From risks to resilience

Action research into informal workers' health and wellbeing in Indore, India

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Urban Health Resource Centre (UHRC) is an NGO in India that supports socio-economic empowerment; promotes health, nutrition and wellbeing; and partners closely with disadvantaged urban populations.

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Acknowledgments

In this working paper, we report on the complex risks, challenges, adaptations and aspirations of informal workers and settlement dwellers in Indore, the economic capital of Madhya Pradesh. India's economic growth is concentrating in urban areas, where informal employment plays a huge role. Yet informal workers remain marginalised including in their health, living conditions and economic prospects. We present measures to enhance informal workers' resilience to climate change and other risks, which could be adopted in India and in other developing countries. These interventions can advance several Sustainable Development Goals, notably SDG 11 on cities, SDG 13 on climate action, and SDG 8 on economic growth.

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Summary

India's informal urban workforce

The majority of India's workers (men and women) are in informal work — mostly in cities. India's economic growth is rapidly concentrating in urban areas, where populations may reach 594 million by 2036, according to India's National Commission on Population (2020). Informal workers contribute very substantially to gross domestic product (GDP), yet remain marginalised, particularly in terms of their health, general wellbeing and economic prospects.

This growing informal urban workforce lives primarily in informal settlements. As factories and other commercial uses of land move into city peripheries, poorly served settlements are becoming even more squeezed and congested. Swelling populations, inadequate services and weak infrastructure combine with climate and occupational health risks, bringing compounded difficulties to informal workers and settlement dwellers.

This study recorded the complex risks, challenges, adaptations and aspirations of informal workers and settlement dwellers in Indore, the economic capital of Madhya Pradesh. We chose Indore to represent India's growing cohort of 'million-plus' cities. We looked for patterns of interacting risks, but also for evidence of resilience that could be shared.

Outlining our study

Ninety qualitative interviews explored workers' occupational hazards, gendered challenges, access to healthcare, low-quality housing and neighbourhood conditions including water scarcity, inadequate sewerage and garbage collections, and other risks linked to climate change. We also conducted 20 key informant interviews with decisionmakers to understand 'supply-side' constraints to service provision within informal settlements. Where we observed resilient practices, we disseminated these via practical 'action' sessions, short booklets and workshops.

Findings

Climate change is elevating temperatures markedly both at work and at home, where it interacts with indoor air pollution in single rooms without separate cooking spaces. Unreliable water supplies are making good hygiene harder, and collecting clean water consumes productive hours, affecting livelihoods, especially for women. At other times, downpours make living conditions damp, damage property and exacerbate problems associated with poor sanitation. COVID-19 and other crises have added acute pressures to already difficult lives.

A key finding was the difficulty people faced when obtaining official documents and social welfare benefits intended to cushion them against extreme hardship. Nearly a quarter of interviewees did not have the universal identification document (Aadhaar card) they needed to claim many social services. Similarly, nearly half did not have the labour welfare card needed to get a 'ration card' needed to access subsidised food through Public Distribution System shops. Changes in procedures, administrative delays, applications rejected for minor irregularities and problems with biometric or mobile phone text message authentication contributed to inequitable access.

Women informal workers reported that they typically carry the main burden of household and care responsibilities, in addition to their economic roles. They also reported restricted livelihood opportunities, either because they were offered only low-skilled and low-pay work, or because of social norms. Households headed by single women were the worst affected.

COVID-19 caused severe food insecurity and also impacted livelihoods, children's education and other health concerns. Lockdown drastically curtailed most informal workers' livelihoods and food security, either because work suddenly stopped or because their previous coping strategies became unviable. Challenges with accessing entitlement documents for benefits only compounded the difficulties. Women missed out on nutritional support for themselves during pregnancies and for their children.

Young adults living in informal settlements reported that financial independence was key, whether working to support their families through COVID or for their individual prospects. Some had left education early and were entrepreneurial (for example running small convenience shops). Others still in education or training wanted to move into the formal sector. Most young men felt able to seek livelihood opportunities wherever they liked. In contrast, many young women had their mobility or education curtailed by social pressures.

Supporting resilience

We also uncovered several examples of resilience amongst informal workers and residents of informal settlements. Incrementally improving their housing brick by brick (including underground water storage) is an established strategy to adapt to climate change. We held community-level workshops to share other promising experiences and promote effective action, at both individual and collective levels. For example, we supported communities to collectively request water connections and helped individuals apply for essential documents. Together with stakeholders such as health field functionaries, ward councillors and slum dwellers, we also developed and disseminated 'how to' booklets including on water storage, collective upgrading efforts, accessing social benefits, and strategies for buying and storing food grains.

Recommendations

This working paper recommends several actions:

- Stronger implementation of welfare measures is required, especially clear, simple and consistent application procedures.

- Additional focus is needed on welfare measures that support women's disproportionate burdens and foster gender equality.

- Madhya Pradesh should consider following other Indian states' action in universalising the Public Distribution System for subsidised food grains (as Tamil Nadu has done).

- Peri-urban farming should be supported because it offers an important role in food security, as well as livelihood options.

- Adaptive local strategies, such as bulk buying and efficient grain storage that help address food insecurity and benefit health, should be encouraged.

- Assistance for incremental building improvements (which are already established in informal settlements) should be expanded as upgraded housing can play a pivotal role in fostering health and climate resilience.

- Communities should be supported and encouraged to collectively apply 'demand-side' pressure for public services, such as better water connections. Such collective requests are currently an under-utilised approach.

- Support for community groups, and crucially for women's groups, will help underpin all efforts towards community-level and family-level resilience in informal settlements.

- To support youths in informal settlements, there is a need to expand the reach of open schooling and university education by offering flexible learning opportunities. Technical training, entrepreneurship and skill development courses can enhance youth livelihoods.

Measures implemented in our action research should be employed more widely to enhance community resilience among informal workers and settlement dwellers. They should be expanded within Indore and adapted in other Indian cities and countries in the global South. They will help advance progress towards several of the Sustainable Development Goals, including to make cities inclusive, safe, resilient and sustainable (SDG 11), taking urgent action to combat climate change (SDG 13), and to promote inclusive and sustainable economic growth, employment and decent work for all (SDG 8).

1

Context

Informal workers and people living in informal settlements in India's fast-growing cities are already marginalised and vulnerable, despite the huge contribution they make to the economy. Climate change is exacerbating the situation, bringing issues like erratic rainfall patterns, more frequent heatwaves and water scarcity that worsen living conditions and health. More acute challenges, such as COVID-19, add another layer of difficulty.

1.1 India's growing informal workforce and settlements

Like many low- and middle-income countries, India is rapidly urbanising. With economic growth becoming concentrated in urban areas, urban populations rose from 217 to 285 million between 1991 and 2001, were 377 million in 2011, and may reach 594 million by 2036, according to India's National Commission on Population (2020).

In India, nearly four fifths of male and about three quarters of female workers are in informal, mainly-non-agricultural, employment. For youth, the proportion is even higher. Up to 90% of young people aged 15–30 in Indian cities are working informally (Dore 2013). Informal workers contribute about half of India's GDP (NASEM 2016). Yet their health, wellbeing and longer-term prospects are generally ignored and neglected.

Informal workers usually live in informal settlements (an overlap that was part of this study's rationale). Informal settlements are growing in Indian cities, but they are also being 'squeezed' by modernisation. Many city centres are deindustrialising and moving factories to their peripheries. A shift towards broad boulevards, mass transport systems and modern shopping malls caters to India's growing middle class, but is compressing informal settlements into congested living space with inadequate services. It is vital to understand the overall implications of these trends for urban employment in India (Chen and Raveendran 2012). Yet there is little literature on the multiple interacting risks associated with informal workers' and settlement dwellers' occupations, living conditions and access to basic services, and women's occupational health remains particularly neglected (NASEM 2016).

1.2 Indore: representative of India's 'million-plus' cities

We conducted our study in Indore, the economic capital of Madhya Pradesh, which has attracted many migrant workers from other districts of Madhya Pradesh and from states like Bihar and Uttar Pradesh. Most research into urbanisation and India's informal settlements has concentrated on megacities such as Delhi, Mumbai, Chennai and Kolkata. By contrast, we provide insights about medium-sized cities (above 1 million inhabitants). In 2018, the United Nation's World Urbanisation Prospects estimated that India had 61 such 'million-plus' cities (UN 2018).

Indore's 2011 census recorded over 1.9 million residents within the city (up 44% from the 2001 census due to migration, natural increase and the city's geographic expansion) and 2.17 million within the wider metropolitan area. The 2011 census suggested 590,257 people lived in informal settlements ('slums').[1] But the work of the Urban Health Resource Centre (UHRC) with women's groups between 2009 and 2012 revealed 633 slums with an estimated population of 918,575: nearly 50% of the city's population (Agarwal 2016). The population of Indore's metropolitan area was estimated to be 3.12 million in 2021, based on 44% decadal growth between 2001 and 2011.

Indore's flourishing industrial and commercial activities include manufacturing plastic goods, pharmaceuticals, leather goods, stainless steel kitchenware, garments, iron goods, milk-processing plants, vegetable oil refineries, and real estate development. Being a commercial and industrial centre, Indore attracts a large number of informal workers.

1.3 Defining poverty, vulnerability and resilience

Poverty and vulnerability are two distinct but intertwined challenges. Poverty generally means inadequate income for necessary consumption. But this description has limitations (Mohanty and Vasishtha 2021; Vijaya *et al.* 2014). A more holistic definition (eg Mitlin and Satterthwaite 2013, Loughhead and Mittal 2000), involves multiple deprivations such as powerlessness (Agarwal 2009) and casual economic conditions (nature of occupation, access to fair credit), social conditions (prevalent alcoholism or other disease, gender inequities, educational disparities), environmental factors (water supply, drainage systems, sanitation facilities), access and usage of public health services, and even absence of community-based organisations (Taneja and Agarwal 2004).

Vulnerability means diminished capacity to anticipate, cope with, resist or recover from any hazard (Bohle 2001) and also encompasses risk exposure (Bara 2010). Vulnerability is not uniform across informal settlements. For example, women and children are exposed to more risk and/or have more-limited capacity (Hoogeveen *et al.* 2004). Perceived vulnerability, including livelihood uncertainties, makes people cautious and can limit their coping ability.

Resilience emerges from factors that oppose vulnerability. These can include knowledge and health, organisational capacity, connections, infrastructure and services, economic opportunities and natural assets (IFRC 2012). For example, job security, livelihood opportunities or even raised respect in the community can boost resilience (Julca 2011). Upgrading informal settlements in collaboration with the community can better meet local needs, and so build resilience (Seeliger and Turok 2014).

1.4 Vulnerability to climate change and extreme weather

Informal settlements and slums offer poor living environments with few public services. Climate change and extreme weather events amplify these vulnerabilities (Satterthwaite *et al.* 2020, IPCC 2014), placing climate-related challenges amongst the biggest risks to informal settlements and workers.

At present, Indore's temperatures reach about 40°C in the summer. According to the state action plan on climate change (Government of Madhya Pradesh 2013), daily maximum temperatures may increase 1.8–2°C by 2050. Other sources suggest even greater increases. By 2030, maximum temperatures may be close to 50°C on some summer days (TARU 2012). The average minimum temperature may rise 2°C by the 2030s and by 3–4°C by the 2080s, but the urban heat island effect could push that 2–4°C higher within Indore (TARU 2012). Extreme heat brings a variety of health problems to informal settlements, as we will discuss in Chapter 3.

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[1] Authors' note: This paper has used the terms 'slum' and 'informal settlement' interchangeably to describe neighbourhoods in Indore with unhealthy, low-quality living conditions. This choice reflects our commitment to describe the lived experiences of disadvantaged urban populations, who do not make a distinction between the two terms.

Flooding and waterlogging are also likely to increase as the climate changes. Torrential rains can flood slum houses, especially those not built on an elevated plinth (Singh and Singh 2016; Ahmed 2016). Within Indore, annual rainfall could increase by about 11% by 2050, and during monsoon months by about 14% (TARU 2012). There is limited data on current flooding rates, but a study of 500 flood-vulnerable households in Indore found 88% of these experienced several days of water ingress each year, and for 63% the water level was over 1m inside their home at its worst (Sharma *et al.* 2016). Rains can also facilitate outbreaks of dengue fever in informal settlements, especially near open drains (Rani *et al.* 2018; Smiley *et al.* 2017).

Indian cities depend on rural food production, which is adversely affected by climate change-related shifts in rainfall and droughts (Debnath and Nayak 2020). This may drive price rises, undermining food security and nutrition for urban informal workers and settlement dwellers (Tacoli *et al.* 2013). Food is already more expensive in cities than in villages, and through this rural-urban reliance, climate change makes it even harder for low-income urban groups to access sufficient good-quality food.

Research from other Indian cities also reveals how heavy downpours damage workers' livelihoods, in turn depleting savings and increasing debts (Santha *et al.* 2016). Street vendors in particular risk damage to their merchandise (Samarpitha 2019; Ko *et al.* 2020; Bhowmik and Saha 2012). Very few main roads and lanes in Indore's informal settlements have adequate drainage. Drains often become blocked with garbage, exacerbating water logging. Increasingly erratic rainfall will, therefore, inevitably worsen health and living conditions within informal settlements as climate changes.

Many informal settlements are considered 'illegal', so municipal services are denied. Slum dwellers often struggle to obtain proof of address documents that might establish their rights to such services (Agarwal 2014 and this study).

