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TOWARDS CARING CITIES: A GEOSPATIAL ANALYSIS IN DHAKA CITY

Research-in-Action Series

DATA-POP ALLIANCE

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FOREWORD

The future of sustainable, inclusive, and gender-equal societies depends on how we recognize, reduce, and redistribute unpaid care and domestic work-a fundamental aspect of Sustainable Development Goal (SDG) 5. Across urban centers, particularly in rapidly expanding cities, women disproportionately shoulder caregiving responsibilities, which directly limits their economic opportunities, mobility, and participation in decision-making. The way cities are designed, governed, and serviced plays a critical role in either reinforcing or alleviating gendered inequalities in care work. The vision of caring cities offers a transformative approach-one that upholds women's rights and integrates essential services, infrastructure, private-public partnerships and policies to enable their full economic participation.

The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) mandates that states take proactive measures to provide essential services, social protection, and supportive infrastructure to ensure that women are not disproportionately disadvantaged by gender gaps in unpaid domestic work and care responsibilities.

The concept of caring cities aligns with CEDAW principles with emphasis on urban planning and governance that prioritize affordable, accessible gender-responsive and quality care services, such as child- and old-age care. By embedding care into the very fabric of urban development, cities can become engines of women's economic empowerment rather than spaces of exclusion.

Caring cities recognize that care work is not just a private responsibility but a public good-a crucial element of economic and social well-being. lnvestments in urban infrastructure that facilitate caregiving, such as far example well-located childcare centers, walkable neighborhoods, green spaces and climate-resilient care infrastructure can dramatically shift the demands for care from women to shared societal responsibility. At the heart of this transformation is a policy shift that sees care not as an afterthought, but as a fundamental pillar of urban resilience and economic development.

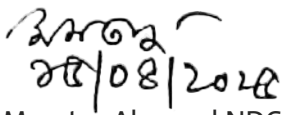
The Government of Bangladesh has prioritized investments in the care economy. The Child Day Care Centre Act 2021 established comprehensive regulations for daycare centres, promoting increased female participation in the labour force. Another key intervention has been the lntegrated Community-Based Center far Child Care, Protection, which has led to the establishment of over 8,000 Community-Based Child Care Centers (CCCs) across 16 districts and 45 upazilas. This initiative has made childcare more accessible for working families, particularly in underserved a reas. This report presents a comprehensive analysis of the care economy landscape in Dhaka City. lt uses geospatial data to map and assess the distribution of the demand far, and supply of, care services. The report underscores the urgent need for gender-responsive policies, ensuring that care work is recognized, redistributed, and supported through investments into adequate care delivery models. By advancing

the principles of caring cities, governments, urban planners, prívate sector and civil society can create urban environments where women's economic empowerment is not constrained by the absence of essential services, but rather supported by cityscapes that facilitate well-being, mobility, and shared responsibility for care as an enabler for inclusive economic city development.

As we commemorate the 30th anniversary of the Beijing Declaration and Platform for Action, we must renew our commitment to its bold vision to respect, protect and promote rights, equality and empowerment for all women and girls.

We hope the insights from this report will support policy makers and other stakeholders to further strengthen the care infrastructure-where essential services, gender-responsive planning and budgeting, and shared responsibility for care work are prioritized as fundamental drivers of women's economic empowerment and gender equality.

Achieving gender equality requires systemic changes. It demands a new vision for cities-one where care is central, infrastructure is inclusive, and women are empowered to thrive economically, socially, and politically. By investing in caring cities, we not only meet the urgent needs of today but build a more sustainable, just, and resilient future for all.



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EXECUTIVE SUMMARY

This report, a collaborative effort between UN Women and Data-Pop Alliance, presents a comprehensive analysis of the care economy landscape in Dhaka City. It uses geospatial data to map and assess the distribution of the demand for, and supply of, care services. Adopting principles of feminist urbanism, this research explores how demographic trends, urban density and environmental risks intersect with the availability of care infrastructures. By harnessing geospatial analysis, this research offers a robust framework and data-driven insights to support decision-makers and urban planners in creating more equitable, accessible and climate-resilient care services in Dhaka City.

Dhaka City, the primary economic hub of Bangladesh, continues to attract a predominantly young population that is seeking economic opportunities. In 2020, 23 per cent of the city's population was aged between 15 and 24, and 75 per cent fell within the working-age demographic (15–64), reflecting the region's vibrant labour force. However, 25 per cent of the population comprises dependants, including young children and the elderly, creating a substantial demand for care services. Currently, Dhaka City hosts 859,456 children under the age of five and 353,032 elderly individuals who require care services. Notably, 11 per cent of these populations—approximately 94,483 children and 38,810 elderly individuals—reside in informal settlements, where access to affordable care is severely limited. Additionally, 9 per cent of these dependants live in flood-risk zones, having been exposed to at least one flood event in the last 20 years. These data underscore the urgent need to establish affordable and climate-resilient care services.

A demographic structure consisting of a youthful and economically active population, while often considered advantageous for labour productivity growth, is frequently accompanied by significant caregiving responsibilities, which disproportionately fall on women and girls. Despite the city's relatively low dependency ratio of 33 care dependants for every 100 workers, caregiving demands on women restrict their participation in the labour force. Without an affordable and accessible system of quality care services, women, who are primarily responsible for unpaid caregiving, are restricted in their participation in employment, thus limiting their economic inclusion and contributing to gender inequalities in the workforce and beyond.

Despite relatively favourable physical accessibility to childcare facilities—80 per cent of the population lives within a 15-minute radius of one or more childcare facilities—capacity constraints remain a critical concern. Dhaka City is equipped with only 873 childcare facilities, yielding an average of one facility per 1,000 children aged 0–4. This figure falls below internationally recognized benchmarks, leading to overcrowding, reduced quality of care and long waiting lists. Informal settlements are disproportionately affected, as only 19 per cent of childcare facilities are located within these communities. Similarly, elderly care services are unevenly distributed, with fewer than one facility per 1,000 elderly residents (aged 65 and older). These services are concentrated in central areas, leaving peripheral regions underserved and low-income elderly populations with limited access to essential care.

The rapid urbanization of Dhaka City has prioritized the development of residential, commercial and industrial units at the expense of non-residential spaces such as parks and recreational facilities. These 'third spaces' are essential components of the care economy, providing environments for caregivers to engage in childcare and elder care activities while fostering physical and social well-being. However, informal settlements, particularly in the southwest, including Kamrangir Char and Lalbagh, are significantly underserved in terms of access to green and recreational spaces. The loss of such spaces has exacerbated environmental and health challenges, including poor air quality, elevated stress levels and heightened exposure to extreme temperatures, all of which negatively impact care provision.

RECOMMENDATIONS: TOWARDS A CARING DHAKA CITY

These findings underscore the need to create more inclusive care infrastructures in Dhaka City. The city's high population density presents both challenges and opportunities for transforming it into a 'caring city' that prioritizes equitable access to essential services. By integrating geospatial analysis into urban planning, Dhaka City can address demographic pressures, reduce gender disparities, and build a more resilient and inclusive care infrastructure. To design evidence-informed, gender-responsive and sustainable care solutions that meet the evolving needs of Dhaka City's diverse population, a roadmap for a Caring Dhaka City may consider:

1. **Investing in Inclusive Care Systems:**
   Prioritize expanding childcare and old-age care services in underserved areas, particularly in informal settlements and peripheral zones, in order to reduce the unpaid care demand on women and girls and promote gender equality in the economy and beyond.
2. **Designing Gender-Responsive Policies**:
   Expanding care services and formalizing caregiving roles can create employment opportunities, empower women economically and support sustainable urban development.
3. **Fostering Public-Private Partnerships:**
   Collaborations between government, NGOs and the private sector are essential to bridging gaps in care services, especially for low-income families.
4. **Developing Climate-Resilient Buildings:**
   Given Dhaka City's vulnerability to flooding and other climate-related risks, investing in resilient infrastructure is critical to also ensuring continuity of care services during crises.
5. **Leveraging Technology for Enhanced Resource Allocation:**
   The use of digital tools and geospatial data can optimize resource allocation, improve service coverage and enhance real-time monitoring of care needs.

Photo: UN Women/Fahad Abdullah Kaizer

Section I

Relevance and Objectives

At its core, the concept of care revolves around on the sustenance and enhancement of human life, encompassing fundamental activities such as food preparation, cleaning and providing assistance to individuals with specific needs, including children and those with disabilities or vulnerabilities that impede their ability to perform basic self-care activities (e.g. personal hygiene).[1] Care is a universal requirement, with every individual needing care at various stages of their lives, thereby establishing its essential nature for all.[2]

From this foundational understanding emerges the notion of care systems, which encompass a comprehensive array of legal and policy frameworks, services, financing mechanisms, social and physical infrastructure, programmes, standards and training, governance and administration, as well as social norms related to care.[3] A comprehensive care system effectively integrates these components in a coordinated manner, aiming to establish a social organization of care. A comprehensive care system also acknowledges, mitigates, redistributes, rewards and represents care workers, fostering shared responsibility among all members of society.[4]

While the care economy includes a varied occupational landscape of care jobs, a significant portion of caregiving remains uncompensated, with women and girls disproportionately shouldering most of its provision.[5] Globally, it is estimated

that women allocate approximately three times more hours to unpaid care work compared to their male counterparts.[6] Findings from a 2021 Time-Use Survey, illustrate that regardless of age, residence, educational level or marital status, women and girls in Bangladesh engage in significantly more unpaid domestic and care work compared to men and boys.

In contrast, men allocate more time to employment-related activities. Specifically, men spend an average of 6.1 hours per day on employment and related activities, whereas women spend an average of only 1.2 hours—five times less. Conversely, women dedicate a total of 5.8 hours to unpaid domestic services and caregiving for household and family members, while men contribute merely 0.8 hours, or one-seventh of the time that women spend in these activities (Sustainable Development Goal 5.4.1).

Addressing the unequal distribution of care services has historically been a central tenet of the feminist agenda and reflected in the CEDAW and the Beijing Declaration and Platform for Action (1995), which commits to addressing gender gaps in unpaid care work within its core areas of concern. [7] Care systems have garnered heightened policy attention in recent years, particularly in light of the COVID-19 pandemic. Evidence collected throughout the pandemic indicates that the unpaid care contributions rendered by women and girls were essential services, effectively subsidizing sectors such as education and health.[8] At the same time, the reliance on women's and girls' unpaid work negatively impacted their economic empowerment, as a greater number of women tend to exit the labour force in order to support the care needs of family and household members compared to men.

Demographic forecasts indicate that the demand for care services is anticipated to escalate and evolve, raising the question of who will provide these services. In 2022, over 15.3 million individuals in Bangladesh were aged 60 years or older, representing 9 per cent of the population.[9] Projections suggest that by 2050, this proportion will double, potentially making Bangladesh home to one of the largest elderly populations in the world.[10]

The dependency ratio, which approximates the needs of care dependants on the working-age population, serves as a critical metric in this context. Data suggests that the old-age dependency ratio between the number of retirees and workers will continue to rise, particularly for women, reaching 64 by 2100, compared to 56 for men. This trend signifies a substantial increase in the demand for care services for older persons and a higher proportion of elderly women requiring care.

Alongside a changing demographic structure, Bangladesh is experiencing economic expansion, as evidenced by its anticipated upgrade from Least Developed Country status in 2026. Further investment in the care economy is essential to support the growing working-age population (15 to 64 years), particularly in relation to women's participation in the labour force.[11]

In the Asia-Pacific region, Bangladesh ranks among the countries with a significant gender gap in female labour force participation. As of 2022, 40 per cent of women were engaged in the labour force compared to 83 per cent of men.[12] According to the World Bank, 73 per cent of urban low-income mothers in Bangladesh identified childbirth and childcare responsibilities as the primary factors influencing their decision to enter or exit the workforce.[13] Furthermore, female engagement in the labour market is characterized by vulnerability, with 29 per cent of women in employment categorized as contributing family workers or own-account workers, compared to 4 per cent of men.

Inadequate, unaffordable and inaccessible care services have significant implications for caregivers, care recipients, governments and economies at large. A well-structured system for the provision of care services can reduce multidimensional inequalities, improve overall well-being and create opportunities for individuals, particularly women, to participate in formal employment, leisure activities and civic engagement. However, the

care economy is often overlooked, leading to an overreliance on women's unpaid caregiving.[14] This neglect results in substantial gender disparities that increase economic vulnerability and exclusion. This scenario necessitates the development of cost-effective, readily deployable, and timely solutions for evidence-informed decision-making to eliminate potential discrepancies between the demand and supply of care services. Such discrepancies generally exacerbate cycles of disempowerment for women and girls over their lives and across generations.

This report examines the care economy in Dhaka's Central Region (i.e. Dhaka City) through the lens of feminist urbanism, aiming to identify and address the distinct care needs of various demographic groups. By utilizing innovative methodologies, including geospatial analysis, the research maps within Dhaka City and its surrounding fringe areas, with a particular emphasis on care for children and older persons. By integrating both traditional and non-traditional data sources, this analysis seeks to identify urban areas characterized by high concentrations of children and other age-specific, care-dependent populations and assess their accessibility to care services. This innovative research also considers contextual and environmental factors—such as flood risks and drought frequency—to provide climate-related insights that can guide decision-making and investments. Through a comprehensive lens, policymakers and urban planners can be better equipped to address the needs of Dhaka City's diverse population, ensuring that accessible and equitable care services are available throughout the metropolis (Box 1).

Importantly, this research is part of a broader initiative to support a comprehensive technical intervention to transform care systems, including the identification of different care delivery models and their costing in Bangladesh (Box 2).

BOX 1.1. Why Dhaka City?

Dhaka City, with a population exceeding ten million residents spread across 307 square kilometres (as of 2022), is notable for its extreme population density—40 per cent of residential areas exceed 99,000 individuals per square kilometre.[1] Rapid and unplanned urban growth, exacerbated by widespread poverty, has compelled many inhabitants to move into informal settlements that lack essential services, such as basic healthcare infrastructure and clean water. Residents on the periphery of Greater Dhaka encounter significant challenges in commuting to the city centre, a situation worsened by inadequate public transportation infrastructure. These shortcomings disproportionately affect women, children and the elderly, who face difficulties related to poor accessibility and a fragmented transport network.[2]

In Dhaka City, a significant number of women are drawn to the informal sector, often due to limited educational opportunities and vocational training, leading to employment in precarious occupations such as domestic work or part-time roles in cleaning and laundry services.[3] In industries such as garment and knitwear manufacturing, the workforce is predominantly female, including young girls from rural areas who strive to contribute to their families' incomes. This dynamic highlights their economic fragility and vulnerability.[4]

Additionally, Dhaka City's environmental characteristics add complexity to its caregiving systems, particularly its proximity to four flood-prone rivers. Historically, Dhaka City has struggled with substantial flooding. For example, in 1998, over 75 per cent of Bangladesh experienced flooding, resulting in half of Dhaka City being submerged.[5] Consequently, urban planning efforts have emphasized expanding the city away from flood-prone areas. Nevertheless, due to increasing migration and rapid urbanization, many informal settlements have emerged in these vulnerable zones. Furthermore, the transformation of green spaces into settlements contributes to the urban heat island effect.[6]

In Dhaka City, caregiving responsibilities are predominantly assigned to women, a consequence of entrenched gender norms that shape caregiving as primarily their obligation. However, with a substantial increase in the female workforce—reportedly three times higher than that of their male counterparts—there is an urgent need to enhance the accessibility of care services and to formalize caregiving roles.[7] Such measures would not only strengthen women's economic empowerment but also ensure responsible and secure caregiving services for those in need.

Given these factors, Dhaka City emerges as a compelling case study for geospatial analysis of the demand for and supply of care services. Its rapid urbanization and dense population underscore the unique challenges and opportunities related to examining the spatial distribution and accessibility of care services. The city faces significant demand for care services for children and older persons, with this demand heavily influenced by its dynamic urban environment.

Understanding how population density affects the provision and accessibility of care facilities is crucial for effective urban planning and decision-making. Moreover, infrastructure challenges in informal settlements create barriers to accessing formal care services, revealing spatial disparities that geospatial analysis can help uncover. Socioeconomic inequalities in Dhaka City significantly influence the affordability and quality of care services across diverse demographics, highlighting the need for targeted intervention strategies. Furthermore, Dhaka City's vulnerability to extreme climate events, such as flooding, disrupts care facilities, emphasizing the important role of geospatial analysis in enhancing the resilience and disaster preparedness of care systems.

Notes

[1] Roy, S., & Sowgat, T. (2021). Dhaka: Diverse, dense, and damaged neighbourhoods and the impacts of unplanned urbanisation. Healthy and Learning Cities and Neighbourhood (SHLC): GCRF Centre for Sustainable.

[2] [4] [6] [7] Rajdhanii Unnayon Kartipokko (RAJUK). (2016) Dhaka Structure Plan 2016 - 2035. Draft.

[3] Shams, M. T. (2014). Analyzing the nexus between structural transformation and female labour force participation in the context of Bangladesh. Masters Thesis, Department of Economics, North South University, Dhaka, Bangladesh as cited in Rajdhanii Unnayon Kartipokko (RAJUK). (2016) Dhaka Structure Plan 2016 - 2035. Draft.

[5] Jahan, S. (2000). Coping with flood: the experience of the people of Dhaka during the 1998 flood disaster.

[6] Rajdhanii Unnayon Kartipokko (RAJUK). (2016) Dhaka Structure Plan 2016 - 2035. Draft.

[7] Ibid.

BOX 2: Geospatial Mapping of Care Services as a Key Building Block to UN Women's Approach to Transform Care Systems in Asia and the Pacific

With the ultimate objective of increasing women's economic inclusion, the TransformingCare Investment Initiative in Asia and the Pacific (TCII-AP) calls for accelerated action in three catalytic areas:

1. **Creating an Enabling Environment through Enhanced Data, Policies and Financing:** This aims to increase the provision of quality, low-carbon care services, basic infrastructure and energy-saving equipment, which particularly benefits women and girls in low-income and rural households.
2. **Implementing Care Delivery for Job Creation:** This focuses on creating decent jobs within the care economy and enhancing access to green and digital economies, which particularly benefits informal workers and domestic workers, including women migrant workers.
3. **Sustaining Impacts through Economic and Social Norms Change:** This involves shifting social and economic norms to recognize care work as valuable and skilled, and to promote it as a shared responsibility among households, the state and both private and non-profit sectors.

To enhance evidence for decision-making related to investments in care systems, along with recommendations for public-private partnerships, blended models and strategies to expand care delivery options for low-income households, UN Women proposes an integrated approach for municipalities to clearly identify needs, solutions and costs. This builds upon UN Women's successful flagship initiative on Safe Cities and Safe Public Spaces. The objective is to develop a multi-stakeholder and multi-sectoral evidence-informed strategy to support caring cities through:

1. **The Identification of Care Delivery Models:** Recognizing the need for insights into the diverse care delivery models in Bangladesh, UN Women has partnered with Base of Pyramid Innovation Centre (Bopinc) to conduct research on childcare provision in Dhaka City. Several models were identified that reflect the informal nature of care delivery prevalent in many developing countries across the Asia-Pacific region. These include madrasahs, home-based care models, centre-based facilities operated by micro-entrepreneurs, community-based daycare services, employer-supported care, on-call care and nanny services, as well as skilling and certification providers[1] Many of these models receive support through a combination of government and private funding. The research involved interviews and focus group discussions with over 50 caregivers, customers and care centre managers to explore the specific needs and preferences of various customer segments, including working parents of children with disabilities, and how service providers can effectively address these needs. The report examined key factors influencing customer satisfaction within the care industry and assessed the significance of accessibility, affordability and quality childcare for low-income consumers and identified the thresholds associated with each criterion. Furthermore, the models were evaluated to pinpoint gaps and opportunities for care entrepreneurs and workers.[2]
2. **Geospatial Mapping of Demand and Supply of Care Services:** To support decision-making with identifying specific geographical areas in most need of expansion of care services, this report presents UN Women's exploration of geospatial analysis of the demand for and supply of care services in Dhaka City in this report.
3. **Costing Model:** A costing model for different types of care delivery aims at identifying specific costs necessary for meeting the demand for care services through a combination of care delivery models in a municipality. The initial application of this approach is currently being tested in the context of Dhaka City.

Notes

[1] UN Women has been actively developing several approaches to map various types of care delivery models. This includes 11 models identified during UN Women's inaugural Care Accelerator, models from the recent Asia-Pacific Care Accelerator, analyses of digitally enabled care models, and a specific mapping of childcare delivery models in Bangladesh, with the objective of transforming care delivery for underserved populations.

[2] This forthcoming report is part of the Gender-Inclusive Care Ecosystem Entrepreneurship Programme (GICEEP), funded by Canada's International Development Research Centre (IDRC) and Visa Foundation, in collaboration with Bopinc, UN Women Regional Office for Asia and the Pacific, and the Swiss Association for Entrepreneurship in Emerging Markets (SAFEEM).

Photo: UN Women/ZANALA Bangladesh Ltd.

Section II.

Literature Review

2.1 EMERGING COUNTRY PRACTICES OF GIS ANALYSIS OF CARE ECONOMIES

As the care economy gains political prominence, numerous countries are endeavouring to use data-driven approaches to address its deficiencies. Certain countries in the Global North—such as Iceland, Norway and Sweden—distinguish themselves with their exemplary childcare policies;[15] others are actively mapping the demand and supply of childcare services by leverageing georeferenced data. Examples from the United States include its Child Care Gaps Assessment, Delaware's Childcare Map, Michigan's Childcare Desert Map and Philadelphia's Childcare Map. Other examples include British Columbia's Childcare Map and Australia's Childcare Deserts and Oases Mapping. Significantly, the most successful instances of employing geospatial analysis for a comprehensive assessment of care services—including care for children, older persons and individuals with disabilities—are observed in the Global South, particularly in Latin America (Table 1).

In 2020, Bogotá, Colombia, initiated the implementation of the **District Care System** as part of its efforts to address entrenched barriers to gender equality and women's autonomy. The

initiative aims to reshape social norms related to caregiving responsibilities, with the primary objective of alleviating the disproportionate demand historically carried by women and girls. A critical component of this initiative involves the application of georeferenced statistical data, which facilitates a localized analysis of care demand and availability. This data-driven approach allows for a nuanced understanding of the landscape of care services within specific territories. Furthermore, this initiative transcends mere analysis; the georeferenced statistical data has informed the consolidation of care services and programmes into **Care Blocks**, thereby promoting enhanced integration of resources to more effectively address community needs.[16] Care Blocks are designated areas within the city characterized by concentrated infrastructure and services aimed at providing comprehensive care to caregivers and their families. Within these areas, individuals can access a range of facilities within a 30-minute walking radius, including schools, daycare centres, parks, hospitals, care centres for older persons, and disability support centres.[17]

The development of Argentina's Federal Care Map commenced in 2020 through a collaborative initiative involving the Ministry of Women, Gender and Diversity; the National Directorate of Care Policies; and the Economic Commission for Latin America and the Caribbean (ECLAC). This interactive online portal delineates the geographic locations of various organizations, services and institutions dedicated to care, development and education for early childhood, older persons and individuals with disabilities. These resources include services from public, private and community sectors. The map also emphasizes training centres for care professionals, encompassing vocational training institutions and higher education programmes, as well as home care services. This acknowledgement underscores the significance of the expertise required for caregiving and the diverse professions it entails, given that caregiving is not an inherent or intuitive ability—rather, it is a skill that necessitates formal education and training.[18]

The Federal Care Map functions on two fronts. Externally, it operates as a website that enhances the visibility and integration of caregiving by facilitating access to local services and training opportunities for individuals and families. Internally, it acts as a diagnostic tool for the Argentine government, identifying gaps in caregiving networks throughout the country. Its objective is to provide actionable insights to the Ministry of Women, Gender and Diversity and to the Interministerial Care Policies Committee, thereby supporting evidence-informed decision-making.[19]

Regarding its methodology, the internal map integrates data from various sources, including a database of educational and caregiving facilities (which also supports the external phase); a care intensity indicator (developed by ECLAC and the map's team); statistics from the Ministry of Health on population growth, infant mortality and birth rates; sociodemographic data from the 2010 National Census; information on informal settlements from the National Registry of Informal Settlements; and records on sex distribution at birth, age and departments of individuals holding a Unique Disability Certificate, as supplied by the Tax and Social Information System. Additionally, spatial information is included at various levels of aggregation.[20]

The cornerstone of this initiative is the Care in Equality Bill, which proposes the establishment of Argentina's Comprehensive Care System with a gender perspective. A range of public programmes has been developed based on the map's analysis. Initially, it informed the creation of the *Registradas* Programme, designed to formalize domestic workers. It has also supported the *Equiparar* initiative, aimed at strengthening public policies and civil society actions for women, LGBTQI+ individuals, and persons with disabilities. Furthermore, the internal phase integrates data on women in rural and peri-urban areas, detailing their socio-demographic profiles and caregiving dynamics, which supports the Sembrar

Igualdad initiative, aimed at empowering women and LGBTQI+ individuals in rural contexts.[21]

In 2023, **Mexico's Care Map** was jointly developed through a collaboration between the Instituto Nacional de las *Mujeres* (INMUJERES - National Women's Institute), the UN Women Global Centre of Excellence on Gender Statistics and El Colegio de México.[22] This interactive map platform was designed to assist the public in locating nearby care services and to concurrently support public administration and social initiatives by providing comprehensive statistics, indicators and maps regarding such services. When using the map interface, users can select a Mexican state to access pertinent local care data, including municipal-level information.

