

Reimagining Walkable Cities: Exploring the Experience of Mothers of Premature Babies

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Abstract

This article highlights an overlooked social group in urban planning: first-time mothers of premature babies requiring neonatal care. It explores how to reimagine urban spaces for a sustainable and inclusive city. Set in inner London, the article delves into the challenges these mothers face while caring for their newborns, who often rely on medical aids. These mothers face practical challenges when navigating the city, including remaining vulnerable to infections, managing oxygen tanks and non-folding prams, which can lead to complications that make urban travel difficult. Based on an interdisciplinary research project with neonatologists, the article explores the emotional and sensory experiences of mothers navigating the city. Using diary entries and walking interviews, it calls for integrating emotional responses into urban planning to create more inclusive and sustainable cities.

Keywords: motherhood; preterm babies; sensory experience; mobility; sustainable cities

Introduction

In an article for *Town Planning Review* in 1949, Mumford advocated for an organic conception of urban planning by recommending that planners facilitate “*the provision of an environment suited to every phase of life and growth, from infancy to senescence*” (Mumford, 1949: 5). This argument remains highly relevant today, across all the identified phases. For the purpose of this article, the infancy phase provides particularly useful insights. Although the paper reflects the patriarchal norms of his time (he refers to the planner as a ‘he’ and the main caregiver as ‘the mother’), the observations he made on the need for neighbourhood spaces for caregivers and their babies’ daily routine still hold value:

'there is often a lack of common meeting places for the mothers, where, on a good day, they might come together under a big tree, or a pergola, to sew or gossip, while their infants slept in a pram or their runabout children grubbed around in a play pit' (Mumford, 1949: 6).

Cities have not changed much in terms of balancing different needs and priorities: they still pose challenges to parents and their babies, not to mention to parents and *vulnerable* newborns. Imagine navigating the city while caring for a vulnerable newborn who is still susceptible to infections and might rely on medical aids like oxygen support or monitoring equipment. For parents entrusted with caring for a fragile newborn, the urban environment clearly becomes a labyrinth of challenges and uncertainties. The once familiar urban landscape no longer feels accessible. Instead, it demands profound adjustments to navigate safely with a vulnerable newborn.

This article sheds light on a largely overlooked social group in urban studies: first-time mothers with their premature babies, that is, babies born before 37 weeks of gestation, which is earlier than the typical 40 weeks for a full-term pregnancy. These babies often experience health challenges due to their early birth (e.g. breathing difficulties and developmental delays) and often require specialised neonatal care before they can be discharged from the hospital cares. After that, they still face a risk of recurrent infections and long-term health challenges, often requiring prolonged medical support even after leaving the hospital. In the UK, approximately 10% of all births per year receive some neonatal care (i.e. Intensive Care or Special Care) either because they were born prematurely or full term but sick (data from BLISS, a UK-based charity for babies born premature or sick). While the numbers in these statistics may seem irrelevant, they reflect broader vulnerabilities. They reveal the complexities of mobility in urban spaces while, at the same time, managing medical and emotional needs. Additionally, the study focused on first-time mothers to ensure that participants had no prior experience navigating urban spaces with a newborn. Examining the shared urban experience of first-time mothers and their preterm babies offers a new perspective on rethinking mobility, placemaking, and sustainability in ways that address diverse and often invisible challenges.

This article is based on an interdisciplinary research project in collaboration with a team of social scientists and neonatologists (2013 - 2015)¹. The study involved 19 first-time mothers, primarily from two highly diverse inner London boroughs, Lambeth and Southwark (Gullino et al., 2017). My positionality played a significant role in this research. As both a social science researcher and a mother of a premature baby who underwent extended neonatal care, my dual perspective shaped the research process (Finch, 1993; Oakley, 2013). My own experience provided a deeper understanding of the unique challenges these mothers face as they navigate urban spaces with their newborns (Widdowfield, 2000).

