Habitat International 142 (2023) 102965

Contents lists available at ScienceDirect

Habitat International

journal homepage: www.elsevier.com/locate/habitatint

Reconsidering mobility of care: Learning from the experiences of low-income women during the COVID-19 lockdown in Itagüí, Colombia

Juan Pablo Orjuela *, Tim Schwanen

Transport Studies Unit (TSU), School of Geography and the Environment, University of Oxford, South Parks Road, Oxford, OX1 3QY, UK

ARTICLE INFO

Keywords:
Mobility of care
Mixed methods
Gender
Transportation
COVID-19
Colombia

ABSTRACT

In recent years the literature on mobility of care has rapidly expanded, and the concept offers a powerful lens to highlight how everyday mobilities are organised, undertaken, and experienced in gendered ways. The concept can nonetheless benefit from further theoretical development. In this paper we enrich the mobility of care concept by drawing on influential conceptualisations of care from feminist theory and analysis of data collected during the COVID-19 lockdown among a group of 40 low-income women living in peri-urban areas of Itagüí, a municipality in the south of the Medellín metropolitan area, Colombia. Through this approach we first argue that relying on a taxonomy of trip purposes limits the understanding of the role of care in urban mobilities and risks underestimating the prevalence of mobility of care. Second, we suggest that activities of self-care also generate mobility of care and that their consideration allows practices and experiences of receiving care to be considered. Finally, we show how care activities are part of, and generate, intertwined mobilities and immobilities, and argue that rendering visible the full extent of mobilities of care demands that careful consideration be given to immobilities as well.

"*The world will look different if we move care form its current peripheral location to a place near the centre of human life*" – Tronto (1993, page 101)

"*[N]ow everything revolves around helping others, share as a family, and take care of each other against a hidden enemy called COVID-19*" – Rosa (pseudonym), Dimú research participant, 2020

1. Introduction

In transport research, the concept of mobility of care has centred care-related activities in how some researchers and policymakers measure and interpret trip purposes and, in line with the quotation from Jean Tronto above, the world does look different through a care-centric lens. Caring for others often involves trips that do not align with the assumption of pendular travel central to much transport planning, with commuters going to a fixed work location in the early morning and back home in the afternoon. It instead includes multiple chained trips, undertaken at a wide range of hours to access multiple locations. These trips also highlight the gendered nature of urban mobility as women typically undertake many more care-related trips than men (Sánchez de Madariaga & Zucchini, 2020). However, most of the mobility of care literature is grounded primarily in empirical observations and the concept could benefit from further theoretical development. Although commonly referred to as 'mobility of care', in this paper we also use the plural version – mobilities of care – to reflect the various types, motivations, and characteristics of these mobilities and the diversity of the people who enact them.

In this paper we aim to contribute to the mobilities of care literature in three ways, by i) moving from taxonomies of trip purposes in travel surveys to a focus on care as conceptualised in feminist scholarship for the identification of mobilities of care, ii) redefining care trips to include self-care and other trips traditionally excluded from mobility of care, and iii) explicitly recognising the co-constitutive nature of mobilities and immobilities of care. We do this by combining a conceptualisation of care from feminist scholarship with empirical evidence from a group of 40 women in Itagüí, a municipality in the Medellín urban area in Colombia during the first wave of the COVID-19 pandemic. In Colombia, a complete national lockdown was in place from 24th March until 1st September, 2020 and followed by intermittent local lockdowns and mobility restrictions. During the national lockdown, people were instructed to stay home and only undertake essential travel, such as

* Corresponding author.
E-mail address: juan.orjuelamendoza@ouce.ox.ac.uk (J.P. Orjuela).

https://doi.org/10.1016/j.habitatint.2023.102965
Received 13 April 2023; Received in revised form 31 October 2023; Accepted 1 November 2023
Available online 9 November 2023

commuting to/from employment in health services and movements associated with food production and distribution (Arellana et al., 2020). As exemplified by the above quotation from Rosa, these restrictions affected the way care and its associated mobilities were enacted.

The remainder of this paper is structured in four sections. In Section Two we consider previous studies of mobility of care and explain how the identification of mobilities of care can be developed. This is followed in Section Three by a discussion of the geographical location of our research, our methods, and the group involved in the process. In Section Four we develop our contributions in detail, before discussing their implications in Section Five.

