books set in India, *Nine Lives, White Mughals* and, specifically in Delhi, *City of Djinns* and *The Last Mughal: The Fall of a Dynasty, Delhi, 1857*, inspire and inform. Others including Aman Sethi's *A Free Man* and Gurcharan Das's *A Fine Family* and *India Grows at Night* provide voices and narratives that conjure up vivid montages of lived lives and intergenerational being. And then there are the films, musicians, television programmes and celebrities all of which visually and aurally stimulate the senses for what is India. Whether it is Sue Perkins travelling down the Ganges,[1] Rick Stein espousing India's cuisine,[2] Kevin McCloud in *Slumming it*,[3] or *Joanna Lumley's India,*[4] the chaos and magic of India and the human energy and determination are always palpable.

Diary entry: 5th June 2002

New Delhi, June 5th , 2002, Britain has *ordered* its citizens to leave India immediately in view of a heightened threat of a war with Pakistan that could be nuclear. An official from the U.S. states that the chances of war are serious

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and unbelievably real. Cross-border terrorism in Kashmir is the precursor to this military conflict. I'm standing at the airport in a queue to leave. The pain in my heart and concerns in my head make for a sorry situation. I've just left Mr Khurram who dropped me off. My friend of three years whilst carrying out my doctorate in India. "Don't worry", he says, "You cannot stay, you have been ordered to leave now". I'm looking around an airport that's in chaos – pushing, shoving, queue jumping, shouting, hassling. Why am I privileged to leave? I want to stay and face what my dearest friends are facing in a country I've come to love. The flight home is going to be an emotional one.

Diary entry: 30th August 2013

It seems like the most efficient and convenient way to travel. Let's go with the driver in a hired 4x4 jeep from Bhawanigarh, Punjab to New Delhi – 242 km of expressways and major roads. Five hours or so. Sit back, relax and take in the view. The jeep has strangely covered seats with what look like tablecloths. We are sitting in the back. The driver has a friend with him up front. It doesn't take long for it to dawn on us the driver might be under the influence of something. His raucous laughter every time we have a near miss is becoming more concerning. Trying to look out of the window only reveals what looks like a narrow road where every vehicle wants to overtake the other irrespective of which side of the road they should be travelling on. Bullock carts, bikes, the occasional car tipped up on one side on the curb, buses, lorries – it's total pandemonium. We stop onthe Patiala Road; I need something to drink. Back in the jeep. We decide to take some photos and video to get us to focus on the task in hand. "Oh, look at that bus overtaking the cart coming straight towards us", thank goodness we have space, but no, wait a third vehicle – a car – is now straining to overtake the bus, overtaking the cart. A horn breaks the silence from the bus "Minister's bus – ha ha ha" informs the driver. "If it kills us, they face no prosecution". This isn't helping. Closer and closer the three vehicles approach us at breakneck speed. Our driver holds his nerve. At the very last minute the car pulls in. The bus misses the back of our jeep by about 1cm. The swoosh of air between the two vehicles provides a most audible thud.

This book brings under one umbrella empirical data, both quantitative and qualitative, along with people's voices to consider themes around freedom, choice, dignity and the role of place for development. It sets out data that were gathered for our project funded through the *Rising Tide Foundation* in three different slum types in Delhi between September 2021 and August 2024. Taking an approach that gathers data from the communities themselves, listening to their voices and seeing and feeling how they go about their daily lives, provides a rich understanding of what works for bottom-up development and why place matters. Our book will add to the literature, knowledge, policy and debates around the meaning of place and space and how these urban contexts affect life's purpose and meaning. We aim to generate an overall picture of the context in which households operate within the communities and the linkages between life's purpose (community accomplishments,

altruism, trust, respect, and well-being) and meaning (individual freedom, choice, engaging in life that has inherent value). Using community voice we look at patterns within the slum areas where people self-organise with a wide diversity of institutions in place to solve problems becoming agents of change. By collaborating with different disciplines – economists, political scientists, medics, statisticians, spatial analysts – and by working in the communities themselves informs the book and its findings. The book is multidisciplinary in its approach bringing to the fore health, politics, entrepreneurship and social anthropology to consider the understudied area of different slum types and the implication of demographic shifts to neighbourhoods that offer different place and space.

Why Delhi?

Cities act as engine houses for wealth creation, employment and human progress by combining the forces of agglomeration and industrialisation (UN-Habitat, 2022a), with 80% of global Gross Domestic Product (GDP) generated in cities (World Bank, 2019). By 2050, over 70% of the world's population will live in cities, with the most rapid urbanisation occurring in the Global South. Cities attract people with the prospect of improving their lives. Being free to choose your urban space is of great importance. Some neighbourhoods spontaneously develop and grow from the bottom up. Others are spaces that have been planned from the top down with no input from those living at the grassroots. Place matters. What is important for development is the freedom to control one's own life that will engender well-being and provide purpose and meaning.

Until recently a typical view has been that slums are where life is little more than a quest for survival. Unplanned settlements are regarded as pictures of poverty and marginalisation; those coming from rural areas impinging upon the city's periphery (Roy, 2008). However, recent urban theory has recognised that 'slums' can be regarded as places highlighting resistance, resilience and entrepreneurship (Kudva, 2009; McFarlane, 2012; Varley, 2013). The term slum was first uttered in the East End of London in the early 19th century. Its meaning: a 'room of low repute'. 'Back slum' described a "back alley – street of poor people" (Nolan, 2015; UN-Habitat, 2003; Weinstein, 2014). It has been estimated that in 2022, almost 1.1 billion people in the world lived in slums or slum-like conditions. The projection is that by 2050, this number will almost double owing to rapid urbanisation. According to UN-Habitat, in 2020, one in four urban dwellers worldwide lived in slums or informal settlements. Three hundred sixty-nine million, that's 48.2% of the urban population of central and southern Asia, live in slums (UN-Habitat, 2022b). In a meeting convened in 2002 by UN-Habitat, the United Nations Statistics Division and the Cities Alliance, a definition was set out for the term 'slum'. This would allow for the measuring of the then Millennium Development Goal 7 'Ensure Environmental Sustainability' with a focus on Target 7D that is to '*achieve by 2020, a significant improvement in the lives of at least 100 million slum dwellers'*. The definition still stands for the measuring of the 2015–2030 SDG targets, including SDG 11 '*Sustainable Cities and Communities'* and Target 11.1:

'By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums'.

The UN (UN-Habitat, 2003; 2005) defines a slum household as "one in which the inhabitants suffer one or more of the following household deprivations": (1) lack of access to housing durability (a permanent structure providing protection from extreme climatic conditions); (2) lack of sufficient living area (no more than three people sharing a room); (3) lack of access to improved water sources (water that is sufficient, affordable and can be obtained without extreme effort); (4) lack of access to improved sanitation facilities (a private toilet or a public one shared with a reasonable number of people); and (5) lack of security of tenure (de facto or de jure secure tenure status and protection against forced eviction). However, individual countries may use different definitions for their own policy and planning purposes. Legal designation is central to the government's recognition of slums in India. Indeed, estimates suggest that half of the slums in India are not recognised by the government and have 'non-notified status' (Subbaraman et al., 2012). No new slum has been notified in Delhi since 1994 (Bhan, 2016).

Our book is responding to the challenge of how generally slums are perceived as homogeneous places and spaces that require governments to eradicate, evict, displace and relocate those residents who are living lives on the edge. This challenge requires a renewed effort to understand what kind of institutional arrangements and governance systems facilitate or undermine community cohesion and empower spaces and networks to engender life's purpose and meaning. Different slum types are under-researched regarding the influence living in different environments has on life's meaning and purpose. The book presents the opportunity to compare the adaptiveness of individuals living in different slum types, with different levels of institutions and governance structures. The problem that is investigated is the effect neighbourhood choices and decisions have on enterprise, empowerment, resilience, trust, dignity and engaging in life that has inherent value.

Delhi, officially the National Capital Territory of Delhi (NCT), is the name of India's capital city, with New Delhi being a district within it, housing important institutions including Parliament House and the Supreme Court. The NCT includes New Delhi and 18 other districts. The NCT, a union territory with a fixed boundary, has a population according to the 2011 census of 16.8 million; a more recent estimate is over 20 million (Chakravorty and Sircar, 2021). Delhi is made up of different spaces that are planned, unplanned, authorised and unauthorised, with those living in them coming from different religions and castes with varying education levels, languages and migration status. From diplomats to members of Parliament, to daily wage earners to maids and security guards, college students and auto rickshaw drivers, those living in Delhi form a rich tapestry of communities living in adjoining districts, where the rich live next to the poor, who supply them with entrepreneurial services and products. "Even if the wealthy do not desire to live near poorer settlements such as bastis, as is typically the case, the very structure of socioeconomic dependence guarantees a spatially heterogeneous pattern of settlement" (Sircar, 2021, p.67).

Planning and policy documents state that there are eight types of settlements in Delhi. One is 'planned' (23.7% of the total population of the city lives in planned colonies), the remaining seven, 'unplanned' (76.3% of the total population of the city). The eight types are JJ clusters (slum), slum designated areas, unauthorised colonies, JJ Resettlement Colonies, Rural Villages, Regularised-Unauthorised Colonies, Urban Villages and Planned Colonies. Therefore, three-quarters of Delhi's population live in 'unplanned', 'illegal' and 'informal settlements' (Bhan, 2016, p.19). Informal or illegal settlements are also known as bastis. Delhi's bastis grew in number between 1981 and 2000. Typically, residents do not own the land, which may be public or private, upon which they have built their homes and businesses, thus violating planning norms and standards. Between 2002 and 2010 the number of bastis was reduced through evictions. The clearances of 'encroachments' are ordered through the Delhi High Court and the Supreme Court of India. It is then typically the role of the Delhi Development Authority (DDA), the Municipal Corporation of Delhi, the Public Works Department, the Delhi Jal Board and the Central Government to oversee the removals and evictions. From the 2001 to the 2011 census there is a fall of 25% in population from two central districts in Delhi 'it has been established that removal of slum clusters is the primary reason for the fall in population in New Delhi district vis-à-vis 2001' (Government of India, 2012, p.44). The Court's portray the poor as 'encroachers' (Dupont, 2008; Ramanathan, 2006), 'nuisances' (Ghertner, 2008) changing their environments to 'dirty' ones (Baviskar, 2003) who have no place within 'World-Class Cities' (Chatterjee, 2004; Bhan, 2016).

Those being evicted may or may not be offered alternative plots of land or dwellings in a resettlement colony. This will depend upon when the household became a resident of the original basti, whether they were renters or owners of their dwelling, and the ability to provide various personal documentation required by the Delhi High Court. In some cases, there is also the requirement to have available money to buy a resettlement colony plot of land (Bhan, 2016). The resettlement colony may not have any amenities, including water, garbage disposal or a transport system (Routray, 2022; Roy, 2003). Resettlement colonies are often on the periphery of the city, typically 30 miles away from the original community that is being evicted and offered plots of around 18 square metres for a family of five. Construction of housing is private and not subject to building regulations (Heller, et al., 2021, p. 113).

> The process of resettlement not only involves involuntary settlement in uninhabitable lands without basic amenities, but also destroys the networks, relationships and patronage of key leaders and politicians …. A lifetime is needed to build various kinds of relationships, networks and support systems … residents are scattered after the demolitions and have to start new lives displaced with others from faraway jhuggi settlements.
>
> (Routray, 2022, 112)

It is believed by some, especially within the judiciary, that alternative sites should not be offered to those who encroach and squat on public land. The inability of the government to plan for the development of the city should not be replaced by an

'arbitrary system' of providing land to those who are evicted from their unplanned bastis.[5] However, resettlement colonies are the only way that residents of JJ slums can become legitimate in contemporary Delhi, a city shaped by judicial decisions taken in the 'public interest' (Bhan, 2016).

Delhi master plans

There have been three master plans for Delhi (MPD) with a fourth about to be published, each setting out a 20-year plan:

- MPD I (1962–1981).
- MPD II – (1981–2001) issued nine years late in 1990.
- MPD III – (2001–2021) issued six years late in 2007.
- MPD IV – (2021–2041) still under review (2024).

The Master Plans created by the Delhi Development Authority (DDA), established in 1957 as a statutory body, under the jurisdiction of the Ministry of Housing and Urban Affairs, attempt to "pioneer the process of development in the city".[6] Each Master Plan sets out detailed land use categories, including urban development areas and rural zones. However, the Master Plans haven't predicted the number of people coming into the city and thus changes to the number of planned colonies as a proportion of different colonies imply that many citizens have built their homes and businesses on illegal spaces. Indeed, there has been "haphazard and unplanned growth of the capital city of the country, notwithstanding Master Plans prepared for the city and in existence for last more than 40 years, wherein the planners have envisioned planned growth with beautiful city in mind".[7] The third Master Plan aimed to make Delhi a global metropolis and a 'world-class' city (DDA (2007) 2010:1). It will become 'slum free' through in situ slum development and rehabilitation for the 'economically weaker sections' (Routray, 2022, p. 60).

The draft MPD 2041 (DDA, 2021) is set out over 487 pages in two volumes – *Visions 2041 and Enabling Policy Framework* and *Spatial Development Strategy and Action Plan*. The overall vision is to "Foster a Sustainable, Liveable and Vibrant Delhi". There are three main Goals and six Objectives to achieve the vision. Objective 4 – Shelter and Social Infrastructure – includes the need for the "regeneration of planned and unplanned areas" (p. 9). The MPD 2041 notes that although Delhi is one of the fastest growing megacities in the world, the second highest performer and the fastest growing economy in Asia Pacific, issues in the city, including "disparate living conditions", are a "threat to its market potential and global attractiveness" (p. 1). With highly dense populations living in 'unplanned' areas, the MPD 2041 recommends a need for a "nuanced policy for regeneration in the city" (p.3). Over the last 20 years migration and high land values have caused a "growth of unplanned settlements in the city" (p. 4). This highlights, according to MPD 2041, "the need for introducing new housing types that cater to the needs of different income groups and tenure requirements" (p. 4). There are ten key focus areas for the Master Plan. Owing to the "proliferation of unplanned development" (p. 5), the fifth focus area, "Housing", states:

> High land prices in the city have resulted in a mismatch between housing needs and housing supply. A large part of Delhi is unplanned with unauthorized colonies that fulfil the housing need by providing lesser expensive options of owned as well as rental housing. Due to poor quality construction and high built densities, these developments are unsafe. There is a requirement for different typologies and tenures of housing.
>
> (p. 5–6)

Strategies are discussed that will enhance the quality and safety of unplanned areas. As per other Plans, this is through in situ slum rehabilitation and an area improvement scheme for slums/JJ clusters. Relocation is only considered where the site of the community is regarded to be 'untenable'. The Plan also regards resettlement colonies to face issues of poor construction, lack of services and accessibility. Again, as per the slum/JJ colonies, resettlement colonies will be regenerated (Section 7.6, p 54). The Plan also sees the need to redevelop unauthorised colonies. This will be through the application for regularisation and the sanctioning of building plans (p. 134). Alternatively unauthorised colonies can come forward with a regeneration scheme of their own, the procedures for which are set out in the Plan.

Featured neighbourhoods

We have chosen three distinct neighbourhoods in which our project is immersed – a spontaneous order slum or JJ cluster (Sanjay), a resettlement colony (Bhalswa) and an unauthorised colony (Ajit Vihar). The terms are those used by the courts, planners, city and central governments, authorities, media and residents (Bhan, 2016). It is estimated that 14.8% of the total population of Delhi lives in JJ clusters (slums), 12.7% in resettlement colonies and 5.3% in unauthorised colonies (Bhan, 2016). Unauthorised colonies are built on privately owned land that is for sale but not zoned legitimately for housing – they are informal for building codes, formal for the process of purchase, illegal and unplanned but legitimate. JJ slum colonies are built on government-owned land that is not for sale and not zoned for housing – they are informal, illegal, unplanned and without legitimacy. Resettlement colonies are formal, legal, legitimate and 'planned', however, there are restrictions on sale, transfer and the rental of properties or plots. Although the resettlement colonies are 'planned', they are often without basic services. As JJ clusters and unauthorised colonies are illegal, the state is not required to supply them with basic services, and in some cases, bar service providers from delivering piped water to JJ clusters. Although resettlement colonies are legal and planned in accordance with guidelines, they are also denied full services in practice (Heller et al., 2021, p. 100). The state is not required to supply basic services; however, some basic services are delivered owing to private and community solutions. Piped water from the city's bulk water system is not available in JJ clusters, unauthorised colonies and most resettlement colonies. Instead, the neighbourhoods rely on tanker trucks, borewells and purchased water in individual containers. There is a complete absence of sewerage systems in these types of neighbourhoods. Those living in unauthorised colonies

are not as vulnerable as residents in JJ clusters, owing to having some degree of proprietary tenure to the land upon which they have illegally built their homes. The unauthorised colony is less likely to be concerned about eviction and therefore invest more in their neighbourhoods and homes. However, these unauthorised communities still live in "legal and political limbo" (Heller et al., 2021, p. 110).

Sanjay colony, according to the Delhi Urban Shelter Improvement Board's (DUSIB) list of JJCs for 2014, is home to 4,250 jhuggis (homes) housing a population of around 25,000–30,000. It was founded in the late 1970s in South Delhi. Sanjay is within 10 km of Connaught Place – the default centre of Delhi (Heller et al., 2021). Bhalswa resettlement colony in northeast Delhi covers an area of 10.38 km^2. The population in 2020 was reported as 102,701 residents. Part of a resettlement plan of 2000–2002 families were relocated when their JJ slums clusters were demolished. Evictions occurred in 11 communities in Delhi, including Nizamuddin, Dakshinpuri and Rohini. Bhalswa landfill site came into operation in 1993 located near the Bhalswa Lake, a freshwater oxbow lake on the Yamuna floodplain. Residents work in local industries, are daily wage labourers, as well as employed by the landfill as rubbish pickers. Bhalswa is around 24 km from the centre of Delhi. Ajit Vihar is a neighbourhood in Burari Garhi, North Delhi, with around 4,059 residents situated 21 km from Connaught Place. It is one of 1,797 unauthorised colonies in Delhi. Figures 1.1 and 1.2 show the boundaries of these neighbourhoods as well as their relative positions to each other.

The influence of economists

The hypothesis of this project is that the empirical data gathered from the slum neighbourhoods provide evidence to support the theories of Jane Jacobs, Friedrich Hayek and Elinor Ostrom. That is that slums within cities are a spontaneous order

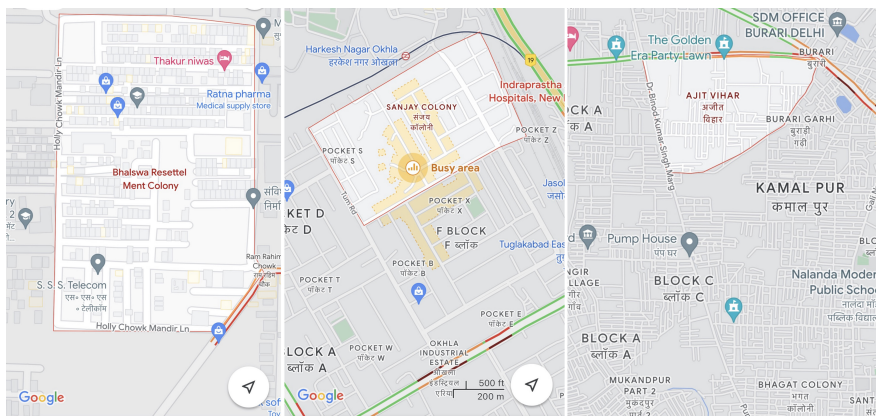

Figure 1.1 Maps of the featured areas

Source: Google Maps

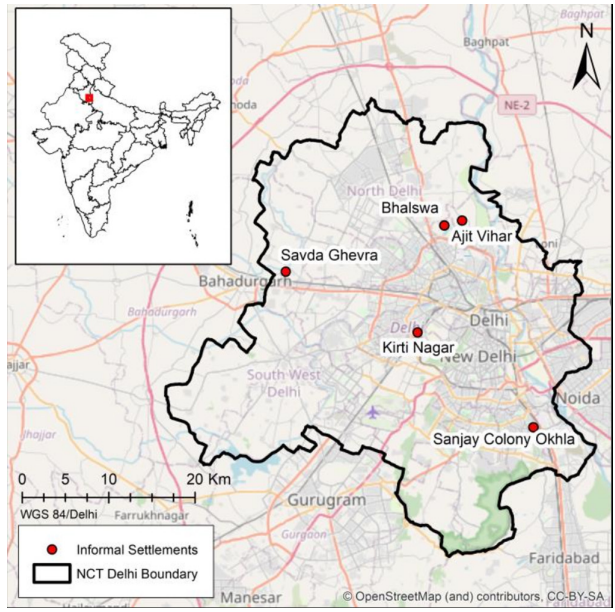

Figure 1.2 Map of NCT showing Bhalswa, Ajit Vihar and Sanjay colony

Source: Open Street Map and contributors CC-BY-SA

(Hayek, 1948). Dynamic social networks and market competition serve as organising principles where tolerance and inclusivity rather than distrust and exclusivity are the norms, allowing economic development to take place. That slums are mini cities within the city region and as such, provide evidence of Jacob's 'fractal' theory (Ikeda, 2024). Our project gives real-world relevance by looking at patterns in daily lives: people coming together to solve complex problems and working together to bring solutions for their neighbourhood through polycentric systems (Ostrom, 2005, 2009a). Instigating a rich socio-economic framework grounded in an understanding of how and why slums work from the view of the street (Jacobs, 1961), provides lessons about economics and urbanism.

What follows are short reflections on the lives and relevant theories to our work of Jane, Friedrich and Elinor. It is interesting to note that each of their lives was full of passion and drive. There are some commonalities. Jane and Friedrich were not fans of their schooling. Elinor, growing up during the Depression, single-mindedly supported herself through college, describing herself as a "stubborn son of a gun". Jane was also stubborn, always challenging authority. Each wanted to question and explore the ideas of those they disagreed with (some describe as opposing poles of thought) through observations, research and theory – Jane/Robert Moses; Friedrich/John Maynard Keynes; Elinor/Garrett Hardin. All three are inspirational figures indeed. Their theories, personalities and passion accompanied us every step of the way on this journey. Standing in their shadows, we shall always be truly grateful.

Why Jane Jacobs

Jane Jacobs, born in 1916 in Scranton, Pennsylvania, was an author, activist, journalist and theorist. When Jane was 18 years old, she moved to New York City, having graduated from high school and worked at a local newspaper in Scranton. According to Jane, New York was "where I came to seek my fortune. I was trying to be a writer" (Kanigel, 2016, p. 61). She joined her older sister to live on Orange Street in Brooklyn. Jane undertook a string of short-lived, ill-paying jobs, often taking shorthand and typing tests for advertised roles across the Brooklyn Bridge in Manhattan. Mornings were spent looking for work, the afternoons exploring the city. Towards the end of her first year in New York, and on one of these afternoons of discovery, she found herself in Manhattan's fur district – Sixth Avenue to the east, Eighth Avenue to the west, 26th Street to the south and 30th Street to the north. The 19-year-old was transfixed by the neighbourhood full of carts hauling mink, ermine, muskrat and other pelts. They were being transported to be transformed into wraps, coats and scarves for the fashion industry. Using her writer's ability to subsume every detail of what she heard and what she saw, Jane wrote her first of four essays that featured in *Vogue* from late 1935 to early 1937. "Where the Fur Flies" describes the story from the street that makes up the journey of the furs from trapper to fur farmer, auctioneer to dresser, dealer to manufacturer to retailer (Laurence, 2016). Three further essays were published in *Vogue* over the next year and a half that celebrated Manhattan's specialised wholesale districts: leather ("Leather Shocking Tales", March 1936), diamonds ("Diamonds in the Tough", October 1936) and flowers ("Flowers Come to Town", February 1937). These places were all located in the working-class districts of the Lower East and West Sides. The vignettes Jane wrote describe the "complex interactions between people, places, and practices that defined the diverse and lively human ecology of New York and other great cities" (Laurence, 2016, p. 25). Districts such as these developed owing to historical, social, economic, architectural and geographical contexts. Jane Jacobs' stories highlight the city's spirit. The vibrant street life stresses the interconnectivity, diversity and self-organisation, showing how people and the city work together to create one another. The neighbourhoods serve as dynamic centres of interaction.

On another one of Jane's afternoons of discovery, she found herself in Greenwich Village alighting the train at Christopher Street, Sheridan Square. She walked the warren of streets by which she was enchanted – small shops, barbers, tea rooms, ice dealer's cellars, art galleries, bakeries, second-hand books, drugstores. It was "New York in all its smallness, its irregularity, its turn-the-corner-and-what-do-you-find little shocks and surprises" (Kanigel, 2016, p.68). Over the next 33 years, Jane would live within 500 yards of the Christopher Street subway where she had emerged that day in three different homes in New York City.

In September 1938 she decided to continue her education at Columbia University. She married Robert Hyde Jacobs Junior in 1944 after he proposed after a week of meeting her, being turned down on the Saturday, with Jane changing her mind the following Wednesday to say yes. Bob was an architect by training. They

bought a house in Hudson Street – then a notified slum – where, after seven years and having lived in the Village for 20, a threat was made to Washington Square Park. There were plans to run a sunken highway through the centre of Washington Square by Robert Moses and his urban renewal projects. Jane joined the campaign to save the park with other community members in the neighbourhood. Whilst working for *Architectural Forum,* she visited Philadelphia and East Harlem. There she would witness the tearing down of blocks of slums to be replaced by high-rise flats. According to Jane, the old slums were bad, but the new projects were bad in different ways. What the old neighbourhoods had were people, storekeepers and "behind the seeming confusion of the East Harlem streets, a kind of order ran through them, an endlessly intricate one" (Kanigel, 2016, p. 141). Jane appreciated all East Harlem's charms, qualities and peculiarities and how these came together to make a living place. She learned of a study by the East Harlem Small Business Survey and Planning Committee, which set out slum clearances and the building of apartment blocks for 50,000 people. Around 1,500 businesses would be wiped out along with churches, political and social clubs – that is the decimation of the community, ignoring the social dynamics of city life. After presenting her ideas at Harvard University and wanting to take some time off to write more about 'city streets' for *Forum*, she was offered a grant from the Rockefeller Foundation in 1958 to write a book on her ideas and to be granted leave to write it. That book was *The Death and Life of Great American Cities*.

For her book Jane visited different cities, including Boston, a city she had visited in the early 1940s. When Jane Jacobs originally visited the district known as the North End in Boston in the early 1940s, she came across a scene where residences and commercialisation and industry exist side by side. Immigrants from Ireland, Eastern Europe and Sicily poured into the neighbourhood in search of improving their lives through the 'American dream'. The North End was an old low-rent area merged into the heavy industry of the waterfront with the highest concentration of dwelling units of any part of Boston and as high as in any American city. Years later, to research for her book, Jacobs revisited to observe a rehabilitated neighbourhood with an incredible sense of energy, noise and bustle. Busy entrepreneurs – upholstery makers, metal workers, carpenters, cooks and goods being hawked and haggled over in shops and markets. She found the atmosphere buoyant, friendly, with a community seemingly in good health, which in her words was 'infectious'. This remarkable transformation through organic growth where the poor are the agents of change typify neighbourhood slums, where place attachment provides a feeling of community uniqueness and irreplaceability. With a sense of belonging, feelings of loyalty, trust and a life with value and dignity, there follows a desire for bottom-up approaches to alleviating poverty. According to Jacobs:

> Conventional planning approaches to slums and slum dwellers are thoroughly paternalistic. The trouble with paternalists is that they want to make impossibly profound changes, and they choose impossibly superficial means for doing so. To overcome slums, we must regard slum dwellers as people capable of understanding and acting upon their own self-interests, which

> they certainly are. We need to discern, respect, and build upon the forces for regeneration that exist in slums themselves, and that demonstrably work in real cities. This is far from trying to patronize people into a better life… (1961, pp. 284–285) … Unslumming hinges, paradoxically, on the retention of a very considerable part of a slum population within a slum. It hinges on whether a considerable number of the residents and businessmen of a slum find it both desirable and practical to make and carry out their own plans right there (1961, p. 286) … Why slum dwellers should stay in a slum by choice, after it is no longer economically necessary, has to do with the most personal content of their lives, in realms which planners and city designers can never directly reach and manipulate – nor should want to manipulate. The choice has much to do with the slum dwellers' personal attachments to other people, with the regard in which they believe they are held in the neighbourhood, and with their sense of values as to what is of greater and what is of lesser importance in their lives.
>
> (Jacobs, 1961, p. 293)

According to Jacobs, for true urban vitality to exist, there needs to be spaces with mixed uses, short, walkable blocks, large concentrations of people and a mix of old and new buildings. Jane's real-world experiences and observations of social interactions shaped how she understood cities. Urban renewal projects served only to create instant slums. Planners focused on the creation of green spaces, heights of buildings and traffic flow, not the relationship between personal interaction and public space that stimulates urban culture. For Jane "active urban life can never be planned because people invent uses for space" (Gottdiener et al., 2015, p. 327). For Jane, poor neighbourhoods are dynamic centres of interaction.

"Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody" (Jacobs, 1961, p. 251). For Jacobs cities are central to economic progress (Jacobs, 1969). Trust, social networks, diversity, entrepreneurial discovery, economic freedom, density and action spaces all give rise to innovation, discovery and development. In turn these generate explosive economic expansion (Ikeda, 2012).

Why F. A. Hayek?

Hayek was born in Vienna, then the capital of the Habsburg Empire, known as the Austro-Hungarian Empire, on 8th May 1899. His father, August von Hayek, was a medical doctor and a part-time lecturer in botany at the University of Vienna. Both of his grandfathers were academic scholars, one a leading economist and the other in natural sciences. His grandfather on his maternal side, Franz von Juraschek, was a close friend (and fellow mountain climber with) Eugen von Böhm-Bawerk, one of the followers of the founder of the Austrian school of economics, Carl Menger. Hayek showed a disdain for education and his teachers, even though he was able to read fluently before starting school and was influenced by his second cousin, the philosopher Ludwig Wittgenstein (Ebenstein, 2001; Erbacher, 2019). Just before

his 18th birthday in 1917 Hayek joined the Austro-Hungarian Army. He fought on the Italian front until the end of WW1 in November 1918, suffering damage to his hearing where shrapnel ricocheted, chipping a piece out of his skull. After the war Hayek enrolled at the University of Vienna, studying psychology and economics. In 1921 he gained his first degree in law, and his second in political science in 1923. After spending a year in New York and reading *Socialism* by Ludwig von Mises (Mises, 1922 [1981]), Hayek began attending Mises' private seminars. In the late 1920s he founded and became the Director of the *Austrian Institute for Business Cycle Research* and married his first wife, Helen Berta Maria von Fritsch, in 1926, with whom he had two children. He joined the faculty of the London School of Economics (LSE) in 1931. Hayek and John Maynard Keynes exchanged letters debating each other's beliefs around the role of government intervention in the economy during these LSE years and until Keynes' death in 1946. Hayek advocated for free markets, arguing against excessive government intervention and Keynes supported government spending and fiscal policies to combat unemployment during economic downturns. After becoming a British citizen with his family in 1938 Hayek went on to live in the U.S.A, becoming Professor of Economics at the University of Chicago from 1950 to 1962 and married his second wife in 1950, Helene Bitterlich, his cousin. Being awarded the Nobel Memorial Prize in Economics in 1974, he influenced politicians around the world, including Baroness Margaret Thatcher, whom he met through meetings at the Institute of Economic Affairs in London and Ronald Reagan, who welcomed him to the White House as a special guest. He was also awarded the Presidential Medal of Freedom, the nation's highest civilian honour, by President George H. W. Bush in 1991 for a "lifetime of looking beyond the horizon" (Nasar, 1991).

In 1935 Hayek edited the book *Collectivist Economic Planning: Critical Studies on the Possibilities of Socialism*. This book saw a transition for Hayek's work to political philosophy from economic theory. According to Ebenstein:

> In Collectivist Economic Planning, he opposed the idea that it is possible to manage an advanced technological society from a single point. He instead emphasized the idea of spontaneous order (though he did not yet use this term)—that the proper goal of government should be to enable individuals to make as much use as possible of their own knowledge and talents in ways that they themselves see best. He believed there can be no progress without economic liberty. The attempt to mandate interpersonal agreement by requiring all the members of a society to live in accordance with the dictates of one or some prevents the emergence of the kind of human order in which material and technological advance will occur. Law—rules—should prevail over individual commands. Private property is essential to this order.
>
> (2001, p. 92)

A year later, Hayek gave an address at the London Economic Club in 1936 where he first put forward his ideas around the division of knowledge. This issue of "Economics and Knowledge" would concern him for the rest of his career and

explains why Hayek did not accept Mises' apriorism. The philosophical belief that knowledge is independent of experience and can be derived from self-evident truths (Hutchinson, 1992).

Information can be unique to the individual, beneficial to others, yet unorganised and decentralised. An economic or social order is difficult to create owing to:

> the fact that the knowledge of the circumstances of which we must make use never exists in a concentrated or integrated form but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess.
>
> (Hayek, 1945, p. 519)

For Hayek, knowledge includes explicit, systematised and theoretical knowledge; it also includes inarticulate knowledge, that is thoughts, customs, habits and local knowledge of time and place. Thus, knowledge in this broad term is essentially a complex social order. Individual decision-making occurs within an open-ended environment. Individual decisions and choices form a part of the process, shaping and determining the environment within which these decision processes are taking place. Individuals do not necessarily know in advance the choices and actions available or the future consequences of these actions. However, it is the individual's actions that establish the opportunity; opportunity is being discovered by human actions (Mises, 1996, 2000).

Individuals, families and firms possess pieces of "knowledge of the kind which by its nature cannot enter into statistics" (Hayek, 1945, p. 524). To know how to allocate resources, or what social norms and practices would be best for a community requires the "bits and pieces of knowledge that separate people, families, or firms possess" (Horwitz, 2001, p. 87). Spontaneous order is the use of dispersed and tacit knowledge in society that generates order out of self-interest. When human actors pursue their own plans and commitments, the unintended consequence is the development of institutions, rules and practices. Spontaneous orders are not of human design but products of human actions (Hayek, 1948).

It is an impossibility to supply central planners with the data necessary to coordinate economic and social order as efficiently as a decentralised system. Statistical data cannot take into account the outcomes induced by the interaction of individuals who possess only partial knowledge. For Hayek, the choice is not whether we plan or don't plan, but whose plan prevails. If planning is left to some central authority, it is nonsensical to believe that their knowledge (however well informed) could replicate the superior knowledge generated by the bits and pieces of knowledge possessed by separate people, families or firms. The true needs of individuals, and how best to satisfy them, cannot be achieved by a central body. Individuals know their own values. Planning, without this information, is rendered pointless. Any interference from an outside player or agency, utilising different knowledge and desiring different outcomes, will upset the balance of spontaneous order.

For Hayek, communication is key to allow for the exchange of knowledge to stimulate learning and the discovery of better ways of doing and providing things.

However, Hayek states that "much of the knowledge relevant for social coordination is … inherently contextual" (Horwitz, 2001, p. 87).

Hayek is concerned about the size and scope of power of the state that will prevent private actors from making decisions that damage economic growth, human flourishing and human liberty. State regulatory control, planning and activity by democratic governments is a way, Hayek believes, for the state to become increasingly powerful. It manipulates democracy to its own ends, reducing individual liberalism, perpetuating interest-group politics, whilst increasing the power of the state. Hayek sees a need for the rule of law and institutions that 'least hinder' the actions of agents. The exchange and availability of property rights as well as respect for the law facilitate coordination (Hayek, 1973).

> Given problems of knowledge and political incentives, governments should not engage in interventionist policies that stand in the way of new uses of space that would enable cities to evolve and adjust locally to changes in tastes, technology and resources.
>
> (Ikeda, 2012, p. 80)

On the occasion of his ninetieth birthday in 1989 Margaret Thatcher sent a letter which stated:

> It is ten years this week since I was privileged to become Prime Minister. Many people have been most kind in their comments on what the Government has been able to achieve in that time. There is of course still so much to do. But none of it would have been possible without the values and beliefs to set us on the right road and provide the right sense of direction. The leadership and inspiration that your work and thinking gave us were absolutely crucial; and we owe you a great debt.
>
> (Ebenstein, 2001, p. 296)

Hayek died in March 1992 aged 92 in Freiburg, Germany.

Why Elinor Ostrom?

Elinor Claire Awan was born on the outskirts of Beverly Hills in August 1933, an only child to Leah Hopkins, a musician and Adrain Awan, a Hollywood set designer. They divorced early in Elinor's childhood. Growing up during the Great Depression Elinor and her mother were relatively poor, growing vegetables and fruit in their garden and canning peaches and apricots to eat during the winter. The family remained thrifty, Elinor learning how to knit during World War II, and remembers how she sent scarves to those fighting overseas. She took up swimming as a child and joined a swimming club. Later in life she would teach swimming to help cover college fees. From an early age, the principles of cooperation and resource conservation were ingrained deeply in her view of the world. Attending Beverly Hills High School, situated across the road from her home, provided

Elinor with a vision for her future, as 90% of children went to college from this school. Her mother saw no reason to support her through college, not having had the opportunity herself. However, Elinor continued on to college, graduating from the University of California, Los Angeles (UCLA) in 1954, majoring in political science. After taking a break from academia she started to think about further studies back at UCLA. She was not able to undertake a PhD in Economics owing to being discouraged 'as a girl' from taking mathematics as an undergraduate and beyond that of algebra and geometry in high school. She was therefore admitted to a Political Science PhD programme at UCLA. Her PhD considered the husbandry of Los Angeles groundwater resources, and even though Elinor didn't know it at the time, this was the start of her work on common-pool resource problems and the managing of such resources. She worked in conjunction with a research team that was considering the water industry in Southern California at the time (Vincent Ostrom, Charles Tiebout and Robert Warren, 1961). In 1963 she married Vincent Ostrom. When Vincent was offered a job at Indiana University a year later, they decided to move from UCLA, where Elinor would not be able to obtain a faculty position owing to their antinepotism rules. In 1965 Elinor completed her doctoral dissertation at UCLA from a distance in Indiana. She became a professor in the early 1970s and returned to her research. Vincent and Elinor founded the "Workshop in Political Theory and Policy Analysis" in 1973, a research centre in all but name. This would allow them to work with like-minded scholars in and outside of their academic department – the Department of Government. Elinor criticised the ideas of Garrett Hardin in her 1990 book *Governing the Commons.* Hardin's 1968 article in *Science* describes his theory of the tragedy of the commons. That is that resources are finite and will be destroyed unless controlled by the government or privatised. Shared resources will be over-exploited (Hardin, 1968). Elinor disagreed and showed successful management through cooperative arrangements, self-governance structures and polycentricity. She won the Nobel Prize in Economics in 2009, sharing it with Oliver E. Williamson. She died of cancer in 2012, a few weeks before her husband, who was 14 years her senior. According to Steve Horwitz, "you know how much two people loved each other when one literally cannot live without the other" (Ostrom, 2012, p. 49).

Throughout her life Elinor's work considered how people come together to solve problems "beyond the imagination of textbook theorists" (Pennington, 2012, p. 14). They define and enforce rules utilising polycentric systems of governance where different actors and entities have some role in the process. Elinor observes communities freely choosing their own mechanisms "to manage natural resource problems without government coercion or planning" (Ostrom, 2012, p. 15). Ostrom set out to discover what factors are needed for bottom-up solutions to common-pool problems to work and which ones impede the development of these solutions. She also wanted to come up with a framework to show when spontaneous processes of governance would work and when there was a need for external generation of rules. The key elements are as follows: (1) clearly defined boundaries; (2) those within the community having a set of rules and clear procedures for the use of the resource; (3) a community with high levels of trust and social capital as well as

a strong sense of local and cultural identity are more likely to arrive at and adhere to a set of rules; (4) strong monitoring and enforcement mechanisms, i.e., rewards for upholding the rules and penalties for breaking them; (5) transparent, speedy and efficient dispute resolution procedures; (6) those within the community shape and enforce governance arrangements. These six factors affect a community's incentive structure. These incentives Ostrom calls 'action situations'. There are many action situations where decentralised community governance can work well. That is then, where there are clear boundaries, high levels of interpersonal trust or social capital, where there are procedures for resolving disputes, the community has sufficient decision-making autonomy and can create, monitor and enforce its own rules.

Central authorities will not have the knowledge of cultural norms and values of the communities and how people respond to and perceive resource management issues. This is what Hayek (1945) terms the knowledge of the "circumstances of time and place". External regulators and bodies and bureaucrats in central agencies lack a personal stake to manage assets effectively within the community. They respond to their own budgetary imperatives and demands of powerful interest groups. However Ostrom does see a need for the state to be able to assist where necessary in the resolution procedures within communities and to ensure legal property rights. Ostrom's work looked at how actual institutions operate on the ground through both statistical studies and detailed case studies. "Her book *Governing the Commons* is a superb testament to the understanding that can be gained when economists observe in close-up detail how people craft arrangements to solve problems in ways often beyond the imagination of textbook theorists" (Pennington, 2012, pp. 44–45).

Collective action in cities occurs at the neighbourhood level with community residents working together in a deliberative and collaborative manner with other stakeholders to maintain and regenerate assets and services within their neighbourhoods (Aligica, 2019). Ostrom spent a lifetime studying communities in culturally diverse locations. Through her work Ostrom found that communities would establish rules and enforce mechanisms that were effective and flexible to solve common-pool resource problems. Communities would come up with their own governance arrangements based on local norms and conventions as well as self-regulating (Ostrom, 1990; Ostrom, 2005; Ostrom, Tiebout, and Warren, 1961). Polycentric governance produces opportunities at multiple levels for multiple actors to be accountable for starting and instigating solutions to problems and issues within their own community (Carlisle and Gruby, 2017; Pattberg and Widerberg, 2016). Instead of monocentric governance, polycentricity offers a greater range of opportunities to social stockholders. With multiple governing entities within a polycentric system, each governing unit has a degree of independence to make rules and norms in its own domain (Ostrom, 2010a). Carrying out case studies around the world, Elinor Ostrom highlights how communities work with public officials and government agencies to monitor, enforce and design rules for using and managing resources (Ostrom, 1990). Users are capable of collectively managing common resources in a sustainable way that supports their needs (Ostrom, 1990).

The enabling of polycentric governance systems can develop appropriate solutions that are fitting for individual neighbourhoods (Lebel et al., 2006). As opposed to large government-led initiatives, polycentric solutions can provide levels of flexibility and robustness that may not normally be possible. If a part of a proposed solution has issues, there are multiple routes that allow for adaptation and support (Ostrom, 2010b). So, what do we mean by polycentricity? According to Stephan et al. (2019)

> At the core of almost every definition of polycentric governance (or polycentricity, polycentric systems or polycentric arrangements) is the idea of multiple centres of decision-making, or multiple authorities, no one of which has ultimate authority for making all collective decision …. How many centres of how many different sizes exist is less important than the basic idea that multiple centres exist and operate concurrently, within a system in which no single centre has final ultimate authority.
>
> (Stephan, Marshall, and McGinnis, 2019)

Plan of the book

The book is divided into four parts:

- Part 1: Neighbourhood cohesion (Chapters 1 and 2).
- Part 2: Collective action and polycentricity (Chapters 3 and 4).
- Part 3: Entrepreneurship (Chapters 5 and 6).
- Part 4: Reflections (Chapter 7).

Part 1: Neighbourhood cohesion

Chapter 1, "The draw of the city", provides an introduction that sets the scene for the rest of the book. The research undertaken in Delhi over the three years of the project focuses on three different neighbourhood types – slum/JJ, resettlement and unauthorised colonies. Delhi's community live in a mixture of planned, unplanned, illegal and informal settlements owing to the detailed land use categories set out by urban planners. What follows are six chapters that explore, through data, different parts of the lives of those living in three neighbourhoods – Sanjay (slum/JJ), Bhalswa (resettlement) and Ajit Vihar (unauthorised). We will discover stories of community solutions and resilience, where people become their own agents of change to provide their lives with dignity, purpose and meaning. The chapters may be read independently, although there are themes and threads running throughout that bind the book together.

Chapter 2, "Resilient cities – why does slum type matter?", sets out to understand the different levels of trust, community cohesion, well-being and social capital in the different neighbourhood types. That is "is your life affected by the community in which you live and if so how and why"? The chapter considers three hypotheses, the data having been collected through a household survey carried

out in Sanjay, Bhalswa and Ajit Vihar. The first considers how choosing one's own neighbourhood compared to one to which you have been evicted affects your daily living. The second, how some form of legality around housing can determine loyalty and fellowship through collective care for the community. The third, we investigate any causal links between trust, social capital and neighbourhood cohesion. Finally, the observations of Jane Jacobs in the slums of great American cities are explored and extrapolated:

> When sufficient people begin to stay in a slum by choice, several other important things also begin to happen. The community itself gains competence and strength, partly from practice and growth of trust.
>
> (Jacobs, 1961, p. 295)

Part 2: Collective action and polycentricity

Chapter 3, "Community action: Solving problems through polycentric systems", investigates how and why communities come together to solve local problems. First, the types of projects are investigated. These include community saving groups, applications, sanitation and water. Second, we hear the voices of the residents to provide a deeper understanding of the drivers and motivations around these community solutions. Finally, we construct, using Ostrom's theories, a model to explore how community residents work together in a deliberative and collaborative manner with other stakeholders to maintain and generate assets and services to improve the neighbourhoods. As Elinor Ostrom says, "In my own effort to start developing an alternative 'behavioural theory of collective action', I posited that building trust among participants that the other participants are trustworthy and reciprocators is an essential core of future theories*"* (Ostrom, 2009b, p. 211).

Chapter 4, "Leading the slums: Governance, politics and brokers", investigates the perceived characteristics of a successful community leader/broker in each of the settlement types. We seek to explore and then dispel the myth that residents are helpless and illustrate that they are actively trying to improve their neighbourhood with the support of their brokers, who are passionate to help. There are two parts to the chapter. First, to fully assess the efficacy and distributive aspects, we listen to the voices of community members carrying out interviews to allow for an ethnographically informed picture of who leads the slums. Second, through a conjoint experiment using the theoretical framework set out in Auerbach and Thachil (2018, 2023) and Stokes et al. (2013) we explore residents' preferences around selecting brokers to assist them in the procurement of goods and services.