2

Methods

Our action research used qualitative interviews with informal workers and residents of informal settlements. We also conducted key informant interviews with government health workers and municipal representatives. We explored how informal workers' multiple risks affect their health, livelihoods and wellbeing; how risks interact; and also emerging solutions that foster resilience.

2.1 Research design

Figure 1 outlines the conceptual framework that structured our action research. Figure 2 summarises the process, which is detailed in the subsections below. We conducted qualitative interviews with workers, as well as consultations with community and government stakeholders. From these consultations, we identified and implemented measures to foster resilience.

2.2 Qualitative interviews

UHRC team members conducted 90 qualitative interviews with diverse informal workers and settlement residents (Table 1). Our categories cover the leading groups of informal workers in Indore's different slum areas (see Appendix 1). Interviews explored occupational hazards, gendered challenges, climate change impacts, hazardous living environments and other risks among workers and settlement dwellers. The interviews generally lasted 1–2 hours.

Respondents were selected to be at least five households apart if living in an informal settlement. We also took 'transect rides' through workplaces, including markets and the central hiring location for casual labour (Mazdur Chowk) to identify informal workers.

The UHRC research team used a qualitative interview checklist, and verbal consent was sought from each participant. Since the research was carried out during the COVID-19 pandemic (Box 1), the interviews adhered to a pre-agreed COVID-19 protocol approved by our ethics committee (see Appendix 2). In this report, we have used pseudonyms to maintain interviewees' privacy.

Figure 1. Analytical framework for analysing health and wellbeing risks for informal workers and settlement dwellers
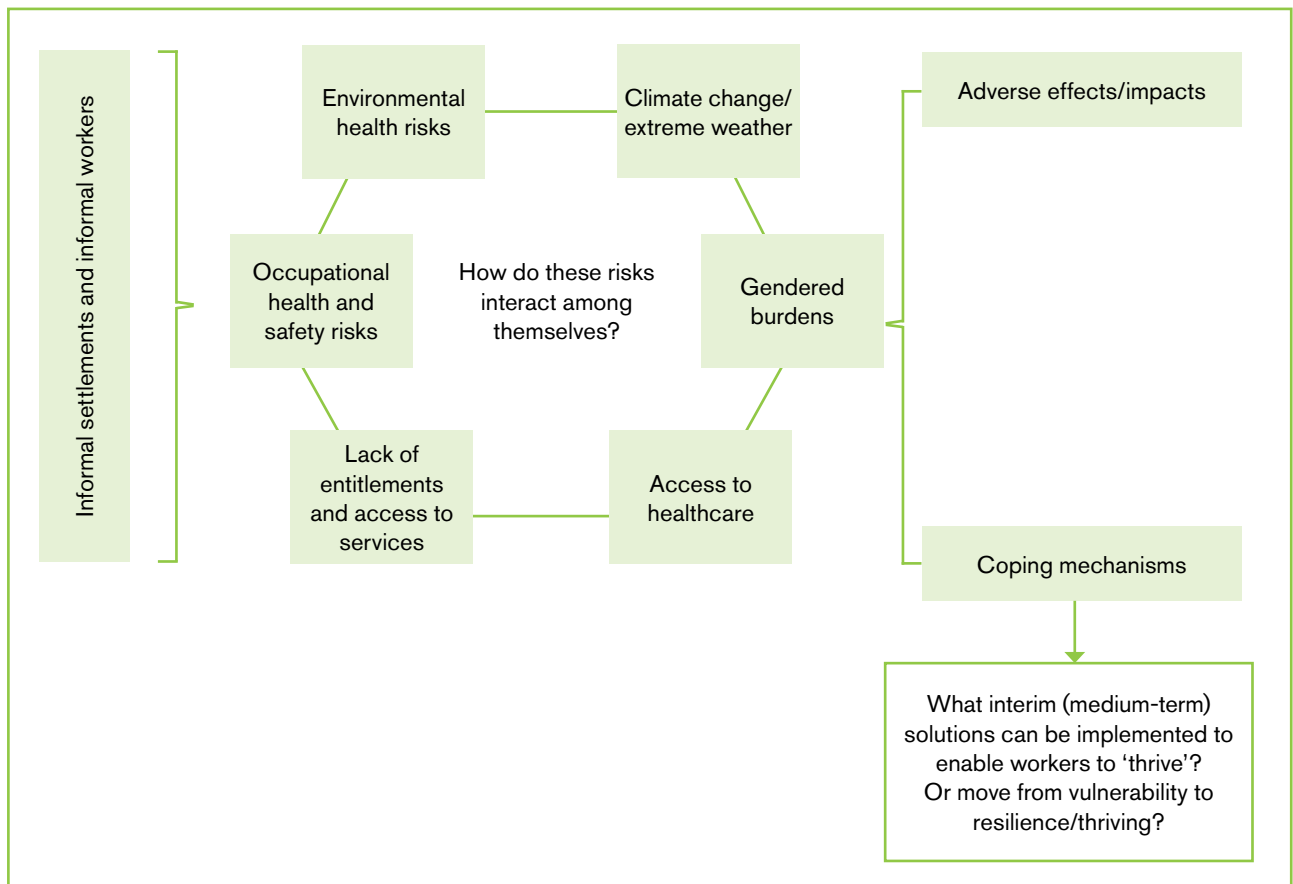
Figure 2. An overview of this action research
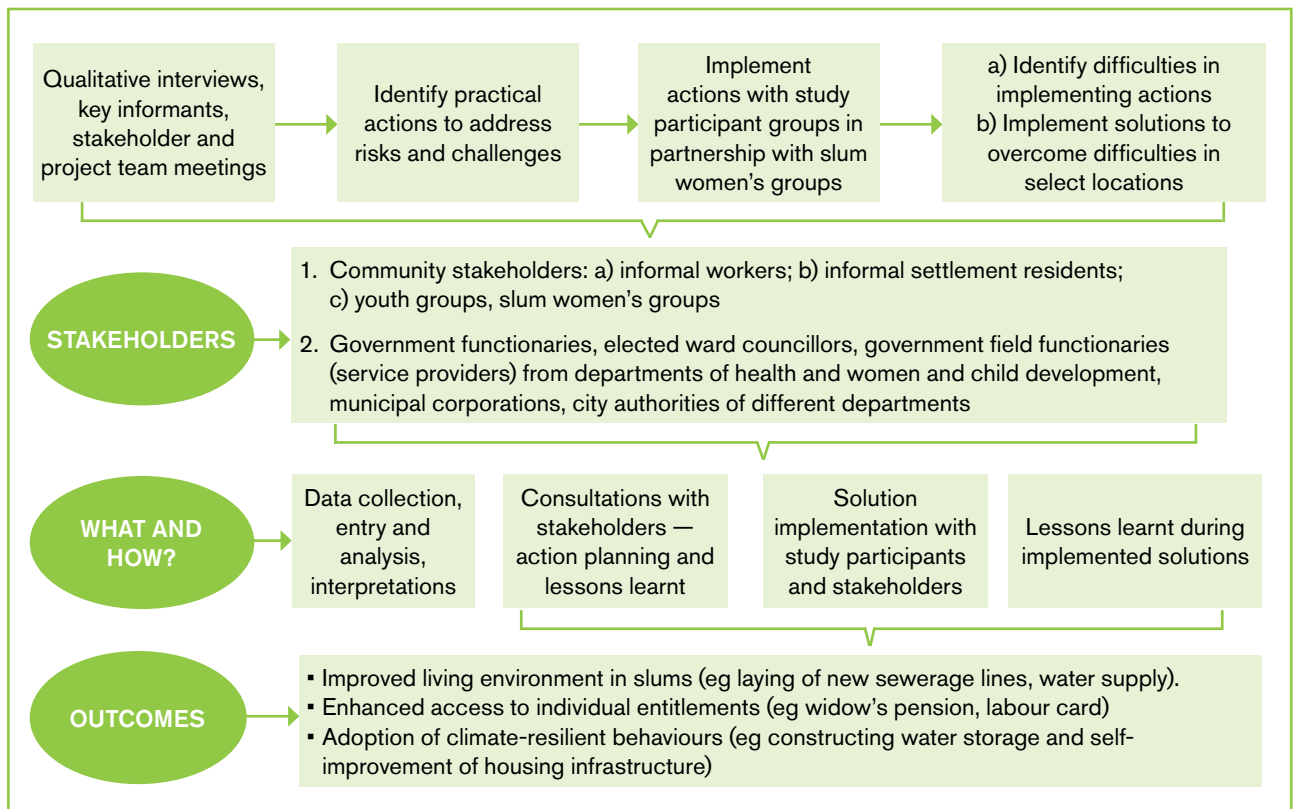
Table 1. Sample categories and sizes

CATEGORY	SAMPLE SIZE (TOTAL OF 90 INTERVIEWS)
Women and men working informally in factories, including making biscuits, garments, insulated products and processed foods. Many work on piece-rate wages. These workers are not covered by certain public benefits, for example factories do not contribute to the employee state insurance fund on their behalf. However, they may be covered by their informal worker card, which entitles informal workers to some public benefits.	15 (8 men, 7 women)
Women in informal domestic work ('house help') who cook or clean in higher-income neighbourhoods.	15
Women working from home in informal settlements such as stitching clothes, making papads (papadams/poppadoms), doing packaging work, making brooms, jewellery or decorative items.	15
Street vendors working near informal settlements selling vegetables, fruits, spices, jewellery and household items.	15 (8 men, 7 women)
Casual labourers: peri-urban agricultural workers (who water, weed and harvest crops as work becomes available); construction workers; and daily-wage casual labourers for various unskilled jobs.	15 (8 men, 7 women)
Youth (aged 18–26) living in slums and informal settlements pursuing various livelihoods.	15 (8 men, 7 women)

We separately conducted 20 key informant interviews with frontline government workers and municipal representatives. These included:

- Anganwadi workers (from the Department of Women and Child Development) managing anganwadi centres (See Box 7), who provide supplementary nutrition and link with auxiliary nurse midwives for immunisations and health check ups.

- Accredited social health activists (ASHAs), who are neighbourhood-level functionaries of the health department.

- Auxiliary nurse midwives (ANMs) from the health department, who administer immunisations and other basic healthcare to pregnant women and young children; treat minor ailments; and provide preventive medicines (such as chlorine tablets, iron-folate).

- Ward representatives/ward councillors (elected to represent the city's smallest administrative units of the municipal corporation).

These key informant interviews were intended to help us understand the administrative constraints currently hindering provision of services and their potential solutions.

The interviews were recorded in Hindi and subsequently translated into English and analysed using Atlas.ti software. Themes covered in our research were coded and grouped under domains of 'vulnerability' and 'resilience'. This allowed us to examine the pattern of risks facing informal workers face and their responses. We then examined codes within the 'vulnerability' and 'resilience' domains to explore how risks interact, and how resilience emerges. Throughout this paper, we have quoted respondents' descriptions of common scenarios.

2.2.1 Research questions

Our interviews examined the following topics with informal workers and residents of informal settlements:

- Key health challenges and health outcomes

- How public health, occupational and environmental risks as well as climate change are affecting respondents' livelihoods and wellbeing

- Coping strategies and emerging measures that can foster resilience

- COVID-19's indirect effects on health, food security, and children's education; and

- Slum youths' aspirations and how they are addressing inherited deprivation.

BOX 1. COVID-19'S IMPACT ON INFORMAL WORKERS AND ON OUR RESEARCH

India's nationwide lockdown for COVID-19 in March 2020 severely affected informal workers. Many small- to medium-sized manufacturing businesses shut down as supply chains were disrupted. Most workers were left unemployed and without any form of social security (Sinha 2021). Many migrant workers resorted to walking to their native villages.[2] Many faced hunger, starvation and death.

Those staying in informal settlements faced elevated infection risks because of their crowded living conditions (Corburn *et al.* 2020, Wilkinson *et al.* 2021). Furthermore, healthcare for the urban poor is dismal (Das *et al.* 2021).

Indore was one of India's worst affected cities during COVID-19 (Yadavar 2020). Its dense and congested population, and its role as a trade centre, made it easy for the virus to spread.

We initially planned a much larger survey, with about 600 interviewees, but COVID-19 forced us to scale back and to conduct solely qualitative interviews. In particular, COVID-19 prevented us from including brick-kiln workers because most kilns closed due to the pandemic. Brick-kiln workers are seasonal migrants who often live in temporary shelters at the kilns. They would have provided important information on risks facing informal sector workers in poor living and working conditions.

However, investigating COVID-19's indirect impacts on informal workers and settlement dwellers has helped to understand the pandemic's wider ramifications. We hope our research will deepen understanding and inform strategies to promote informal workers' health and wellbeing, including in the wake of COVID-19.

2.2.2 Interview limitations

Some interviews were conducted in two stages because respondents were not initially available to complete the full set of questions, and the research team needed more time to ensure accurate, detailed responses.

Some women respondents were not able to freely share their experiences, especially when a male family member was present. The team tried to make the women comfortable and to ensure their interviewer was female. However, some women informal workers could not fully share their stories.

2.3 Consultations with women's groups

We also held over 80 discussions with UHRC-mentored women groups and with other women active within their communities (but where formal groups had not been established). The discussions sought possible solutions to climate, environmental and health risks. Practical, doable solutions were then implemented and disseminated.

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[2] Authors' note: In India, 'native place' or 'native village' is the recognised term for the location where a child or adult is expected to reside and where his or her official documents will be applied for (which is usually the father's native place). Women move to their husbands' house and thus that place becomes their native place after marriage. It should be noted that 'native place' is distinct from a person's place of birth, as there is a cultural norm for a pregnant woman to stay at her mother's home (or an elder sibling's home) for the birth itself.