2. Setting the scene: mobility and care

2.1. Mobility of care

In transport research, care-related activities and trips have predominantly been discussed in two ways. First, there is a long-standing tradition of studies into household-serving or 'maintenance' travel and women's disproportionate responsibility for it (e.g., Hanson & Hanson, 1981; Mauch & Taylor, 1997; Priya Uteng & Turner, 2019; Rosenbloom, 1978; Schwanen, 2007). This literature has challenged long-standing assumptions in transport studies and planning of trip-makers as neutral, disembodied subjects unmarked by gender and its intersections with class, race, age, and other processes of social differentiation. Second, and more recently, Sánchez de Madariaga has introduced the concept of 'mobility of care', which she proposes "includes all travel resulting from home and care responsibilities: escorting others; shopping for daily living" (Sánchez de Madariaga, 2013, pages 53–54), as well as visits to take care of the sick or elderly. The concept has seen considerable uptake in Latin America, where it has helped to highlight differences in mobility burdens between men and women (Hernández & de los Santos, 2020) and the changes in mobility patterns that are associated with having children (Faria, 2020). It has also helped to foreground the social aspects of sustainable transport, a concept that is mostly understood in terms of environmental aspects and implications (Sagaris & Tiznado-Aitken, 2020).

Sánchez de Madariaga introduced the mobility of care concept to question the usual focus in transport policy on work-related trips, which in combination with socially established gender roles has resulted in a poor integration of gender issues in transport planning. By creating a new category of trip purposes, the mobility of care concept has given greater visibility to care-giving activities that are typically subsumed in transport research and policy under categories such as social visits, serving passengers, or shopping. This new category recognises the labour involved in giving care to children and other dependent individuals, and offers insights into gender disparities because women conduct most care-related trips (Montoya-Robledo & Escovar-Álvarez, 2020; Murillo-Munar et al., 2023; Ravensbergen et al., 2020, 2023; Sánchez de Madariaga & Zucchini, 2020). It is trips associated with childcare (Faria, 2020) and to accompany other household members of the same household that require some mobility assistance (Hernández & de los Santos, 2020) that have received particular most recognition in mobility of care studies to date.

Care-related trips share certain features that contribute to their lack of recognition in much transport research and policy. Care trips are frequently part of multi-purpose chains of typically short trips (Faria, 2020; Murillo-Munar et al., 2023; Plyushteva & Schwanen, 2018; Ravensbergen et al., 2023). Such chains may involve, for example, picking kids up from day care centres, stopping at a shop to get groceries, and other care-related activities before heading home, and differ markedly from the common representation of travel behaviour as pendular and consisting of heading to a stable workplace and back home after work. Care-related trips frequently also involve taking small children along, using strollers, and carrying bags, packages, toys and many other objects that are needed for care-giving. One type of care trip that has received some attention in recent years comprises velo-mobilities of care – that is, care-related trips carried out by bicycle (Ravensbergen et al., 2020). Facilitating care-related trips by bike should be an important part of sustainable transport policies worldwide but seldom receives the attention it deserves in local policy-making (Jiron & Carrasco, 2019; Sagaris & Tiznado-Aitken, 2020).

2.2. Advancing understanding of mobility of care

A focus on trip purposes is useful for the identification of mobility of care, especially if research relies on secondary data such as national or local travel survey data, originally collected by or for government agencies. However, working with trip purpose categories is not without limitations. Those categories only to some extent reflect the dictum that travel is a demand that is derived from people's need or preference to participate in everyday activities or social practices that are distributed across space and time. This is why the activity-based approach to travel analysis (Axhausen & Gärling, 1992; Rasouli & Timmermans, 2014) has long since considered how individuals' and households' trips are linked to time use and sequences of activities conducted at particular physical locations, with or without others. Similarly, in social practice theory (Hui et al., 2017; Shove et al., 2012), it is common practice to study everyday mobility practices as part of the 'practice bundles' they constitute with other practices, such as the 'weekly supermarket shopping-freezing of food items-private car use' bundle. Studying a person's physical trips in close connection with their own and others' actions, practices, and behaviours in stationary settings can advance understanding of what constitute mobilities of care, why and how these mobilities are performed, and how they are experienced.