> By "polycentric" I mean a system where citizens are able to organise not just one but multiple governing authorities, as well as private arrangements, at different scales …. Polycentric systems are themselves complex adaptive systems without one dominating central authority.
>
> (Ostrom, 2003, pp. 12–13)

Part 3: Entrepreneurship

Chapter 5, "Stories from the street: An intricate sidewalk ballet", highlights the voices of the entrepreneurs we encountered during this research. Stories of the street scenes where goods are being hawked and haggled over in shops and markets will be told alongside the voices of entrepreneurs – the street vendors, textile workers, carpenters, painters, recyclers, beauticians, barbers and cooks. The atmosphere in these settlements is buoyant, friendly with community cohesion and trust. The slums provide examples of organic growth where the poor are agents of change. Place attachment provides a feeling of community uniqueness and irreplaceability. With a sense of belonging, feelings of loyalty, trust and a life with value and dignity there follows a desire for bottom-up approaches to alleviating poverty. It is an 'infectious' atmosphere, with the poor focused on their family, neighbourhoods and the next generation.

> Mingled all among the buildings for living were an incredible number of splendid food stores, as well as such enterprises as upholstery making, metal working, carpentry, food processing. The streets were alive with children playing, people shopping, people strolling, people talking. Had it not been a cold January day, there would surely have been people sitting.
>
> (Jacobs, 1961, p. 19)

Chapter 6, "Is there a doctor in the house?", explores the world of what some have termed private or informal healthcare providers. We believe these doctors are examples of medical entrepreneurship. The basic concept in Kirzner's theory of entrepreneurship is alertness (Kirzner, 1997, 1973). The private healthcare providers are satisfying the wants of our communities. Due to inequalities in health care access, private medical services have sprung up within neighbourhoods to cater for individuals unable to access or ignored when attending a government healthcare facility. There are three parts to this chapter. First, to consider the supply side, we set out the findings from our census and survey in each of our three neighbourhoods. Second, focusing on demand, we listen to medical providers' voices to explore the extent and type of medical conditions treated regularly within the communities. Third, utilising the methodological tool developed by Das and Hammer (2005), we conduct an experiment to explore quality and competence. Each part starts with quotes from the private healthcare provider interviews, followed by some of the findings already documented in the literature and then our own findings from our three settlements. "If all had to wait for better things until they could be provided for all, that day would in many instances never come" (Hayek, 1960, p. 44).

Part 4: Reflections

Chapter 7, "The draw of the city: Looking ahead." Prosperity is when society respects the dignity of each person and his or her right to act as a moral agent. Individuals living in poverty see themselves as active agents, not passive victims. Throughout the book we have set out our empirical findings from our three-year

fieldwork project undertaken in the slums of Delhi. The project was designed so that the data were gathered in many different formats – mapping, household surveys, film, conjoint experiments, case studies, interviews, workshops – to answer the objectives from different triangulating perspectives. The research has generated a better understanding of place and space and life's purpose and meaning. This chapter summarises the three parts of our book. The first looks at how different neighbourhood types can affect the lives of those living within them. With a focus on trust, well-being, cohesion and social capital, data were gathered through a household survey to investigate if there are differences depending upon where you live. The second part considers the types of projects and interactions carried out by individuals that may benefit themselves as well as their communities. The governance structures and institutions are also explored. The results of a conjoint experiment are reviewed to show how and why residents choose and elect brokers who assist in this local action for change. The third, using observations from the streets, studies entrepreneurial spirit and dynamism. A view of the city from within provides stories of resilience and community solutions. Included is a focus on local medical healthcare providers. Our project brings a snapshot of the intricate workings of urban life in Delhi slums. We aim to inform public discourse by having been allowed to venture into the rich tapestry of people's lives, even for a moment.

Notes

1 The Ganges with Sue Perkins, 2017 BBC.
2 Rick Stein's India, 2013, BBC.
3 Chanel 4, 2010.
4 2017 ITV
5 Okhla Factory Owners' Association … vs The Govt. Of National Capital Territory … on 29 November, 2002 https://indiankanoon.org/doc/1143856/
6 https://dda.gov.in/index.php/dda-glance
7 https://indiankanoon.org/doc/842247/ Joginder Kumar Singla vs Municipal Corporation of Delhi, CWP 1397 of 2001.

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2 Resilient cities – Why does slum type matter?

The trust of a city street is formed over time from many, many little public sidewalk contacts. It grows out of people stopping […], getting advice from the grocer and giving advice to the news-stand man, comparing opinions with other customers at the bakery […] admonishing the children, hearing about a job from the hardware man and borrowing a dollar from the druggist, admiring the new babies and sympathizing over the way a coat faded.

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> *Customs vary: in some neighbourhoods people compare notes on their dogs; in others they compare notes on their landlords. Most of it is ostensibly utterly trivial, but the sum is not trivial at all. The sum of such casual, public contact at a local level – most of it fortuitous, most of it associated with errands, all of it metred by the person concerned and not thrust upon him by anyone – is a feeling for the public identity of people, a web of public respect and trust, and a resource in time of personal or neighbourhood need. The absence of this trust is a disaster to a city street.* (Jacobs, 1961, p. 66–67)

Introduction

Neighbourhoods are districts of an urban city where neighbours live and come together through social and cultural networks. As the above quote by Jane Jacobs illustrates, for some, a 'neighbourhood' defines who they are in terms of social position, dignity and identity, offering a community with humility and empathy. Neighbourhoods can form boundaries as well as promote rich cultural diversity and pluralism. A neighbourhood with strong social cohesion can empower communities to support each other through residential bonds, create coordinated actions and networks for a collective good. By contrast, low levels of neighbourhood social cohesion and trust are associated with stress, depression and anxiety (Forrest and Kearns, 2001; Prezza et al., 2001; Barnes, 2003).

Those living in slums are not a homogeneous population, but a diverse group of people with different interests, means and backgrounds. Slums are a significant economic force. In some cities, it has been estimated that as much as 60% of employment is carried out within the informal sector. What is vital for a city to continue to flourish is diversity, which is a source of economic and cultural dynamism (Jacobs, 1961, 1968; Glaeser, 2011). This chapter examines the relationship between subjective well-being, neighbourhood cohesion and social capital, taking into consideration the socio-economic backgrounds of the households as well as levels of trust in our three different settlements – slum/JJ colony (Sanjay), resettlement colony (Bhalswa) and unauthorised colony (Ajit Vihar). What is being investigated are the different levels of neighbourhood cohesion, social capital, trust, resilience, and subjective well-being that affect residents' behaviours and how they play a part in an individual's life's purpose and meaning. The data in this chapter were gathered through a survey carried out with 1,004 households (311 in Sanjay; 365 in Ajit Vihar; 328 in Bhalswa). We look at neighbourhood networks, happiness, sense of purpose, life satisfaction and control. We follow an intra-community focus using Auerbach's social capital scale (Auerbach, 2019). Bouncing back from a variety of challenges that arise in life is measured through household resilience. Structural equation modelling is employed to assess direct and indirect associations.

In this chapter, we explore three hypotheses:

1. Being able to choose your neighbourhood is beneficial to your well-being and contributes positively to attitudes around neighbourhood cohesion – A comparison of Sanjay (slum/JJ) and Bhalswa (resettlement).

2. Residents' preferences on social capital and neighbourhood cohesion measures are different in two neighbourhood types – A comparison of Sanjay *(slum/JJ – illegal housing built on public land)* and Ajit Vihar *(unauthorised – illegal housing built on private land typically owned by the household).*
3. There is a causal link between trust, social capital and neighbourhood cohesion irrespective of neighbourhood type – A comparison of Sanjay, Bhalswa and Ajit Vihar.

Neighbourhoods

Research from around the world has shown that maintaining well-being is crucial for those living in difficult and challenging circumstances. Well-being helps people cope with stress, trauma and hardship, enhancing resilience and mental health, and is vital in areas affected by poverty, conflict and disasters. We examine the relationships between subjective well-being (SWB) and neighbourhood cohesion, taking into consideration the socio-economic background of the households as well as levels of trust within our three different settlement types.

As neighbourhoods are bounded urban areas, they provide a valuable opportunity to understand the perceptions of individuals and communities within a specific, finite region. By investigating different neighbourhoods, we can explore and compare how these factors vary across regions, shedding light on patterns and differences in community well-being, social cohesion and quality of life. This comparative approach reveals important insights into how neighbourhood characteristics impact residents (Puddifoot, 1995; Pinchak et al., 2021). We consider the association between neighbourhood social cohesion and well-being for residents living in our different colony types.

In this chapter, we will first explore the *attitudes* of residents through the Neighbourhood Cohesion Index (NCI) and the subjective well-being scale (SWB). These residents live in Bhalswa (resettlement colony) and Sanjay (slum/JJ colony), allowing us to investigate the first hypothesis:

> Being able to **choose** your neighbourhood is beneficial to your well-being and contributes positively to attitudes around neighbourhood cohesion – A comparison of Sanjay (slum/JJ) and Bhalswa (resettlement).

Second, we consider whether the type of neighbourhood you live in affects how you perceive your community and your involvement within it.

> Residents' preferences on social capital and neighbourhood cohesion measures are different in two neighbourhood types – A comparison of Sanjay (slum/JJ – illegal housing public land) and Ajit Vihar (unauthorised – illegal housing private owned land).

Third, we investigate links between trust, social capital and neighbourhood cohesion in the three different neighbourhood types.

> There is a causal link between trust, social capital and neighbourhood cohesion irrespective of neighbourhood type – A comparison of Sanjay, Bhalswa and Ajit Vihar.

Measures

When considering how neighbourhood characteristics impact residents, one of the measures we employ to understand these associations is the Neighbourhood Cohesion Index (NCI). The NCI is used in this research to measure social cohesion with a focus on neighbourhood networks and the degree of neighbourliness; that is, the emotional social support within the neighbourhood, which includes visiting neighbours and friendships (Buckner, 1988; Ross and Searle, 2021). Higher mean total scores indicate a greater level of neighbourhood social cohesion (Ellaway et al., 2001; Robinson and Wilkinson, 1995). A neighbourhood with strong social cohesion can empower individuals within communities to support each other through residential bonds, create coordinated actions and networks for a collective good (Putnam, 1993; Sampson et al., 1997; Sampson and Raudenbush, 1999; Saegert et al., 2001). All items are measured on a 5-point Likert scale with 5 (strongly agree) to 1 (strongly disagree). The total scores for NCI are calculated by taking the average of the 18 items, with items 5 and 15 being reverse scored. The NCI measure can be divided into three subscale dimensions: 'sense of community' (SOC), 'neighbourliness' (NEI) and 'attraction to neighbourhood' (ATTR) (Ross and Searle, 2021; Fone et al., 2006; Fone et al., 2007; Krishna and Shrader, 2000). The NCI has been well-validated and used in a range of different country settings with various communities (Fone et al., 2014; Robinson and Wilkinson, 1995; Fone et al., 2006; Fone et al., 2007; McCulloch, 2003; Macintyre and Ellaway, 2000).

The second measure is the subjective well-being (SWB) scale. Subjective rather than objective well-being is used to explore the individual's internal subjective assessment of their own life as a whole, based on cognitive judgements and affective reactions.

Diener, one of the leading scholars in SWB research, defines SWB as how "a person feels and thinks his or her life is desirable regardless of how others see it" (Diener, 2009, p.1). This definition highlights the thinking and feeling dimensions of SWB. To gain an understanding of how an individual's perceived SWB is associated with neighbourhood social cohesion, four subjective measures of well-being are used – hedonic well-being (feeling of happiness), eudaemonic well-being (sense of purpose), evaluative well-being (life satisfaction) and freedom of choice (life control) (Diener, 1984; Watson, 1988; Inglehart and Genes, 2000; Verme, 2009; Bavetta et al., 2014; Steptoe et al., 2015) (the items for these scales are shown in Table 2.1).

When considering how the neighbourhood in which you live affects perceptions of the community and the involvement within it, we use the seven-item scale devised by Auerbach (2019). This was developed using as a springboard the World Bank's Measuring Social Capital scale (World Bank, 2004) and the active social capital scale devised by Krishna (2002). We elected to use this scale due to Auerbach's extensive research work in India's slums (Auerbach, 2019; Auerbach, 2017; Auerbach and Thachil, 2018; Auerbach and Thachil, 2023). The seven items are set out in Table 2.2.

Table 2.1 Measures: Neighbourhood Cohesion Index (NCI) and subjective well-being (SWB)

Neighbourhood Cohesion Index (NCI)	
Item	*Item description*
NCI1 (ATTR)	Overall, I am very attracted to living in this neighbourhood
NCI2 (ATTR)	I feel like I belong to this neighbourhood
NCI3 (NEI)	I visit with my neighbours in their homes
NCI4 (NEI)	The friendships I have with people in my neighbourhood mean a lot
NCI5 (ATTR)	Given the opportunity, I would like to move out of this neighbourhood (R)
NCI6 (NEI)	If people in my neighbourhood were planning something, I'd think of it as something 'we' were doing rather than 'they' were doing
NCI7 (NEI)	If I need advice, I could go to someone in my neighbourhood
NCI8 (SOC)	I agree with most of my neighbourhood about what's important in life
NCI9 (SOC)	I believe my neighbours would help me in an emergency
NCI10 (SOC)	I feel loyal to people in my neighbourhood
NCI11 (NEI)	I borrow things and exchange favours with my neighbours
NCI12 (SOC)	I'd be willing to work with others to improve my neighbourhood
NCI13 (ATTR)	I plan to remain a resident of this neighbourhood for a number of years
NCI14 (SOC)	I think of myself as similar to people who live in this neighbourhood
NCI15 (NEI)	I have never invited neighbours over to my house to visit (R)
NCI16 (SOC)	A feeling of fellowship runs deep in this neighbourhood
NCI17 (SOC)	I regularly stop to talk with people in my neighbourhood
NCI18 (SOC)	Living in this neighbourhood gives me a sense of community
Subjective well-being (SWB)	
Item	Item Description
Satisfaction	Overall, how satisfied are you with life as a whole these days? (0 not at all satisfied to 10 completely satisfied)
Freedom	How much freedom of choice and control do you feel you have over the way your life turns out? (0 no freedom and control to 10 complete freedom and control)
Happiness	How happy did you feel yesterday? (0 not at all happy to 10 completely happy)
Purpose	Do you feel your life has important purpose or meaning? (0 not at all worthwhile to 10 completely worthwhile)
Trust	
Trust	How much trust do you have in your neighbours? (0 do not trust at all to 4 trust completely)

Now that we have set out the measures used, the next part of the chapter turns to the first hypothesis:

> Hypothesis 1: Being able to **choose** your neighbourhood is beneficial to your well-being and contributes positively to attitudes around neighbourhood cohesion – A comparison of Sanjay (slum/JJ) and Bhalswa (Resettlement).

Characteristics of participants – Well-being and neighbourhood cohesion

We collected socio-demographic information from 328 residents in Bhalswa and 311 from Sanjay colony, Okhla, Phase II between March and April 2022. The

Table 2.2 Social Capital (SC) scale

Social Capital (SC)	
SC1	If a family here is short of money, or has a member who is sick or dies, will people here in the settlement help that family in need?
SC2	If you were short of money and needed Rs 1,000, would your neighbours in the settlement lend you the money?
SC3	In your opinion, would your neighbours in the settlement give time or money to improve the development of the settlement?
SC4	If there were a big problem in the settlement, like no water or electricity for several days, would people in this settlement unite to solve the problem?
SC5	When people here are free, do they mostly socialise and spend time with their own social group, or do they mix with other social groups?
SC6	People in this settlement only really care about their own household and don't care about the welfare of the settlement as a whole (R).
SC7	Generally speaking, how much do you (mainly) trust people in this settlement?

majority in both colonies were Hindu, belonging to the scheduled caste, migrating from Uttar Pradesh (UP). However, there were statistically significant differences between the two colonies with a higher proportion of Muslims in Bhalswa (22.6% Bhalswa vs 5.5% Sanjay), a higher proportion of general and 'backward' caste in Bhalswa (42.4% Bhalswa vs 31.9% Sanjay) and a higher proportion of migrants from UP in Sanjay colony (71.7% Sanjay vs 63.7% Bhalswa). For the 639 participants, the mean number of years of education (8.78 years) and the age of the main household wage earner (38.62 years) were not statistically significantly different in the two colonies. Almost one third of households in Sanjay colony reported their main occupation as a self-employed business owner, whereas in Bhalswa, this was true for less than one fifth of households. The average monthly income in Sanjay colony was statistically significantly less at Rs. 16,681.70/- (£172.82 (£1=Rs.96.52/- conversion rate)) compared with Bhalswa at Rs. 18,935.98/- (£196.18). Monthly income was positively correlated with the household owning a refrigerator with a freezer ($r=0.280$, $p<0.01$), washing machine ($r=0.331$, $p<0.01$) and scooter/motorcycle ($r=0.367$, $p<0.01$) in both communities. These wealth indicators show positive associations with monthly income. Those in Sanjay colony were more likely to carry out employment within their own community compared to those in Bhalswa (35.4% Sanjay vs 12% Bhalswa).

Where a statistically significant difference was found regarding wealth indicators, only the ownership of a smartphone was more likely in Sanjay than in Bhalswa. For scooter, bicycle, electricity, refrigerator and washing machine, Bhalswa residents were statistically more likely to own these items than those in Sanjay (Table 2.3).

Data analysis

Data were collected using Qualtrics and exported into Stata 17 for analysis. Initially, descriptive statistical analysis was undertaken to obtain means and

Table 2.3 Demographic variables – Sanjay colony (slum/JJ) and Bhalswa (resettlement)

	N (%)	
	Sanjay colony (JJ)	*Bhalswa (RS)*
Household religion		
Hindu	291 (93.6)	251 (76.5)
Muslim	17 (5.5)	74 (22.6)
Christian	0 (0.0)	3 (0.9)
Sikh	1 (0.3)	0 (0.0)
Buddhist	2 (0.6)	0 (0.0)
Household caste		
General caste	54 (17.4)	78 (23.8)
Scheduled caste	216 (69.5)	185 (56.4)
Backward caste	41 (13.2)	65 (19.8)
Highest household education completed up to:		
College	24 (7.7)	20 (6.1)
Up to 12th grade	86 (27.7)	84 (25.6)
Up to 8th grade	124 (39.9)	128 (39.0)
Little or no education	77 (24.8)	96 (29.3)
Main household occupation		
Self-employed business owner	94 (30.2)	61 (18.6)
Regular salary/wage employee	128 (41.2)	154 (47.0)
Casual worker/daily paid labourer	89 (28.6)	113 (34.5)
Mean length of residence (years) (SD)	29.05 (12.40)	18.47 (9.44)
Maximum	50	50
Minimum	1	1
Mean monthly family income (Rs) (SD)	16,681 (7,575)	18,935 (10,567)
Maximum	70,000	70,000
Minimum	4,000	3,000
Work		
Work outside community	119 (38.3)	220 (67.1)
Work inside community	192 (61.7)	108 (32.9)
State of origin		
Delhi	2 (0.6)	13 (4.0)
Bihar	40 (12.9)	48 (14.6)
Haryana	14 (4.5)	6 (1.8)
Madhya Pradesh	3 (1.0)	14 (4.3)
Rajasthan	23 (7.4)	30 (9.1)
Uttar Pradesh	223 (71.7)	209 (63.7)
Uttarakhand	2 (0.6)	2 (0.6)
Other	4 (1.3)	6 (1.8)
Wealth items		
Owns a car orjeep	4 (1.3)	8 (2.4)
Scooter or motorcycle	80 (25.7)	116 (35.4)
Auto/mini 3-wheeler	10 (3.2)	14 (4.3)
Bicycle	60 (19.3)	89 (27.1)
Smart phone	280 (90.0)	260 (79.3)
Feature phone	61 (19.6)	190 (57.9)
House has electricity	298 (95.8)	324 (98.8)
Computer	8 (2.6)	11 (3.4)
Fridge with freezer	155 (49.8)	251 (76.5)
Washing machine	89 (28.6)	127 (38.7)
TV	237 (76.2)	269 (82.0)

Note: Other states are – Chhattisgarh, Himachal, Jharkhand, Nepal, Punjab, Tamil Nadu and West Bengal. % shown in parenthesis.

standard deviations for the data. Statistical tests were then carried out to ascertain if any significant differences existed between the two communities' demographic variables. Independent t tests were used for continuous outcomes and Chi-Square tests for dichotomous outcomes. Structural Equation Modelling (SEM) was used to establish the construct validity of the NCI and the SWB measures. The Cronbach's alpha was used to measure the internal consistency of the NCI. For the SWB, internal reliability was considered through correlations between the NCI and its sub scores. To understand the differences between residents in Sanjay colony, Okhla Phase II and Bhalswa, individual items on both the NCI and SWB measures were analysed using the estimated average marginal components effect (AMCEs). The ACME is the average causal effect of changing the community variable from Bhalswa (=0) to Sanjay colony (=1) for a given resident while averaging over the other factors (Hainmueller et al., 2014; Humble et al., 2023; Williams, 2012).

The NCI ($\alpha = 0.89$) and SWB ($\alpha = 0.80$) in this present study show good composite reliability. Very good convergent validity of the NCI is seen through correlations with its sub scores of SOC ($r=0.947$, $p<0.01$), NEI ($r=0.896$, $p<0.01$) and ATTR ($r=0.779$, $p<0.01$). For the SWB, internal reliability was considered through correlations between the NCI for Sanjay colony ($r=0.145$, $p<0.05$) and Bhalswa ($r=0.264$, $p<0.001$). Group-level construct validity was established with values of CFI > 0.94 and RMSEA < 0.05 for both Sanjay Colony and Bhalswa. Reliability of the measures was also demonstrated by loadings onto each of the factors. Sense of community (0.54 to 0.74), neighbouring (0.30 to 0.77), attraction to neighbourhood (0.30 to 0.79) and well-being (0.33 to 0.82). Factor loadings greater than or equal to 0.3 are said to be salient and relate meaningfully to primary factors (Kline, 2016; Brown, 2006; Humble, 2020).

Neighbourhood Cohesion Index (NCI)

Eight statistically significant differences were seen between the responses from residents in Sanjay colony and Bhalswa on the NCI, four in 'sense of community' (SOC), and two in each of the themes 'neigbourliness' (NEI) and 'attraction to neighbourhood' (ATTR) as shown in Figure 2.1.

Regarding the sense of community (SOC), residents in Sanjay colony were 9.3 percentage points (pp) more likely to believe their neighbours would help them in an emergency (NCI 9, $p<0.001$) and 9.5 pp more likely to have a greater willingness to improve their neighbourhood than residents in Bhalswa (NCI 12, $p<0.001$). Residents of Sanjay colony were 10.2 pp more likely to feel a greater sense of community than those residents of Bhalswa (NCI 18, $p<0.001$). Sanjay colony residents were 5.48 pp less likely to feel that their neighbours agree with them about what is important in life (NCI 8, $p<0.05$).

In the subscale 'neighbouring' (NEI), residents in Sanjay colony were 4.76 pp less likely to invite neighbours to their home (NCI 15, $p<0.01$) and 9.7 pp less likely to feel that neighbourhood friendships meant a great deal to them (NCI 4, $p<0.001$).

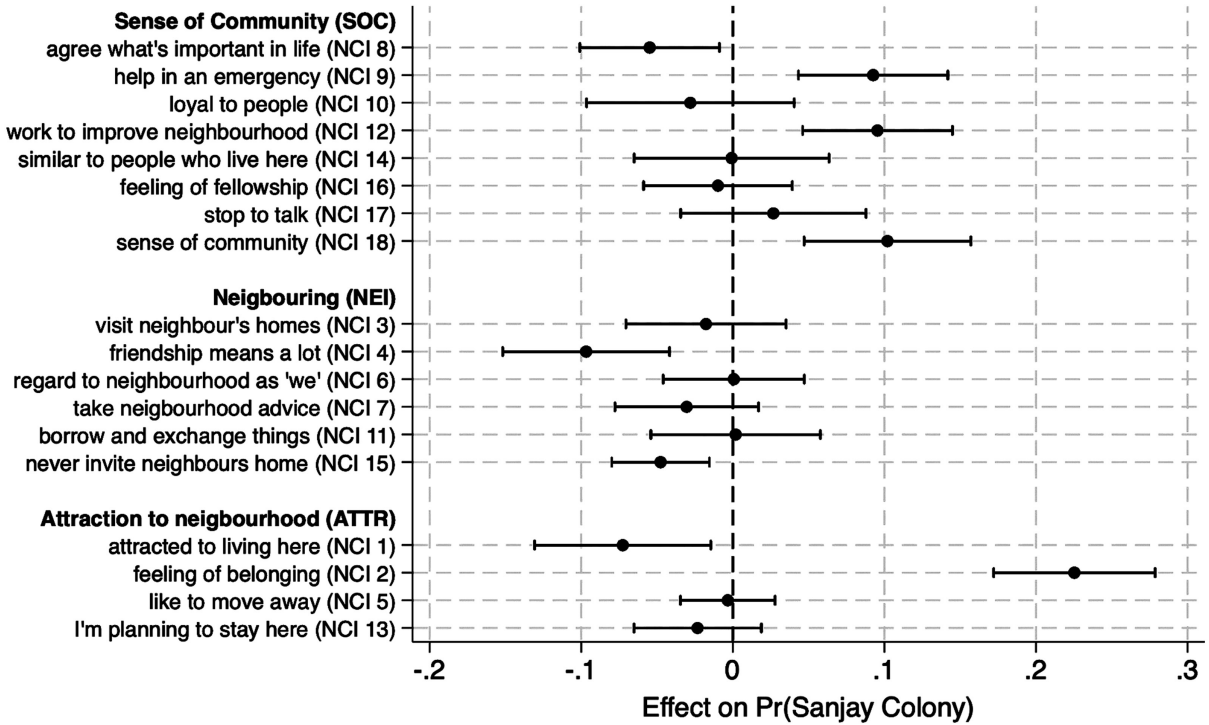

Figure 2.1 Neighbourhood Cohesion Index

Note: Neighbourhood Cohesion Index (NCI) estimated averaged marginal component effects for Sanjay colony with 95% CIs. The percentage points (pp) estimates for Sanjay colony (=1) with the base group being Bhalswa (=0). The marginal effect of each independent variable being averaged over the joint distribution of the remaining variables. The independent variables are in the vertical axis. The horizontal axis gives the prediction of change in the independent variable (points), and the associated 95% CIs (bars).

Table 2.4 Neighbourhood Cohesion Index (NCI)

Item description	*Sanjay colony with base Bhalswa*
Sense of community (SOC)	
I agree with most of my neighbourhood about what's important in life (NCI 8)	−0.055** (0.023)
I believe my neighbours would help me in an emergency (NCI 9)	0.092*** (0.025)
I feel loyal to people in my neighbourhood (NCI 10)	−0.028 (0.035)
I'd be willing to work with others to improve my neighbourhood (NCI 12)	0.095*** (0.025)
I think of myself as similar to people who live in this neighbourhood (NCI 14)	−0.001 (0.033)
A feeling of fellowship runs deep in this neighbourhood (NCI 16)	−0.010 (0.025)
I regularly stop to talk with people in my neighbourhood (NCI 17)	0.027 (0.031)
Living in this neighbourhood gives me a sense of community (NCI 18)	0.102*** (0.028)
Neighbouring (NEI)	
I visit with my neighbours in their homes (NCI 3)	−0.018 (0.027)
The friendships I have with people in my neighbourhood mean a lot (NCI 4)	−0.097*** (0.028)
If people in my neighbourhood were planning something, I'd think of it as something 'we' were doing rather than 'they' were doing (NCI 6)	0.001 (0.023)
If I need advice, I could go to someone in my neighbourhood (NCI 7)	−0.030 (0.024)
I borrow things and exchange favours with my neighbours (NCI 11)	0.002 (0.028)
I have never invited neighbours over to my house to visit (R) (NCI 15)	−0.048** (0.016)
Attraction to neighbourhood (ATTR)	
Overall, I am very attracted to living in this neighbourhood (NCI 1)	−0.073** (0.030)
I feel like I belong to this neighbourhood (NCI 2)	0.225*** (0.027)
Given the opportunity, I would like to move out of this neighbourhood (R) (NCI 5)	−0.003 (0.015)
I plan to remain a resident of this neighbourhood for a number of years (NCI 13)	−0.023 (0.021)
Constant	−0.157 (0.137)
	P[F(18, 620) = 16.62] < 0.001
	R^2 = 0.325

Note: Analysis includes 639 observations. Coefficient estimates of the average marginal component effects with standard errors in parenthesis. ***p<0.001, **p<0.01, *p<0.05.

Regarding 'attraction to the neighbourhood' (ATTR), respondents from Sanjay colony were 7.3 pp less likely to say they were attracted to living in the neighbourhood (NCI 1, p<0.01). They were 22.5 pp more likely to have a feeling of belonging (NCI 2, p<0.001). Given that the base probability is 50 percent, the effect size of this result is the most significant of all these results as it increases the base probability by 45 percent (medium Cohen's d effect size (0.45 = 0.225/0.5)).

Subjective well-being (SWB)

There were two statistically significant differences between the responses from residents in Sanjay colony and Bhalswa on the SWB (Figure 2.2). There was a

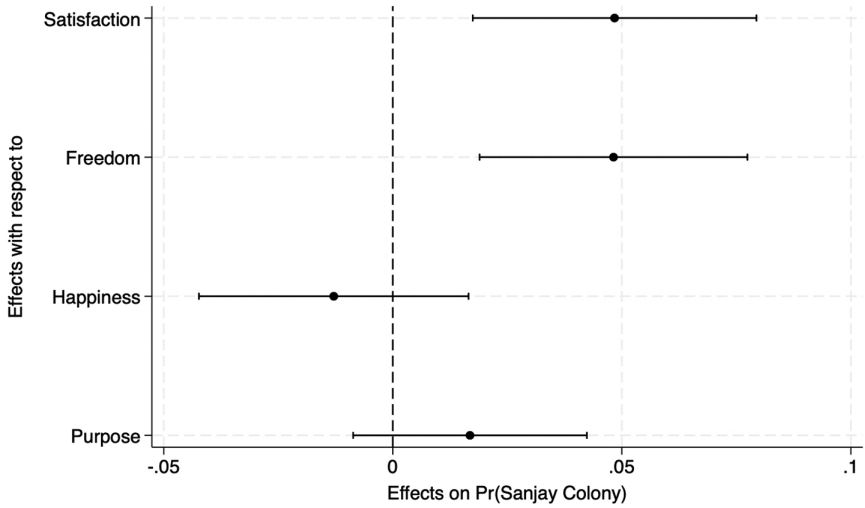

Figure 2.2 Subjective well-being

Note: Well-being estimated averaged marginal component effects for Sanjay colony with 95% CIs. The percentage points (pp) estimates for Sanjay colony (=1) with the base group being Bhalswa (=0). The marginal effect of each independent variable being averaged over the joint distribution of the remaining variables. The independent variables are in the vertical axis. The horizontal axis gives the prediction of change in the independent variable (points), and the associated 95% CIs (bars).

4.8 pp increased likelihood that residents in Sanjay colony had a greater likelihood to feel more satisfied with life ($p<0.01$) and a 4.8 pp increased likelihood of having greater perceived feelings of freedom of choice ($p<0.001$) than residents in Bhalswa (Table 2.5).

Table 2.5 Subjective well-being

Item description	*Sanjay colony with base Bhalswa*
Overall, how satisfied are you with life as a whole these days? (Satisfaction)	0.048^{**} (0.016)
How much freedom of choice and control do you feel you have over the way your life turns out? (Freedom)	0.048^{***} (0.015)
How happy did you feel yesterday? (Happiness)	−0.013 (0.015)
Do you feel your life has an important purpose or meaning? (Purpose)	0.017 (0.013)
Constant	−0.095 (0.092)
	$P[\chi^2 (4, 634)=14.49] <0.001$
	$R^2=0.084$

Note: Analysis includes 639 observations. Coefficient estimates of the average marginal component effects with standard errors in parenthesis. $^{***}p<0.001$, $^{**}p<0.01$, $^{*}p<0.05$.

Associations between NCI and SWB

Statistically significant positive correlations demonstrated modest associations between Neighbourhood Cohesion Index (NCI) and subjective well-being (SWB) in both Sanjay colony ($r=0.145$, $p<0.05$) and Bhalswa ($r=0.264$, $p<0.01$). In both communities, there was a strong positive correlation between trust and neighbourhood cohesion (Sanjay $r=0.618$, $p<0.01$; Bhalswa $r=0.533$, $p<0.01$). However, only in Bhalswa was trust statistically significantly positively related to subjective well-being ($r=0.121$, $p<0.05$).

There was a statistically significant positive modest correlation with regards to the length of residence within the neighbourhood and the NCI in both Sanjay and Bhalswa (Sanjay, $r=0.157$, $p<0.01$; Bhalswa, $r=0.171$, $p<0.05$). The longer a resident had lived in the community, the greater the feeling of neighbourhood cohesion. Well-being was also statistically significantly correlated with employment in both communities (Sanjay – income, $r=0.119$, $p<0.5$; regular employment, $r=0.134$, $p<0.05$: Bhalswa – income, $r=0.165$, $p<0.01$; regular employment, $r=0.109$, $p<0.05$).

Only in Bhalswa was there shown to be correlations with length of residency, SWB and trust. For subjective well-being, there was a negative modest correlation between the length of residency ($r= -0.117$, $p<0.05$); the longer the resident lived in the community, the lower their level of subjective well-being. For the level of trust, there was a significant positive modest correlation with length of residency. The longer a resident had lived in Bhalswa, the greater the level of trust ($r=0.145$, $p<0.01$). Interestingly, regarding trust, only in Bhalswa was there a statistically significant correlation between employment and trust (income, $r=0.132$, $p<0.05$; regular employment, $r= -0.161$, $p<0.01$; working outside the community, $r= -0.238$, $p<0.01$). Neither age nor education was found to be statistically significantly correlated with NCI, SWB or trust in Sanjay or Bhalswa.

What do these findings show about well-being and neighbourhood cohesion in different community types?

This first hypothesis considered two different settlement types in Delhi, India, with one spontaneously developed by individual families (Sanjay – unauthorised, illegally built on public land) and the other 'planned' by the government to reallocate slum dwellers who have been evicted from their spontaneous neighbourhoods to the outskirts of the city (Bhalswa – legal and 'planned').

We found that in both settlements, residents' feelings around community cohesion were associated with their subjective well-being. That is, a greater sense of satisfaction, freedom, happiness and purpose was felt by those residents who had rated more highly their sense of community, attraction to their neighbourhood and neighbourliness. When a community trusted their neighbours, there was a greater feeling of cohesion. The longer a resident lived in the community, there was a greater sense of cohesion.

Those with higher incomes and those who undertook regular employment (employee) enjoyed higher levels of subjective well-being. We found that neither

age nor education influenced feelings around trust, neighbourhood cohesion or subjective well-being.

Those living in Sanjay (slum/JJ) reported higher subjective well-being and were more likely to feel a sense of belonging to a whole community where they would help and be helped by their neighbours in an emergency.

However, Sanjay residents were less likely to be neighbourly with fewer friendships and less of an attraction to live in the neighbourhood.

Part of the reason for this, which we cannot substantiate, may relate to the more cramped living conditions in Sanjay in comparison to those in the resettlement community of Bhalswa. That Sanjay residents reported higher subjective well-being than in Bhalswa, *despite* such factors, may also indicate the independent and overriding value they place on having chosen where to live and not having been subject to forced relocation.

In Bhalswa, there was a greater feeling of neighbourliness, and the longer the resident had lived in the community, the greater level of trust in their neighbours, even though residents did not express the sense of community belonging expressed in Sanjay. One explanation for this result could be that the shared feelings associated with the trauma of compulsory relocation allowed the development of strong bonds with immediate neighbours coping with the original sense of helplessness – and with longer terms of residency, their trust in neighbours increased independent of their perception of the neighbourhood as a whole.

Friendliness and supportiveness among neighbours could have remained independent of any sense of self-esteem or fulfilment within the neighbourhood. Our results showed, however, that the longer the resident had lived in Bhalswa, the greater the negative effect on their subjective well-being. Residents with poor subjective well-being may be those unable to leave owing to lower incomes and employment possibilities. A possible explanation for this finding may be the lasting negative impact on sense of belonging and well-being arising from the experience of forced relocation.

Our findings are, to some extent, in line with the existing literature that reports associations between greater neighbourhood social cohesion and better subjective well-being (Bjornstrom et al., 2013; Cramm et al., 2013; Robinette et al., 2013; Elliott et al., 2014; Cramm and Nieboer, 2015; Delhey and Dragolov, 2016). They show that a greater sense of community cohesion is associated with trust (Kawachi and Berkman, 2014). As in other literature, residents with the highest incomes expressed greater subjective well-being (Campbell and Lee, 1992; Savage et al., 2005; Mendes et al., 2021). Interestingly, income was only associated positively with trust and neighbourhood cohesion in Bhalswa.

With regards to neighbourhood cohesion, residents in Bhalswa, the resettlement colony, were less likely to have a sense of belonging to their neighbourhood. Williams et al. (2022) agree, stating that resettlement housing projects in India produce ghetto effects, which inhibit feelings of belonging and processes of placemaking. As in Mahadevia et al. (2016), we found that residents in the resettlement colony of Bhalswa were less likely to feel a sense of community and the desire to improve their neighbourhood owing to greater heterogeneity of the residents. In

contrast to the existing literature, we found that education was not correlated with trust, subjective well-being or neighbourhood cohesion. Blanchflower and Oswald (2004) in their study on well-being over time showed that education played a role independently of income, and Patel et al. (2021) found that higher education significantly decreased the odds of low subjective well-being in older adults in India.

Our analysis so far in this chapter aims to contribute to debates concerning neighbourhood cohesion and subjective well-being for residents living in different neighbourhood types in megacities. Gathering better local data allows for a clearer understanding of the differences between residents of two types of colonies, one devoid of security of tenure (Sanjay), both of infrastructure (Sanjay and Bhalswa) and one on the periphery of the city detached from a socio-economic livelihood base, where residents had been evicted from their original homes (Bhalswa).

In the next part, we turn our attention to our second hypothesis.

> Hypothesis 2: Residents' preferences on social capital and neighbourhood cohesion measures are different in two neighbourhood types – A comparison of Sanjay (slum/JJ – illegal housing built on public land) and Ajit Vihar (unauthorised – illegal housing built on private land typically owned by the household).

Characteristics of participants – Perceptions of community and the involvement within it

We collected socio-demographic information from 365 residents in Ajit Vihar, as well as having collected 311 from Sanjay colony, Okhla, Phase II between March and April 2022. The majority in Ajit Vihar (92.5%) were Hindu and belonged to the general caste (59.2%). Of the 365 participants from Ajit Vihar, 21.1% had a college education with 61.6% having completed up to grade 12, this is in contrast to Sanjay colony that only had 7.7% respondents with college education and 35.4% that had completed up to grade 12. Around one fifth of Ajit Vihar were self-employed with the majority being regular salaried wage earners (52.9%). This is in contrast to Sanjay colony, where one third of households were self-employed business owners, and 41.2% had a regular salaried wage. The average monthly income in Sanjay colony was statistically significantly less at Rs. 16,681 (£156.65) compared with Ajit Vihar at Rs. 36,115 (£339.79).[1] Monthly income was positively correlated with the household owning a refrigerator with a freezer ($r=0.245$, $p<0.01$), washing machine ($r=0.275$, $p<0.01$), colour TV ($r=0.106$, $p<0.01$) and scooter/motorcycle ($r=0.073$, $p<0.05$) in these communities. These wealth indicators show positive associations with monthly income. This illustrates the robustness of our data and the convergent validity of 'income' as a measure of wealth (Deaton, 2018). Statistically significant differences were found regarding all the wealth indicators, with residents in Ajit Vihar being statistically more likely to own these items than those in Sanjay (Table 2.6).

We use Auerbach's social capital scale as a way of understanding community collective action (Auerbach, 2019). Higher levels of social capital have been

Table 2.6 Demographic variables – Sanjay colony (slum/JJ) and Ajit Vihar (unauthorised)

	N (%)	
	Sanjay colony (JJ)	*Ajit Vihar (UA)*
Household religion		
Hindu	291 (93.6)	339 (92.5)
Muslim	17 (5.5)	19 (5.2)
Christian	0 (0.0)	3 (0.8)
Sikh	1 (0.3)	3 (0.8)
Buddhist	2 (0.6)	1 (0.3)
Household caste		
General caste	54 (17.4)	216 (59.2)
Scheduled caste	216 (69.5)	96 (26.3)
Backward caste	41 (13.2)	53 (14.5)
Highest household education completed up to		
College	24 (7.7)	77 (21.1)
Up to 12th grade	86 (27.7)	148 (40.5)
Up to 8th grade	124 (39.9)	100 (27.4)
Little or no education	77 (24.8)	40 (11.0)
Main household occupation		
Self-employed business owner	94 (30.2)	82 (22.5)
Regular salary/wage employee	128 (41.2)	193 (52.9)
Casual worker/daily paid labourer	89 (28.6)	90 (24.7)
Mean length of residence (years) (SD)	29.05 (12.40)	10.98 (11.56)
Maximum	50	50
Minimum	1	1
Mean monthly family income (Rs) (SD)	16,681 (7,575)	36,115 (10,545)
Maximum	70,000	70,000
Minimum	4,000	18,000
Work		
Work outside the community	119 (38.3)	268 (73.4)
Work inside the community	192 (61.7)	97 (26.6)
State of origin		
Delhi	2 (0.6)	25 (6.8)
Bihar	40 (12.9)	106 (29.0)
Haryana	14 (4.5)	10 (2.7)
Madhya Pradesh	3 (1.0)	8 (2.2)
Rajasthan	23 (7.4)	17 (4.7)
Uttar Pradesh	223 (71.7)	152 (41.6)
Uttarakhand	2 (0.6)	24 (6.6)
Other	4 (1.3)	23 (6.3)
Wealth items		
Owns car or jeep	4 (1.3)	14 (3.8)
Scooter or motorcycle	80 (25.7)	197 (54.0)
Auto/mini 3-wheeler	10 (3.2)	16 (4.4)
Bicycle	60 (19.3)	111 (30.4)
Smart phone	280 (90.0)	342 (93.7)
Feature phone	61 (19.6)	211 (57.8)
House has electricity	298 (95.8)	342 (93.7)
Computer	8 (2.6)	43 (11.8)
Fridge with freezer	155 (49.8)	322 (88.6)
Washing machine	89 (28.6)	234 (64.1)
TV	237 (76.2)	317 (86.8)

associated with greater levels of community collective action. Social capital provides a greater understanding of the networks and norms within a community's social structure, showing how cooperative and coordinative actions benefit the whole community (Putnam, 1993; Krishna, 2002). In this next section, we consider differences in social capital and neighbourhood cohesion in Ajit Vihar and Sanjay colony.

Social Capital

Figure 2.3 illustrates the social capital (SC) index estimated averaged marginal component effects for Ajit Vihar with 95% CIs. The percentage points (pp) estimates are for Ajit Vihar (=1) with the base group being Sanjay (=0). The marginal effect of each independent variable being averaged over the joint distribution of the remaining variables. The independent variables are on the vertical axis. The horizontal axis gives the prediction of change in the independent variable (points), and the associated 95% CIs (bars).

The data show there are five significant differences in the social capital scale between those living in Ajit Vihar and Sanjay colony. The most significant difference is for SC4 "unite to solve problems". There is a 33.6 pp ($p<0.001$, SC4) increased positive likelihood that residents come together in Ajit Vihar to solve problems (Table 2.7). Given that the base probability is 50%, this effect size is significant as it increases the base probability by 67.2% (medium Cohen's d effect size (0.672 = 0.336/0.5)). This large effect size indicates how the community in Ajit Vihar has a significantly greater likelihood of coming together to support each other. Neighbours in Ajit Vihar are 10.4 pp ($p < 0.001$, SC3) more likely to give

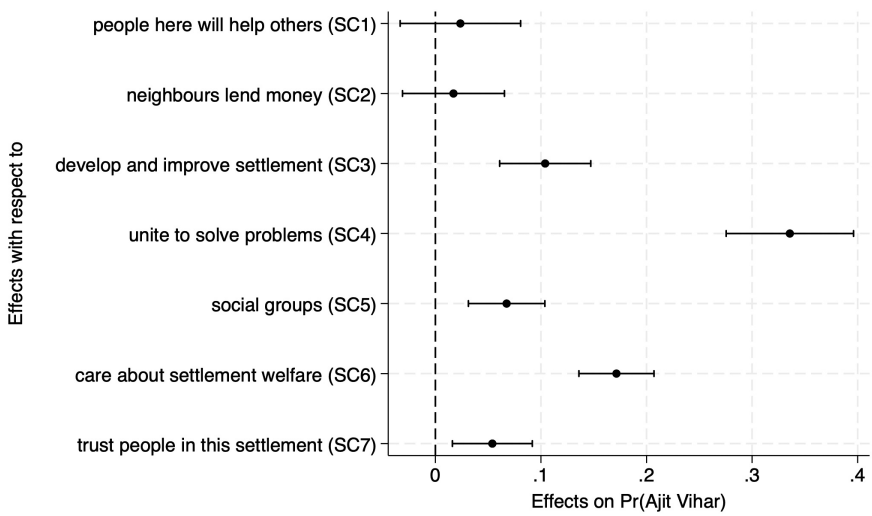

Figure 2.3 Social capital scale – Ajit Vihar and Sanjay

Table 2.7 Auerbach's social capital scale

Item description	*Ajit Vihar base Sanjay colony*
If a family here is short of money, or has a member who is sick or dies, will people here in the settlement help that family in need? (SC1)	0.024 (0.029)
If you were short of money and needed Rs 1,000, would your neighbours in the settlement lend you the money? (SC2)	0.017 (0.025)
In your opinion, would your neighbours in the settlement give time or money to improve the development of the settlement? (SC3)	0.104*** (0.022)
If there were a big problem in the settlement, like no water or electricity for several days, would people in this settlement unite to solve the problem? (SC4)	0.336*** (0.031)
When people here are free, do they mostly socialise and spend time with their own social group or do they mix with other social groups? (SC5)	0.067*** (0.018)
People in this settlement only really care about their own household and don't care about the welfare of the settlement as a whole. (R) (SC6)	0.172*** (0.018)
Generally speaking, how much do you (mainly) trust people in this settlement? (SC7)	0.054** (0.019)
Constant	−0.502*** (0.030)
	P[χ^2(7, 676)=270.27] <0.001
	R^2=0.736

Note: Analysis includes 676 observations. Coefficient estimates of the average marginal component effects with standard errors in parenthesis. ***p <0.001, **p<0.01, *p<0.05.

their time or money to improve the development of the settlement than those residents of Sanjay colony. They are also 17.2 pp (p<0.001, SC6) more likely "to care about the welfare of the settlement as a whole" and are 6.7 pp (p<0.001, SC5) more likely to mix with other social groups than in Sanjay. Finally, in Ajit Vihar, they are 5.4 pp (p<0.001, SC7) more likely to trust others in the community. These factors contribute to our hypothesis of being able to observe differences through residents' preferences related to social capital.