3

Climate risks

This section discusses informal workers' key challenges in dealing with climate risks (such as downpours, heat stress or water scarcity) and associated coping mechanisms. Some risks are specific to certain informal occupations. Across the study, women workers are usually more affected than men.

3.1 Heat stress

Challenges

Most respondents reported experiencing more frequent hot days over the past 10 to 15 years. Home-based workers reported facing less heat stress as they worked in sheltered environments. Factory workers, casual labourers, street vendors and those working from a single-room house reported greater challenges due to heat stress. Housing (size, ventilation and materials such as tin roofs) played a key role in heat stress (see also Chapter 4). Aggravating factors for workers included poorly ventilated spaces, proximity to hot machines, and needing to use protective masks/gloves.

Heat stress reduced people's productivity, and constrained wages. For example, a factory worker working on a piece-rate basis might report less productivity on hot days. Heat stress also caused exhaustion at the end of the day. Women reported difficulty with household tasks, especially cooking, which added to the heat (see Hansi's testimony). Some women workers reported toilet facilities being unavailable, or no permission to take breaks. They routinely reduced fluid intake, making heat stress harder to cope with. Street vendors reported challenges in finding shade in crowded markets. Domestic workers struggled with hot commutes, and reported feeling dehydrated and dizzy.

"I work in the chips factory from 9am to 6pm. I work close to a boiler which emanates heat resulting in heat exhaustion. After returning from work, it is me who has to cook for the family on the chulha[3] *in my single-room house. I feel drained out by the end of the day."*
— Hansi, a 36-year-old female factory worker

Coping mechanisms

Those who could drank more water and splashed water on their faces or arms. Agricultural labourers poured water over their heads and often rested in the shade during their lunch break. Street vendors used shade where they could find it. Some vendors altered the time at which they worked, as did some home workers.

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[3] A traditional Indian biomass stove.

3.2 Downpours

Challenges

Respondents reported increasingly frequent downpours, which can flood low-lying houses, leak through cracks and openings, and turn settlement lanes to a muddy morass. Often, downpours flooded sewerage lines, letting sewage wash back into dwellings.

Home workers and street vendors reported water dripping into houses and spoiling their merchandise or making it impossible to make perishable products such as *papad* or dried/fried snacks, thereby affecting their income. Many street vendors reported lower customer turnout due to waterlogged streets. Agricultural and construction workers reported less work being available in the rainy seasons. Casual, domestic and factory workers reported difficulty in reaching work through water-logged, unpaved lanes and roads. Some workers said they were getting ill more frequently, and consequently losing wages. All types of workers were affected by water damaging possessions, including food supplies (especially stored grains), essential documents (such as ration cards), steel trunks and mattresses.

"Water drips from the crevices of my house. I have no choice but to keep vessels to collect the rainwater … We do not have enough savings at present to repair the roof." — Neerja, a 34-year-old street vendor

Coping mechanisms

Families saved money to gradually raise their house plinth. Some workers waded barefoot through flooded lanes carrying their shoes. Some home-based workers and agricultural labourers took on different work, such as stitching or packaging tasks, that are less affected by heavy downpours.

3.3 Water scarcity

Challenges

A few interviewees had intermittent access to piped water in their homes from the Narmada pipeline, which aims to provide sustainable water supplies to Indore from the Narmada River, 70km away. Most interviewees said municipal borewells were their main water source, and that these would usually dry up in the summer, which was starting progressively earlier.

Informal workers and settlement residents reported paying for water and therefore restricting its use, with impacts on handwashing, hygiene and health. Interviews confirmed that women and children generally fetch water. As a result, children may be late to school, and women have additional household burdens and potentially forego earnings.

It is my and my daughter's responsibility to fetch water from the borewell. In summer when there are a lot of crowds, I become late reaching the factory owing to fetching water. The manager gets angry and sometimes deducts my wages." — Geeta, factory worker

Coping mechanisms

Family members, most often women and children, fetch paid-for water from deeper private borewells, or from free municipal or paid private water tankers. Some fetched as much as possible in a day to minimise time off work. A few could store water at home in an underground water-storage tank known as a *haudi* — but generally only people with both resources and space. A few in rented accommodation could use a landlord's *haudi*.

CONSTRUCTING AN UNDERGROUND WATER STORAGE TANK: JANKI'S STORY

A woman drawing water from an underground haudi or storage tank © Urban Health Resource Centre, India

Janki lives in Shanti Nagar, where the Narmada water connection remains erratic. Janki used to get water from a neighbour's borewell, but it made her late for her work as a domestic help. She asked her husband to fetch water on some days, but he would say "I have to earn to feed you and children. What else further do you want me to do?" She did not ask her children because it would affect their schooling.

Instead, Janki took a loan of INR 20000 (US$267) from Jan Lakshmi microfinance company at an interest rate of 2.5% per month over 24 months. She contacted a local mason who constructed a *haudi* with bricks and iron rods. Janki said "It is a one-time investment, so all the efforts need to be made to make it strong. I do not want to put money again and again to repair it."

The *haudi* can store 3,000 litres of water, which lasts 15 days and is used for washing and cleaning (families usually prefer to store drinking water in traditional earthen pots). In summer, Janki often calls a private tanker to fill it. This costs INR 700–800 (about US$10) every fortnight.

Janki is now slowly repaying her loan. The family's total monthly income ranges from INR 7,000 to 15,000, and the loan repayment is INR 2,060 per month (about US$27).

3.4 Food inflation and food insecurity

Challenges

Most workers reported that grains cost more in Indore than in their native villages. Subsidised grains should offer a safety net, but many informal workers do not have the required ration card or food subsidy slip (as discussed in Chapter 5).

Even those with ration cards often do not have every family member's name on it (see Aradhana's testimony on page 37), and they reported needing to purchase grains from more expensive sources. Others said that the ration shop often gave them less than their entitled weight of food grains/commodities. Casual workers are more affected than those with comparatively stable livelihoods. As a consequence, people eat only what they can afford to, limiting variety and cutting food intake when times are hard, with impacts on their health and wellbeing (see Usha's testimony).

"The costs of eggs and milk is extremely high in the city. We cannot imagine consuming them as part of our daily diet. We purchase and eat dal (lentils) occasionally. We mostly use pickle or chutney[4] or peppers in place of vegetable or dal to eat with chapati."
— Usha, casual labourer

Coping mechanisms

Some workers visit their native villages and contribute labour on family farms. In return they bring grains back to the city, and store them in large steel vessels. However, these are vulnerable to spoilage (see section on downpours above). Some families buy grain in bulk within the city when it is cheapest (usually harvest time). Many agricultural labourers buy grains from their employers.

A woman taking wheat out of a storage barrel
© Urban Health Resource Centre, India

ACCESSING THEIR ANNUAL GRAIN QUOTA: SUJATA AND MANOHAR'S STORY

Twenty-five-year-old Sujata and her husband Manohar left their family's farm in Jhabua (150km from Indore) because of family disputes. They now work as casual construction labourers in Indore, but each year they return to Jhabua during the sowing season (September to October) and harvest season (March to April). They work on the farm, and this earns them some money and also their share of grains, which lasts most of the year. Sujata says "In rural farms, one can easily produce what they wish to consume. There is self-sufficiency in rural areas which is not possible in cities."

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[4] Chutney is commonly green pepper chopped with a little coriander, lemon juice and salt.

4

Physical and living environment risks

This section focuses on housing conditions such as housing ownership, housing quality, cooking fuel and toilets, as well as on neighbourhood conditions such as sewerage, lanes and waste management. These living conditions affect people's health and wellbeing. We describe the challenges people face and the measures they adopt in order to cope.

4.1 House ownership and housing materials

Challenges

Many workers own their houses, and many who own houses previously lived in rented accommodation. However, some families have remained as long-term renters. For some, work and earnings are unstable. Some own a partially built house or a purchased plot and are saving gradually to build their house. Others have suffered setbacks such as severe or prolonged family illness. A substantial number of renters live in single-room housing. We found no clear links between the informal workers' occupation and their extent of house ownership.

Few owner-occupied houses are made entirely of permanent material. Some are constructed mostly of insecure temporary materials (known as *kutcha* housing). Warming and waterlogging exacerbate

problems of heat stress and poor sanitation and also worsen the health and wellbeing of people living in poor-quality housing.

Many renting families use a single room as a common living and cooking space, often using polluting cooking fuel. Earthen or brick *chulha* stoves, fired by wood, dungcakes or coal, are still a common form of cooking in urban slums. People use *chulhas* when they lack the formal address documentation (see Chapter 5) needed to buy clean LPG cooking fuel from authorised outlets, or when they cannot afford the cylinder deposit and recurring fuel costs. Some buy small LPG cylinders from the black market when in dire need. Household air pollution from cooking fuels is a big source of air pollution in India and a major cause of ill-health.

In many cases, even in self-owned houses, toilets drain out into back lanes rather than proper sewerage systems. Self-owned houses generally have private toilets, whereas renting families share with four or five other households. A few toilets are connected to a

mini septic tank, soak pit or to the sewerage system. But even those were vulnerable to sewage overflow during waterlogging. In addition, very young children cannot easily use toilets. They may defecate outside or in the room. Some parents dispose of children's faeces in a plastic bag, in a vacant plot or behind the house. Combined with other sewerage system shortcomings, this raises the risk of gastro-intestinal infections.

Most households have metered electricity connections, but some use unauthorised 'hook-ups' to live wires on electricity poles. Renters rely on their landlords for power connections.

Coping mechanisms

Many house owners improve their dwelling incrementally over several years (see Kashi's testimony). Households frequently borrow LPG cylinders, in a network of cooperation, 'getting by' until they can afford to buy. Some use kerosene lamps during power cuts.

> ### INCREMENTAL SELF-BUILDING AND HOME IMPROVEMENTS: KASHI'S STORY
>
> Kashi, 48 works as an agricultural labourer near her settlement (Nandbagh Colony) and lives with her husband (a mason), who moved to Indore 25 years ago. They upgraded their house gradually over ten years, first adding an extra room. For several years they could not afford to build a toilet, and they would defecate in the open. Kashi joined an Urban Health Resource Centre-mentored women's group (women's groups also pool savings and disburse loans) and borrowed money to improve their house. Kashi's family are still elevating the plinth and making other improvements.

4.2 Neighbourhood conditions

Challenges

Neighbourhood conditions affect the health and wellbeing of people living in informal settlements (see also Table 2). Garbage disposal is a problem for many households. Garbage trucks cannot access narrow lanes, and scheduled collections are often missed. Some interviewees reported being away for work at the garbage collection time, and that they found it harder to deal with waste. Workers dispose of garbage in empty plots, behind houses, and in sewage channels, rendering these prone to blockages.

Slum lanes are often unpaved or partially paved, broken, uneven and dirty, especially in newly developing settlements, making them difficult to use during wet weather. Many lack street lighting. Some women reported feeling unsafe in unlit streets when returning from work after dusk. Street vendors said taking carts over unpaved lanes was difficult. Those who walk (especially children going to and from school) and cyclists getting to work also struggled with the uneven lanes, especially when wet.

Coping mechanisms

Where sewerage channels are choked, residents request they be cleaned. This can restore functionality, but still leaves a sewage residue on the lanes.

Some communities have garbage bins, and a few families separate 'dry' and 'wet' garbage. The municipal collection vans have two containers, one for dry waste (including plastic and glass) and another for wet waste (generally kitchen waste). Separating 'dry' and 'wet' makes collection easier, and hence makes efficient collection more likely.

Table 2. Risks associated with people's living environment

RISKS	CONDITIONS	CHALLENGES
Neighbourhood-level living conditions	Sewerage	Sewerage not laid in many slums resulting in sewage outflow from household latrines. Clogged sewerage systems lead to backflow of sewage during rains.
	Garbage disposal	Garbage-collection trucks unable to enter narrow lanes. Workers unable to throw household garbage into garbage-collection trucks owing to being at work when truck arrives. Hence, they dispose of garbage in the nearest vacant plot.
	Pathways	By-lanes are mostly unpaved making it challenging for street vendors pushing heavy carts, children walking to school or workers commuting to workplaces.
	Streetlighting	Inadequate streetlighting in many lanes makes it unsafe for women/children to walk/travel alone after dark.
Household-level living conditions	Toilets not connected to septic tank/sewerage	Self-owned toilets not connected to septic tanks can lead to toilet outflow at the rear of the house. Young children unable to use adult toilet; mother often disposes of faeces outside in empty plots.
	Cooking fuel and cooking space	Use of biomass fuel (*chulha*) in many rented accommodations with no separate kitchen poses risk of respiratory disease due indoor air pollution.
	Housing made of semi-permanent material	Houses having a tin roof increase heat stress. Crevices in roof can lead to water leaking into the house during rains. Rainwater enters inside low-lying houses.

5

Documentation and social benefits

Informal workers in Indore experience difficulties in obtaining basic documentation needed to apply for social benefits. But those who have acquired documents also face challenges in accessing social benefits. Indeed, inability to access social benefits emerged as a major challenge for informal workers.

5.1 Identity documents and benefit schemes

Having a **universal ID (UID) document** or **Aadhaar** is a pre-requisite for accessing many social welfare schemes and essential services in India. A UID/ Aadhaar issued in Indore is a photo ID and proof of address that can be used to open a bank account. It also facilitates applications to social welfare schemes such as the widow's pension and old-age pension. But it has to be linked to an active mobile phone number, so it can be verified via a one-time passcode sent by SMS. In addition, using your Aadhaar requires biometric authentication via fingerprint verification.