There is, however, another leg to the 'mobility of care' concept. The conceptualisation of its care component can be advanced by grounding research on the mobility of care explicitly in feminist scholarship on care and the ethics of care (Raghuram, 2016; Sevenhuijsen, 1998; Tronto, 1993, 2010). For Tronto and Fisher (in Tronto, 1993, p. 10), care is "a species activity that includes everything that we do to maintain, continue, and repair our 'world' so we live in it as well as possible". Tronto has divided care in four 'phases', namely i) caring about, ii) taking care of, iii) care giving, and iv) care receiving (Tronto, 1993, pages 105–108). These four phases are related, respectively, to four ethical elements of care: attentiveness, responsibility, competence, and responsiveness as shown in Table 1. Deeply influential across the social sciences, Tronto's approach to care has widely been "taken up descriptively and critically […] to interrogate the politics of how worlds are sustained"(Middleton & Samanani, 2021, p. 32). Its usefulness to trips to chauffeur children to schools and nurseries has already been demonstrated in Schwanen (2007).

The definitions of mobility of care as described in Section 2.1 are typically located at the intersection of Tronto's phases ii and iii above, that is, 'taking care of' and 'care giving'. 'Taking care of' differs from 'care giving' insofar that the former does not imply physically administering the care but comes with an acceptance of responsibility. Thus, being responsible for having food at home (taking care of) does not necessarily imply physically buying and preparing such food (care giving). In a similar vein, 'caring about' having food at home (phase i) implies the recognition of a need, which may not require physical movement. 'Receiving care' (phase iv) is partially excluded from the mobility of care definition used by Sánchez de Madariaga and Zucchini (2020) and others (Faria, 2020; Murillo-Munar et al., 2023) because they usually maintain health-related trips as a separate trip purpose category. Furthermore, the definition of mobility of care excludes trips such as leisure shopping, personal walks for recreation, and other leisure visits, despite some of these being a potentially important component of self-care. Tronto's phases of care are intertwined and closely related, and it is not our objective to suggest they should be translated into distinct categories of trips. Instead, and as demonstrated below, considering all four phases allows a very broad range of trips to be

Table 1
Four phases of care and their related ethical elements.

Care phase	Related ethical element	Comments
i ***Caring about***	*Attentiveness* – the recognition of a need	Before taking care of a specific need, we must be attentive to others' needs. This does not necessarily imply direct action as, for example, one may care about another person's wellbeing without going to see or calling them.
ii ***Taking care of***	*Responsibility* – e.g., the responsibility of care parents have for their children	Taking care of is here presented as taking responsibility. In this sense, making sure that, for example, children receive proper food and healthcare classifies as taking care of even if the responsible individual or group need not administer this care themselves. This taking care of may, or may not, involve additional activities and mobilities.
iii ***Care giving***	*Competence* – the ability to provide care	Care giving is an essential part of care and Tronto highlights the importance of considering competence as an ethical element. In Tronto's words, "intending to provide care, even accepting responsibility for it, but then failing to provide good care, means that in the end the need for care is not met" (Tronto, 1993, page 133)
iv ***Care receiving***	*Responsiveness* – giving agency to the one receiving care	Responsiveness in this case reminds us of the importance of considering the preferences of those receiving care. This implies recognising that those receiving care can refuse or amend the way their needs are being met and a moral necessity to respond to these preferences.

identified as part of mobility of care. This means that mobility of care is even more prevalent and worthy of critical consideration in transport policy than previous studies have suggested.

3. Location, methods and the Dimú group

Itagüí is one of the ten municipalities constituting the metropolitan area of the Aburrá valley in Medellín, Colombia (Fig. 1), a conurbation of 3.8 million inhabitants. With a population of 268,000 and area of 21 km^2 (Alcaldía de Itagüi, 2015), Itagüí is one of the densest municipalities in the country. To the north, it borders Medellín, Colombia's second-largest city of 2.5 million inhabitants. The Medellín River cuts across the metropolitan area from south to north and is the east border of Itagüí physically separating it from Envigado, one of the most affluent municipalities in Colombia.