Neighbourhood Cohesion Index comparing Ajit Vihar to Sanjay colony

We turn our focus to the Neighbourhood Cohesion Index and compare residents' responses in Ajit Vihar with Sanjay colony. Illustrated in Figure 2.4 are comparisons between residents' responses in Ajit Vihar with Sanjay colony as a base case. We see eight significant differences, three of these in 'SOC', four in 'NEI' and one in 'ATTR'.

Residents in Ajit Vihar are 15.0pp more likely to agree with neighbours about what is important in life (p<0.001, NCI 8). They are also significantly more likely to feel a sense of loyalty (11.1pp, p<0.01, NCI 10) and fellowship (9.8pp, p<0.01,

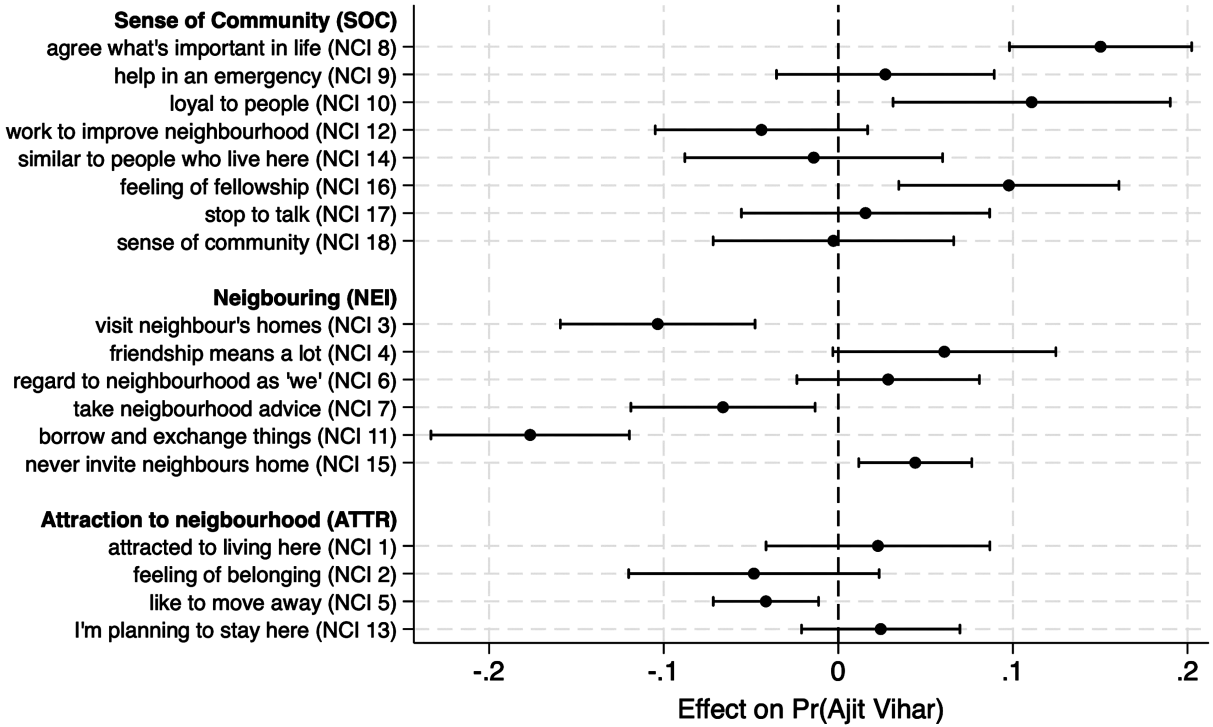

Figure 2.4 Neighbourhood Cohesion Index – Ajit Vihar and Sanjay

Note: The figure illustrates Neighbourhood Cohesion Index (NCI) estimated averaged marginal component effects for Ajit Vihar with 95% CIs. The percentage points (pp) estimate for Ajit Vihar (=1) with the base group being Sanjay (=0). The marginal effect of each independent variable being averaged over the joint distribution of the remaining variables. The independent variables are on the vertical axis. The horizontal axis gives the prediction of change in the independent variable (points) and the associated 95% CIs (bars)

Table 2.8 Neighbourhood Cohesion Index (NCI)

Item description	*Ajit Vihar with base Sanjay colony*
Sense of community (SOC)	
I agree with most of my neighbourhood about what's important in life (NCI 8)	0.150*** (0.027)
I believe my neighbours would help me in an emergency (NCI 9)	0.027 (0.032)
I feel loyal to people in my neighbourhood (NCI 10)	0.111** (0.040)
I'd be willing to work with others to improve my neighbourhood (NCI 12)	−0.044 (0.031)
I think of myself as similar to people who live in this neighbourhood (NCI 14)	−0.014 (0.038)
A feeling of fellowship runs deep in this neighbourhood (NCI 16)	0.098** (0.032)
I regularly stop to talk with people in my neighbourhood (NCI 17)	0.016 (0.036)
Living in this neighbourhood gives me a sense of community (NCI 18)	−0.003 (0.035)
Neighbouring (NEI)	
I visit with my neighbours in their homes (NCI 3)	−0.103*** (0.028)
The friendships I have with people in my neighbourhood mean a lot (NCI 4)	0.061 (0.033)
If people in my neighbourhood were planning something, I'd think of it as something 'we' were doing rather than 'they' were doing (NCI 6)	0.029 (0.027)
If I need advice, I could go to someone in my neighbourhood (NCI 7)	−0.066** (0.027)
I borrow things and exchange favours with my neighbours (NCI 11)	−0.176*** (0.029)
I have never invited neighbours over to my house to visit (R) (NCI 15)	0.044** (0.016)
Attraction to neighbourhood (ATTR)	
Overall, I am very attracted to living in this neighbourhood (NCI 1)	0.023 (0.033)
I feel like I belong to this neighbourhood (NCI 2)	−0.048 (0.037)
Given the opportunity, I would like to move out of this neighbourhood (R) (NCI 5)	−0.041** (0.015)
I plan to remain a resident of this neighbourhood for a number of years (NCI 13)	0.024 (0.023)
Constant	0.182 (0.152)
	P[F(18, 657)=7.28] <0.001
	R^2 = 0.166

Note: Analysis includes 676 observations. Coefficient estimates of the average marginal component effects with standard errors in parenthesis. ***p<0.001, **p<0.01, *p<0.05.

NCI 16) with their neighbours. In the subscale 'neighbouring' (NEI), Ajit Vihar residents are less likely to visit neighbours' homes (10.3 pp, p<0.001, NCI 3), take neighbours advice (6.6 pp, p<0.01, NCI 7) or borrow and exchange favours with their neighbours (17.6 pp, p<0.001, NCI 11). Yet, they are more likely to invite neighbours into their homes (4.4 pp, p<0.01, NCI 15). Given the opportunity, there is less likelihood Ajit Vihar residents would move out of their neighbourhood compared to those in Sanjay (4.1 pp, p<0.01, NCI 5) (Table 2.8).

Element of trust and the importance to the neighbourhood

In this part we consider our third hypothesis:

Hypothesis 3: There is a causal link between trust, social capital and neighbourhood cohesion irrespective of neighbourhood type – A comparison of Sanjay, Bhalswa and Ajit Vihar.

We investigate if there are any causal links between trust, social capital and neighbourhood cohesion. Looking at our household data, our findings show that in the three communities there is a strong positive correlation between trust and neighbourhood cohesion (Ajit Vihar ($r=0.678$, $p<0.01$); Sanjay ($r=0.618$, $p<0.01$); Bhalswa ($r=0.533$, $p<0.01$)). We also see strong significant correlations in all three settlements with (i) social capital and NCI (ii) social capital and trust (Ajit Vihar ($r=0.743$, $p<0.01$; $r=0.723$, $p<0.01$); Sanjay ($r=0.274$, $p<0.01$; $r=0.264$, $p<0.01$); Bhalswa ($r=0.300$, $p<0.01$; $r=0.386$, $p<0.01$)).

The correlations between these three themes of neighbourhood cohesion, social capital and trust suggest a strong latent structure. We explore these relationships and see clear connections between trust, community neighbourhood cohesion (NCI) and social capital (SC). The path models (Figure 2.5) illustrate how strongly these three measures are related.

A path model is a statistical technique that specifies a model of the relationship between variables and statistically tests the fit of the model to the data. Path analysis is a specific application of Structural Equation Modelling (SEM). SEM is based on the analysis of covariance structures. The just-identified standardised path model is used to show the interrelated causal effect between trust, community neighbourhood cohesion (NCI) and social capital (SC) in our three communities to understand the strength of the relationships. We use standardised path models when comparing the three different communities as this allows us to understand whether the form of the relationship differs across the groups (Kline, 2016; Loehlin and Beaujen, 2017).

In Ajit Vihar, residents who have increased levels of trust in their neighbours have a strong significant causal effect on NCI ($\beta = 0.678$, $p<0.001$) and on social capital ($\beta = 0.405$, $p<0.001$). There is also an indirect effect that trust plays through NCI to social capital ($\beta = 0.468$, $p<0.001$). The standardised models demonstrate that the data is a good fit to the model and reveal relationships among the variables. Only 36% of the variation in social capital responses and 54% in NCI remain unexplained by the Ajit Vihar model. These causal links are not as strong in Sanjay and Bhalswa, but all paths are still significant ($p<0.05$) (Figure 2.5 and Table 2.9).

Our data show there to be causal links between trust, social capital and neighbourhood cohesion in all three settlement types. These are all statistically significant. The path coefficients greater than 0.5 (0.678, Ajit; 0.618, Sanjay; 0.534, Bhalswa) demonstrate a strong causal effect between trust and neighbourhood cohesion (Humble, 2020; Bollen, 1989).

Conclusion and thoughts

In the analysis above, we attempt to address the three hypotheses comparing different neighbourhood types:

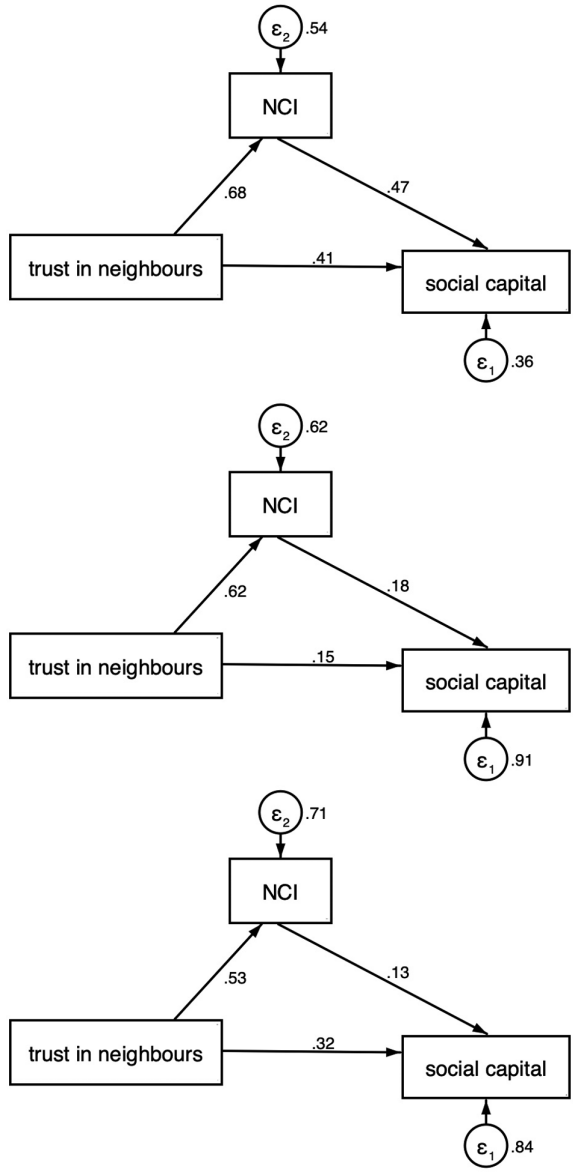

Figure 2.5 Path models showing causal relationships between trust, NCI and SC

Note: Ajit Vihar - top; Sanjay colony - middle; Bhalswa - bottom.

Table 2.9 Path coefficients for settlement models

Relationship	*Settlements*		
Path coefficients	*Ajit Vihar*	*Sanjay colony*	*Bhalswa*
NCI			
Trust	0.678*** (0.025)	0.618*** (0.032)	0.534*** (0.037)
Social capital			
Trust	0.405*** (0.041)	0.153* (0.068)	0.316*** (0.057)
NCI	0.468*** (0.041)	0.179** (0.068)	0.131* (0.059)

Note: Standardised structural path coefficient estimates with standard errors in parenthesis. Note that in each settlement, the standard deviations of the three variables are of the same magnitude. ***p<0.001, **p<0.01, *p<0.05.

> Being able to choose your neighbourhood is beneficial to your well-being and contributes positively to attitudes around neighbourhood cohesion.

and

> Residents' preferences on social capital and neighbourhood cohesion measures are different in neighbourhood types.

and

> There is a causal links between trust, social capital and neighbourhood cohesion irrespective of neighbourhood type – A comparison of Sanjay, Bhalswa and Ajit Vihar.

Our findings show that those living in a neighbourhood that they have chosen report higher subjective well-being and a sense of belonging to the community in which they come together to support and help neighbours. Social capital and neighbourhood cohesion are different depending upon the type of settlement in which you live. For those in an unauthorised colony where land is owned yet houses are illegally built, residents are more likely to come together to support one another, cultivating a strong sense of loyalty and fellowship. This collective care for the community is demonstrated by their willingness to invest both time and money into their neighbourhood's development, to transform and improve their living conditions. In all three settlement types, there are causal links between trust, social capital and neighbourhood cohesion, without which, Jane Jacobs believes, is a disaster to a city street (Jacobs, 1961, p. 67).

> Under the seeming disorder of the old city, wherever the old city is working successfully, is a marvellous order for maintaining the safety of the streets and the freedom of the city. It is a complex order. Its essence is intricacy of sidewalk use, bringing with it a constant succession of eyes. This order is all composed of movement and change, and although it is life, not art, we may fancifully call it the art form of the city and liken it to the dance – not to a simple-minded precision dance with everyone kicking up at the same

> time, twirling in unison and bowing off en masse, but to an intricate ballet in which the individual dancers and ensembles all have distinctive parts which miraculously reinforce each other and compose an orderly whole. The ballet of the city sidewalk never repeats itself from place to place, and in any one place is always replete with new improvisations.
>
> (Jacobs, 1961, pp. 60–61)

Note

1 £1 = Rs.106.29 conversion rate December 2024.

Authors' note

Figures 2.1, 2.2, 2.3, 2.4, and 2.5 from StataCorp. 2023. Stata Statistical Software: Release 18. College Station, TX: StataCorp LLC.

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PART II

Collective Action and Polycentricity

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3 Community action solving problems through polycentric systems

In my own effort to start developing an alternative "behavioural theory of collective action", I posited that building trust among participants that the other participants are trustworthy and reciprocators is an essential core of future theories (Ostrom, 2009b, p. 211).

Introduction

Collective action, people coming together to solve complex problems, can be seen down every alleyway and on the street corners of neighbourhoods known as slums, informal settlements, favelas and shantytowns. The quote above from Elinor Ostrom is critical in the understanding of this chapter and the theory that lies behind it. Schools, doctors, pharmacies, clinics and the recycling of clothing and plastics are all part of the rich makeup of the streets in Delhi. This hive of activity around local community provision highlights entrepreneurial dynamism and collective action that can be seen as market success (Aligica, 2019; Ostrom, 2009b).

People come together to make life better not only for themselves but also for others in their neighbourhood. The poor don't wait for someone to come and solve their problems; they work together through polycentric systems to bring solutions to their community. Whilst observing what could be described as the disorder of slums, there is an intricate social and economic order. Collective action occurs

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at the neighbourhood level (Ostrom, 2005; Ostrom, Tiebout, and Warren, 1961). Community residents work together in a deliberative and collaborative manner with other stakeholders to maintain and generate assets and services to improve their community (Jacobs, 1961).

However, not all slums are the same. What needs to be present is the attachment and a belonging to the place and space, to other people, and the right to be treated with dignity and respect within the community. The atmosphere in these settlements is typically buoyant, friendly, espousing community cohesion and trust. Slums provide examples of organic growth where the poor are agents of change (Kaye, 2020).

Prosperity is when society respects the dignity of each person and his or her right to act as a moral agent. Individuals living in poverty see themselves as active agents, not passive victims (Jacobs, 1961). What is important for development is freedom of choice and freedom to control one's own life, which will engender well-being and provide purpose and meaning. The poorest are solving things for themselves. The poorest are working together, coming up with their own solutions through collective action, dealing with the problems that occur in their daily lives. The media's representation of development typically hides the story of community solutions and resilience. Shock effect images and narratives are used to provoke feelings of guilt and pity in audiences in the Global North through humanitarian appeals and international news coverage that foster a sense of Northern superiority in need of Western intervention or sympathy (Donald, 2011). Living in an informal settlement, sitting with a "begging bowl that leaks" is a misguided representation of reality (Ayittey, 2005). Communities are working together to solve problems through polycentric systems (Ostrom, 2005; Carlisle and Gruby, 2019).

In this chapter, we investigate circumstances in the different slum types where governance institutions arise from the bottom up. Elinor Ostrom defines institutions as rules, norms and organisations that govern how people interact with each other. Polycentric processes are systems of governance with multiple decision centres where "(e)ach unit exercises considerable independence to make and enforce rules within a circumscribed domain of authority" (Ostrom, 2005, p. 283). A one-size-fits-all is NOT the solution, but a redundant variety of institutional devices provides diversity that allows for the coping of uncertainty. Polycentricity allows for resilience. Information attained in a situation where decisions for and by the institution have worked well can be transferred to another for others to try (Ostrom, 2005). Ostrom believes that polycentricity is a mechanism for creating resilient systems (Tarko, 2017).

> Multiplicity of arrangements also enables us to test the relative performance of different types of institutional practices and thus evolve new solutions to different kinds of problems.
>
> (Ostrom, 1976, p. 8)

There is:

> an order that is in constant flux, and which reacts to changing conditions. Different decision centres are constantly engaged in mutual adjustment, both in terms of competing with one another and in terms of cooperating to solve larger scale problems.
>
> (Tarko, 2017, p. 65)

In this chapter, we investigate how residents themselves are improving their own neighbourhoods through community action. Typically, slum community development is regarded as requiring state intervention, through a top-down approach, those living in the community too poor to be able to visualise the way forward without government intervention.

Our data do not agree.

To investigate how communities come together to solve local problems, a total of 1,004 households in Sanjay, Bhalswa and Ajit Vihar were asked if they participated in community projects. If they did, what were the projects, what activity were they involved with and with whom did they associate to fulfil the action. Interviews were also undertaken with community members specifically to provide greater detail around what occurs at the neighbourhood level when residents work together as well as with other stakeholders to improve their lives and neighbourhood.

This chapter is divided into two parts. First, we provide a summary of the community collective action activities in which households are involved. We highlight some of the activities through the voices of residents within the bastis. This provides a deeper understanding of the drivers and motivations around these community solutions. Second, using Ostrom's Institutional Analysis and Development (IAD) framework, we build a model to explore how communities, working with a range of partners, can undertake private and public outcomes to improve their neighbourhoods. Different actors come together, showing resilience, adapting to challenges through flexible behaviour, adjusting to external and internal demands. According to Ostrom:

> The IAD framework is intended to contain the most general set of variables that an institutional analyst may want to use to examine a diversity of institutional settings including human interactions within markets, private firms, families, community, organisations, legislatures, and government agencies.
>
> (2010b, p.646)

Summary of community activities

From the household survey, 51.5% of Ajit Vihar residents, 45.7% of Sanjay residents and 16.5% of Bhalswa residents indicate they work on community projects. It is interesting to note the significant difference between the likelihood of working on a community activity for Bhalswa residents compared to the other two communities.

Table 3.1 Activities in which the residents are involved within their communities

Neighbourhood community project activities	*Sanjay slum/JJ*	*Ajit Vihar UC*	*Bhalswa resettlement*	*Total Number of households*
Public water	139 (45%)	60 (16%)	46 (14%)	245 (19.6%)
Community saving groups/chit fund/micro finance	30 (10%)	83 (23%)	14 (4%)	127 (10.1%)
Street lighting	35 (11%)	56 (15%)	15 (4%)	106 (8.5%)
Applications (i.e., Voter ID cards, Aadhaar card; market/ stalls licences, birth and death certificates)	41 (13%)	33 (9%)	28 (9%)	102 (8%)
Public toilets	47 (15%)	34 (9%)	12 (4%)	93 (7.4%)
Private health care and schooling	18 (6%)	6 (2%)	7 (2%)	31 (2.5%)
Community areas (garbage collection/ communal space)	10 (3%)	13 (4%)	7 (2%)	30 (2.4%)
Construction	8 (3%)	6 (2%)	2 (1%)	16 (1.3%)

Note: Percentages have been rounded.

Even though in the Resettlement colony there is a lack of public good provision, the data show residents are less likely to come together than in the unrecognised and slum/JJ colonies to solve problems. Place attachment provides a feeling of community uniqueness, resilience and irreplaceability. With a sense of belonging, feelings of loyalty, trust and a life with value and dignity, there follows a desire for bottom-up approaches to alleviating poverty. It is an infectious atmosphere, with the poor focused on their family, neighbourhoods and the next generation.

Almost 1/5th of all households have been involved in projects around the provision of water. Other community action projects include the organising of chit funds/loans for household needs, the provision of street lighting, assistance for the completion and application for documents (including Voter ID cards, birth and death certificates) and the provision of working public toilets (Table 3.1).

Collective action voices from the slums

Using the voices of residents within the bastis, different community activities are discussed to provide a more in-depth look at how and why community solutions come about and the motivation behind them.

Community savings groups

Typically, when a self-help group (SHG) is formed, establishing its functioning norms as well as regular deposits into the group account are the initial steps followed by the participants (Wydick, 2016). SHGs are informal associations of individuals, typically women, coming together to pool their resources, support each other and address community problems and issues (Rathi, 2023). Data show that, owing to the increased access to savings and loans, women tend to increase per capita monthly family food expenditure, benefiting nutritional outcomes. SHG

membership can be associated with greater well-being outcomes (Kumar et al., 2018) through behavioural change. Women also tend to reinvest their funds in asset ownership to contribute and benefit from future income streams. The increase in social networks and mobility enhances the understanding of rights and entitlements, thus engendering women's empowerment (Brody et al, 2017; Diaz-Martin et al, 2020; Pandey et al, 2019; Raghunathan et al, 2023; Rathi, 2023; Kumar et al., 2018). Women are also able to become more independent through their control over income, decision-making around credit and active involvement within the group itself. This leads to a higher level of freedom and choice (Kumar et al., 2021; Ghosh et al., 2024; Sharma and Varma, 2008).

It's midday. We arrive outside the basti in our auto rickshaw. There is a hive of activity at the entrance to the colony. The water tap has been turned on as it is at this time every day. It will remain on for the next hour or so. Women and girls rush to fill plastic containers that are different sizes, colours and shapes. It is an important time of day. We are ignored. The focus is on saving as much water in the containers, irrespective of any other distraction. Water flows down the alleyways; water leaks because containers are constantly being swapped and juggled beneath the tap. Some have been able to connect hose pipes to the mains water line, the hoses snaking their way through the basti, causing obstacles that could easily cause you to trip and end up face down on the cobbles. The hose pipes fizz with the noise of water escaping down to those households who have paid extra to have the only water supply available delivered right to their door.

One of the green hoses provides us a route to meet Runa, who is actively involved in running one of the self-help savings groups that is active in this community. As we venture ever inwards through the narrow alleyways featuring blue, green and pink painted brick houses, we are joined by an ever-increasing number of followers. Some women are dressed in brightly coloured saris – yards of cloth expertly pleated, wrapped and tucked to effortlessly provide style and charisma. Others are in full salwar kameez in matching pants, tunic and scarf, draped over the shoulders. One of the group following us points to the up-and-coming doorway. "Runa", she says, turning and smiling at us. We are welcomed into the small room. It's rather dark and our eyes need to acclimatise after being in the bright sun. There stands Runa. Tall, long, dark hair pulled back from her face and tied with a bow. She wears a blue and white patterned tunic with a darker blue contrasting scarf and pants. She is barefoot with rings on her red painted toes. Bangles hang from her wrists, and she holds her mobile phone in her hand.

Runa Devi and her husband came to Delhi in 1992. She is 35 and her husband is 40 years old. The family decided to migrate to the city from Bihar owing to the lack of farming work in the rural area where they lived. Now residing in Sanjay colony, Runa's family is well known and respected in the community for their unwavering support and assistance to other families in the neighbourhood. Runa is part of a thrift and credit group in the basti. The savings from the group help her run her household. Runa has been a catalyst in bringing women together, encouraging them to join the community savings group. According to Runa:

> "Our savings group has become an important part of the community, allowing women and their families to improve their conditions and create a better place for all our children in the colony. By coming together, we can buy things that would otherwise be out of our reach. This helps us buy sometimes expensive items that are not possible, like better cloth to make clothes that will last."

In these savings groups, each woman contributes a modest amount every month:

> "During our monthly meetings, we all talk about who needs to borrow money from our fund and how we're going to pay it back. Doing this together helps us feel like we can stand on our own two feet. It also makes us feel good, like we're all in this together, helping and supporting each other."

The impact of these groups extends beyond individual families, contributing to the overall well-being of the community. The cooperative effort has led to tangible improvements, showcasing the power of collective action. Runa tells us that sometimes residents in the community need help to pay for medicines:

> "Most people use private local health facilities for medical treatments as if people from here (her community) go to government hospitals they are not seen quick enough."

Runa Devi proudly shares that "the community has greatly benefited from us coming together". She emphasises that through their combined efforts, women feel "more confident and have gained greater control over their futures. The savings group has helped us with our money, making us feel safer and stronger".

Applications

The poor actively seek certain interventions from 'experts' and activists as a response to the structural difficulties they experience with the judiciary, the Delhi Development Authority and other state bodies (Routray, 2022). Residents living in different slum types require specific documentation knowledge from different intermediaries living within their community. Those living in the communities are looking for help with the application process for different documents. In slum areas, typical documents required include the Aadhaar card, Voter ID, ration cards, birth, death and marriage certificates, as well as street vendor identity cards.

The Aadhaar card is issued by the Unique Identification Authority of India (UIDAI) and is considered proof of residence and not proof of citizenship. The UIDAI assigns a 12-digit unique identification number which is linked to the resident's basic demographic and biometric information such as a photograph, ten fingerprints and two iris scans, stored in a centralised database. The Voter ID card is issued by the Election Commission of India to all adults domiciled in India over the age of 18, with the purpose of casting votes and identification. It can also be used as proof of address and age. Application is on a paper Form-6 of the

Election Commission attached with proof of ID, Indian nationality, age and residence. This is through the Booth Level officer of the area of residence or online through the "Voters' Service Portal" (www.nvsp.in). Ration cards are issued by state governments and allow households to purchase subsidised or apply for free food grains and rice, depending upon the ration card type. There are several card types. The Antyodaya (AAY) is issued to the poorest of poor households (Below Poverty Line category) and provides 35 kilograms of food grains per household per month, with 20 kilograms of rice and 15 kilograms of wheat. Families can apply for the AAY that have an annual income up to Rs. 15,000 (£142.08 exchange rate £1 = Rs. 105.57) where all family members must be below the poverty line. People with physical or mental disabilities or 'destitute' widows can apply for the scheme. Applications can be made online or through The Chief Executives. Proof of income, address, identity and a certificate stating that a ration card has not been held before is required for the application process.

All of these documents are very important. When a Jhuggi or spontaneous slum is about to be demolished, only around one half of residents in demolished Jhuggis have the correct documents to file to be eligible for resettlement. Even if you have the right documents, if there is a mistake on one or if the photocopies aren't of good quality, then this could imply years of disputes (Bhan, 2016; Routray, 2022).

We have arranged to meet Poonam with other members of the neighbourhood at the community meeting space. This turns out to be an open area, with a cement-built block-style construction at one end. There are gates leading up to the structure and steps where one must leave one's shoes out of respect for the area. It is extremely hot. The canopy provides no respite from the searing temperature. We sit. Poonam begins her story.

Poonam's family has been living in Sanjay colony since 2006 and originates from Bihar. The husband works in an export company in Okhla, the areas surrounding the Okhla Industrial Area became a destination for the poor looking for employment opportunities.

The family is well networked in the community and participates in all community events. Poonam is active in cultural and religious gatherings and events.

> "We have managed to build a good life here, despite our modest means. We are involved within our community and make it a point to participate in all community events. My husband and I feel it is important for us to stay involved and support our neighbours."

She works in a Delhi government office. Her job allows her to have a good understanding of application procedures, government rules, and the steps needed during the application process of different document types. When we met with her, she told us that one of her roles in the neighbourhood is to help families complete form-filling for different applications. These can include Voter ID cards, ration cards, Aadhaar cards, market stall licences, birth and death certificates and widow's pensions. Poonam tells us that she has a good understanding and the skills required around application procedures and knowledge of the government rules:

> "One of the ways I contribute to my community is by assisting families with various official tasks. Whether it's filling out forms for like ration cards, Aadhaar cards, or applying for official licenses, I am always ready to help.
>
> I learned how to get applications done faster, with shortcuts and all. It took time, but now I know what to do and who to talk too in the offices. This makes it easier for me to help others in our community who don't know where to start or what to do.
>
> Many people in our neighborhood struggle with filling out forms and understanding the way to do it. It can be very confusing for them, as rules keep changing. I use what I learned to guide them step by step and helping them avoid mistakes that could delay their applications.
>
> When my neighbors see that their applications are processed quickly and without any problems, they feel relieved and thankful. It's a good feeling to know that I can make a difference in their lives and that I am trusted."

She thinks it's good that the residents in the neighbourhood support each other. It makes her and her family feel happy and secure for their children in the future:

> "In our community, I always join in the cultural and religious gatherings. These events help us keep our traditions and culture alive, even though we're far from our original home. I really enjoy organizing and taking part in these events. They bring people together and make our bonds stronger. These gatherings aren't just about ritual; they're about sharing joy and being there for each other when someone needs help."

We heard from other residents about applications for documents through intermediaries. One of the group members sitting alongside Poonam stated that:

> "There are lots to fill out. I don't have a computer and so I asked Mam for help. She knows how to do all these sorts of things and works with others to get it done. You had to give lots of information and documents – income certificates, identity proof, address and all –she did all this for me, as she was knowing all this."

We finish our meeting with Poonam and her friends in Sanjay colony and have a final meeting set in Ajit Vihar this evening. It's rather a long drive so we go back to the hotel and take a car from there.

Community environment

It's becoming dark. Looking out of the car window during the hour-long drive to Ajit Vihar, the roadside is littered with shops, brightly lit up in the dusk of evening. Attracting shoppers with displays of wares, steps lead up to overly stocked clothes shops, manikins displaying various outfits. Outside some men sit at sewing machines that look like they are from a bygone age with pedals and cracking

handles, making alterations for customers to ensure snug fits. Bangle stores glistening with bracelets of every colour, book shops stocked high with the latest publications and magazines, an auto repair shop with what looks like old engine parts, exhausts and oily rags. The hubbub of the city is in full flow. The journey is a pleasant one. We are going to meet with some Ajit Vihar residents, including Vikas, who works in an export factory and has been educated up to 12th standard. He has invited some friends to his home. As we enter, it is obvious that some celebratory cooking has been taking place. We are in for a treat. Plastic chairs are arranged in a circle around a small coffee table. Vikas's mother starts to bring in plates of food, piled so high that it seems almost impossible that she isn't dropping everything. Biriyani, aloo gobi, alu paratha, and some raita and lashings of Pepsi served in plastic cups. The atmosphere is convivial. The conversation begins.

Vikas's family moved to Delhi in 2005, originating in Sirimainpur, Uttar Pradesh. He tells us that his family is well established within the community. He points to those in the room.

"We are all friends here. What matters to us not only are our own families and businesses, we want to live somewhere that is safe for all" he says. "There are ways of getting things done. This we have learnt over time. If there is something we can't fix then we go to someone who knows what to do*"*.

During the conversation it becomes clear that cleanliness and safety are focused priorities. The cleaning and clearing of drains, garbage disposal, water quality, street lighting, and improved sanitation are at the top of the list of community projects. According to one person:

> "in the rainy season the roads get filled with water and the drains get clogged. We work together in our neighbourhood to do this. We take turns digging, cleaning, and making sure the water flows properly. It's hard work, but we know it's important for our health and our children's. When we work together, it brings us closer and makes our community stronger. We might not have much, but we have each other, and that makes a big difference.
>
> Drains, there are so many drains here, which should be cleaned by the MCD daily (local council], but they leave it very dirty. We don't let it get dirty in our area because we keep the drains clean ourselves. When we come to know the sweepers aren't present, we clean them. We keep our neighbourhood clean. We don't let anyone mess with it."

Concerning cleanliness related to garbage and rubbish collection another resident chips in:

> "Garbage skips are kept in our colony by paying money to our broker. He then arranges to get cleaning done by emptying them when they are full. The neighbourhood is much better, and we have fewer rats. You will find garbage strewn in other streets. Disease like dengue, malaria and typhoid happen because of dirt present in these areas. We alter behaviour in advance and plan accordingly to take precautions."

Piped and potable water is not a basic service supplied by the Delhi Jal Board to the neighbourhood as Ajit Vihar, as an unauthorised colony, is an area not zoned legitimately for housing. Vikas's mother has joined us. She says:

> "There were a lot of issues with the water supply. We had pipes installed here but the water was cut off. So we all had to go to another place with water buckets in our hands to get water. Some would give and some would refuse to help. We used to face so many problems with water, so many. We were ready to give up anything to get water at home, even if we had to give up our jewellery to bring water into the house. We used to think like that. But now there is a water supply in our street. All of us women got together and went and talked to the local politician. He supported us, he got the pipes laid directly."

Even though the pipes have been laid thanks to the local broker and his connection with local politicians and officials, water can still cause a problem:

> "In our colony, we all come together to fix the water because it can cause a lot of problems. The dirty water makes people sick, and the bad smell is everywhere. We can't just wait for someone else or the government to help us, so we gather our tools and work together to clean and repair any pipes. Everyone in the neighborhood helps out, even the kids, because we all want to live in a healthier place."

Vikas looks at his watch. It's dark. His 17-year-old daughter is out. She should be returning home any time soon. He's starting to look anxious. His mobile rings. The daughter is a few streets away. Soon, she enters the house with great gusto and throws herself down in an empty chair. She wears jeans and a Rolling Stones t-shirt. We ask her if she is not worried about being out late. She points to her phone.

> "Look - My Safetipin App, she says. It shows me the rating for each area. Where is it that women feel safe. Is it bad or good, I heard about it on Facebook. I don't go to where it tells me other women have felt unsafe. That's a good thing about this app. Street lights have been repaired in our neighbourhood. My friend says it's because of the App, so we need to keep on rating on it. Papa knows I am safe."

The conversations that we have had tonight highlight how, through polycentric systems – brokers, the community, neighbours, politicians, officials, Resident Welfare Association (RWA) – issues priorities by the community are being solved.

In the next section, we build a model using Ostrom's IAD framework as a springboard (Polski and Ostrom, 2017). We do this to explore why and how residents come together and work with a range of partners to develop collective action solutions. In turn, we consider whether the collective action process affects an individual's subjective well-being. This will provide a way to produce a rich understanding of the social situation (Polski and Ostrom, 2017, p. 16).

To construct our model, there are several steps needed to manipulate the data to provide appropriate and meaningful variables. First, we carry out factor analysis to construct themes around collective activity from the household survey data. Second, using two scales (Auerbach's social capital and the subjective well-being scale), we compare residents' responses in the three neighbourhood types. From this, we construct latent factors for the subjective well-being and social capital measures. These analyses are used to build a theoretical model to explore how social capital contributes to the residents' involvement in community projects and the effect this has on residents' subjective well-being.

Data preparation

We start by discussing an adaptation of the IAD framework to inform the construction of our own model. The framework sets out a theoretical model illustrating how a diverse polycentric system can be analysed. The Ostrom's constructed the framework to allow the exploration of human interactions *"*within markets, private firms, families, community organisations, legislatures and government agencies" (Ostrom and Ostrom, 2014, p.173). The IAD provides a structure to investigate, through empirical studies, the workings of polycentric systems. As a springboard, we use our interpretation of this theoretical model (Figure 3.1) to explore our own empirical data. We investigate how community social capital [Attributes of community] is connected to working with different partners [Action Situations] in order to contribute to the involvement in community projects [Interaction] and the effect this has on residents' subjective well-being [Outcome].

Each aspect of the model is now discussed in turn.

Attributes of the community [social capital]

According to Putnam (1995, p.67), social capital refers to "features of social organisation such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit". In our model, we are using social capital synonymously with the Attributes of Community.

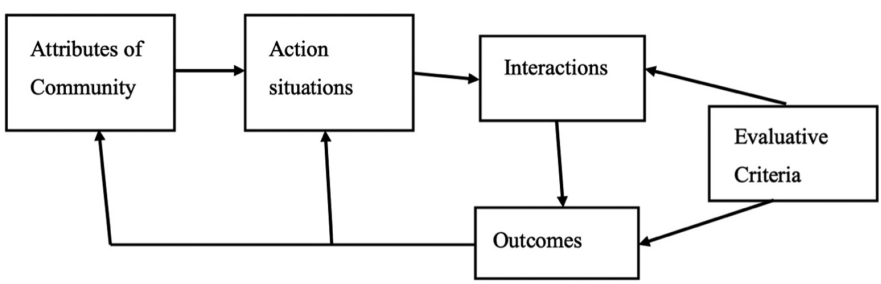

Figure 3.1 A Framework for Institutional Analysis and Development (IAD)

Source: Adapted from Ostrom (1975; 1986; 2005)

Using the seven-item scale devised by Auerbach (2020), we compare residents' responses in the three neighbourhood types. This is followed by the construction of a single latent factor through Structural Equation Modelling (SEM) using the seven item scale. Auerbach developed his scale using as a springboard the World Bank's Measuring Social Capital scale (World Bank, 2004) and Krishna's (2002) active social capital scale. We use this scale owing to Auerbach's extensive research work in India's slums. His area of research is similar to ours, looking at public goods and services in poor areas. He undertook two years of fieldwork in the north Indian cities of Bhopal and Jaipur to ascertain the extent of slum leaders' contributions to development and how this is related to brokers and politics.

The seven items that make-up Auerbach's social capital scale (SC1 to SC7) and their coding are provided in Table 3.2. The percentages for each community type show the number of households agreeing with each of the statements. Looking at SC1 and SC4 that consider helping neighbours and uniting to solve problems, the great majority of households in all three areas agree with these attributes/statements (SC1 – 89.3%; 70.9%; 77.3%) (SC4 – 95.5%; 78.8%; 87.1%).

There are two statements where there is a statistically significant difference for the answers provided by the households in the different bastis. Carrying out

Table 3.2 Auerbach's social capital scale

Variables	*Sanjay colony N = 311*	*Bhalswa N = 328*	*Ajit Vihar N = 365*
(SC1) If a family here is short of money, or has a member who is sick or dies, will people here in the settlement help that family in need? [No = 0; Yes = 1]	89.3%	70.9%	77.3%
(SC2) If you were short of money and needed Rs 1,000, would your neighbours in the settlement lend you the money? [No = 0; Yes = 1]	75.8%	62.1%	73.4%
(SC3) In your opinion, would your neighbours in the settlement give time or money to improve the development of the settlement? [No = 0; Yes = 1]	74.6%	50.3%	79.2%
(SC4) If there were a big problem in the settlement, like no water or electricity for several days, would people in this settlement unite to solve the problem? [No = 0; Yes = 1]	95.5%	78.8%	87.1%
(SC5) When people here are free, do they mostly socialise and spend time with their own social group or do they mix with other social groups? [own group = 0; other group = 1]	41.7%	42.0%	51.20%
(SC6) People in this settlement only really care about their own household and don't care about the welfare of the settlement as a whole. [false = 0; true = 1]	57.1%	51.4%	66.6%
(SC7) Generally speaking, how much do you (mainly) trust people in this settlement? [a little = 0; a lot = 1]	47.6%	29.1%	54.5%

Note: Cronbach Alpha is 0.8.

a Scheffe test illustrates that Bhalswa is significantly different from the two other settlement types regarding SC3 and SC7. With regards to improving the neighbourhood, the statement (SC3) "would your neighbours in the settlement give time or money to improve the development of the settlement?" shows a statistically significant difference for residents' responses in Bhalswa ($p<0.05$) compared to the other two bastis (74.6%; 50.3%; 79.2%). When comparing the different settlements statistically, we see a difference in the trust question (SC7) "generally speaking, how much do you (mainly) trust people in this settlement?" Only 29.1% of households in Bhalswa indicated that they were trusting of their neighbours in the settlement ($p<0.05$).

Using these data, we carry out confirmatory factor analysis in Stata to create a latent[1] factor for social capital (Attributes of the Community). This starts the process of constructing our theoretical model based on the IAD to consider polycentricity within the neighbourhoods to solve problems through collective action. We postulate that levels of social capital have an influence on community's collective action behaviours and use the Institutional Analysis and Development framework (V. Ostrom, 1975; E. Ostrom, 1986, 2005) created by the Ostroms to understand the causal relationships at work here.

Looking at Figure 3.2, the oval shape is used in confirmatory factor analysis models to indicate a latent variable. The observed variables are given by the rectangles. The smaller circles are the error terms made up of the unique error to that variable and the associated random error (Humble, 2020). Interpreting the model, a one standard deviation increase in the social capital latent factor is associated with a 0.6 standardised score increase in the observed variable SC1 (helping a family in need). This factor loading can be interpreted as a correlation between the latent factor and the item. Similarly, for the other observed variables, a one standard deviation increase in the social capital latent factor is associated with the standardised score increase in the observed variable (SC2, 0.66; SC3, 0.6; SC4, 0.57; SC5, 0.44; SC6, 0.6; SC7, 0.67). The factor loadings, which range from 0.44 to 0.67, illustrate the reliability of the model where the items relate well to the social capital latent variable. Loadings greater than or equal to 0.4 are said to be salient, relating meaningfully to a latent variable (Brown, 2006). The social capital latent variable (Attributes of the Community) will be used in our theoretical model.

Action situations [RWA/brokers/government officials/neighbours and family]

In all neighbourhoods, households indicated that they work with a combination of different partners to facilitate community action activities. First, there are family and neighbours who work on different activities that have both public and private benefits as per the definitions above. Communities look to different intermediaries who offer services to the community to meet their needs. Different terms are allocated to these intermediaries who typically reside within the neighbourhoods, including brokers, Pradhans (chiefs), special men, men who mingle and slum leaders. We will use the generic term broker here for each of these intermediaries. Brokers can be affiliated with a political party and may be male or female.

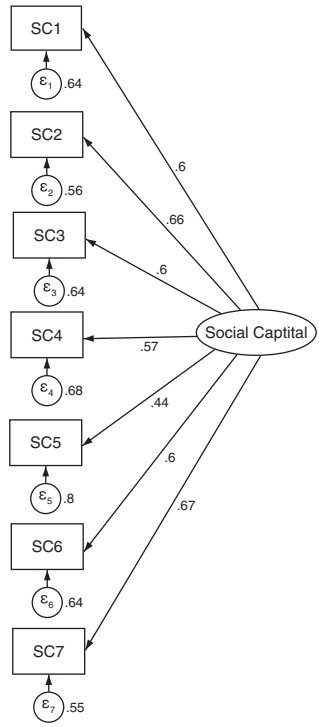

Figure 3.2 Confirmatory factor analysis model for Social Capital theme items

Because of their detailed knowledge of the voting dynamics in their locality, they serve as key bridges between politicians and residents. The intermediary is often undertaking the procurement of proofing and assisiting in the completion of documents (ration cards and Voter IDs). Brokers can assist in the operation of clearing clogged drains, removing garbage, and the installation of toilets. Negotiations with politicians may form part of this process. Once the basti becomes recognised, then residents are often incorporated into the voter list. Brokers can help to oversee entrepreneurial businesses, including gaining licences to operate hand carts for vendors and activities carried out by scrapyard dealers. They can also liaise with the police on behalf of residents. RWA (Resident Welfare Associations) are resident bodies representing the interests of the residents in a particular area. They are formed by residents coming together to address common problems and to manage community affairs. Membership of the RWA is open to all residents in the basti, which may come with a subscription charge. The RWA's role is to empower the community and promote community cohesion. The aims of the RWA include improving amenities and facilities such as roadways, streetlights, drains, cleanliness, electricity and water. They also handle community grievances, acting as a mediator to resolve disputes within the neighbourhood. With regards to government officials, these include local politicians – elected ward councillors (from the

MCD – Municipal Corporation of Delhi that governs most of Delhi – total number 250) and Members of the Legislative Assembly (MLA – Delhi state government – total number 70). Households were asked if and how they had worked with each of these different partners. In our adapted IAD model, we combine these partners using structural equation modelling to form one latent variable termed 'Partners' [Action Situations].