The exploration is structured in four parts. First, I establish the conceptual framework for the argument and identify key gaps in existing knowledge. Next, I outline the ethnographic methods employed in the interdisciplinary research project, including diary entries (via paper diary and a Web app as a digital diary) and walking interviews. I then present two main emerging themes from the mothers' experiences in the results and discussion section. Ultimately, I suggest that affect, referring to the emotional and sensory responses to urban spaces, offers a fresh and useful perspective on understanding mobility in light of sustainable cities. While scientific evidence and technological innovations driven by big data and analytics are central to urban planning (for example, Batty, 2013; Bibri, 2018 and 2021), incorporating multi-sensory approaches into placemaking and planning processes can foster more inclusive urban environments (Heinrichs, 2019: 795; Vida et al., 2023). This approach recognises the importance of urban planning to recognise the significance of individuals' sensory experiences and adaptation to the urban environment, in order to accommodate a broader and more diverse range of needs.

1. Motherhood, everyday mobilities and sensory sustainability in cities

In this section, I outline the conceptual framework of this paper. It builds on three key bodies of scholarship in urban studies that allow capturing the emotional and embodied experiences that shape mothers while navigating the city: the social construction of motherhood (for example, Collett, 2005; Lupton and Fenwick, 2001 and 2002; Miller, 2005); the role of mobility

¹ NHS London Riverside Research Ethics Committee (London) granted ethical approval for the study in June 2013 (study number 13/LO/0752).

and spatial practices in mothers' identity formation (for example, Boyer and Spinney, 2016; Cement and Waitt, 2017 and 2018; Luzia, 2010; Gullino and Rubin, forthcoming); and the role of sensory experiences in urban sustainability (for example, Heinrichs, 2019; Degen and Rose, 2012).

This interdisciplinary approach integrates such perspectives, situating my research within existing academic discourses and practical urban planning while advocating for more inclusive city design. While urban sustainability agendas increasingly focus on data-driven approaches (for example, Bibri, 2018 and 2021), this framework argues for a change towards human-centred urban planning where sensory experiences and lived realities are prioritised. This section concludes by introducing and including the unique perspective of first-time mothers of preterm babies in this reimagining of inclusive urban spaces.

1.1 Social construction of motherhood

The first body of scholarship examines how motherhood is socially constructed rather than being exclusively a biological event. Different societal contexts and ideologies shape roles and expectations placed on women becoming mothers, defining what it means to be a 'good mother' and influencing how mothers should navigate their new identities and responsibilities both inside and outside the home, as caregivers and workers (Berger et al., 2022; Schmidt et al., 2023). Such ideals often include expectations of mothers as primary caregivers, nurturing figures, and self-sacrificial beings, responsible for both the emotional and physical well-being of their children.

In the context of hospitalised preterm babies, the social construction of motherhood is even more complex as it is shaped by medical frameworks in addition to societal expectations (Collett, 2005; Lupton and Fenwick, 2001 and 2002; Miller, 2005). As a result of giving birth before the due date, mothers experience a wider range of intense emotions ranging from stress, grief, guilt and shame (Jarašiūnaitė-Fedosejeva et al., 2024). They have 'failed motherhood' (Fowler et al., 2019). Their mental health, due to the trauma of early delivery and the anxiety about their ongoing child's health, is at risk, and the quality of early parent-infant interaction can be affected (Neri et al., 2020). As Spinelli et al. (2016: 184) argue, these earlier difficulties may impact the construction of maternal identity and the bond with their child. The primary purpose of a medical setting is to save the infant's life.

Tensions frequently arise between mothers' attempts to assert their identity as 'real mothers' and healthcare professionals positioning themselves as 'teachers' and 'experts',

often leading to frustration and anger among mothers (Lupton and Fenwick, 2001). These emotional struggles are not confined to the hospital environment. The traumatic experiences often persist when the mother and baby transition home. Emotional challenges await them as they leave a hypervigilant hospital environment to then learn to care for their baby at home ('the unknown'), leading to poor maternal self-confidence (Fowler et al., 2019). As mothers try to normalise their experiences and begin going outside their homes, they encounter further difficulties in navigating urban spaces. They try to balance societal expectations of motherhood with their personal experiences of fear, uncertainty, and vulnerability.