Despite Medellín and Itagüí being part of a continuous urban area, they remain administratively independent. The rural and peri-urban areas of the steep hills to Itagüí's west are known as the Corregimiento (8.9 km^2) and mostly populated by low-income families in informal settlements. A study by Oviedo Hernandez and Titheridge (2016) considered the Altos de Cazucá municipality in the Bogotá metropolitan area but described social exclusion in the periphery of Colombian cities in a way that is directly transferable to the Corregimiento in Itagüí. As in Altos de Cazucá, the urban marginalisation of the Corregimiento combines geographical (e.g., the Medellín River to the east and the high slopes to the west), economic (with most people in the Corregimiento living on salaries close to or even below the legal minimum), and social dimensions of exclusion (such as fear to move at night and in certain areas), and is compounded by a lack of sufficient facilities within the area itself (Church et al., 2000). The Corregimiento offers only a small number of local opportunities for satisfaction of basic needs. These include grocery shops, some public schools (although the main one had been under construction for three years and students were taking their classes on improvised tents at the time of our study) and day-care centres, and a police station and jail.

Dimú is a research group of 40 women from the Corregimiento, which emerged in January 2020 out of transdisciplinary participatory action research project focused on accessibility and health instigated by researchers at the University of Oxford and EAFIT university in Medellín. The inclusion criteria that were used when Dimú was created were:

- Self-identifying as women (although while this was not a selection criterion, all participants were, in fact, cis women);
- Being over 18 years of age;
- Being the carer to at least one child aged 0–8 years old; and
- Living in the Corregimiento of Itagüí.

The Corregimiento is a common settlement for national migrants fleeing from violent areas in Colombia and Venezuelan migrants looking for better opportunities. However, place of origin was not included in our survey nor part of our inclusion criteria. Table 2 provides summary statistics for the Dimú group and shows that the participants lived in a variety of household situations and were very to extremely poor.

The research with the Dimú group was broadly focused on the relationships of im/mobility with health and wellbeing. Mobility of care only emerged as a prominent theme at the analysis stage as one that cuts across the materials focused on different aspects of health and wellbeing. The originally planned research activities were significantly adapted when Colombia entered a complete lockdown to control the spread of the coronavirus. Face-to-face meetings and workshops were substituted by online activities which were mostly configured around WhatsApp use. This was a collective preference and decision because the participating women all had smartphones and used WhatsApp regularly but were keen to limit data usage. Most Dimú women considered participation in virtual workshops prohibitively expensive because they lacked access to essential infrastructure, such as laptops, broadband internet and/or large data bundles.

The analysis below is based on four types of interaction (Fig. 2). Three waves of online surveys were completed, with questions being added in the second and third waves. The first-wave survey was a travel diary asking for trips conducted on the previous day, including their purpose and monetary cost. The second wave added details on what the women considered to constitute essential trips, and the third wave added details on mental health. Surveys were sent via a personal WhatsApp message over one week that included weekdays and weekends. The day each Dimú member received her survey was allocated randomly.

The diaries were complemented by four rounds of storytelling exercises. The women in Dimú were invited to tell us stories using the medium(s) of their preference. We received videos, voice messages, crafts, diaries, photographs, and written pieces. Given the pandemic restrictions, all crafts and hand-written diaries and pieces where shared through photographs via WhatsApp. In total we received 56 stories covering four topics (which were suggested by the research team based on analysis of materials received earlier). In the following sections, pseudonyms are used to protect participants' privacy.