Interactions [collective action activities]

Exploratory factor analysis was undertaken on the activity data to explore and create themes. When principal components analysis data reduction is performed, it suggests that there could be a two-factor solution. The factor loadings can be seen in Table 3.3. The combination of items within the first factor suggests these are the activities that benefit an individual at the personal level, and we term this theme 'private'. The second factor contains items that could infer the provision of a service for the whole community, and we term this theme 'public'. These two themes can be seen to represent an individual's private benefit – loans/savings, applications/forms, and access to education and health. The second theme is related to public benefits – water, sanitation, street lighting, garbage collection and construction. The factor loadings for all items are greater than 0.4 and thus salient, relating meaningfully to the primary factor (Table 3.3) (Brown, 2006; Kline, 2016).

Outcomes [subjective well-being]

We now move on to the subjective well-being scale (SWB). Subjective well-being encompasses both cognitive judgements and affective reactions, offering a holistic view of how people perceive themselves. Diener defines SWB as how "a person feels and thinks his or her life is desirable regardless of how others see it" (Diener, 2009, p. 1; Humble et al., 2023). This definition underscores the importance of both thought and emotion in assessing well-being, making it a comprehensive measure of personal satisfaction.

To understand the connection between an individual's perceived SWB and social capital, we use four subjective well-being measures. These measures provide

Table 3.3 Factor analysis: Two themes for collective activity of residents

Item	*Theme 1: Private*	*Theme 2: Public*
Chit fund/micro finance/private savings groups	0.843	
Applications (i.e., Voter ID cards, ration card, Aadhaar card; Market/stalls licences, birth and death certificates)	0.787	
Education/ Health	0.432	
Public water		0.738
Public toilets/sewers/drains		0.690
Street lighting/ construction/rubbish collection		0.466

Note: Principal components analysis (PCA) with Varimax orthogonal rotation.

a nuanced view of how people feel about their lives in the context of their social environments. By focusing on subjective experiences, the research aims to reveal deeper insights into the personal and emotional aspects of well-being and how these are influenced by the sense of community and support in one's neighbourhood. This approach emphasises the importance of internal perceptions and their role in shaping overall life satisfaction. The four subjective measures of well-being are hedonic well-being (feeling of happiness), eudaemonic well-being (sense of purpose), evaluative well-being (life satisfaction) and freedom of choice (life control) (Diener, 1984; Verne, 2009; Bavetta et al., 2014; Pitlik and Rode, 2016).

The four subjective well-being questions are:

1. (Satisfaction) – Overall, how satisfied are you with life as a whole these days? [0 not at all satisfied to 10 completely satisfied].
2. (Freedom) – How much freedom of choice and control do you feel you have over the way your life turns out? [0 no freedom and control to 10 complete freedom and control].
3. (Happiness) – How happy did you feel yesterday? [0 not at all happy to 10 completely happy].
4. (Purpose) – Do you feel your life has an important purpose or meaning? [0 not at all worthwhile to 10 completely worthwhile].

It can be seen from the boxplots in Figure 3.3 that there are clear differences in the settlement's subjective well-being responses. We see in all cases that the residents in Bhalswa provide ratings that have the lowest mean value, followed by those living in Sanjay colony, with the highest being households from Ajit Vihar. Visually, these can be seen to be significantly different from one another, illustrating clear differences in the three areas around how the residents view their own well-being.

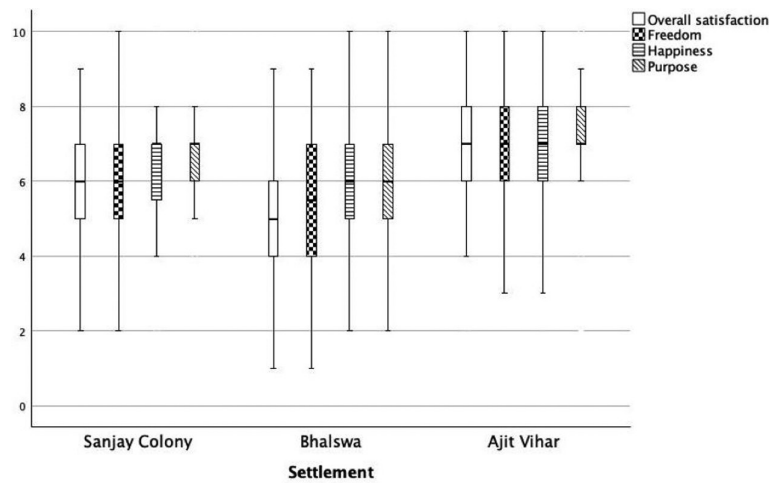

Figure 3.3 Subjective well-being boxplots for the three settlements

Table 3.4 Significant differences in the three settlements well-being

	Subset for alpha = 0.05		
	1	*2*	*3*
Satisfaction			
Bhalswa	5.14 (1.778)		
Sanjay Colony		5.95 (1.338)	
Ajit Vihar			6.90 (1.336)
Freedom			
Bhalswa	5.50 (1.677)		
Sanjay Colony		6.34 (1.500)	
Ajit Vihar			7.03 (1.363)
Happiness			
Bhalswa	5.80 (1.589)		
Sanjay Colony		6.25 (1.572)	
Ajit Vihar			6.91(1.563)
Purpose			
Bhalswa	6.05 (1.666)		
Sanjay Colony		6.64 (1.675)	
Ajit Vihar			7.28 (1.513)

Note: Mean for groups in homogeneous subsets is illustrated in the table with standard deviations in parenthesis.

Analysing these data using the one-way analysis of variance (ANOVA) demonstrates that the differences between the subjective well-being measures in all three settlement types is statistically significantly different at the 5% level (Blanca et al., 2017). This is clearly illustrated in Table 3.4 by a post hoc Scheffe Test that demonstrates the significant subsets of mean scores for the individual settlements ($p<0.05$). This shows that the scores for each of the well-being measures are always significantly higher in Ajit Vihar and Sanjay colony than those in Bhalswa.

As with the social capital scale, we can use these data around subjective well-being to create a latent factor through confirmatory factor analysis. Interpreting the model, a one standard deviation increase in the subjective well-being latent factor is associated with a 0.8 standardised score increase in the observed variable Satisfaction "Overall, how satisfied are you with life as a whole these days?". This factor loading can be interpreted as a correlation between the latent factor and the item. Similarly, for the other observed variables, a one standard deviation increase in the subjective well-being latent factor is associated with the standardised score increase in the observed variable (Freedom, 0.68; Happiness, 0.75; Purpose, 0.69). It can be seen from Figure 3.4 that factor loadings ranging from 0.68 to 0.80 show that they relate meaningfully to the latent factor Subjective Well-Being (Outcomes).

In the next section, we use the social capital (attributes of the community) and subjective well-being (outcomes) latent factors, along with the collective activities (public and private interactions) undertaken by the communities and the partners (action situations) to create our adapted IAD model. This will explore how community residents come together through polycentric systems to develop and

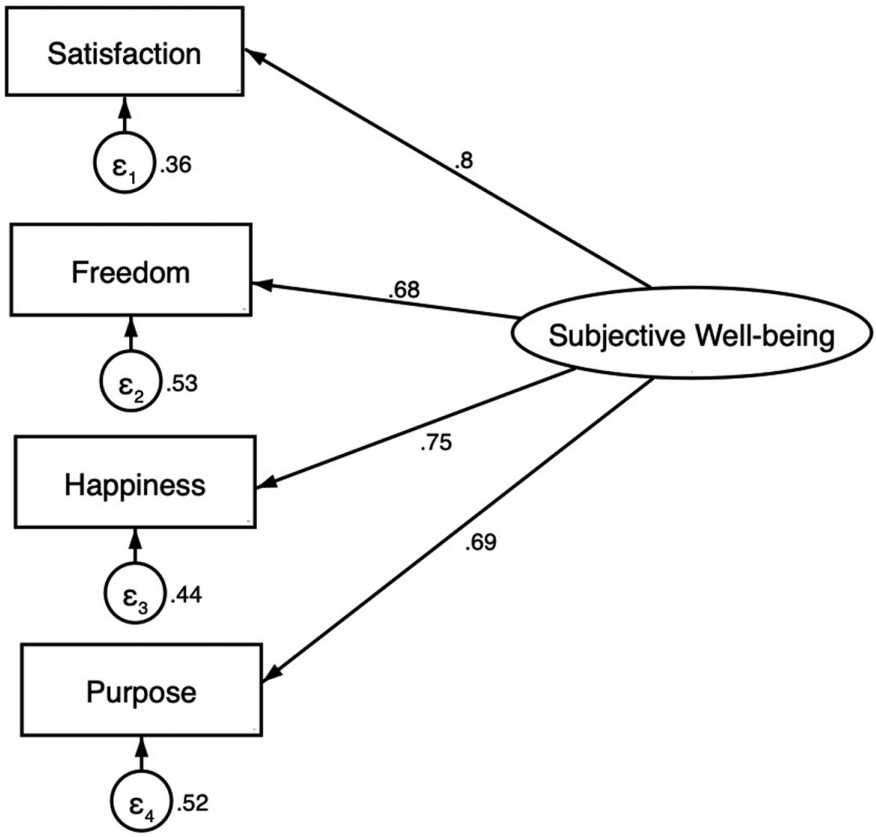

Figure 3.4 Confirmatory factor analysis for subjective well-being items

undertake collective action solutions to overcome issues and problems in their own community.

A model of collective action through polycentricity in Delhi neighbourhoods

We are now able to build our model from the data that have been manipulated to provide workable factors. Within our model, we have ten variables

- Two latent factors – social capital and subjective well-being that were constructed through the process set out above.
- Two themes constructed from the household data around community activities: theme 1 (private benefit) and theme 2 (public benefits).
- Five variables that represent the different partners within the polycentric system – Government Officials, Brokers/Community Leaders, RWA (Resident Welfare Associations), Family and Neighbours.

- The partner's latent variable in the model is derived from the five partner variables.

Structural equation modelling (SEM) was undertaken to assess the relationships between the ten variables and statistically test the fit of our theoretical model. Preliminary screening of the data ruled out multicollinearity (redundancy between measurements). Modification indices recommended the inclusion of some disturbance covariance terms between item variables, which resulted in a robust and good fit with chi-square and fit indices ($\chi^2(4) = 9.468$; RMSEA = 0.033; S-RMR = 0.013; CFI = 0.998; TLI = 0.983). This confirmed our confidence in the structure of the model (please see the Appendix to this chapter for further evidence of our model's causal structure).

If we work from left to right in the model's figure (Figure 3.5), our model shows that the greater the levels of cooperation and trust within a community (Social Capital/Attributes of the Community), the more likely residents will work with a range of partners (Partners/Action Situations), resulting in interactions that can be more individually (Private) or community (public) facing or focused. These interactions affect the subjective well-being of the individual (Outcomes).

The paths in our model (Figure 3.5) illustrate that increased community social capital causes a greater likelihood that residents will work on a range of projects. These projects are supported through collective action by residents working with a range of partners. There is a statistically significant positive direct path from 'social capital' to 'subjective well-being' (SWB) (β=0.12, $p<0.05$). The more the feelings of trust, unity and cohesion within the community, the more this has a positive effect on subjective well-being within the family – feelings of freedom, happiness and satisfaction with life that has purpose and meaning. There is another significant path from 'social capital' to 'partners' (β=0.20, $p<0.01$), demonstrating that residents who have higher levels of social capital are more likely to engage with a range of partners. This range of partnerships demonstrates collective action cooperation through a range of stakeholders, working in a deliberative and collaborative

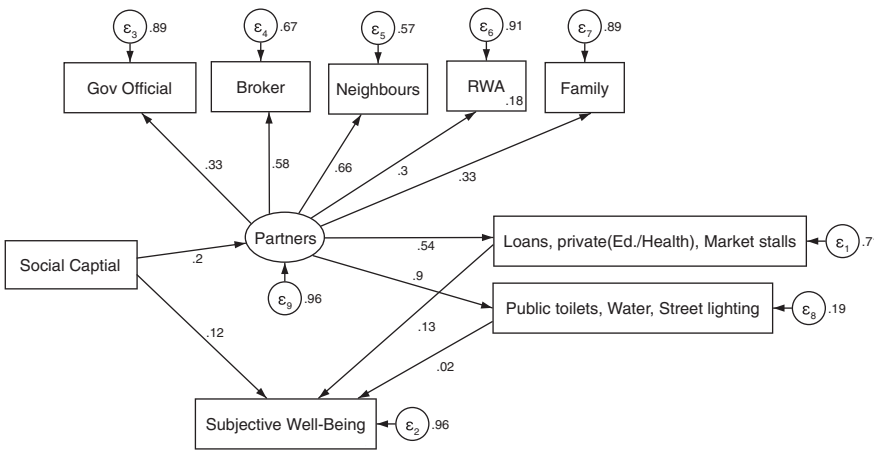

Figure 3.5 A model of collective action through polycentricity in Delhi neighbourhoods

manner to maintain, develop and create within a community (Aligica, 2019; Tarko, 2017; Ostrom, 2009a, 2010a, 2005). Higher levels of social capital have been associated with greater levels of beneficial community collective action (Bowles and Gintis, 2002; Varshney, 2002; Krishna, 2002; Putnam et al., 1993; Rodriguez-Pose and Berlepsch, 2014). Conversely, communities with lower levels of social capital are less likely to organise such activities (Fukuyama, 1996; Putnam, 1995; Krishna, 2002; Auerbach, 2017, 2020; Auerbach and Thachil, 2018).

The partner latent variable loadings illustrate that residents are working dominantly with their neighbours ($\beta=0.66$, $p<0.001$) and brokers ($\beta=0.58$, $p<0.001$). We see that residents also work to a lesser degree with family, government officials and the RWA, all being significant, having β-values around 0.3.

Considering the collective action activities (Interactions), we have two types. First, activities that benefit individuals at a personal level (private) and second, those that provide services for the community as a whole (public). The path from 'partners' to both forms of collective action activities are positive and statistically significant. This implies that partners work positively to facilitate interactions that benefit both at the individual ($\beta=0.54$, $p<0.001$) and community level ($\beta=0.9$, $p<0.001$). Only the path from the activities that benefit individuals at a personal level has a positive and significant effect on subjective well-being ($\beta=0.13$, $p<0.05$).

Conclusion and thoughts

Using voices and statistical data gathered in our three Delhi neighbourhoods provide evidence to support how communities come together to overcome, through polycentric systems, local problems.

> Polycentricity, as understood in the Bloomington School, manifests the endless striving by fallible but capable individuals as they work together in local groups, formal organizations, and as a global community to innovate, implement, and improve the institutional arrangements they can use to alleviate their common problems and better realize their shared aspirations.
>
> (Cole and McGinnis, 2025, p. 19)

From garbage collection to community loan self-help groups, from drain clearances to applying for documentation, our data provide stories of bottom-up approaches where individuals act as agents of change. These community solutions demonstrate evidence of resilience and collective action. We adapt Ostrom's IAD framework to develop our own model that provides additional understanding of the association between collective action activities and how residents interact with partners. Residents' own social capital is shown to play an important role in their participation with partners as are the overcoming of community and private problems to their own subjective well-being.

The data show there to be a statistically significant difference for two items in the social capital scale for residents living in Bhalswa compared to Sanjay and Ajit Vihar. In Bhalswa, only 29.1% of households in our survey indicated that

they were trusting of their neighbours, compared to 47.6% and 54.5% in Sanjay and Ajit Vihar, respectively. Half of those in Bhalswa said they believed that their neighbours would give time and money to improve the community. For Sanjay and Ajit Vihar, the figures were 74.6% and 79.2%. Concerning subjective well-being, we have also seen how those living in Bhalswa have statistically significantly lower levels concerning overall satisfaction, enjoying freedom and choice, and living a happy life that has purpose and meaning. As per our model, lower social capital leads to fewer interactions with a range of polycentric partners and thus fewer public and private interactions, resulting in lower subjective well-being. These residents in Bhalswa have been resettled, evicted from their original slum. Different communities coming together owing to multiple demolitions. Arriving to a parcel of land to rebuild social and political networks, friendships, relationships and livelihoods, our data suggest, has a detrimental effect on the lives of those involuntary resettled to uninhabitable contexts, having to restart their lives.

Appendix

In the chapter, we have established that our SEM gives a good fit to the data. Here we investigate further to assess if the data were produced by the model's causal structure and to confirm our confidence in the structure of the model. The technique used is called a d-separation test, with the 'd' standing for 'directed'. The test gives the necessary and sufficient conditions for pairs of vertices to be probabilistically independent. The d-separation test allows us to predict a set of conditional probabilistic independencies that must be true if the causal model is true (Verma and Pearl, 1988; Pearl, 1988; Geiger et al., 1990; Shipley, 2016). Firstly, from the variables, we list each unique pair on non-adjacent vertices that do not have a direct path connecting them. The only four such pairs of non-adjacent vertices are as follows:

[Social Capital (SC), Private Benefits (PrB)].
[Partners (P), Subjective well-being (SWB)].
[Social Capital (SC), Private Benefits (PrB)].
[Public Benefits (PuB), Private Benefits (PrB)].

For our first pair [Social Capital (SC), Private Benefits (PrB)], we can write a conditional independence statement as $SC \coprod PrB \mid P$. This means that the vertex SC forms a disjoint union, that is, there are no elements in common with vertex PrB, given vertex P. In other words, to traverse the path from 'social capital' to 'private benefits', you need to pass through the variable 'partners' (Figure 3.5). We can write all four unique pairs of non-adjacent vertices as conditional independence statements as follows $SC \coprod PrB \mid P$, $P \coprod SWB \mid SC\ PrB\ PuB$, $SC \coprod PrB \mid P$ and $PuB \coprod PrB \mid P$

We investigate the hypothesis of independence using Pearson partial correlation, testing to see if any of the coefficients are zero. The test results for the probabilities

Table 3.5 d-separation statements, Pearson partial correlation and probabilities

	Pearson partial correlation	
d-separation statement	*Estimate*	*Probability assuming independence*
$SC \coprod PrB \mid P$	0.0565	0.0113
$P \coprod SWB \mid SC\ PrB\ PuB$	−0.0028	0.7142
$SC \coprod PrB \mid P$	−0.0395	0.0666
$PuB \coprod PrB \mid P$	−0.3467	0.001

assuming independence are given in Table 3.5. We obtain the composite probability for all four of these by using the Fisher's C test:

$$C=-2[\mathrm{Ln}(p_1) + \mathrm{Ln}(p_2) + \mathrm{Ln}(p_3) + \mathrm{Ln}(p_4)] = 12.539, \text{ gives } P\left[\chi^2(8) = 12.539\right] > 0.05$$

This statistical result implies that we have no reason to reject our model's assumptions and that our data were produced by this causal structure.

Note

1 A latent variable is one that cannot be directly observed but is estimated based on a series of observed variables (i.e., the social capital scale responses).

Authors' note

Figures 3.2 and 3.3 from StataCorp. 2023. Stata Statistical Software: Release 18. College Station, TX: StataCorp LLC.

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4 Leading the slums

Governance, politics and brokers

By "polycentric" I mean a system where citizens are able to organise not just one but multiple governing authorities, as well as private arrangements, at different scales .... Polycentric systems are themselves complex adaptive systems without one dominating central authority (Ostrom, 2003, pp. 142–159).

Introduction

Elinor Ostrom's quote above refers to polycentricity. A system in which multiple, overlapping decision-making centres operate independently but also interact and cooperate. That is how groups of people at different levels are able to self-organise, leading to better long-term outcomes for the community. The different levels considered in this chapter are those of the community and their choice of broker, known as the community leader. We investigate the perceived characteristics of a successful community leader/broker in each of our settlements. We seek to explore and then dispel the myth that residents are helpless and illustrate that they are actively trying to improve their neighbourhood with the support of their brokers, who are passionate to help and part of a polycentric system.

The labyrinths of very narrow lanes in Sanjay colony provide paths between brightly painted bricks of three storey buildings, each exuding its own identity not only in shape and texture but housing a multitude of endeavours. Sitting on the left, we pass a woman in a red saree washing her children's clothes in a plastic bucket,

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some already hanging out to dry on the corrugated roof of her house. It would be easy to fall over the large blue plastic water containers that have been positioned in the compressed alleyway at regular intervals by the homeowners once their water has been collected for the day from the tanker. The brickwork behind her is incomplete, painted a red colour, bricks seemingly lacking cement to hold them together. No architects, no planners and no developers have walked this path. Above her head is a cobweb of electrical wires, some tied together with cloth, others seemingly providing energy for TV satellite dishes attached to the sides of some of the buildings in the alleyway. Walking deeper through the densely packed corridors, the neighbourhood seems ever more chaotic. Randomly placed cement steps and ladders, with pushbikes and motorbikes leant against them, lead to the floors above. A green ladder rests outside a turquoise cement wall. The house has contrasting dark blue wooden shutters at the window and a small doorway leading into a 10-foot square room. Two beds covered in white cloth are placed on opposite sides with just enough room to walk between them. Once inside, we meet the resident. Mahesh, aged around 60, stands tall and slender in a white t-shirt and green striped lungi. His hair is silver-grey, eyes dark and kind. His commanding facial features make you believe that this is the man you can trust here. He exudes an air of confidence gained from years of living and working in the neighbourhood. He is what some call a Pradhan and others their broker and slum leader. Proud, knowledgeable, in control and an intermediary for his community.

We sit opposite him on one of the two beds. He sends out for a bottle of Pepsi, which is brought back almost instantaneously in a plastic carrier bag. Drinks are poured into glasses, and he begins his story.

Mahesh has lived here since the late 1970s. His was one of the first houses to be built in the colony. When the neighbourhood was spontaneously growing, he acted as a 'strongman', being literate and able to negotiate with local officials, police and those with connections in state bureaucracy. He started attending key events to meet and form relationships with those who could help solve local problems. The basti had no public services or infrastructure. Houses were being built on publicly owned land not designated for housing in the Delhi Plan – no electricity, no paved roads, no drainage, no water or sanitation. Mahesh points above our heads where a signboard hangs. Proudly, he announces that he is a senior party worker for the ward councillor, the signboard displaying the logo and name of the party. Not only does he have connections with the councillor but also with the members of the Legislative Assembly and through them the members of Parliament. He is a key bridge between politicians and residents, working to ensure that the community's voice is heard. He tells us how he arranges for water tankers to come to the colony every day, and as a senior party worker, has had his councillor's name displayed on the side of the water tankers. This allows residents to recognise him and possibly vote for him in the future. At this point, a woman tries to enter the room but is ushered away. Mahesh tells us that he is helping her to obtain different documents to gain her ration card. This he does frequently as he knows the process and how to complete the documents needed in a timely and efficient manner. He stands up as he wants to show us the community from his rooftop. We climb the

cement stairway so we can look out at the rich tapestry of the colony, which now sprawls over an area of just under 2 km^2. It is home to around 30,000 people with a population density three times that of New York. Mahesh points to the garbage skips, the water tankers, the entrepreneurial street vendors selling from their hand carts, people going about their daily lives, 'this' he says "shows our neighbourhood flourishing, coming together to solve problems, creating better lives for each other through community solutions". He pauses, 'this' he says "fills my heart with pride. I was here at the start. I have been a part of this success, and I will continue to be so as long as I live".

The seminal work in the area of slum governance was undertaken in Latin American cities (Ray, 1969, Caracas, Venezuela; Cornelius, 1975, Mexico City, Mexico; Perlman, 1976, Rio de Janeiro, Brazil; Stokes, 1995, Lima, Peru). Ray (1969) considers the 'barrios' (urban squatter settlements/neighbourhoods) of Venezuela and their importance to the political system. He sets out how and why the 'invasion' occurred to the cities by those living in rural areas. The first wave of migrants occurred in 1945 after the coup to dismiss General Isaías Medina. Those from rural areas began to enter Caracas or oil towns in the Oriente and around Lake Maracaibo. The building of 'ranchos' (shacks) on public or private land began the formation of the illegal 'barrios'. The second wave of migration occurred between 1950 and 1957, when Venezuela enjoyed an economic boom under Pérez Jiménez's policies and the expansion of the production of oil. The next wave came in 1958, again associated with another political change when Pérez Jiménez was overthrown. The barrios became very powerful voting areas, which Ray perceives as 'slums of hope' and neighbourhoods that house aspirational residents. The barrios divided themselves into neighbourhoods with definable boundaries and community names. Community improvements, Ray states, were undertaken through cooperative action where there was the motivation to do so. The communities worked together to obtain urban utility and social services from the government. Over time, the barrios' buildings and provision of public services improved visibly. However, if the residents were dissatisfied, then this would be expressed during elections. At the time, he predicted the emergence of leaders within the barrios from a more educated and aggressive youth. Their commitment and vision could turn to authoritarian models outside the political system (including Castroism), attracted by promises to prioritise the welfare needs of the poor. Cornelius (1975) considers the political significance of those living in slums in Mexico City in the 1970s. Colonias proletarias (slum communities/colonies) residents have different political attitudes and behaviours. These depend upon how the colony was originally established, and partly due to the experience of the migrant concerning property rights and tenure. The longer a family resides in a colony, the more supportive of the political system, which they believe assists in vertical class mobility. Cornelius spends a chapter looking at 'community leadership' and how 'caciquismo' (political power wielded by local leaders and translated as 'boss politics') is flourishing in the neighbourhoods of Mexico City. He describes several types of politically active migrants in the neighbourhoods, including voting specialists, demand-makers, complete activists and community problem-solving. Perlman

(1976) sets out to dismiss the myths that those living in slums are apathetic, incompetent, disorganised and dangerous as per marginality theory – what she terms the myths of marginality. She does this through fieldwork in three favelas of Rio de Janeiro between 1968–1969. The favelados, those living in the favelas she shows, are none of the above. They are hard working, save money, value education, pursue upward mobility, work together as communities to defend their rights and eschew radical politics. Politically, the communities work with the established political system. Perlman interviewed residents in three favelas as well as 50 local leaders in each, who she chose for their position as a head of a community organisation or owing to their reputation. Stokes (1995) carried out research that included observations, a 900-resident survey and in-depth interviews with community leaders, considering the politics of the urban poor in Lima, Peru, from the mid-1980s to the early 1990s. The slum area under examination is the Independencia. She finds that the community leaders are of two different dispositions. There are those who adopt a confrontational political style, espousing ideas around class struggle, compared to those leaders who promote a traditional, respectful, clientelist vision of political action. The role of intermediaries, sometimes called brokers, because they have the ability to broker goods and services, has also been highlighted in more recent studies in Argentina and India. These studies highlight the importance of political affiliations, revealing how political connections help resolve residents' issues and aid in community slum development (Auerbach, 2017; Auerbach and Thachil, 2018, 2023; Paniagua, 2022). Auerbach and Thachil undertook their study in two Indian cities (Jaipur and Bhopal) through a conjoint survey experiment with 2,199 residents living in 110 slums and a survey of 629 slum leaders. Their aim was to understand how residents choose their slum leader and the characteristics successful brokers possess. The findings initially show that a preferred broker is one with a good education (above grade 8) who is of the same caste and religion as the resident, from the same state, has the same political affiliation with good networks. Data were also collected around the choice of neighbour to provide a benchmark of social preferences. This provides information to ensure that the preferred traits and qualities of the slum leader are specific to them and not the general social preferences of the resident. Triangulation from the conjoint survey experiment and the survey with the brokers shows that the political importance of coethnicity and religion is weakened because residents express a far stronger preference for neighbours to share those attributes. This implies that rather than a political inclination, there is a wider social preference within the neighbourhood for those of the same ethnicity and religion. Education is the strongest preference expressed by residents for their broker's attribute. Paniagua (2022) considers the provision of basic public goods and services within communities in urban slums in the city of Buenos Aires, Argentina. Using two sources of quantitative data, she compares neighbourhoods where elections to choose slum level representatives had already taken place to those where they had not. She also carried out in-depth interviews with slum residents, brokers and community organisation leaders. The findings show that in neighbourhoods with higher social capital and a high density of grassroots organisations, introducing formal electoral methods to choose a broker, rather than relying on informal selection procedures, improves the level of broker responsiveness.

Formal slum leader elections can also see new leaders entering the competition. However, public good provision will only transpire when civil society is active within the community.

The popular view of slum communities is that they are in hopelessness. However, as Auerbach and Thachil (2023) point out:

> they are not helpless, nor are they tricked into trading votes for trinkets. Instead, they are engaged in everyday forms of political participation... urban slum residents actively select their community leaders (brokers), following those they see best as positioned to improve local conditions (p.10).

There are two parts to the research. First, to fully assess the efficacy and distributive aspects, we listen to the voices of community members carrying out interviews to allow for an ethnographically informed picture of who leads the slums. Second, through a conjoint experiment using the theoretical framework set out in Auerbach and Thachil (2018; 2023) and Stokes et al. (2013), we explore residents' preferences around selecting brokers to assist them in the procurement of goods and services. So, why a conjoint experiment and how does it work?

Why a conjoint experiment and how does it work?

Conjoint analysis has been shown to be superior to other statistical techniques as the respondent is making a choice without having to be concerned about disclosing personal preferences. This has the benefit of confidentiality, thus avoiding bias. The research focus is set out around the characteristics of a hypothetical person in a story. Using this technique, respondents feel more comfortable in responding openly (Mutz, 2011; Orme, 2010).

Multiple steps are needed to set up the experiment. These steps are discussed in the next part of the chapter. However, before we explain the procedure more fully, it would be advantageous to describe how our conjoint experiment worked during data collection.

The experiment is undertaken on a one-to-one basis. The researcher sits with the respondent and shows them two hypothetical profiles of brokers that could exist in their neighbourhood. In our experiment, the broker profiles were shown visually, thus providing a cognitive placeholder to help the respondent remember the information about each candidate (Mutz, 2011; Auspurg and Hinz, 2015). These profiles, as will be explained in due course, were made up of five attributes with multiple options. Imagery and icons for each attribute are printed on a card-storyboard, each card being unique with randomly assigned attributes to reveal multiple broker profiles. A complete set of cards was carried by each researcher. In our experiment, we had 25 cards in total, representing 25 different broker profiles. The researcher, through Qualtrics on their mobile phone, generated two random profiles, which also had been given a number. These numbers were on the back of each card-storyboard and represented a different broker profile/vignette, so the researcher knew which cards to present. Thus, the respondents were shown, each

Figure 4.1 Card-storyboards

time during the process, two randomly selected profiles. They were asked which broker they were most likely to choose from the two profiles and then to rank each of them on a scale from 1 – would never be helpful – through to 7 – would always be helpful – within their community. This ranking is used to confirm the reliability and validity of the conjoint experiment research design. The researcher repeated this process eight times with each respondent. Figure 4.1 shows examples of the card-storyboards as described above.

The researcher entered the data into Qualtrics on their mobile phones in real time. The display on the phone showed the generated profiles and options to select as per the respondent's choices and rankings. The screenshot in Figure 4.2 is an example of the image on the researchers' phone.

Once data collection had concluded, these data were manipulated into a form that allows analysis. The statistical analysis allows us to understand the fine-grain choice structure of the individual characteristics by estimating the average marginal component effect. Through analysis, the relative statistical importance of each characteristic can be assessed by using the marginal effect of the attribute averaged over the joint distribution of the remaining attributes. This analysis will show the likelihood of how individual characteristics vary in importance in different informal settlements that have different levels of institutions in place. We provide a greater understanding of the mechanisms at work in these broker and client choice relationships. We explore the emergence of brokers in different community types in Delhi, India, and how the broker builds a following from local residents. We seek to investigate the origins of hierarchy in clientelist spaces and study the processes through which informal leaders emerge within our different slum types. Now, let us look at each of the parts of the research in turn. First, we set out some of the discussions carried out with community members and brokers, allowing for

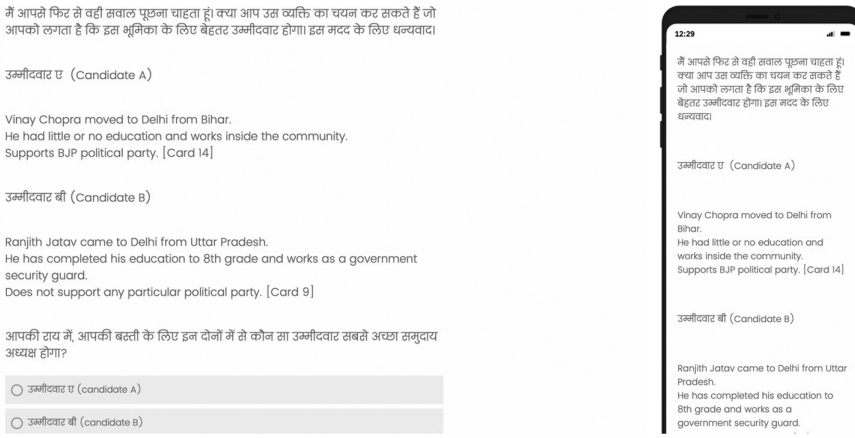

Figure 4.2 Screenshot illustrating Qualtrics data collection software

voices from the grassroots to inform our research. Second, we describe how we set up the conjoint experiment. Third, these quantitative findings are presented to allow us to investigate the overarching themes of governance, politics and brokers in different slum types in Delhi.

Voices from brokers and residents

Capability

When talking with the brokers, they expressed their desire to support their communities to gain popularity and a larger following. This support, they suggested, helps them climb the party ranks and enhances their value to their political party. As these neighbourhoods aren't electoral constituencies, the goal for brokers and political parties isn't to secure a majority but to enable as many resident votes as possible. Political parties in India are constantly seeking brokers who can deliver a significant voter base. Ambitious brokers aim to work in multiple neighbourhoods to maximise the number of voters they can influence for politicians. These brokers are often entrepreneurial, aspiring for political careers and promotions within the party by its leaders. Our data from the household survey shows that in each of our neighbourhoods, around 80% of residents say they voted in the last round of Delhi elections, both at the municipal and state levels. To do so, these residents must have a Delhi registered Voter ID card.

When talking with a broker in Sanjay colony on the issue of community leadership and party affiliation, his response was:

> "Sanjay colony is set to become the best colony under our AAP leadership. Joining politics with AAP and working as a community leader has always been my dream because I believe in the potential for real change in our community. The main aim I have is to address the issues in Sanjay – this is

> getting cleaner, better drainage system and sorting out our garbage problems. For the past five years, the facilities we've had haven't been effective, and the dirty drains and garbage everywhere continue to cause significant problems for the residents here".

Other community members relayed the same message to us around cleanliness in the community:

> "I felt compelled to participate actively in the clean-up efforts. Our people deserve better living conditions, and I want to be a part of making our colony a better place. By being involved, I hope to lead by example and show that we can make a difference if we work together."

Concerning the broker and his involvement:

> "Everybody in the community here in Sanjay, comes together to work on getting sewers installed, all thanks to our community leader. Pramood (community leader/ broker) organized meetings and got everyone to help. It wasn't easy, but with some organisation and a lot of talking, everyone agreed to save up some money. Each family put in what they could.
>
> We finally had enough money to get the sewers installed. This made a huge difference to our lives, making the colony cleaner and better to live in. It showed us how much can be done when we work together. Pramood had meetings and brought everyone together, giving confidence that we could solve big problems."

Leadership roles and the association with different political parties were a recurring theme. One broker indicated that:

> "I want to encourage more people in our colony to step up and take on leadership roles. Our party provides excellent facilities and opportunities for those who want to get involved, and it's important that everyone participates. This ensures that leadership is bringing diverse perspectives and solutions to our community's challenges."

It's crucial for brokers to assist communities as the market is highly competitive. From the interviews, it was evident that residents only support brokers who can improve their living conditions as well as those of the community. If residents are dissatisfied or the broker fails to address their issues, other brokers will step in. We heard from residents about their frustration when slum leaders, despite their efforts, could not resolve their problems:

> "The AAP broker doesn't help with anything. Drinking water quality is poor, and it's been like this for ages. People keep complaining and asking for help, but they just don't seem to care. It's clear that they are not doing their job. This has made everyone, just wanting someone who will finally take action and help fix things. We are talking to our BJP broker, Surender, to see if he can help."

According to the residents, these issues lead to a change in their community leader, revealing the power of the market. A number of conversations revealed the same theme:

> "Sanjeev really tried to fix the garbage problem in the colony, but it just didn't work out. He set up meetings with everyone to talk about the issue and came up with ideas. Sanjeev even took the time to talk to the local waste management to try and get a system going. But things didn't go as planned – some people didn't cooperate and weren't much help either. We felt pretty down after having lots of meetings and not making much of a difference, so we have started talking to another broker who says they can help."

Partisanship

The degree of connectedness provided by a broker's network significantly enhances the opportunities available to residents by allowing them to engage with a range of partners. Brokers typically have access to government agencies, private service providers and local businesses. This interconnected polycentric network enables collaboration and resource sharing. With the broker's input, residents can effectively address their community challenges and find solutions to their problems. The broker's networks do not only empower residents to resolve immediate issues but also strengthen the overall resilience and cohesion of the community. As one resident informed us:

> "If you're an ordinary person, it's hard to contact someone high up like a Minister or local councillor. But we do take our community issues to our broker as his government and business networks can usually help sort out problems."

Brokers who have affiliations with local political parties, whether aligned with the incumbent government or the opposition, are often better positioned to address the needs and requests of local residents. These connections can provide brokers with easier access to resources, decision-makers and information that are critical for resolving community issues. They can navigate bureaucratic processes more effectively and advocate for solutions that align with residents' concerns. Brokers' party affiliations also enhance the broker's credibility and influence within the community and also with local politicians, making them a valuable intermediary in addressing local challenges. The broker can be seen to help communities in situations where other possible routes have not yielded solutions, such as in this example from Ajit Vihar:

> "In Ajit Vihar, we are needing some light for some streets to making it safer at night for us. Without proper lights, it be very dark and dangerous, so we decide to talk to the RWA for help. We had a big meeting with them, many people from our area coming to ask about this important thing. But, unfortunately, RWA people say they cannot be helping us with streetlights. They

said budget is tight and many other reasons, making us very disappointed and worried about safety.

Then we went to Ashok, he is a broker from the BJP, asking him if he could be helping us. He was a very good man, helping in our community. Ashok made some calls, talked to right peoples and arranged everything for the street lightings. He worked very hard for us, and finally, we got lights on our street! Now, at night, it will be much safer for us to walk and go around. All residents are very happy and thanking Ashok for his big help."

Education

In interviews in all three of our communities, we found that our residents valued brokers' education qualifications as some measure of capability. This was due in part to the necessity of residents needing to make written correspondence, applications, petitions and claims to government bureaucracies to action assistance and services:

"It's important for our broker to have an education. If a person is educated, they are more likely to do a good job. Because applications and claims require a high level of reading and writing. Everything is written. This is part of what the broker does for us, getting the documents we need. It's too difficult for us to navigate all the paths needed for success in these matters."

It is not only the level of literacy that the community may value in a broker but also their ability to negotiate and see clear ways forward when problems seem unattainable:

"An educated person can approach problems in different ways, to help the community more effectively. They would be able to understand and implement solutions better."

The idea that a broker would work more effectivity if they were educated also came through the interviews, with comments such as:

"If a broker is well educated, they will have a better understanding of how to plan and execute tasks. They can catch on quickly and act more effectively. They are also less likely to make mistakes."

Overview of data collection in Delhi for our research experiment

We initially conducted fieldwork over three years, starting in 2021, in three different types of settlements to gain a deeper understanding of the communities. These were either a Jhuggi Jhopri or spontaneous order slum (Sanjay colony, housing built on publicly owned land not assigned for housing), government rehousing plots sold to eligible residents of Jhuggi Jhopris that have been demolished (Bhalswa resettlement colony) or those who have bought plots of land legally but built homes on these plots that aren't assigned for homes (Ajit Vihar unauthorised). Prior to this,

our professional team of data collectors had been working in Delhi for the past 20 years and thus had substantial knowledge and understanding of these communities.

We used the information gathered from our 2021 household survey of 1,004 residents, supporting qualitative case studies and local knowledge, to create a pilot for the experiment. This was so that we could refine and avoid respondents being presented with unrealistic broker attribute combinations (Wagenaar et al., 2001; Wallander, 2009). A pre-registration document for our planned research was uploaded to an online repository (https://doi.org/10.25405/data.ncl.24581622) to allow for greater transparency, replicability and improve planning.

Broker experiment – Research design

A conjoint experiment was used to explore the perceived characteristics of what is considered a successful community leader/broker in each of the settlement types. In political science studies that concern behaviour, the forced-choice conjoint survey approach is often used as it enables estimates to be simultaneously found for multiple treatment attributes (Hainmueller and Hopkins, 2015; Hainmueller et al., 2014). A major advantage of this statistical method is that it is fully nonparametric and so does not require any functional choice probability assumptions (Arifin, et al., 2009; Bakken and Frazier, 2006; Hainmueller et al., 2014). It is a multivariate technique that can be used to examine the decisions made by individual respondents when they are facing a range of options. Conjoint analysis encompasses several iterative steps of redefining and verifying attributes, interpretations and profiles to give statistical likelihood measures. To consider the reliability and validity of the experiment, the respondent was asked to rate whether they felt the broker vignettes shown to them on the card options on a scale from 1 to 7 depicted a slum leader who would be 'never helpful – 1' through to 'always helpful – 7'. To ensure confidentiality, respondents were given coffee beans in their hands to count out for the researcher to indicate their rating evaluation for each of the broker profiles.

One critical aspect of our choice experiment is to ensure that the choice of slum leader made by the resident does not merely represent their general broader social preferences. This poses a challenge in candidate choice experiments, as they often lack reference points for social preferences. To mitigate these concerns, we undertake a second experiment. In this experiment, we presented respondents with two individuals seeking to relocate to the settlement with their families and asked them to choose their preferred neighbour. The profiles in this experiment precisely mirrored those in the slum leadership experiment. If the results from particular characteristics are similar in the two experiments, this would cause doubt about the validity to ascertain particular political preferences. Again, to consider the reliability and validity, the respondent was asked to rate whether the profile of the person shown to them on the cards was someone they would like as a neighbour. The scale was from 1 to 7 where 1 indicated "never want them to live close" to 7 indicated "always want them to live close" (Auerbach and Thachil, 2018; 2023).

During each round of the conjoint data collection, for the two brokers, we asked the respondent to rank on a scale of 1 to 7 how helpful they thought the broker

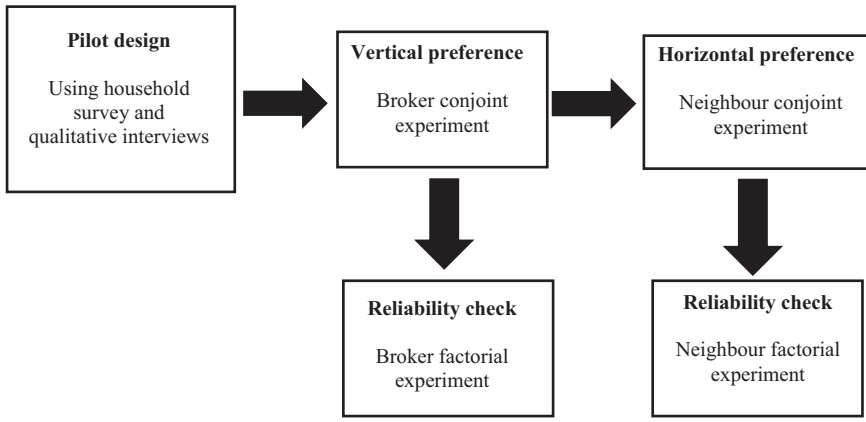

Figure 4.3 Research design

would be. For the neighbour conjoint we asked the respondent to rank from 1 to 7 how likely they would like the person as a neighbour.

Using this information, we undertook two separate factorial survey experiments to confirm the reliability and validity of the conjoint experiment research design (Auspurg and Hinz, 2015; Rossi and Nock, 1982). The results from the factorial experiments confirmed the conjoint results and gave us confidence in our findings. These results from the factorial experiments are presented at the end of this chapter in the Appendix (Auspurg and Hinz, 2015; Wallander, 2009; Rossi and Nock, 1982). The figure above sets out the research design (Figure 4.3).

Compiling the card-storyboards

The pilots revealed five attributes that community members consider when choosing their broker:

(1) caste and religion; (2) region of origin; (3) party affiliation; (4) occupation; (5) education.

These attributes were used when compiling the broker profiles set out on the card-storyboards. The first attribute is caste and religion. Rather than specifying this attribute directly, we were able to use names that are synonymous with the specific castes and religions found in each of our neighbourhoods. In our communities, these were Hindus (general and scheduled caste) and Muslims. For the second attribute, we used our household data to inform the different regions of India where migration had occurred from within these neighbourhoods. Table 4.1 shows the migration data from our household survey. The majority had come to Delhi from Uttar Pradesh and Bihar.

Third, regarding partisanship, the broker's profile was randomly assigned either to one of the majority parties (Aam Aadmi Party (AAP), Bharatiya Janata Party

Table 4.1 Household survey percentage migration data for each settlement

State of origin	*Sanjay (slum/JJ)*	*Bhalswa (RS)*	*Ajit Vihar (UA)*
Uttar Pradesh	71.7	63.7	41.6
Bihar	12.9	14.6	29.0
Delhi	0.6	4.0	6.8
Rajasthan	7.4	9.1	4.7
Haryana	4.5	1.8	2.7
Madhya Pradesh	1.0	4.3	2.2
Uttarakhand	0.6	0.6	6.6
Other	1.3	1.8	6.3

Note: Other – Chhattisgarh, Himachal, Jharkhand, Nepal, Punjab, Tamil Nadu and West Bengal.

(BJP), Indian National Congress known as the Congress Party (INC), Bahujan Samaj Party (BSP)) or to indicate they did not support any party. Fourth, we assigned the broker an occupation as part of their profile. We assigned the broker to either work in a high connectivity job (municipal), a job outside the colony that had an opportunity for greater connectivity (outside) or working inside the settlement (inside) and therefore the least opportunity to connect and gather additional information. Brokers were also randomly assigned one of four grades of education – college education, 12th grade, 8th grade, or little/no education.