1.2 Mothers' identity through mobility and spatial practices

The second body of scholarship explores the relationship between urban mobilities and sustainability as deeply intertwined with questions of equity and access. (e.g., Boterman and Bridge, 2022; Boyer and Spinney, 2022; Clement and Waitt, 2017 and 2018; Luzia, 2010). Urban mobilities have a significant role in defining the sustainability of cities (they influence transportation choices, energy consumption and environmental impacts), yet they often reinforce existing inequalities by prioritising the needs of certain social groups over others. Feminist urban scholars have long stressed that not all mobilities are equal (Greed, 2011; Hanson, 2010; de Madariaga and Neuman, 2020; Kern, 2021; Murray, 2016). Urban environments tend to be designed around the needs of able-bodied men, creating barriers related to transportation access, safety, and caregiving responsibilities to women, whose mobility results more restricted (Loukaitou-Sideris, 2020). These challenges, as highlighted by Gullino and Rubin (forthcoming) in their exploration of mothers' mobilities in London and Johannesburg, tend to be characteristics of urban environments globally, with differences between cities often less marked than expected.

At the same time, urban mobility is not only a practical necessity. It also plays a significant role in shaping individuals' identities, particularly for mothers. As Schildler and Neely (2024) note, becoming a mother contributes to profound mental and physical changes. The concept of 'journeying' within local geographies is essential for facilitating mobility but also, and importantly, for fostering a sense of belonging, developing one's identity, and reconnecting with the outside world. Clement and Waitt (2017 and 2018: 1187) argue that mobility and spatiality are indeed part of motherhood itself as '*motherhood emerges while walking somewhere*'. This perspective highlights how urban mobility is not just about efficiency or infrastructure: it is a lived, embodied experience that reflects broader societal structures.

Further expanding this idea, Boyer and Spinney (2016) introduce the concept of the 'mother-baby-pram-assemblage', emphasising how women build their identities as mothers through mobility, even if that mobility becomes a struggle. Mothers' mobilities are, in fact, continuously negotiated with (non) human actors, including the mode of transport and access to it (Luzia, 2010). The simple act of 'taking the bus', as a mother-baby joint practice, holds many complexities in relation to space and access (number of pram limits on buses, needing to wait for another bus or course stairs), technologies (the pram might not fit or might get entangled while moving in and out the bus) and people (overcrowded). The everyday city experience reveals challenges: every step becomes the result of multiple negotiations based on micro decisions in terms of where to go (accessibility), how to go (safety, both emotional and physical) and when to go (avoiding peak times and overcrowded spaces). As Kern (2021) notes, motherhood makes the gendered nature of city '*visible in high definition*'.

Understanding the joint mobility between caregiver and child enables discussions to shift from individual responsibility to collective planning and design of the city, emphasising the need for more inclusive and equitable mobility policies (Ataol et al., 2022). Urban mobility is not just about how quickly and efficiently one moves in city spaces but *who* is allowed to move freely and on *what* terms, with profound social and environmental consequences.

1.3 Sensory experiences and sustainability

The third body of scholarship explores the sensory dimensions of urban life (e.g. Degen and Rose, 2012) and recent debates on sensory sustainability (e.g., Heinrichs., 2019; Vida et al., 2023). This body of work, unlike discourses driven mainly by big data and efficiency metrics, advocates for a broader understanding of urban experiences that includes multi-sensory (not just visual) perceptions and affective engagements with the environment (Dogrusoy et al., 2011; Heinrichs, 2019 2021; Pink, 2008). Elements such as the sounds of the city, the perceived air quality through smell, or the texture of surfaces all shape how individuals can respond to and interact with urban spaces (Xiao et al., 2018).

Heinrichs (2019: 795) calls for multi-sensory informed policymaking as a necessary shift from mainstream sustainability approaches, which are often dominated by digital and technocratic approaches applied at the building and neighbourhood scale. These approaches tend to '*sideline the public realm and the social and natural life which unfolds there*' (Vida et al., 2023: 1). While not intending to replace available scientific evidence and

political decision-making, people's emotional and sensory experiences in a given environment can enrich governance processes and lead to more transformative policies for well-being and sustainability (Heinrichs, 2019: 797).

Sensory experiences are deeply intertwined with body mobility (particularly through routinised walking practices) and by perceptual memories of the built environment shaped by previous visits to the same place (Degen and Rose, 2012). As Tuan (1977:11) notes: '*(senses) reinforce each other to provide the intricately ordered and emotion-charged world on which live in*'. These experiences influence how individuals navigate and relate to the city, and also shape their sense of belonging and their participation in urban life (Tuan, 1977; Pink, 2008; Degen and Rose, 2012).