Third, in April 2020 Dimú collectively responded to the consultation

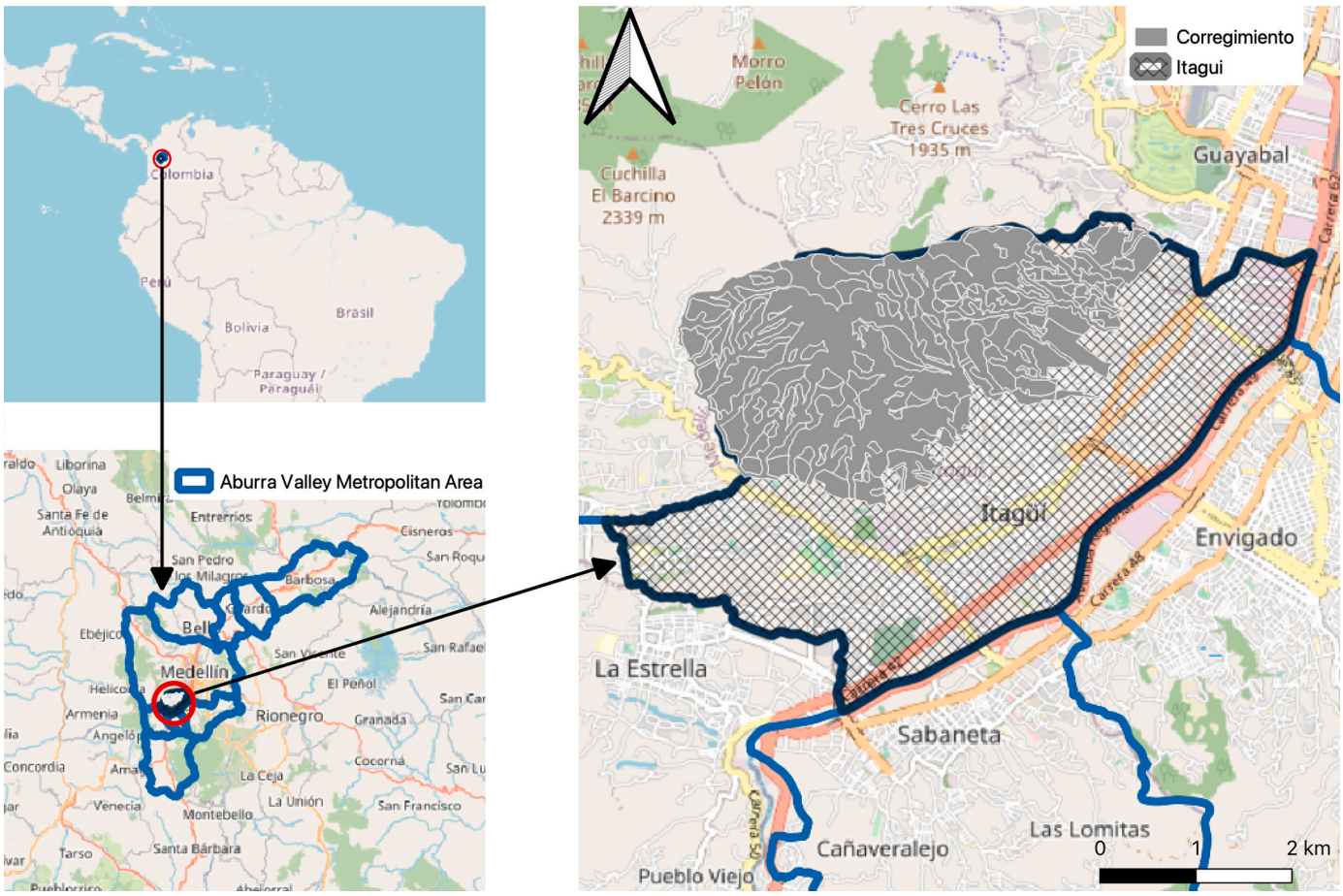

Fig. 1. Map of Itagüí in the Metropolitan area. The Corregimiento is shown in solid grey.

Table 2
Summary statistics of the Dimú group.

	Employed	Independent	Unemployed	Full-time homemaker	Other/No answer
Occupation	4	13	12	9	2
	Yes		No		No answer
Living with partner	20		17		3
	Min	Median	Mode	Max	No answer
Age	21	32	32	67	3
# children living in their home[a]	0	2	2	3	2
# adults living with them	0	1	1	5	2
Personal monthly income[b]	0	13.5 -< 27	27 -< 135	135 -< 270	4
Household monthly income[b]	0	135 -< 270	135 -< 270	270 -< 540	4

[a] Being the carer to one or more children does not necessarily mean being their mother as in some cases the child was a sibling or godchild. This is also why in one case the child did not live with them.
[b] Monthly income ranges given in approximate US$ values in 2020.

phase for Itagüí's Development Plan[1] for the period 2020–2023 (Lozano-Torres, 2021). The decision to submit comments to the Development Plan was mostly opportunistic given that our timeline matched that of the Plan's open call for comments, but also served two purposes. First, it gave the researchers an early opportunity to begin conversations with Dimú in a way that directly influenced the policy-making process in the area, thereby strengthening the group's voice and its shared sense of collective efficacy. Second, it opened the door for public investment in the topics that women in Dimú found most important as all budget decisions in the following four years would be based on their relation to the Development Plan goals. The University of Oxford and EAFIT University researchers organised the process and received reactions from 20 women who articulated a series of concerns centred on the environment, health, and transport in Itagüí.