India's voter ID card, also known as **Electoral Photo ID Card (EPIC)**, is issued by the Election Commission. It is needed to cast your vote in municipal, state and national elections. It also serves as a proof of address and as an identity card.

Many people apply for a UID/Aadhaar through a Suvidha Kendra, an accredited outreach kiosk that delivers public services as part of the national government's Digital India initiative. Some Suvidha Kendra services

are free, including registering for a voter ID card. Others incur a modest fee, including applying for the UID/ Aadhaar card or the Mazdoor card.

The Mazdoor card is issued by Madhya Pradesh's labour department. It is sometimes called the Labour card, Mazdoor Diary, Majdur, Shramik card or e-Shram card (the latter obtained via the online e-Shram portal). Holders can access educational scholarships for children, maternity benefits (under the Pradhan Mantri Matru Vandana Yojana scheme), and a subsidised electricity tariff etc. During national emergencies (such as COVID-19), Mazdoor card holders are eligible for government assistance.

Any Indian, including informal workers, can join the **Pradhan Mantri Suraksha Bima Yojana (Prime Minister's Insurance Scheme)** by paying an annual premium of INR 12 + tax, deducted from one's bank account. This premium is waived in the first year for informal sector workers with a Mazdoor card. If an informal worker becomes partially disabled, they are entitled to INR 100,000. If disability is total, entitlement is INR 200,000. If the worker dies, the INR 200,000 can be paid to a pre-arranged nominee.

The Public Distribution System (PDS) implements India's National Food Security Act, 2013. Central government procures, stores and transports food grains, and makes bulk allocations to state governments, which allocate to districts. District administrations run 'fair price' shops and issue eligible families with **ration cards (also called food subsidy slips)**.

The **One Nation, One Ration card** scheme (ONORC), introduced in October 2020, aims to help people get food entitlements anywhere in the country, irrespective of where their ration card is registered.

The **Vidhwa widow pension scheme** is known as **Kalyani Pension Yojana** in Madhya Pradesh. Widows aged 18–59 years can claim a monthly payment of INR 600 if they have an income certificate or food subsidy card. After 60, eligible women (and men) can claim the **Vriddh old-age pension**.

The **Ayushman Bharat scheme** is a government of India medical insurance scheme that enables access to medical care of up to INR 500,000 at accredited private hospitals with part co-payment depending on the medical condition.

Challenges

Obtaining basic ID and proof-of-address documentation is challenging for many people. Nearly half of interviewees did not have an Indore voter ID card. Some had a voter ID for their native place,[5] but not Indore. Without place-of-residence voter ID, people lose their fundamental constitutional right to suffrage and political franchise during municipal, legislative assembly and parliamentary elections. The Indore voter card also serves as a proof of address, a photo ID, a proof of date of birth and is needed to apply for a phone service (mobile or landline), social benefits and public services such as hospital treatment.

Nearly three quarters of workers had a universal identity document (UID/Aadhaar), but for some this was issued from their native place, not Indore. Workers whose UID/Aadhaar lacked an Indore address cannot access welfare benefits such as maternity benefits or educational scholarships for children.

Some labourers reported challenges in applying for the UID/Aadhaar card. A few did not have the basic documents needed, such as a birth certificate. For some, the requirement for biometric fingerprint authorisation was challenging. Hard manual labour had worn their fingerprints such that they could not be scanned.

Problems getting ID and proof-of-address documentation also causes problems opening a bank account — which is needed to receive many benefits and join social protection schemes. Although many families have Indore bank accounts, others have their bank accounts in their hometowns or villages. A substantial number have no bank account at all, either because they did not know how to start the process or they were not sufficiently confident to do so.

For others, minor problems proved insurmountable in the face of bureaucracy. A misspelt name, an out-of-date address or a wrong or lapsed phone number on an Aadhaar document can result in rejection for other paperwork or schemes. A lapsed phone number renders the Aadhar card valueless as an ID, and a bank account dysfunctional, since authentication is via a single-use password that goes to the mobile number. Where several people's details have to be correct for one household application, the risk is higher.

Nearly half our interviewees did not have an active Mazdoor card, though a few of those without cards had applied for them. A substantial proportion could not apply, because they either did not have the right basic documents or did not know the procedure for applying. Some reported that they did not know how to apply because the process had frequently changed. Workers reported going from one office to another, only to be told they had followed the wrong process. Some had been given the strong impression that only online applications were permitted. This has deterred many who lack the confidence and technical familiarity needed for online applications.

Although having a Mazdoor/labour card does not automatically translate into access to intended social benefits, it is an important step, especially as the card is used to access the ration card that enables people to access subsidised food grains from the PDS shops.

Indeed, many of our interviewee's families did not possess ration cards. Some of these people were recently arrived migrants. But some were families who had lived in Indore for a considerably longer period, yet they were still unable to get the card.

Some who were applying for a ration card reported that they could not get a proof of address in Indore that was acceptable to the Department of Food, Civil Supplies and Consumer Protection (the ration card issuing body). Others had had their applications rejected, sometimes because of changes in the application process, bureaucratic hurdles or exclusion on some procedural pretext that usually marginalised the poor. Many families are not receiving their full entitlement as some family members had not been named on the card (see Aradhana's testimony, page 28).

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[5] See footnote 2 on page 13 about 'native place.'

A Below Poverty Line (or BPL) ration card can also serve as proof of low income — and therefore as proof of entitlement to other schemes. These layers of bureaucracy become increasingly difficult to negotiate for more vulnerable groups. A Mazdoor/labour card can help people apply for a ration card, and a ration card bearing one's name supports applications for old age or widow's pensions.

Furthermore, the old age pension application process requires biometric authentication (fingerprints — which are generally less marked in older people). Elderly people have to attend in person when applying for a pension at the relevant office. That presents a barrier to many. Understandably, some elderly people find it hard to follow and work through the pension application requirements.

Additionally, while India has rolled out the One Nation, One Ration card system, implementation remains weak. One problem is the use of one ration card per household. Workers who live in Indore without their families (usually men) may leave their ration card in their native places for their families to use. A ward councillor interviewed as a key informant pointed out that not only would such a worker not have a card, the cost of buying food is higher in the city than in villages.

"How will he gain access to subsidised grains here in the city without a ration card? How will he afford the cost of food grains and other items which are expensive here in comparison to rural areas? He also has an additional burden of sending remittances back in his village." — Interview with a ward councillor

Coping mechanisms

Aradhana's story illustrates informal workers' struggles with bureaucracy, and also the value of persistence.

OVERCOMING BUREAUCRACY: ARADHANA'S STORY

Aradhana, from Tigariya Badshah settlement, works at home making necklaces. She had the a mazdoor/labour card but not the ration card/food subsidy slip she needed to claim her family's ration of subsidised food. She visited her zonal office many times trying to acquire this, but to no avail. She then lodged a complaint via the chief minister's helpline.

Then came many calls from government officials. They said they would process her ration card request, but only if she retracted her complaint. Aradhana told them "I will take my complaint back when you have processed my application".

After six months of persistence, she received her ration card/food subsidy slip. However, it only had her and her daughter's names. Her husband's and son's names were missing. She again lodged a complaint via the helpline. She got calls from irate officers who would threaten her, saying "We have processed your food subsidy slip as you wished. You are still not satisfied! Take your complaint back or we will cancel your food subsidy slip altogether." Aradhana remained firm and gently told them to process her husband's and son's name soon.

After another couple of months, Aradhana received a call from the district magistrate's office telling her that her husband's and son's names had been added and she could collect her updated card. A jubilant Aradhana said "I knew that these officers remain lazy to do their work, but they require constant pressure from the public to deliver what they are meant to deliver."

6

Working conditions and access to healthcare

This section covers working conditions in indoor/outdoor workplaces, occupational health, facilities at workplaces, and the commute to and from work across worker categories. Access to medical care, preferred healthcare facilities and workers' relationships with employers/managers are also discussed.

6.1 Working conditions

Construction site and factory workers reported the most workplace risks. Injuries caused by sharp implements or machines were common (see Tulsi's testimony on page 24). On construction sites, falls were common, particularly during the rainy season, and workers using drills suffered with dust in their eyes and airways. A few workers received first aid for occupational injuries, but they said this depended on their employer's or manager's goodwill. Agricultural workers reported problems from heat, thorns and backache and pain in their legs and arms while/after working. Musculoskeletal pains were also common among construction workers and home-based workers who spend long periods sitting in one position for stitching, deseeding tamarind pods or making jewellery etc (see also the section on challenges affecting women). Many home-based workers had inadequate space and insufficient light, especially in rented houses.

Workers reported varying challenges/experiences related to commuting to work. Street vendors incur costs from the round trip of about 20km to the wholesale vegetable market. Most share a rented vehicle in groups of 4–5. Very few have their own three-wheeled transportation. Vendors must also navigate their vending carts through unpaved, broken or water-logged lanes. Factory workers generally commute by walking (mostly women) or cycling (usually men). Women usually work in factories near their house. Domestic workers generally walk or share an autorickshaw to more distant locations, particularly in the summer. Workers face heat stress while walking to and from work in the summer.

Many workers (especially factory workers, domestic workers) reported difficult relationships with employers/managers. They would often be reprimanded for producing less output, or for taking breaks. Some managers did not give any perks, such as a bonuses or holidays on festivals.

"My hand was smashed in one of the biscuit assembler machines. I had to wait for a while for the assembler to go up. That resulted in a severe bruise owing to which I was not able to work for many days. I received no help from my manager in availing treatment and my wages were deducted owing to not working for some days."
— Tulsi, a 36-year-old working in a biscuit factory

Some domestic workers are not allowed to use the toilets at houses they clean and have to wait until they return home or go on to further work at a more reasonable household. Some reported that they were not allowed to touch certain objects in the house or pass through certain areas considered 'holy'. Their cleaning work is integral to the household's smooth functioning, and yet they are considered unclean and impure. This throttles their self-esteem and reinforces an acceptance of caste hierarchies.

Respondents said that more-supportive factory managers sometimes bear the expenses of treating a worker's injury. A few domestic workers said their employing family was supportive. Some said their employer encouraged them to continue schooling their children. Two or three employers paid school expenses for one of their domestic worker's children. Most employers of domestic workers did not deduct pay for absence due to COVID-19 or other unavoidable causes.

6.2 Access to healthcare

Few workers have knowledge about where to seek affordable quality healthcare or have the documentation or negotiation ability to access it. Many workers use low-cost private clinics for injuries and minor ailments (for example sore throat, fever, cough). Since most clinics are within or near their informal settlements and operate late into the evenings, workers prefer them because it helps to avoid losing wages. For more serious ailments (for example, major injury, surgery, maternity care) or in an exigency, some pay for treatment at expensive private hospitals. However, this practice also pushes them further into poverty and debt traps.

"During my wife's pregnancy last year, she underwent premature labour. We did not know where to go. Hurriedly upon the advice of our neighbour, we went to this expensive private hospital which charged us a big amount. I had to borrow money from my contractor and some relatives to pay for my wife's surgery. I still have not been able to repay my debt."
— 28-year-old Prem, a casual worker

A few workers reported using government hospitals and felt confident in navigating the government system. These 'positive deviant' families are aware of the benefits of obtaining good quality and affordable care at large government hospitals (such as Maharaja Yashwantrao (MY) Medical College Hospital of Indore) and low-cost charitable hospitals.

7

Challenges affecting women

Women face particular risks and challenges, often bearing a triple burden of domestic tasks, wage earning and caring for young and elderly dependents. This 'triple role' demonstrates women's immense contribution to the family and to household income (Fajarwati *et al.* 2016). In addition, women often contribute unpaid assistance to their spouse's livelihood, and this remains largely unrecognised as a contribution to income.

7.1 Household labour

Women we interviewed reported rarely receiving help with home tasks from their husbands (see Vimla's testimony). Notably, it was usually women (and sometimes children) fetching water. Women also cook and clean. When they did report receiving help, it was usually from their daughters, but just occasionally also from young sons.

"I have to wake up early at 5am, clean the house and prepare food for everyone. Then I reach Mazdur Chowk at 8am and return home by 6pm. I have to then prepare dinner for everyone. My two older sons 21 and 23 years do not lend any help nor does my husband. I face severe backache at the end of the day. Yet I know it is me who has to prepare food for them."
— Vimla, a casual worker

However, both sons and daughters sometimes helped with home-based work, for example making *papads*.

7.2 Women-headed households

Our researchers interviewed many women heads of households. These women are primary earners, sometimes because their husbands are ill or alcoholics and therefore unable to contribute to family income. Sometimes, their husbands had died or deserted the family. Most of these women are in debt and struggle to make ends meet. Only a few aspire to educate their children. Most prioritise food and meeting daily needs (see Rajkumari's testimony).

"I am the only earning member of the family as my husband is suffering from TB (tuberculosis) and cannot work. I must feed my children, pay rent and also pay for medical expenses. At the end of the end, there is negligible saving."
— Rajkumari, a 36-year-old casual worker

7.3 Domestic violence

Informal women workers reported verbal and physical domestic abuse. In many cases the spouse was alcoholic and/or could not work. These women see a bleak future for their children and yet continue striving (see Hema's testimony).

"He comes home drunk and beats me in front of my children. My bruises hurt while working but I have no choice. Who will bring up my children?"
— Hema, a 27-year-old domestic worker

However, many women have developed assertiveness over time, sometimes with help from grown-up children or other relatives.