1.4 The mother-preterm baby-pram assemblage and affective mobilities

In this article, I draw on three scholarships to understand how motherhood is an affective and embodied experience that is deeply entangled with how mothers engage with urban environments through their mobility. This framework demonstrates how an attentive understanding of mobility, which integrates identity, sensory experiences, and spatial practices, can inform more inclusive and sustainable urban policies.

I extend existing research by introducing and including the lived experience of first-time mothers of preterm babies, a group whose needs have so far been overlooked in urban policies and planning. As argued earlier, this specific assemblage highlights broader issues of vulnerable mobilities in cities, offering valuable insights that could inform policies for reimagining inclusive cities. These mothers navigate cities that are not designed with them in mind. Their mother-preterm baby-pram assemblage presents unique complexities (Boyer and Spinney, 2016; Gullino and Rubin, forthcoming). Unlike many new mothers whose journeys into motherhood take place primarily at home, these mothers begin their transition in highly specialised medical environments, where healthcare professionals play a central role in mediating caregiving (Holditch-Davis et al., 2000; Lupton and Fenwick, 2001 and 2002; Tardy et al., 2000; Wigert et al., 2006). Their babies might require extended hospitalisation, with their prematurity posing potential long-term health risks (Spinelli et al., 2013 and 2016).

Depending on their gestational age, these babies often rely on medical aids like oxygen support or monitoring equipment and remain vulnerable to infections, intensifying mothers' alertness to the environment. Small, crowded spaces like public transport or shops and cafes can pose serious risks of infection that might lead to hospital readmission. As a result, spaces typically seen as social opportunities are transformed into sites of emotional and sensory

tension into sites of emotional and sensory tension (Schindler and Neely, 2024). Moreover, these mothers often lack pre-established social networks. Unlike mothers of full-term babies, who might join parenting groups like the NCT (National Childbirth Trust)², their social networks are often limited to mothers met in hospital. Differently from what one might expect given the great vulnerability of the babies, our study showed their need to go out and identify affirming social environments just like mothers of full-term babies (Gullino et al., 2017). As a result, their mobility is shaped by affective responses, with decisions about where to go, how to get there, and when to travel being guided by continuous considerations of what feels best for both their babies and themselves. The sensory landscape of a city can have an impact on how accessible, friendly, and safe they perceive their environment to be and facilitate or hinder mothers' mobility and engagement in public life (Gullino et al., 2017). These experiences can reinforce feelings of exclusion or belonging and, as Heinrichs (2019: 795) argues, should be considered in multi-sensory-informed policymaking for sustainable urban development.

The heightened sensory experiences of the mother-preterm baby-pram assemblages, as they navigate the urban maze, provide critical insights into what constitutes a sustainable and inclusive city. Motherhood, as a spatial practice extending beyond the home to the broader city (Luzia, 2010), reveals how mobility, affect and emotional responses shape perceptions of urban spaces. By focusing on the lived experiences of these mothers, I argue for a shift in urban planning to prioritise a wider range of needs and foster gender-sensitive, inclusive policies for more sustainable cities.

2. Mothers' experiences through diaries and walking interviews

This article draws upon an interdisciplinary research project conducted with a team of neonatologists involving 19 first-time mothers living in socio-economically diverse boroughs in inner London. The aim was to explore how mothers of preterm babies experience and navigate the city once they and their baby have left the neonatal unit.

² National Childbirth Trust is a UK-based charity offering parents-to-be antenatal classes and a support network.

The primary focus of the research was on the initial four months after hospital discharge, during which mothers and their babies worked to re-establish routines both at home and in the city. The research employed a subject-control design and aimed to address a gap in existing knowledge: how mothers negotiate the challenges of the urban environment while at the same time caring for a vulnerable infant after discharge from a neonatal unit, and how the transition from hospital to the broader urban environment impacts both mothers and babies (Gullino et al., 2017). The subject group consisted of mothers whose babies had been in the Neonatal Unit (NNU) of St Thomas' Hospital in London for at least a month. The control group consisted of mothers whose term babies were born in St Thomas' Hospital and had no complications requiring admission to NNU. The subjects and controls were matched by electoral wards or postcodes (see Table 1) (Gullino et al., 2017: 2). Inner London's context was key to the project, as around 60% of Lambeth and Southwark residents rely on buses due to low car ownership and limited underground transit options.