Finally, the first author conducted semi-structured phone interviews with five Dimú women after the national lockdown in March 2021, to obtain further information on how they perceived their mobilities of care had changed during the lockdown. Interviewees were selected based on the stories they had shared previously, and interviews were completed during individual WhatsApp calls lasting 30–60 min.

The research with Dimú received approval from the University of

[1] Development Plans in Colombia are the statutory instrument for short- and mid-term development goals and financial investment by local governments, presented by the local executive branch every four years. Before its approval, the plan has to go through a consultation phase and has to be approved by the local legislative council.

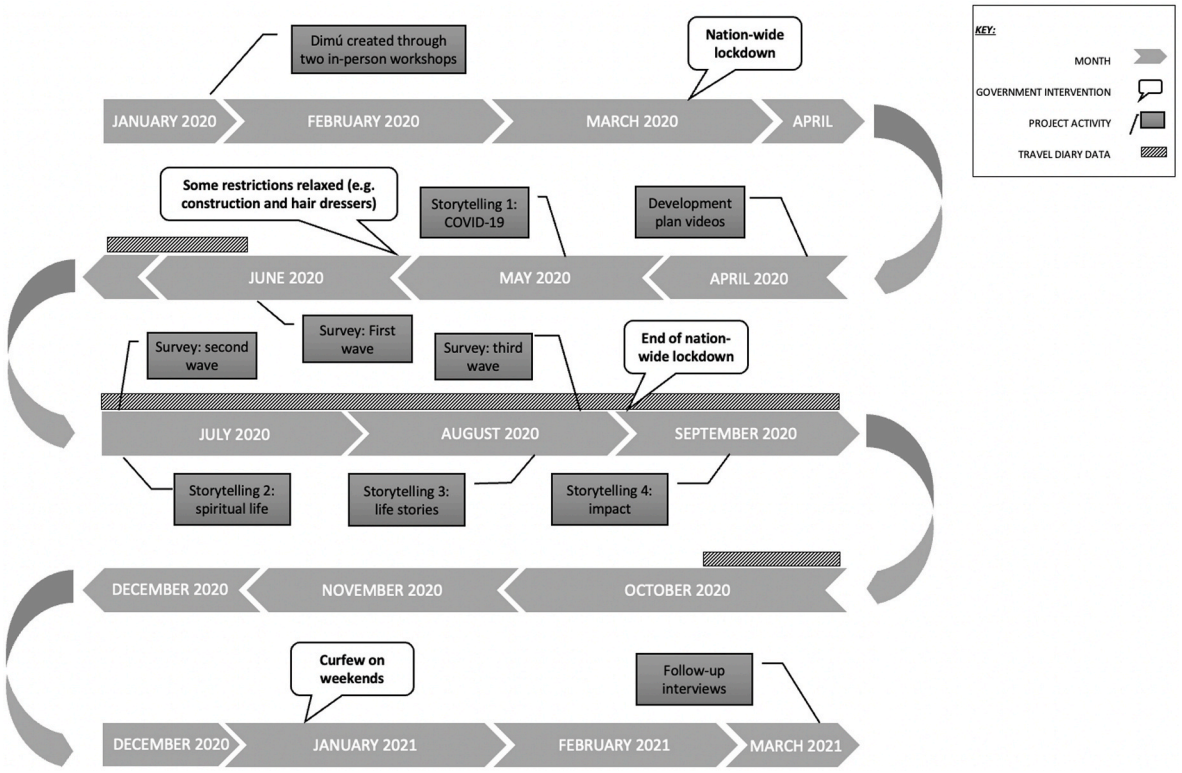

Fig. 2. Timeline of the various stages of the project and policy interventions due to COVID-19.