Collecting data

As described above, our researchers collected data by inputting responses into Qualtrics in real time. The use of Qualtrics software for data collection allows for the attributes of the brokers to be randomised independently, generated from a pool of profiles. At the start of the data collection procedure, the resident was asked to provide information about themselves. These data included caste, religion, age, gender, education, occupation, state of origin, political affiliation and the number of years residing in the slum. Table 4.2 provides descriptive statistics concerning age, gender, number of years living in the settlement, education level and voting history.

A stratified random sampling technique was employed for the survey. If respondents were unavailable or unwilling, enumerators approached an adjacent house. The survey was conducted in the afternoon and early evening to balance access to individuals who stay at home with those working outside the settlement. Enumerators selected individuals within each household based on availability, aiming to ensure a gender balance. At least one of the project investigators and a supervisor accompanied the survey teams in the field for the duration of the study. This supervision ensured the integrity and accuracy of the data collection process. Figure 4.4 shows the data being collected in households in our neighbourhoods.

Manipulating data

When carrying out conjoint surveys, researchers typically reduce the number of profile cards (vignettes) by systematically using orthogonality, so that there is an

Table 4.2 Descriptive statistics of resident survey respondents

	Settlement		
	Sanjay colony (JJ)	*Bhalswa (RS)*	*Ajit Vihar (UA)*
Age	39.93 (12.22)	42.19 (13.17)	41.21 (13.81)
Gender (male)	76.8%	61.6%	85.1%
Time in settlement	26.29 (12.67)	18.42 (7.76)	10.90 (10.24)
Level of education			
BA or Diploma	7.9%	8.9%	18.1%
12th grade	16.7%	7.9%	18.1%
8th grade	39.9%	41.4%	43.6%
Little or no education	35.5%	41.9%	20.2%
Vote in last municipal elections	71.9%	73.6%	62.7%

Note: Mean age and time in settlement in years with standard deviation in parenthesis.

independence of factor attributes retained. This design technique creates a smaller number of attributes that are uncorrelated across the different vignettes. In other words, the columns in the design matrix have zero correlation between levels of different attributes. Orthogonality allows separate estimation analysis for each attribute, independent of the others.

From the table of attributes (Table 4.3), our experiment results in 2×2×2×3×2×5×3×4= 2,880 possible different profiles. In our experiment, an orthogonal array of 25 profile cards was generated that formed a valid representation of the 2,880 possible attribute profiles. An orthogonal array was constructed using the statistical package SPSS to make the number of profile cards manageable (IBM, 2013; Hainmueller et al., 2014; Wallander, 2009; Humble, 2020; Raghavarao et al., 2011).

Results from the three settlement areas

Measures were analysed using the estimated average marginal components effect (AMCEs). The AMCE represents how the likelihood of each attribute affects the average difference in the probability of being preferred as a given slum settlement leader. The average causal effect of changing a factor l from level t_0 to t_1 for a given broker characteristic while averaging over the other characteristics in the broker's profile is given by:

$$\tau_l\left(t_1, t_0; \Pr\left(\boldsymbol{t}_{ijk,-l}, \boldsymbol{t}_{i,-j,k}\right)\right) = \sum_{\left(\boldsymbol{t}_{ijk,-l}, \boldsymbol{t}_{i,-j,k}\right) \in \tau} \mathbb{E}\left[Y_{ik}\left(t_1, \boldsymbol{t}_{ijk,-l}, \boldsymbol{t}_{i,-j,k}\right) - Y_{ik}\left(t_0, \boldsymbol{t}_{ijk,-l}, \boldsymbol{t}_{i,-j,k}\right)\right] \times \Pr\left(\boldsymbol{t}_{ijk,-l}\boldsymbol{t}_{i,-j,k}\right)$$

where $\boldsymbol{t}_{ijk,-l}$ is an (L-1) dimensional vector representing levels of all the factors except the factor l of the j th profile in the k th task completed by respondent i,

Figure 4.4 Data collection photographs

Table 4.3 Brokers attributes in the vignettes

- Broker Caste is the same as the resident (1), caste not the same (0)
- Broker Religion is the same as the resident (1), religion not the same (0)
- Broker State is the same as the resident (1), different state (0)
- Broker is Muslim (2), Scheduled Caste (1), General Caste (0)
- Broker has the same Partisanship (1), different partisanship (0)
- Broker supports AAP party (4), BJP (3), INC (2), BSP (1), No party (0)
- Broker works in a Municipal job (2), outside settlement (1), inside settlement (0)
- Broker has college education (3), 12th grade (2), 8th grade (1), little or no education (0)

Note: Coding for the attributes of the brokers is given in the brackets.

$\boldsymbol{t}_{i,-j,k}$ denotes the levels of all factors for the remaining broker profiles other than profile j, and τ is the support of $\Pr\left(\boldsymbol{t}_{ijk,-l},\boldsymbol{t}_{i,-j,k}\right)$. The expectation ($\mathbb{E}$) is over a random sample of the respondents and item responses. For example, if the case was a broker with 'same caste as resident' versus a broker who has a 'different caste to resident', due to the random assignment of attributes, profiles with 'same caste as resident' have the same distribution for all other attributes on average as compared to profiles with 'different caste to resident'.

Results

We now consider the choices made by respondents during the experiment in each of the settlement types in order to select their slum leader. We will also illustrate the cases where there are significant distinctions between vertical preferences for slum leaders and horizontal preferences for neighbours (Clogg et al., 1995; Judge et al., 1985; Dietz and Kalof 2009; Oberfichtner and Tauchmann, 2021). We look at each settlement type. We then give an overview of how these results illustrate the residents' active choice to enlist brokers. We start by looking at Sanjay (slum/JJ), followed by Bhalswa (resettlement colony) and finally Ajit Vihar (unauthorised colony).

Sanjay colony – slum/JJ

In Sanjay colony, data were collected from 203 residents. Each respondent rated eight pairs of two slum broker profiles (vertical preference), resulting in 3,248 observations. Data were also collected concerning the residents' social preference by considering their neighbour choices (horizontal preference). Seven statistically significant differences were found for preferred slum leader/broker profiles in Sanjay colony, with four of these showing significant differences across vertical and horizontal preferences.

Our main finding, in line with Auerbach and Thachil (2018; 2023), is that residents in Sanjay colony place a high value on the capability of slum brokers being able to lobby for them and have the capacity to do this. This is seen through attributes related to the level of education in the broker vignette profiles. A preferred broker in Sanjay colony with college education is 11.2 percentage points (pp) more

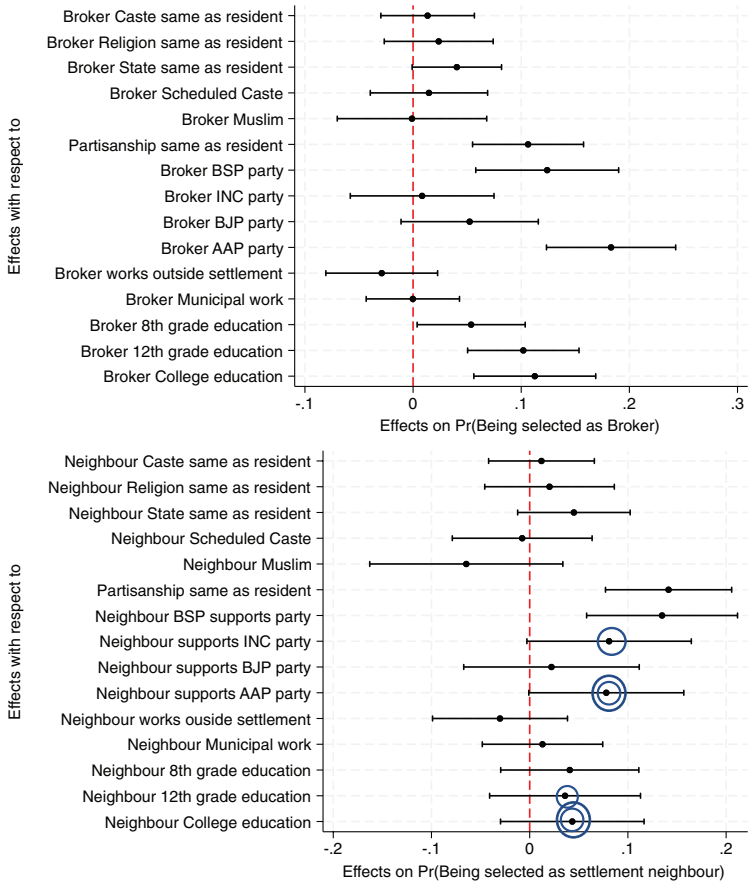

Figure 4.5 Sanjay: comparing preferences for brokers (top) and slum neighbours (bottom)

Note: The top panel illustrates estimates of the effects of the randomly assigned slum leader in Sanjay Colony attribute values on the probability of being preferred for the slum broker. The bottom panel shows estimates of the effects of the randomly assigned colony *neighbour* attribute values on the probability of being preferred as a neighbour. The percentage points (pp) estimates are based on an OLS model with standard errors clustered by respondent detailed in Table 4.4. The marginal effect of each independent variable being averaged over the joint distribution of the remaining variables. The independent variables are in the vertical axis. The horizontal axis gives the prediction of change in the independent variable (points), and the associated 95% CIs (bars). Rings indicate significant differences between the AMCEs in the broker and neighbour models (1 ring = $p < 0.1$, 2 rings = $p < 0.05$)

likely ($p<0.001$) to be selected. Leaders with 12th grade (10.2 pp, $p<0.001$) and 8th grade education (5.4 pp, $p<0.05$) are also preferred to those profiles that show leaders with little or no education. We find that there is a high likelihood, significant at the 99.9% level, that residents prefer brokers with college or 12th grade education. In contrast, the preferences for respondents' neighbours with college, 12th or 8th grade education were not significant at the 90% level (Figure 4.5 and Table 4.4).

Table 4.4 Sanjay: Preferred profile broker and neighbour

Variables	*Preferred Profile*	
	Broker	*Neighbour*
Caste	0.014 (0.022)	0.012 (0.027)
Religion	0.024 (0.026)	0.020 (0.033)
State	0.040* (0.021)	0.045 (0.029)
Muslim	−0.001 (0.035)	−0.065 (0.050)
Scheduled caste	0.015 (0.028)	−0.008 (0.036)
Partisanship	0.106**** (0.026)	0.141**** (0.033)
BSP party	0.124*** (0.033)	0.135**** (0.039)
INC party	0.008 (0.034)	0.081* (0.042)
BJP party	0.052 (0.032)	0.022 (0.045)
AAP party	0.183**** (0.030)	0.078** (0.040)
Works outside settlement	−0.029 (0.026)	−0.030 (0.035)
Works municipal job	−0.001 (0.022)	0.013 (0.031)
8th grade education	0.054** (0.025)	0.041 (0.036)
12th grade education	0.102**** (0.026)	0.036 (0.039)
College education	0.112**** (0.029)	0.043 (0.037)
Constant	0.320**** (0.045)	0.370**** (0.051)
N (Profiles)	3,248	3,248
	P[F(15,202) = 9.68] < 0.0001	P[F(15,202) = 3.33] < 0.0001

Note: Analysis includes 3,248 profile observations with standard errors clustered by the 203 respondents. Coefficient estimates of the average marginal component effects with standard errors in parenthesis. ****p<0.001, ***p<0.01, **p<0.05, *p<0.1 The percentage points (pp) estimates of the effects of the randomly assigned broker in Sanjay Colony attribute values on the probability of being preferred for the leader slum.

To assess the confidence that the experimental results specifically relate to political preferences for brokers, we compare the broker and neighbour preferences. If the results in both experiments were similar, this would raise concerns about the importance of the trait for political preference.

The rings in Figure 4.5 (bottom) indicate when there are significant differences between broker and neighbour preferences.

When looking at the respondent's preference regarding broker and neighbour education, that is, comparing vertical and horizontal preference, there is a statistically significant difference. Respondents preferred a broker profile with 12th grade education (χ^2=3.40, p=0.0653) at the 90% level and college education (χ^2=4.53, p=0.033) at the 95% level. For example, we see that the impact of going from little or no education to college education is significantly higher for broker selection 11.2 pp compared to 4.3 pp for neighbours selection.

We see similar results for 12th-grade education, with brokers being 10.2 pp (p<0.001) more likely to be preferred and only a 3.6 pp (p>0.1) likelihood for 12th-grade education with neighbours. These findings clarify that the educational profile preference observed in the broker experiment isn't merely a by-product of a general social preference among residents for well-educated individuals in their

settlement. Instead, it indicates a distinct political preference for well-educated slum leaders. The effect size of this result is the most significant of all the broker education profile levels as it increases the base probability by 22.4% (Cohen's d effect size (0.224=0.112/0.5)). These findings demonstrate that the impact of education in broker profiles is very specific to political preferences. The implication is that residents have a strong preference towards educated brokers. This suggests that respondents believe this characteristic is highly significant for a broker, as it allows them to effectively discuss and advocate on behalf of residents with external organisations and providers. This preference for higher levels of education was expressed clearly in interviews by Sanjay residents for brokers, but when asked about neighbourliness, education did not appear in the responses.

In relation to political affiliations, we find that residents of Sanjay prefer co-partisan slum leaders (10.6 pp, $p<0.001$), and those who are affiliated with the BSP (Bahujan Samaj Party) (12.4 pp, $p<0.01$) and the AAP (Aam Aadmi Party) (18.3 pp, $p<0.001$). The AAP is the incumbent State-level party and the Municipal-level party. We find that changing the broker's partisanship to match that of the residents' increases the broker's chance of being chosen by ten percentage points. The significant differences between respondents' preferred broker to neighbour profiles are towards those with an AAP allegiance. This allegiance towards the AAP is significantly higher in leader selection (18.3 pp, $p<0.001$) than in neighbour selection (7.8 pp, $p<0.05$) at the 99% level ($\chi^2=6.92$, $p=0.0085$). Given that the base probability is 50%, the effect size of this result is the most significant of all the broker political affiliation profile levels, increasing the base probability by 18.3% (Cohen's d effect size (0.366=0.183/0.5)). Selecting a broker with AAP allegiance implies that residents of Sanjay believe that brokers acting for them have a greater political network access and hence more problem-solving efficacy to instigate change. This result is also true for residents' horizontal preferences for neighbours – partisanship (14.1 pp, $p<0.001$), the BSP (13.5 pp, $p<0.001$), the AAP (7.8 pp, $p<0.05$) and the INC (Indian National Congress known as the Congress Party) (8.1 pp, $p<0.05$). Respondents tend to significantly favour having neighbours who support the INC ($\chi^2=3.39$, $p=0.0658$). The other political affiliations should be treated with caution regarding residents' decisions, as they may not be solely associated with their broker preferences. Regarding caste, religion and state of origin, we find little evidence of any significant effect on the residents' choice of broker. However, residents do take into consideration whether brokers share the same state of origin as themselves (4.0 pp, $p<0.1$).

Bhalswa – Resettlement colony

In Bhalswa, data were collected from 203 residents. Residents in Bhalswa are more likely to prefer a broker with college education (8.3 pp, $p<0.001$). This reveals the importance of education again in a resident's choice of broker, as in Sanjay. However, in contrast to the Sanjay residents, Bhalswa respondents have a greater likelihood of favouring neighbours who have higher levels of education (Figure 4.6). For their neighbours, they prefer profiles that demonstrate

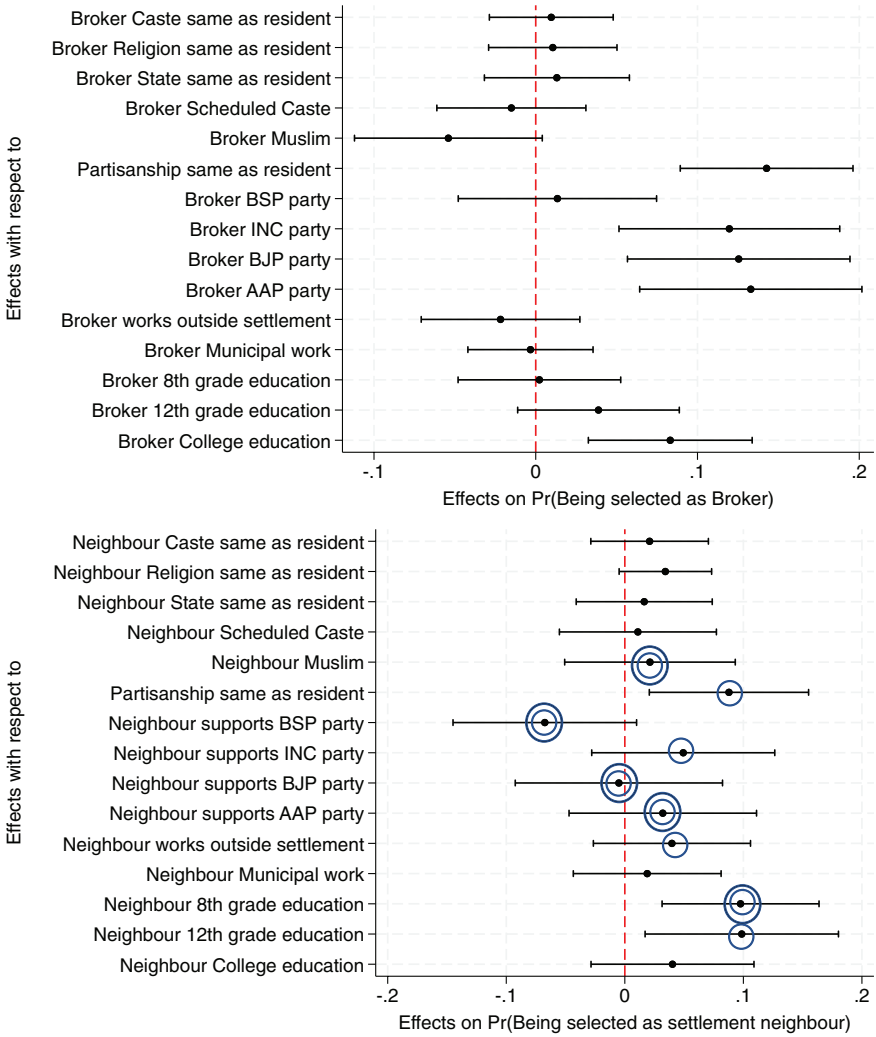

Figure 4.6 Bhalswa: comparing preferences for brokers (top) and slum neighbours (bottom)

Note: The top panel illustrates estimates of the effects of the randomly assigned slum leader in Bhalswa resettlement colony attribute values on the probability of being preferred for the slum broker. The bottom panel shows estimates of the effects of the randomly assigned colony *neighbour* attribute values on the probability of being preferred as a neighbour. The percentage points (pp) estimates are based on an OLS model with standard errors clustered by respondent detailed in Table 4.5. The marginal effect of each independent variable being averaged over the joint distribution of the remaining variables. The independent variables are in the vertical axis. The horizontal axis gives the prediction of change in the independent variable (points), and the associated 95% CIs (bars). Rings indicate significant differences between the AMCEs in the broker and neighbour models (1 ring = $p<0.1$, 2 rings = $p<0.05$).

completion of 8th grade (9.8 pp, $p<0.001$) or 12th grade (9.9 pp, $p<0.01$) education. This pattern around neighbour education was not seen in Sanjay colony, with respondents having a preference towards educated brokers but not educated neighbours.

In Bhalswa, political partisanship also plays an important role when selecting a broker. Residents exhibit a preference for their broker (14.3 pp, $p<0.001$) and their neighbour (8.8 pp, $p<0.001$) to share the same political partisanship as themselves. This respondent preference is nearly twice as significant for a broker than a neighbour, demonstrating the significant contrast between vertical and horizontal preferences at the 90% confidence level ($\chi^2= 3.10$, $p=0.0782$). As in Sanjay colony, we observe an equivalent trend, indicating a likelihood for residents to have a preference to share the same political outlook as their brokers and neighbours. This suggests that individuals tend to gravitate towards others who align with their political perspectives. Significant differences are seen in how respondents prefer a broker to have party affiliations with the AAP (13.3 pp, $p<0.001$), the BJP (12.5 pp, $p<0.001$) and the INC (12.0 pp, $p<0.001$) (Figure 4.6 top). Testing to see if there is a significant difference between respondents' preferences around broker and neighbour profiles, we see significant differences between all the respondents who are more likely to favour preferences towards a selected broker profile with party affiliations to the APP ($\chi^2=6.52$, $p=0.0107$), the BJP ($\chi^2=9.60$, $p=0.0019$), the INC ($\chi^2=3.18$, $p=0.0745$) and the BSP ($\chi^2=4.04$, $p=0.0443$). This partisanship preference suggests that brokers' party affiliations are not merely general social preferences horizontally related to neighbours but vertically related to their choice of leader.

In Bhalswa, residents tend to choose a broker owing to their affiliation with a political party but not so regarding their neighbours (Figure 4.6 Bottom). Partisanship in neighbour and broker choice is important but any one of a range of parties is selected for brokers, including AAP, BJP and INC. Residents in Bhalswa have a slight preference for their broker not to be Muslim (5.4 pp, $p<0.1$). This is significantly different from their preferences around neighbour profiles at the 95% level ($\chi^2=4.02$, $p=0.0449$). For a neighbour, the respondents are more likely to favour someone of the same religion (3.4 pp, $p<0.1$).

Ajit Vihar − Unauthorised colony

In Ajit Vihar, data were collected from 188 residents. As with the other two colonies, there was a trend for respondents to prefer brokers with higher levels of education – college (14.4 pp, $p<0.001$) and 12th grade (12.1 pp, $p<0.001$). This trend for higher education is also seen in respondents' neighbour profile selection, with respondents being 9.7 pp ($p<0.001$) more likely to favour brokers with a college education. The impact of college education on profile characteristics is more pronounced in the selection of brokers (12.1 pp, $p<0.001$) than in the case of neighbours (5.3 pp, $p>0.1$), indicating a significant difference at the 90% confidence level ($\chi^2=3.17$, $p=0.0752$). This suggests that in Ajit Vihar, residents prefer highly educated neighbours, while also exhibiting a distinct political preference for brokers educated at least up to the 12th grade and beyond.

Residents are more likely to favour general caste profiles for their broker, being significantly less likely to prefer scheduled caste (7.2 pp, p<0.001) or Muslim (6.6 pp, p<0.001). Testing for vertical preferences for brokers and horizontal preferences for neighbours demonstrates preferred profiles for brokers that are not scheduled caste (χ^2=7.67, p=0.0056), showing a significant difference from the neighbour preferred profile at the 99% level (Figure 4.7, bottom).

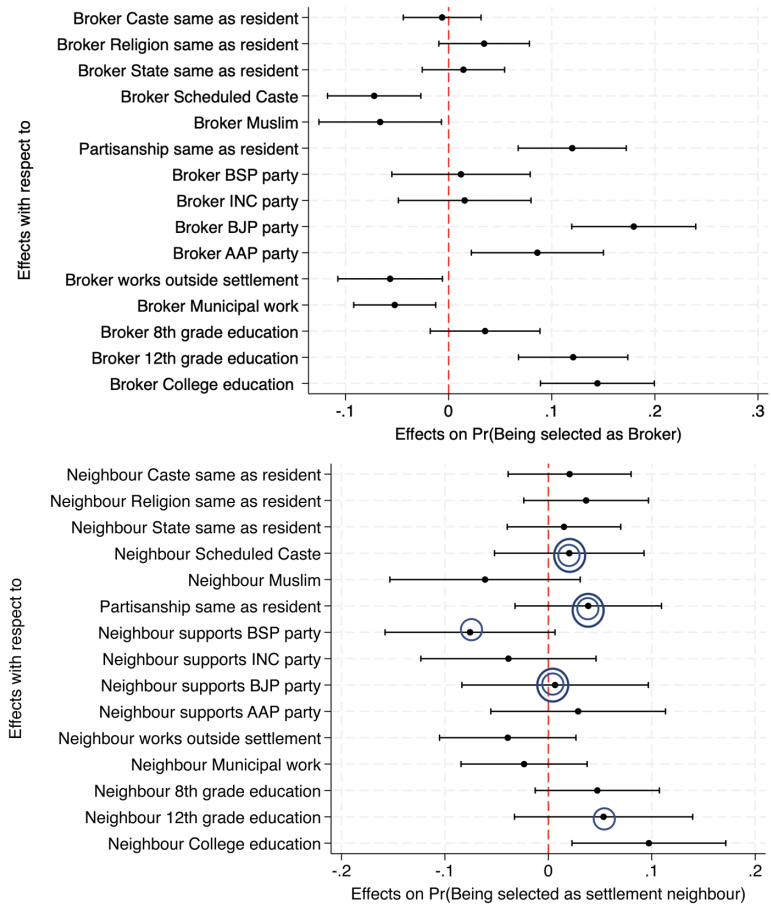

Figure 4.7 Ajit Vihar: comparing preferences for brokers (top) and slum neighbours (bottom)

Note: The top panel illustrates estimates of the effects of the randomly assigned slum leader in Ajit Vihar unauthorised colony attribute values on the probability of being preferred for the slum broker. The bottom panel shows estimates of the effects of the randomly assigned colony *neighbour* attribute values on the probability of being preferred as a neighbour. The percentage points (pp) estimates are based on an OLS model with standard errors clustered by respondent (Table 4.6). The marginal effect of each independent variable being averaged over the joint distribution of the remaining variables. The independent variables are in the vertical axis. The horizontal axis gives the prediction of change in the independent variable (points), and the associated 95% CIs (bars). Rings indicate significant differences between the AMCEs in the broker and neighbour models (1 ring = p<0.1, 2 rings = p<0.05).

Table 4.5 Bhalswa: Preferred profile broker and neighbour

Variables	*Preferred profile*	
	Broker	*Neighbour*
Caste	0.010 (0.019)	0.021 (0.025)
Religion	0.011 (0.020)	0.034* (0.019)
State	0.013 (0.023)	0.016 (0.029)
Muslim	−0.054* (0.029)	0.021 (0.036)
Scheduled caste	−0.015 (0.023)	0.011 (0.034)
Partisanship	0.143**** (0.027)	0.088**** (0.034)
BSP party	0.013 (0.031)	−0.067 (0.039)
INC party	0.120**** (0.035)	0.049 (0.039)
BJP party	0.125**** (0.034)	−0.005 (0.044)
AAP party	0.133**** (0.035)	0.032 (0.040)
Works outside settlement	−0.022 (0.025)	0.040 (0.034)
Works municipal job	−0.003 (0.020)	0.019 (0.032)
8th grade education	0.002 (0.025)	0.098**** (0.034)
12th grade education	0.039 (0.025)	0.099*** (0.041)
College education	0.083**** (0.025)	0.040 (0.034)
Constant	0.378**** (0.038)	0.371**** (0.038)
N (Profiles)	3,248	3,248
	P[F(15,202)=8.84]<0.0001	P[F(15,202)=2.77]<0.0001

Note: Analysis includes 3,248 profile observations with standard errors clustered by the 203 respondents. Coefficient estimates of the average marginal component effects with standard errors in parenthesis. ****p<0.001, ***p<0.01, **p<0.05, *p<0.1 The percentage points (pp) estimates of the effects of the randomly assigned slum leader in Bhalswa resettlement colony attribute values on the probability of being preferred for the leader slum.

Respondents are 12.0 pp (p<0.001) significantly more likely to prefer brokers that have the same partisanship as them. This was significantly different at the 99% level in vertical preferences for brokers and horizontal preferences for neighbours (χ^2=5.75, p=0.0056). We have seen that partisanship was also important in Bhalswa and Sanjay colony, observing a preference towards neighbours with the same partisanship. In Ajit Vihar, respondents display a tendency to favour broker profiles with similar partisanship (same political affiliations), but in contrast to Sanjay and Bhalswa, not necessarily in their choice of neighbour (p>0.1).

Regarding party affiliation, respondents are 18.0 pp (p<0.001) more likely to favour a BJP broker. There is a highly significant vertical preference for brokers among respondents over neighbours who support the BJP (0.7 pp, p>0.1) at the 99.99% level (χ^2=15.66, p=0.0001). This suggests a clear preference for the BJP (parliamentary incumbent party) among residents of Ajit Vihar, possibly indicating that the BJP brokers help residents address community issues and concerns. The AAP (incumbent state and municipal level party) were 8.6 pp (p<0.001) more likely to be favoured in broker profiles in Ajit Vihar. However, there were no significant differences at the 90% level between their selections for broker and neighbour (χ^2=1.97, p=0.1599). When selecting profiles related to their neighbours, residents

Table 4.6 Ajit Vihar: Preferred profile broker and neighbour

Variables	*Preferred profile*	
	Broker	*Neighbour*
Caste	−0.006 (0.019)	0.021 (0.030)
Religion	0.034 (0.022)	0.037 (0.031)
State	0.014 (0.020)	0.015 (0.028)
Muslim	−0.066*** (0.030)	−0.061 (0.047)
Scheduled caste	−0.072**** (0.023)	0.020 (0.037)
Partisanship	0.120**** (0.027)	0.039 (0.036)
BSP party	0.120 (0.034)	−0.076* (0.042)
INC party	0.016 (0.033)	−0.039 (0.043)
BJP party	0.180**** (0.030)	0.007 (0.046)
AAP party	0.086**** (0.032)	0.029 (0.043)
Works outside settlement	−0.057*** (0.026)	−0.039 (0.033)
Works municipal job	−0.052*** (0.020)	−0.023 (0.031)
8th grade education	0.035 (0.027)	0.047 (0.030)
12th grade education	0.121**** (0.027)	0.053 (0.044)
College education	0.144**** (0.028)	0.097**** (0.038)
Constant	0.414**** (0.043)	0.447**** (0.047)
N (Profiles)	3,008	3,008
	P[F(15,187)=10.80]<0.0001	P[F(15,187)=2.64]<0.0001

Note: Analysis includes 3,008 profile observations with standard errors clustered by the 188 respondents. Coefficient estimates of the average marginal component effects with standard errors in parenthesis. ****p<0.001, ***p<0.01, **p<0.05, *p<0.1 The percentage points (pp) estimates of the effects of the randomly assigned slum leader in Ajit Vihar unauthorised colony attribute values on the probability of being preferred for the leader slum.

in Ajit Vihar were less likely to favour profiles affiliated with the BSP (7.6 pp, p<0.1). This difference was significant at the 95% level (χ^2=4.42, p=0.0356). Residents tend to favour incumbent parties over those in opposition.

Exploring the impact of combined factors

The results so far suggest that choices made by residents when selecting their brokers cannot be reduced to a single factor. In the analysis set out above, two factors have emerged highlighting the importance of education and party affiliation of the broker. In this section regarding broker choice, we examine the interaction between education and political party. To do this, we look at four possibilities. They are whether the broker's party is incumbent (BJP or AAP) or in opposition (INC or BSP) and if the education level is college or little to no education. Figure 4.8 illustrates the average probability of a broker being chosen by a resident in Sanjay colony with a combination of the four traits around party and education. In Sanjay, we see clearly the importance of educated brokers who align with incumbent parties. College-educated brokers are preferred 64.1% of the time to 50.7% for those supporting incumbent parties with little or no education.

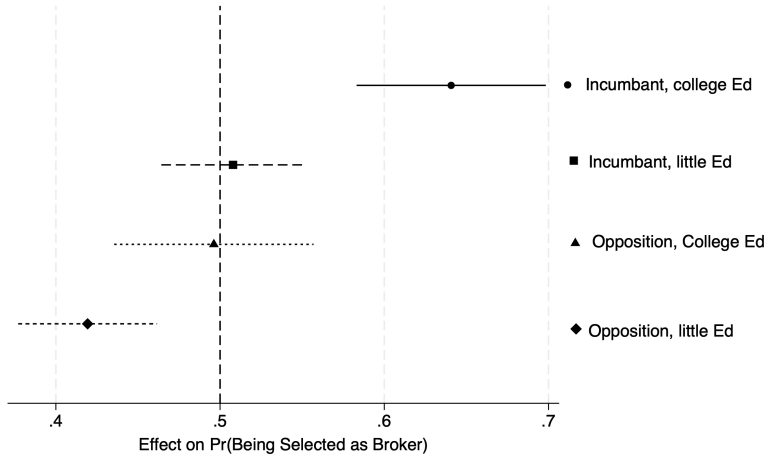

Figure 4.8 Sanjay education and partisanship

Note: Figure 4.8 illustrates the average probability of being preferred for selection as a broker. Horizontal axis gives estimates for broker profiles with traits given on the vertical axis. Bars represent the associated 95% confidence intervals.

In Ajit Vihar, we can see the importance of broker choice being connected to the incumbent over the opposition parties (Figure 4.9). A broker who has a college education and affiliations with the incumbent party is preferred 62.4% of the time, as compared to a college-educated broker, aligning with opposition parties who is only preferred 53.8%.

Similar patterns are seen in Bhalswa, with college-educated incumbents preferred 60.7% as opposed to college opposition only preferred 53.3% (Figure 4.10).

In all three settlements, we see that brokers with a higher level of education and being connected to the incumbent parties are important attributes when residents make choices for their broker.

Conclusion and thoughts

Our data show that residents actively choose their brokers to help develop and improve their neighbourhoods. Brokers are part of the polycentric system that facilitates collective action. Brokers compete for support, giving residents agency. The market for brokers is competitive. If residents are not happy or the broker is unable to address community requirements, there are other brokers who will step in to take their place. Our research shows that residents living in a range of informal settlement types – slum/JJ, resettlement and unauthorised – display similar choice processes to select brokers to improve their lives within their communities. Two broker characteristics have been found to be statistically significant in all three neighbourhoods when choosing a broker – partisanship and education.

First, individuals tend to gravitate towards brokers who align with their own political perspectives. Settlements have stronger associations with certain political

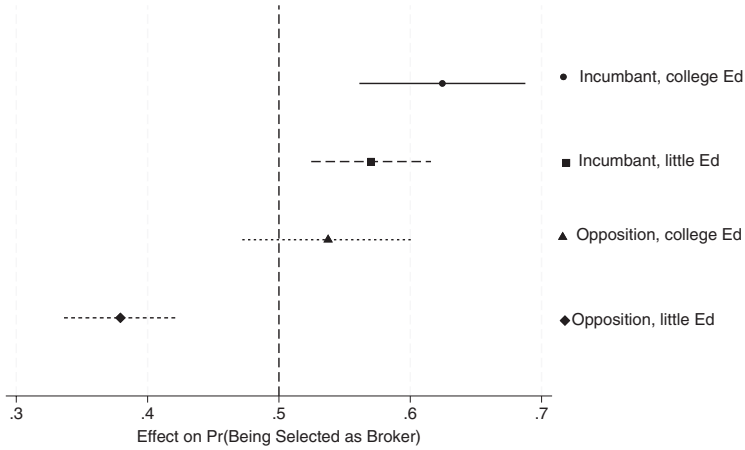

Figure 4.9 Ajit Vihar education and partisanship

Note: Figure 4.9 illustrates the average probability of being preferred for selection as a broker. Horizontal axis gives estimates for broker profiles with traits given on the vertical axis. Bars represent the associated 95% confidence intervals.

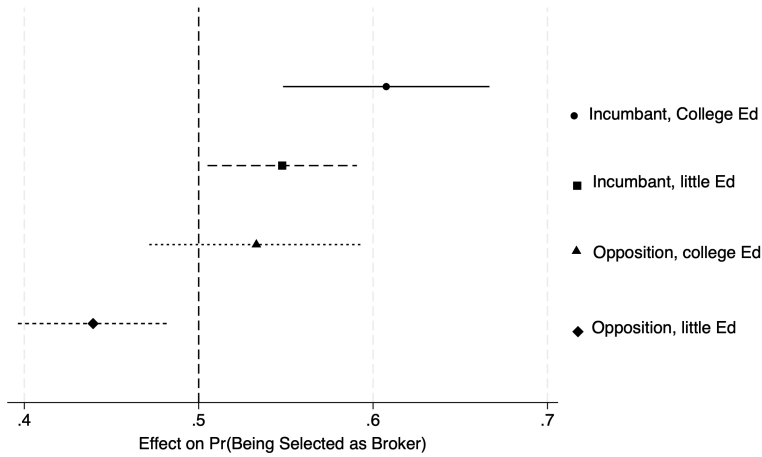

Figure 4.10 Bhalswa education and partisanship

Note: Figure 4.10 illustrates the average probability of being preferred for selection as a broker. Horizontal axis gives estimates for broker profiles with traits given on the vertical axis. Bars represent the associated 95% confidence intervals.

parties. This indicates that brokers affiliated with parties that are strongly represented in the neighbourhood are more likely to have a greater positive influence owing to their networks and links to officials and other polycentric partners. Second, we found education to be the most important attribute of broker selection, this attribute having high significance in all three settlements. Respondents favour

brokers who have higher levels of education. During the interviews, it became apparent that education was an indicator of the broker's capacity to liaise with public and government officials, having the ability to lobby on behalf of the community. Higher education also inferred that the broker would have the ability to help with the application of documents and licences (i.e., Voter ID cards, ration cards, Aadhaar card; market/stalls licences, birth and death certificates). We also found that Ajit Vihar and Bhalswa residents would like to live next to neighbours with higher levels of education. Sanjay colony residents are slightly different in this respect, having a preference for educated brokers but not as concerned about the relative education levels of their neighbours. Residents feel that the broker is accountable to them and their views are heard within local political forums. Brokers are not randomly selected by residents. Residents are active choosers, selecting brokers that are likely to have more competency and are well-connected. This, in turn, helps to facilitate the provision of goods and services for the community.

> The differential political and economic performance across nations and communities, for example, could not be answered satisfactorily without seriously studying the omitted factors: trust and norms of reciprocity, networks and forms of civic engagement and both formal and informal institutions.
>
> (Elinor Ostrom, 2007, p. 2)

Appendix

Design effects

To investigate the heterogeneous treatment effects on how preferences varied among different respondent groups, we looked at gender, education and duration of residence in the slum. We examine how the relative importance of distributive and efficacy concerns varied meaningfully across the three settlement subsets. In a conjoint forced-choice experiment, it is important that heterogeneous treatment effects are dealt with care, as the pre-treatment moderator variables are not randomly assigned in this survey.

This analysis found no significant differences regarding gender in the selection of broker attributes in any of the three settlement types. The residents' gender did not show any significant influence in their selection of brokers.

Regarding education, we partitioned the respondents in each settlement by using the median level of education into two categorised subgroups. Those who have been in education to at least grade 10 (=1) and those who have had little or only up to 8th grade education (=0). Respondents from Bhalswa within the higher education level were significantly more likely to favour brokers who were also more educated. This preference extends not only to those with a college education, where the increase is 17.2 percentage points ($p<0.01$), but also those broker profiles with 12th-grade education. The broker profiles with 12th-grade education shifted their likelihood of selection with a 13.7 percentage points increase ($p<0.01$). This was also seen to be true in Sanjay for brokers with a college education, which increased their likelihood of selection from 5.8 pp ($p<0.1$) to 20.1 pp ($p<0.01$).

Next, we investigate to see if the length of residency in the settlement has an effect on broker preference. To create the binary variable, we used the mean time that a respondent had lived in the settlement. A value of 1 denotes a respondent has lived in the community above the mean time and 0 if below. The analysis revealed that for residents of Sanjay who lived in the community longer, there was a 16.4 pp ($p<0.05$) greater likelihood that they were more likely to favour broker profiles that contain partisanship with their own political views. In Sanjay, there was also a greater likelihood that they would select profiles where the broker had a municipal job, up 11.3 pp ($p<0.01$). Residents who had lived longer in Bhalswa were more likely to prefer brokers with higher levels of education. They were 7.5 pp ($p<0.01$) more likely to favour profiles with brokers having 12th grade education and a 11.4 pp ($p<0.1$) greater likelihood of preferring brokers with college education. In the unauthorised colony, Ajit Vihar, the longer residents had lived in the settlement, then this significantly decreased the likelihood of preferring a broker of the same partisanship from 17.9 pp to 2.8 pp ($p<0.01$). This is a sizable reduction of 15.1 pp. This was the most noticeable effect on choice. This could imply that for residents, the party of the broker is less important in Ajit Vihar in relation to 'getting things done' in their neighbourhood. In Ajit Vihar, residents were more likely to favour brokers from the parliamentary party BJP or AAP, municipal and state governments. The data imply that this may not be how they would vote in an election.

Robustness checks

The analysis undertaken for each settlement rated slum leader profile observations, with respondents rating eight pairs of two slum leader and neighbour profiles per pairing. To obtain accurate variance estimates, standard errors are clustered by respondent, as observed choice outcomes are not independent across profiles rated by a single respondent. Due to multiple iterations, prior vignettes and their evaluations may frame subsequent vignettes and lead to carryover effects (Tourangeau et al., 1989; Wirtz, 1996). Conducting diagnostics around the variation in judgements gives interclass correlation for Sanjay colony (ρ =0.274), Bhalswa (ρ =0.269), Ajit Vihar (ρ =0.252), hence, only 25–27% of the variation in judgements was attributed to the variation between respondents. This relatively moderate value indicates that the fairness of evaluations was rather homogeneous among respondents (Auspurg and Hinz, 2015). The correlation between respondent value variables and the error term for each settlement is close to zero ($r<0.04$), indicating a successful randomisation and that the model assumptions of independent variables not being correlated with the error term is met. Standard randomised balance checks were also performed by regressing respondent attributes on indicator variables for all of the broker profiles. We used again, as set out in the design effects section, binary indicators for duration of time in the settlement, education and gender. It was found that there was no change in our main findings when controlling for these demographic variables.

Finally, we took great care at the design stage to check for any implausible attribute combinations and removed these from our possible set of vignette broker

Table 4.7 Factorial survey experiment comparison

	Conjoint		*Factorial*	
Variables	*Preferred profile*		*Preference scale*	
	Broker	Neighbour	Broker	Neighbour
Caste	0.009 (0.011)	0.013 (0.015)	0.112** (0.048)	0.036 (0.063)
Religion	0.018 (0.013	0.035** (0.015)	0.016 (0.096)	−0.056 (0.106)
State	0.022* (0.012)	0.026 (0.016)	0.117* (0.067)	0.045 (0.072)
Muslim	−0.046**(0.018)	−0.033 (0.025)	−0.250*** (0.096)	−0.092 (0.118)
Scheduled caste	−0.021 (0.014)	0.007 (0.020)	−0.058 (0.060)	0.054 (0.082)
Partisanship	0.133**** (0.016)	0.095**** (0.020)	0.619**** (0.079)	0.284**** (0.080)
BSP party	0.052*** (0.019)	0.001 (0.023)	0.185** (0.082)	−0.006 (0.093)
INC party	0.048** (0.020)	0.034 (0.024)	0.236*** (0.087)	0.122 (0.099)
BJP party	0.118**** (0.019)	0.007 (0.026)	0.584**** (0.087)	0.073 (0.107)
AAP party	0.133**** (0.019)	0.051** (0.024)	0.510**** (0.091)	0.107 (0.094)
Works outside settlement	−0.035** (0.015)	−0.011 (0.020)	−0.058 (0.067)	−0.022 (0.083)
Works municipal job	−0.018 (0.012)	0.003 (0.018)	−0.047 (0.051)	0.010 (0.072)
8th grade education	0.032** (0.015)	0.062*** (0.019)	0.170*** (0.065)	0.069 (0.076)
12th grade education	0.087**** (0.015)	0.064*** (0.024)	0.328**** (0.065)	0.165* (0.097)
College education	0.112**** (0.016)	0.057*** (0.021)	0.432**** (0.070)	0.253*** (0.082)
Constant	0.370**** (0.024)	0.392**** (0.025)	3.147**** (0.136)	3.531**** (0.141)
N (Profiles)	9,504	9,504	9,504	9,504
	P[F(15,593) =9.504]<0.0001	P[F(15,593) =5.42]<0.0001	P[F(15,593) =16.18]<0.0001	P[F(15,593) =2.13]<0.001

Note: ****p<0.001, ***p<0.01, **p<0.05, *p<0.1

profile cards. In order to do this, we undertook interviews and focus groups in the three neighbourhoods to ascertain what were plausible broker attribute combinations. This allowed us to assign candidate broker profiles of certain caste and religion, with appropriate occupations and education levels. Robustness tests were undertaken on the final data set by excluding certain attribute profiles to test data validity around implausible combinations (Auspurg and Hinz, 2015; Hainmueller, Hopkins, and Yamamoto, 2014; Hainmueller and Hopkins, 2015).

Factorial survey experiment

We undertook the following factorial survey experiment to confirm the reliability and validity of the conjoint experiment research design (Auspurg and Hinz, 2015; Wallander, 2009; Rossi and Nock, 1982). Simultaneously, to the conjoint data collection, we also asked the respondent to rank on a scale from 1 to 7 how helpful the broker would be as a community leader – where 1 indicates that they would NEVER be a helpful community leader and 7 indicates that they would ALWAYS be.

The results of the factorial experiment shown in Table 4.7 agree with the conjoint experiment results and give us confidence in our findings. As we can see, both methods produce very similar significant results. They illustrate a dominance for higher levels of education in brokers and also that partisanship is important at both broker and neighbour levels. All respondents prefer both brokers and neighbours who have the same political affiliations as them. Particular party allegiance was significantly important in both the conjoint and factorial study for broker preferred choice. Party allegiance is not statistically significant regarding neighbour choice.

Authors' note

Figures 4.5, 4.6, 4.7a, 4.8, 4.9 and 4.10 from StataCorp. 2023. Stata Statistical Software: Release 18. College Station, TX: StataCorp LLC.