In examining mothers' sensory experiences and their entanglement with the material world after childbirth (Boyer and Spinney, 2016), I employed two main ethnographic methods: diaries and walking interviews (Meth, 2003; Jones et al., 2008; Evans and Jones, 2011; Clark and Emmel, 2010). Both methods provided rich insights into mothers' and babies' daily lives, allowing them to generate data on their emotional responses and sensory experiences while navigating the complexities of the urban landscape.

Mothers were invited to keep a diary for four months, with the option to choose between paper or electronic formats (a WebApp designed by a member of the research team) to ensure inclusivity. The use of diaries in healthcare and clinical research to assess patients' experiences is fairly common, more so than in social science studies (Elliott, 1997; Stone et al., 2003). However, the use of diaries to investigate patients' experiences outside of healthcare spaces is less usual.

Once the diaries were completed, mothers participated in walking interviews, which involved a routine walk from the participants' homes. Conversations between the researchers (myself and the research assistant) and participants were prompted by insights generated from the diary entries. Each walk lasted about an hour, with the route led by the mothers while pushing their prams. The duration varied according to their and their babies' schedules. The conversations between the mothers and researchers were recorded, and the route was mapped using the FieldTrip GB App.

In some cases, we had to arrange a 'virtual' walking interview with participants when their baby was unwell. Instead of walking outside, we used a tablet displaying a map of the area, allowing mothers to share their favourite routes and their meaningful local places. Once the

interview was concluded, the researchers explored the area themselves familiarising with the spaces discussed.

The analysis presented in this article focuses on a subset of 10 mothers (the subject group), though the shared experiences across both groups will also be briefly discussed in the next section. Walking interview transcripts, diary entries, researchers' field notes, and memos written during the transcript review process were all analysed using thematic analysis, supported by NVivo software (see **Error! Reference source not found.**) (Hennink et al., 2020). This paper will draw on all these resources.

Table 1

Table 2

3. Navigating urban spaces through sensory and emotional engagement

The previous section outlined the research methods used in this study. The study allowed us to see comparative results between the subject and control groups, highlighting both shared and divergent experiences (more in Gullino et al., 2017). While the experiences of both groups are acknowledged, this article, and this section in particular, centres mainly on the subject group and what emerged from this specific mother and preterm baby assemblage. Two key themes emerged. The first, largely common to both groups of mothers, reveals the importance for all mothers of being mobile in the urban environment as well as the emotional need to connect and socialise with other mothers. It then highlights how mothers of preterm babies engage with, and emotionally respond to, various urban spaces, revealing how these environments, perceived through the lens of their babies' vulnerability, shape their daily navigation of the city. The second theme, more distinctive to the subject group, focuses on what emerges from the city through mothers' affective experiences, revealing the discoveries they make through their interactions with different urban spaces.

3.1 The affective and emotional dimensions of urban spaces

Despite the challenges associated with mothering a vulnerable child, mothers of preterm babies revealed through their diaries and walking interviews the compelling need to go out and leave their homes and engage with the urban environment. This aligns with what the literature on mothers' mobility suggests (Schindler and Neely, 2024). For both groups, the city emerged as an essential dimension of mothers' identities, particularly

through their mobility and participation in urban life, with 'mother and baby activities' becoming crucial to their wellbeing.

In this research project, the need for both mothers' groups to venture outside was driven by several reasons. First, there was the need for more space within their homes in London. This supports Luzia's (2010: 368) argument that parenting frequently involves a *'lack of time and space'* at home. For many mothers, going out was an essential way to find this space, even in adverse weather conditions. Mothers' diaries document daily activities, like walking in a park, shopping at local supermarkets, and stopping by cafes and pharmacies, often with mixed emotional experiences. While walking along with them, they all expressed their need to be out with strong statements for their own wellbeing: *'Get out of the flat'*, *'Keeps my mind clear'*, *'Get some fresh air'*, *'Boring for both of us to stay at home'*, *'I would go a bit crazy if I were stuck at home'*, *'Get exercise'* and *'Mother's sanity'*. Such powerful quotes underscore the emotional and psychological importance of such spaces (Schindler and Neely, 2024).