In addition to demographic data, such as the population of children, users can explore details regarding 'Establishment Count', which denotes the number of care facilities available. Furthermore, 'Potential Demand Rates', defined as the ratio between the total number of individuals aged 0 to 11 years in a specific geographical unit and the number of establishments serving this population within that area, are calculated for various demographics, including children, persons with disabilities and older persons.[23]

Drawing from the experiences of Argentina, Colombia and Mexico in the application of geospatial analysis, it is evident that the geo-mapping of care demand and supply constitutes a significant tool for institutionalizing actions to transform care systems. Specifically, in the context of Colombia, the utilization of geospatial analysis for the mapping of the care economy has informed the development of relevant and actionable care policies. By providing decision-makers with meticulously calculated georeferenced data on care demand and supply, it has become feasible to strategically plan interventions and allocate resources to enhance care provision for both caregivers and care recipients, culminating in the establishment of the Care Blocks.

Given the multifaceted nature of the factors influencing the demand for and supply of care services, a thorough understanding of contextual aspects is essential. Bangladesh's pronounced vulnerability to climate change effects and the substantial presence of slums and informal settlements in Dhaka City, sets this research apart from similar efforts conducted in Argentina, Colombia and Mexico. These variables constitute critical contextual factors for evaluating the disparity between the demand for and supply of care services and will be examined in the subsequent methodological section.

TABLE 1. Examples of Countries in Latin American Countries utilizing Geospatial Analysis to Map and Assess Comprehensive Care Systems[2]

Country (City)		Azua and Santo Domingo Este, Dominican Republic	Metropolitan Lima and Callao, Peru	Chile	Bogota, Colombia	Buenos Aires, Argentina	Argentina	Montevideo, Uruguay	Mexico
Initiative		Care Communities Pilot (part of the National Care Policy) [24]	Care Mapping part of the National Care System [25]	Care Map Part of National Support and Care System, Chile Cares [26]	Care Blocks part of the Care District System [27]	Care Map (part of the Comprehensive Care System) [28]	Federal Care Map part of the Integrated Care System[29]	Care Map in the Municipio B [30]	Federal Care Map [31]
Institution		• Sustainable Development Fund • Instituto Nacional de las Mujeres • UN agencies Dominican Republic • Inter-Agency Coordination UNDP • ILO	• Ministry of Women and Vulnerable Populations • UNDP	• IDE Chile (Ministry of National Assets) • National Support and Care System, Chile Cares	• ECLAC • Government of Bogotá • Women's Secretariat	• Government of Buenos Aires • Sub-secretariat for Women's Affairs	• Ministry of Women, Gender, and Diversity • National Directorate of Care Policies • ECLAC	• UNDP • University of the Republic • Data Uruguay • Government of Montevideo	• National Women's Institute (INMUJERES) • UN Women • Global Centre of Excellence on Gender Statistics • College of Mexico
Data	Administrative	✔[1]	✔	✔	✔	✔	✔	✔	✔
	Crowdsourced	✘	✔	N/A	✘	✘	✘	✘	✘
	Web scraping	✘[2]	✔	N/A [3]	✘	✘	✘	✘	✘
Groups	Children	✔	✔	✔	✔	✔	✔	✔	✔
	Older persons	✔	✔	✔	✔	✔	✔	✔	✔
	Persons with adisability	✔	✔	✔	✔	✔	✔	✔	✔
Type of analysis	Mapped facilities	✔	✔	✔	✔	✔	✔	✔	✔
	Accessibility	✘	✘	✘	✔	✘	✘	✘	✘
	Other factors[4]	SE; CN[5]	SE	SE	SE; C; M	C	SE; C	SE; C	SE; C

Source: Authors' elaboration

1 **Legend:** A checkmark (✔) indicates that the factor was included in the study, whereas a cross (✘) signifies its exclusion. "N/A" denotes that information was not available online. **Acronyms:** SE (Socioeconomic), C (Contextual), M (Mobility), CN (Care Needs).

2 Since this project was only recently completed at the end of the first semester of 2024, publicly available information on the research process remains limited. Although one of UNDP's communication portals mentions big data as a data source, no further details were explicitly provided.

3 Since the Chile Cares website was down during this research, publicly available information on innovative data types could not be accessed.

4 **Socioeconomic factors** refer to the social and economic conditions that influence individuals' or groups' behaviours, opportunities and quality of life. These factors typically encompass indicators such as income level, educational attainment, employment status, social class and access to healthcare. Contextual factors refer to the geographical and spatial characteristics that impact the development, organization, and dynamics of a region or community. These factors typically include indicators such as land use, infrastructure availability, population density, environmental conditions, and regional connectivity. **Mobility factors** refer to the conditions and dynamics that influence the movement of people, goods, and services within and between regions. These factors typically encompass indicators such as transportation infrastructure, accessibility, commuting patterns, and the availability of public transit.

5 Care needs from households eligible for the National Care Policy pilot. A sweep survey was conducted in Santo Domingo Este neighbourhoods using questionnaires that included a module on care gaps in the interviewed households.

2.2 THE CARE ECONOMY IN BANGLADESH

2.1.1 MODELS OF CARE PROVISIONS

Although Bangladesh has established regulatory frameworks for the care of children and older persons, it lacks a comprehensive and integrated care policy that effectively addresses the diverse needs of its population (Table 2).[32] In Bangladesh, childcare models can be broadly categorized into two main types: formal and informal services. [33] The Ministry of Women and Children Affairs (MoWCA) oversees formal childcare services, such as child daycare centres funded through-government subsidies; government-run daycare centres, government agencies, directorates, departments, statutory agencies, and autonomous agencies that provide free services; daycare centres run by individuals or organizations for commercial purposes; and non-profit daycare centres run by individuals, organizations, non-governmental organizations (NGOs), clubs, associations, the corporate sector or the industrial sector. These include provisions within garment factories, government-run establishments and community-based childcare programmes that encompass NGO-supported childcare centres. The Bangladesh Labour Act of 2006 illustrates the progress that Bangladesh has made in developing policies aimed at formalizing the integration of childcare support within the workforce.[34] This legal provision requires factories and establishments with 40 or more workers to provide care facilities for children under six years of age.

Informal childcare is widespread and often characterized by arrangements that are either unpaid or inadequately compensated and lack formal educational components. Common providers of informal care services include grandparents, relatives and madrasahs (institutions specifically aimed at Islamic education and cultural instruction). Additionally, home-based care models represent a significant segment of informal childcare, where micro-entrepreneurs offer services that are particularly accessible in peri-urban communities. NGOs play a supportive role in this model by providing training and guidance to caregivers.[35]

In Bangladesh, there is a significant lag in per-child expenditure on early childhood care and development, with public expenditure amounting to only 0.3 per cent of Gross Domestic Product in the fiscal year 2016–17.[36] This has led to a substantial reliance on private services, which accounted for 41 per cent of total childcare provision in 2017. In recent years, a variety of private enterprise models have emerged, including at the intersection of the care and digital economies.

Some private institutions receive donor subsidies, while others depend on user fees.[37] Consequently, most families that use these services have to devote a significant portion of their household budgets to childcare. The median monthly cost for one child can amount to BDT 5,000 (approximately $40 as of July 2024).[38] To address these costs, the Bangladesh government has implemented a childcare fee subsidy programme aimed at supporting low- and moderate-income families with preschool-aged children. The subsidy amount is based on parental income.[39] The education sector has received 12 per cent share of total Annual Development Programme in the fiscal year 2025 from 11 percent in the previous year - a marginal increase.[40] Applying the ILO Care Policy Investment Simulator to Bangladesh reveals that it would require a gross additional annual investment of US$15.34 billion, or 2 per cent of GDP (minus current spending), to bring Early Child Care Education policies in line with international standards by 2035.

An analysis of population demographics and social protection expenditure patterns reveals a disproportionate allocation towards programmes for older persons. In 2017, children under five constituted 9 per cent of the population but received only 2 per cent of age-specific social spending. In contrast, older persons—comprising 8 per cent of the total population—received 72 per cent of such expenditures.[41]

Within Bangladesh's demographic, nearly 90 per cent of social protection funds are allocated to approximately 14 per cent of beneficiaries. Overall, pensions account for 36 per cent of total social protection expenditure, serving 0.45 per cent of the country's population.[42] Note that allocation amounts may reflect the higher costs associated with specialized and complex services for older persons, which often necessitate significant financial investments.

Educational institutions play pivotal roles in providing childcare by offering a safe and structured environment for children and fostering opportunities for learning and socialization. Bangladesh's formal education system serves over 40 million students, divided into general and religious (madrasah) education.[43] General education encompasses pre-primary (ages 3–5+), primary (ages 6–10+), secondary (ages 11–17+), and tertiary levels, which include higher education institutions.

The government fully funds mainstream primary education, making it free for all students. In contrast, the secondary education sector is predominantly developed by the private sector, primarily on a non-profit basis. Despite significant advancements in educational policies for young children in Bangladesh, such as the Comprehensive Early Childhood Care and Development Policy adopted by MoWCA in 2013, early learning continues to be predominantly facilitated by NGOs and the private sector. Government initiatives have primarily focused on bridging access gaps in rural areas, while private schools have largely served children in urban and semi-urban settings.[44]

A significant challenge within Bangladesh's education system is low participation in formal teacher training programmes.[45] Additionally, many schools lack adequate physical facilities and teaching resources. Mosque-based schools typically possess limited materials beyond educational textbooks (approximately 86 per cent of mosque-based schools face this issue).[46]

The transition from primary to secondary education is marked by a considerable dropout rate, with around 20 per cent of students from primary school failing to progress to the secondary level. Children from disadvantaged populations, particularly those residing in urban slums, are 2.5 times more likely to be excluded from school compared to the national average.[47] School attendance is also lower among children engaged in child labour, which remains a critical concern in Bangladesh, especially in the aftermath of the COVID-19 pandemic.[48] Additionally, children in disaster-prone areas are particularly susceptible to disruptions in their education.[49] Only 35.3 per cent of five-year-old children from the poorest families are enrolled in preschool, compared to 61.3 per cent from the wealthiest families. This disparity has shown some improvement in recent years.[50]

Despite the limited literature on care models for older persons in Bangladesh, it is evident that, similar to childcare, two primary care models exist: formal and informal. Considering that older populations often experience multiple complex health conditions concurrently,[51] formal care facilities for older persons primarily focus on health-related aspects. These facilities include hospitals, nursing homes and similar institutions that provide medical care and health services, typically staffed by healthcare professionals. The availability of specialist geriatricians in Bangladesh remains limited, with few public-sector initiatives beyond the 2014 establishment of a dedicated geriatric unit at Dhaka Medical College Hospital. Third-sector organizations and the private sector are addressing the gap in public care for older persons, including through on-demand providers of care services for older persons.[52]

Non-health-related facilities, such as daycare centres and assisted living facilities for older persons, focus on providing social, recreational and supportive services. These services include assistance with daily activities (e.g. eating and bathing) provided by caregivers and support staff

rather than healthcare professionals. These services and programmes are largely administered by governmental entities, NGOs and the private sector, encompassing specialized health facilities, nursing homes and retirement communities.[53]

To enhance protection for older citizens, the Government of Bangladesh introduced the Universal Pension Scheme in 2023. This initiative aims to enable individuals, including those with low incomes, to prepare for self-sustained retirement within their financial means.[54] The scheme comprises four distinct pension plans: *Progoti* for private-sector employees, *Surokkha* for informal-sector workers such as farmers and labourers, *Somota* for individuals below the poverty line, and *Probash* for Bangladeshi citizens residing abroad.

Kinship systems play a crucial role in providing informal care services for older adults, with the traditional extended family system ensuring that older adults, particularly women, are not left unattended or without care.[55] While kinship networks remain strong, the increasing shift towards nuclear family structures is straining these traditional care arrangements.[56] Elderly individuals, especially those without children, are at greater risk of neglect and inadequate care.[57] Demographic shifts coupled with the absence of a robust social security system may leave the elderly increasingly vulnerable.[58]

TABLE 2: Legal Frameworks on Child and Old-age Care in Bangladesh

Sector	Policy	Year	Description
Childcare	**Childcare Strategic Operational and Implementation Plan of Comprehensive Early Childhood Care and Development Policy**	2016	Outlines a coordinated approach to ensure the holistic development of children from birth to eight years old. It focuses on improving early childhood education, health, nutrition, and protection services through a multi-sectoral strategy that involves government, NGOs and community stakeholders.[59] The plan aims to provide equitable access to quality early childhood programmes, strengthen institutional capacities and promote parental and community engagement to foster the cognitive, physical and emotional development of young children.
	Children Act	2013	Officially known as Shishu Ain, 2013, it provides comprehensive legal protection for children, focusing on their rights to care, protection from abuse and access to justice.[60]
	National Child Policy	2011	Addresses children's rights, including education, health, protection from exploitation and abuse, with special provisions for vulnerable groups.[61] The policy mandates a minimum of six months of maternity leave to support maternal health and childcare. Additionally, it requires employers to establish daycare centres for lactating and working mothers, enabling them to breastfeed their children.
	National Education Policy	2010	Aims to ensure universal access to quality education for children, with a focus on primary and secondary education, and addresses issues of dropouts and inclusivity.[62]
	Child Day Care Centre Act	2021	Previously named the Child Day Care Centre Bill, the Act aims to support the children of professionals and working women by establishing four types of childcare. It requires that all childcare centres be registered and monitored by the MoWCA. The Act specifies that daycare services are available for children aged six months to six years.[63]
	Bangladesh Labour Act	2006, updated in 2018	This Act includes provisions to eliminate child labour and regulate employment conditions for young workers, setting minimum age limits and working conditions. It also requires factories and establishments with 40+ workers to provide suitable rooms for children under six years old.[64]
Care for Children and Older Individuals	**Probin Unnayan Foundation Act**	2017	It establishes the Probin Unnayan Foundation, an organization dedicated to the welfare and development of elderly citizens.[65] The Act outlines the foundation's role in providing support services, promoting the rights and dignity of older adults, and facilitating programmes focused on their health, social security, and overall well-being.
	National Policy on Older Persons and Action Plan for implementing the National Policy on Older Persons	2013	Focuses on ensuring the basic rights of the elderly, combating age-based discrimination, and empowering older adults. It outlines five broad objectives for the elderly: dignity, participation, self-dependence, self-attainment, and access to services.[66] Although care services are not explicitly mentioned, they are integral to the policy's working strategy, which includes providing social facilities for older persons, ensuring the safety of their lives and property, reducing poverty, securing financial stability, offering healthcare and nutrition, and addressing the impact of climate change and emergency situations on older persons.
	Parents Maintenance Act	2013	Ensures that elderly parents receive adequate financial support from their children.[67] This legislation requires children to provide for their elderly parents who cannot support themselves, ensuring access to basic necessities such as food, clothing, and shelter.
	National Health Policy	2011	Includes specific provisions for the healthcare of elderly individuals, emphasizing access to affordable and quality health services and geriatric care.[68]
	Old Age Allowance Programme	1997	A social safety net programme providing financial assistance to elderly individuals who are 65 years or older, particularly those who are poor and vulnerable.[69] The allowance is viewed as a measure to alleviate the hardships faced by the elderly, ensuring they are not perceived as a burden to their families.
Care for Children and Older Individuals	**National Social Security Strategy**	2015	Includes child benefits and social protection programmes aimed at reducing poverty and vulnerability among children and families, with a focus on health and education. It also incorporates specific measures for the elderly, including pension schemes, social pensions, and programmes aimed at reducing poverty and improving the quality of life for senior citizens. The Constitution of Bangladesh, Article 15(D), declares the introduction of a social security programme for the elderly population.

Source: Author's elaboration

Section III

GIS Mapping: Approach and Methodology

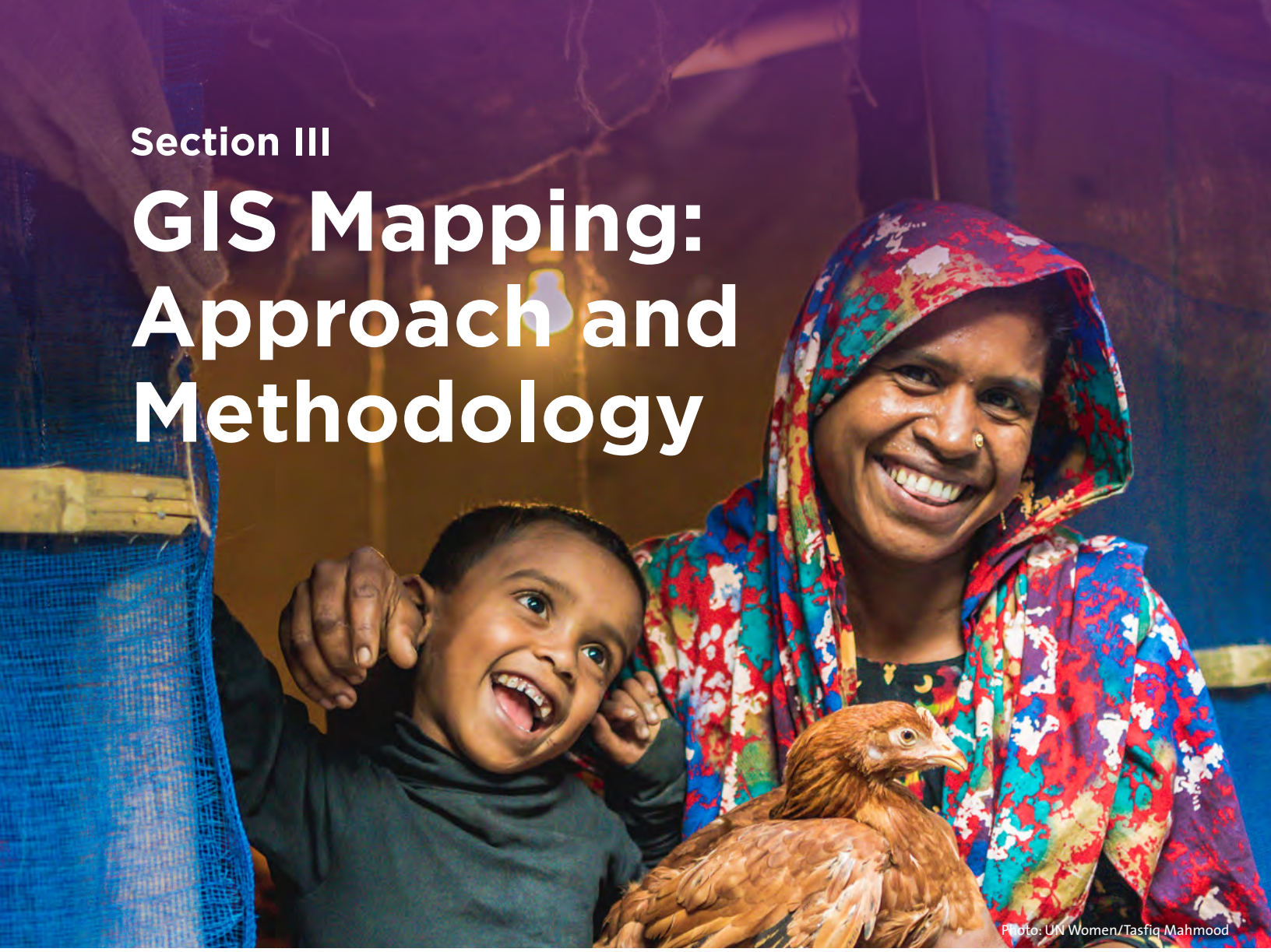


Photo: UN Women/Tasfiq Mahmood

This research conducts a geospatial analysis of the demand for and supply of care services in Dhaka City following the methodology proposed by UNDP (2022).[70] The analysis of care needs (i.e. the demand side) incorporates demographic and socioeconomic characteristics of the population such as age, as well as contextual factors such as land-use patterns and environmental hazards. By embedding multiple variables into the analysis, this approach underscores the value of geographic information system (GIS) methods and provides a nuanced understanding of the care needs, informing targeted and focused interventions.

To further articulate the analysis, the demand mapping is accompanied by an analysis of the supply of care services, creating an overview of areas where care services are currently available and where they are needed. Following this mapping, this research addresses the extent to which care services are accessible, in order to better identify potential target areas for further intervention. This research design seeks to enhance evidence-informed decision-making to transform care systems at the local level and ensure that care services are accessible to those who need them most.

3.1 GEOGRAPHICAL SCOPE

Bangladesh is organized into eight primary administrative divisions, which are further subdivided into 64 districts, and then into 495 Upazilas. The geographical scope of this report is the Dhaka Central Region (i.e. Dhaka City) within

the Dhaka Metropolitan Area, which comprises Dhaka City and its adjacent fringe areas, totalling 41 Upazilas. The Dhaka Central Region is divided into the Dhaka South City Corporation (DSCC) and the Dhaka North City Corporation (DNCC) and includes the Eastern and Northern Fringe areas, defined by the Balu, Buriganga and Turag rivers, the Tongi canal, and the southern boundary of Dhaka District.[71] As of 2022, the population of this area was estimated to be over 10 million, constituting roughly 6 per cent of the country's total population.[72]

Dhaka City exhibits distinct land-use trends, with agricultural zones primarily located along the northern, eastern and southeastern boundaries, while the centre features a dense concentration of non-residential urban development. Commercial and industrial units are dispersed throughout the city, often near rivers or other water bodies. To better understand the intra-city dynamics of Dhaka City, the analysis employs hierarchical clustering with spatial constraints (administration: DNCC and DSCC) at the upazila level. Due to the limited resolution of some satellite-based images for the spatial distribution of the population at the ward level, Upazilas were selected for the mixed-methods clustering to identify different analytical units of the city. This method organizes upazilas into a hierarchical structure based on distances calculated from their socio-demographic, economic and geographic characteristics. In addition to these characteristics, geographic distances between upazilas are incorporated by calculating the spatial proximity between their centroids. The method balances both data characteristics and geographic proximity, ensuring that upazilas are grouped not only based on their attributes but also considering their spatial relationships. The final clusters are determined by cutting the hierarchical tree into a predefined number of groups, with adjustments made for specific administrative regions to account for geographic and contextual differences.