7.4 Low-skill work that pays less

Most women interviewees said they were given less skilled work, and consequently got less well-paid work, than men. Women factory workers often pack items, or cut plastic, whereas men often operate machines or become supervisors. Women reported having fewer opportunities to upgrade their skills and had to work in strenuous roles (see Shipra's testimony).

"I sieve sand throughout. I carry bricks over my head. This work entails more effort while men are simply here to plaster the mixture of cement and sand. Yet I am paid less. I also have not had the opportunity to upgrade my skill in years of work." — Shipra, a casual worker

7.5 Musculoskeletal pain

Women informal workers across all categories reported musculoskeletal problems.

Low-back pain (LBP) is the predominant occupational health risk among all work-related musculoskeletal disorders. LBP is defined as any "non-traumatic musculoskeletal disorder affecting the low back" (Punnett *et al.* 2005). LBP was most evident with a history of multiple pregnancies (including miscarriages and abortions). Multiple pregnancies can lead to vitamin D deficiency. Where women have insufficient or no vitamin D and calcium from natural sources and no or very little medical supplementation before and during pregnancy, maternal bone resorption increases to form the foetus' bones through release of maternal stores of minerals (calcium and phosphate) which are utilised to support bone formation in the foetus. Excessive bone resorption, as occurs over multiple pregnancies, can cause osteomalacia — a bone-softening condition that manifests in low back pain and is aggravated by work and standing for long hours (see Rupa's and Shipra's

testimonies below). These challenges also affect women's productivity, and hence their earning potential.

"My back starts aching every evening. I sometimes have an urge to not work for a day, but I cannot afford to lose a day's wages. I have three children to feed."
— Rupa, a home-based worker

"My entire body aches at the end of the day. It is a challenge to load and unload heavy materials or carry them on your head." — Shipra, a casual worker

BOX 2. COVID-19'S IMPACT ON WOMEN

COVID-19 is mostly dealt with in Chapter 8. But it has had particular effects on women that deserve noting here.

In many cases, our interviews revealed women informal workers took charge of managing the family's basic needs during the COVID-19 crisis. They borrowed from neighbours to feed their families, pay their rent and purchase essential rations. A few women took loans from community savings groups or relatives, either to meet daily expenses or to help their husbands pursue alternative livelihoods. For example, some bought a cart to sell vegetables — a livelihood option that remained viable. Some women also changed their work, for example taking up casual labour.

During 2020 and 2021, there was a sizeable increase in the number of widows in informal settlements, because of COVID-19. Losing an earning spouse shifted financial responsibilities more firmly onto women, often aggravating pre-existing financial distress. Many women have struggled to get their *vidhwa* (widow) pension (see also Chapter 5 on documentation and benefits) owing to the lack of appropriate documentation and bureaucratic hurdles.

Antenatal and maternity services were almost non-functional at government facilities during the lockdown and after strict lockdown restrictions were eased. Many pregnant women used private hospitals or resorted to home delivery by traditional birth attendants or a neighbour.

Women's health was also indirectly harmed by COVID-19 because pregnant and lactating women were not receiving supplementary nutrition through the Integrated Child Development Services (ICDS) Scheme's anganwadi services. Women missed regular antenatal check-ups, iron-folate, calcium, vitamin D supplements and their own tetanus vaccinations. Poor nutrition during pregnancy can have long-lasting effects.

8

Impacts of COVID-19

COVID-19 has had a devastating impact on informal workers' livelihoods and health, and the ramifications may continue for years. Our interviewees' experiences, as described here, should be read alongside Chapter 7 on challenges affecting women, and Chapter 9 on challenges for youth, as the pandemic brought additional burdens for youth and women.

8.1 Livelihood loss/ disruption

Challenges

Most informal workers lost their regular work during India's COVID-19 lockdown. Factories shut, domestic workers were sent home, home-based workers could not collect or deliver their materials, and vendors lost their customers. Selling vegetables remained viable, but difficult. Millions of workers returned to their native villages.

Restrictions eased partially by the end of June 2020, but some smaller factories had shut down permanently. Some households decided not to re-employ their domestic workers. Many street vendors resumed work but found they were earning less.

Coping mechanisms

Moving back to their native villages did eliminate people's rental costs in Indore and minimised food costs. Some people earned modest wages from few days of casual labour in their villages.

Some street vendors switched from selling clothes and household items to vegetables, thereby making a smaller but reasonably certain income. Some used savings or borrowed money from relatives, neighbours or from community groups to buy carts for selling vegetables.

Many people who previously had factory or domestic jobs looked for casual labour as soon as restrictions lifted. Some exhausted their meagre savings to make it through lockdowns. Some did whatever they could to get by and help their family (see Gopal's testimony).

STAYING AFLOAT DURING THE COVID-19 PANDEMIC: GOPAL'S STORY

Gopal's vegetable sales near his home in New Indira Ekta Nagar had been going well, and he made extra money loading and unloading at Indore's central vegetable and fruit market (*mandi*). But when COVID-19 struck, fear of infection kept him away from the *mandi* and he stopped his wife going to her work as a cleaner. Many smaller markets Gopal previously sold at also closed. The situation was very difficult, but Gopal's friends helped him. They broke 'stay at home' restrictions and stealthily brought vegetables from the *mandi*, which he sold from home. Though the earnings were less, it was enough to feed the family.

8.2 Food and nutrition during the COVID-19 lockdown

Challenges

With so many livelihoods severely disrupted, food became a huge challenge in informal settlements. Interviews with key informants suggested that access to subsidised grains was the most crucial social security safety net for most informal workers.

Workers who did not have ration cards (see Chapter 5 on documentation and social benefits) could not get free food allowances. Many vulnerable families reduced their intake or ate less nutritious food, sometimes just chapati with a pickle. Some families relied on grains they had stored in advance (see section 3.4 on food inflation and food insecurity). Some families could not travel to their villages to get their long-term annual share of grains around the time COVID-19 hit in March 2020.

Coping mechanisms

In many areas the elected ward representatives and social organisations distributed free rations during the lockdown. However, these did not reach everyone, and some people said the food had spoilt by the time it reached them. Some families borrowed money from relatives or neighbours to buy food items. A few families with 6- to 36-month-old children or pregnant and lactating mothers could receive a 'take-home ration' from their Anganwadi centre, part of the Integrated Child Development Services scheme. Some found the government midday meal scheme a reprieve. It is crucial to note that take-home rations and midday meals are both supplementary nutrition to complement home-cooked meals and do not meet a person's entire caloric needs.

One interviewee reported that she and her husband picked wheat grains left after harvest in a nearby field and got by on these, together with expensive flour bought with borrowed money.

8.3 Effects of COVID-19 on children's education and healthcare

Challenges

Schools closed during the lockdown, so children missed education, and many dropped out permanently. Children missed routine vaccinations, and some missed out on supplementary nutrition they should have received at school. Adolescent children were most likely to drop out of school as their families needed them to earn wages. Where classes shifted online, informal workers' children often could not afford the smart phones that they needed to attend classes.

Frontline health workers (ANMs) reported difficulties in providing routine immunisation services to children as they were occupied with COVID-19 duties. Meanwhile, informal workers and settlement dwellers reported being scared to take children for immunisation for fear of COVID-19 infection. Consequently, many children missed time-sensitive essential immunisations. Preventable diseases like diphtheria, whooping cough, polio and rubella, for which vaccines are administered under the government's health programme, deplete children's nutritional reserves, and impair development, even when they do not kill. Since children missed out on immunisation, some may have contracted measles, and a proportion could have died unrecorded during the pandemic.

Coping mechanisms

Some parents prioritised education and paid for children to attend 'coaching' near their settlements. A few took loans from community savings groups or microfinance institutions to purchase Android phones. Some further diversified their livelihood strategies and took on extra home-based work to pay for children's education.

A few families accessed paid immunisations for children and pregnant mothers from private clinics.

9

Challenges for slum youth

Young people aged 18–26 living in slums are striving to better themselves. Many aim to support their families. Some young women hope to break free of traditional restrictions to pursue their aspirations.

9.1 Financial independence

Challenges

Almost all the young people we interviewed said becoming financially independent was crucial, especially for weathering future adversities. All young people faced challenges from COVID-19 (see previous chapter). Some young women who previously stitched had not been able to find work during COVID-19. Some young men who had gone back to their villages (see Hari's testimony) had returned after the lockdown, but found work was less available.

Coping mechanisms

Some who had left school early saw a future in entrepreneurship (see testimonies from Pratap and Mahesh on page 30). Those still in education or technical training often wanted to work in the formal sector in a stable job, for example for a multinational company (see Amit's testimony on page 30).

Many youths aligned their aspirations with supporting their families. Naina, aged 19, had taken over her family's fish shop after her father became incapacitated. Others were learning skills like stitching/tailoring that could generate work at home, or that could be used for employment in Indore's well-established garment sector. However, few were proactively pursuing wider opportunities. Tina, aged 18, reported that she was working in a beauty parlour because she wanted eventually to set up her own.

"During COVID-19 the beer factory I worked at closed. I moved to my native village and helped my father with farming. After the lockdown I returned to Indore, my earlier employer had closed the beer factory. I found work in a plastic factory. I wanted to earn to repay my father's debt and also arrange money for my sister's wedding." — 23-year-old Hari

9.2 Education

Challenges

Young people had mixed attitudes to education. Some were happy to leave school and 'learn a trade by doing'. Some had had their education curtailed, either by financial constraints or social expectations (see Rama and Sangita's testimonies). But some young people had a firm resolve to continue learning, whether in formal education or within work settings.

"I wanted to pursue university education, but my mother strongly objected. I had to leave my studies after class X." — 19-year-old Rama, who now stitches at home

"I was about to join college but presently my family's financial condition is not good, and we cannot pay the fees." — 18-year-old Sangita, who now stitches at home

Coping strategies

Young people's educational aspirations come through clearly in their desire to develop skills which can aid them in finding decent employment:

"I am gradually developing my skills… I can now nearly assemble a two-wheeler on my own. This work experience will help me set up a garage of my own in a few years' time." — Pratap, now 20, dropped out of school, and a job, but then started an apprenticeship in his uncle's garage

"I was not really good in studies. So, there was no point in completing education. I can work my way through by learning hands-on and establish my own shop." — 20-year-old Mahesh

"My aspirations have not changed due to COVID-19. I am still going to coaching after restrictions have been lifted so that I would prepare for competitive exams. My father also told me to prepare." — 19-year-old Meena

"I am pursuing a technical training course at the ITI [Industrial Training Institute, a chain of government technical training institutes across India]. I aspire to find a stable job in a multinational company." — 20-year-old Amit

9.3 Mobility, gendered restrictions and family support

Challenges

Most young men were able to seek livelihood opportunities wherever they liked, including in shops or commercial establishments beyond their settlements. They said this helped them understand what skills they needed to acquire, helped build social networks and let them explore opportunities.

"I have been able to build many connections and networks in the city due to my nature of work. I get to interact with many people daily. I have recently learnt about a computer course which can help me get a better job in a few months' time." — 21-year old Subhash, a shop assistant

In contrast, many young women had their mobility curtailed by social pressures. Pooja, 18, said she wanted to go to college, but her brother did not agree and she now stitches. Chavi, aged 20, expects to get married soon, but she has been told she will only be allowed to work from home (where she plans to open a tailoring shop for ladies' garments). Some girls reported facing family pressure to marry as early as 18 (the minimum legal age for marriage). Their families believed that marriage would provide them with financial and social security they could not otherwise achieve.

Coping mechanisms

Even young women who expect to marry saw the need for a skill they can use to generate an income:

"I did not know what to do after quitting studies so therefore I started going to the bakery close to my home. After marriage, I shall at least be able to bake and sell cakes from home." — Jaya, an 18-year-old bakery assistant

For many youths, family support — often from mothers — was important in both setting and achieving aspirations. Naina, the young woman running the family fish business, had help from her mother while her grandmother stayed at home with her ill father. Eighteen-year-old Tina said her mother was supporting her in her ambition to set up her beauty parlour. And 21-year-old Megha has her father's support for her aspiration to be a police officer.

10

Implementing solutions that foster resilience

Strategies to address health and wellbeing challenges emerged from community discussion sessions with women's groups, informal workers, settlement dwellers and health service providers (Table 3). We implemented these strategies to build household and community resilience and improve service access. We also helped people to apply for documents and benefits — as explained in section 10.2. Furthermore, we disseminated strategies through events in local areas and distributed 'how to' booklets (Box 4).

10.1 Community sessions on collective requests for services

We held over 80 community sessions in several settlement clusters to identify neighbourhood needs and motivate residents to collectively request municipal works, for example through women's groups submitting formal requests to local government.

We identified lanes where we motivated residents to collectively request civic works. Residents were given capacity-building support and guidance on submitting requests that drew on experience from other settlements. Upgrading requests included piped water supply, paving of lanes, clearing of clogged sewerage pipes, laying of sewerage lines, and garbage collection.