However, mobility in inner London was experienced as complex by both groups. Reliance on public transport is common, but the physical accessibility of the system, particularly the underground and trains, posed significant problems for mothers with prams:

'I try not to take public transport, and if I take it, it's normally bus because the underground is sometimes difficult' and also 'I go out all day, even if it rains, we go out' (4 March 2014). 'I don't like the tube very much because the pram, I don't like going on the escalator with the pram it's far too scary' (13 May 2024).

Second, going out allowed mothers to embrace their new identities by taking on the socially defined and publicly visible role of a mother (Collett, 2005; Miller, 2005). This performance of motherhood was reinforced through new friendships and participation in specific social activities. As Goffman (1959: 72) suggested, while the cues for becoming a mother may be sparse, an essential part of enacting and maintaining this identity involves *"looking and acting the part"* (Collett, 2005: 327). By performing their new roles in the public sphere, mothers were able to affirm their motherhood. Berger (1963: 99) argues that *'Identity is socially bestowed, socially sustained and socially transformed'*. For mothers, this new identity was often validated through acts of social recognition.

Mothers of preterm babies appeared to be highly selective about the spaces they chose to engage with. They sought out environments where they felt welcome and understood. Positive experiences were frequently tied to places where mothers felt supported. One mother of a preterm baby noted, *'they [the café owners] are very welcoming...it's quiet and they are very helpful'*. However, positive experiences often come at the cost of negative ones: *'sometimes*

you go to a restaurant and they say they don't have a space, or don't make an effort', 'we don't really go there anymore as the woman who ran it doesn't like having too many buggies in there, she made us feel very unwelcomed' (14 March 2014).

Therefore, 'safe places' for mothers meant places with physical amenities with a welcoming social atmosphere. These included outdoor cafes with a supportive atmosphere, parks with appropriate facilities (such as cafés and changing spaces), or children's centres offering baby activities. These spaces were both physical and social environments where mothers could affirm their new identities, connect with other mothers, and navigate the complexities of their new roles as mothers of preterm babies.

The third reason mothers go out is to fulfil their need to socialise and receive social and emotional support from other mothers, as one mother succinctly captured: *'Someone to talk to, to ring with silly questions'* (7 July 2014). However, mothers of preterm babies often face challenges in forming supportive relationships and finding affirming social environments for themselves and their babies (Gullino et al., 2017). For many, the absence of pre-existing networks like NCT groups, made these interactions more difficult to establish, yet all the more essential in reinforcing their identities as "good mothers" (Marshall et al., 2007; Miller, 2005). After the initial stages of motherhood in the hospital, where their experiences were mediated by healthcare professionals, mothers' identities and experiences of motherhood need to be socially constructed through everyday social and spatial practices. Through socialisation, mothers sought to validate their experiences and engage in meaningful exchanges that helped, at least in part, to counter the isolation often felt in parenting.

As with mothers of full-term babies, mobility in the urban environment emerged as a crucial aspect for mothers of preterm babies, helping them meet their needs for space, identity and socialisation. At the same time, however, the urban environment appeared as a labyrinth of decisions that shaped their experiences. Navigating it as a vulnerable assemblage emerged as challenging, requiring adjustments to overcome its constraints. Mothers had to manage their babies' heightened vulnerability to infections (with risks of hospital readmission), as well as the practical demands of transporting medical aids such as oxygen support at the bottom of the pram, with the oxygen supply which could potentially run out during an outing.

During the walking interviews, mothers recounted stressful experiences due to, for instance, the difficulty of negotiating crowded public spaces and limited space on buses, often shared with other prams or wheelchairs:

'I think infections are my main obsession and that's why I would not go to places which are crowded' and 'I took [the baby] on the bus... the pram tipped and [name of the baby] fell out...so obviously I was stressed' (12 March 2014).

One recalled an emotional interaction while using the bus carrying medical aid. When the driver asked them to fold the pram, as a wheelchair was about to get on the bus, they decided not to use the bus anymore: *'you say, look it's a baby! And when he was tiny tiny, they asked me to fold up the pram [with the oxygen support at the bottom] and carry the cot and so I was just... no I can't [fold it]'* (13 May 2024).