The model utilized the indicators listed in the Methodological Note, adhering to the North-South division and grouping Upazilas based on various demographic and contextual factors, including:

(i) Ensuring geographic contiguity to facilitate efficient administration;

(ii) Aligning with the administrative boundaries of DNCC and DSCC, which are responsible for delivering services, with the caveat that when Upazilas have wards under both DNCC and DSCC jurisdiction, the upazila is grouped with the City Corporation that has more wards under its jurisdiction;

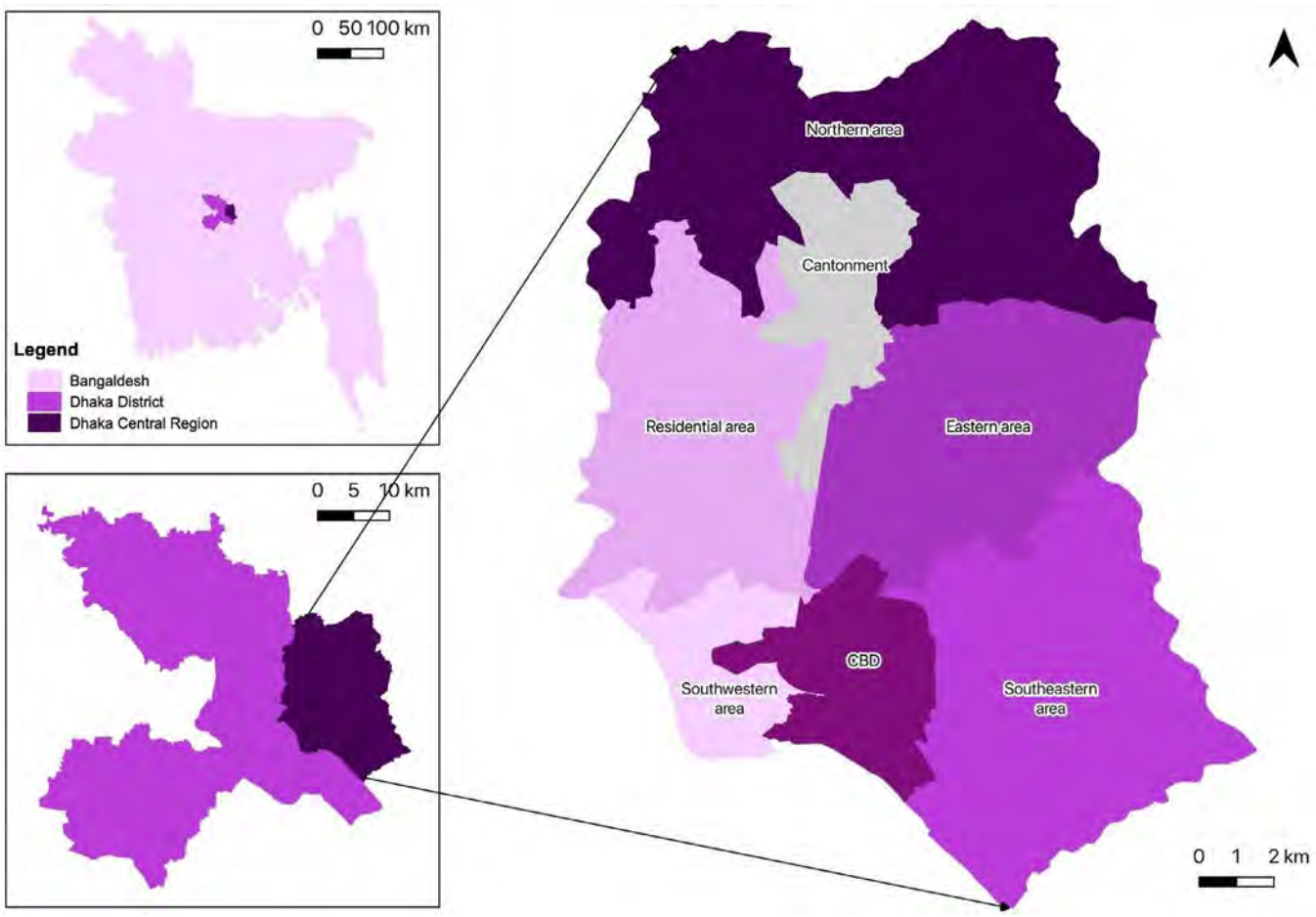
(iii) Grouping similar land-use roles to enhance rban planning efforts;

(iv) Accounting for the unique geographic characteristics of each area, such as flood hazards and green spaces; and

(v) Addressing socioeconomic integration by considering the distribution of informal settlements and other relevant factors.

Once the clusters were generated, they were manually verified using qualitative literature to ensure they accurately reflected socioeconomic and geographical realities. This step was crucial for validating the clusters by cross-referencing them with existing research and qualitative data on the areas, such as neighbourhoods and zones.

MAP 1. Area of Study



Source: Authors' elaboration using data from OCHA (2020)

3.2 MAPPING CARE DEMAND

3.2.1 POPULATION DISTRIBUTION AND CHARACTERISTICS

Mapping the demand for care services involves identifying areas that exhibit a heightened need for such services, as informed by the demographic characteristics of the population. Specific age groups are typically associated with particular types of care provision (e.g. children aged 0–4 years requiring early childhood care and development).

Traditional data sources, including administrative records, household and population censuses (HPCs), georeferenced population projections, and household surveys, as well as non-traditional data sources such as satellite images, may be employed for this purpose.[73] Due to limitations in data access, the analysis of the demand incorporates non-traditional data sources (Table 3).

TABLE 3. Data Sources for Mapping the Demand of Care Services

Indicator	Type	Data Source	Date (last updated)
Population by sex	Satellite Imagery	WorldPop[74]	2020
Population by sex and age groups	Satellite Imagery	WorldPop[75]	2020

Notes: Please see the full list of potential sources evaluated in the Annex.
Source: Author's elaboration

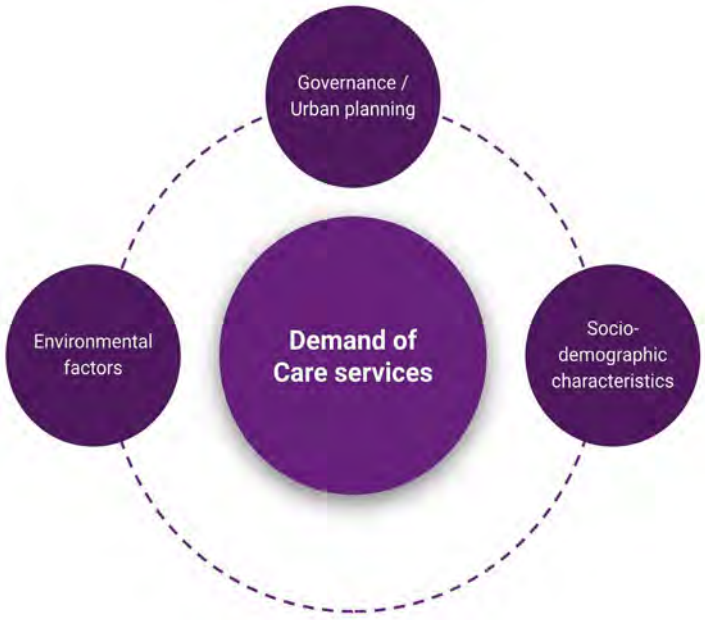
3.2.2 SOCIOECONOMIC AND ENVIRONMENTAL FACTORS

To enhance the understanding of the demand for care services, this research incorporates contextual information, including the prevalence of informal settlements and slums, land-use patterns and exposure to climate-induced hazards (Figure 1 and Table 4). By elucidating environmental risks such as flooding, heatwaves and air pollution in conjunction with land use metrics, this methodology seeks to inform the design of interventions that simultaneously address care needs and socio-environmental vulnerabilities.

Dhaka City, similar to many urban centres in the Global South, exhibits a complex socioeconomic landscape marked by significant contrasts and challenges. **Informal settlements and slums provide a valuable perspective for analysing the socioeconomic distribution within Dhaka City.** The terms "informal settlements" and "slums" are often used interchangeably, though they have distinct meanings in urban studies and policy discussions. According to the United Nations Human Settlements Programme (UN-Habitat, 2015), informal settlements are characterized by their "informality", as they develop outside the formal planning and legal frameworks of cities, typically on land where occupants have no legal claim or occupy illegally. In contrast, "slum" specifically refers to a type of informal settlement in densely populated urban areas with substandard housing and poor living conditions. UN-Habitat (2003) defines slums by criteria such as lack of durable housing, insufficient living space, inadequate access to clean water, poor sanitation, and insecure tenure. The term "slum" often carries negative connotations, associated with poverty, crime, and social degradation. However, in this report, we rely on data from the World Bank, which uses the terms "informal settlements" and "slums" interchangeably. Due to this limitation, these terms will be treated as synonymous throughout the report.

These areas typically accommodate a considerable segment of the city's low-income population, making them crucial for examining economic disparities, living conditions and the concentration of vulnerable demographics. It is expected that the inadequate quality and limited access to essential services in these settlements will highlight the substantial socioeconomic challenges encountered by their residents, thereby exposing significant deficiencies in access to care services.

FIGURE 1. Contextual Factors Affecting the Demand for Care Services



Source: Author's elaboration

TABLE 4. Data Sources for Contextual Variables

Indicator	Type	Data source	Date (last updated)
Informal Settlements/slums as proxy for socioeconomic distribution			
Informal Settlements/slums[93]	Satellite imagery	The World Bank[76]	2010–2017
Land use			
Land Use / Land Cover (LULC) type	Typology as identified from OpenStreetMap and updated by interpretation of VHR satellite imagery	The World Bank[77]	2017
Open & Green Areas coverage extent	Typology as identified from OpenStreetMap and updated by interpretation of VHR satellite imagery	The World Bank[78]	2017
Disaster Risk			
Multidimensional Risk Index	Geo exposure-located index	European Commission[79]	2022
Flood Risk	VHR satellite imagery	The World Bank[80]	2017

Notes: Please see the full list of potential sources evaluated in the Annex.
Source: Authors' elaboration

Mapping spatial distributions and temporal changes within designated areas—particularly regarding **open and green spaces—is essential to accurately analyse and contextualize the diverse zones and their liveability within urban spaces, as well as to understand the demand for and provision of care services.**[81] Urban Land Use/Land Cover (LULC) data entails the classification and description of land surfaces, encompassing both natural and artificial features based on their primary uses (e.g. residential, commercial or industrial), in addition to physical cover types, including forests and water bodies.

LULC data assumes a pivotal role in the nexus between urban planning and care systems for several reasons. Urbanization patterns inform development planning by elucidating current trends in urbanization, identifying various land uses, such as residential and commercial, and forecasting future growth.[82] This information supports the formulation of sustainable urban plans that optimize land use, manage growth and enhance urban resilience. Infrastructure planning and environmental assessment are integral components of infrastructure development, guiding decisions regarding transportation networks, water systems and waste management. Furthermore, LULC data informs environmental impact assessments by monitoring changes that affect habitats, microclimates and urban heat islands. **Identifying care needs involves recognizing areas with specific social requirements, such as access to healthcare facilities, green spaces and recreational areas**. For care strategies, understanding the distribution of various land uses is essential for determining optimal locations for healthcare centres, care facilities for older persons, childcare centres, and other social services, thereby ensuring equitable access for all urban communities.

According to the International Centre for Climate Change and Development (2024),[83] from 2000 to 2019 Bangladesh was ranked as the seventh most affected country by climate change, facing significant risks due to its exposure to various natural hazards. The country's geographical location renders it particularly vulnerable to multiple threats, including cyclones, landslides and earthquakes. While the general socioeconomic impacts of climate change are well documented, the effects on caregiving systems are equally significant but often overlooked.

Climate change exacerbates the vulnerabilities of individuals who rely on caregiving, particularly in low-income communities. The increased frequency and intensity of extreme weather events, such as heatwaves and floods, place additional strain on caregivers and the infrastructure supporting them, complicating the provision of adequate care. Furthermore, the physical and mental health impacts of climate change disproportionately affect women, who make up the majority of caregivers, thereby intensifying the burden on caregiving systems.[84] Moreover, as primary caregivers, women often need to balance caregiving with navigating climate-induced disruptions to health services and infrastructure, further increasing their workload and psychological strain.[85]

Incorporating flood risk assessments into care mapping in Dhaka City is essential due to the city's high susceptibility to flooding, which disproportionately impacts vulnerable populations, particularly women with caregiving responsibilities.[86] This research employs the Sub-national Index for Risk Management (INFORM) to assess environmental risks, such as flooding, drought and epidemics, as well as their linkages to care systems. The INFORM index integrates indicators related to hazards, exposure, vulnerability and coping capacity at the upazila level. It considers factors such as socioeconomic status, access to services, environmental risks and demographic profiles in order to map risk distribution.[87] These assessments are critical for prioritizing emergency response and evacuation resources—vital for women managing caregiving duties amidst disrupted infrastructure—identifying care facilities requiring

flood fortification, and addressing the increased risk of waterborne diseases, which pose significant challenges for women responsible for sanitation and hygiene during crises.

3.3 MAPPING CARE SUPPLY

The process of mapping the care of care services begins with the collection and integration of diverse datasets, followed by data cleaning to retain only relevant facilities and the processing of information. Due to the limitations of available geo-located data sources and the scope of this research, the mapping of care services in Dhaka City specifically targets facilities for childcare and for older persons (Table 5). The specific subcategories of care facilities were identified considering the availability of data and other relevant criteria (Methodological Note in Annex).

For mapping the supply of care services, multiple complementary sources were included, as follows:

- **Google Places API:** Web scraping and data processing involved extracting information from websites. According to UNDP (2022), the Google Places API can be used to locate various types of facilities, as it "supports location-based services and business (and other institutions and places) searches from Google apps data.[88] Google Maps contains billions of publicly available points of georeferenced data at the global level, which allows the researcher to extract updated information on care centres with different target populations both in urban and rural areas."
- **Administrative georeferenced data** refers to statistical information collected and maintained by governmental or official agencies, typically derived from administrative records. These datasets are geo-referenced, meaning they include location information (latitude and longitude) tied to specific administrative boundaries such as districts, municipalities or other administrative divisions. They provide structured information used for planning, policy-making and geographic analysis, although they may not always be updated in real-time or have detailed information at the lowest administrative levels. The dataset provided for this study contained land use information for individual buildings. Although care for children and older individuals was not separately categorized within the dataset, the education and health subsets were reviewed to identify relevant facilities and services related to these needs.
- **Crowdsourced data**, particularly from platforms such as OpenStreetMap (OSM), is collected collaboratively by volunteers and users worldwide. It involves the community-driven mapping of geographic features, including roads, buildings, amenities, and points of interest. Unlike administrative data, which is typically managed by governmental bodies, crowdsourced data on OSM is open and continuously updated by contributors from around the world. This data is valuable for its real-time updates, diverse coverage (including informal settlements and local amenities), and flexibility in adding new features or correcting existing ones. However, it may vary in accuracy and completeness depending on local community engagement and verification processes.

Incorporating administrative geo-referenced data alongside crowdsourced data from OpenStreet Map, which encompasses broader categories such as education and health, facilitates a more comprehensive mapping of facilities related to childcare and elderly care. This approach addresses gaps in facility coverage and ensures a more thorough analysis, particularly by mitigating the risks associated with an exclusive reliance on services that only maintain an online presence.

TABLE 5. Data Sources for Mapping the Supply of Care Services

Indicator	Type	Data Source	Date (last updated)	Granularity (lowest unit)	Details of the Dataset
Childcare Facilities	Web scraping	Google Places API	2024	Point data	See Methodological Note in Annex for keywords used in web scraping
	Education dataset Crowd sourced, Geo-located data	HOTOSM	2024	Point data	Only features kept: 'kindergarten'
	Land use dataset, ***Education category*** Geo-located administrative data	GIS dataset locally developed by the Capital Development Authority	2024	Polygon data	**Land use data by building.** Only buildings kept: 1-'Kindergarten&Nursery' 2-'Pre-primary' and 3-'Pre-primary Madrasah
Care Facilities for Older Persons	Web scraping	Google Places API	2024	Point data	See Methodological Note for keywords used in web scraping
	Healthcare dataset Crowd sourced, Geo-located data	Global Health sites Mapping Project	2024	Point data	The dataset shows the list of operating health facilities. Features that include in their name: geriatric, midwife, nurse, community health worker, nursing, Alzheimer's, hospice or senior are kept.
	Land use dataset, *Healthcare category* Geo-located administrative data	GIS dataset locally developed by the Capital Development Authority	2024	Polygon data	**Land use data by building.** Facilities with: geriatric, midwife, nurse, community health worker, nursing, alzheimer's, hospice or senior are kept.

Source: Authors' elaboration.

3.4 ASSESSING ACCESS TO CARE SERVICES

This research estimates the discrepancy between the demand for and the supply of care services by utilizing AccessMod for the assessment of accessibility. Developed by the World Health Organization (WHO) in collaboration with the University of Geneva and the AeHIN GIS Lab, AccessMod is predicated on various open-source libraries and tools. While initially designed for health-related applications, various analysts have repurposed this tool to address other pertinent issues, including access to drinking water,[89] educational facilities,[90] and green spaces.[91]

In modelling accessibility to care facilities in Dhaka City, several factors were taken into consideration, including topography, road networks, movement constraints (e.g. rivers, lakes and flood extents), the distribution of the target population, and the geographical locations of care facilities (Table 6). The analysis employed two primary parameters to evaluate accessibility:

1) **Travel Time** refers to the estimated time required for individuals to reach the nearest care facility, calculated based on realistic travel modes (vehicle or walking) and capped at a maximum of 15 minutes.
2) **Uncovered Population:** This denotes the proportion of the target population without access to a care facility within the defined travel time.

These parameters were calculated using AccessMod, which incorporates different travel modes (walking, motorized and bicycling) and their respective speeds (Methodological Note in Annex), under the following assumptions:

- **Travel Speeds:** The World Bank's 2022 report on Dhaka's Integrated Corridor Management notes an average vehicular speed of 6 km/h,[92] corroborated by a local report citing 4.8 km/h. [93] Proposed road category speeds are 8 km/h (primary), 6 km/h (secondary), and 4 km/h (tertiary), reflecting urban travel realities. The proposed means of transport are motorized vehicles for roads, with average speeds set at 8 km/h for primary roads, 6 km/h for secondary roads, and 4 km/h for tertiary roads, reflecting local traffic conditions. Walking is the primary mode of transport for all other land covers, with an assumed average speed of 3 km/h based on regional studies. When multiple modes of transport are included in the analysis, the results (e.g. six minutes to the nearest facility) reflect the average travel time calculated using the most efficient travel mode for each segment of the journey, based on the transport options available (motorized or walking) along the route to the facility.
- **Maximum Travel Time:** The 15-minute limit reflects practical considerations based on empirical evidence for accessing care services (including a 2018 study[94] on healthcare access and the 2021 Travel Use Survey)[95] and adapts Moreno's '15-minute city' concept to the context of Dhaka, a city with inadequate public transportation (see Methodological Note in Annex). Dhaka City's limited transportation options mean that walking or low-speed motorized travel is often the default mode for reaching services. Thus, the 15-minute travel time limit is both a practical and theoretical benchmark, balancing global urban planning principles with the specific realities of Dhaka's urban environment.

The analysis also considered the ratio of the target population (by age group) to the number of corresponding facilities in each area. However, it does not account for the maximum capacity of these facilities, such as how many individuals each can support or factors such as staff-to-child ratios. While this data is crucial for a more comprehensive assessment of care service accessibility, it was excluded due to data limitations. Consequently, the study focuses solely on the availability of facilities relative to the target population by area.

TABLE 6. Data Inputs for AccessMod

Indicator	Type	Data Source	Date	Resolution	Uses
Childcare Facilities	Vector	Merged datasets	Multiple	Facility location	
Elderly Care facilities	Vector	Merged datasets	Multiple	Facility location	
Other inputs					
Digital Elevation Model (DEM)	Raster	Copernicus DEM	2023	Point data	See Methodological Note for keywords used in web scraping
Road Network	Vector	Humanitarian OpenStreetMap (HOT)	2024	Roads	Used to extend much further outward the facility as travel time could be faster.
Population Distribution Grid	Raster	WorldPop	2020	100m	
Land Cover Distribution Grid /	Raster	Land Use / Land Cover Maps (ESA EO4SD-Urban	2017	0.5 m	Used to characterize the area of analysis and that are believed to affect the traveling time of patients moving across this area.
Barriers to Movement	Raster	Land Use / Land Cover Maps (ESA EO4SD-Urban)	2017	0.5 m	Used to represent various components of the landscape the population cannot travel through, such as rivers, lakes, military and airport zones and industrial complexes

Indicator	Type	Data Source	Date	Resolution	Uses
Exclusion Areas	Raster	Land Use / Land Cover Maps (ESA EO4SD-Urban)	2017	0.5 m	Used to consider areas where a share of the target population might be living but where facilities could/ should not be located. *Examples of such areas may include low-lying coastal areas subject to inundation/ storm, national parks, military zones, etc.*
Zones Boundaries	Vector	OCHA	2024	Upazila / Districts	

Source: Authors' elaboration

3.5 LIMITATIONS AND STRENGTHS

Geospatial data on care suffers from limited availability, accessibility and inherent limitations. Conducting a comprehensive geospatial analysis of care services, including informal unpaid services provided within the household sector, would necessitate extensive fieldwork and qualitative studies to accurately map the supply of and demand for such services. Additionally, unpaid services are profoundly informal, embedded within the private sphere of family life, rendering precise mapping exceedingly challenging even with extensive qualitative efforts. Furthermore, ethical concerns arise regarding the mapping of locations where these services are provided for pay or profit, as disclosing exact coordinates can infringe upon individuals' right to privacy. Consequently, these services are visualized at an appropriate scale within this research.

The most significant obstacle lies in the absence of a comprehensive, structured dataset or register that encompasses all existing care facilities. This issue is compounded by the fragmented nature of care data, which is often siloed by sector and lacks an integrated approach. To address this, the analysis draws on multiple sources and employs various analytical methods to capture the full spectrum of available resources. Specifically, education and health datasets were reviewed to identify care services for the youngest population (ages 0 to 5, preschool age) and the older population (aged 65 and above), respectively.

This method revealed significant gaps, particularly concerning childcare facilities that are not affiliated with educational institutions (e.g. daycare centres), which could only be identified through web scraping. This limitation likely resulted in underrepresentation, as it excludes facilities lacking an online presence. Similarly, no structured data source provides detailed information on care facilities for older persons. Administrative and crowdsourced data generally focus on healthcare facilities without distinguishing those that provide services specifically for older adults. This lack of categorization hampers the analysis, as there is no dedicated dataset for the care of older adults, requiring reliance on general health data and online sources to identify non-health-related care options, further limiting the available data (see Table 7).

Another challenge is the scarcity of detailed information regarding the types of care facilities, particularly in distinguishing between public and private services. None of the available data sources include indicators that specify whether care services for children or older persons are publicly or privately operated. While some data exist on public facilities managed by MoWCA, no publicly accessible list containing geolocation data for these facilities has been identified. Additionally, the categories of available data are limited and heavily reliant on name-based categorization or data mining, which further restricts the scope of analysis. For example, data regarding childcare provisions within garment factories—a potentially critical area of study—was absent from all sources. Even targeted web scraping utilizing terms such as "employer-sponsored

childcare" and "garment factory childcare" did not yield relevant results.

There is a substantial lack of geo-coded information on care services specifically for persons with disabilities, which constitutes a significant limitation. Current supply-mapping datasets lack variables pertinent to disabilities, thus complicating assessments of the availability and adequacy of care facilities for this vulnerable group. This deficiency underscores the urgent need for more inclusive datasets that account for the identification of the needs of people with disabilities. Future research should prioritize the integration of disability-related data to address this critical shortcoming.

The methodological approach employed in this research, however, offers considerable value by integrating advanced geospatial analysis techniques with traditional data sources. This integration facilitates a detailed mapping of care demand and supply within Dhaka City, taking into account demographic and socioeconomic characteristics. By overlaying contextual factors such as land use and environmental hazards, the approach provides a comprehensive understanding of care needs and informs multifaceted targeted interventions. The employment of geo-coded data, satellite imagery and web scraping for facility identification ensures a robust and current representation of care systems, thereby enhancing the accuracy and relevance of findings.

The methodology also underscores the importance of accessibility metrics and comparative analysis to identify areas exhibiting the greatest need for care services. This not only highlights disparities in care provision but also aids in the planning and implementation of effective care delivery models. By incorporating innovative tools, such as the Google Places API and AccessMod, the study offers valuable insights into the spatial distribution and accessibility of care services, supporting evidence-informed decision-making and investment strategies. Overall, the methodological approach provides a nuanced and multi-dimensional analysis of care services, addressing both immediate needs and long-term planning for the development of care infrastructures.