Women writing collective community requests
© Urban Health Resource Centre, India

Residents either submitted written requests or made verbal requests to relevant authorities. The collective requests were politely worded, and written requests were signed by concerned neighbourhood residents. Phone numbers and UID/Aadhaar numbers of three contact residents were provided. This underscored the requests' legitimacy and helped authorities to coordinate with the residents.
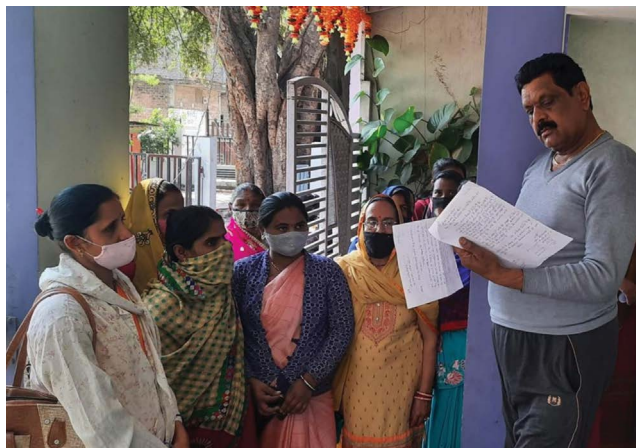
Slum women submitting a collective request to their ward councillor © Urban Health Resource Centre, India

Municipal action was not swift, and so communities wrote collective reminders. We also encouraged community representatives to attend public hearings (*jan sunwayi*) held periodically at the office of the district magistrate. During these sessions, government officers/executives from various departments are available at designated desks in a large hall. They issue a receipt for the community or individual request/reminder.

Outcomes

Dealing with municipal authorities is a time-consuming process, and even active women's groups needed continuous gentle encouragement to pursue their requests. However, when authorities do respond positively, residents' groups get a confidence boost and their belief in the value of collective efforts is restored.

Key outcomes as a result of collective requests (outlined in more detail in Appendix 3) included:

- Lanes were paved in four slums benefitting 769 households.

- Choked sewerage lines were cleaned in four slums, benefitting 670 households.

- New sewerage lines were laid in one slum, potentially benefitting 492 households.

- A garbage-collection truck started arriving in four slums, potentially benefitting 331 households.

- Narmada household water connections that had already been laid were activated in six slums benefitting 1,132 households.

- A new Narmada household water pipeline is being laid in one slum, likely to eventually benefit 335 households (see Box 3).

- Streetlights were activated in one slum lane benefitting 92 households

The government's urban renewal policies envisage a role for community mobilisation, and our action research has emphasised both the value and the difficulty of this. We provide one example from our intervention in Shanti Nagar relating to requests for water connections in the informal settlement there (Box 3).

BOX 3. COMMUNITY REQUESTS FOR PIPED WATER

Residents of lane number one of Shanti Nagar had to fetch water from a tank nearly 2km away in another settlement. One resident explained, "There was one public borewell in the entire settlement which would dry up during summer months. We would often call water tankers in summers months after negotiating a price."

In May 2021, UHRC sessions motivated seven women residents to collectively request a connection to the Narmada water pipeline. They wrote to the ward councillor, with a copy to the district magistrate's office. When they did not receive a response, they submitted a reminder at the public hearing, held in July at the district magistrate's office.

In November, 40 households were connected and could receive water from the Narmada water pipeline. However, the remaining 250 households in Shanti Nagar still lack a water supply. The efforts are ongoing to extend the supply to remaining households. It is worth noting that even piped water is available only for 10–15 minutes on alternate days or twice a week.

10.2 Community sessions on applying for documents and benefits

Our team held over 60 community sessions to discuss and facilitate the application processes for social benefits. These sessions identified many vulnerable families who lacked entitlement cards and/or the basic documents needed to apply for these (for example they had no Aadhaar/UID card). Some families had errors in their Aadhaar/UID cards (for example names spelt wrongly or incorrect date-of-birth information), hindering them when applying for social benefits.

We engaged these individuals and families during follow-up sessions and settlement visits, helping them to prepare and submit applications, both for ID documents and benefits. We explained social and welfare schemes, outlined eligibility criteria, discussed which documents are required, and where the applications should be submitted. We devoted some sessions to assisting women, in order to ameliorate gendered challenges in accessing social benefits (for an example, see Parvati's testimony below). Some residents were aware that they could apply for documents online, and use the local Suvidha Kendra (authorised kiosk) if they did not have a smartphone or computer themselves.

Outcomes

During the project:

- 739 e-Shram cards were applied for, and 736 were issued. Three were rejected.

- 36 widows applied for the widow's pension, and 17 started receiving their pension. Three applications were rejected.

- 35 applications for old-age pension were facilitated. Seven pensioners started receiving a pension. Five applications were rejected.

- 52 Aadhaar/UID cards were submitted for updating/correction with the requisite documents. Of these, 50 were corrected. Corrected Aadhaar cards will potentially enable the cardholders to apply for and use various benefits and services as described in Chapter 5.

- 501 Below Poverty Line ration card applications were facilitated. All were rejected without citing reasons.

- 118 Ayushman Bharat card applications were facilitated. From these, 115 families received the Ayushman Bharat card, which enables access to medical care worth up to INR 500,000 at accredited private hospitals.

E-shram (labour) card prepared through project efforts

Several families preferred to use an agent's services for benefit applications, rather than go through the challenges of the formal procedures, because otherwise they would lose wages by taking time off work. One worker explained, "If I apply for labour card through the services of a private agent and paying a service charge, at least I am aware that I will get my labour diary. I have to trade my work hours to visit the collectorate office only to receive a rejection every time. The amount that I am spending one time for investing in applying for labour diary, I will be saving a lot more in the coming months by getting a subsidised ration."

ACCESSING HER WIDOW'S PENSION: PARVATI'S STORY

Parvati Bai, 51, is a domestic worker in New Indira Ekta Nagar. Her husband Kishan died 15–20 years ago. She tried to apply for a widow's pension, without success. She said, "I made many rounds of the ward office, the Collectorate and the Municipal Corporation for many years. Everywhere I went, they would look at my papers and tell me 'It will start soon' but it never did. My daily wages would get affected as I would need to take leave to visit offices. My money would also be spent in taking photocopies and on transportation costs between different offices. I soon gave up. In October 2021, a UHRC team member shared information on the documents required and helped me re-apply for my widow's pension. I visited the office alongside them and submitted the documents. I received my first instalment of my pension of INR 600 in January 2022."

10.3 Encouraging savings and loan groups for housing improvements

Many informal workers and settlement dwellers gradually improve their housing step by step over several years. We held community sessions where women who had made substantial strides in improving their housing explained how they had achieved this, with the aim of inspiring others.

The sessions encouraged vulnerable families to save within community savings and loan groups (some already existed, some were formed during the project). These groups give all members a structure for saving regularly, and for borrowing for house improvements and other family needs at a low interest rate. Collective savings help families draw loans to incrementally improve housing as feasible for them — and to repay gradually.

However, this approach takes several years of perseverance to see outcomes. Many residents are unwilling to join or form groups as it entails a commitment to contribute each month. Community-based savings groups must have a set of rules. Sometimes there can be conflicts related to book-keeping and management, resulting in a group disbanding, leaving members unwilling to regroup.

10.4 Sessions to promote resilience at household level

Our team held sessions with women's groups where community representatives shared their experiences of solutions for sanitation, waste management, heat stress and cost-effective grain storage. This is part of UHRC's long-tern resilience building approach, and we expect outcomes to emerge over the next few years.

Better toilets: The sessions shared knowledge on building a small low-cost toilet either with a mini septic tank or soak-away pit, or connected with the sewerage system. The mini septic tank is a local adaptation developed by neighbourhood masons. Another technique was to tilt the toilet slightly backward to minimise water use for flushing.

Separating waste: People were encouraged to use separate waste containers for wet waste such as vegetable and food waste, and dry waste like plastic bags or household items. This is how the Indore Municipal Corporation directs that waste should be presented for collection. Families were encouraged to coordinate with the municipal waste collectors, and

to avoid leaving waste (including children's faeces) in vacant plots.

Heat stress: People were encouraged to manage heat stress by splashing water on their head, face, neck, and arms, or alter their working hours. However, these techniques will only help if people have sympathetic employers.

Fetching and storing water: Construction of *haudis* (underground water storage) was encouraged, and people interested in this method were encouraged to save in community groups and draw loans to cover the cost.

Grain storage/management: Families storing grains shared advice on sourcing and safe storage. They recommended bulk buying and splitting transport costs across several households, buying from native villages (where the quality may also be better), buying from the wholesale market (*mandi*) rather than smaller distributors, and negotiating for good-value grain from peri-urban farms.

Families suggested measures to protect grains from damage. This included sorting and checking for pests three times a year, re-drying grain in the sun after damp periods if required, and using preservatives, which included EDCT (ethylene dichloride carbon tetrachloride) as well as herbal pest-control methods like dried neem leaves and neem fruit. They also recommended keeping grains 20cm to 30cm above the floor, perhaps in a drum or can on a stool.

A community awareness-raising session
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Table 3. Emerging solutions for addressing challenges facing informal workers and settlement dwellers

RISKS	CONDITIONS	EMERGING SOLUTIONS
Solutions for living environment challenges		
Neighborhood-level living conditions	Sewerage	Verbal/written requests to authorities and reminders to lay drainage pipes. Requests are made for cleaning of clogged sewerage system.
	Garbage collection	Verbal/written community requests to authorities and reminders for regular garbage collection.
	Pathways	Verbal/written community requests to authorities and reminders for paving or repairing lanes, pathways.
Household-level living conditions	Toilets	Encouraging the construction of soak-pit/mini septic tank below toilet seat or installing a connection to the sewerage system.
	No separate cooking space	Families using biomass fuels should cook outside in open space if they have space outside the house.
	Water supply	Verbal/written collective requests for individual water connections to the municipal corporation.
Solutions for climate-related risks		
Climate change impacts	Heat stress	Promoting individual behaviours of taking short breaks in the shade whenever feasible, using a wet cloth, pouring water over oneself.
	Heavy downpours	Elevating housing plinths to prevent water from entering. Making walls/ceiling of permanent material through gradual savings.
	Food inflation resulting in food insecurity	Promoting practice of obtaining wheat in bulk at low cost and safe storage with use of appropriate spoilage prevention method(s). Promoting vegetable gardening in slum homes.
	Water scarcity	Written community requests to authorities for piped water supply; tankers during summers. Construction of *haudi* (underground water storage tank).
Solutions for access to social benefits and healthcare		
Social benefits	Access to food subsidy card	Facilitation of food subsidy card applications, and sharing steps to apply.
	Majdur/labour/e-shram card	Facilitation of online applications for e-shram and sharing steps to apply at Suvidha Kendra kiosks along with documents online.
	Widows' pension and old-age pension	Facilitation of applications with required documents for pensions and explaining steps to apply and documents required.
Healthcare	Access to government healthcare system and affordable private healthcare	Sharing information on government and charitable health facilities with optimal information about these facilities and how they function.
	Access to medical insurance	Facilitated applications for health insurance (Ayushman) cards and sharing steps to apply along with documents online.
	Improving access to health and nutrition outreach services	Increasing knowledge of importance of antenatal and child immunisation services of auxiliary nurse midwives (ANMs); supplementary nutrition from Anganwadi centres.

BOX 4. 'HOW TO' BOOKLETS

Informed by local knowledge, we compiled a range of solutions and strategies ('how to' steps) into action booklets in Hindi, which covered the following themes:

- **Accessing water and water management** This booklet describes where and how to get water, and practices adopted by more-resilient households to manage their water challenges, including investing in storage facilities like *haudis*.

- **Where to get healthcare** This booklet outlines the healthcare routes most frequently used by informal workers and slum dwellers. It includes information on state-run and private hospitals, maternity hospitals, community health centres, charitable/semi-charitable health facilities, and private low-cost health facilities.

- **Collective neighbourhood upgrading efforts** This booklet describes strategies that resilient communities are adopting to improve living conditions at household and community level. It includes information about which municipal offices receive community requests for services. It also includes example requests that communities can adapt (and example reminders for following up progress).

- **Accessing social benefits** This booklet provides information on benefit schemes for informal workers. These include subsidised food grains, labour benefits, and benefits for socially disadvantaged individuals. It covers what documents are needed to apply, and where applications can be submitted.

- **Strategies for obtaining and storing grains** This booklet features information on how resilient households acquire good value food grains, and how they store and manage their supply, so as to protect it from spoilage.

The booklets have been disseminated at local area advocacy events that aimed to foster community engagement, especially between women's groups, ward councillors and frontline health workers. The booklets have also been distributed to informal workers and settlement dwellers.

A local advocacy event to build linkages between the community, functionaries and politicians
© Urban Health Resource Centre, India

11

Lessons and recommendations

The recommendations in this chapter have the potential to mitigate climate risks, improve people's physical living environment in informal settlements, enhance healthcare access, capitalise on youth's determination to succeed, bolster food security, foster gender equality and boost overall wellbeing of informal workers and settlement dwellers. Box 5 outlines the key lessons learnt from this research.

11.1 Better access to social and health benefits for informal workers

The core need is to strengthen implementation of, and access to, all social and health benefits intended for informal workers and the urban poor. Crucially, application procedures and terminology need to be kept clear and simple, and consistent over time. Changes in nomenclature and procedures cause confusion, affecting informal workers, municipal and department executives and other facilitators — including NGO functionaries who help people apply for various schemes.

The system should be made more responsive to the extra burdens and challenges facing women. For example, women have often received less education than men, and find it more difficult to negotiate complex applications procedures.

To improve access, there is a need to simplify procedures for pensions and schemes benefiting widows or those whose husbands have deserted them.

Similarly, expeditious implementation of the National Urban Health Mission (NUHM, see Box 6) is needed, alongside strengthening of the urban component of the Integrated Child Development Services (ICDS) programme. Particularly necessary are: outreach health services in informal settlements; support for women's health groups (Mahila Arogya Samitis); more Accredited Social Health Activists in informal settlements (to reach one per 200 to 500 households); and an overall increase in primary, secondary and tertiary healthcare in cities. Setting up additional Anganwadi centres or mini-Anganwadi centres (a mini-AWC serves 150 to 400 people) in informal settlements would greatly improve health, nutrition and wellbeing outreach services for informal settlements dwellers and informal workers. For newer settlers and less-experienced families, knowledge of outreach services and cost-effective government and charitable medical facilities can help improve healthcare access.