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PART III

Entrepreneurship

Source: Flooded Cellar Productions

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5 Stories from the street

An intricate sidewalk ballet

The stretch of Hudson Street where I live is each day the scene of an intricate sidewalk ballet. I make my own first entrance into it a little after eight when I put out the garbage can, surely a prosaic occupation, but I enjoy my part, my little clang, as the droves of junior high school students walk by the centre of the stage dropping candy wrappers. (How do they eat so much candy so early in the morning?) While I sweep up the wrappers I watch the other rituals of morning: Mr Halpert unlocking the laundry's handcart from its mooring to a cellar door, Joe Cornacchia's son-in-law stacking out the empty crates from the delicatessen, the barber bringing out his sidewalk folding chair, Mr Goldstein arranging the coils of wire which proclaim the hardware store is open, the wife of the tenement's superintendent depositing her chunky three-year-old with a toy mandolin on the stoop, the vantage point from which he is learning the English his mother cannot speak. (Jacobs 1961, p. 61)

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Introduction

As in the quote by Jane Jacobs, setting out the morning routine she encountered on Hudson Street, New York, in her 1961 book *Death and Life in Great American Cities*, we highlight the voices of the entrepreneurs we encountered during this research in our Delhi neighbourhoods. Stories of the street scenes where goods are being hawked and haggled over in shops and markets will be told alongside the voices of entrepreneurs – the street vendors, textile workers, carpenters, painters, recyclers, beauticians, barbers and cooks. The atmosphere in these settlements is buoyant, friendly, exuding community cohesion and trust. The slums provide examples of organic growth where the poor are agents of change. Place attachment provides a feeling of community uniqueness and irreplaceability. With a sense of belonging, feelings of loyalty, trust and a life with value and dignity, there follows a desire for bottom-up approaches to alleviating poverty. It is an 'infectious' atmosphere, with the poor focused on their family, neighbourhoods and the next generation.

According to Jane Jacobs

> A good way to see the problem of the city is to take a bus or streetcar ride, a long ride, through a city you do not know. For in this objective frame of mind, you may stop thinking about the ugliness long enough to think of the work that went into this mess. As a sheer manifestation of energy, it is awesome. It says as much about the power and doggedness of life as the leaves of the forest say in spring. All else can only be oases in the desert. Hundreds of thousands of people with hundreds of thousands of plans and purposes built the city and only they will rebuild the city.
>
> (Jacobs, 1955, p. 101)

That is just what we did.

Morning has broken

Street vendors, water, cutting hair and the painter

It's 6.30 am in the morning and the sun is not yet up. Darkness surrounds the basti. It's winter. The temperature is 6 degrees. Cold by any standard, never mind for Delhi. The market traders are huddling together around what resembles a campfire made from strips of paper and wood shavings. They are getting ready for the day. Their kinship is palpable. All have moved here from Bihar and now live in this basti. Friendship and trust are important in this business, they say. Supporting each other and watching each other's backs on a daily basis form the bond needed to succeed as a street vendor in the basti.

Ashok sits on a blue plastic chair, woolly ski hat and jacket pulled tightly to keep in the warmth. Lali, an elderly woman, amazingly flexible, hunkers down on a cement slab only six inches off the floor and hugs a cup of sweet tea. Her head and body are covered in a long woollen shawl.She only wears sandals. Maybe she doesn't have shoes or socks; this is an exceptionally cold day. Sunil stands tall in

Figure 5.1 Morning

stature, pretending not to feel the cold, dressed only in a striped blue and white rugby shirt and jeans. Arjun Devi no longer sits around the fire. He used to own a barrow and was part of the traders' clan. But he was offered a flat in Kalkaji when his slum was demolished. Lali holds a newspaper out to us. *The Hindustan Times* has a story about Raj. They see him as a celebrity. We take the morning paper, ready to read more about him later. The handcarts are standing by, waiting for the vegetables, fruit and cooking ingredients to arrive in the morning delivery. The handcarts resemble trestle tables on wheels; a flat bed of wood on what looks like old-fashioned wheels that once were part of an oversized rusting bicycle. The basti is coming awake. Others walk by, off to work, scarves, hats, body warmers all out of place in this Delhi neighbourhood but needed against the current cold. A herd of cows is making its way to the rubbish pile. Maybe there is something to eat there.

Ashok is getting ready now with his cart. He is a street vendor who sells food in the morning to the commuters leaving the basti as well as those travelling on the periphery. He is making several dishes and starts preparing his ingredients along with heating the oil using a portable gas cylinder. Aloo Chaat – mashed lentil and potato dumplings; Pani Puri – hollow spherical dough balls filled with onions, spices, and mashed potatoes; Parathas – an Indian flatbread fried in desi ghee and stuffed with vegetables served with chutney or potato curry.

The market is coming alive now, not only with people but with the sounds and smells that make Delhi the city it is. Sunil's vegetables have also arrived: tomatoes, cabbages, cauliflowers, onions, sweet potatoes, carrots. He lays out his vegetables expertly in a colourful array, showing his professionalism and time spent in this business. Sunil knows that the women in the basti are meticulous when it comes to buying their vegetables. Therefore, his display needs to lure them into buying from him and not a competitor some streets away. He is ready to push his cart to the more 'interior', he tells us. Ready for the women to come shopping for their ingredients for today's family meals once they drop their children at school.

Activity is increasing.

The chatter of children splashing in the unfamiliar puddles makes us turn to look. A group of six girls, dressed smartly in their blue school uniforms – woollen jumpers and matching salwar kameez (the tunic blue and white check, the trousers pale blue). Both the colour and the thinness of the material are very unsuitable for this weather. Large backpacks carry their multitude of books for the day. Pink knitted pull-on hats complete the look. We are now into the school run. A dad holding his little son's hand makes his way through the streets; motorbikes laden with riders and multiple children; auto rickshaws with children eagerly discussing last night's soap opera episode. The green and yellow soft-top rickshaw stops. The children get out and run off down the alleyway towards the school.

The driver parks his rickshaw in need of a break. Leaning up against a static stall, decked out with Lay's crisps, Uncle Chipps, Kurkure Masala Munch, Swad Mixed flavour sweets and an array of hanging strips of brightly coloured confectionery, he reaches into his pocket. He rolls some leaf into a cigarette shape but, searching again in his coat, he can't find his matches. We happen to have a matchbook from the hotel. We have been using them to light the mosquito coil. He is grateful and starts to smoke. His name is Rajkumar. We ask him how he came to live in this place and become a driver. Moving from Darbhanga District of Bihar to the city in 1990 and originally working as a house help in the Badarpur area of the city, earning Rs. 3,000 (£28.44) a month meant there were challenges. Determined to improve his financial situation and observing the constant busyness of autorickshaw drivers, Rajkumar realised that learning to drive could be a route to a better future. To become his own boss. With a clear goal in mind, he began saving from his earnings while learning to drive. Hard work and perseverance paid off. In 2001, a purchase of an autorickshaw was secured. A significant turning point, seeing an increase in income and a way to a more prosperous life. After marrying Mamta, the goal was to become homeowners. Years of hard work and careful planning followed, and the dream became a reality in 2011 when a house was built. They achieved this with some help from loans from family and relatives, as well as savings Rajkumar had accumulated over a decade of running his auto rickshaw business. Rajkumar smiles, proud and fulfilled. Looking ahead, he is determined to continue to live in Delhi with his wife and children, believing that the village in Bihar offers limited opportunities. So why remain in Delhi? "Staying in the city ensures us a brighter future", he says, "where my children can access the opportunities that Delhi life offers". Rajkumar has finished his smoke. He throws the butt on the ground, into a puddle, swivelling his shoe on it to ensure it has gone out. His next fare has arrived. A smartly dressed young woman walks over, nodding at the driver and smiling at us in acknowledgement all at the same time. She wears a light blue jacket over an orange t-shirt, sporting a pair of khaki trousers and ankle boots. With a large red tote bag over her shoulder, she constantly refers to her iPhone in the palm of her hand. Rajkumar and the new arrival, who we later learn is called Jahnvi, greet each other with a 'namaste'. They know each other well, as it transpires the auto driver provides her transport every day to the local metro station. Jahnvi has a degree in English, which she gained from Bharati College. Her parents

sent her to the local low-cost private school to enable her to learn English from an early age. All with the expectation that she would succeed and attain a role in an international company. And this she has done working in Gurugram at a British-based company call centre. "I am very busy supporting traveller's queries and issues, not only on the phone, but also using Live Chat", she says. Jahnvi has her own desk and computer, working alongside 1,400 other operators. Her colleagues work around the clock, and she feels she is fortunate that, owing to her upgraded position and promotion, she has secured day shifts. This makes the one-hour metro journey in the women's carriage feasible. She still lives in the basti, although moving could be an option. The support given to her by her mother and father in the past, she believes, she now needs to return. Looking at her Apple watch, she tells us she must go and steps into Rajkumar's auto, who has been waiting patiently, staring into the distance from his cab.

Our conversation has distracted us from the street. Darkness has turned to light, the puddles reflecting the brightness of morning. The children have disappeared. All now sitting at their desks, no doubt. What has replaced them is a scene of ordered chaos. The pavement has been taken over by rows of extra-large blue and white plastic containers. A multitude of women stand guard over them at the entrance to the interior of the basti. The street is now blocked by two private water tankers. The trucks facing each other, nose to nose like some combat of the titans. One driver standing on the ladder of the back of his tanker. The second driver holding and directing a thick yellow plastic hose pipe that comes out of the top of the lorry. In anticipation, the women start moving forward. Wanting their container to be filled first. But the water street vendors have priority and fill up the containers on their carts, ready to sell to those who can't come to the pick-up point. The women move forward again. Jostling for position. It takes time. But eventually the containers are gone, and rupees have changed hands. A young man hangs his now full containers on the crossbar of his bike. Not able to sit on the saddle and pedal, pushing it is the only option. Where are the containers going? We decide to follow.

He makes his way to the basti entrance. Starting out the streets in the slum are quite wide, but it does not take too long before the buildings close in and the streets narrow. It is a warren of activity and a colourful mosaic of community life. Blue, green, pink painted walls. Three floors of buildings, the first being the entrance to a business of some kind. A criss-cross of electrical wires run to and fro, from one building to the next on both sides of the street. The first and second floors are the community's homes, complete with satellite dishes. Washing hangs in the upstairs' gaps, hoping for the rain to stay away until drying occurs. The bike pushing water carrier in his stripey flip-flops is still making good headway. Miraculously, he hasn't bumped into anything even though his cargo is unbelievably heavy. He starts to slow and must be close to his delivery point. Light is emanating from one of the downstairs shopfronts on the left. The flip-flop water courier stops. He has made his destination.

Greetings occur and pleasantries exchange. Unnervingly, the greeter holds a cutthroat razor, waving it at the water boy. He's happy to see him, bringing water for his business – "Vishal the Barber Shop". The space occupied is around 12 feet

by 8 feet. A black reclining chair is occupied by a man having his morning beard trim. His shoulders and chest are covered by a tea towel. Vishal holds the razor in one hand and a comb in the other, snipping and cutting away. A mirror takes up the whole side of one wall. The other houses styling products neatly stacked on shelves waiting for the correct customer. A poster on the back wall illustrates numerous hairstyles, some more creative than others.

It's still quite early, but the next unit's lights are on too. Standing on a ladder, holding a paint brush in one hand and a plastic container holding white gloss in the other, is a white haired man in a yellow, black and white checked shirt and jeans. Covered in paint splashes, he must have been working for some time. The walls are looking clean and bright. A makeover certainly worth doing to ensure customers that the business within provides a clean and hygienic environment. The man climbs down from the ladder. He almost hits his head on the revolving plastic cream coloured fan hanging inches away on the ceiling. He smiles, knowing that we think he's had a close call with the fan. He wants to put us right. He tells us his name is Chandan. Arriving from the Baliya district of Uttar Pradesh in 1997 with his uncle and living in the basti, his first real job was with a detergent company in Okhla. The pay was only Rs. 400 (£3.79) per month, so Chandan took a labourer's job with a construction company nearby. After 20 years of working in various unrelated jobs, specialising in one vocation seemed to be a more lucrative option. So, he decided to go it alone. He now owns his own interior and exterior painting company, earning Rs 10,000 (£94.75) per month. The demand for painting services in the neighbourhood is ongoing. Business will always be there.

Chandan lives in the basti in a three-room house shared with his wife, Usha, and two children. He is proud to tell us that both children have completed their education up to college level. This accomplishment is a source of immense pride. Education provides his children with opportunities he never had. With a solid educational foundation, his children will have a better start in life and be able to pursue brighter futures. Chandan proudly surveys the spick and span room, looks at his

Figure 5.2 Painting and barbershop

watch and informs us that he is going to meet Usha for lunch. She works with other women from the community sorting garment factory waste. The cycle sellers are bringing a variety of delicious lunchtime dishes too good not to try. The recipes are always changing, and according to Chandan, today's specialities will be Pav bhaji (a blend of spicy mashed vegetables served with butter-toasted buns) and chole bhature (chickpea curry served with deep-fried bread). How could we resist?

Afternoon tea

The business of recycling, garment factory waste and the curry seller

We make our way back out towards the south entrance of the basti. What meets our eyes is a street divided into three rows. The first looks identical to the third. Each side of the street is piled high, as far as the eye can see, with very large white canvas sacks. They are stacked in piles reaching five feet or so in height. Usha (Chandan's wife) tells us that on one side of the street are sacks filled with textile waste from the local garment factories in Okhla. These textiles are pieces of different fabrics in terms of colour and type that are remnants from the cutting process when making clothes. Indeed, 15% of fabric is wasted during the making of garments. In Hindi, Usha tells us, this factory waste is known as *Katrans*. Sitting in between the two piles of sacks is a row of 20 pairs of women or more, each facing each other. They are dressed in vibrant colours. Their shawls and saris – pinks, oranges, blues, yellows, greens – are a spectacular contrast to the whiteness of the piles of sacks. The women are sitting in one long line, on the ground in between the sacks in pairs, segregating the textiles into colours and fibre type, cutting them into strips. They then deposit these into the sacks on the other side of the street, ready for Yameen to take the process further. This includes turning the pieces of cloth into minute fibres, followed by cleaning and then drying. The recycled yarn can then be used in the future production of cloth rather than going to landfill.

But it's time for lunch. Narendra, the lunch cycle seller, is making his way up the line, serving the women their lunch at a price of Rs. 20. He serves the food from his bike. He has set it up on a stand on the back wheel. That's where the curry is located in a large silver vat. On the handlebars is a tin box full of bread and buttered toasted buns. He serves the women with both hands. Scarf around his neck, jacket, trainers, sporting a smart moustache and slick hair gives him an air of sophistication and confidence. He's not the only lunch cycle seller and food vendor. He has competition. A man in an orange shirt, black hair with dyed red tips, is piling rice high into bowls, serving some of Yameen's supervisors who have been monitoring the sorting process. We stick with Narendra and choose the chickpea curry, and it's totally delicious. Sitting watching, perched on top of a pile of sorted textiles, is Yameen. Swinging his feet in his brown leather sandals, arms across his knees, he's watching the process with a keen eye.

Yameen runs one of the main recycling dealerships in the community. His family, originally from Uttar Pradesh (UP), migrated here in the 1990s in search of a better life. Born in the basti and now aged 24, he works as a partner in the family

Figure 5.3 Recycling

recycling business. The community is made up of many from Uttar Pradesh who have bonded together owing to their shared roots and experiences. These have played a crucial role in shaping the cultural and social fabric of Delhi's informal neighbourhoods, including this basti. When Yameen's father first moved to Delhi, he began selling ice candies (ice lollies) from a mobile cart. Through hard work

and determination, saving enough capital, he purchased a small piece of land. What seemed to be an up-and-coming business was what was then a new venture – buying and selling waste and scrap materials, including paper, plastic, glass bottles and fabrics. As the savings grew, the operation expanded. What began as a modest endeavour has now transformed into a thriving family business, with Yameen, his father and his brother all working together to manage and expand their enterprise. The family's journey from selling ice candies to running a successful recycling business is a testament to their resilience and entrepreneurial spirit.

The recycling warehouse is situated on one of the roads that run adjacent to the settlement. There are several other similar shops and warehouses along one edge of the basti's periphery. The business evolved significantly when dealings changed to contracting directly with neighbouring factories and companies, purchasing materials in bulk. This shift in strategy proved to be both profitable and efficient, as working with large companies streamlined operations and secured more deals. Trading with large businesses offers clear advantages. The business's ability to adapt and scale by focusing on more significant, stable clients has been a key factor in their ongoing success. No bank loans have been taken by the family for the business, who prefer to take any loan from people they know or from within the community they trust.

Garment tags for export

Yameen tells us that there is another entrepreneur down the back street in the basti who is doing incredible business too. He wants us to follow him to show other success stories that are occurring in the neighbourhood. The storefront is very small, and it is difficult to get inside the tiny room. One has to bend down so as not to hit one's head on the cement lintel door frame. A woman crouches outside the open window. She talks loudly and proclaims she is Daleep's mother. She is sitting guard for anyone coming into the business. Daleep's motorbike is propped up outside the shopfront – a Royal Enfield – bringing back to us memories of Steve McQueen in films from a bygone age. Daleep's family includes his mother, wife and two children, an older brother and an elder aunt who all live together in the two-storied house above the tiny room we are standing in. The building is one of the oldest in the settlement, and over time, the streets have been repaved. As a result, the original ground floor of his house is now below road level. The front of the house doubles up as his workshop. Before this entrepreneurial business, the workshop area was used by the family as a small shop. The front of the house still has wooden shelves and a shop counter overlooking the street. Daleep tells us that he converted the family shop into his workshop 15 years ago and uses the shop's shelves and cupboard to store his material, including the paper tags.

Having worked for other people in the textile business for years, Daleep felt that his creative talents were not being utilised. Working as an apprentice, he had watched designers innovatively creating not only garments using different colours, shapes and materials but the labels too. He became really interested in the tags attached to clothes that were being exported around the world. As a child, he

Figure 5.4 Tags for export

collected wrappers from his visits to his auntie's shop, fascinated by the use of colour to advertise what was inside. Inspired, he decided to take a short course in graphic design and start his own business. His Royal Enfield has come in handy. He now rides all over the city to gain contracts for clothing tags and labels he designs and prints. After travelling extensively between different parts of Delhi – Noida, Gurgaon and Okhla – and racking up many miles, he started to secure major orders owing to his keen eye and business acumen. Securing orders worth Rs. 200,000 – Rs. 300,000 (£1,875 – £2,812) per month, he is able to employ some of his neighbours as well as his family to help complete the orders for internationally renowned clothing manufacturers. Pulling the threads through the labels by hand is labour-intensive. Getting them ready to be put onto designer wear for the international brands takes time. He shows us the tags he is working on for a rush job – Jack & Jones. Boxes are stacked on the shelves, string dangling successfully attached, ready to be transported to the Jack & Jones factory. Proud of the design and the finished product, Daleep believes he will go far in this business, as does his mother, who agrees vehemently and rather loudly, nodding furiously as we leave.

Opposite, a woman is sitting in another small space with purple walls, from which hang various wools and threads. Her smile is infectious. She beckons. Rita seems to be sitting on a sack filled with materials. Next to her is a mountain of haberdashery items. And on the wall, a certificate announcing "Qureshia qualified". She's holding a cream crocheted handbag – one might call it a bindle – with

a short shoulder strap and a locking crossover crocheted fastener. She proudly puts it over her arm to provide us with a fashion show. There is a hessian bag full of the same design next to her. These are being sent to the online company where they are sold. Learning handcrafting whilst a teenager initially making items for the home – bed sheets, curtains, fringing, tablecloths – according to Rita, "there wasn't a single penny of profit in it". So, she trained to become a Qureshia specialist – that is making items using a crochet lace pattern, known as Qureshia, to create intricate designs. The pattern is known for its elegance and traditional style in India, and the bindle bag shows off these skills. Through this work, Rita says she has become self-reliant, and if her children ask her for money, then she has her own that she can contribute, even to buy books for school that may cost up to Rs. 1,000 (£9.39). Phone in hand, she visits the website where one can purchase her wares. Turning the phone and scrolling to reveal her designs, she feels that her business has allowed her to become completely independent and that with drive and determination, a woman can do what she wants. Since starting her business, she says, she has become happy again. Her life now has purpose and meaning, living for the future, not only her own but her children's.

In the cool of the night

Pumping iron, beast and the beauty Bina and the corn grinder

Dusk has crept upon us. The children have returned home from school. Boys huddled outside by Daleep's Royal Enfield, making a metal Meccano helicopter that looks like it's from the 1950s. They are trying to get it to work. Obviously having fun. A string of bulbs light the way up and down the alley. The community is alive, hustling and bustling. What has become apparent are the sounds and the aromas of a community living at full pace. Women frequent the beauty parlours, threading eyebrows, henna painting, bindi buying, chatting and laughing. The door and windows adorned with portraits of women's faces, ornately painted, bedecked with jewels hanging from ears, neck, forehead – a vision that would definitely entice you to patronise the salon. The corn seller proudly stands next to her grinding machine, waiting for the next household to bring their ration of corn and wheat that needs milling. A true investment, not only for the business but also for the community. The Red Rock Gym owner welcomes the ripped young men showing their membership cards, ready to pump iron. Showing off his own oversized biceps and triceps in a tightly fitting t-shirt, an advert for such body improvements gained through lifting weights in his own establishment. The sizzling of cooking fat and the aromas of spices permeate through the community. Restaurants enticingly cooking at the front of their stores to attract visually those returning home in search of an evening treat. Dr Ansari's clinic is still open. He waves as he recognises us walking past. Mahesh's door is open; a broker's day is never done. He's holding court with a number of residents who are sitting on the two beds, sipping Pepsi from plastic cups. It must be important; he doesn't look up. The televisions can be heard from the rooms above, washing now having been taken down, the rain stayed off. Older children can be seen doing their homework, getting ready for the next

Figure 5.5 Getting ready for evening

day's lessons, revising for those all-important exams. The blue water containers are almost empty, stacked outside front doors awaiting tomorrow's tanker arrival. Coming to the entrance of the basti, we see Ashok pushing his cart back to where the day began. Some vendors are packing up. They've had a good day and are in good spirits. Other vendors are just beginning. Products are more akin to the evening purchaser. What enters our minds are the words of Jane Jacobs. The intricate sidewalk ballet. We could have indeed written exactly the same about our journey through the basti today.

> Mingled all among the buildings for living were an incredible number of splendid food stores, as well as such enterprises as upholstery making, metal

> working, carpentry, food processing. The streets were alive with children playing, people shopping, people strolling, people talking. Had it not been a cold January day, there would surely have been people sitting.
>
> (Jacobs, 1961, p. 19)

> Under the seeming disorder of the old city, wherever the old city is working successfully, is a marvellous order for maintaining the safety of the streets and the freedom of the city. It is a complex order. Its essence is intricacy of sidewalk use, bringing with it a constant succession of eyes. This order is all composed of movement and change, and although it is life, not art, we may fancifully call it the art form of the city and liken it to the dance — not to a simple-minded precision dance with everyone kicking up at the same time, twirling in unison and bowing off en masse, but to an intricate ballet in which the individual dancers and ensembles all have distinctive parts which miraculously reinforce each other and compose an orderly whole. The ballet of the good city sidewalk never repeats itself from place to place, and in any one place is always replete with new improvisations.
>
> (Jacobs, 1961, p. 60)

As the stories told here illustrate, the businesses in the communities span a broad spectrum, not all of which we describe in our journey – medical clinics, clothing and garment shops, beauty salons, laundries, jewellery stores, general stores, grocery shops, bakeries, mobile phone outlets, gyms, restaurants, recyclers and liquor stores. This list represents just a glimpse of the many different trades and services that thrive in these vibrant neighbourhoods. The narratives here provide a deeper understanding of the entrepreneurial spirit that drives these communities, illustrating the creativity and resilience of their members as they navigate and succeed in a variety of industries.

The death and life of great Indian cities

Jane Jacobs, born in 1916, became an author, activist, journalist and theorist best known for her work around community-based approaches to development. A passionate young woman from the start who had been stifled at school by her teachers. Expelled in the third grade, Jane found school boring compared to her home life. The expulsion was all over a promise. Her father, Dr John Decker Butzner, had told Jane never to make a promise you can't keep. The story goes that the very next day, having been told never to promise if you can't keep it, a visitor gave a talk at Jane's school about teeth hygiene. He asked all the children to promise they would brush their teeth every night and morning for the rest of their lives and to put up their hands to confirm this promise. Jane told all of the class to put their hands down, as this was something they could never keep! Her teacher found out that it was Jane's doing and that embarrassment had shrouded the talk. The children had all put down their hands in defiance. The teacher and Jane had an almighty argument. Jane, at the age of nine, tried to explain that her father had

told her that you should never make a promise to something that was impossible to keep. So, her teacher, at her wit's end, expelled her. Running out of school, she headed to the railway line and scrambled up and down the railway sidings. Afraid of her parents' reactions, she headed home to lunch and then back to school without telling them of her expulsion. According to Jane, the incident left her with a feeling of independence. "It really changed me. It was an important event in my life", she said. She learned from this that "you can be afraid of something and the only way to overcome being afraid of it, or to lessen the fear, is to live through it" (Kanigel, 2016, p. 39).

This little child, with guts, foresight and verve, had the beginnings of the personality that was to become Jane Jacobs. Friends from those days remember the little girl as "a free spirit, clever, hilariously funny and fearless". Numerous stories abound around the young Jane, dispelling myths put out by her teachers, pushing boundaries. In Jane's words, she 'resisted' the education she was offered at school. Defying and wrangling with authority, believing that how the teachers wanted her to behave was wrong. After graduating from high school and taking a role on the local paper as a reporter, Jane moved to New York City at the age of 18 in November 1934. When exploring the city after looking for jobs, she came across the Manhattan fur district. Using her writing skills, as well as observations, striking up conversations with people working there at the grassroots, she wrote an article for *Vogue* in 1935. "Where the Fur Flies", a 1,000-word account of the community that earned her $40. Three other literary portraits of the sidewalks of New York City by Jane were written for *Vogue* – leather ("Leather Shocking Tales"), diamonds ("Diamonds in the Tough") and flowers ("Flowers Come to Town"). Jane showed them to be:

> animators of street scenes, mediums for diverse city livelihoods, the threads that connect makers and distributors and sellers in an economic network. What makes these pieces particularly remarkable is how, even during the lean times of the Depression, she discovered vibrant, small-scale economies clipping along on their own energies, scenes so different from our shared vision of the 1930.
>
> (Zipp and Storring, 2017, p.54)

Jane was very concerned about what she called the eyes on the streets, the lack of which allows strangers to impinge on empty or unused spaces. Spaces that have been closed off from view, or where viewers no longer street-watch, as they have been taken off their surveying of the streets. Eyes on the streets is a natural and casual outcome of sidewalks that are used most, being enjoyed by all. The hustle and bustle of streets in the slums, with their combination of businesses and residents, people using and enjoying the streets, makes them safer. Streets need to be busy and encourage the criss-crossing of paths to and from the different vendors, the eyes on the streets from the residents themselves to the storekeepers and small businessmen allow them to act as guardians of the sidewalks. These 'watchers' observe the comings and goings of all, including strangers. Without knowing it,

they are keeping the streets safe. Jane gives the example of herself waiting for a bus on a street in the Lower East Side of Manhattan. Even before she could begin her normal perusal of the goings on in the street, her attention was gained by a woman opening a window on the third floor in a residential building. She began waving to get Jane's attention. The woman shouted to Jane that the bus route didn't stop where Jane was waiting at the weekend and directed her to the correct waiting place. Jane uses this example of a woman being one of thousands in Manhattan, who casually takes care of the streets. Observing, taking notice of strangers, taking action when needed. It is this watching by those in the neighbourhood itself that makes the streets safe. In *The Death and Life of Great American Cities*, Jane talks at length about these eyes on the streets. In particular, she highlights the high-rise public housing projects with their elevators and corridors acting as streets in these buildings. Jacobs is concerned about these streets 'piled up in the sky' (Jacobs, 1961, p. 51). The corridors, stairs and lifts are used by the residents to come and go. These are their streets. However, they may or may not know or recognise each other. As the corridors, stairs and lifts are also accessible to the public, having no security to the entrances (unlike apartments on 5th Avenue) and are closed to public view, they lack the security of the street-watchers; those eye police she describes on the busy and bustling sidewalks of the city. These are blind-eyed streets open to vandalism, crime, danger and lurid behaviour by 'strangers' who become an 'automatic menace' (Jacobs, 1961, p. 54). Jacobs sees the bad in such high-rise public housing:

> The corridors of the usual high-rise, low-income housing building are like corridors in a bad dream: creepily lit, narrow, smelly, blind. They feel like traps, and they are. So are the elevators that lead to them. These traps are what people mean when they say, time and again, "Where can we go? Not to a project! I have children. I have young daughters".
>
> (Jacobs, 1961, p. 413)

Why are we relating the early days of Jane's life alongside her ability to set into writing what she observed and saw from such an early age?

First, Jane's observations and writings about city life parody our own experiences in India. The ballet on the sidewalks of New York City – the pas de deux, pirouettes, arabesques, plies, adagio to allegro and the crescendo – all mimicked on the streets of Delhi. Our research shows that those living in slums are both undertaking traditional jobs linked to the community – barbers, auto drivers, food sellers – as well as accessing modern occupations in the online economy – online selling, recycling and call centre roles. The communities we observe are places of inclusion, residents working within and outside their neighbourhood in a variety of roles, engaged with the local, national and international economies. Jacobs, like us, is concerned about slum clearances and the relocation of residents away from their livelihoods, their local networks – friendship, political, religious – to high-rise public housing where the eyes of the streets no longer protect and view the dangers within unviewed corridors, lifts and stairwells.

Second, it's partly about Jane herself, her character of resilience, verve and passion. The lack of bowing to authority and to question the 'accepted' wisdom. We think about how she sees and thinks about cities, society and space. A successful campaigner against modernisation from above against urban renewal projects. A passion and drive to understand what truly makes a city work and a love for the textures and intricacies of street life, threatened by the abuses of urban renewal. What Jane was 'violently' against was the idea that to improve the lives of those in communities, such as the ones we have described in this chapter, demolition to restart with a 'clean slate' is the only answer (Zipp and Storring, 2017). Jane preferred the 'bad old streets' because they worked. The coexistence and mixed-use spaces of stores, residences and workplaces provide neighbours with a network of interconnections delivering friendships, trust, safety and collaboration; the self-organising of urban life and what Jane called 'social capital'. This could never be replaced by any amount of planning, policing or subsidised services. Jane lived and breathed the city with people at the very heart of it. Her work changed the way we *view* cities. Regeneration exists in slums themselves, people acting in their own and their community's interest causes change.

Part of the speech, "A Living Network of Relationships", which Jane gave at the New School for Social Research in New York in April 1958, addresses the issue of slum clearances. The destruction of housing brings about the uprooting of communities. And with this displacement, the annihilation of local businesses, churches, friendships and group relationships, which are then beyond repair. Jane in her speech, goes on:

> Our rebuilders have no idea what they are destroying, and they have no idea of repairing the damage—or making it possible for anyone else to do so. The entire theory of urban rebuilding rests on the premise that subsidized improvements will catalyse further spontaneous improvement. It is not working that way in New York. Living communities, portions of living commercial districts, are so ruthlessly and haphazardly amputated that the remnants, far from improving, get galloping gangrene. Furthermore, the newly built projects themselves stifle the growth of relationships. We are now conscious that this is true of the huge public housing projects. What we may not be so aware of is that this stifling of variety and of economic and social relationships is inherent in the massive project approach itself, whether public or private housing or anything else.
>
> (Zipp and Storring, 2017, p. 176)

In situ slum rehabilitation schemes

From what we have learned from our own research in the streets of Delhi and the readings of Jane Jacobs, keeping original neighbourhoods as they are and upgrading them within the current location has many benefits. Slums change and evolve themselves. Where slum rehabilitation is prescribed by the government, minimising

the loss of what comes with a thriving community environment is crucial. Using the term 'in-situ', would seem to concur with that premise.

In situ – adverb or adjective: 'being in the original position'; 'not having been moved' *synonyms* 'unmoved' and 'unaltered'.

Experts agree:

> The city of Delhi has launched repeated drives to upgrade slums, has conducted countless surveys of eligible households, budgeted enormous sums and produced reams of reports and evaluations, but virtually all slum upgrade projects have failed …. A more practical approach for policy makers is to focus on so-called in-situ upgrading of slums, that is, instead of removing slums, making them more liveable by improving the housing quality, basic infrastructure, and delivery of basic services like water and sanitation.
>
> (Heller, 2016, p. 1–2)

The draft MPD 2041, section 7.6.1 states, "Slum/JJ clusters on tenable sites shall be improved through in-situ slum rehabilitation or area improvement schemes. Relocation shall be considered ONLY in case the underlying site is untenable" (p. 54). However, in Delhi, in situ rehabilitation schemes have seen several communities removed from their original sites to housing in high-rise flats kilometres away from the original bastis. Reports in the Delhi newspapers highlight the stories of those rehoused to these high-rise flats (Mehta, 2024).

Not everyone in the original colony is offered relocation when demolition occurs. Those allocated flats need verified documents – Aadhaar cards/Voter ID cards/ration cards dated after 2014. It is estimated that out of the two million people living in slums across Delhi, 8,379 have been offered flats under the 'in-situ rehabilitation scheme' (Nabi, 2024). Indeed, these schemes have, in the past, been met with some disillusionment.

At the start of the day, Lali, the street vendor, gave us the *Hindustan Times* to read. Around the campfire this morning, there was great excitement to see their old friend Arjun Devi featured. Arjun resided in Bhoominheen Camp but was evicted and secured for his family a flat in the newly built Kalkaji extension. These flats are an example of the Delhi Development Authority housing complex in Govindpuri, allotted to those evicted from their slum in 2022 – Bhoominheen Camp. Interestingly, the term 'in situ' rehabilitation does not mean in this case within the same neighbourhood. The in situ rehabilitation scheme transfers residents from the demolished Camp to the Kalkaji flats, some 2 km away. This move from the original neighbourhood that was made up of low-rise, high-density homes to the impersonal high-rise buildings has disrupted social networks and removed communities from their street-based livelihoods. It is little wonder that some of those being offered relocation refuse the opportunity. Relocation to a multistorey building makes the transferal of small trading and business activities that are carried out at the 'ground' level impossible – street hawkers and their carts, the ownership of animals for eggs and milk, the running of beauty parlours and cafes. Those stories of real people we have observed in the first part of our chapter would no

longer be able to trade if they were evicted to this type of 'in-situ' rehabilitation. Nevertheless, a promise of a better life with safer homes and more amenities can be enticing.[1]

In reality, the tenants of the Kalkaji apartments, like Arjun Devi, believe that the conditions are worse there than in their original neighbourhood. Because of this, they wish they were back in their old slum. The flats lack potable water. They raise safety issues through faulty and broken lifts, water seepage in the walls causing electric shocks, an erratic electricity supply and the use of LPG cylinders in the flats owing to unconnected piped gas and a malfunctioning sewage system. All of these issues are occurring within two years of construction. Arjun can no longer work as a street vendor. He has nowhere to keep his cart, living on the third floor. He tried at first, leaving it outside the flats, but several times it was vandalised and eventually stolen. Now he sits staring out of the window. He feels isolated and removed from his trader's clan, sitting around the fire each morning sharing gossip, waiting for the day to begin. He's lost his livelihood, dignity and lives with feelings of helplessness and rejection. This is irrespective of the Supreme Court judgements of *Sudama Singh v. Government of Delhi*[2] *(2010)* and *Gainda Ram v. Municipality of Delhi*[3] *(2010)* that emphasise that in situ rehabilitation is the norm not relocation and that 'hawkers' have a fundamental right to trade and remain within their original trading area (RoyChowdhury, 2021).

The lack of safety in the Kalkaji apartments is a real threat to the residents too. With no security guards at the entrances and the gates to the flats, no one monitors who comes and goes. It seems anyone is able to access the buildings. In these high-rise flats, residents continually feel vulnerable and abandoned. Left to fend for themselves, helpless and acting alone, there is a deep sense of dread, especially for women. The feeling is that they have been sold a poor deal. The state has turned its back on what was supposed to be an opportunity for renewal. Issues around the lack of protection, caused by alienation, moving from a community neighbourhood environment to a single flat residency, where closing the door closes you to the world, for some, provides a sense of disillusionment and fear. Feelings around the lack of dignity and abandonment are palpable. This, the residents say, is very different from their original neighbourhood, where there was a bond within the community. Looking after each other, despite the hardships, was an unspoken pledge.

One resident recounts the problem:

> Our mothers and daughters are far from safe here. Strangers come and loiter around late into the night, drinking and causing trouble, making it impossible for our daughters to move freely. The government should have anticipated this risk, yet we are left to endure it. On top of that, the lifts haven't been working for two months. I live on the 11th floor, and my mother, who struggles to walk, has no choice but to climb the stairs every day. Despite our repeated complaints, no one seems to care or take action. We are abandoned and exhausted, fighting for basic safety and dignity while feeling utterly ignored.
>
> (Nabi, 2024)

Owing to the untenable living conditions, some residents are considering relocating back to a slum neighbourhood. Although they believed that their lives were far from perfect in their original basti, there was security and safety. It was a community that watched over each other. Wanting to return to a community where there is control from within, being part of a safe environment again beckons. The 'in situ' rehabilitation to a high-rise block of flats engenders what the residents feel is an uncaring and overwhelmingly unsanitary predicament. The scheme has succeeded in creating a vertical slum in place of a neighbourhood jhuggi (Mehta, 2024). According to one woman who lived for 30 years in the Govindpuri jhuggi jhopri and was relocated to the flats in Kalkaj:

> It's as if an eerie silence has settled over these apartments. Back in the jhuggi, there was a real sense of community. If someone had an argument, tripped, or even just had a bad day, everyone spilled out of their homes to offer help. Now, we're confined to our small rooms on different floors. It's a world where no one knows what's happening beyond their own door.
>
> (Mehta, 2024)

The building of Delhi's Kalkaji flats to "rehabilitate economically weaker section families" that have been evicted from their original bastis is only one example of in situ slum rehabilitation through the Pradhan Mantri Awas Yojana (PMAY) scheme. The Delhi Development Authority (DDA) aims to rehouse 376 jhuggi jhopri clusters, providing what they believe is a "better and healthy living environment to the residents of JJ clusters, with proper amenities and facilities".[4]

Much has been discussed and written about different government initiatives that have and are being undertaken to address slum rehabilitation in urban areas of India, including Delhi (RoyChowdhury, 2021; Kamath, 2012; Rao, 2020; Surendra, 2020; Ram and Sharma, 2022; D'Souza, 2019; Dupont and Shankare Gowda, 2020; Weinstein, 2014; Heller et al., 2021). These housing project initiatives include the Indira Awas Yojana (1985–2001), the Valmiki Ambedkar Awas Yojana (VAMBAY, 2001–2006), Jawaharlal Nehru National Urban Renewal Mission/Basic Services to Urban Poor (JNNURM/BSUP, 2005–2012), Rajiv Awas Yojana (RAY, 2013–2022), Rajiv Rinn Yojana (RRY) and the Pradhan Mantri Awas Yojana (PMAY, 2015–2024) and PMAY-U 2.0 (2024–2029). These schemes offer assistance in the construction, purchasing and/or renting of affordable homes. The PMAY-U (Pradhan Mantri Awas Yojana (Urban)), launched in 2015, subsumed all previous programmes of affordable urban housing. It is one of the government's major social welfare schemes. The budget for PMAY-U in 2024–2025 is Rs. 54,500 crore (£5 billion). This represents around one third of the total allocated to the Ministry of Housing and Urban Affairs (MoHUA) for the year.

There is much criticism around public housing initiatives in India. Failure occurs owing to the lack of community participation, poor housing construction with inadequate infrastructure, the disruption of social networks and access to employment for rehoused residents, high rents or maintenance costs thus making homes inaccessible, bureaucratic delays, corruption, poor project management and inefficient

project execution (Mathur and Mane, 2024; D'Souza, 2019; RoyChowdhury, 2021; Kamath, 2012).

The accounts from Kalkaji, part of the PMAY initiative, heralded by the government as a success, hold testament to the criticism not only of academics, but voices from the streets.

By contrast, what is unmistakable in the original bastis and communities is the durability embedded in deep history, connectivity, collective action, working within polycentristic governance systems, in spaces that engender well-being and neighbourhood cohesion. Global networks are tapped into through the almost complete ownership of mobile phones and access to the internet. Mini cities within a city, with all the benefits Jane Jacobs observed in the tightly knit communities of Manhattan, accessing global opportunities, the poor being their own agents of change, with their eyes on the streets.

Notes

1 Not just for those living in the slums as it turns out, according to the newspaper *India Today* (October 2024). According to the news report, "Some DDA employees decided to sell off the remaining inventory for a hefty profit. If you're willing to pay Rs. 6.5 laks (£5,968), the flat is yours" (*India Today*, 2024). There are also reports of scams, illegal transfer of deeds and falsifying documents to make a quick yield in the future.
2 https://missingbasti.com/posts/judgements-resources –- "jhuggi dweller should not be treated as 'secondary citizens''if the jhuggi dweller is forcibly evicted and relocated, such jhuggi dweller is not worse off'. 'no jhuggi dweller is forcibly evicted and relocated and that (those to be evicted) have a right to a *meaningful engagement*.'
3 Gainda Ram vs. Municipal Corporation of Delhi (2010) MANU/SC/0862/2010
4 https://www.youtube.com/watch?v=zFCLPV7L-48

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6 Is there a doctor in the house?

If all had to wait for better things until they could be provided for all, that day would in many instances never come (Hayek, 1960, p. 44)

Order generated without design can far outstrip plans men consciously contrive (Hayek, 1988, p. 8)

Introduction

Dr Ansari's[1] clinic is tucked away deep in the heart of the colony. His one-room office is directly on the alleyway, a storefront clinic squeezed between a beauty parlour and a corn grinding store, with security metal shutters on either side of the entrance. The office houses the reception area and the surgery alongside a fridge, stacked medical provisions, medical apparatus, computer and a consulting desk. Dr Ansari's clinic provides a real-world example of Hayek's thoughts set out in the quotes above around the demand for healthcare and the spontaneous order of the

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market to provide that care within the community. Dr Ansari's clinic is housed in a 12-foot by 8-foot space cooled by a ceiling fan on the lower ground floor of a three-storey home. Behind his desk, Ansari wears a well-ironed yellow shirt with earphones slung around his shoulders. He is welcoming, giving an air of assurance and professionalism. There seems to be no shortage of medical supplies. Two glass-fronted cabinets are stacked and overflowing with packages. The fridge, standing on a pallet and away from the wall, has a poster of Ganesha, one of the most well-known and worshipped deities in the Hindu religion. He has the head of an elephant, symbolising wisdom and intellect. Ganesha is seen as a remover of obstacles, thus clearing the way to allow one to move forward in life. He is the bringer of good luck and the patron of arts and sciences, and the deva of intellect and wisdom. No wonder he has pride of place in Ansari's practice. A calendar is pinned up on the opposite wall, assumably provided free by a pharmaceutical rep, as it features illustrations of babies dressed as medics – stethoscope, glasses and white coats prevail. Two benches, either side of the desk, run from the door to halfway down the room. One has a pillow and a red plastic chair adjacent. It would seem that this bench is for patients who are about to be examined to lie on comfortably. The other bench provides space for about three people to sit to talk confidentially to the doctor at his desk. Ansari's clinic is typical of those we visited. He's been taking care of this community from the same small one-room clinic since 1997.

While we talk, he tells us all about his journey from dreaming of being a doctor as a child to setting up his first practice and how things are now. His clinic is busy, so our conversation gets interrupted by patients quite a bit. They come in without hesitation, trusting Dr Ansari completely. "He's a great doctor", they tell us, "He's healed many of our family members". He charges anywhere from 10 to 20 rupees per visit, depending on the patient's illness. Patients are happy to see Dr Ansari; they talk freely with him and listen closely and intently to his advice.

Dr Ansari lives with his wife and three grown-up children – two daughters, 24 and 22, and a 20-year-old son. He's worked hard to build his clinic business because he wants the best for his children. His oldest daughter has a humanities degree and teaches children with special needs, commuting every day from the colony to Gurugram. He tells us that his youngest daughter is following in his footsteps, training for her BAMS (Bachelor of Ayurvedic Medicine and Surgery). He seems extremely proud of her for choosing the same path he did. She lives away from home in Mathura and is in her second year at the Sanskriti Unani Medical College. He jokes that she takes after him and isn't great at physics. "If she had done better in physics, she could have gone for an MBBS", he says. MBBS is a Bachelor of Medicine and Surgery. Training to become a doctor in India for an MBBS degree takes five and a half years, including a one-year internship. This degree provides traditional medical training as in the U.K. or U.S.A. Running alongside BAMS, there are other non-MBBS options in India, including AYUSH programs that focus on Ayurveda, Yoga, Unani, Siddhi, and Homoeopathy. His son is on a different track, proudly says Ansari, studying for an MBA and getting ready to go into business. His children's education is extremely important to him.

We ask Dr Ansari how and why do medics like him emerge in slum settlements? He says he came here around 25 years ago:

> "When I came to this place, there was nothing here. No proper drainage systems. The kinds of patients we had were those with fever, colds, and stomach-related issues."

And now we ask, have things changed?

> "Well, you know", he says, "there are still patients coming in with stomach diseases, but things are getting better, I feel. The residents have done a lot and made many improvements. These improvements are reflected in better health … I'm still busy".

He goes on to tell us that he believes these stomach problems come from two main sources.

> "People are eating different cultural foods, which is causing them illness. Vendors prepare it by the roadside, and cleaning does not take place here at regular intervals. This is the first reason for this issue. Secondly, those who are consuming filtered water are also experiencing stomach problems."

We ask him why he believes filtered water is the problem. Dr Ansari explains that it has to do with not changing the filters and some homes not taking proper care. He says he always suggests boiling drinking water.

At that moment, a patient comes to the door. "Doctor Ansari? Sorry to trouble you", they say, coughing and explaining that they have finished the medicine he prescribed and need more. He consults his notes on the computer and then reaches to one of his shelves behind him. Taking down a box, saying, "Another course of this medicine should clear it, but please do come back if the symptoms have not completely cleared".

Another patient pops their head around the door. "Doctor Ansari, are you free for a moment?" they ask. They explain they are suffering from stomach pain and have not been eating well. Ansari asks how many times they have been to the toilet since the pain started and if they have vomited. He prescribes medicines and recommends that they go to the pharmacy in Harikesh Nagar to buy them. "Don't forget, 3ml thrice a day. You will be fine". His smile is reassuring, and the patient leaves on a mission to the pharmacy and better health.