Oxford's Research Ethics Committee (reference: SOGE 1A020 – 01). The application form paid detailed attention to typical ethical issues in participatory research (e.g., regarding power relations between academic researchers and community members and the management of expectations about project results among all involved parties) and was updated to account for the complications raised by the pandemic. At the start of the work with the participating women, we began by creating a sense of community through the Dimú WhatsApp group. We gave the group the Dimú name and created a logo with participants' help, and soon after, the WhatsApp group became an informal place where they shared thoughts on the pandemic, discussed the veracity of news articles, and informed each other about the latest governmental advice. Some used the group to obtain support for housing emergencies or grocery shopping. Research methods were adapted to keep them safe and to allow them to take part while participant burden was minimised as much as possible. Deadlines for surveys and stories were agreed with them and kept flexible. Cash awards between US$ 10 and US$ 100 were offered to the best three stories in every round of story-telling, and when in person meetings were possible, they were all compensated for their time with the equivalent of Colombia's official minimum hourly wage, and offered transport, lunch, and childcare.

The reactions to the Development Plan and all stories were analysed using NVivo version 12 (QSR International Pty Ltd., 2020) and parts were classified into four nodes (family, livelihoods, mental health, im/mobility). Ten women were selected as case studies based on the relevance of their answers with the defined nodes. Data was analysed both longitudinally (i.e., at an individual level looking for trends and changes with time) and cross-sectionally (i.e., at a node level looking for trends and changes between individuals). All videos and voice messages were coded, but only key segments were transcribed. All answers were received and analysed in Spanish. Quantitative data from surveys was analysed using R Studio (R Core Team, 2020; RStudio Team, 2020).

4. Im/mobilities of care during severe restrictions

4.1. Mobility patterns

As expected, the women in Dimú declared very few trips. Surveys were collected from July – three months after Colombia's national lockdown started – until mid-October 2020, which was 1.5 months after the lockdown finished (although some restrictions were still in place). On 109 (64%) of the 174 days for which survey data is available the women did not leave their house. Fig. 3 shows the mean number of declared trips per person per day for all surveys and for surveys reporting at least one trip. In no month did the average number of trips per person per day for all surveys exceed 1.5, although the values increased post-lockdown. To a limited extent the low values reflect

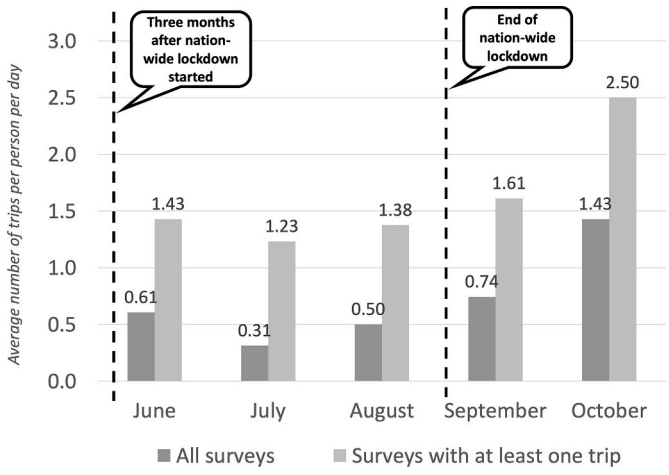

Fig. 3. Average trip frequency per person per day according to month of submission in our survey.

underreporting or confusion about the difference between a round-trip and a trip from an origin to a destination (despite the research team's efforts to clarify the difference). Yet the effects of extreme poverty as well as stay-at-home orders and a reduction in public transport service provision during the lock have most likely been more important than underreporting. The combined effect of these factors is that average trip frequencies for the Dimú group are even lower than those previously recorded for areas of very low incomes in Colombia (Bocarejo & Oviedo, 2012; Murillo-Munar et al., 2023; Oviedo Hernandez & Dávila, 2016). Another effect of the lockdown restrictions imposed by the government were very low levels of trip chaining and travelling in company of members of other households among the Dimú women.