BOX 5. KEY LESSONS

Our research has recorded informal workers' lived experience, and several key points have emerged:

Renaming a benefit scheme, or modifying the application procedures, leads applicants to make several visits when applying, and excludes many from receiving timely social benefits. Negotiating online applications is challenging for most informal settlement dwellers as they have limited knowledge and understanding of technology.

Many informal workers prefer using an agent to acquire social benefits. This avoids going through bureaucratic challenges. Informal workers reported that the costs of using an agent saved on transport costs, led to fewer lost earnings and gave them confidence that their application for the benefit via an agent would be successful.

Many women have demonstrated their firm resolve and tenacity relating to the wellbeing of their families, especially children's education and managing essential family needs such as food. They also assert themselves to prevent/minimise spousal abuse. Women's active roles are also key to other community and individual solutions, including others outlined here.

Collective efforts, such as polite community requests for services and amiable negotiation, can help upgrade informal settlements. However, informal workers and their communities need support and motivation from civil society organisations in achieving this because the process of making requests and submitting reminders is time consuming, and because civic response is uncertain. This study illustrates the importance of collective community action, as envisaged in the government of India's urban renewal policies.

Settlement residents can gradually improve their housing over several years in instalments. Saving regularly in slum women's groups helps them to borrow comfortably and improve their homes brick by brick.

Informal workers access small nearby private clinics and government hospitals or charitable/ semi-charitable hospitals, with their choices depending on feasibility and medical need. For minor ailments/injuries, workers prefer low-cost private clinics accessible after work hours. Workers experienced in using affordable health institutions were better able to navigate access to services from government and charitable/semi-charitable hospitals, such as services for serious illness, injuries, surgery and childbirth.

Knowledge sharing and promoting behavioural change complements service provision. For example, in neighbourhoods and lanes where people had adopted better waste-disposal practices, there was much better waste management than in others. Similarly, use of health outreach and Anganwadi services in neighbourhoods can increase with awareness of services, particularly among the most vulnerable.

Local experiential wisdom is crucial. Some people are more resilient than others, and efforts to share their strategies can propagate their successes. For example, UHRC is promoting local strategies to store grain and water.

BOX 6. GOVERNMENT HEALTH AND NUTRITION PROGRAMMES

Anganwadi centres provide supplementary nutrition to pregnant/lactating mothers and young children, nutrition education to pregnant and lactating mothers, referral of sick, undernourished children to the nearest healthcare centres, early childhood education, pre-school activities for children aged 3–6 years, and linkages with ANM for immunisations (for pregnant mother and children aged 0–6 years), as well as antenatal check-ups, contraceptive counselling and supply, and to coordinate local women's groups.

The Integrated Child Development Services (ICDS) scheme, which manages the anganwadi centres, has been implemented since 1975 under the Ministry of Women and Child Development.

NUHM (National Urban Health Mission), launched in 2013, is a sub-mission of the National Health Mission, focusing on urban communities. NUHM envisages meeting the urban population's healthcare needs, with a focus on urban poor, by providing essential primary healthcare services and reducing out-of-pocket expenses for treatment. NUHM works through strengthening the existing healthcare delivery system, targeting slum populations and converging with schemes relating to wider determinants of health, such as drinking water, sanitation and education, including those implemented by the ministries of urban development, housing and urban poverty alleviation, and women and child development.

11.2 Ways to enhance food security for informal settlement dwellers

Subsidised grains

Despite Clause 8 of the National Food Security Act 2013 (NFSA) mandating that migrant workers and their families should be able to claim their entitlements from wherever they reside, a set of strict regulations hinder access for vulnerable informal workers originally from another district, even though they are contributing to Indore's economy.

Madhya Pradesh should follow the example of other Indian states that have introduced reforms in the Public Distribution System (PDS), such as expanding coverage, increasing the number of 'fair price' shops, reducing prices, having uniform or slightly variable prices for different categories of households or cardholders, using continuous and robust monitoring of the NFSA's reach, offering toll-free complaint numbers, and enhancing transparency of the supply chain. Several studies suggest these reforms have led to better implementation of the PDS (Khera 2011; Himanshu and Sen 2011, Joshi *et al.* 2016). Several Indian states, including Tamil Nadu, Telangana, Himachal Pradesh and Odisha, have universalised access to grains through the PDS. Under Tamil Nadu's universal PDS system, for instance, each family below the poverty line is entitled to 20kg of rice at a highly subsidised price — and families decide for themselves whether they qualify. The state government decided on this universal coverage, acknowledging that effective targeting of poor families was administratively complex, and there was a real risk of the people most in need of food security being left out (Vydhianathan and Radhakrishnan 2016). Similarly, there is evidence from the famine-prone Koraput-Bolangir-Kalahandi region of Odisha that both caloric intake and diet quality improved after PDS was universalised (Rahman 2016). Study tours could take state and non-state personnel to see how giving universal access to subsidised grain works elsewhere in India.

Peri-urban farming and household vegetable growing

As well as providing employment, support for peri-urban agriculture could also play an important role in ensuring food security. Links with peri-urban farmers are an important food strategy for some casual workers. The value of peri-urban farming has been well demonstrated during the COVID-19 crisis (which some commentators have likened to a concentrated and accelerated version of the climate crisis). Some urban planning approaches propose cities like Indore develop satellite towns, rather than simply spread outwards, thereby protecting peri-urban farms from development. Examples of such satellite towns are Pimpri-Chinchwad outside Pune (Ansari *et al.* 2022) and Sanand outside Ahmedabad (Chatterjee and Chattopadhyay 2020). How well, and for how long, this can be achieved would vary from location to location depending on population growth, commerce and industrialisation forces.

Similarly, previous research in Indore by the Urban Health Resource Centre established the value of vegetable gardening by slum households. It can help to mitigate climate change effects and food insecurity, promote greening, provide a sense of psychological wellbeing and enhance social cooperation (Agarwal *et al.* 2021).

Adaptive strategies

Researchers have vividly discussed how the urban poor cut down on food intake or borrowing in order to buy food when times are hard (Shakeel and Shazli 2020; Tacoli *et al.* 2013; Compton *et al.* 2010). However, adaptive strategies such as obtaining grains from family farms in a worker's native village, purchasing food grains at low cost at harvest times, and bulk buying for careful grain storage have received less attention (but see Mackay 2019 for an example from Uganda). Social networks play a crucial role in helping many workers get low-cost food grains from alternative sources. Such adaptive strategies are a step towards self-dependence, and they are crucial for reducing various risks like food insecurity (which leads to undernutrition and poor overall health).

11.3 How living conditions can be improved

People's physical living environments in informal settlements are often poor. Although budgets may be allocated to cities under different policies and programmes, their utilisation could be improved by 'demand-side efforts', in which the community spurs civic authorities into action. NGOs can train community groups to begin gentle negotiations with municipal authorities for urban services (such as piped water, and laying and cleaning sewerage systems). Other settlements within Indore, other Indian cities, and even other low-to-middle-income countries could make informal settlements more resilient by community-led requests for access to urban services. Although not a new idea (see Yu *et al.* 2016; Joshi and Darshini 2010), it is an under-used approach.

Support for people's already-established route of steadily improving housing is also needed. For example, elevating the plinth is a time-tested strategy informal settlement dwellers use to prevent water entering their homes in most low- and middle-income countries

(Hossain and Rahman 2017; Singh and Singh 2016; Sakijege *et al.* 2012). Incremental self-building makes house improvements more achievable partly because the investment needed can respond flexibly to fluctuating incomes and savings, and partly because acquiring small loans with low interest rates can be more cost effective than a single large loan (Satterthwaite 2020). Support for the urban poor could include sustained capacity building to form and manage savings groups offering micro loans. A wider set of experience exists that could be tapped, for example Mahila Housing Trust (MHT) in Ahmedabad has also been promoting incremental self-building in slums through micro lending (Mahila Housing Trust 2020).

11.4 The need for collective empowerment and 'demand-side' approaches

Community groups that engage informal workers and settlement dwellers foster solidarity, build community capacity, and drive collective empowerment. They can be established, and their capacity built, under the aegis of government programmes, supported in partnership with local NGOs. Women's groups are especially important (see Box 7) and are mandated under several national policies, including India's National Urban Livelihood Mission, and the Integrated Child Development Services. The National Urban Health Mission (NUHM, see Box 6), for example, mandates a women's health group (Mahila Arogya Samiti) for every 50 to 100 households in informal settlements.

Community groups provide a sustainable approach to alleviating urban vulnerability, as they build human capacity over long time periods. They are appropriate forums for promoting climate risk mitigation strategies; for knowledge sharing about welfare schemes; for health and nutrition care; and especially for 'demand-side' negotiations for urban services.

Indeed, there is a clear need for policies and schemes to include and strengthen 'demand-side' or 'demand-led' measures. These are vital to complement the supply-side strategies envisaged in government policies and programmes. An example of a demand-led measure is the policy support for an 'on-demand Anganwadi centre or mini-Anganwadi centre' offered within the Integrated Child Development Services programme.

And as our study and others have shown, demand-side pressure can make other urban service provision more responsive.

BOX 7. SUPPORT FOR WOMEN'S GROUPS

Redressing gender inequalities is another over-arching issue, and key to ensuring better health and wellbeing within informal settlements.

Sustained support for slum women's groups is also central to redressing gender inequalities. These groups help foster women's autonomy within healthcare, children's education, and other family expenditure decisions. Women's groups are an effective forum for discussing gendered issues and for stimulating social solidarity, leadership and resilience.

Empowered women can gradually change social norms, such as the norm of men taking decisions on healthcare and children's education. Shared decision making can build a more equality-oriented social milleu (Agarwal *et al.* 2016a, Roy *et al.* 2016).

Slum women's groups can be fostered and trained to manage collective savings and loans, for example for housing improvements or healthcare needs. Such systems let more women save effectively, and instil greater confidence among members. Use of savings for members' health and social needs also reduces their dependency on local moneylenders (Agarwal and Sarasua 2002), while women's groups can mobilise communities to make collective requests for urban services, as described earlier.

Furthermore, for several informal settlement services to be optimally beneficial once provided, it is also essential to build responsiveness among families. For example, for garbage collection to be utilised effectively, families need to respond positively. Women's groups can offer a route for promoting desirable behaviours.

Policies and programmes on health, livelihoods and welfare are feasible only through women's agency, either as groups or individuals.

Practical mechanisms of inter-sectoral coordination can help redress grievances and enhance access of the urban poor and informal workers to benefits and services. For example, Mishra (2017) proposed a city- and local-level grievance redressal mechanism for workers, employers, NGOs and government functionaries, to be supported by the Ministry of Urban Development or the Department of Labour and Social Justice; and Elsey and Agarwal (2016) also proposed better inter-sectoral coordination at ward and city level. In Kerala, the Kudumbashree Mission works to speed up the convergence of services offered by various departments and agencies (John 2009). Similarly, the Samajik Suvidha Sangam programme in Delhi offers women access to 45 programmes

from nine departments, including a mix of social, employment, health, education and food programmes. Access points are named Gender Resource Centres. These 'convergence platforms' are managed in partnership with NGOs, and they also support women's empowerment by enhancing skills and fostering networking (Ebken 2014; Taieb and Schmitt 2012).

11.5 Supporting aspirations of slum youth

When provided with family support and encouragement, young people can navigate themselves out of inherited deprivation. A recent study in Dhaka, Bangladesh revealed similarly high aspirations to our study, with parental support again being a strong factor (Sultan *et al.* 2021). Youth in our study were striving for a firm footing within various livelihoods, often to support their family in getting out of poverty. In a gender unequal society, girls in particular aspire to earn a respectable identity via independent work. However, for some, gendered challenges such as restricted freedoms to travel, and pressure to marry early, hinder their aspirations. An earlier study by the Urban Health Resource Centre in Indore, had similar findings (Agarwal *et al.* 2016b), as did a study in Nairobi, Kenya (Muthengi and Austrian 2017). Technology has given youth greater access to information and role models. Many young women are bolder than older generations in taking strides towards self-reliance.

Youths' aspirations need to be encouraged through family support to aid them in navigating inherited deprivation. There is also a need to expand flexible education options through the open school and open university system, which would allow them to work and study at the same time. India's largest open university is the Indira Gandhi National Open University (IGNOU), which has several regional centres where in-person teaching is also conducted to complement distance education. Additional coaching support at schools or designated "open schools" (including career guidance towards low-fee education or technical training options) will motivate more youth to enrol.

Other priorities are to conduct additional outreach sessions by the government's industrial training institutes (ITI)[6] in schools in urban informal settlements (including in a gender-sensitive way) and to establish more ITIs near slums. Linking ITIs with government schools in informal settlements will enable more slum youth to gain employable skills, with the option to advance their skills through subsequent courses. There is a need to offer vulnerable youth (especially girls) additional entrepreneurship skills and vocational trainings to enable their small businesses to thrive.

Many girls face social barriers in pursuing their aspirations. Intensive outreach can help to guide girls towards both technical training and non-technical employment options, which can better advance their goals. Complementary efforts by NGOs and other stakeholders can help change social norms and attitudes towards women's empowerment.

11.6 Building resilience to climate-related risks

Climate change is resulting in heat stress, heavy downpours, inflation in food prices and groundwater depletion. Adaptive practices and resilience need to be built on several fronts.