TABLE 7. Distribution of Mapped Care Facilities for Children and Older Persons, by Data Sources

Data Source	Childcare (<5 years of age)		Care for Older Individuals (+65 years of age)	
	#	%	#	%
Administrative Data	704	81%	2	1%
Crowdsourced Data	21	2%	226	97%
Google Place API	148	17%	5	2%
Total	**873**	**100%**	**233**	**100%**
Of which Public facilities	24 [81]	1%	*No information*	*No information*

Source: Authors' elaboration

Section IV

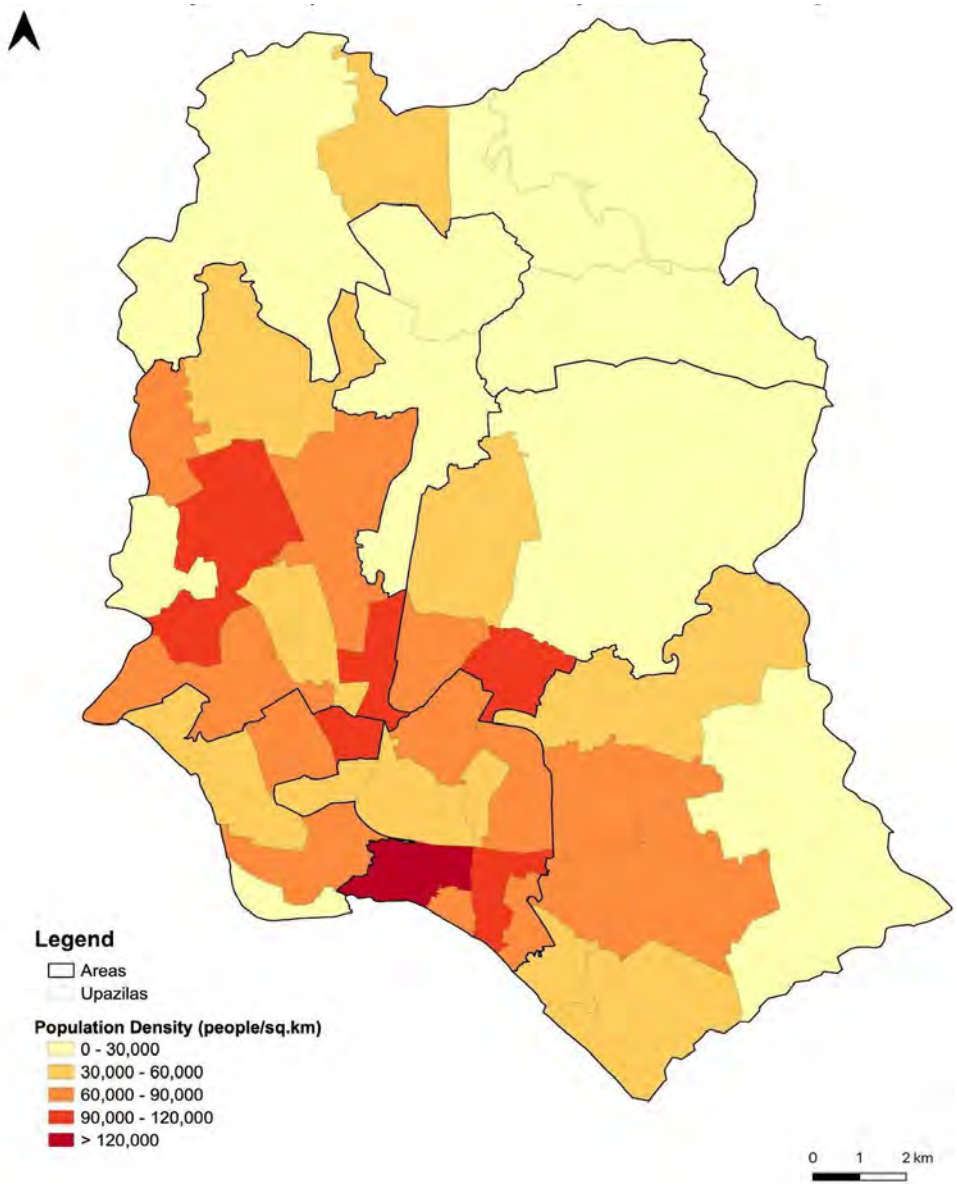
Findings

Photo: UN Women/ZANALA Bangladesh Ltd.

4.1 THE DEMAND FOR CARE SERVICES

Dhaka is one of the most densely populated cities in the world, with over 10 million people[96] residing in an area of 307 square kilometres within the northern (DNCC) and southern city corporations (DSCC).[97] The Central Business and Historic District (CBD) is the most densely populated area, with Banshal and Chawkbazar hosting more than 180,000 and 130,000 inhabitants per square kilometre, respectively (Map 2). The city's high density places significant pressure on urban infrastructure and services, with only a few areas retaining rural characteristics to a varying degree, mainly in the southeastern and northern parts of the city.[98] High population density has been accompanied by rapid population growth and rural-to-urban migration. The city has experienced an exceptionally fast pace of urbanization with an average annual rate of 8 per cent between 1991 and 2019. During the same period, the outskirts expanded even faster, with a growth rate of 43 per cent.[99]

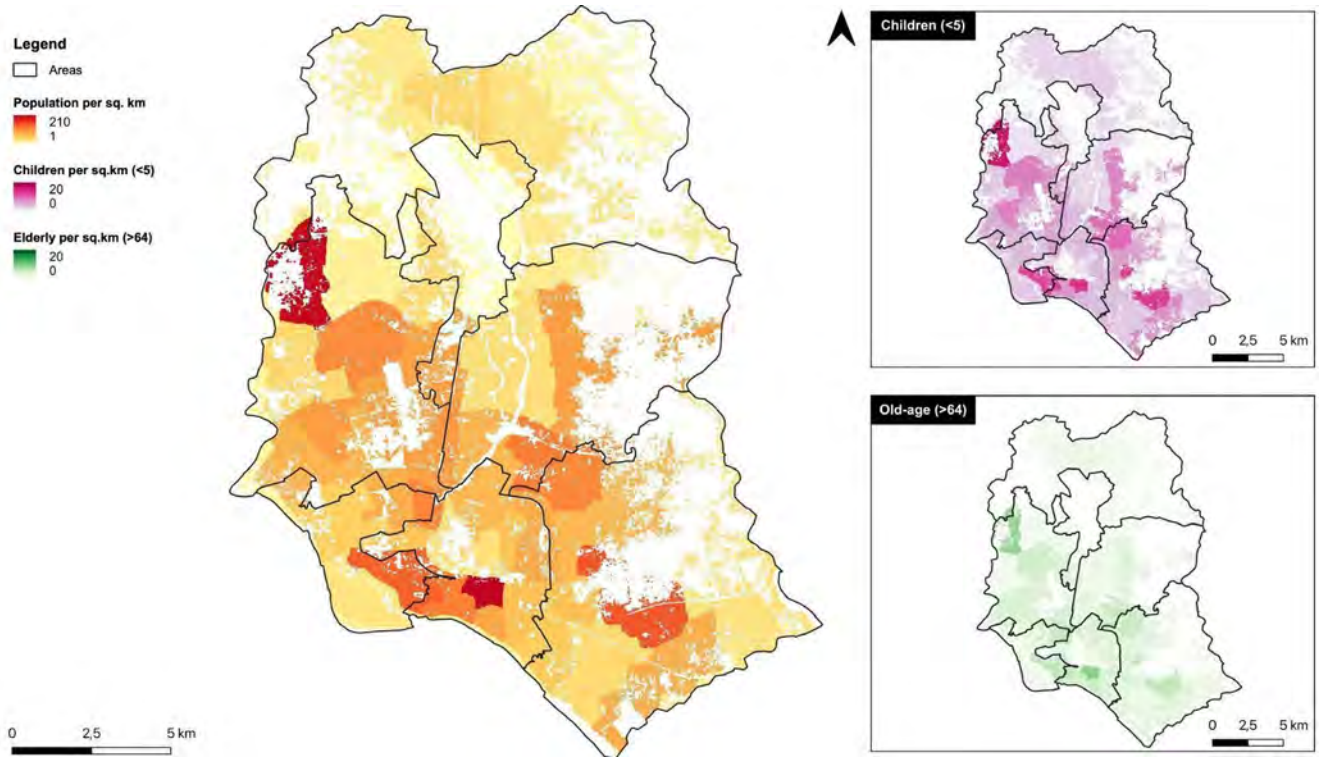
MAP 2. Population Density of Dhaka City



Source: Authors' elaboration using WorldPop (2020b)

Dhaka City is the country's primary economic and productive hub, attracting a large influx of young people in search of economic opportunities. In 2020, **the population of Dhaka City was predominantly young**; 23 per cent of the population was aged between 15 and 24 years.[100] Additionally, approximately 75 per cent of the population is of working age (15–64 years), underscoring the city's vibrant labour force. The remaining 25 per cent consists of care dependants. Of these, 7 per cent are young children under the age of five, 7 per cent are of mandatory school age (5–9 years), and 8 per cent are in lower secondary school (10–14 years). Finally, 3 per cent of the population is 65 years or older (Map 3). According to the 2022 Household and Population Census, in Dhaka City, men accounted for 54.5 per cent of the population, indicating a high concentration of men in the city and making the Dhaka Central Region predominantly male.

MAP 3. The Distribution of Population in Dhaka City, by Age Groups (2020)



Source: Authors' elaboration using data from WorldPop (2020b).

Alongside the population distribution by sex and age groups, two additional demographic indicators, the dependency ratio and the child-woman ratio, characterize the demand for care services. Dhaka City's dependency ratio is lower relative to the country average (33 vs. 53), indicating that a larger proportion of the population is of working age.[101] Similarly, in Dhaka City, the child-woman ratio, which measures the number of children under five per 1,000 women of reproductive age (15–49 years), is 267, compared to the national average of 332.[102] This demographic structure depicts a high concentration of working-age individuals and fewer young children, particularly in urban areas. Women, who traditionally bear most caregiving responsibilities, continue to face substantial demands, particularly in a city with a predominantly male population.

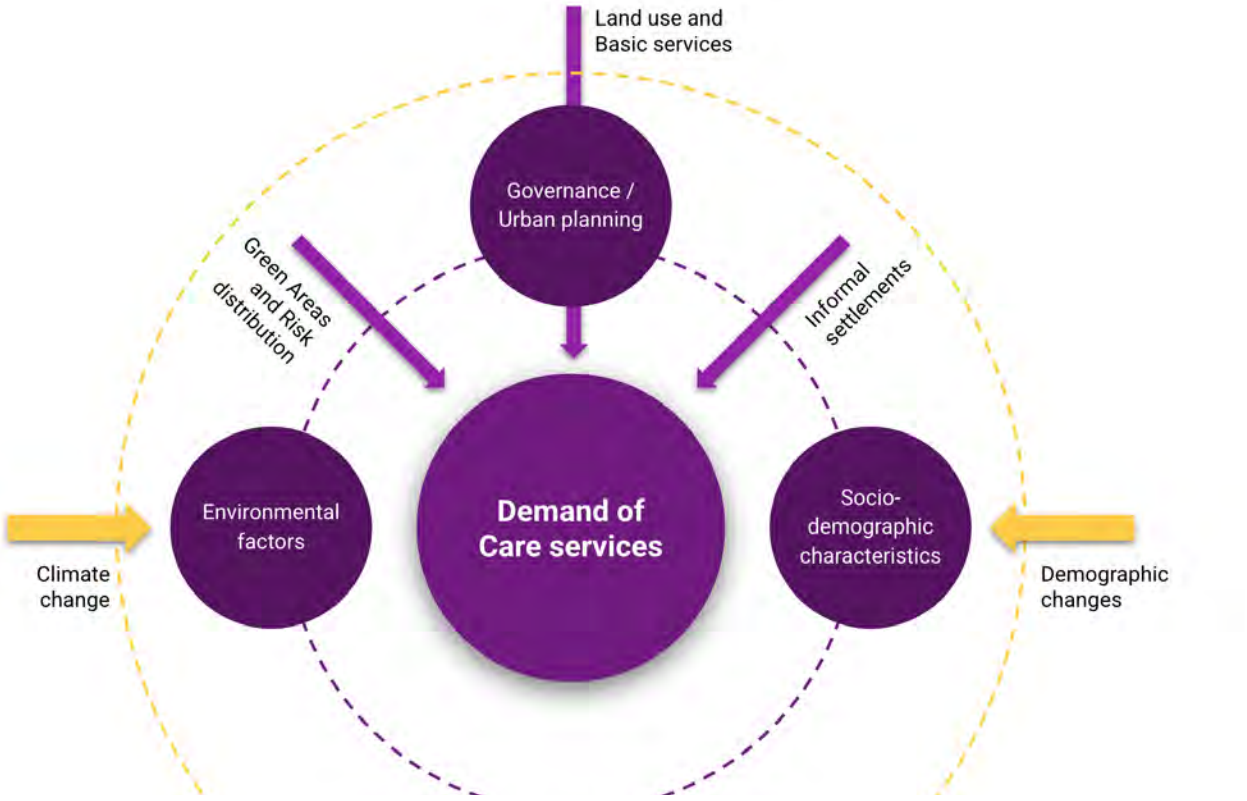
At the country level, the Bangladesh Time-Use Survey 2021 revealed that women aged 25–44 years old spend an average of 29.4 per cent of their time on unpaid and domestic care work, while men of the same age group spend an average of only 3.7 per cent of their time on unpaid and domestic care work.[103] The latest Household and Population Census confirms pronounced gender disparities, with only 18 per cent of working-age women employed (versus 44 per cent of men) and with a gap of over 38 percentage points between women and men doing unpaid domestic work as their main economic activity in urban Dhaka (Table 8). In addition to demographic structure, several other factors influence the demand for care services (Figure 2).

TABLE 8. Population Aged 15 Years and Above by Main Economic, Activity, Sex, District and Location (2022)

District and Location: Dhaka (Urban)	Number of Persons			%		
	Total	Men	Women	Total	Men	Women
Employed	4.530.538	3.667.526	863.012	44%	65%	18%
Household Work	1.854.605	29.248	1.825.357	18%	1%	39%
Looking for Work	135.677	100.405	35.272	1%	2%	1%
Do not work	3.884.910	1.871.680	2.013.230	37%	33%	43%
Total	**10.405.730**	**5.668.859**	**4.736.871**	**100%**	**100%**	**100%**

Source: Authors' elaboration using data from the Population and Housing Census 2022 (2023)

FIGURE 2. Schematic Representation of Factors Influencing the Demands for Care Services



Source: Authors' elaboration

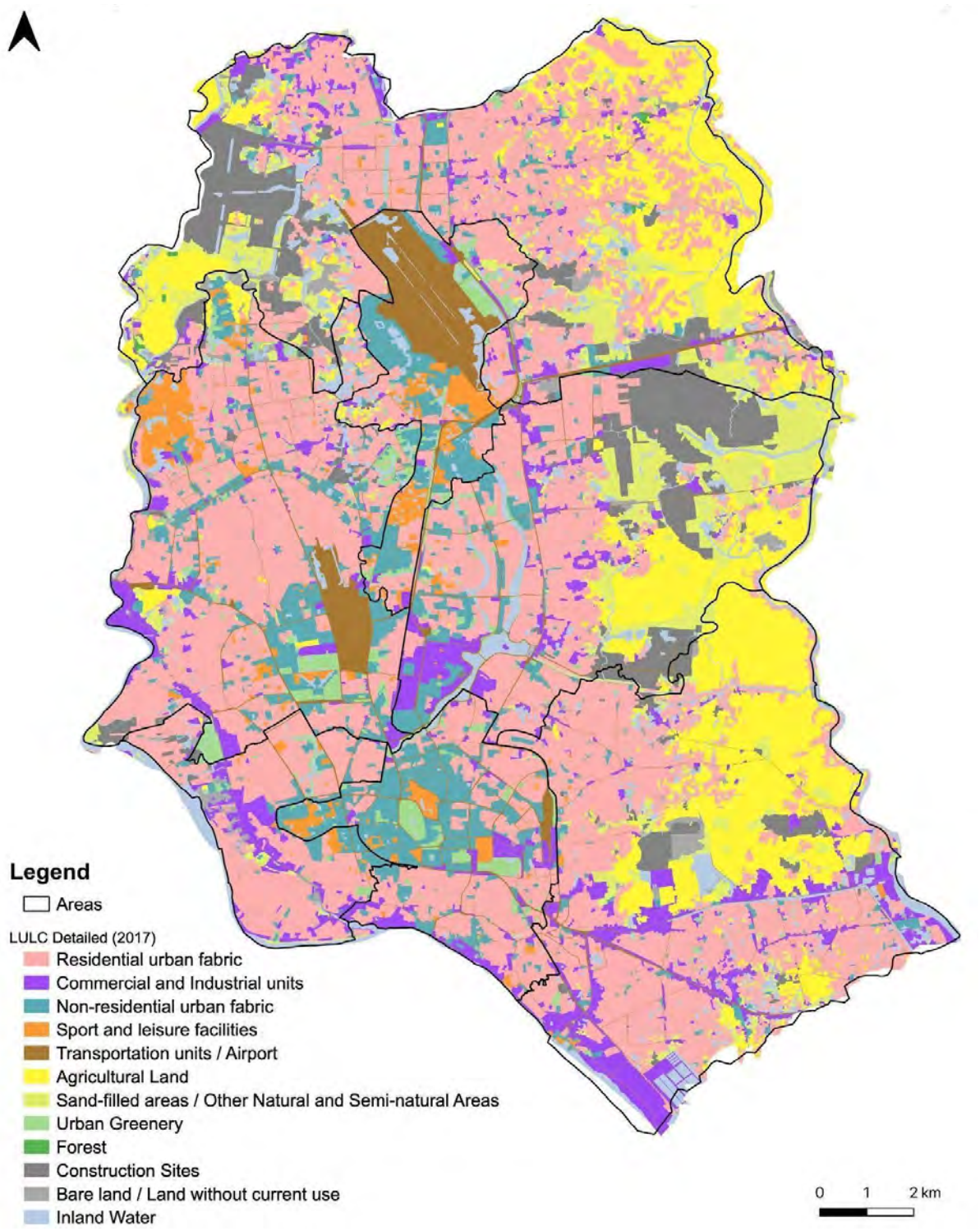
4.1.1 URBANIZATION AND RECREATIONAL SPACES

The urban expansion of Dhaka City has significantly changed land use patterns over the years, with dense residential, commercial and industrial zones rapidly replacing agricultural land and green spaces.[104] Despite agricultural land still covering a significant portion of the peri-urban areas, it is increasingly under pressure from urbanization (Map 4). A land-use analysis comparing satellite images from 2001, 2011 and 2021 revealed a 27 per cent increase in built-up areas over 20 years, accompanied by a 29 per cent decrease in vegetation.[105] This has significant implications for the city's environment and its overall sustainability.[106]

The rapid urbanization of Dhaka's City has resulted in a notable scarcity of non-residential spaces dedicated to sports and recreational activities compared to the abundance of residential, commercial and industrial units. **Recreational facilities and urban green spaces are among the most unevenly distributed across the city with informal settlements significantly lacking access.** Limited recreational spaces are predominantly concentrated in wealthier neighbourhoods around the CBD and the Cantonment area. This disparity underscores the intersection of urban planning and gender equity, highlighting the need for inclusive development strategies that ensure equitable access to recreational and support facilities across all socioeconomic groups within Dhaka City. These non-residential 'third spaces', including parks and leisure facilities, play a critical role in the care economy by providing environments where caregivers can engage in childcare and elderly activities, facilitating essential physical and social interactions that contribute to the well-being of children and older persons.[107]

The unplanned and rapid loss of green spaces in Dhaka City is intensifying both environmental and health challenges, with profound implications for the provision of care. Green spaces also play a crucial role in enhancing air quality, reducing stress and providing cooling effects, which are especially important in a city vulnerable to extreme temperatures.[108] The decline of these areas, particularly in the eastern and southeastern areas, may disproportionately impact caregivers and their dependants. The reduction of green spaces is especially harmful to young children and older persons who depend on these environments for physical activity, relaxation and social interaction.[109]

MAP 4. Land Use and Cover (LULC) in Dhaka City



Source: Authors' elaboration using data from the World Bank (2023c).

4.1.2 INFORMAL SETTLEMENTS

The severe shortage of affordable housing is a critical urban challenge driven by the rapid urbanization of Dhaka City. The city has seen a 234 km² expansion of built-up areas, outpacing its growth of 116 km² between 1991 and 2019.[110] The surge in urbanization has significantly increased the demand for affordable housing, but the current supply falls far short. This gap, along with challenges in affordable housing development, has contributed to the growth of informal settlements and haphazard urban sprawl.

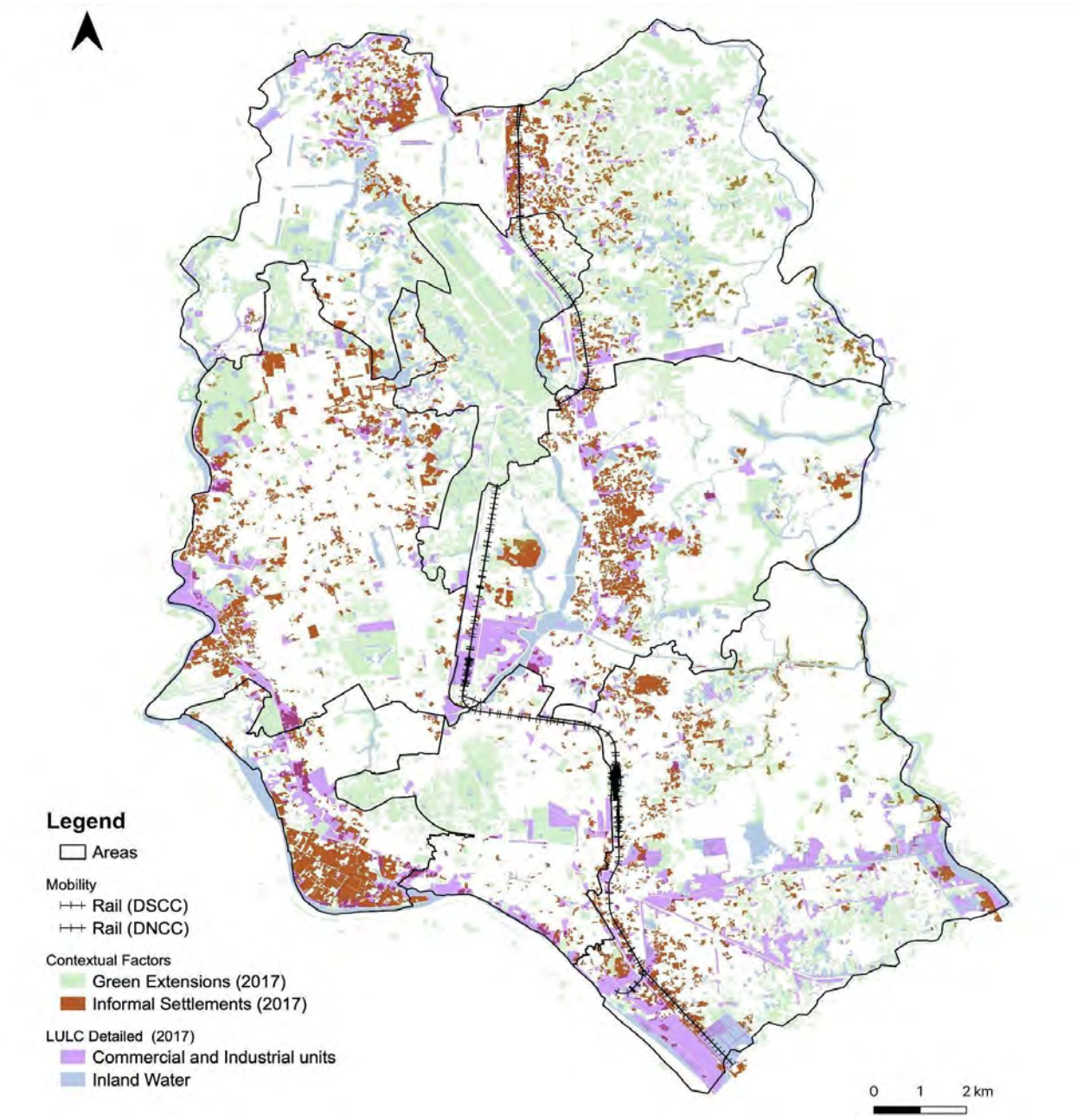
In 2022, 22 per cent of the city's population lived below the poverty line, with over 5,000 slums housing approximately four million people.[111] In these densely populated areas, around 75 per cent of households occupy single-room units, sharing one toilet and water sources, and enduring inadequate electricity.[112] Often situated on the city's outskirts, these settlements are marked by poor housing conditions, limited access to basic services, and challenging living environments (Map 5).