We will let Dr Ansari get back to his patients and come back later in the chapter to find out more about not only his medical journey but also the journeys of other slum doctors.

As might be expected, not everyone sees Dr Ansari's medical practice as desirable, including the Medical Council and judiciary:

> One hotly debated topic is the relative quality of providers in the private and public sectors. One side of the debate holds that private-sector providers are mostly "quacks" with little training and medical competence; the other side notes that anyone able to afford a private doctor will do so, since the care is much better.
>
> (Das and Hammer, 2007, p.340)

In the 1996 case of Poonam Verma v. Ashwin Patel, the Supreme Court of India provided a legal definition of 'quack' (Section 41):

> A person who does not have knowledge of a particular System of Medicine but practices in that System is a Quack and a mere pretender to medical knowledge or skill, or to put it differently, a Charlatan.
>
> (Supreme Court of India, Poonam Verma vs Ashwin Patel and Ors on 10th May, 1996)

As per Section 11 of the Indian Medical Council Act, 1956, a medical qualification is one acquired from a university or medical school in India, 'included in the First Schedule'. According to the Indian Medical Council Act, qualifications that are not listed in the 'First Schedule' are not officially recognised. An update was made in the Indian Medical Central Council Act of 1970 to include the recognition of medical qualifications from institutions mentioned in the Second Schedule. All medics need to register in the State or Central Register of Indian Medicine. Where an individual is in breach of the Acts, they may be imprisoned for one year and fined up to Rs. 1,000, or both (Singh and Trivedi, 2024). Those practising homoeopathy must hold a recognised medical qualification and be registered in the State or Central Register of Homoeopathy according to the Homoeopathy Central Council Act of 1973. The Indian Penal Code (IPC) also sets out the issues around criminal conspiracy (Section 120B), culpable homicide not amounting to murder (304), deception (420) and impersonation (419). The IPC has since been replaced in July 2024 by the Bharatiya Nyaya Sanhita (BNS) as the official criminal code in India. Section 106 of the BNS mandates imprisonment for up to five years for registered doctors involved in deaths caused by rash or negligent acts during medical procedures.

BNS Section 106:

> Whoever causes death of any person by doing any rash or negligent act not amounting to culpable homicide, shall be punished with imprisonment of either description for a term which may extend to five years, and shall also be liable to fine; and if such act is done by a registered medical practitioner while performing medical procedure, he shall be punished with imprisonment of either description for a term which may extend to two years, and shall also be liable to fine.
>
> **Explanation:** For the purposes of this sub-section, "registered medical practitioner" means a medical practitioner who possesses any medical qualification recognised under the National Medical Commission Act, 2019 and whose name has been entered in the National Medical Register or a State Medical Register under that Act.

The Supreme Court in April 2018 discussed the 'threat' and 'risk' of untrained practitioners, described by the courts as 'quacks' and 'charlatans' who practice medicine. It is believed that they play with the lives of people and pose a risk to society.

> "A number of unqualified, untrained quacks are posing a great risk to the entire society and playing with the lives of people (Justice R.K. Agrawal and Justice Mohan M. Shantanagoudar). People having no recognised and approved qualifications, having little knowledge about the indigenous medicines are becoming medical practitioners and playing with the lives of thousands and millions of people. Sometimes such quacks commit blunders and precious lives are lost."
>
> (*Business Standard*, 2018)

Utilising the services of private providers, operating as 'quacks' within the slums may have poor consequences, not only for the individuals involved but also for the public healthcare system. Patients delayed from receiving genuine treatment risk recovery and well-being. The delay to a professional diagnosis can lead to the patient being transferred to the public health system in greater need of care than originally first required at the outset of the symptoms (Singh and Trivedi, 2024; Pai, et al., 2024).

In this chapter, we explore the world of what some have termed private or informal healthcare providers. We believe these doctors are examples of medical entrepreneurship. The basic concept in Kirzner's theory of entrepreneurship is alertness (Kirzner, 1997; 1973). "Alertness leads individuals to make discoveries that are valuable in the satisfaction of human wants" (Yu, 2001, p. 48). The private healthcare providers are satisfying the wants of our communities. Due to inequalities in health care access, private medical services have sprung up within neighbourhoods to cater for individuals unable to access or ignored when attending a government healthcare facility. There are three parts to this chapter. First, to consider the supply side, we set out the findings from our census and survey in each of our three neighbourhoods. Second, focusing on demand, we listen to medical providers' voices to explore the extent and type of medical conditions treated regularly within the communities. Third, utilising the methodological tool developed by Das and Hammer (2005), we conduct an experiment to explore quality and competence. Each part starts with quotes from the private healthcare provider interviews, followed by some of the findings already documented in the literature and then our own findings from our three settlements.

The number of private healthcare providers in the three settlement types

Dr Kartik, a doctor in one of our neighbourhoods told us:

> "At our clinics, poor people come to visit. I treat them at less cost accordingly. Also, I possess good knowledge also. Those who did not benefit from anywhere, I've cured them. Because I use patented medicine, not generic medicine. I bring it from reputed companies only. Due to a good knowledge base, my diagnosis is also good. When diagnosis is good, medicine will automatically work. If the diagnosis is not good, medicine would not work. The patient is having another problem and you're giving medicine for some other diseases, definitely it will not work. That's the reason for my success."

India's post-independence health care system is based on a tax-funded system similar to that in the U.K. Joseph P. Bhore's committee's report in 1946 created the Indian National Health System, where medical care is delivered through salaried doctors. India created a three-tiered health care policy. In rural areas, this consists of Primary Health Care Clinics (PHCs) that are linked to Community Health Centres (CHCs) to deal with more complex cases. In urban districts, city hospitals have been built for tertiary care (Patel et al., 2011; Acharya, 2013; Anand and Fan, 2016).

Data show that 86% of full-time health care providers in rural India operate in the private sector, with 68% having no formal training and hence operating 'illegally'. A market exists as shown by the dense network of health care providers. In these rural areas, patients choose their provider, the majority of which are private (Das et al., 2022). According to the National Family Health Survey 3 (NFHS) (2014), almost 60% of households indicate that poor quality care in public health care facilities is the reason for not utilising them (Baru et al., 2010). The Bharatiya Janata Party (BJP) government led by Modi in 2014 focused on making traditional forms of medicine mainstream. The government established the Ministry of Ayurveda, Yoga, Unani, Siddha and Homeopathy (AYUSH). Ayurveda – 'Ayur' means 'life' and 'veda' means 'knowledge' in Sanskrit (Bhandari, 2015). Data show that for every household in Delhi that there are 70 medical care providers (mostly private) within a 15-minute walk (Das and Hammer, 2005). Private medical providers account for 70% of the share of health care expenditure in all of India (WHO, 2009, 2014; Downie, 2017; Watson, 2021).

So, what does our research show is happening in Sanjay colony, Bhalswa and Ajit Vihar around private medical health care? In 2024, we undertook a census in each of the neighbourhoods to understand the extent of medical provision within the communities. By walking down every alleyway and through each street in our three communities, we logged every private healthcare provider we came across. The private sector ranges from one-room clinics to those selling Ayurvedic medicines, from pharmacies, laboratories, drug retailers to pharmaceutical stockists. In the three neighbourhoods, we found 43 private health care providers – 28 clinics, 13 medical stores and pharmacies, 1 dentist and 1 laboratory.

Why the urban poor attend fee paying private medical care?

India has one of the largest public health systems in the world in terms of size. However, most health care communications in India are through the private sector (Peters and Muraleedharan, 2008; Mahal et al., 2004; Mackintosh et al., 2016). In rural India, owing to the lack of access to publicly operated Primary Health Care Centres, a wide variety of health care providers with differing 'qualifications' has arisen to fill the gap. This provides those living in rural areas a multitude of 'doctors' to choose from (Das et al, 2022). Some believe this to be a "vibrant, dense, and competitive marketplace" (Das et al., 2022, p. 1). Some qualifications within this sector are non-MBBS certified, including AYUSH providers – alternative medical practitioners with degrees in Ayurveda, Yoga, Unani, Siddhi and

Homoeopathy. Owing to a lack of data on what is happening on the ground, there is a limited picture around quality, medical knowledge, availability, access and cost at the point of delivery.

When carrying out research in the slums of Kathmandu, Nepal, Elsey et al (2016) found there to be an association between one's social capital and the role of social cohesion in the health and well-being of women. The greater the level of trust, empowerment and neighbourliness felt by women living in the slums, the greater their subjective well-being.

Evidence suggests that public doctors in government hospitals behave poorly towards patients from low-income households (Das and Hammer, 2007). Doctors are also likely to be absent. When enumerators called on government health facilities across India, 40% were found to be absent, whilst those present were also found to be inactive and not carrying out their duties (Chaudhury et al., 2006). Doctors are more likely to be absent than other healthcare workers. The hypotheses are that doctors can receive an extra salary from private practice whilst on a full-time public salary, those working in rural areas do not live in the vicinity and therefore turn up irregularly, and strong unionisation prevents professionals from being dismissed and reprimanded owing to unprofessional conduct (Chaudhury et al., 2006).

A study in the slums of Ahmedabad, India, considered the attributes of a health care provider and choices made by the residents. Residents were asked to think about the attributes that informed their choices of health provider with the following options (i) either a public, private or traditional provider, (ii) the distance of travel to the facility 15 minutes compared to 35 minutes, (iii) the attitude of the doctor and staff towards the patient (friendly or indifferent), (iv) the appropriateness of care, and the (v) familiarity with the doctor (known or unknown). The data show that for the 93 residents, the most important attributes were the appropriateness of the health facility with the illness, that the doctor is known by the patient (familiarity) and acts in a friendly manner. Residents also preferred a health care provider to be local rather than one located further away (Černauskas et al., 2018). Female respondents showed a preference for private providers. Older respondents and females have a stronger preference for doctors with a friendly attitude and respect towards their patients and are known to them personally, engendering a sense of trust and continuity. Similarly, in poor areas of Gurugram, Haryana the attitude of public health care doctors towards the poor, flexible opening and visiting hours, the likelihood of having medicines in stock, as well as inefficient public provision are highlighted as reasons for the preference of private health providers.

> If anybody wants to get hassle-free services, then government facilities are not an option. The staffs are irresponsible and behave rudely with poor patients. Along with waiting time, such attitudes of staff make the patients move away from government facilities.
>
> (E P, A. A et al., 2021, p. 90)

Rude behaviour and the lack of empathetic attitudes by government healthcare professionals towards the poor in government facilities reoccur as reasons why private healthcare is preferred. Themes include 'unpleasant experience from government hospitals', 'rudeness', 'discrimination of the poor', 'symptoms not taken into consideration', 'long queues'. In contrast private healthcare providers are regarded with satisfaction, where doctors are 'respectful', provide 'dignified treatment', 'empathetic', 'listening' and 'caring'.

In poor areas of Gurugram city, Haryana, the poor seek treatment from private healthcare providers:

> Participants have experienced a glaring difference in the behaviour of staff in other facilities they accessed earlier, especially the government-run hospitals and centres. People felt discriminated due to their identity of being outsiders. However, the facilities provided by IHPs (Informal Healthcare Providers) values them and "treat" equal. Such positive behavioural and treatment attributes of the practitioners not only increased their morale but also sustain to seek healthcare from such practitioners.
>
> (E P A A, et al., p. 94)

Collecting data from 2,000 households making up 10,929 individuals in slums situated in four cities of India – Jaipur, Ludhiana, Mathura and Ujjain – 68% of household heads indicated that their family only visited private health facilities in their slum, while 14% said they used both private and public. Private health care provision was typically within 2 km of the residence and within walking distance (Gupta and Guin, 2015). A key concern is the corruption in the delivery of public services, including health (Gupta and Guin, 2015). This includes the payment of 45,000 salaries of bogus/ghost employees in Delhi alone by the Municipal Corporation of Delhi (MCD). In 2004, over Rs. 32 lakhs (Rs. 3 million or £2.7 million) was released for salaries of 1,826 employees. Six MCD officials were arrested in connection with the embezzlement (Times of India, 2009).

In summary, previous research demonstrates that government urban health care does not meet the needs of the poor. There seems to be at least four main reasons according to the literature – a shortage of government provision, the attitude of doctors in the government sector to the urban poor, corruption within the system and a lack of trust. Evidence suggests that some doctors and medical practitioners in government hospitals have a poor attitude towards patients from low-income households, offering a poor quality of care (National Family Health Survey, 2014; Peters and Muraleedharan, 2008; Ishwardat et al., 2016). This leads to issues around trust (Raha et al., 2010; Aneli et al., 2018). Large numbers of medical practitioners, as many as 40% in a typical day, are also absent from government facilities (Pulla, 2015; Chaudhury et al., 2006). Corruption within the government system has implied a lack of structure and efficiency around provision (Kumar, 2003; World Bank, 2008; Dash et al., 2009; Sengupta and Nandy, 2005). Reports around corruption have targeted the Municipal Corporation of Delhi, which is

responsible for improvements and coordination of medical health facilities around the city (Dash et al., 2009; Naher et al., 2020).

In our research of the healthcare providers surveyed, more than 50% have been practising for over 20 years in their slum community. Their ages ranged from 22 to 64 years ($\bar{x}$ = 38.93, σ = 10.576). The majority (90.7%) reported that they had no other occupation and working in medicine was their only job. There was a split in residency, with 40.8% stating that they lived in the community and 59.2% indicating that they lived outside the community where they practice medicine. This could have some bearing on the levels of trust and respect. However, we could conjecture that as stated by the practitioners themselves long term respect and trust is gained owing to effective and efficient diagnosis, medicine prescriptions and the curing of ailments.

According to Dr Dwivedi trust from the community comes with time and reliability:

> "The patients from this place didn't give their trust to nobody. When we first started our practice, they relied more on home remedies. If you say north, they will say south. Until they trust you, they don't listen to the doctors. However, after some time, I'd say two years then they started to trust our clinic."

Interviewing patients also collaborated the attributes they expect from their private medical practitioner in their communities:

> "My mother-in-law lives with us and sometimes needs the doctor to come to visit here at the house. We use our local doctor as he is flexible and will come when she needs him. He knows us well. He knows what my mother-in-law will need to set her right again. If we had to use the government hospital, then there is not that flexibility. They would not come to our neighbourhood. It is too interior."
>
> Patient 1

And:

> "Being a woman, I only want to see my local doctor – Dr Sunita. She is a good doctor, and I know her, and she knows me. She is only a walk away. I have a belief in her and she provides good advice. There in the government hospital there is a long wait. And when you are seen they spend little time on your problem. As we are from this place they treat us badly. Like we don't matter."
>
> Patient 2

And:

> "There in the government hospital they will not give you the medicine you need. Even if they give you medicine, they do not have it on the shelf. Visiting Dr Yadav, he is always listening well to my problems. He recommends what

Figure 6.1 Clinic

I should do. And he gives me the medicine. If he does not have it, he will prescribe it from the pharmacy which is just a walk through the basti"

Patient 3

Qualification of private medical providers: Sanjay, Bhalswa and Ajit Vihar

"In this colony, services play a pivotal role. What kind of services you are giving to the patients is the only factor. Whether you are an MBBS or a BAMS hardly matters. They don't consider who you are or the qualifications you have. They have taken the medicine from you. They liked your services, behaviour and hospitality. They learn to trust you, they will consider that, and come back again if everything works out well for them and they regain their good health."

Dr Abdullah

In India, undertaking a Bachelor of Medicine and Surgery (MBBS) degree takes five and a half years, including a one-year internship. There are a variety of non-MBBS qualifications, including AYUSH (Ayurveda, Yoga, Unani, Siddhi and Homoeopathy an alternative medical practitioner degree), BAMS (Bachelor of Ayurvedic Medicine and Surgery) and B Pharm (Bachelor of Pharmacy) (Rao et al., 2011, 2013). Research shows that only 58% of doctors in urban areas have a medical degree, and only 19% in rural areas (Chandra and Bhattacharya, 2019). For allopathic doctors, 31.4% have a secondary school qualification. Previous research in Delhi suggests there are "no qualified doctors available in the slums" (Chandra and Bhattacharya, 2019, p.38). It is often assumed that those providing private medical care for the poor in slum areas are not qualified (Downie, 2017). This leads to the Indian government and Indian Medical Association dismissing these providers, labelling them as 'quacks' and condemning their practice as illegal (Das and Hammer, 2007). The Medical Association has a view that classical medical training is required before anyone can consult and dispense medicines (Pulla, 2015).

The data in Table 6.1 show the distribution of the medical providers' qualifications in each of the three different types of settlements. Those qualified at MBBS, BAMS and B Pharm have some formal medical-related qualification. Other qualifications, i.e., Masters, Degree, Diploma or less are not medical-specific certifications.

Therefore, we have two broad groups. Private health care providers in our three settlement types firstly with a formal medical related qualification – MBBS degree (Bachelor of Medicine and Surgery), BAMS (Bachelor of Ayurvedic Medicine and Surgery) and B Pharm (Bachelor of Pharmacy) (25.7%) – and secondly with little or no formal training in medicine (74.3%).

We undertook analysis to see if there are any statistically significant differences in the numbers of medical practitioners working in each of the three settlements. Sanjay colony has significantly ($p<0.05$) more medical practitioners with a degree and significantly less with a Diploma or less. The data also show medical practitioners with master's qualifications only in Sanjay and Bhalswa. We found no significant difference between each of the three settlement types of the number of medical providers who had MBBS and BAMS qualifications (Table 6.1).

Table 6.1 Qualifications of medical providers

Qualification	*Sanjay*	*Bhalswa*	*Ajit Vihar*	*Total*
MBBS	3.4%	3.1%	2.3%	2.9%
BAMS	13.8%	18.8%	13.6%	15.2%
Masters	3.4%	3.1%	0.0%	1.9%
B Pharm	6.9%	6.3%	9.1%	7.6%
Degree	27.6%	9.4%	11.4%	15.2%
Diploma or less	44.8%	59.4%	63.6%	57.1%
Total	100%	100%	100%	100%

Note: B Pharm: Bachelor of Pharmacy is a four-year undergraduate degree in pharmacy. The BAMS is a five-and-a-half year, Bachelor of Ayurvedic Medicine and Surgery. It is an undergraduate degree in the field of Ayurveda, the traditional system of medicine in India. MBBS is a Bachelor of Medicine and Surgery degree in India.

Type of medical conditions

What are the most prevalent ailments in the slums of Delhi that are treated by private healthcare providers?

> "Skin allergy, common infections and fever. These are the most common problems in this area. Health issues are a very common thing owing to the lack of clean water and pollution. We see lots of our patients around these things – breathing problems, dehydration, diarrhoea, bad throats. That's the reason we opted for this place. We can do a good job here as there are many needing our help."
>
> Dr Dwivedi

And

> "I give general treatment like diarrhoea, fever and cough. People do come for these minor illnesses at clinics like mine. If they have severe medical illness, like cancer or needing operations, and I am unable to treat them, I recommend they go to one of the big hospitals in Delhi. The patients who come to me, I diagnose them and give them medicines or advice where needed."
>
> Dr Verma

In slums globally, it is estimated that poor water, drainage systems and sanitation (including open defecation and latrines that discharge into the community's environment) contribute to disability adjusted life years (DALYS) in LMICs (lower- and middle-income countries), causing 60 million DALYS globally (gastrointestinal disease (diarrhoea, vomiting, dehydration and dysentery), malaria, hepatitis, dengue and typhoid) (Elsey et al., 2016; Gupta and Guin, 2015; Krishna and Raj, 2022; Banerjee et al., 2021; Cairncross et al., 2010). The use of solid fuels for cooking and heating ranks fifth highest with over 40 million DALYS and 3.5 million premature deaths annually, typically from respiratory disease (asthma, cough and tuberculosis) (Elsey et al., 2016). Accidents and injuries are also among the main causes within the home, including within the kitchen and in the wider slum environment (burns, eye irritations and headaches).

The data we collected in our three settlements were classified as in Tables 6.2 and 6.3 as 'routine' and 'non-routine' illnesses. The 11 subcategories are taken from the definition by Luke and Munshi (2007). Non-routine illnesses are those that are more difficult to treat and potentially more serious. We aggregate the responses from 105 medics collected during the survey from our three different neighbourhoods. First, the most common routine illnesses reported were fever, headaches and loss of appetite (52.7%). Coughs and throat infections were second, accounting for 33% of routine illnesses and include sinus issues, throat pain and tonsillitis. Ear, tooth and eye infections account for 11% of routine illnesses treated at the private medical facilities (Table 6.2).

Table 6.2 Routine illnesses

Illness	*Sanjay*	*Bhalswa*	*Ajit Vihar*	*Total*
Cough and throat infection: cough, sinus, throat pain, throat infection, tonsils.	34.6%	36.1%	27.6%	33.0%
Headache and fever: fever, infection, headache, loss of appetite.	53.8%	55.6%	48.3%	52.7%
Injury and accident: injury, hand injury, leg injury, insect bite, glass cut, bleeding.	7.7%	0.0%	3.4%	3.3%
Ear, nose and throat: ear pain, tooth pain, ear infection, eye problems, nose pain.	3.8%	8.3%	20.7%	11.0%
Total	100%	100%	100%	100%

Table 6.3 Non-routine illnesses

Illness	*Sanjay*	*Bhalswa*	*Ajit Vihar*	*Total*
Gastrointestinal: diarrhoea, vomiting, dehydration, dysentery.	38.9%	13.3%	23.5%	23.1%
Respiratory: respiratory, breathing problem, Tuberculosis, chest pain, nosebleed, asthma.	5.6%	26.7%	5.9%	15.4%
Typhoid and jaundice: low weight, typhoid, jaundice.	16.7%	6.7%	11.8%	10.8%
Childhood diseases: mumps, measles, chicken pox.	5.6%	6.7%	5.9%	6.2%
Tumours and operations: appendix, stroke, ear operation, head tumour, childbirth.	5.6%	13.3%	11.8%	10.8%
Skin conditions: allergy, boils, skin problems.	27.8%	10.0%	17.6%	16.9%
Chronic conditions: anaemia, blood pressure, giddiness, diabetes, ulcer.	0.0%	23.3%	23.5%	16.9%
Total	100%	100%	100%	100%

More serious conditions reported by our medics, but still illnesses that can be treated by the private medical provider, are given in Table 6.3. Of the non-routine cases seen in the private providers 23.1% are due to gastrointestinal illness – diarrhoea, vomiting, dehydration and dysentery.

These data illustrate the types of illnesses being treated in private healthcare providers offering a range of treatments for the most common ailments to more serious illnesses. Our medical providers tell us that when they feel they are unable to provide a medical diagnosis, they make a referral to an alternative provider or hospital where they know this can be undertaken. These referrals include where surgery is required, for example, in cases of accidents. They also refer cases of suspected cancer, chest pains and symptoms related to heart attacks, suspected kidney issues and those suffering from diabetes. With regards to more severe illnesses, Dr Ansaritold us:

> "Yes, they do come, those patients with severe symptoms. Sometimes patients come with symptoms of cancer. But I cannot do anything for these

> patients, so I refer them. There are many patients who say this to me that, doctor, you have advised me correctly and referred me to the hospital, otherwise we could have been in a problematic situation. Two of the patients I have seen recently are currently being diagnosed in Safdarjung hospital. Whenever I feel any of my patients have symptoms which can cause severe problems, I refer them outside."

Dr Sanjeev said on referrals that "in the case of hypertension, we measure BP and oxygen levels. To check the oxygen levels, we check ECG." For the ECG, he refers to the City Lab, which is nearby, within a two minute walki. Going on to say:

> "Whether the reason is sick sinus syndrome, or it is normal. Whether cardiac heartbeat is high or slow. Is there any blockage or not? These are things the ECG reports tell us. The cardiac and sinus are common things. When something else is suspected we ask them to get the Echo test. Echo is more detailed."

Competence of the private healthcare provider

> "Each morning, I come to office and make sure all is well. I turn on my computer and I can contact other practitioners in my community and beyond. We chat online and discuss any cases we may have that the community should be aware of. Like diseases and illness that could spread, or cases that are causing me to think about medication or referral."
>
> Dr Ansari

And:

> "To keep my skills up I go to seminars on a regular basis. In pharmaceutical sectors, like MK pharma, Cipla, FBC, mankind & Himalaya, they often organize various seminars. Himalayas are doing it more often and Ayurveda pharma also."
>
> Dr Sanjeev

When considering the competency of private providers with no MBBS qualification to those with MBBS (Bachelor of Medicine and Bachelor of Surgery, equivalent to an MD degree in the U.S.), Das et al., (2022) find a correlation between informal providers' medical knowledge with that of MBBS providers in the same state. "States where public providers are more knowledgeable are also those where private providers are more knowledgeable" (p. 10). Also, that "across Indian states, equal qualifications do not imply equal quality. The knowledge of an informal provider in Gujarat or Tamil Nadu is substantially higher than that of a fully trained MBBS provider in Bihar or Jharkhand" (p. 10).

When measuring medical quality, typically the medical qualifications of the doctors, their medical supplies, along with the infrastructure (electricity and refrigeration) to ensure operational optimality, are all taken as important factors.

Medical knowledge and the competence of medical personnel are also part of quality provision (Das and Hammer, 2005; Collier et al., 2003; Das and Mohpal, 2016; Das et al., 2016). Considering the diagnosis techniques of doctors in Delhi, with different qualifications working in the private and public healthcare systems, it was found that non-MBBS providers knew fewer relevant questions and examinations to perform during a diagnosis than their public or qualified private counterparts. However, when carrying out the diagnosis, the non-MBBS healthcare provider asked all the questions and performed all the tasks associated with their skill set. The examination of the patient would typically last, in this case, 15 minutes. The MBBS qualified government doctors, by contrast, performed less than a third of what they knew, taking two minutes and the private MBBS doctor, using 59% of the tasks in his armoury of knowledge took around four minutes to complete the patient diagnosis (Das and Hammer, 2007).

> Private sector providers without an MBBS may provide better health care *despite* their lower competence relative to public providers …. The amount of time, questions asked, examinations done and advice given is much lower for public MBBS doctors in primary health clinics than anyone else.
>
> (Das and Hammer, 2007, p. 11)

Mystery clients or simulated standardised patients have been used in previous studies to assess quality (Sudhinaraset et al., 2013). Quality predictors can include provider knowledge and skills, adherence to clinical guidelines and patient satisfaction. We use the methodological tool developed by Das and Hammer (2005) to measure provider competence in our three neighbourhoods. Due to time and financial considerations, we selected a subset of two case studies from the five considered by Das and Hammer (2005). Pharyngitis, depression and pre-eclampsia were not considered in our experiment; we chose diarrhoea and tuberculosis. Due to poor hygiene and a lack of sanitation in informal settlements, cases of diarrhoea and tuberculosis are common. In India, the case fatality ratio for tuberculosis demonstrates a high number of morbidities. The World Health Organization Global Tuberculosis Report (2023) highlights that the rates of tuberculosis have declined. However, it remains a challenge for the Indian government, with estimates of over 350,000 people dying every year. Two symptoms of the medical conditions were presented to the medical healthcare provider and their responses recorded. The following cases were presented to the medics, and they were requested to set out the questions they would ask the patient, what examination they would perform and the kind of treatment and/or medication they would offer. Of the 33 private medical providers that participated in this part of the study, ten had some form of medical qualification, MBBS, BAM or were working towards one. The other 23 providers had no formal medical qualification, but all indicated that they had been working in clinics and medical centres for over ten years.

The two cases that were asked in our experiment with 33 private medical providers. were:

Case 1: A mother brings an eight-month-old child to your clinic. She tells you that her child has been suffering from diarrhoea for the last 2 days and she does not know what to do.

Case 2: A man comes to your clinic with a one-month history of weight loss, and low-grade fever and coughing. If the man then told you he has blood in his phlegm, what diagnosis would you give?

The interview was recorded and then scored using the methodological tool developed by Das and Hammer (2005). We explore the data using Item Response Theory (IRT) (Hambleton et al., 1991; Humble, 2020).

With regards to our data, Table 6.4 shows the diarrhoea case (D1-D6) and the tuberculosis case (T1-T6). The third column shows whether the medical provider asked the relevant diagnosis questions (history), carried out the correct examination procedure and then provided the most relevant medical prescription. In the case of diarrhoea, the diagnosis questions would concern fever, vomiting, urination and stools. The examination is taking of temperature, with oral re-hydration being the prescribed medication for diarrhoea. With tuberculosis, the history includes night sweats and chest pain; the examination: chest inspection, taking of temperature and blood pressure. The treatment is multi-drug therapy or referral. Table 6.4 shows the percentage of providers who asked the relevant questions, stated the correct examination and the relevant prescription/way forward. These statements are compared to a list of questions compiled by experts for each of the cases – diarrhoea and tuberculosis. Correct diagnosis by the medical providers is re-hydration therapy in the case of diarrhoea and for tuberculosis, multi-drug therapy and referral. Failure to do this could cause harm to the patients in the short or long term. The final two columns compare our results in percentages with those of Das and Hammer (2005). As can be seen in Table 6.4, 81.8% and 60.6% of the private health care providers in our three slum types provided the correct diagnosis and treatment for diarrhoea and tuberculosis, respectively.

We were particularly pleased to observe the high level of accurate diagnoses in cases of diarrhoea. This result is significantly higher than the findings reported by Das and Hammer (2005). In their research, they highlighted that many medical practitioners incorrectly prescribed antibiotics for diarrhoea, which they stated was surprising given the information campaigns conducted by the World Health Organization and others emphasising this practice was unsuitable. Our data, however, demonstrates that 20 years later, this message has clearly reached a larger number of medical providers, with 81.8% of our sample prescribing the correct treatment for diarrhoea through re-hydration therapy and not antibiotics.

Using the same data, we can now consider the competence level of these 33 doctors. There are several steps needed to prepare the data for Item Response Theory and produce the relevant analysis.

The structure of the competence index uses data from the items that are set out in Table 6.4 concerning the medical practitioners' answers around patient history, examination and treatment. These 12 items are used to construct two competence indexes, one for diarrhoea (6 items D1-D6) and one for tuberculosis (6 items T1-T6).

Table 6.4 List of competence questions to medical providers

Item number	*Case*	*Type of question*	*Question*	*Percentage of providers asking relevant question, examination and diagnosis*	*Das and Hammer(2005)*
D1	Diarrhoea	History	Has the child had a fever?	42.4	40.5
D2	Diarrhoea	History	When did the child last urinate?	18.2	14.6
D3	Diarrhoea	History	Has the child had any vomiting?	54.5	43.9
D4	Diarrhoea	History	Frequency of stools?	39.4	47.3
D5	Diarrhoea	Examination	Temperature	24.2	26.8
D6	Diarrhoea	Correct diagnosis	Recommendation is oral re-hydration therapy	81.8	29.3
T1	Tuberculosis	History	History of night sweats?	45.5	14.2
T2	Tuberculosis	History	History of chest pain?	51.5	15.6
T3	Tuberculosis	Examination	Temperature	30.3	31.2
T4	Tuberculosis	Examination	Chest inspection/chest x-ray	48.5	52.7
T5	Tuberculosis	Examination	Blood pressure/blood tests	39.4	40.0
T6	Tuberculosis	Correct diagnosis	Treatment, multi-drug therapy or referral	60.6	72.2

Our study satisfies the minimum requirement sample size of 30 or at least five cases per item to be able to undertake the analysis using Item Response Theory (Bujang et al., 2018; Cappelleri et al., 2014). Item Response Theory (IRT) can be used when a latent trait cannot be measured directly, as it is unobservable and derived from a group of question item responses. The latent variable in this case represents the 'competence' of our medical practitioners to diagnose the medical conditions discussed with them – diarrhoea and tuberculosis. As the competence index is calculated using a standardised normal distribution, the results can be interpreted as standard deviations from a mean of zero. The competency value is a z-score and measured in units of standard deviations in the Item Response 1-parameter model. As a rough measure, we can say that a more competent provider would have a competency score greater than 1 and a less competent provider, having a score below −1.

To visualise the results from IRT, we use an item characteristic curve. This curve illustrates the relationship between the probability of the respondent medical practitioner answering the item correctly and their underlying competence. The two parameters in an item characteristic curve can be interpreted as:

(i) The point on the competence scale where the probability of the correct response is 0.5 is the difficulty parameter. The lower the difficulty of an item, the greater the likelihood of a provider answering the question correctly.
(ii) The slope of the item characteristic curve is called the discrimination parameter, with steeper gradients illustrating greater values of discrimination.

The Item Characteristic Curves plot the observed proportions and model predictions of the probability of the medical practitioner's competency at making the correct diagnosis for diarrhoea and tuberculosis. They illustrate the discrimination ability and levels of difficulty through a competence index estimate. Each curve represents the diagnosis questions for diarrhoea (D6) and tuberculosis (T6) and gives the probability of competence. The competence scale on the horizontal axis is measured in units of standard deviation and has a mean of zero.

Figure 6.2 illustrates that there is a greater likelihood that these respondents will have higher levels of competence in the diagnosis of diarrhoea. The latent competency difficulty measure shows that 99.5% (z-score = −2.545) of practitioners gave the correct diagnosis more than 50% of the time for diarrhoea and 76.9% (z-score = 0.736) for tuberculosis. The discrimination parameter has a value of 0.65, demonstrating the correlation between the latent trait and the probability diagnosis. The value suggests a moderate distinguishing power between high and low values of the trait (Baker, 2001). The competence of the medical providers is shown to be good across the range of competence.

Looking first at the diagnosis estimates for diarrhoea diagnosis (D6), we see that those medical practitioners with higher levels of competency (Competence >1) making a successful diagnosis at least 91% of the time. Those medical practitioners having lower levels of competency (Competence = −1) are making the correct diagnosis 74% of the time.

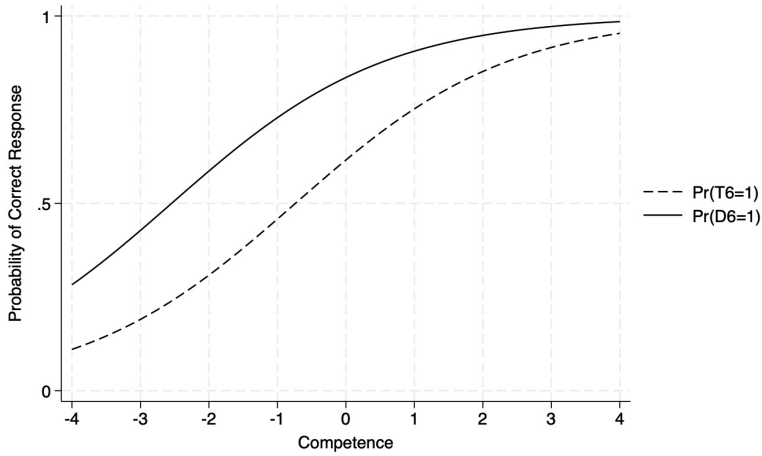

Figure 6.2 Item Characteristic Curves for diagnosis (D6 and T6)

Regarding diagnosis for tuberculosis (T6), discrimination (slope of the item characteristic curve) by the medical practitioners is shown to be good. This suggests confidence in the diagnosis of tuberculosis from the more competent medical providers (Competence >1). The maximum competence of 4 implies a successful diagnosis 96% of the time. For more competent providers (competency = 1), we observe a similar pattern to that of the diarrhoea cases. Successful diagnosis of 76% when the competency score is equal to 1, moving to 86% (Competence = 2) and 92% (Competence = 3). The latent measure does indicate that those medical practitioners with lower levels of competency (Competence = −1) only making the correct diagnosis for tuberculosis 46% of the time.

Overall, Item Response Theory gives a general latent factor for competency and illustrates the high levels of professionalism seen in these practitioners being able to make informed decisions.

To assess the reliability of the items as a discriminating tool for measuring the latent trait competence index, we explored the information function.

Firstly, looking at the information function curve (Figure 6.3), we see large values, meaning that the responses can be estimated with precision. The information function shows a slight bias towards the positive region of the latent trait, suggesting that the item responses provide slightly more information about medical providers at the higher end of the latent construct. Overall, we can say that the information function suggests that the questions asked about the correct examination and the relevant prescription/way forward (D1-D6, T1-T6) provide good information across the latent trait spectrum. Our analysis demonstrates that the competence measure provides a good level of information to help inform a single construct (Baker, 2001; Humble, 2020).

Of the 33 medics, 10 had some form of medical qualification, such as MBBS, or BAM or were working towards one of these recognised medical qualifications. The

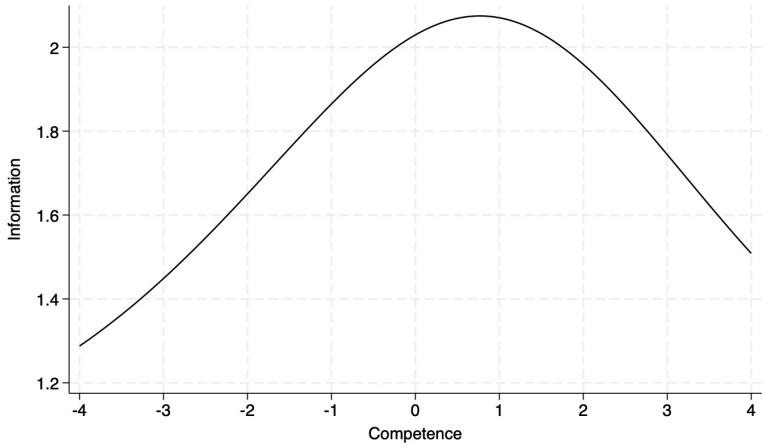

Figure 6.3 Information Function Curve for Competence latent factor

Table 6.5 Differential item test: Medical qualifications

Diarrhoea			*Tuberculosis*		
Item	*Chi-square test*	*p-value*	*Item*	*Chi-square test*	*p-value*
D1	0.14	0.706	T1	0.61	0.435
D2	0.18	0.672	T2	0.26	0.611
D3	0.09	0.759	T3	1.21	0.271
D4	0.49	0.486	T4	0.07	0.793
D5	0.05	0.822	T5	0.16	0.689
D6	0.03	0.860	T6	0.06	0.800

Note: Manntel-Haenszel DIF test.

other 23 providers in our experiment had no formal medical qualifications but had been working in clinics and medical centres for more than ten years in Delhi. We investigate here, using differential item testing, to see if there are any statistically significant difference in the competency of these two groups of providers operating in slum settlements in Delhi. The results in Table 6.5 illustrate that there are no significant differences ($p>0.05$) between those with some medical qualifications and those who have gained medical understanding by working in medical clinics and centres.

Caution, as always with small samples, needs to be taken here, and further investigation into the differences in groups of differing medical experience needs to be considered in the future. Saying this, the result still raises interesting questions around the quality and availability of medical support for those living in slums.

Conclusion

The view is that primary care in India is available for all through government hospitals and primary care health centres. Our data suggest that due to a lack of provision

for the poor and attitudes towards them, a wide variety of entrepreneurial healthcare providers exist to cater to their needs. These medical providers offer a range of treatments from the most common ailments to being able to help and advise on more serious complaints. The healthcare providers in this private sector come with a range of medical qualifications, more often than not working in networks to help and facilitate better treatment outcomes through knowledge transfer. One of the challenges for India is data around these low-cost private medical providers to know more about their practices and patients. Our research adds to this body of knowledge. As well as public medical providers having a poor attitude towards patients from low-income households, the fact that these very households also do not have trust in a publicly recognised corrupt system gives reason for the poor to opt for a private medical healthcare system to cater to their immediate health care needs.

> You can produce enough to sustain the present population of the world, only because of a spontaneous process or mechanism which enables you to make use of infinitely more information than any central authority possesses.
>
> (Hayek, 1985)

> The main point of my argument is, then, that the conflict between, on one hand, advocates of the spontaneous extended human order created by a competitive market, and on the other hand those who demand a deliberate arrangement of human interaction by central authority based on collective command over available resources is due to a factual error by the latter about how knowledge of these resources is and can be generated and utilised.
>
> (Hayek, 1988, p. 7)

Note

1 All names are pseudonyms.

Authors' note

Figures 6.2 and 6.3 from StataCorp. 2023. Stata Statistical Software: Release 18. College Station, TX: StataCorp LLC.

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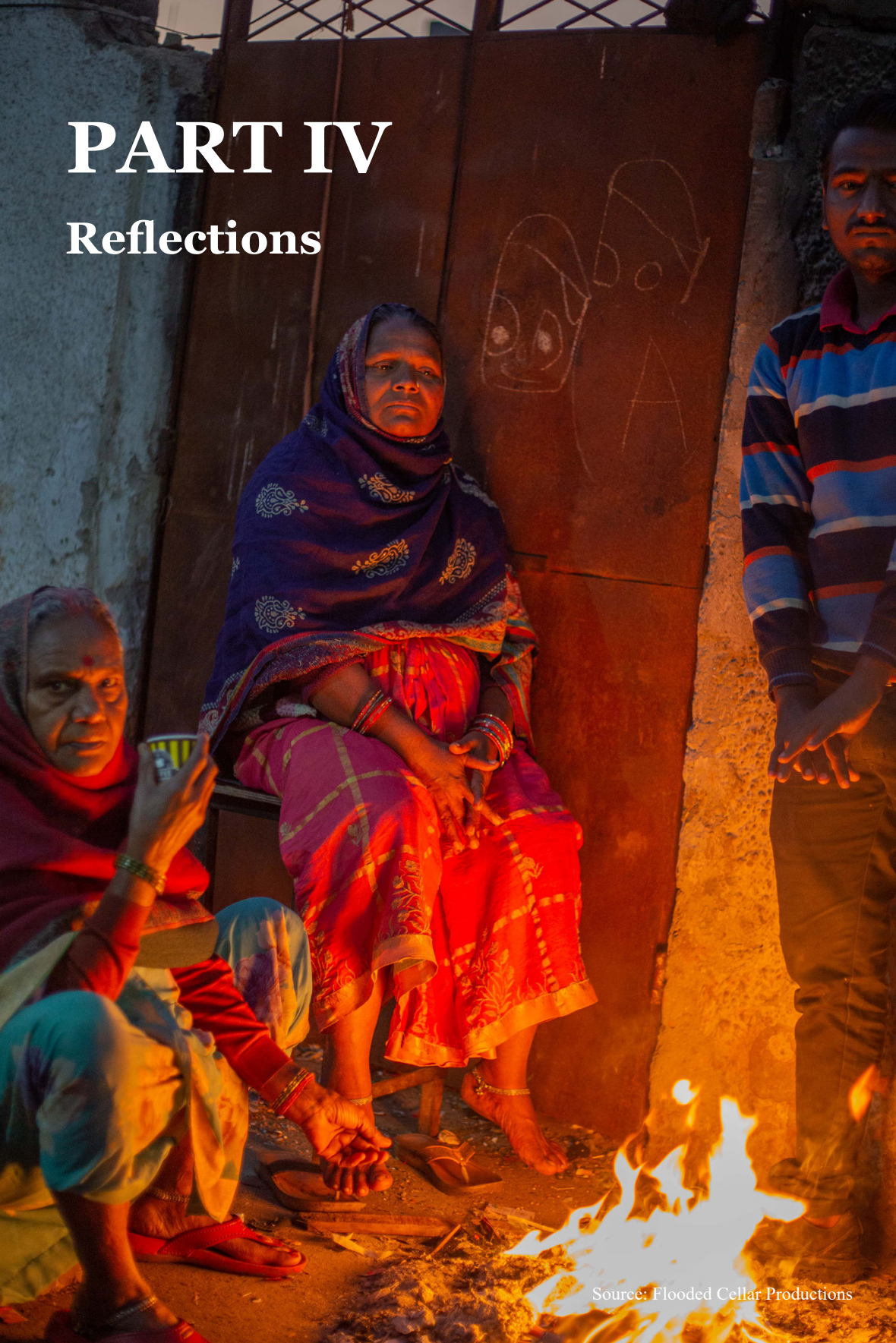
PART IV

Reflections



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7 The draw of the city

Looking ahead

Introduction

It is estimated that around 4.4 billion people live in cities – that's more than one half of the world's population. By 2050, the World Bank states that this will have grown to almost 70%.[1] As of 2025, there are 34 cities globally that are considered 'megacities' defined as having a population of over 10 million people. The majority of these are located in Asia and include Tokyo, Delhi and Shanghai. By 2030, the number of megacities could rise to 43.[2] With an estimated 34 million people living in the metro area of Delhi, it is only second to Tokyo in its megacity status.

Cities act as magnets representing opportunity, attracting those in search of a better life and future. Enterprise and vision drive people to follow their own objectives, attracted to freedom, eagerly expectant of prosperity and hope. Freedom and opportunity allow people to make a better life for their family – better job opportunities, improved healthcare, education and a higher standard of living. Friends and relatives already living in the city help new arrivals to get a job, settle down and begin a journey to the life they aspire to. In a city like Delhi, many coming from rural areas and other states are looking for the opportunity to make the life they desire for themselves and their families despite living in slums and in difficult conditions. Rewards are high for entrepreneurial spirit, industriousness, determination and the ability to seize opportunities that present themselves in such a vibrant city context (Friedman and Friedman, 1979). A living city, with its blend of different cultures and diversity, is one in which economic growth is generated from its own local economy (Jacobs, 1961; 1969). Individuals are located within a matrix of networks and action spaces. Information and opportunities filter through the networks, allowing for unpredictable and innovative directions of the dynamic processes. The dynamic process allows diversity and density to give rise to discovery and development, enabling economic freedom and tolerance (Jacobs, 1969; Ikeda, 2012, 2024). Communities are then able to create, discover and solve social problems typically from the ground up.

Milton and Rose Friedman, in their book *Free to Choose,* provide Hong Kong as an example where, when the government leaves people free to discover and pursue their own objectives, economic and social benefits abound. At the time of writing in 1979, Hong Kong had no tariffs and no restraints on international trade. No price fixing, no wage laws and carried out economic activity without government

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direction. Government – a Crown colony of Great Britain at the time – was limited to issuing currency, enforcing and overseeing the rule of law, and facilitating transport and communication. Hong Kong, with its great harbour, rapidly developed. No duties and no tariffs allowed the power of the free market to permit industrious people to build their lives. In 2023, Hong Kong's GDP per capita ranked it as the 12th richest region in the world. In 2024, Hong Kong ranked eighth in the world in new billionaires, and one in every 176 Hongkongers is estimated to have a net worth of more than U.S. $10 million.[3] Hong Kong has gone from poverty to prosperity.