Mothers of preterm babies also shared the difficulties of finding affirming social environments where they could fulfil their needs of being part of the city: *'People kept staring at us because she was on an oxygen tank and because she was so tiny for her age. I went to the playground once or twice, but I didn't go back'.*

These citations underline how mobility challenges directly impacted mothers' anxiety, limiting their ability to feel fully part of the city. It does not come as a surprise that many mothers viewed walking as the safest and most reliable way of moving across the city. It allowed them to avoid the overcrowded, often inaccessible, and poorly maintained public transport options.

3.2 Mothers' sensory sustainability in urban spaces

While navigating the city with their preterm babies, mothers discover new dimensions of urban life. They experience increased sensory awareness. They form new attachments to local spaces while they engage in social interactions that shape their evolving identities. Their experiences reflect how urban spaces sustain physical but also emotional and sensory needs.

Through the walking interviews and the direct engagement with the urban environment, the discussion explores how mothers' sensory engagement with their surroundings shapes their perceptions of the city (for example, noise levels and air quality), and how these environmental factors affect their daily lives. Walking and pushing a pram as an assemblage allowed them to experience their local neighbourhoods in a new way. Walking at a slower pace allowed them to have a more immersive experience which enhanced their awareness of the urban context. They began noticing previously overlooked details in their urban environments and perceived the city differently. For instance, one participant reflected: *'I have spent more time discovering little parks and squares because I have been walking'* (12 March 2014). Similarly, local shops and everyday spaces took on new meanings: *'My daily trip to the local supermarket generally makes an excuse, I like to come down with a reason'* (9 April 2014). These places, once mundane, became sites of personal connection, with expressions like *'My Marks and*

Spencer' and *'My [café] Nero'* (5 March 2014) indicating new, personal attachments to these spaces.

Circulating in the city with a tiny baby also meant a highly magnified awareness of environmental and physical features emerged, influencing mothers' emotions and decisions on where to go. During the walking interviews, quite a few discussions concentrated on multi-sensory aspects of the environment, like dirtiness, heavy traffic and fumes. Mothers feared the fumes/pollution and the overcrowded spaces and judged them unsuitable for their vulnerable babies. Some participants mentioned the traffic as something that:

'scares me...'. 'It's such heavy traffic and that I think has been the main problem in London for me when I go out...Also if it's heavy traffic, all the fumes you breathe in... it sounds silly but... traffic is horrible! You have big big trucks, lorries passing by and buses just spitting out all that fumes and the noise'; '[London] is a very dirty city, especially public transport, we don't have a car... we live in the centre so we don't need it' (14 March 2014).

In addition to environmental concerns, mothers became more attuned to the design of public spaces, particularly parks and open areas. They often expressed preferences for parks with certain features, such as landscaping and the presence of facilities like cafés:

'I suppose, [name of the park] there's lots of trees and much more landscaping and flowers, and it's much prettier and there's a really nice café' and also: 'Whereas [name of the park] doesn't have a café which is bit of a shame' (12 March 2014).

Mothers also paid close attention to micro-environmental details, such as the textures of roads and pavements, the design of sidewalks, and the general attractiveness of their surroundings. Walking with a pram introduced new considerations into their everyday routes:

'Normally we go to this part because she likes the bumpy [cobble stones]' or be a reason for various concerns: 'because there's a lot of curbs and things that you have to push things up and down, you have to lift the buggy up and down steps and getting on or off buses, you have to be quite aggressive in a way to make space for yourself...'; 'Now that [the baby] is heavier it's fine. When she was small, she was flying around in the pram. So that's been an issue and that actually decides where I walk sometimes' (12 March 2014).

These insights highlight how the city's physical design directly impacted mothers' mobility and their choices about where to go.

4. Some conclusive reflections

This article begins by exploring scholarships that capture the emotional and embodied experiences shaping mothers as they navigate the city: the social construction of motherhood, the role of mobility and spatial practices in identity formation, and the significance of sensory experiences in urban sustainability. Within this framework, I incorporated the unique perspective of first-time mothers of preterm babies using their experiences as an opportunity to reimagine inclusive urban spaces through the lens of vulnerability.