Informal settlements are dispersed across Dhaka City, but certain areas display significantly higher concentrations. Notably, the southwest area covering Kamrangir Char and Lalbagh shows marked density. Similar high concentrations are observed near the railroad tracks in both the northern and southeastern areas of the city. Specifically in the eastern areas, where urban and rural zones intersect, there is a notable presence of informal settlements, especially in the central part of the Gulshan upazila near the river. In contrast, the Cantonment region, a military area that serves as the headquarters for the Bangladesh Army, along with the CBD, which functions as the city's business core, report the lowest concentrations of informal settlements, with averages of 0.11 in the Cantonment region and 0.03 in CBD, respectively.

Informal settlements in Dhaka City are typically located near areas with a high concentration of informal employment opportunities, such as markets, bazaar stalls, trade fairs and industrial zones (Map 5).[113] The reliance on informal employment, combined with the precarious living conditions in these settlements, perpetuates cycles of poverty.

For women, who constitute a significant portion of the informal workforce—97 per cent of employed women in Bangladesh are in informal employment, according to the Bangladesh Labour Force Survey 2022[114]—this cycle is particularly vicious. In these contexts, demands for unpaid care work on women are heightened by precarious working conditions, living arrangements and community responsibilities.[115] These challenges are exacerbated by the lack of extended family support, leaving women solely responsible for care work.[116] Despite the assumption that increased household income from women's labour might lead to a more equitable distribution of care responsibilities, evidence suggests otherwise. In Dhaka slums, even as women's incomes rise, men are often less inclined to take on care responsibilities, further entrenching the gendered division of labour.[117]

Map 5. Distribution of Informal Settlements and Green Spaces in Dhaka's City



Source: Authors' elaboration using data from World Bank (2023b, 2023c, 2023d)

4.1.3 ACCESS TO BASIC SERVICES: WATER SUPPLY, TRANSPORTATION AND WASTE MANAGEMENT

Rapid urbanization has significantly impacted natural water resources, making water supplies a critical concern in Dhaka City. According to the Household Income and Expenditure Survey (HIES) 2022, approximately 19 per cent of households in Bangladesh rely on piped water supply, an increase from 12 per cent in 2016. [118] However, the majority—around 77 per cent—still depend on tube wells as their primary source of drinking water, and 4 per cent of households use alternative sources, such as ponds, rivers and other types of wells (e.g. rivers,

ponds, wells, canals). These water sources are often contaminated by discharge from pollution sources such as pit latrines and septic tanks,[119] posing serious health risks, particularly to women and children, who are more vulnerable to waterborne diseases.[120] The responsibility of securing clean, safe water, often scarce, largely falls on women, further increasing the demands of their caregiving and exacerbating gender inequalities.[121]

Poor water quality and limited access to water supply not only threaten the well-being of dependants but also require additional time and effort to procure goods that are critical for household consumption and survival. LULC data reveals that rapid urbanization often outpaces the development of essential services like water supply systems. Areas transitioning from agricultural or peri-urban land uses into densely populated urban zones frequently lack adequate water infrastructure. This disconnect between land use changes and infrastructure development explains why certain areas remain underserved. Rapidly growing areas, particularly peri-urban and informal settlements, are forced to rely on unsafe water sources like hand-pumped tube wells, as public utilities fail to keep pace with rapid urban expansion.

The transportation infrastructure in Dhaka City is characterized by narrow, congested roads and limited highways or expressways to ease vehicle movement.[122] Additionally, the roads are poorly maintained, with many lacking sidewalks or having sidewalks in disrepair. The Centre for Policy Dialogue (CPD) found that, on average, commuters in Dhaka City spent more than two hours outdoors daily, with over 46 minutes of that time spent stuck in traffic congestion, resulting in an annual waste of approximately 276 hours.[123]

Women, who may rely more on walking and public transportation, are disproportionately affected by the lack of safe and accessible public transportation options.[124] The significant time lost in traffic, combined with unsafe travel conditions, restricts women's mobility and access to essential services, including healthcare, education and employment opportunities.

Urban growth also exacerbates challenges in waste management, as the city's infrastructure struggles to keep pace. Dhaka's and municipal corporations' challenges in collecting more than half of the solid waste generated leads to unsanitary conditions, with waste often dumped in open landfills.[125] These conditions contribute to **environmental degradation and health hazards, disproportionately affecting low-income communities, where women are typically responsible for managing household waste and contending with the associated health risks.**[126]

This failure to address waste management further deepens gender inequalities, as women bear the greatest burden of environmental impacts. In low-income areas, women are forced to deal with the direct health risks of improper waste disposal, including exposure to toxic substances and heightened disease risk. These environmental challenges interact and reinforce each other, affecting the demand for care services. For example, environmental degradation caused by poor waste management leads to increased contamination of water sources and air pollution from burning waste, both of which contribute to health issues that often fall within women's caregiving responsibilities.

4.1.4 CLIMATE CHANGE AND NATURAL HAZARDS

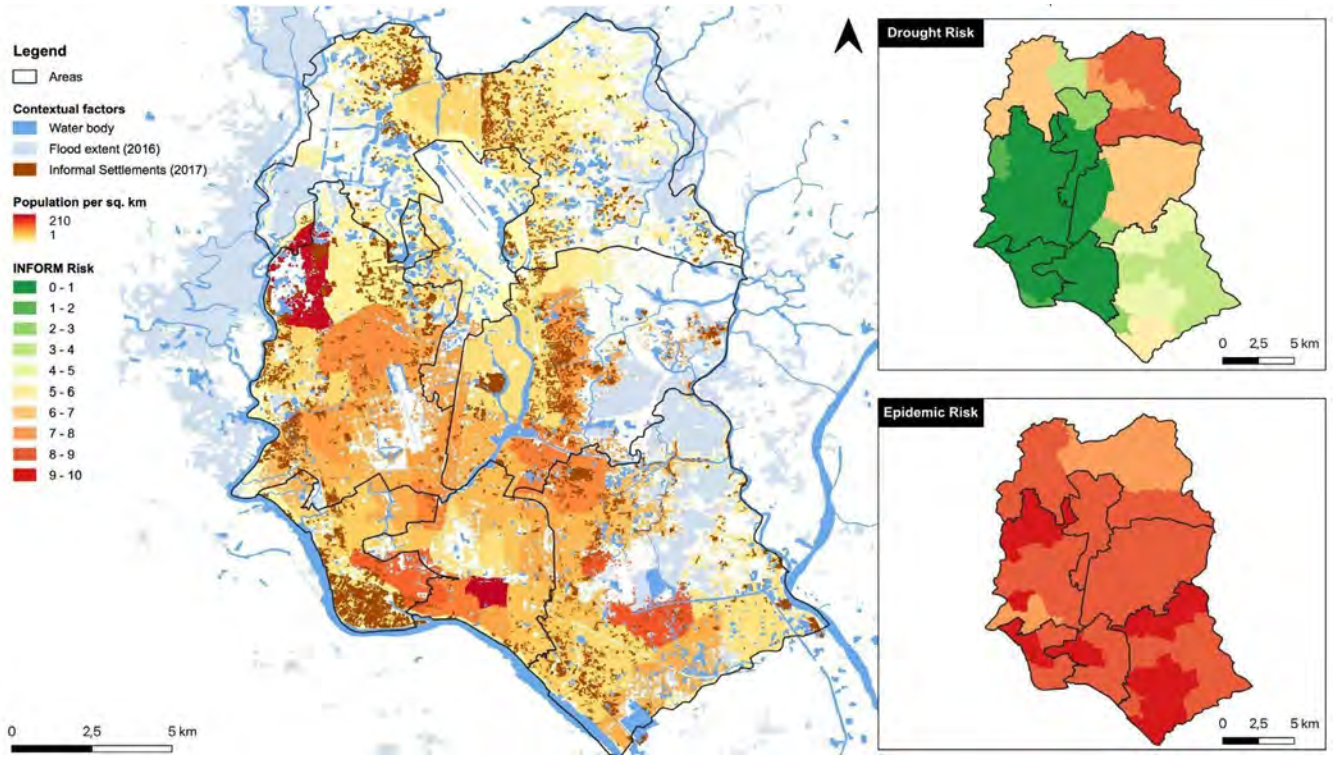
From 2018 to 2021, Dhaka City consistently ranked as the world's second-most polluted city globally.[127] During the winter months, the city's dangerously high levels of suspended particulate matter are three to four times above WHO standards. Proximity to industrial and traffic-heavy areas, along with shrinking green spaces, are key contributors closely linked to health risks, such as respiratory issues. Air pollution leads to serious health outcomes, including over 3,500 annual premature births.[128] **These environmental factors and associated health risks increase the demands on women for**

additional unpaid medical care.

Dhaka City has experienced multiple floods over the past decade, underscoring the city's susceptibility to natural hazards. Subject to changing rainfall patterns, Dhaka City has experienced an increase in both droughts and floods.[129] The city's flood risk is exacerbated by the effects of climate change, its topography and the location of many informal settlements in flood-prone areas (Map 6). Nearly 60 per cent of informal settlements have inadequate or poor drainage, making them particularly vulnerable to flooding.[130] Attention is especially needed for the eastern and southeastern areas, which not only face higher flood risks but also increased risks of epidemics. The northern residential area and the informal settlements concentrated in the southwest are also particularly susceptible to epidemics.

In May 2024, motivated by the need to implement localized mitigation and resilience strategies to address heavy rain, flooding and the risk of vector-borne diseases, the DNCC and DSCC published the city's first climate action plan, which was aligned with the Paris Agreement's goals.[131] When floods disrupt care services, both caregivers and their dependants are affected, underscoring the critical need to strengthen the resilience of care facilities to maintain their operational capacity during crises. **Dhaka City's vulnerability to climate change, particularly flooding, amplifies the demands on women, whose caregiving responsibilities are increasingly strained by climate-related health challenges.**

Map 6. Main Risks in Dhaka City - INFORM Risk Index



Source: Authors' elaboration using data from the European Commission (2022), The World Bank (2023a), The World Bank (2023b), WorldPop (2020a)

BOX 3: Summary Estimated Demand for Care Services

Dhaka City's demand for care services is shaped by its dense, rapidly urbanizing population and shifting demographics. The city has over 10 million residents, 75 per cent of whom are of working age, while 25 per cent are dependants, including young children and older persons. Currently, 859,456 children under the age of five and 353,032 older adults require care services. Of these, 11 per cent (approximately 94,483 children and 38,810 older persons) live in informal settlements, where access to affordable care is particularly limited. Approximately 1 per cent of dependants reside in high-risk flood zones and have been exposed to four or more flood events. Nearly 9 per cent of Dhaka City's residents live in areas with a lower flood risk, having experienced at least one flood event in the last 20 years. These figures underscore the urgent need for affordable care services that incorporate climate resilience measures.

Despite a low dependency ratio of 33, which indicates a predominantly young population, Dhaka City faces significant gaps in its formal care infrastructure. Caregiving responsibilities disproportionately fall on women, contributing to a low labour force participation rate of just 18 per cent. This is despite Dhaka's child-woman ratio being below the national average, highlighting systemic barriers that hinder women's economic opportunities.

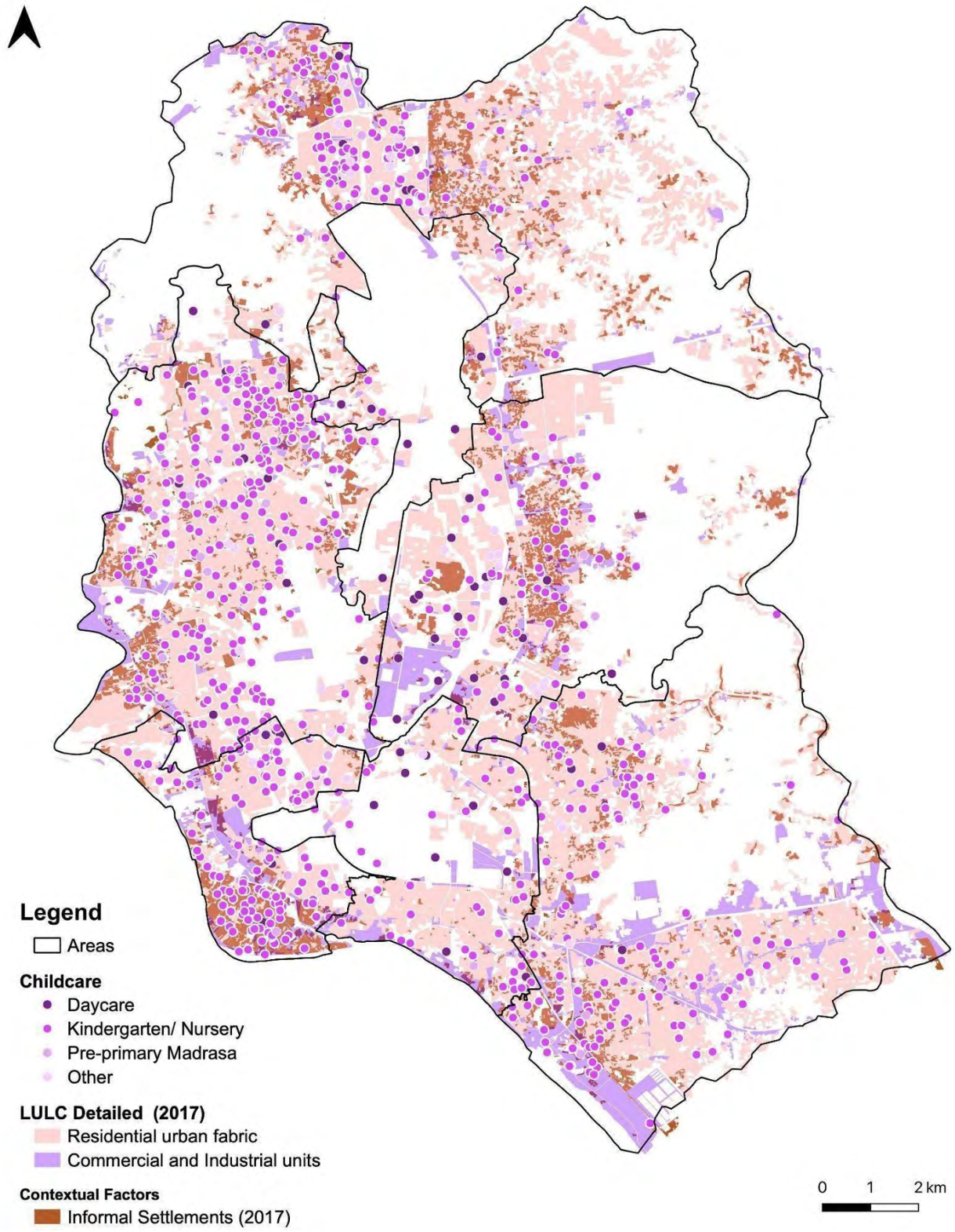
To address these challenges, Dhaka City urgently needs structured, accessible and affordable care services. Such services would help reduce inequalities, particularly for those in informal settlements and flood-prone areas, while alleviating women's caregiving burdens. In turn, this could enable greater female labour force participation, support the city's dependent population, and foster sustainable economic growth.

4.2 THE SUPPLY OF CARE SERVICES

The mapping of the supply yielded a total of 873 childcare facilities, with kindergartens—encompassing nurseries and pre-primary schools—being the most prevalent category. Over 700 facilities, representing 85 per cent of the total number of childcare facilities, fall into this category (Figure 3 and Map 7). The mapping also identified 69 daycares, 19 pre-primary madrasahs, and 44 facilities categorized as 'other'. **The analysis of the distribution of childcare facilities raises concerns regarding equity.** With approximately 7 per cent of Dhaka's population being preschool-aged (around 860,000 children), the current provision of 873 childcare facilities is likely insufficient, particularly considering the city's population growth.

The **geographical distribution also reveals a notable deficiency of childcare facilities in commercial and industrial areas.** These findings further underscore a potential disconnect between legal frameworks and their practical implementation. While the Bangladesh Labour Act of 2006 delineates important provisions to ensure the availability of childcare facilities in workplaces,[132] the results indicate that these regulations are not being effectively enforced. This gap highlights the necessity for stronger oversight and accountability mechanisms to translate legislative intent into tangible expansions of childcare services.

Map 7. Distribution of Childcare Facilities Across Dhaka City, by Type and Contextual Factors



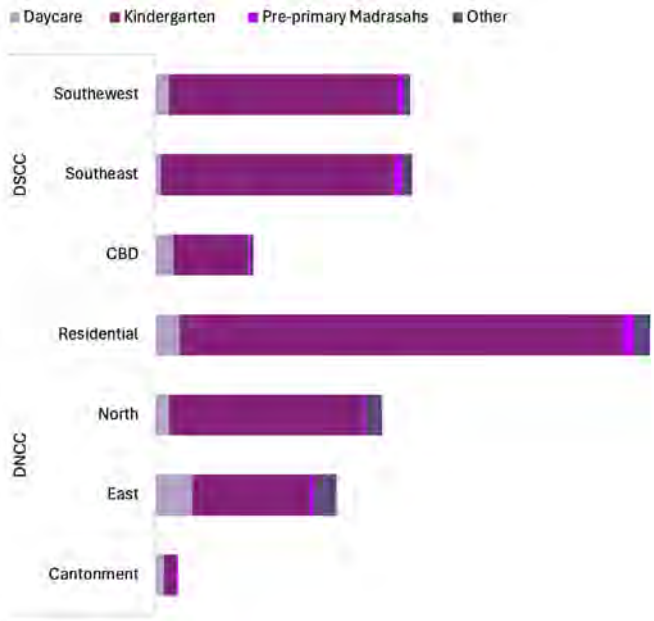
Source: Authors' elaboration using data from Table 5, World Bank (2023b), and World Bank (2023c)

The **demand for care services is particularly pressing in informal settlements, where caregivers—predominantly women—are more vulnerable.** Among the 1,624 informal settlements, 90 host a total of 146 childcare facilities, accounting for 19 per cent of all childcare facilities mapped in this research. Notably, approximately 40 of these facilities are concentrated in the southeastern area, particularly within the informal settlements of Kamrangir Char and Lalbagh. The presence of only 146 facilities in these areas signifies a substantial shortfall in childcare availability for underserved communities.

A study conducted among low-income households in Bangladesh highlights the severe consequences of this imbalance. It found that only 2 percent of full-time working mothers have access to employer-provided childcare, and just 1 percent rely on private care. The vast majority depend on extended family—most often other women and girls—to fulfill caregiving responsibilities.[133] Frequently, these young caregivers are the daughters or siblings of the working mothers, who, in addition to childcare, must undertake other domestic chores. This situation underscores the intergenerational transfer of care responsibilities and the perpetuation of gender inequalities, as young girls are socialized into caregiving roles from a very early age.

Given the significant risks associated with flooding, particularly within vulnerable communities, the lack of adequate childcare infrastructure in areas susceptible to flooding limits options for caregivers, especially women, during crises. Moreover, during flood events, children's safety and well-being are jeopardized as families are deprived of secure and accessible care environments. This underscores the urgent need for climate-resilient childcare infrastructure and the prioritization of childcare services in flood-prone and disaster-vulnerable areas, ensuring that families do not face disproportionate impacts from environmental hazards. Addressing this issue is essential for creating a more equitable and resilient care economy that can effectively support vulnerable populations in times of crisis.

FIGURE 3. Distribution of Childcare Facilities in Dhaka City, by Type



Source: Authors' elaboration

TABLE 9. Distribution of Childcare Facilities in Dhaka City, by Land use

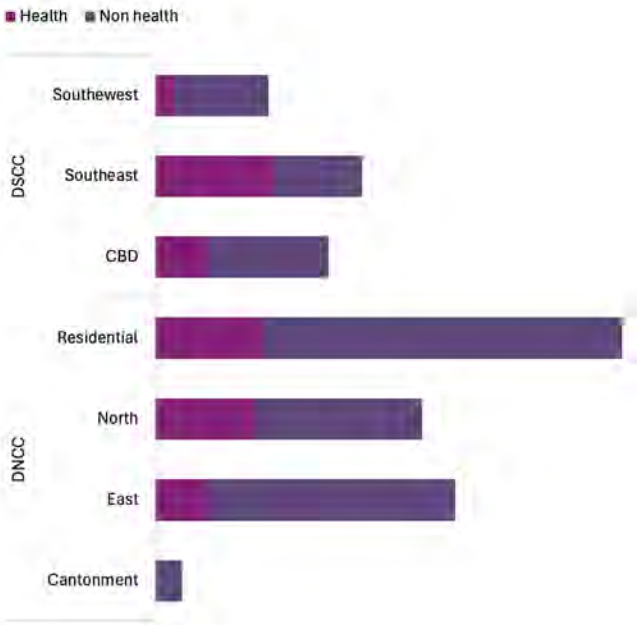
Land Use	Childcare Facilities	
	#	%
Formal, high density, continuous residential fabric	588	67%
Industrial, commercial, public, military and private units	135	15%
Formal, low-to-medium density, continuous residential fabric	86	10%
Roads and rail network and associated land	14	2%
Green urban areas	13	1%
Other	37	4%
Total	**873**	**100%**

Source: Authors' elaboration

The **analysis of the supply of care services for older persons in the Dhaka City reveals a higher prevalence of non-health-related facilities** (Figure 4). Non-health-related facilities focus on assisting with the activities of daily living and enhancing social well-being, rather than providing medical treatment. These facilities include assisted living communities, senior centres and adult daycare services, which offer support with activities such as bathing, dressing, meal preparation and transportation. While they do not provide intensive medical care, these facilities are designed for older adults who require assistance with personal care but do not necessitate constant medical supervision.

Health-related care facilities for older persons, such as nursing homes, skilled nursing facilities, and hospitals, prioritize medical support, continuous treatment and rehabilitation for older adults with chronic illnesses, injuries or disabilities. These facilities typically employ healthcare professionals to manage residents' medical needs, encompassing medication administration, health condition management and rehabilitative care. This distinction has implications for the independence and quality of life of older adults; while non-health-related facilities provide a short-term solution for caregivers, health-related facilities offer a long-term solution.

FIGURE 4. Distribution of Care Facilities for Older Persons in Dhaka City, by Type



Source: Authors' elaboration

TABLE 10. Care Facilities for Older Persons in Dhaka City, by Land Use

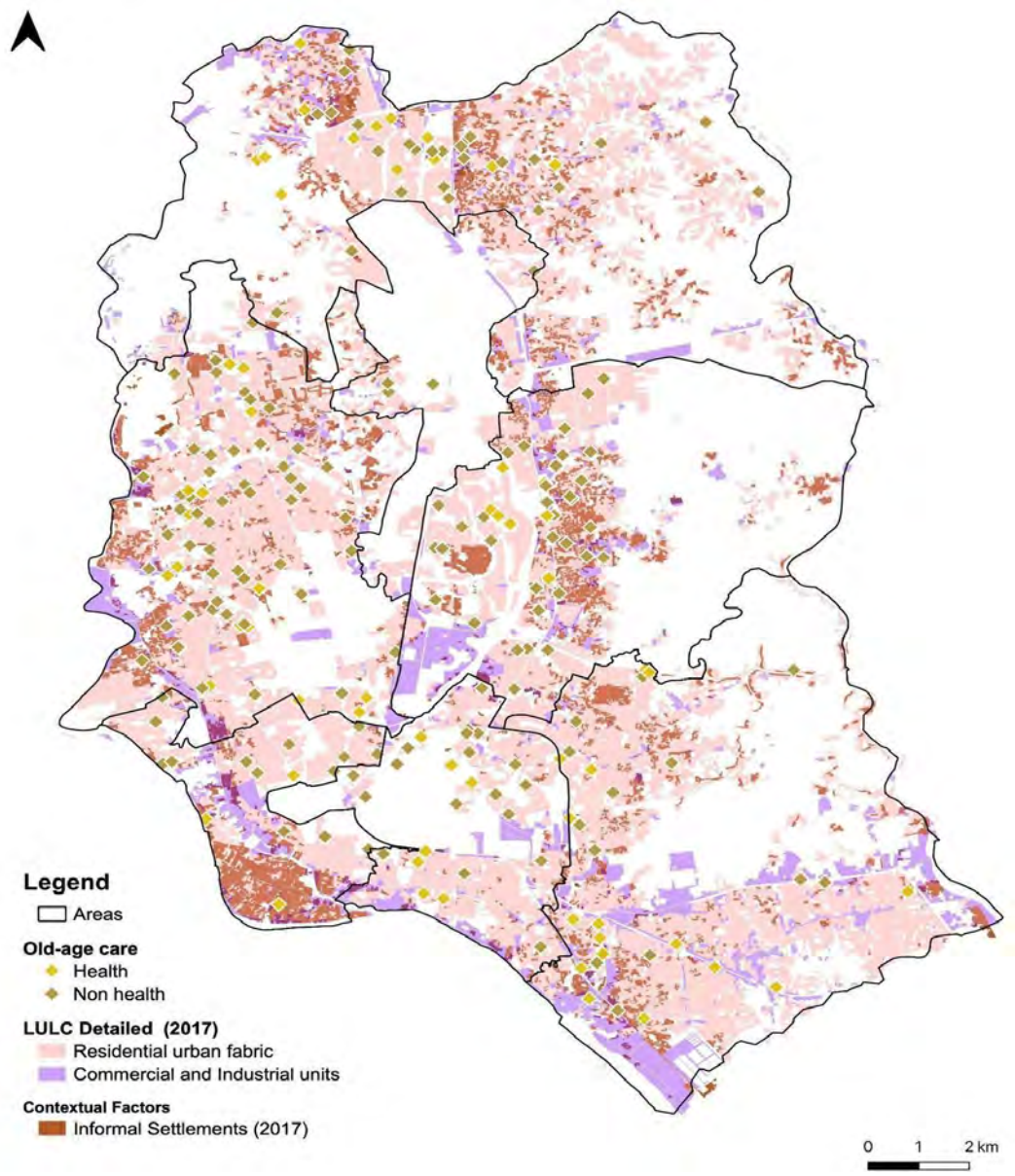
Land Use	Childcare Facilities	
	#	%
Formal, high density, continuous residential fabric	152	65%
Industrial, commercial, public, military and private units	45	19%
Formal, low-to-medium density, continuous residential fabric	20	9%
Roads and rail network and associated land	5	2%
Other	11	5%
Total	**233**	**100%**

Source: Authors' elaboration

Most care facilities for older persons are concentrated within the urban residential fabric and the central business district (CBD) (Map 9). In stark contrast, only 21 out of 1,624 informal settlements have mapped care facilities for older persons, with most of these settlements housing only one or two facilities, resulting in a total of just 23 facilities across the entire city. While this distribution is markedly different from that of childcare facilities, the analysis reveals similar trends, particularly highlighting **a significant shortfall in the availability of care services for older persons in underserved communities.**

Moreover, 14 facilities (6 per cent) were exposed to at least one flood event in the last 20 years, which raises serious concerns regarding the availability, adequacy and preparedness of these areas during crises, including for caregivers. This observation corresponds with the analysis of childcare supply, where 64 childcare facilities (7 per cent) were exposed to at least one flood event since 2004, emphasizing the urgent necessity for climate-resilient care infrastructures and the prioritization of care services for both children and older adults in flood-prone and disaster-vulnerable regions. Ensuring that families are not disproportionately affected by environmental risks is crucial for protecting vulnerable populations during crises.