Similarly, in *India Grows at Night: A Liberal Case for a Strong State,* Gurcharan Das recounts the story of two towns on the outskirts of Delhi in Haryana – Faridabad and Gurgaon. In 1979, the state of Haryana created Gurgaon and Faridabad by dividing a political district into two halves. Faridabad had much going for it – a railway line to the capital, fertile agriculture, a plethora of industries, an active municipal government and a state government that earmarked it as a town of the future. Gurgaon, in comparison, had no local government, no railway link, rocky soil and poor agriculture and was likened to a sleepy village made up of impoverished farmers. As Gurgaon (now Gurugram) initially had no government, no planning authority and was originally ignored by the state government, there was less red tape and therefore, fewer bureaucrats to block the development that was to create the now extremely successful 'Millennium City of India'. The name reflects the city's rapid growth and transformation during the 1990s and early 2000s. With its skyscrapers, shopping malls, golf courses, luxury shops, IT and corporate sectors, it has emerged as one of the main business hubs in the country, attracting private investors, private developers and builders. By comparison, Faridabad has struggled to develop, battling with corruption, government intervention and planning.

The downside of the lack of government intervention and effectiveness is the provision of minimal public services. However, what has occurred is that the 'self-reliant' and 'resilient' residents of Gurgaon have dug bore wells to supply water when the state supply runs out; installed diesel generators for when the state-provided electricity is cut; use cell phones rather than state-supplied landlines; deliver their goods through courier companies rather than the public mail system; and installed their own sewage treatment plants to service apartment complexes and companies where the public system has failed. Gurcharan Das highlights the importance of 'dharma' as per the Hindu scripture Bhagavad Gita when thinking about communities working together in India. By following 'dharma' (the duties that are concerned with doing the 'right thing' in life), individuals can lead a virtuous life, contributing to the well-being of themselves and society. When individuals behave in accordance with dharma, there is harmony and order in society (Das, 2012a, p. 160). Following the dharma framework allows for a life of purpose and order, guiding individuals and communities in their actions (Das, 2002, 2012b).

What both of these examples illustrate is that the most effective system for coordinating human activities is freedom. Whilst individuals have the right to pursue their own happiness and well-being, the role of the government should be to protect these rights. Individuals possess natural rights to life, liberty and property which

must be protected from government interference (Mises, 1949; 1962). Individuals making their own decisions based on their knowledge, preferences and circumstances is critical for human dignity, prosperity and creativity.

For Hayek, freedom is preserved through decentralised market mechanisms and the rule of law. Personal freedom and autonomy are essential to human flourishing. The government is required to maintain law and order, uphold the rule of law, protect property rights and safeguard these civil liberties. For Hayek, the rule of law is an essential component of freedom. For individuals to be free, there needs to be clear, predictable and impartial laws that apply equally to everyone. The rule of law ensures that individuals can pursue their own goals without unpredictable intervention by the state (Hayek, 1973). The more freedom individuals have to make decisions based on their own knowledge and values, the more efficient and just the social order will become. Thus, prosperity can only be achieved when people are valued as self-governing agents. Autonomy and human dignity unleash productive energy, leading to knowledge sharing, which is critical to innovation and localised problem solving (Palmer and Warner, 2022).

For Jane Jacobs, when an urban space is diverse with its mixed use of space, people are free to choose where they live, how they work and express themselves and who they connect with. Tightly knit, self-regulating neighbourhoods are the heart of a free society. A life that is free and spontaneous allows for local knowledge and grassroots decision-making to shape communities. Jane Jacobs saw freedom as an everyday lived experience within urban spaces and cities. For Jacobs, top-down planning is a threat to people's freedom, disallowing them to shape their own communities. Urban planning and renewal projects affect how people make choices, and freely live, engage, move and connect with others within their communities. Individuals need autonomy where communities evolve naturally through spontaneous interactions, and security is upheld by the 'eyes on the streets'. "Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody" (Jacobs, 1961, p.251). True urban freedom comes from empowering local communities and people to shape their own environments.

For Elinor Ostrom, freedom is embedded in her theories around collective action and how people collectively self-govern. Freedom is entwined with autonomy, participation and trust within communities. In her work around managing common resources, Ostrom highlights the ability of people to make their own rules, adapt them as necessary and enforce them for the good of the whole community – freedom through democratic participation. The building of trust and responsibility creates systems of mutual monitoring and graduated sanctions, advocating freedom with responsibility having the capacity to self-organise. Within polycentric systems, there is a freedom of flexibility and innovation rooted in local knowledge, participation and collective action.

The themes we see in common for Jacobs, Hayek and Ostrom are local knowledge, self-organisation and spontaneous order, freedom through diversity and freedom to co-create one's own environment. Freedom thrives in the commons and on the street corner. All three distrust centralised authority and champion bottom-up approaches. There is a celebration of spontaneous order, for Jacobs from an urban

perspective and Hayek from an economic one. Ostrom provides evidence to show that freedom emerges when communities collectively create and maintain institutions that reflect shared goals, norms and values. Freedom is achieved when rules and institutions are co-created.

We are now coming towards the end of our journey. It's time to reflect on all that has been said and done. We have considered some of the ideas and writings of three monumental figures in the world of theorists – Jane Jacobs, Elinor Ostrom and Frederick Hayek. Our empirical data, from the real world of the workings of a megacity, provides further credibility and strength to their original ideas, translating them to the world of global development.

The book is divided into three parts, and so this is how we will structure our final chapter. Let's pick out the main ideas and themes from each. Allowing us to pull the different scenes of our ballet of the streets together will provide final thoughts that we hope will inform and inspire.

Part 1: Neighbourhood cohesion

It may have come as a shock to learn that of the estimated 20 million people residing in the megacity Delhi, three-quarters live in 'unplanned', 'illegal' and 'informal' settlements. Since 1962, Master Plans have prevailed in dividing Delhi into designated areas, some of which can be built upon for housing and others where this is deemed illegal. Now in its fourth iteration, there remains a host of classifications. Eight different settlement types – JJ clusters (slum), slum designated areas, unauthorised colonies, JJ resettlement colonies, rural villages, regularised-unauthorised colonies, urban villages and planned colonies – all feature still in the Master Plan for Delhi IV. However, the rural poor have continued to make their way to the bright lights of Delhi in search of a better life. The city provides optimism, opportunities, freedom to choose and a way of life only dreamt of by the rural poor. "Cities aren't full of poor people because cities make people poor, but because cities attract poor people with the prospect of improving their lot in life" (Glaeser, 2012, p. 70). Delhi is predicted to become the number one megacity worldwide by 2050, with a projected number of 49.6 million (Fleck, 2023).

Our project features three distinct neighbourhoods – JJ cluster slum (Sanjay), resettlement colony (Bhalswa) and an unauthorised colony (Ajit Vihar). So why these neighbourhoods? First, each has its own distinct character as well as legal entity. Second, our professional team of data collectors, who have been working in Delhi for the past 20 years, has substantial knowledge and understanding of these communities. Sanjay is a spontaneous order neighbourhood. Homes built illegally on public land. Bhalswa, the resettlement colony, is housing built legally on land offered to and bought by individuals after their JJ slum was demolished, followed by eviction. Ajit Vihar, the unauthorised colony, is illegal housing built on private land. Piped and potable water, as well as sanitation, are not basic services supplied by the state to neighbourhoods that have built their homes in areas that are not zoned for legitimate housing. However, even in Bhalswa, where individuals had to start again and build their own dwellings after being evicted, there is no water

and sanitation provided by the Delhi Jal Board (DJB). The DJB is the government agency responsible for the provision of potable water to those living in the NCT.

Through the data collected by the specifically designed household survey, we considered the subjective well-being and neighbourhood cohesion of those living in a neighbourhood that was either designated by the state (Bhalswa) or spontaneously developed and chosen (Sanjay). Those living in Sanjay feel a sense of belonging to the neighbourhood. Helping each other is a way of life. They enjoy freedom of choice and believe they have control over their lives, thus providing greater satisfaction with their daily living than those living in Bhalswa. Living in Bhalswa has resulted in lower levels of subjective well-being over time, and distrust of neighbours when initially moving to the neighbourhood. Those living in Bhalswa enjoy the security of having property rights and legally owning their homes. However, issues around the lack of freedom to choose this neighbourhood, their neighbours and the distance from their original networks as well as the city centre, all seemed to contribute to the detrimental effects on people's well-being. Being unsatisfied with life and feeling a lack of control over the future, not only one's own but others, could point to the lack of agency felt by those living in this community.

Sanjay and Ajit Vihar residents are compared next. Of those who completed our survey, the average number of years living in the neighbourhood was 29 years in Sanjay and 11 years in Ajit Vihar. Residents in both communities have chosen to live in these neighbourhoods, albeit illegally (Sanjay – choice, publicly owned land, illegal zone for housing; Ajit Vihar – choice, privately owned land typically by the household, illegal zone for housing). Social capital refers to the networks around relationships, trust and shared beliefs that allow the community to collaborate, cooperate and work together in a collective way. The findings from our survey show that in Ajit Vihar, people are significantly more likely to unite around local problems and together improve their neighbourhood. In both Ajit Vihar and Sanjay, individual households are just as likely to assist others on an individual basis, by lending money, or generally assisting in times of need. Those living in Ajit Vihar, although illegally because of zoning for housing, typically own their plot of land upon which their house is built. This provides greater security of tenure. Improving the neighbourhood with other members of the community who also own their plots of land may engender a more productive sense of being.

In all three neighbourhoods, the greater the level of trust a person has, the more likely they are to work within their community to improve it as well as feel a part of it. However, in Ajit Vihar, the association is stronger than in Sanjay or Bhalswa.

As Jane Jacobs notes in her speech *A Living Network of Relationships,* after providing an analogy of her time working in a clock manufacturer upon arriving in New York to seek her fortune:

> it is pretty exciting to think of repairing and rebuilding the city in such a way that its people will continue to have freedom and opportunity to make thousands of intricate, big and little adjustments; to repair it in such a way that new needs, as they come along, new uses, new opportunities, new relationships,

> new immigrants' orientation clubs, new New Schools will find scope to grow and turn around in, instead of a massive set of master-minded straitjackets.
>
> (Zipp and Storring, 2017, pp. 183–184)

Part 2: Collective action and polycentricity

In part two of the book, we continue to see that trust is an important element to allow for people to come together to solve problems within their neighbourhoods. As Elinor Ostrom stated in a conversation with Adam Smith in 2009 (Editor-in-Chief of Nobelprize.org):

> Humans are neither all angels nor all devil …. It is the context, and the institutional context, in which they find themselves that enables them to have … more willingness to use reciprocity, to trust one another, and to be in a situation that I trust you and you trust me and I won't be a sucker.
>
> (Nordman, 2021, p. 17)

To improve their community, residents work together collaboratively and deliberatively with different stakeholders to generate and maintain assets and services – thus a polycentric system. This collective action process can be regarded as market success. But are all three community types the same in this regard? Are residents in Sanjay, Bhalswa and Ajit Vihar working together to improve their colonies?

We designed questions to investigate this phenomenon, and through the household survey, we considered the different activities residents were involved with. The findings show that almost half of the residents in both Sanjay and Ajit Vihar are involved in community projects.

This is not the case in Bhalswa, where only one in six takes part in community action endeavours. Being less likely to come together in Bhalswa could imply less place attachment, trust, agency, resilience and community identity. Looking at the responses to the social capital questions that were part of the household survey, this holds true for those living in Bhalswa. Only 29.1% of households indicated they trusted their neighbours in the settlement. Half said they thought their neighbours would NOT give time or money to community improvements. These items are statistically significantly different from the answers provided by the residents of both Ajit Vihar and Sanjay. This is also reflected in the subjective well-being of residents, where in Bhalswa, the mean scores for satisfaction, freedom, happiness and purpose are all significantly lower than those given by those living in Ajit Vihar and Sanjay. That is, the answers residents gave us in Bhalswa when responding to the questions around subjective well-being showed they were less satisfied with their life, believed they had less freedom to choose and control the way their life would turn out, were more unhappy and felt their life was less worthwhile than those living in Ajit Vihar and Sanjay.

We have seen that some community members in each of the neighbourhoods – Sanjay, Ajit Vihar and Bhalswa – come together to work on projects that benefit

individuals at a personal level or the whole community. We talked with many residents about their activities and daily routines. Their stories provided us with different examples of collective action and community solutions. These included those that benefit individuals, such as forming savings and loan groups or supporting the application process for different legal documents or cards. Other activities that benefit the community as a whole include cleaning drains, emptying of rubbish skips, street lighting and piped and potable water provision.

In all neighbourhoods, households indicated that they work with a combination of different partners to facilitate community action activities. These can be individuals or groups of people who live within the neighbourhood. A group could be the residents who form an RWA – Resident Welfare Association, and a broker is an example of an individual who acts as an intermediary and a key bridge between politicians and residents. Households, typically through brokers, also liaise with those outside the community, such as government officials at both the local and city levels.

To comprehend what is going on within this complex social situation, we use the IAD framework as a springboard to build our own model, allowing us to break down the activities into manageable sets (Polski and Ostrom, 2017). The activities and human interactions in our model are social capital, partners, community projects and subjective well-being. Our model shows that the greater the levels of cooperation and trust within a community, the more likely residents will work with a range of partners. This results in collective action that can be individual or community-focused. In turn, being part of this polycentric system improves individuals' subjective well-being. Our household survey revealed that only 16% of those who took part from Bhalswa were involved in community action projects. When looking back at our data for the three community types, our model also confirms that for those living in Bhalswa with lower levels of satisfaction and trust, we would expect fewer interactions with partners. This results in fewer public and private interactions and hence lower subjective well-being.

An important part of the polycentric system is that undertaken by the community leader, otherwise known as the broker. Through interviews and a conjoint experiment, we paint a picture of who these leaders are, why they are important to the community and how they are selected by the residents. All of our neighbourhoods had brokers. Typically, a broker is affiliated with a political party. Some aspire for promotion within their affiliated party, while others aim for a political career. In order to do this, they work with the residents within their own community boundaries to facilitate personal or public collective action outcomes. The market for brokers we found to be highly competitive. Brokers are only supported when they are shown to be working with and in the residents' interest. The three themes that transpired from the interviews were capability, education and partisanship. Within the capability theme, issues around working together, organisational strategies, confidence building and problem-solving became apparent characteristics and abilities that a successful broker possesses. For partisanship interconnectedness, networks, credibility, collaboration and resource sharing highlighted how empowered the broker would be. Thus, being able to effectively address their

community's challenges and enable problem solutions. An educated broker is one who is literate and vociferous. Being able to execute and plan tasks, solve problems and assist with written communications are all central to a broker's everyday activity.

A broker cannot rest on his or her laurels. There is a market for brokers. Residents are active choosers, but which attributes are the most significant in the selection of brokers? A conjoint experiment is a method we used for this part of the project. Using this technique, respondents feel more comfortable and are likely to answer openly on a sensitive subject, i.e., politics. We found that in all three settlements, partisanship and education are the most statistically significant characteristics when choosing a broker. Individuals gravitate towards brokers who align with their own political perspectives. Settlements have stronger associations with certain political parties. Thus, choosing a broker that is representative of the leading party within the area could lead to connections with more powerful networks and links enabling change and influence. A broker who has a higher education level is preferred to one who does not display levels of education. As Jane Jacobs states:

> An interweaving, but different, set of relationships must grow up; these are working relationships among people, usually leaders, who enlarge their local public life beyond the neighbourhoods of streets and specific organizations or institutions and form relationships with people whose roots and backgrounds are in entirely different constituencies, so to speak. These hop-and-skip relationships are more fortuitous in cities than are the analogous, almost enforced, hop-and-skip links among people from different small groupings within self-contained settlements. Perhaps because we are typically more advanced at forming whole-city neighbourhoods of interest than at forming districts, hop-skip district relationships sometimes originate fortuitously among people from a district who meet in a special-interest neighbourhood of the whole city, and then carry over this relationship into their district.
>
> (Jacobs, 1961, p. 144)

Part 3: Entrepreneurship

To be able to see the sheer manifestation of energy that goes to make-up the awesomeness of a city, one needs to observe it as a person unfamiliar with it. That is how Jane Jacobs describes she could witness the lives of those she did not know or judge. King Charles III felt the same after visiting the Dharavi slum in 2011. He wrote:

> When you enter what looks from the outside like an immense mound of plastic and rubbish, you immediately come upon an intricate network of streets with miniature shops, houses and workshops, each one made out of any material that comes to hand.

> Unlike the 'fragmented, deconstructed housing estates' *built in the West, the slum has order and harmony* he claimed, adding*:* "We have a great deal to learn about how complex systems can self-organise to create a harmonious whole"
>
> (Daily Mail, 2011)

Our observations and stories are a snapshot, not only of those catering to the local needs of the community – barbers, beauticians, painters, street vendors, gym owners – but owing to globalisation and worldwide interconnectedness, there has been the integration of economic activity to allow our entrepreneurs to participate in global markets. What we see here are examples of organic growth where the poor are agents of change. As Jane Jacobs says:

> if the conditions for generating city diversity can be introduced into a neighbourhood while it is a slum, and if any indications of unslumming are encouraged rather than thwarted, I believe there is no reason why any slum need be perpetual.
>
> (Jacobs, 1961, p. 286)

Entrepreneurial activity abounds in all of our three communities – Bhalswa, Sanjay and Ajit Vihar. Our intricate street ballet is made up of those catering for the local, national and international markets. No longer carrying out low levels of economic activities catering just for the local economy, our street life illustrates that our residents are integrated, no longer living on the peripheral but participating fully in society (RoyChowdhury, 2021).

Different government housing initiatives have prevailed to ensure that Delhi will become 'slum free' as per the third Master Plan of Delhi. As stated in the draft Master Plan for Delhi 2041 there is also "the need for introducing new housing types that cater to the needs of different income groups and tenure requirements" (Delhi Development Authority, 2021, p. 4). The flats for the economically weaker sections at the Kalkaji extension are an example of those built through the PMAY (Pradhan Mantri Awas Yojana) initiative. Impersonal public housing made up of high-rise flats not only brings with it the lack of the eyes on the streets resulting in crime, vandalism and disagreeable activities (Jacobs, 1961) – but also the destruction of entrepreneurship (RoyChowdhury, 2021). This is in stark contrast to Sanjay, Ajit Vihar and Bhalswa, which are all examples of low-rise, high-density homes where entrepreneurial spirit can thrive. This could have been predicted not only by Jane Jacobs but also through the self-help ideas of the English architect and theorist John Turner (Turner, 1976; Cohen, 2015; Fichter et al., 1972).

> When dwellers control the major decisions and are free to make their own contributions in the design, construction, or management of their housing, both this process and the environment produced stimulate individual and social well-being. When people have no control over nor responsibility for key decisions in the housing process, on the other hand, dwelling environments may instead become a barrier to personal fulfilment and a burden on the economy.
>
> (Fichter et al., 1972, p. 241)

That is, although we have seen differences in our three communities, residents in Sanjay, Ajit Vihar and Bhalswa have had input into building their own settlements and therefore have been empowered and self-organised, becoming agents of change. However, in Kalkaji, there has been a lack of agency, with no opportunity for input, consultation, or co-creation from what the government and courts regard as 'illegal slum residents', 'encroachers' (Dupont, 2008; Ramanathan, 2006), 'nuisances' (Ghertner, 2008) who have no place within 'World-Class Cities' (Chatterjee, 2004; Bhan, 2016). Destroying spontaneous order settlements and rehousing residents into high-rise public housing that become vertical slums in themselves at best, 'shifts slums from here to there' and at worst, destroys the community solutions and resilience built up over the years through social networks and polycentricity.

> Our present urban-renewal laws are an attempt to break this particular linkage in the vicious circles by forthrightly wiping away slums and their populations and replacing them with projects intended to produce higher tax yields, or to lure back easier populations with less expensive public requirements. The method fails. At best, it merely shifts slums from here to there, adding its own tincture of extra hardship and disruption. At worst, it destroys neighbourhoods where constructive and improving communities exist and where the situation calls for encouragement rather than destruction.
>
> (Jacobs, 1961, p. 284)

When talking with our entrepreneurs and hearing their stories, walking through the streets observing the hustle and bustle of the day, we came upon storefront clinics. Healthcare providers within the slums themselves, not run by the state or NGOs, but a network of private informal healthcare. We considered the supply, demand and quality of the sector through a census, interviews, survey and a competence experiment. In the three neighbourhoods, we found 43 healthcare providers made up of 28 clinics, 13 medical stores and pharmacies, one dentist and one laboratory. Talking to practitioners and patients, there are three main reasons why those living in the community tend to prefer to visit their local private healthcare provider. First is trust. Knowing you can see your own doctor within your own community is important, engendering reliability. Many of the private providers have been part of the community for decades. They are the face of healthcare. Sitting in their clinics day in day out, they are recognisable, providing medical advice and medication for many of the typical complaints found in the bastis. Patients revisit owing to the ability of the doctor to prescribe the best way forward for their ailments. And the doctors typically live in the community iitself, providing that bond of neighbourliness as well as professionalism. Trust isn't exuded by the state sector. Second, and associated with trust, is attitude. The contrast here is with visits to government hospitals or healthcare providers. Those from our neighbourhoods tell stories of visiting the government sector and experiencing rudeness, poor attitudes, long waiting times and dismissiveness. This is all in contrast to the local informal doctor being someone who listens respectfully, taking time to understand their concerns and problems. Third is availability and being local. The private doctors are flexible and

travel within the community when needed. Their one/two-room clinics are situated on the streets next to other entrepreneurs, being part of the rich fabric of everyday life. Their clinic doors are open, waiting to solve problems they meet in their daily practice. These medical practitioners work together in networks, through a technological infrastructure, pooling information on diagnosis, problem cases, concerns around communicable diseases, as well as the availability of medical supplies and referrals. We considered the ability of the informal doctors through a competency experiment to correctly diagnose and prescribe for diarrhoea and tuberculosis. Almost all of the private doctors did this for diarrhoea, with around two thirds being able to correctly identify and treat tuberculosis.

Part 4: Reflections

Thoughts and observations

At the start of our book, we highlighted some of our diary entries made during previous research trips to India. We stated that writing a book is a commitment, and indeed it is. But what a perfect way to share the experiences, stories and understanding we have been able to uncover and reveal during our time in India.

It is undeniable that research findings can inform policy and practice, but what is also important is that the 'view from the streets' needs to be told widely if the poor are to be listened to rather than ignored or seen as the problem.

The view that we have had of the city from within provides stories of resilience and community solutions where the poor are their own agents of change, living lives with dignity and meaning. We have seen neighbours coming together, adapting to challenges and trusting each other to overcome life's difficult problems. Community solutions through polycentric systems allow slum neighbourhoods to flourish and, in Jane Jacob's words, 'unslum'. Brokers chosen to help fix the streets, informal doctors to cure all ills, individuals working as entrepreneurs at the local, national and international levels to ensure economic security for the family and future generations. These informal parts of the city are often targeted by governments, where the perpetuation of planned and unplanned, legal and illegal and authorised and unauthorised discount all that is good in these spontaneous order communities. No surprise there then as Elinor Ostrom states

> until a theoretical explanation -based on human choice – for self-organized and self-governed enterprises is fully developed and accepted, major policy decisions will continue to be undertaken with a presumption that individuals cannot organize themselves and always need to be organized by external authorities.
>
> (Ostrom, 1990, p. 25)

And according to Friedrich Hayek:

> The curious task of economics is to demonstrate to men how little they really know about what they imagine they can design. To the naive mind that can conceive of order only as the product of deliberate arrangement, it may seem

> absurd that in complex conditions order, and adaptation to the unknown, can be achieved more effectively by decentralizing decisions and that a division of authority will actually extend the possibility of overall order. Yet that decentralization actually leads to more information being taken into account.
>
> (Hayek, 1988, pp. 76–77)

So, what we believe is needed is just what appears in this book: a nuanced understanding of the daily living and processes within these settlements. Evicting residents and knocking down neighbourhoods has been shown to be counterproductive, moving the eyes on the streets away from the city centre to the periphery. Thus, creating slums that are detrimental to community cohesion and well-being, destroying social, political and family networks built over generations, can be regarded as 'slum shifting'. According to Jane Jacobs:

> slum shifting fails because it tries to overcome causes of trouble by diddling with symptoms. Sometimes even the very symptoms that preoccupy the slum shifters are, in the main, vestiges of former troubles rather than significant indications of current or future ills.
>
> (Jacobs, 1961, p. 284)

Our project brings a snapshot of the intricate workings of urban life in Delhi slums. We aim to inform public discourse by having been allowed to venture into the rich tapestry of people's lives, even for a moment.

Notes

1 https://www.worldbank.org/en/topic/urbandevelopment/overview#1
2 https://www.statista.com/topics/4841/megacities/#topicOverview
3 https://www.henleyglobal.com/publications/wealthiest-cities/global-insights/top-10-wealthiest-cities-world-2023

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Appendix

Introduction

This appendix is designed to support the reader who wishes to have a greater depth of understanding of the statistical techniques employed in this book. The idea of the appendix is to help answer some of the questions that the reader may have in relation to the statistical techniques employed. Due to space, the appendix can only offer a starting point and signposting to these statistical techniques. The appendix is supplementary to the rest of the book and is not required reading to be able to understand the statistical results illustrated throughout the book. Contained here in this appendix are greater details on the statistical methods employed, offering the reader theory, proofs and mathematical equations. Statistical topics covered are correlations, covariance, structural equation modelling and conjoint analysis.

Correlation and covariance

Correlation gives a measure of the association between two variables. It was developed by Karl Pearson, an English biostatistician and mathematician. Pearson established the academic discipline of statistics and the first university statistics department at University College London. In Pearson's formula for correlation, the value of $\Sigma(x - \bar{x})(y - \bar{y})$ is influenced by the strength of the correlation between and the spread of the variables.

If there is a positive correlation between the points, the correlation value is positive. If there is a negative correlation, the value is negative. A positive correlation indicates that as one variable increases, the other also increases, or as one decreases, the other also decreases. In contrast, a negative correlation means that as one variable increases, the other decreases, and vice versa. When there is no correlation between the variables, the products of positive and negative values tend to cancel each other out, resulting in a sum close to zero.

The addition to the formula of the number of values (n) gives the average deviation from the bivariate centroid, known as covariance:

$$Cov(x,y) = \frac{1}{n}\Sigma(x-\bar{x})(y-\bar{y})$$

If we then divide this by the standard deviations for x and y, we obtain the linear correlation coefficient r defined as:

$$r = \frac{\sum\left(x-\bar{x}\right)\left(y-\bar{y}\right)}{\sqrt{\sum\left(x-\bar{x}\right)^2}\sqrt{\sum\left(y-\bar{y}\right)^2}}$$

In a slightly amended form, this can be written as:

$$\mathrm{r} = \frac{\sum xy - n\bar{x}\bar{y}}{\sqrt{(\sum x^2 - n\bar{x}^2)}\sqrt{(\sum y^2 - n\bar{y}^2)}}$$

Dividing by the standard deviations of x and y removes the issue of the size of r being dependent on the measurement units being used and allows for r to lie between −1 and +1. If r = +1, then this means there is a perfect positive correlation, and r = −1 means a perfect negative correlation. A value r = 0 implies that there is no linear correlation. A zero correlation implies that there is no way of predicting associations between the two variables (Humble, 2020; Dietz, and Kalof, 2009; Kenny, 1979). In Chapter 2, we use correlations to consider the association between neighbourhood cohesion, social capital and subjective well-being, and in Chapter 6, to consider any association between competence and diagnosis. Correlations are also used concerning the validation and establishing the adapted IAD model in Chapter 3.

Structural equation modelling (SEM)

The structural equation modelling (SEM) and path analysis undertaken in this book are performed using Stata's SEM software. The software data analysis is covariance-based SEM, sometimes referred to as Analysis of Covariance Structures. Structural equation modelling is a multivariate technique that allows for the estimation of a system of equations by fitting these models using their observed covariance structure (Bollen, 1989; Brown, 2006; Kline, 2016; Pearl, 1988).

Stata's SEM analysis software stands out for several reasons. First, it applies a covariance structure analysis to validate the hypothesised model and offers a user-friendly visual interface that effectively presents the SEM analysis results. Second, Stata's SEM encompasses a broad range of possible models from linear and multiple regression to simultaneous equations. Included in this array of models is confirmatory factor analysis (CFA) and multiple indicators and multiple causes. Third, analysis of the model's goodness of fit statistics can be examined to ensure confidence in the theoretical path structure accurately represent genuine relationships. Finally, the software allows for an in-depth analysis of the interrelationships among the different constructs. This encompasses a systematic validation, modification indices, mediation analysis, tests for invariance and direct and indirect effects of the structural model.

Historical background to structural equation modelling

Sewall Wright, a pioneering geneticist, is credited with developing path analysis, a statistical method designed to explore presumed causal relationships among variables. In his groundbreaking 1918 paper, Sewall Wright investigated the biological factors influencing bone size in rabbits. Rather than merely estimating correlations, he introduced path diagrams to represent hypothesised causal pathways between variables. These diagrams allowed him to compare expected correlations, based on his causal assumptions, with actual observed correlations, thereby assessing the validity of his theoretical models. This innovation marked a significant step towards the formal analysis of causal structures in scientific research (Shipley, 2016).

In the decades that followed, path analysis found applications beyond biology, particularly in economics, sociology and social sciences. During the 1930s through the 1950s, economists such as Trygve Haavelmo and Tjalling Koopmans advanced the field by developing systems of simultaneous equations, introducing new estimation techniques, and exploring the challenges of identifying causal relationships. By the 1960s, sociologists like Hubert M. Blalock and Otis Dudley Duncan adopted path analysis to investigate complex social phenomena. Their work contributed to the broader acceptance and refinement of the method, solidifying its role as a powerful tool in the study of causality across disciplines (Blalock, 1961; Duncan, 1966, 1975; Kline, 2016; Bollen, 1989).

Variable types in structural equation modelling

In path analysis and structural equation modelling, variables are typically categorised into two types, these are observed and latent. Observed variables are those for which data are directly available. This data have been measured and recorded, such as Likert scale survey questionnaires or examination test scores. Latent variables, on the other hand, are not directly observed but are inferred from observed variables. They represent underlying constructs such as intelligence, motivation or socio-economic status, which are measured indirectly through multiple indicators. The distinction between observed and latent variables is essential for building accurate models that capture both measurable outcomes and theoretical constructs.

Within these models, relationships between variables are illustrated using paths and covariances. Paths represent direct relationships between variables and are depicted with straight arrows pointing from one variable to another. The estimated path coefficients associated with these arrows function similarly to regression coefficients, indicating the strength and direction of the relationship. Covariances, shown with curved double-headed arrows, are used to represent the shared variability between two variables or error terms without implying a direct causal link. These elements of paths and covariances work together to define the structure of complex models and help researchers understand the interconnectedness of variables in a system (Kline, 2016; Humble, 2020).

Constructing and solving path diagrams

The method of constructing and solving path diagrams was originally developed by Wright. He showed that if the model can be constructed as a proper path diagram, then the correlation between any two variables can be expressed as the sum of the compound paths connecting them. Stata SEM software calculates solutions using matrix algebra methods.

In order to help give an understanding of how the SEM technique computation is undertaken, we will demonstrate the calculation using Wright's three tracing rules. Wright's method states that the correlation between any two variables can be expressed as the sum of the compound paths connecting these two points. The three rules that need to be followed are (1) no loops, (2) no going forward then backward (3) a maximum of one curved arrow per path. The first rule means that a path must not pass through the same variable more than once. The second rule implies that once you have traversed forward along the direction of a path arrow, you cannot proceed backwards against the direction of another arrow (Loehlin and Beaujen, 2017; Kenny, 1979).

The following example set out in Figure A.1 includes four measured observed variables, A, B, C and D. The lower-case letters represent the causal parameters or path coefficients. In most models, the measured variables do not usually account for all possible causes, and so other variables are introduced to capture these unexplained influences. These are referred to as error terms, or unspecified causes, or disturbance terms. In this example, the disturbance terms are denoted by U and V.

The model includes a set of direct causal relationships. For example, variables A and B have direct effects on both C and D. There are also indirect effects, such as A influencing D through C, and B influencing D through C. In a model like this, we could, for example, be exploring how personal views on social capital (A) and perception of neighbourhood cohesion (B) affect private benefits (C), and how these, in turn, have both direct and indirect effects on individuals' subjective well-being (D).

The first step in analysing this model is to identify the system of equations corresponding to each correlation (r) using Wright's tracing rules. The curved arrow path from A to B represents the correlation $r_{AB} = h$. If we next look at the correlation between A and C, we can see that it is made up of a direct path (a) and an indirect path (hb), resulting in the equation $r_{AC} = a + hb$. If we next look at the correlation r_{BD}, we see that it is comprised of a direct path (d) and three compound indirect paths $\left(be + hae + hc\right)$, giving the equation $r_{BD} = d + be + hae + hc$. The remaining three path equations are as follows:

$$r_{BC} = b + ha$$

$$r_{AD} = c + ae + hbe + hd$$

$$r_{CD} = e + ac + bd + ahd + bhc$$

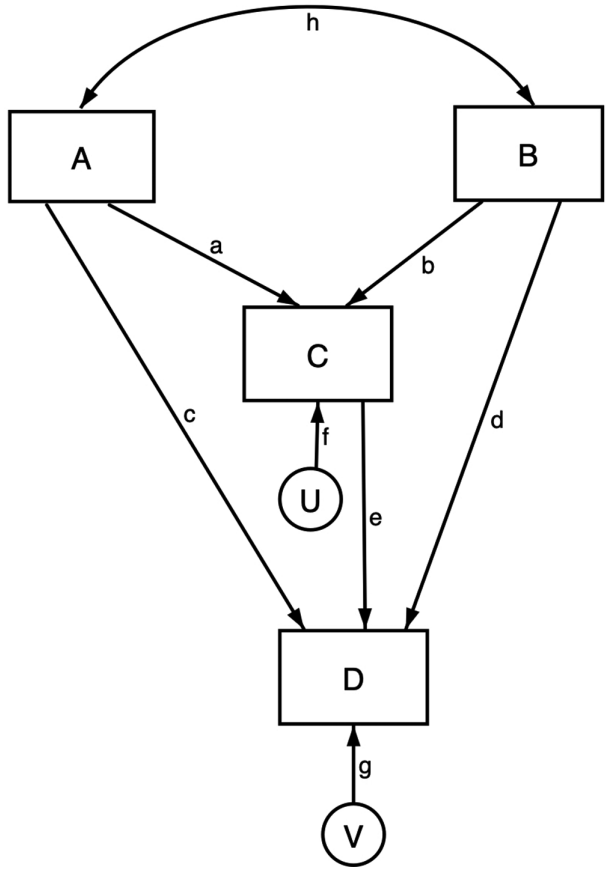

Figure A.1 Path diagram

This system of six equations can then be solved to find the six path coefficients. This model is just identified and so will give one direct algebraic solution (Kenny, 1979; Kline, 2016; Loehlin and Beaujen, 2017).

An alternative way of representing a path diagram is by a set of structural equations. Similarly to how we would write a single multivariate linear regression equation, in structural equation modelling we can represent the model using a system of equations, as follows:

$$C = aA + bB + fU$$

$$D = cA + dB + eC + gV$$

These equations can be used to calculate the disturbance terms U and V. Note that these equations are derived by expressing each dependent variable as a weighted

additive function of its source variables. When the variables are standardised, the weights correspond to the path coefficients, which are equivalent to standardised partial regression coefficients.

This example can be solved using algebraic methods, but as the complexity of the model increases, this is generally not possible. As a result of this, in practice, software programs such as Stata are used to solve the system of structural equations using iterative estimation procedures such as maximum likelihood.

Regarding sample size with structural equation modelling

When conducting path analysis or structural equation modelling, determining an appropriate sample size is crucial for obtaining reliable and valid results. A common rule of thumb suggests that a sample size of over 200 is generally sufficient, although in some cases, a minimum of 100 participants may be considered acceptable. Bartlett et al. (2001) is a useful starting point for readers seeking more detailed information on the various techniques used to determine appropriate sample sizes for surveys. The paper provides calculations of minimum sample sizes for different population types. For a population of 10,000, it recommends a minimum sample size of 119 for continuous data and 370 for categorical data at a 5% level of significance. When the level of significance is tightened to 1%, the required minimum sample sizes increase to 209 for continuous data and 623 for categorical data. It is also recommended basing the sample size on the complexity of the model, specifically the number of free parameters being estimated. A desirable goal for an excellent model is to have a ratio of 20:1 for the number of respondents to the number of parameters in the model. A good model should have a ratio of 10:1, and if the ratio is less than 5:1, the model is said to be poor (Humble, 2020; Kline, 2016; Bollen, 1989). These guidelines help ensure that the model has enough data to produce stable estimates and to accurately reflect the relationships among variables.

Structural equation modelling is carried out in Chapter 2 to show the interrelated causal effects between trust, community neighbourhood cohesion and social capital. In Chapter 3, SEM assists in creating a model of collective action derived from Ostrom's IAD framework. Social capital and subjective well-being latent factors are also produced in Chapter 3 using confirmatory factor analysis.

Conjoint analysis

Historical background to conjoint analysis

The vignette survey approach was an idea proposed by Paul Lazarsfeld and Peter Rossi in 1951 when exploring respondents' views on household social status (Rossi and Nock, 1982). They developed a design that allowed the survey factors to be orthogonal, enabling the analysis of individual aspects independently from one another. This approach supports greater complexity and makes it possible to explore conditions that reflect real human choices and judgements, while still allowing for the clear identification of the separate influences of multiple factors. This method became known as 'vignette surveys' or 'factorial surveys' (Wallander,

2009). This statistical technique allows for decision-makers' preferences to be analysed over a range of circumstances. The technique requires respondents to choose or rate hypothetical profiles or contexts that are systematically changed to enable a researcher to estimate the relative influence of each attribute. From its initial use, which explored respondents' views on household social status (Rossi and Nock, 1982), the technique has been extended in various fields. Notable examples include Simon (1957) on human behaviour in social arenas; Lancaster (1966) in consumer behaviour; Hoffman (1968) in medicine; Green and Rao (1971) marketing, development of product and consumer demand; Anderson et al., (1992) on effective consumer travel choice; Johnson and Orme (2007) in marketing and advertising; and Hainmueller et al. (2014) in political science.

The research set out in this book used the conjoint methods to consider how individuals chose their broker in different communities in Delhi (see Chapter 4). To provide a different example, we could think about a conjoint analysis used to examine factors which are important in relation to entrepreneurship. These factors are ones that respondents may feel would help make a person develop a successful new business. Such a study might aim to compare the statistically significant differences in selected vignettes that were important to the respondents when making choices about being a successful new business leader. The vignettes used in this study would describe information about two people starting a new business. The respondents would then be asked to make a judgement about the people described in the vignette. In their opinion, "Which of these two people starting a new business do you feel would be most successful? I will tell you a little bit about these two people and then ask your opinion about them."

The vignette would describe the entrepreneur in one scenario as someone who 'plans ahead and is prepared' and in another as someone who 'acts hastily'. Another attribute could say, they were 'good with money' in one case and 'not always good with money' in another. Similarly, one version might state they 'can make decisions', while another might describe them as 'often avoiding to make decisions'. Other attributes could include compassion – such as 'thinks about others' versus 'does not always care about others'; communication – 'listens' versus 'knows best', and vision – 'how to improve vision' versus 'does not have a vision to improve'. This initial vignette questionnaire example was adapted from previous research on leadership using a conjoint analysis approach (Soutar and Ridley, 2007; Tavares et al., 2018).

These six independent factor themes could then be used to create vignettes. These factors combined, as we did in our broker vignette experiment in Chapter 4, give a factorial design. In the entrepreneurship example given above, as each of the possible attributes is binary, it gives us 64 different possible vignettes in total ($2\times2\times2\times2\times2\times2=64$). Using the IBM statistical package SPSS, it is possible to reduce the 64 possible vignettes down to 12 with the orthogonal design option. The software creates attributes that are uncorrelated across the different vignettes by using orthogonality, so that there is an independence of factor attributes retained. In the entrepreneurship example, the vignette survey included six independent factor themes:

> This person *[plans ahead and prepares for what's coming / act hastily and just goes with the flow]* and *[are good with money/are not always good with money]*. They *[are good at making decisions/often avoid making decisions]* and *[usually think about others /do not always care about others]*. In conversation *[they typically know best /they listen to other views] [and have/ but do not always have]* a vision on how to improve their future.

Random number generators, in software packages such as Qualtrics, allow the researcher to undertake surveys of this kind, with interviewers reading computer-generated descriptions that have been randomly assigned. Respondents can also self-administer surveys through a computer, phone or online. Due to a random generation function available in Qualtrics, systematic variations of the vignettes can be offered to the respondent, without the researcher having to be concerned about bias.

Advances in computer technology have made it possible not only to undertake conjoint surveys that feature vignettes, but also pictures, video and sound. Our broker conjoint set out in Chapter 4 used card-storyboards as a way to support respondents' ability to select their chosen broker profile. Some surveys have been undertaken using pictures to understand social organisation within neighbourhoods and the perceived quality of these neighbourhoods (Mutz, 2011). Mutz (2011) used pictures to investigate respondents' judgements around the quality of a neighbourhood and the causal likelihood that residents would participate in community collective action.

Data analysis of conjoint experiments

In Chapter 4, a conjoint experiment was used to explore the perceived characteristics of what respondents in each of our different slum types considered a successful community leader/broker. We undertook a forced-choice conjoint survey approach, which is often used in political science studies that concern behaviour, as it enables estimates to be simultaneously found for multiple treatment attributes (Hainmueller and Hopkins, 2015; Hainmueller et al., 2014). The statistical method has the advantage that it is fully nonparametric and so does not require any functional choice probability assumptions (Arifin et al., 2009; Bakken and Frazier, 2006; Hainmueller et al., 2014). It is a multivariate technique that can be used to examine the decisions made by individual respondents when they are facing a range of options.

The measures in our study were analysed using the estimated average marginal components effect (AMCEs). The AMCE represents how the likelihood of each attribute affects the average difference in the probability of being preferred as a given slum settlement leader.

We consider a random sample of N respondents drawn from a population of interest. Each respondent $i \in \{1,\ldots,N\}$ is represented with k choices (ratings) tasks, and for each of the tasks, the respondent chooses the most preferred of j profiles. The average causal effect of changing factor l from level t_0 to t_1 for a given

broker characteristic while averaging over the other characteristics in the brokers' profile is given by,

$$\tau_l\left(t_1, t_0; \Pr\left(\boldsymbol{t}_{ijk,-l}, \boldsymbol{t}_{i,-j,k}\right)\right) = \sum_{\left(\boldsymbol{t}_{ijk,-l}, \boldsymbol{t}_{i,-j,k}\right)\epsilon\,\tau} \mathbb{E}\left[Y_{ik}\left(t_1, \boldsymbol{t}_{ijk,-l}, \boldsymbol{t}_{i,-j,k}\right) - Y_{ik}\left(t_0, \boldsymbol{t}_{ijk,-l}, \boldsymbol{t}_{i,-j,k}\right)\right] \times \Pr\left(\boldsymbol{t}_{ijk,-l}\boldsymbol{t}_{i,-j,k}\right)$$

where $\boldsymbol{t}_{ijk,-l}$ is an (L-1) dimensional vector representing levels of all the factors except the factor l of the j th profile in the k th task completed by respondent i, $\boldsymbol{t}_{i,-j,k}$ denotes the levels of all factors for the remaining broker profiles other than profile j, and τ is the support of $\Pr\left(\boldsymbol{t}_{ijk,-l}, \boldsymbol{t}_{i,-j,k}\right)$. The expectation ($\mathbb{E}$) is over a random sample of the respondents and item responses.

Conjoint analysis encompasses several iterative steps of redefining and verifying attributes, interpretations and profiles to give statistical likelihood measures. To gain a greater understanding of what this causal quantity represents, we will look at a simplified version of broker selection. The AMCE of a broker in relation to where they work – inside the settlement or outside. The analysis can be understood by computing the probability that a broker who works inside the community is chosen over another opposing broker with an otherwise identical set of attributes. Next, compute the probability that another broker who works outside the community but is otherwise identical to the first is chosen over the same opposing broker. Then calculate the difference between the probability for the broker who works inside the community to the one who works outside. Repeat this process, computing the differences in relation to where the brokers work but with different groups of candidates. Then combine all these calculations to find the average effect of where the broker works on the probability that one is chosen, by taking the weighted average of all of these differences over all possible combinations of the attributes. This average is defined as the distribution of attributes, apart from the candidate's own work preferences (inside or outside the community) across repeated samples (Hainmueller et al., 2014).

A feature of the AMCE is that it is defined as a function of the distribution of the treatment components $\Pr(\boldsymbol{t})$. This is in contrast to a normal survey experiment in which causal effects are inherently conditional on setting. An AMCE conjoint incorporates covariates as part of the experimental control. This means that the effects are conditional on their distribution and so supports greater external validity. It has been suggested that conjoint analysis captures the decision-making process of respondents more effectivity than a traditional survey, as vignettes tend to mirror real-world decision-making (Alves and Rossi, 1978; Rossi and Nock, 1982; Alexander and Becker, 1978). Conjoint analysis can also potentially reduce respondent bias compared to traditional survey approaches. This is due to the fact that a vignette experiment presents respondents with a range of attributes (traits) in each given profile, therefore, a respondent could be able to find multiple justifications of why they made their selection. As a result this could conceal a respondent's choices, if they may have normally revealed prejudices or socially undesirable

views around sensitive topics, such as race, gender based violence and stigma HIV (Sniderman and Carmines, 1997; Alexander and Becker, 1978; Mutz, 2011; Rossi and Nock, 1982;Wallander, 2009).

Authors' note

Figure A.1 from StataCorp. 2023. Stata Statistical Software: Release 18. College Station, TX: StataCorp LLC.

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