I have argued that focusing on how this mother-baby assemblage adapts, navigates and experiences the urban environment offers an opportunity to reimagine what inclusive urban spaces might look like through one significant vulnerable assemblage. While the group of mothers studied in this research is demographically small, affect and sensory experience, and vulnerability are integral aspects of life for all city dwellers and can be extended to other vulnerable social groups. As Mubi Brighenti and Pavoni (2019) remind us, this aligns with Simmel's longstanding thesis that modern cities are inherently stressful environments, where the challenges of urban life are felt intensely by all dwellers. For the mothers of premature babies in this article, the complexities of urban life are felt particularly sharply. Their affective experiences were significantly influenced by both their lack of pre-established social networks centred around birth and the vulnerability of their preterm babies. Mothers found themselves at a loss when leaving the hospital, making their transition into the city even more challenging (Gullino et al., 2017).

In such contexts, rational decision-making is often overshadowed by affective experiences and emotional responses. The newness of their situation means that mothers must rely on their feelings and sensory responses to make sense of stressful environments that are not designed with them in mind (Kern, 2021).

This paper highlights that the physical and social spatialities of everyday urban spaces are integral to motherhood (Luzia, 2010). Being mobile in the public sphere plays a crucial role in supporting both the mother's and the baby's well-being, facilitating social connections, and providing a space for mothers to enact and confirm their new identities. Yet, spatial and social practices remain challenging, particularly for mothers of preterm babies. Some barriers amplify the challenges of navigating urban environments. As mothers adapt to new roles, their heightened senses become vital to understanding and adapting to the complexities of their experiences (Gullino et al., 2017).

Being mobile in the city requires constantly making micro-decisions about where, how, and when to move through public spaces, as public transport is frequently experienced as inaccessible, dirty, and unsupportive. Mothers often cite uncertain timetables, overcrowded spaces and limited room for prams as main stressors.

Urban planning needs to prioritise the perspectives of the most vulnerable citizens, ensuring that well-being, equality, and sustainability are equally prioritised. Planners need to rethink spaces for urban mobility, shifting from car-dominated spaces to those designed for slower yet sustainable mobility, like different forms of walking (with a pram or children) and cycling. These changes would contribute to reducing the noise and the level of stress in city spaces and enhance the capacity for social connection, physically (with local spaces such as the local park, chemist, or supermarket) and socially (by providing safe spaces and supportive environments for mothers).

Importantly, urban planning should also learn from mothers' adaptation strategies to ensure more inclusive urban environments. For the participants in this study, walking often emerges as the most feasible option. The slow pace of walking while pushing a pram offers mothers active and independent mobility and also the opportunity to engage more deeply with their local geographies and develop a sense of belonging. Through walking, they connect with the environment on a sensory level, paying attention to noises, air quality, and the texture of urban design. In doing so, they discover and value connected and diverse urban spaces, reclaiming the importance of these areas in fostering a supportive urban environment. Their experience extends far beyond the visual, delving into the significance of '*sensing the city through multiple sensory modalities*' (Howes, 2005: 323). Cities should be experienced through all our senses, otherwise we risk the growing technological dominance of urban spaces and the consequent impoverishment of public life, as Sennett (1994) warned decades ago.

By incorporating the unique perspective of first-time mothers of preterm babies in existing scholarships, this article highlights how vulnerability shapes urban experiences and offers a fresh perspective on the importance of human-centric environments that address broader needs. It emphasises the importance of spaces for mobility, particularly walking, for mothers' wellbeing, social connections and sense of belonging, benefits that could then extend to other social groups as well. Additionally, it identifies gaps in urban planning that continue to overlook the full spectrum of life's phases, as Mumford argued back in 1949. These gaps include the neglect of vulnerable social groups and the failure to integrate multi-sensory policy-making, as discussed by Heinrichs (2019, 2021).

In reimagining mobility in inclusive cities, the affective and sensory experiences of mothers navigating urban spaces underscore the need to design everyday, local environments with a focus on both their physical and social infrastructures. This includes spaces of movement (streets, sidewalks, green spaces, and bus stops), accessible transport infrastructure fostering connections both with local spaces (such as local parks, pharmacies, or supermarkets) and with other mothers.

This article argues for a more comprehensive approach to urban sustainability, one that addresses more diversified and nuanced needs. By focusing on everyday sensed spaces where urban dwellers can walk, feel included, and contribute to low-carbon practices, we can deepen our understanding of sustainable cities (Gullino, 2011).

Conflict of interests

The author has no conflicts of interest to declare.

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