MAP 9. Distribution of Care Facilities for Older Persons Across Dhaka City, by Type and Relevant Contextual Factors



Source: Authors' elaboration using data from Table 5, World Bank (2023b), and World Bank (2023c)

The predominance of non-health-related facilities over health-related ones can be attributed to several factors. In Bangladesh, social norms foresee family members providing care for older adults at home. This cultural norm often diminishes the demand for care facilities in general. Financial constraints are among the most significant barriers to accessing formal care services for older persons due to the high cost of private health-related long-term care centres. Many older adults rely financially on their children, who may not possess the means to afford specialized long-term care. Additionally, the public healthcare system is frequently overwhelmed by a high patient load across all age groups, and the shortage of specialized professionals exacerbates the challenges faced by the older population. On the other hand, non-health-related facilities address a growing demand stemming from the erosion of traditional family care networks.

As increasing numbers of young individuals migrate to other cities or countries for employment opportunities, fewer family members are available to provide care for elderly relatives, thereby weakening the traditional safety net. Although these facilities present a more affordable care alternative, they remain inaccessible to many households, resulting in a gap in support for those who can no longer rely on unpaid caregiving. Furthermore, these facilities contribute to alleviating social isolation, a prevalent issue among the elderly population that significantly affects their mental health. Additionally, Dhaka City may face limitations in healthcare infrastructure, with fewer resources allocated to the establishment of specialized health-related care facilities. For example, specialist geriatricians are still scarce in Bangladesh, and there have been only limited public-sector initiatives beyond the establishment of a dedicated geriatric unit at Dhaka Medical College Hospital in 2014.[134]

4.3 ASSESSMENT OF ACCESSIBILITY

At first glance, the analysis reveals that childcare centres are generally accessible, with around 80 per cent of the population living within a 15-minute walk or drive of at least one facility. However, **optimal accessibility to childcare services extends beyond mere physical proximity; it also necessitates adequate capacity to meet the needs of the population.** Research indicates that critical factors such as staff-to-child ratios, staff qualifications, centre location and working conditions significantly contribute to promoting child development.[135] These structural elements indirectly influence children's growth and learning by shaping the quality of interactions between staff and children in a dynamic, reciprocal process.[136] Given these factors, while proximity to facilities may be favourable, the area appears to be underserved, potentially facing inadequacies, particularly regarding staff-to-child ratios and overall service quality.

The American Academy of Pediatrics, the American Public Health Association, and the National Resource Centre for Health and Safety in Child Care and Early Education recommend the following staff-to-child ratios, which refer to the number of children each childcare staff member is responsible for supervising: 1:3 for infants younger than 12 months; 1:4 for children aged 13–35 months; 1:7 for preschoolers up to 3 years; and 1:8 for preschoolers up to four years.[137]

When adjusted for population, Dhaka City is markedly underserved, with only 873 childcare centres available for 859,456 children aged 0 to 4, resulting in an average of just one facility per 1,000 children, below the recommended benchmarks. When the number of facilities is insufficient for the population, even if physical proximity is adequate, the quality of care services is likely to be compromised due to overcrowded centres and overextended resources. This imbalance can lead to long waiting lists, overburdened facilities, and a decline in quality standards, negatively affecting both children and the working parents who rely on these services.[138]

In terms of travel distance by walking or motorized vehicle, the western area of the Dhaka City, encompassing the southwest residential area and the CBD, exhibits strong accessibility to childcare facilities. The average travel times to the nearest centre, using the selected modes of transportation, range from four to six minutes. This efficiency is underscored by the blue and green zones on the travel time map, as well as the lighter green areas on the average travel time map (Map 10). These regions benefit from a well-distributed network of childcare services, resulting in minimal travel times and very low percentages of uncovered populations (ranging from 0 to 1 per cent). The southwest region is particularly notable, housing 145 facilities and possessing the lowest average travel time by motorized vehicle or walking—4.18 minutes—signifying an optimal distribution of childcare services. However, when adjusted for

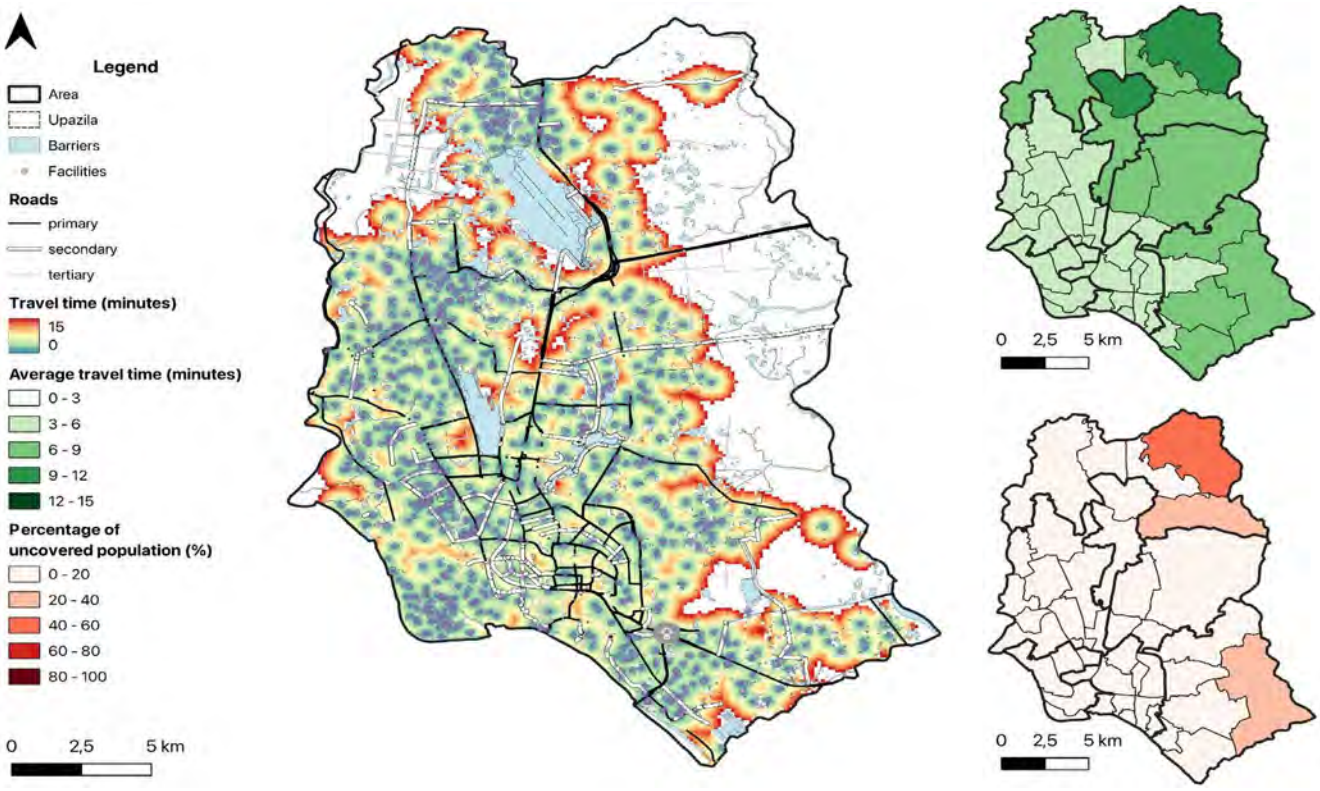
the population of children aged 0 to 4, this area averages only two facilities per 1,000 children.

The eastern segment of the Dhaka City (east and southeast areas) demonstrates moderate, yet still optimal, travel times, with averages ranging between six and eight minutes. However, approximately 5 per cent of the population remains beyond the 15-minute maximum travel time threshold. Moreover, with fewer than one facility per 1,000 children (0.8 and 0.7, respectively), coverage is inadequate and poses considerable challenges in ensuring accessibility for all children.

Finally, the northern area has a slightly longer average travel time of approximately eight minutes, though it remains within the 15-minute accessibility threshold (Map 10). However, this region also has the highest percentage of underserved populations, with 18 per cent overall lacking adequate coverage. In some upazilas, 40 to 60 per cent of the population must travel more than 15 minutes by motorized vehicle or on foot to reach the nearest facility. These findings highlight the urgent need to expand childcare facilities in this area to address significant service gaps.

In contrast, despite the residential area being well-connected in terms of accessibility, it exhibits a coverage deficit when adjusted for the child population. With 241,923 children, it averages merely one facility per 1,000 children. The situation is even more pronounced in the CBD, where the ratio decreases to less than one facility per 1,000 children (0.5), revealing a significant shortfall in childcare provision.

MAP 10. Travel Time (Left), Average Travel Time (Upper right) and percentage of Uncovered Population (Bottom right) for Childcare



Source: Authors' elaboration using data from AccessMod's results

TABLE 11. Accessibility and Coverage of Childcare Services for Children Under the Age of Five Years, by Area

Region	Number of Facilities	Child Population	Facilities per 1,000 Children	Uncovered Child Population	Mean Travel Time (minutes)	Percentage of Uncovered Child Population (%)
Southwest	145	65244	2.2	0	4.18	0.00
Residential	281	241923	1.2	791	5.00	0.33
CBD	56	120847	0.5	0.5	5.09	0.00
East	103	133394	0.8	468	6.32	3.51
Southeast	146	208614	0.7	14032	6.76	6.73
North	129	69300	1.9	12406	7.47	17.90
Cantonment	13	20134	0.6	903	8.37	4.48
Total	**873**	**859.456**	**1,0**	**28.600**	-	**3,3%**

Note: Child population refers to children below age five

Source: Authors' elaboration

Similar to the findings regarding access to childcare services, the accessibility of care facilities for older persons within the city appears, at first glance, to be generally adequate. However, **when adjusted for population, the city is underserved, with fewer than one facility per 1,000 residents aged 65 and older.** Facilities are concentrated in the residential urban fabric and the CBD, leaving peripheral areas with limited access. This centralization creates challenges for residents living outside these areas, particularly for the most vulnerable elderly populations residing in lower-income areas who may struggle to access these services due to geographical distance and limited transportation options.[139] This is concerning because older adults are more likely to experience diminished physical capacity, and longer travel times can discourage them from seeking the care they require.[140]

The analysis by area reveals some paradoxical findings. While the northern region has the longest transit time of approximately eight minutes by motorized vehicle or walking, it still falls within the 15-minute accessibility threshold. It also boasts the highest rate of facilities for older persons, with 1.4 facilities per 1,000 persons aged 65 and older. In contrast, the CBD is among the areas with the shortest travel times but has one of the lowest rates of care facilities per elderly population (0.5 per 1,000 persons aged 65 and older). **In terms of uncovered populations, rural areas show the highest levels of unmet needs.** For example, in the northern region, areas like Khilkhet have over 80 per cent of the population living more than 15 minutes away by walking or motorized vehicle from the nearest facility. Similarly, the southeastern region has almost 40 per cent (38.20 per cent) of its population outside the accessibility threshold.

The optimal staff-to-patient (or staff-to-resident) ratio in care settings for older persons depends on the level of care required, the type of facility, and national or regional guidelines. While there is no universal standard, various organizations and countries provide recommendations to ensure quality care and safety for elderly residents. No specific minimum standards for staff-to-patient or staff-to-resident ratios in elderly care settings in Bangladesh were available. It is notable that, in general healthcare, Bangladesh does not meet

the WHO's minimum thresholds for doctors and nurses per 10,000 people.[141] Further, a significant share of healthcare professionals in 2021—35 per cent of doctors and 30 per cent of nurses—were concentrated in just four major cities (Chattogram, Dhaka City, Khulna and Rajshahi), which collectively serve only 15 per cent of the population.[142] This concentration leaves the rest of the country even more severely underserved.

For example, the United States Centres for Medicare and Medicaid Services (CMS) recommends a minimum standard of one registered nurse per 20–25 residents during daytime hours, and one registered nurse per 30 residents at night.[143] In assisted living facilities, staffing levels tend to be lower, as residents typically require less medical care. There is often a ratio of one caregiver to 10–15 residents, although this varies significantly based on residents' needs and the size of the facility. Although this study did not specifically measure the number of staff or caregivers per resident, the finding of fewer than one facility per 1,000 residents aged 65 and older suggests not only a shortage of facilities, but also a likely deficiency in the workforce providing care services for the elderly population.

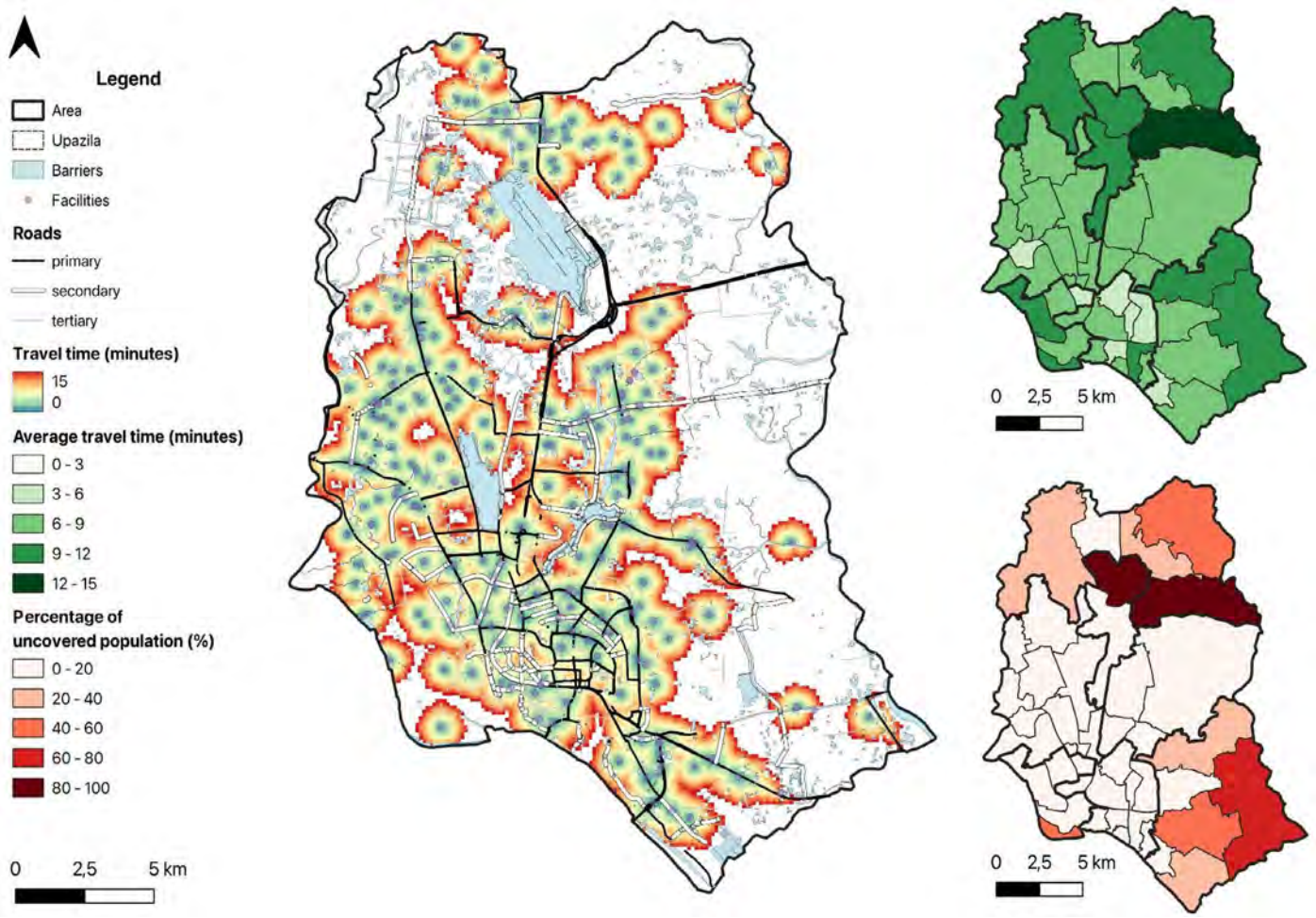
TABLE 12. Accessibility and Coverage of Care Services for Older Persons, by Area

Area	Number of facilities	Elderly Population	Facilities per 1,000 Elderly	Uncovered Older Population	Mean Travel Time (minutes)	Percentage of Uncovered Older Population (%)
CBD	26	49,635	0.5	1,661	6.36	3.35
East	45	54,789	0.8	6,019	7.59	10.99
Residential	70	99,365	0.7	7,639	7.60	7.69
Southwest	17	26,798	0.6	3,203	8.09	11.95
Southeast	31	85,711	0.4	32,741	8.67	38.20
North	40	28,464	1.4	9,653	8.83	33.91
Cantonment	4	8,270	0.5	1,908	10.27	23.08
Total	**233**	**353,032**	**0.7**	**62,824**	**-**	**17.8%**

Note: 'Older population' refers to people 65 years of age and above

Source: Authors' elaboration

MAP 11. Travel Time (Left), Average Travel Time (Upper right) and percentage of Uncovered Population (Bottom right) for Elderly Care



Source: Authors' elaboration using data from AccessMod's results

4.4 INTRA-CITY ANALYSIS AND POLICY IMPLICATIONS

This section explores the characteristics of care provision in each area, with an emphasis on how population density and the number of care facilities per 10,000 inhabitants impact access and service delivery for childcare (Table 13) and care for older persons (Table 14). This analysis is essential for evaluating the adequacy of care services, especially in densely populated areas and vulnerable communities, such as informal settlements.

TABLE 13. Summary Statistics of the Demand of Care Services, by Area

	CBD	Southeast	Southwest	Residential	East	North	Cantonment	Dhaka City
Total Population	1,721,647	2,966,343	929,507	3,446,561	1,900,346	987,279	286,839	12,238,521
Total Female Population	776,894	1,339,438	419,440	1,555,261	857,540	445,512	129,436	5,523,521
Pre-schooling Age and Toddlers (<5)	120,847	208,614	65,244	241,923	133,394	69,300	20,134	859,456
Elderly People (65+)	49,635	85,711	26,798	99,365	54,789	28,464	8,270	353,032
Contextual factors: Average of shares among total surface area per Area (%)								
Open & Green Areas	20%	16%	10%	17%	12%	26%	52%	20%
Informal Settlements	3%	7%	21%	10%	8%	7%	2%	8%
Agricultural Area	0%	27%	0%	2%	12%	20%	1%	13%
Urban Fabric	40%	41%	63%	52%	33%	38%	18%	40%
Industrial, commercial, public, military, private and transport units	46%	14%	22%	27%	15%	10%	54%	21%
Mine, dump and construction sites	0%	6%	5%	4%	25%	16%	1%	11%
Flood Extent (2016)	0%	15%	1%	3%	11%	13%	1%	9%

Note: The values are calculated using an average of each upazila.

Source: Authors' elaboration using data from WorldPop (2020b), World Bank (2023c), and World Bank (2023a).

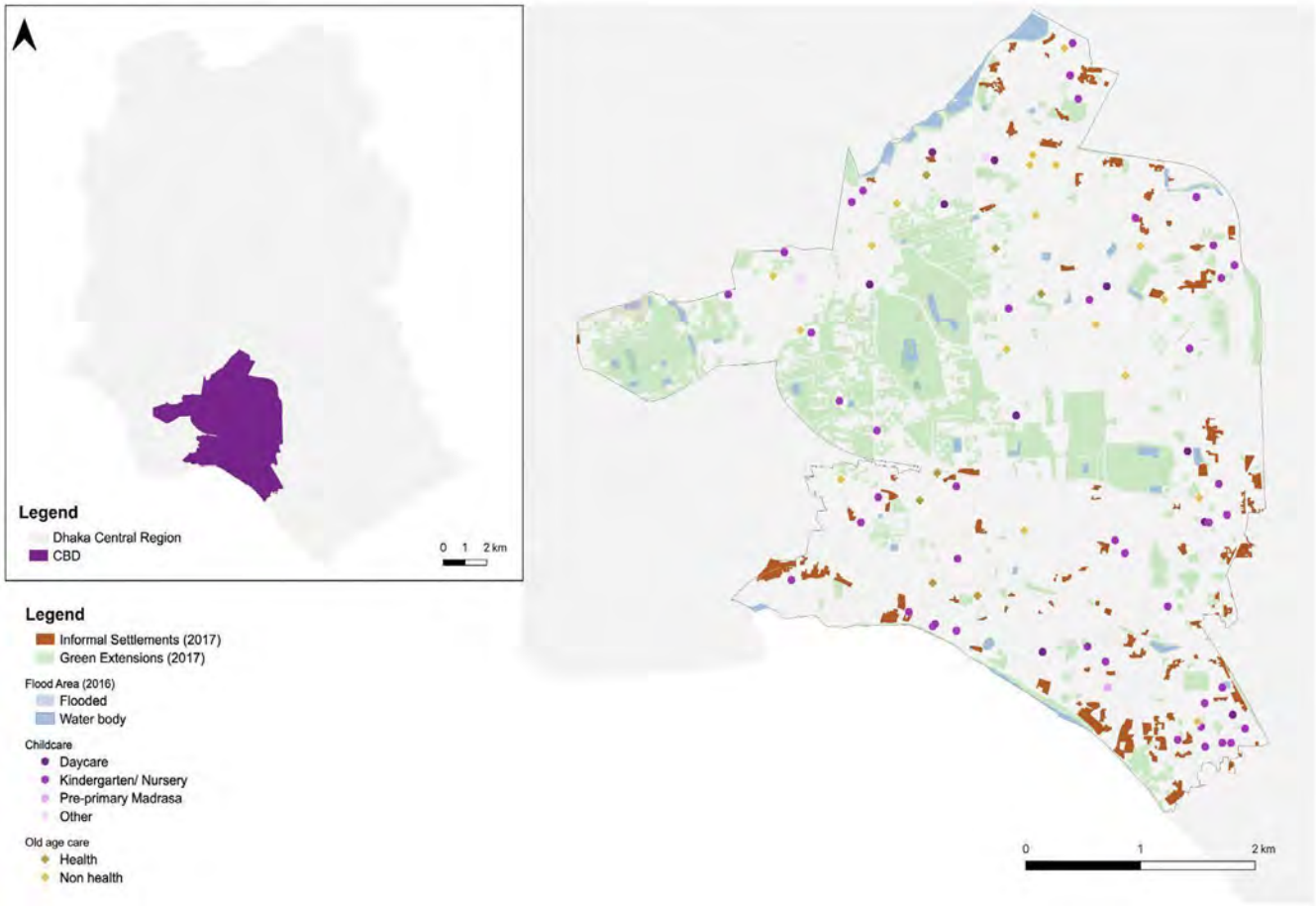
TABLE 14. Summary Statistics of the Supply of Care Services, by Area

CC	Area	Preschool-age Children per km2	Older persons per km2	Facilities per km2		Facilities per 10.000	
				Care for children	Care for older persons	Preschool children	Older persons
DNCC	Cantonment	1,059	435	1	0.2	6	5
	Residential	4,786	1,966	6	1	12	7
	East	2,577	1,058	2	1	8	8
	North	909	373	2	1	19	14
DSCC	CBD	5,568	2,287	3	1	5	5
	Southeast	3,144	1,292	2	0.5	7	4
	Southwest	4,145	1,702	9	1	22	6
Dhaka Central Region		**2,852**	**1,172**	**3**	**1**	**10**	7

Source: Author's elaboration using data from Table 7 and WorldPop (2020b).