Self-built climate-resilient housing: Slum residents have demonstrated their resoluteness and can steadily make their houses more climate resilient. Utilising loans from savings collectives or their own savings, residents can improve their homes by incrementally building elevated plinths to prevent water entering their homes, replacing roofs and walls with permanent materials to protect against heavy downpours, and separating cooking and living space to mitigate heat stress.

Shared local best practice: Sharing effective local strategies, for example for obtaining and storing food grains, can provide a vital cushion against food price inflation.

Urban and peri-urban food production: Peri-urban farming near informal settlements and home-based vegetable gardening helps to mitigate the risks of food insecurity and loss of income due to erratic employment.

Local-wisdom-based water storage: Families fetch as much free or paid water as possible in a day to minimise wage-losses. A few families store the water in underground *haudis*. Others store water in cans/barrels. All city dwellers and others in nearby rural areas face a bleak future of depleted freshwater reserves due to rapidly worsening water stress in Indian cities, as well as across many river basins.

Coping with heat stress: Common practices can help to reduce heat stress, such as splashing on water on your face, arms and neck, drinking more water, taking breaks or varying workhours. Although the feasibility of these varies across different occupations, these are still important and effective coping strategies (Varghese *et al.* 2018).

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[6] Government industrial training institutes (or ITIs) are institutes operated under the Directorate General of Training (DGT), Ministry of Skill Development and Entrepreneurship (MSDE), Government of India. ITIs offer a range of vocational/skill training courses at highly subsidised rates, covering several economic sectors with an objective of providing a skilled workforce in key industries as well as self-employment for youth.

11.7 Suggestions for future research

Several questions deserve further investigation, as follows:

How can access to basic documents and social benefits be enhanced? Action research is needed to learn how civil society organisations can help informal workers and informal settlement dwellers acquire basic government documents (such as ID, proof of address, date of birth document) and social benefits.

How can food subsidy policy be implemented more inclusively? Action research could reveal or confirm better ways to implement existing policy. Such research could develop 'how to' booklets, drawing on active engagement of state and non-state stakeholders from districts or states that can strengthen implementation of the food subsidy policy.

How can women's additional burdens be ameliorated and women primary earners be helped? There is a need to better understand women informal workers' vulnerabilities, and how some are making strides towards resilience. Alongside this, there is a need to find practical solutions to the burdens of women singly managing their households.

How can community-centred slum upgrading with infrastructure support from local authorities be realised, and how can self-built housing be encouraged and expanded within informal settlements? We need to better understand, document, and replicate how communities in mid-sized cities' informal settlements can achieve upgrading of paved lanes, sewerage systems, waste management and water supply from municipal organisations. There is a concomitant need to better understand how households in mid-sized cities can incrementally build better individual houses, and how their communities can play a cooperative and synergistic role.

How can households and communities best deal with water scarcity? Water supplies will probably remain constrained, in the face of urban expansion and climate change. Coping mechanisms like fetching water from several municipal and private sources and constructing *haudis* to store water at home are important adaptive mechanisms. Similar coping mechanisms are used in other South Asian societies as well. For example, some residents of Bandung and Jakarta, Indonesia, use an underground store similar to a *haudi* (called a *toren*) (Baisa *et al.* 2010). These community-created, private, and informal mechanisms for accessing and storing water deserve more research (see also Subbaraman *et al.* 2013).

How does diversifying livelihood strategies help urban informal workers? Our study showed how several informal workers diversified their livelihoods. This strategy became more pronounced in order to cope with COVID-19. In a recent study from the cities of Mumbai, Kochi and Surat, livelihood diversification emerged as a key adaptation (Santha *et al.* 2015). However, most studies on this approach have looked at rural contexts, so the need to study livelihood diversification with an urban lens remains much needed.

How do multidimensional vulnerabilities (including interacting climate risks) afflict urban informal workers in the short and longer term? It will be valuable for action research to investigate how vulnerabilities interact in their effects on informal workers, how families cope with immediate crises and long-term vulnerabilities, and what attributes let some of these families steadily build resilience over several years.

11.8 Wider relevance to the Sustainable Development Goals

Measures implemented in this action research project have the potential to enhance community resilience among informal workers and settlement dwellers both within Indore and much further afield. Such measures can also be adapted to suit other cities in India and in other developing countries.

They will advance progress towards several of the Sustainable Development Goals (SDGs):

- SDG 8 'Decent work and economic growth' promotes sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Low-paid informal workers contribute greatly to the city's economic growth and India's GDP and should be supported to engage in negotiations so that their community priorities are included in decisions and actions.

- SDG 11 'Sustainable cities and communities' aims to make cities inclusive, safe, resilient and sustainable and calls for social exclusion to be eliminated, while SDG 16 'Peace, justice and strong institutions' focuses on the need to build effective, accountable and inclusive institutions at all levels. This focus is crucial for access of benefits and services for informal settlement dwellers.

- SDG 13 'Climate action' advocates taking urgent action to combat climate change and its impacts, including the aim to strengthen resilience and adaptive capacity to climate-related hazards in all countries.

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Appendices

Appendix 1: Characteristics of sample areas

CLUSTER NAME	MAIN SAMPLE DOMAINS	CHARACTERISTICS OF THE AREA
Sanwer Road cluster	Men and women residing in informal settlements, working in small and medium-scale factories, women working from home, casual labourers. Youth working in the informal sector.	Sanwer Road is an industrial area, where slums and informal settlements are situated near factories. Adjacent slums are Avantika Nagar, Ganesh Dham, Riddhi Siddhi Nagar, Adarsh Ganpati Nagar, Sai Dham. Population: above 30,000 Most people are engaged in working in factories such as plastic and garment manufacturing. Street vendors sell vegetables, spices, daily use goods etc. Water quality is poor due to contamination from industrial waste.
Nand Bagh cluster	Women working from home or in nearby small factories/ workshops, youth working in the informal sector, street vendors (women and men), casual labourers, residing in informal settlements.	Nand Bagh is a large informal settlement consisting of 26 slum lanes. Adjacent to Nand Bagh there are Rakhi Nagar, Ekta Nagar and Mateshwari colonies. Population: above 50,000. People live in rented homes and work in factories (including factories in Sanwer Road area) or shops, or sell vegetables and household items on streets. Many women work from home, for example making *papad*, necklaces, stitching.
Jagdish Nagar and New Jagdish Nagar cluster	Informal workers residing in informal settlements running small businesses from home, labouring or working in nearby small factories. Youth working in the informal sector.	Adjacent to Jagdish Nagar there is New Jagdish Nagar A and B and Nandan Bagh with three lanes conveniently named Nandan Bagh Lane 1, Lane 2 and Lane 3, New Shri Ram Nagar, Jairaj Nagar, Jagdish Nagar, Kushwaha Nagar, Prince Nagar, New Prince Nagar, Tigariya and Rajaram Nagar. Population: above 25,000. Some workers are engaged in street vending. Men and women sell vegetables and other household items on streets.
Musakhedi cluster	Men and women residing in informal settlements engage in informal work such as street vending, factory work and domestic work in nearby high-income group colonies.	Within the Musakhedi area there are informal settlements called Shanti Nagar, New Indira Ekta Nagar, Hariom Panna Nagar, Idris Nagar and Aman Nagar. Population: above 15,000 Owing to higher population density, there is a greater strain on civic services. Men are more prone to alcoholism. Most men and women are engaged as domestic workers working at homes of middle-class and upper-middle-class families in nearby colonies.

Appendix 2: COVID-19 protocol of precautions

In the light of COVID-19 risks, the investigators adhered to the following precautions

a) **Safety gear:** The investigators wore masks and provided masks to the respondents and the accompanying family member(s) during the interview to prevent risk of transmission. This was done to reinforce the crucial public health message of always wearing masks. Cloth masks were acceptable protection if the participant (and/or their support person) arrived wearing one.

b) **Handwashing/sanitising:** The investigators carried hand sanitisers and sanitised their hands as frequently as possible.

c) **Physical distancing:** The investigators maintained physical distancing. Efforts were made to interview participants in well-ventilated spaces. If the interview was being carried out inside the household, doors and windows stayed open to ensure cross ventilation.

d) **Ventilation and space for interviews:** UHRC interviewed participants in well-ventilated spaces such as outside on an *otla* (a raised platform commonly found outside slum households, where people often sit). If the interview was being conducted inside the respondent's house, the research team kept doors and/or windows open to ensure ventilation, as best feasible in the housing structure.

e) **Protection of vulnerable groups and avoiding infection:** Residents and workers over the age of 60 were not included in the sample, as they are at higher risk of severe COVID-19. Investigators did not interview a listed respondent in households where someone had shown symptoms of cough, fever, breathlessness etc. in the past two weeks.

f) **Preventing stigmatisation:** UHRC team members were trained to not discriminate against COVID-19 patients and discouraged COVID-related stigma. UHRC team members were trained to use phrases such as *vo jo bimar* (the person who was ill) or *jinke ghar amma ji ko bukhar aur khansi tha* (the house where the lady had fever and cough) instead of "COVID-19 cases" or "suspects".

g) **Psychological support and referrals:** Study participants were not meant to be stressed or afraid, particularly in light of COVID-related challenges. Research team members were trained to listen carefully and with empathy to their concerns. If the respondent experienced any psychological stress (such as when discussing impacts of the COVID-19 pandemic), the research team member stopped the interaction and provided comfort to the respondent and family member(s) as the situation indicated.

Appendix 3: Slum upgrading efforts and outcomes during the project

- **Request for clearing of clogged sewerage lines:**

  - A total of four verbal and five written community requests were made from Pushp Nagar-lane #9, Shanti Nagar-lane #3, New Indira Ekta Nagar-lane #3, Nandan-Bagh- Lane #2, Jairaj Nagar-lane#1, Nandbagh-lane#26, Ekta Nagar-lane#1, Avantikanagar-lane #4.

  - Outcomes: Clogged sewerage lines were cleaned in four *bastis* (plots): Pushp Nagar, Shanti Nagar-lane #3, New Indira Ekta Nagar and Nandan-Bagh-lane #2, benefitting 670 households.

- **Request for new sewerage line**:

  - Verbal request was made from Surendra Nagar; four written community requests were submitted (two each from Tigariya Badhshah and Shanti Nagar-lane #2) at different civic forums. First and second reminders were submitted from Avantika Nagar.

  - Outcomes: Sewerage lines were laid in Surendra Nagar and Tigariya Badshah, benefitting 492 households.

- **Activation of Narmada water-supply line for household water connections:**

  - Verbal requests from three slums, written requests from 10 slums and reminder phone call to the chief minister's helpline were made from 11 slums/lanes: Nandan Bagh-lane #4, Shanti Nagar-lane #1, New Ram Nagar-lane #1, Shanti Nagar-lane #3, Shanti Nagar-lane #2, New Ram Nagar-lane #5, Prince Nagar-lane #1, Nand Bagh-lane #6, Jagdish Nagar-lane #5–6, Nand Bagh-lane #26 and Jairaj Nagar-lane #1.

  - Outcomes: The Narmada water supply was activated in: Shanti Nagar-lane #1, Shanti Nagar-lane #3, Shanti Nagar-lane #2, New Ram Nagar-lane #5, Prince Nagar-lane #1 and Jagdeesh Nagar lanes #5–6, benefitting 1,132 households.

- **Community requests for paving of lanes:**

  - Verbal requests were made from four slums/lanes. Written community requests were submitted from eight slums/lanes. First reminders were submitted from three slums/lanes; second reminder was submitted from one slum/lane and eleventh reminder was submitted from one slum lane. These requests were made from: Tigariya Badshah-Balai Mohalla, Avantika Nagar-lane #5, New Bajrangpura, New Sundar Nagar Gaddha, Roshan Bagh-lane #1, Nand Bagh-lane #6/E, New Ram Nagar-lane #5, Vishal Palace, Nandan Bagh-lane #1, New Ram Nagar-lane #3, New Ram Nagar-lane #1, Nand Bagh-lane #5 and Surendra Nagar.

  - Outcomes: Lanes were paved in Tigariya Badshah, New Sundar Nagar Gaddha, Nandbagh-lane #5 and New Bajrangpura-lane #2, benefitting 769 households

- **Request for street lighting**:

  - Community requests: a written request was submitted from Tigariya Badshah and a verbal request made from New Indira Ekta Nagar-lane #3 for streetlights.

  - Outcomes: streetlights were repaired in New Indira Ekta Nagar lane #3, benefitting 92 households.

- **Request for garbage collection truck:**

  - Community requests**:** four written requests were submitted, and two verbal requests made from Tigariya Badshah-Balai Mohalla, Nand Bagh-lane #6/E, Vishal Palace and Ekta Nagar-lane #2.

  - Outcomes: the garbage collection truck started visiting in all four areas, namely Tigariya Badshah-Balai Mohalla, Nand Bagh-lane #6/E, Vishal Palace and Ekta Nagar-lane #2, benefitting 331 households.

In this working paper, we report on the complex risks, challenges, adaptations and aspirations of informal workers and settlement dwellers in Indore, the economic capital of Madhya Pradesh. India's economic growth is concentrating in urban areas, where informal employment plays a huge role. Yet informal workers remain marginalised including in their health, living conditions and economic prospects. We present measures to enhance informal workers' resilience to climate change and other risks, which could be adopted in India and in other developing countries. These interventions can advance several Sustainable Development Goals, notably SDG 11 on cities, SDG 13 on climate action, and SDG 8 on economic growth.

Knowledge Products