4.4.1 DHAKA SOUTH CITY CORPORATION

Area 1: Central Business and Historic District (CBD)



Upazilas covered in CBD: Bangshal, Chak Bazar, Gendaria, Kotwali, Motijheel, New Market, Paltan, Ramna, Shahbagh and Sutrapur

The CBD serves as the vibrant core of Dhaka's Central Region, encompassing key business and historic districts. It is not only a hub of economic activity, but also **the area with the highest population density of both preschool-aged children and older adults.** This unique demographic concentration places substantial pressure on the area, requiring a careful balance between preserving its rich historical legacy and meeting the growing needs of its diverse residents.

The CBD is heavily urbanized, with 40 per cent of its space dedicated to urban fabric and 46 per cent allocated to industrial and commercial units. Despite the area's strong economic infrastructure, **there is a significant shortage of care facilities**, a critical issue given the dense population of 79,320 people per square kilometre, including 5,568 children and 2,287 older adults.

There are only three childcare facilities per square kilometre and five for every 10,000 children, far below what is needed to support the area's young population. Additionally, the absence of pre-primary schools underscores a dependence on non-educational childcare options, which may not adequately support early childhood development.

For older adults, the situation is equally challenging. With only one care facility per square kilometre and five per 10,000 older adults, the availability of care services falls short of demand.

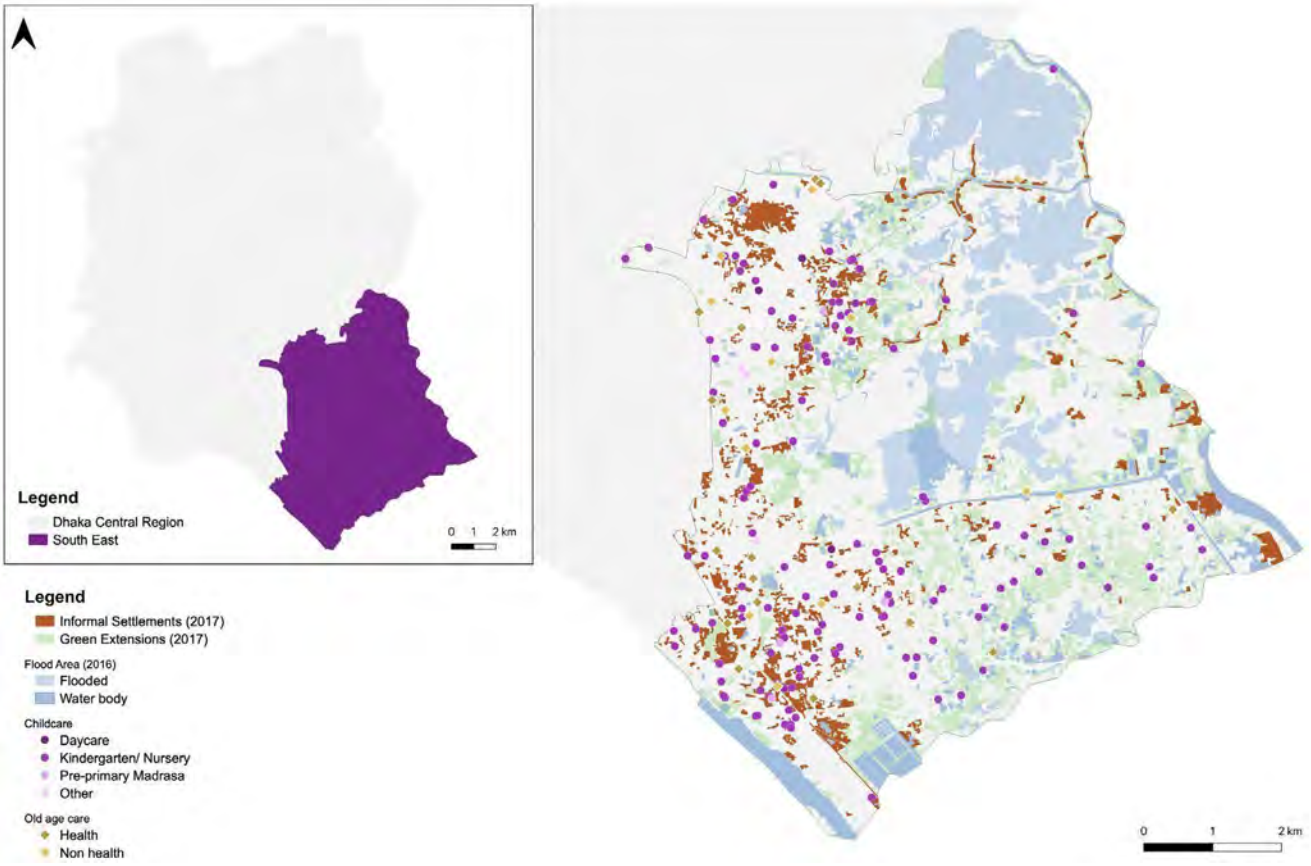
While the CBD ranks high in non-health-related services, it lacks sufficient health-related care for its older population, with almost twice as many non-health facilities. This imbalance is concerning, particularly given the area's high epidemic risk, which could have serious consequences for the elderly population.

Although high urbanization is typically associated with increased resources, in this area, it strains the provision of care services rather than enhances them. The heavy emphasis on commercial and industrial development, paired with limited green space (only 20 per cent) and inadequate social services, has diverted attention from essential infrastructure for care services. This imbalance makes it difficult to meet residents' needs. Additionally, problems like traffic congestion, pollution and constant noise not only worsen living conditions but also limit access to care facilities, endangering the health and well-being of the most vulnerable populations.

Despite these challenges, the CBD offers opportunities to improve the care environment. For instance, childcare facilities are highly accessible, with average travel times by motorized vehicle or on foot to the nearest centre ranging between four and six minutes. The well-distributed network ensures minimal travel times and complete coverage, with no population left without access. Similarly, care services for older adults in the CBD are the most accessible compared to other areas, with an average travel time of 6.36 minutes and only 3.35 per cent of the older population without coverage. These advantages position the CBD as a promising area for the further development of care services, with strong accessibility already in place for both young and older individuals.

In conclusion, while the CBD's economic strength and accessibility to certain care services provide a solid foundation, this area faces significant challenges in meeting the needs of its densely concentrated population. The shortage of facilities for children and older adults, combined with the pressures of urbanization and limited green spaces, underscores the urgent need for a more balanced approach to development. Addressing these gaps will be crucial in ensuring the well-being of the area's most vulnerable residents while maintaining its role as the economic heart of Dhaka City.

Area 2: Southeast



Upazilas covered in southeast area: Demra, Jatrabari, Kadamtali, Khilgaon, Sabujbagh and Shyampur

Although the southeast is the least densely populated area within the DSCC, with 3,144 preschool-aged children and 1,292 older adults per square kilometre, it still faces significant gaps in care services. Industrial activities and ongoing construction projects indicate a growing need for childcare support to meet the demands for care services for the local workforce, as mandated by the Bangladesh Labour Act of 2006. However, childcare provisions fall far short of meeting this demand, with only seven facilities per 10,000 children. This disparity between legal requirements and actual services raises serious concerns about the well-being of working families, particularly women, who are disproportionately impacted by the lack of sufficient childcare options.

Previous evidence revealed that only 23 per cent of surveyed companies provided any form of childcare for their employees, and 41 per cent had moderate familiarity with the childcare requirements outlined in the Act.[144] This low rate of compliance highlights deeper issues regarding policy enforcement and awareness, which, if unaddressed, could undermine the area's potential for sustainable growth and gender equality in the workforce.

The southeast also faces a significant shortage of care services for older adults, **with just 0.5 facilities per square kilometre, highlighting a major gap in support for this population.** While the area benefits from a relatively high concentration of green spaces (16 per cent), offering potential health and wellness benefits like outdoor recreation for both children and older individuals, these do not compensate for the lack of essential care services. The limited availability of care for both children and older individuals suggests that the region is failing

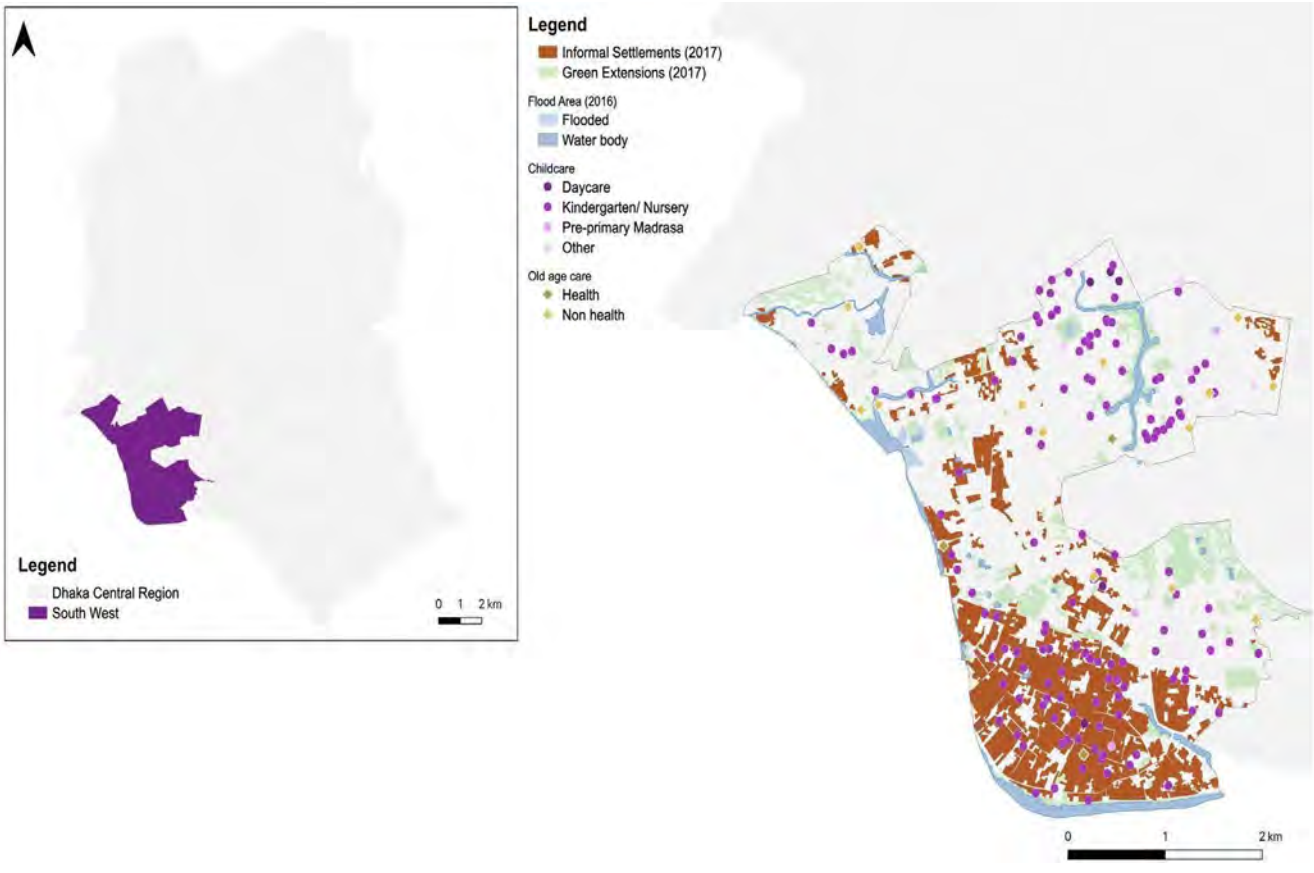
to meet the critical needs of its most vulnerable populations.

The area's 27 per cent agricultural land reflects its rural characteristics, which likely contribute to the scattered distribution of care facilities compared to highly urbanized areas. Additionally, with 7 per cent of the area occupied by informal settlements, many residents may struggle to access formal care services, emphasizing the need for targeted interventions in these communities.

Accessibility data supports this concern: **the southeast ranks among the top three areas with the longest average travel times to the nearest childcare facilities, at 6.76 minutes.** It also has the second-highest percentage of uncovered child population, at 6.73 per cent. The situation is even more severe for older adults, with an average travel time of 8.67 minutes to the nearest care facility (by motorized vehicle or walking) and the highest percentage of uncovered elderly population at 38.2 per cent. These findings underscore the region's pressing need for improved care infrastructure, particularly for its most vulnerable populations.

In conclusion, despite its relatively low population density, the southeast faces significant challenges in meeting the care needs of its population. The combination of inadequate care services for children and older persons, along with long travel times, and a high percentage of uncovered populations highlights critical gaps in care infrastructure. While the region's green spaces offer potential health benefits, these do not compensate for the urgent need to align care services with policy requirements and the needs of working families and vulnerable older residents.

Area 3: Southwest



Upazilas covered in southwest area: Dhanmondi, Hazaribagh, Kalabagan, Kamrangir Char and Lalbagh

The southwest area of Dhaka Central Region has a population density of 59,052 people per square kilometre and ranks as **the third most densely populated area for preschool-aged children,** with 4,145 children per square kilometre. This places it just behind the CBD and residential areas, underscoring the urgent need for robust care services to support its younger population. The area is characterized by an extensive urban fabric (63 per cent) and a substantial industrial and commercial presence (22 per cent). As rapid urbanization reshapes the area, older residential zones are being replaced by modern developments, in line with Dhaka's broader growth trends. This transformation has led to a notable expansion of childcare facilities, with the southwest now hosting the highest concentration of such services in the region, offering nine facilities per square kilometre and 22 per 10,000 children. This increase in childcare infrastructure is a direct response to the growing population and the rising demand for care services spurred by new developments. While this expansion is encouraging, it also underscores the critical importance of maintaining and scaling care services to keep pace with ongoing urbanization, ensuring that both current and future needs of the area's young population are adequately met.

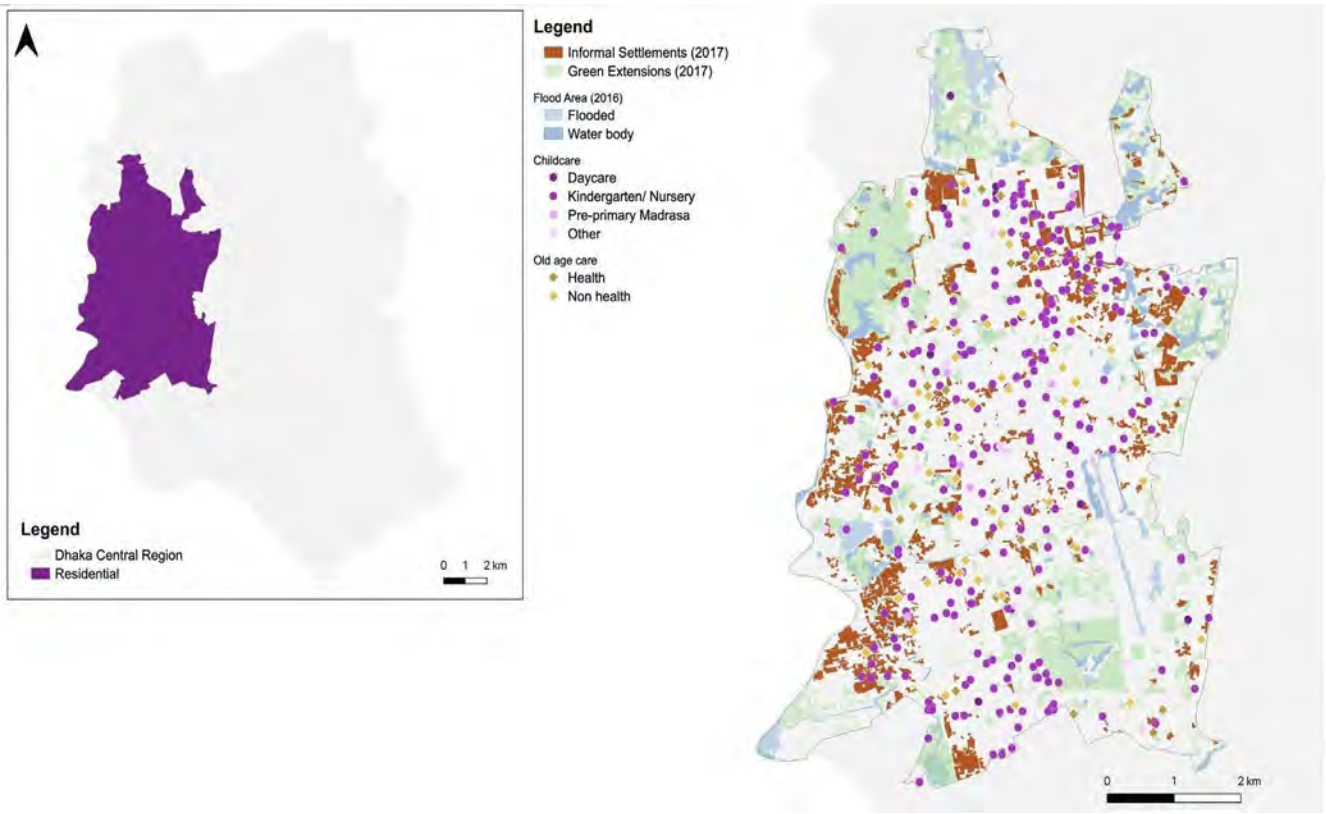
Despite the overall high number of childcare facilities, the distribution in the southwest reveals significant disparities. **Few of these services are located in informal settlements, underscoring stark economic inequalities that disproportionately impact women in these vulnerable areas.** Given that neighbourhoods play a vital role in child development by providing access to essential resources and opportunities, this unequal distribution of childcare is particularly concerning.[145] To ensure all children have equal access to these critical services, it is essential not only to expand childcare infrastructure but also to prioritize equitable distribution, especially in underserved, economically disadvantaged areas. This approach is crucial for promoting both child development and social equity.

The challenges are even more severe for the older population of adults in the southwest. Despite a significant density of older residents (1,702 per square kilometre), **the area is critically underserved in terms of care for older persons, with only one facility per square kilometre and six per 10,000 older adults.** This shortage poses a serious risk to older residents, especially as the area undergoes rapid urban development. Compounding the issue is the low proportion of green spaces (10 per cent), which limits recreational and wellness opportunities for older adults, and the high percentage of informal settlements (21 per cent), which may further restrict access to essential care services. The lack of adequate infrastructure for older adults highlights the pressing need to address these gaps, ensuring that the area's ageing population is not left behind as urbanization progresses.

In conclusion, while the southwest area has seen progress in expanding childcare services to accommodate its growing population, significant gaps remain, particularly in underserved areas like informal settlements. These disparities not only affect children but also highlight critical shortages in care for older persons, leaving a vulnerable population without sufficient support. As urbanization continues to reshape the area, it is essential that care systems evolve alongside it, with a focus on equitable distribution and access to both childcare and services for older persons.

4.4.2 DHAKA NORTH CITY CORPORATION

Area 4: Residential Area



Upazilas covered in residential area: Adabor, Darus Sala, Kafrul, Mirpur, Mohammadpur, Pallabi, Shah Ali, Sher-e-bangla Nagar and Tejgaon

The residential area of Dhaka Central Region stands out with a notably high population density of 68,178 people per square kilometre, including significant numbers of both children (4,786 per km²) and older individuals (1,966 per km²). **This makes it one of the most demographically diverse areas in terms of age**, second only to the CBD. The urban landscape balances green spaces (17 per cent) with informal settlements (10 per cent), while the majority of land is devoted to urban fabric (52 per cent) and industrial or commercial activities (27 per cent).

These figures suggest that the area benefits from relatively developed infrastructure. **The availability of childcare services aligns well with the population's needs, offering six centres per square kilometre and 12 per 10,000 children.** This provision highlights the area's efforts to meet the rising demand for early childhood support services, which is essential in such a densely populated and economically active region. Accessibility is also strong, with an **average travel time by motorized vehicle or walking of just five minutes to the nearest facility, and only 0.33 per cent of the child population left uncovered.** Reliable childcare plays a critical role in urban environments, where working families depend on these services to balance their professional and personal lives. This level of provision not only supports families but also strengthens social equity by enabling greater workforce participation, especially for women.

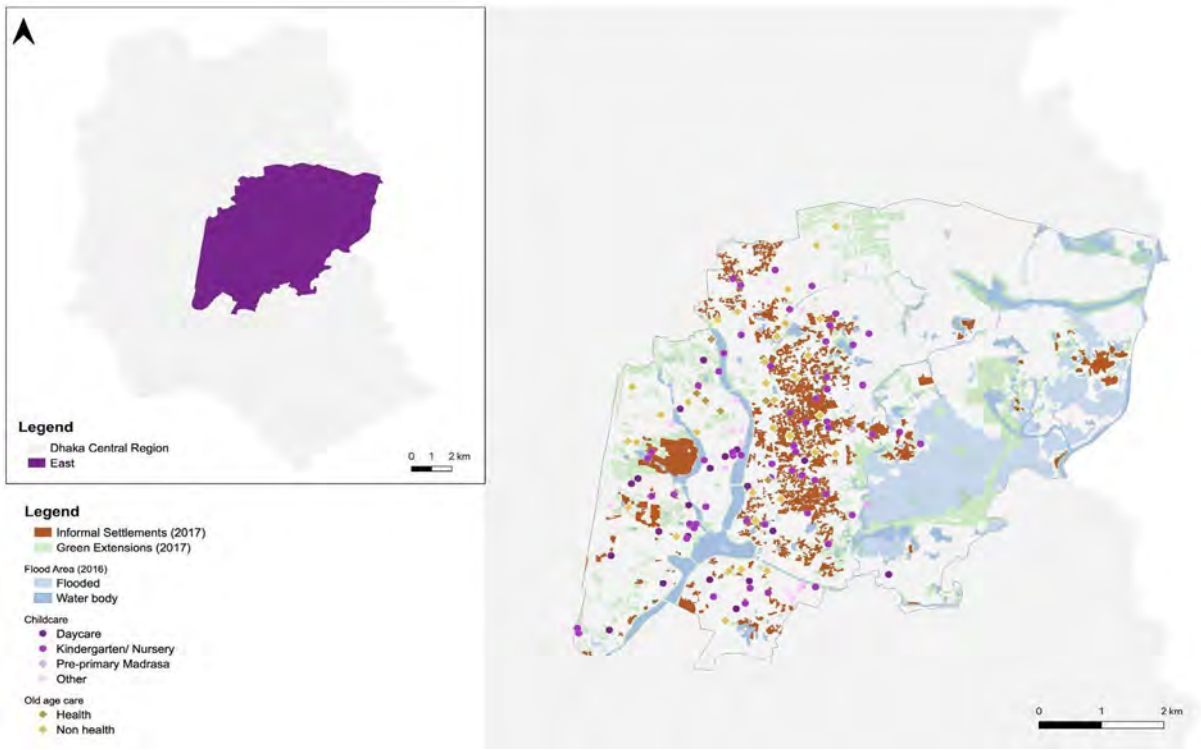
However, despite the positive strides in childcare services, **the provision of care for older persons in the residential area remains critically insufficient.** With a substantial elderly population, the area offers just one care facility for older persons per square kilometre and only seven facilities per 10,000 older residents. This stark shortfall is particularly alarming given the sizeable ageing demographic, highlighting a major gap in support for one of the most vulnerable segments of the population.

Equally troubling is the accessibility of care services for older persons, with an average travel time of over seven minutes to the nearest facility, leaving nearly 7.7 per cent of the elderly population without coverage. The lack of adequate care services for older adults in such a densely populated area underscores the urgent need for a more balanced approach to care infrastructure, ensuring that both young and old receive the necessary support.

Additionally, the mixed land use in the residential area, which divides space between urban fabric, industrial/commercial zones and green spaces, presents both opportunities and challenges for care systems. Green spaces offer environmental and social benefits, such as recreational areas and improved air quality, which can positively impact the well-being of residents, particularly children and older adults. However, **the large proportion of industrial and commercial zones places pressure on the area's infrastructure, limiting the potential for expanding essential social services.** This is evident in the inadequate number of care services for older persons available in the area. Furthermore, the presence of informal settlements, home to some of the city's most vulnerable populations, complicates access to necessary services, deepening existing inequalities and making it harder for disadvantaged groups to receive adequate care.

In conclusion, while the residential area of Dhaka City has made commendable progress in meeting the childcare needs of its growing population, the critical shortage of care facilities for older adults remains a pressing concern. The area's dense and diverse demographic, combined with its mixed land use, underscores the need for a more comprehensive approach to care infrastructure. Addressing the gaps in elderly care, alongside maintaining strong childcare services, will be essential in fostering a more equitable and supportive environment for all residents, ensuring that the needs of both younger and older populations are met in this rapidly urbanizing region.

Area 5: East



Upazilas covered in eastern area: Badda, Gulshan, Rampura and Tejgaon Industrial Area

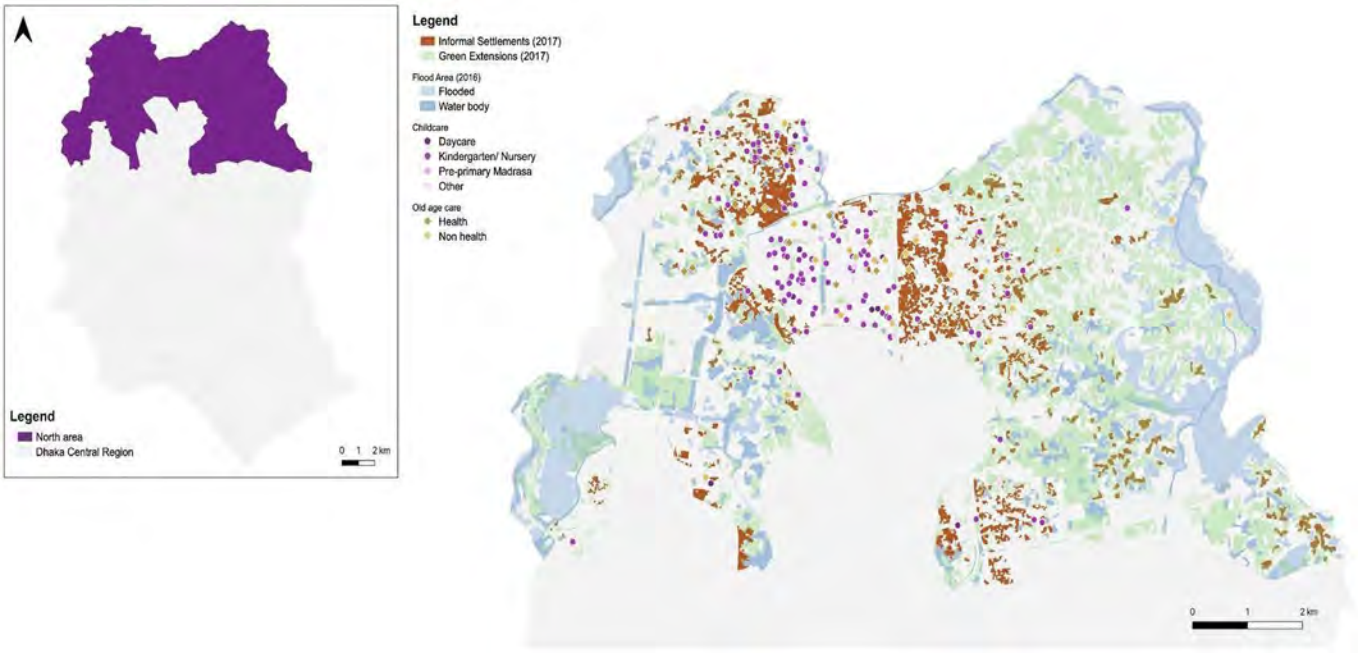
The east has a moderate population density of 36,705 people per square kilometre, with a notable concentration of children (2,577 per km2) and elderly individuals (1,058 per km2). As the area experiences rapid development, there are significant opportunities for both commercial and residential expansion. However, this growth brings considerable challenges, particularly due to the **high concentration of mine dumps and construction sites**, which pose serious health risks. Additionally, the area is highly vulnerable to flooding, putting its most vulnerable populations—children and the elderly—at greater risk from the harmful effects of flooding, pollution, noise, and industrial waste. These environmental hazards underscore the urgent need for strategic and sustainable urban planning that prioritizes the safety and well-being of residents, especially those most at risk.

The east maintains a balanced mix of land use, with 12 per cent green spaces, 8 per cent informal settlements, 12 per cent agricultural land, and 33 per cent urban fabric. While this composition offers potential for both development and environmental preservation, the area's care infrastructure is inadequate to meet the community's needs. For the preschool-aged population, childcare availability is limited, with just two centres per square kilometre. Although the provision slightly improves when calculated per 10,000 children (8 facilities), it remains insufficient to support working families in a rapidly growing region. Moreover, accessibility is a concern, as the East has one of the longest average travel times to the nearest childcare facility—6.32 minutes by motorized vehicle or walking. As more families move into the area, the demand for childcare will only rise, making a significant expansion of these services essential to support both the population and the area's economic development.

The situation is equally concerning for the elderly population, with only one care facility for older persons per square kilometre and eight per 10,000 elderly residents. Like childcare services, access to care for older persons is problematic, with an average travel time of 7.59 minutes to the nearest facility and nearly 11 per cent of the elderly population left uncovered within the 15-minute threshold by motorized vehicle or walking. This shortfall is especially alarming as the ageing population is expected to grow with continued development. Ensuring adequate care for older persons is not only crucial for addressing basic health and well-being but also for promoting social inclusion and maintaining the quality of life for senior residents.

Furthermore, the intersection of rapid industrialization and the preservation of agricultural land presents a challenging dynamic for urban planning. As the area continues to grow, it will be essential to strike a balance between preserving valuable agricultural land and green spaces and expanding urban infrastructure to meet the needs of a growing—and ageing—population. Effective urban planning must ensure that development is sustainable while providing the necessary care facilities and services to support the well-being of all residents, particularly as the demand for both childcare and care for older persons intensifies.

Area 6: North



Upazilas covered in northern area: Dakshinkhan, Khilkhet, Turag, Uttar Khan and Uttara

The north area of Dhaka Central Region is the **least densely populated**, with 12,954 people per square kilometre, and has a smaller proportion of both children (909 per km2) and elderly individuals (373 per km2) compared to other areas. **The area is notably well-served by childcare facilities,** offering 19 centres per 10,000 children—far exceeding the provision in more densely populated regions. **Care services for older persons are also comparatively strong,** with 14 facilities per 10,000 elderly residents, providing better support for the ageing population than many other areas. This robust care infrastructure demonstrates the area's effective response to the needs of both its younger and older populations.

Situated on the outskirts of the city, and similar to the east, the north is undergoing significant development, which presents both opportunities and challenges. With the second-largest proportion of green spaces (26 per cent) and a notable share of agricultural land (20 per cent), balanced by urban fabric (38 per cent), the area has a unique landscape that requires careful planning. As residential and commercial developments continue to grow, strategic urban planning will be essential to integrate care facilities into these new projects, ensuring that future demand for services is met.

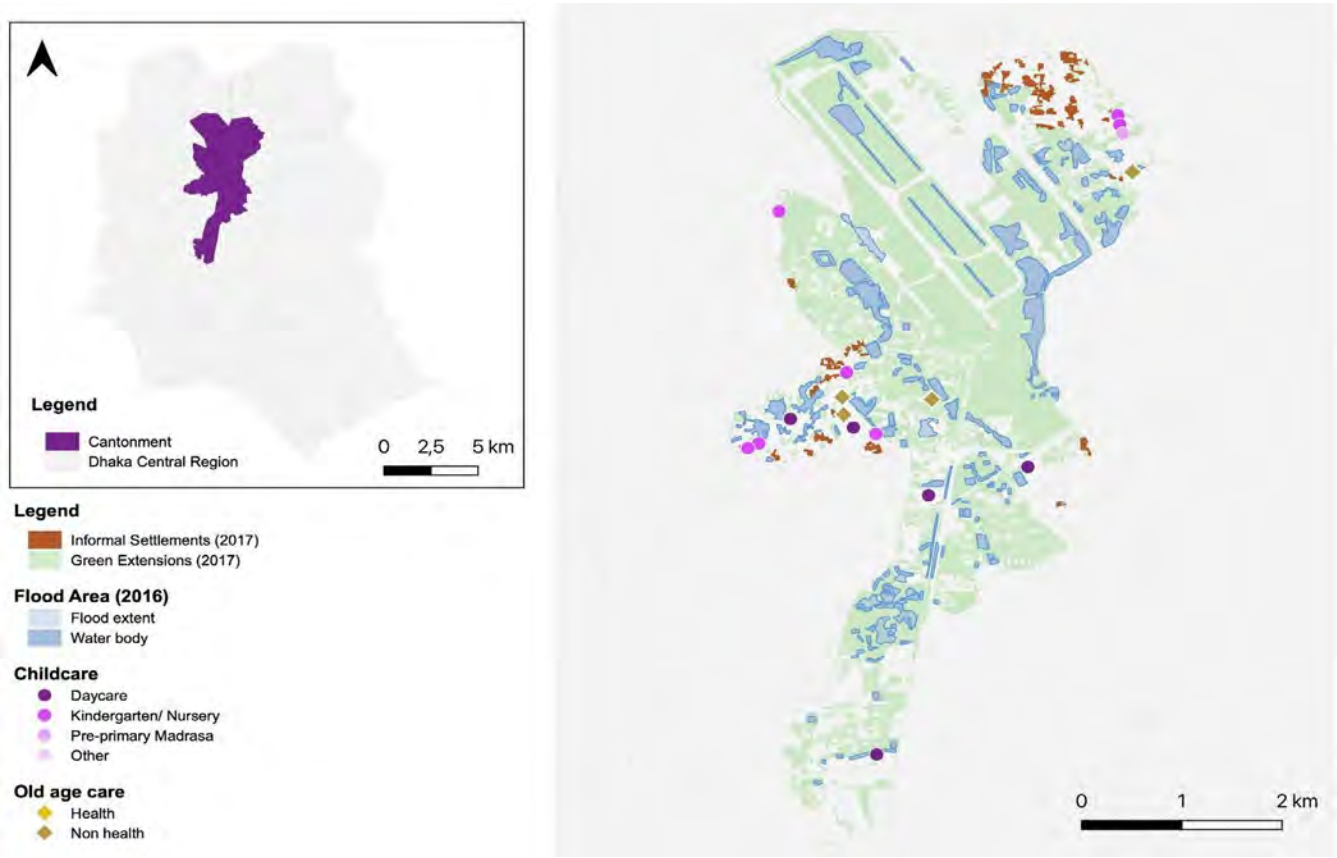
Although the current number of childcare and care facilities for older persons is commendable relative to the population size, the area's large geographical spread creates significant challenges regarding accessibility and equitable distribution of these services. **The north ranks second worst in terms of access to both childcare and care facilities for older persons, trailing only the Cantonment.** The average travel time by motorized vehicle or walking to the nearest childcare facility is 7.47 minutes, leaving 17.9 per cent of the child population uncovered—**the highest percentage among all areas.** Similarly, access to care for older persons is limited, with an average travel time of 8.83 minutes, **leaving nearly 32 per cent of the elderly population without coverage, second only to the southeast.** These figures indicate that while the care infrastructure is relatively robust, greater attention is needed to ensure that services are more evenly distributed and

are accessible across the entire area as development progresses.

Another significant challenge for the north is the **uneven distribution of care services, particularly in informal settlements, which account for 7 per cent of the land.** Furthermore, the region's sprawling layout exacerbates service gaps, especially for the elderly, who may already face mobility challenges. To ensure equitable access, it is crucial not only to expand the delivery of care services but also to strategically position them to serve all neighbourhoods effectively.

While the north benefits from a relatively low population density, this should not diminish the need for continued investment in its care infrastructure. As development accelerates, proactive planning is essential to ensure that care services are scaled appropriately to meet the needs of a growing population. Integrating care facilities into future residential projects and commercial zones will be critical to maintaining the region's strengths in service provision and ensuring that both current and future residents are well-supported.

Area 7: Cantonment



Upazilas covered in Cantonment area: Biman Bandar and Cantonment

The Cantonment, a key military and administrative hub in Dhaka Central Region, stands out for having the **lowest population density in the area** (15,086 people per square kilometre). These figures suggest more specialized and manageable care needs compared to other, more densely populated areas of the city. **Despite these relatively lower demands, the availability of care services remains notably limited.** The Cantonment has just one childcare facility per square kilometre and six per 10,000 children, reflecting a significant shortage of services. This scarcity may be linked

to the area's primary military and administrative functions, which likely attract fewer families with young children compared to more residential or commercially oriented areas. Nonetheless, the lack of childcare services could pose challenges for the families who do reside in the Cantonment, particularly for women as population dynamics evolve over time.

Additionally, **the Cantonment has the poorest access to childcare facilities in the area, with an average travel time of 8.37 minutes to the nearest centre by either motorized vehicle or walking.** However, the percentage of the child population without coverage is relatively low, at 4.48 per cent, likely due to the lower density of preschool-aged children (1,059 per km^2). While this may seem manageable for now, the limited availability of childcare services could become a more pressing issue if the area's population of young families grows. The long travel times also indicate inefficiencies in service distribution, suggesting the need for better planning to ensure that even a modest population has convenient access to essential care facilities.

The scarcity of care facilities for older persons in the Cantonment is even more concerning. Despite a relatively low aged population (435 per km2), **there are only 0.2 facilities per square kilometre dedicated to supporting their specific needs.** As this population continues to grow, the lack of care services could become a challenge, particularly in such a strategically significant area. Addressing this gap is crucial to prevent future strain on the care infrastructure and to ensure that older residents receive the support they need.

Moreover, similar to the situation with childcare, the Cantonment ranks lowest in terms of access to care services for older persons, with an average travel time of 10.27 minutes to the nearest facility by motorized vehicle or foot. This leaves over 23 per cent of the older population without adequate care. The long travel times and low service coverage suggest a substantial mismatch between the population's needs and the availability of services. If left unaddressed, this could lead to an increasing burden on families, particularly women, and a higher risk of social isolation for older residents. Improving the distribution of care facilities and ensuring more efficient access will be critical to meeting the long-term care needs of the ageing population in this vital area.

One of the key strengths of the Cantonment is its favourable living environment, characterized by the highest proportion of green spaces (52 per cent) and the lowest percentage of informal settlements (2 per cent). These features contribute to a healthier, more pleasant atmosphere, significantly improving the quality of life for residents. The abundance of green spaces provides valuable recreational opportunities and health benefits, particularly for families with young children and older adults, while the minimal presence of informal settlements reduces pressure on local infrastructure and resources.

However, these environmental advantages should not overshadow the critical need for a well-developed care infrastructure. The current scarcity of care services for both children and older persons, combined with poor accessibility, suggests that the Cantonment's care systems may not be equipped to meet future demands. As the population evolves, strategic urban planning will be essential to ensure the care infrastructure expands in line with demographic shifts. Investment in care services for children and older adults will be crucial to sustaining the Cantonment's high quality of life and ensuring that all residents, regardless of age or mobility, have access to the support they need. Balancing environmental benefits with a robust care network will be key to maintaining a healthy, thriving community.

Photo: UN Women/Mohammad Rakibul Hasan

Section V.

Conclusion and Ways Forward

Rapid urbanization and demographic shifts in Dhaka City present a significant opportunity to reconceptualize urban spaces through the lens of caring cities. Ensuring that essential childcare and care services for older persons effectively address the needs of the population is crucial for the optimal functioning of both societies and economies, as well as their sustainability. This investment has the potential to alleviate the disproportionate demands of unpaid care work on women and girls, enhancing their economic participation while developing sustainable, caring cities. Investing in an inclusive care economy, starting at the local level, can support the trajectory towards economic growth and gender equality.

Looking ahead, this report suggests potential elements for a strategic framework encompassing a national care policy, gender-transformative data-driven urban interventions, and a gender-equitable division of labour, aimed at fostering a future in which care is both accessible and empowering for all individuals. Such a strategic framework could include:

Strengthening gender-responsive care policies at the municipal and national level: The full realization of women's economic empowerment hinges on gender-responsive policies that recognize and adequately compensate care work. Integrating care services into the labour market is expected to enable greater female participation in employment.

To address the widening gap between the demand and supply of care services, it is critical to enhance accessibility to quality care services, particularly for low-income and marginalized women.

In Dhaka City, expanding affordable childcare and old-age care services should prioritize underserved urban and peri-urban areas. At the national level, the informal nature of caregiving, especially within households, exacerbates gender inequality. Formalizing caregiving roles through legislative reforms that recognize care as a profession is essential. This involves creating formal employment opportunities for caregivers, offering training programmes and certification systems and ensuring fair wages and working conditions. Such legislative measures can elevate the status of care work while contributing to women's economic empowerment by increasing their participation in the formal economy. Additionally, strengthening local legal frameworks and enforcement mechanisms to guarantee family-friendly workplaces and incentivizing private-sector engagement are crucial steps towards closing gender gaps in labour force participation.

Promoting Public-Private Partnerships for care service expansion: Public-private partnerships offer a critical opportunity to expand the availability and quality of care services. By fostering collaboration between governments, NGOs, and private enterprises, the capacity to deliver comprehensive care services can be significantly enhanced. These partnerships could focus on expanding affordable care options, particularly for low-income families and informal workers, while promoting decent work standards for caregivers. Scaling up training programmes for care workers and integrating care work into formal labour markets will not only support women's economic participation but also professionalize care work, ensuring better service quality across the region.

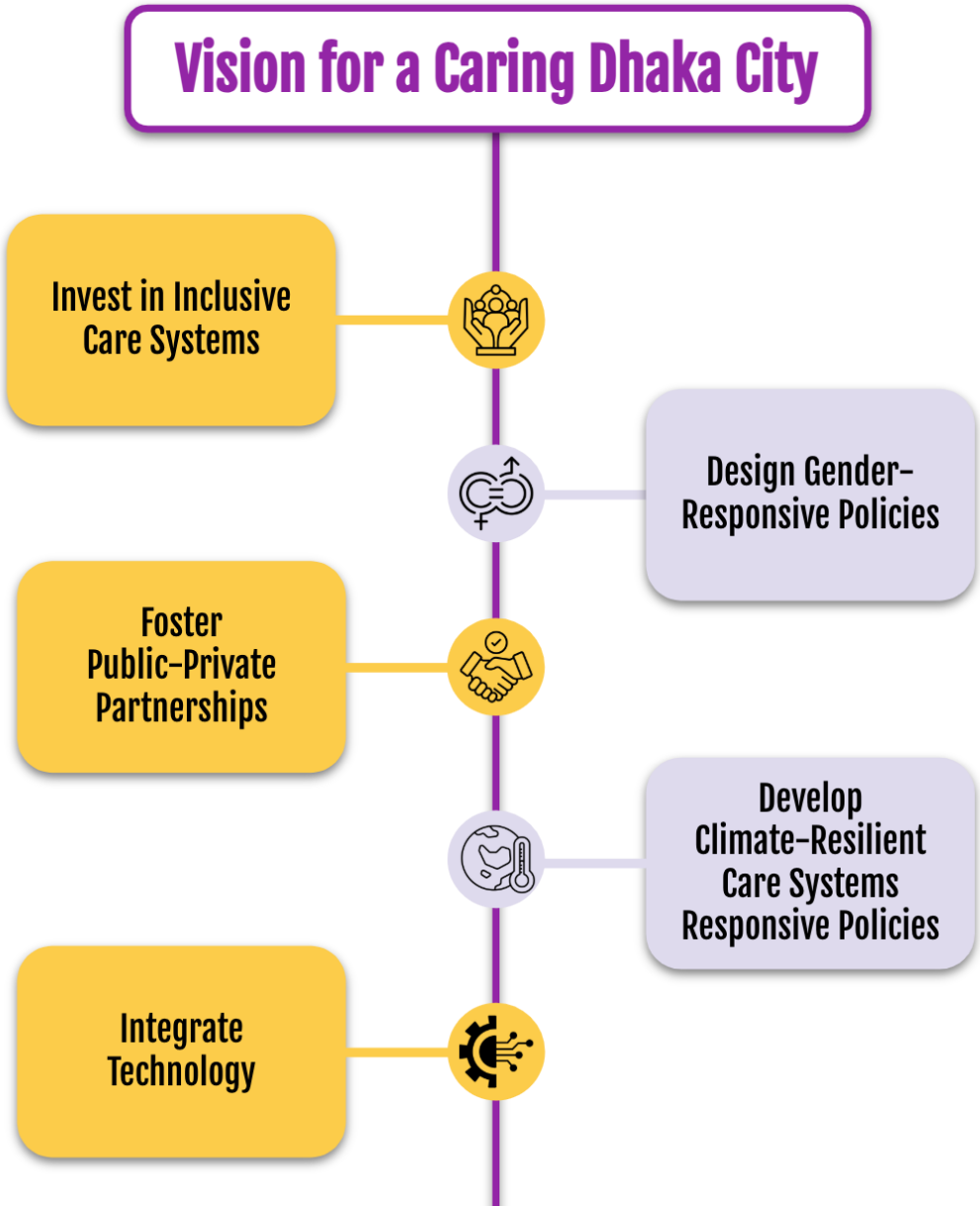
Building climate-resilient care systems: Given Dhaka City's vulnerability to climate change, incorporating climate resilience into care systems would significantly benefit the city, protecting vulnerable populations and enabling continued access to care during crises. Investment is needed in preparedness and resilience building, including climate-adaptive care facilities that can withstand environmental shocks, such as floods and heatwaves, particularly in areas prone to these risks, like Dhaka. Enhancing disaster preparedness in care services—by integrating early warning systems, improving the resilience of care infrastructure, and ensuring continuity of care during crises—will protect vulnerable populations, especially women and children, from disproportionate harm and build women's overall resilience to disasters. Building climate-resilient care systems also calls for urban planning that accounts for green spaces and recreational areas—critical caring spaces—while expanding care services in areas with lower concentrations of air pollution.

Integrating technology into care mapping: Leveraging digital tools and geospatial technologies to map care needs and supply can provide decision-makers with valuable insights into the care infrastructure. Integrating such technologies can enhance the efficiency of resource allocation and improve the quality of care services, ensuring that services are delivered to areas with the highest demand. An added benefit is the incorporation of a climate-change lens into feminist urban planning. However, integrating technology into care mapping requires investment in a geo-coded registry of care facilities. This registry could provide granular data on the location, capacity, and types of services offered by each facility, enabling more efficient resource allocation, better accessibility for users, and improved policy planning. It would also allow for monitoring service gaps, ensuring that care is distributed equitably across different regions, particularly in underserved areas.

As digitalization continues to reshape economies, the care sector must also benefit from these advancements. The online presence of caregiving in Dhaka City is significantly increasing, and

investments in digital tools that enable remote care services, telehealth platforms, and mobile-based care networks will not only improve the efficiency of care delivery but also provide more flexible employment options for women. Developing digital infrastructures in underserved peri-urban areas, ensuring these technologies are accessible to caregivers, can also increase their safety. Additionally, developing digital literacy programs targeted at women and caregivers could empower them to leverage technology to enhance care work and balance employment.

Figure 5. Vision for a Caring Dhaka City



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