In terms of trip purpose, shopping and errands prevailed among the declared trips (Fig. 4). However, it is also clear that the use of conventional trip purpose classification renders some mobilities of care invisible and difficult to identify. By reviewing our data, we could create new categories that included care as a separate purpose, in a similar fashion as Sánchez de Madariaga and Zucchini (2020) have done. This resulted in the identification of almost half (49%) of the trips as mobility of care.

Walking was the most common transport mode with 50% of all trips, followed by 20% in the *chivero* – a collective taxi with a fixed route that fits up to five people – as shown in Fig. 5. Chiveros are not formally regulated by any transport authority and operated normally during the lockdown despite a national mandate to reduce public transport to 30% of normal capacity. Buses did comply with the national mandate, and some routes in Itagüí were altered while some servicing the Corregimiento were stopped altogether.

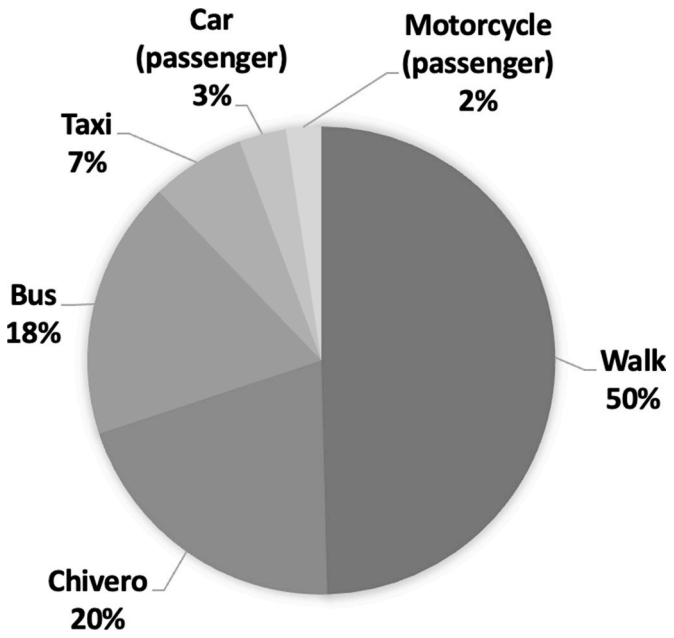

Fig. 5. Mode choice distribution of all trips in our survey.

4.2. From trip purpose taxonomy to a care-centred sensibility

While grounding the identification of mobility of care in quantitative information on the occurrence of particular trip purposes is useful, our analysis shows that this approach cannot account for all mobilities of care involving the Dimú women. An approach that centres on care as defined by Tronto (Section 2.2) can help to identify additional trips and activities that can plausibly be considered as mobilities of care.

Some of the women's trips were conducted not only to give care or help someone receive their care, but also because they cared 'about' (phase i) and needed to care 'for' (phase ii). Mónica, for example, was unable to go to work during the lockdown and in her first story from May 2020 narrated how this limited her capability to care for family members about whom she cares much. The narration involves a sense of responsibility (the related ethical element of phase ii):

> *"I [used to] go every day to the main fruit and vegetable wholesale to sell candy. Sometimes Mister Lucas in block 10 helps me out [and I do the] packaging of the onion 3 days a week. With that and what I get from selling the candy I save enough for rent, to send to my son in Venezuela, and to buy things for my 16-month-old daughter. I am a single mother of two beautiful children, and a 16-year-old niece takes care of my baby when I go out to work. My brothers help out with food […]. [During the lockdown] it hasn't been easy but not impossible either. I can't sell candy anymore and at the onion warehouse they now need me only once a week and not even every week. What has affected me most of the pandemic is that I can't send anything to my son, and I owe two months of rent. One of my brothers is not working now and the other works once or twice a week".*

It is evident that Mónica's ability to care for her children was a collective achievement owing to social capital in Bourdieu's sense (Bourdieu, 1986). Through interpersonal ties within her wider family (her brothers and niece) and beyond (Mister Lucas in block 10), she was able to go out for work and take care of her children. She appealed to her place-based social networks in the Corregimiento for help in enacting this care. Her story involves multiple trips, of multiple people, and two different countries.

If asked to classify the purpose of her trip to the wholesale, Mónica would probably have chosen "work", but this classification cannot do

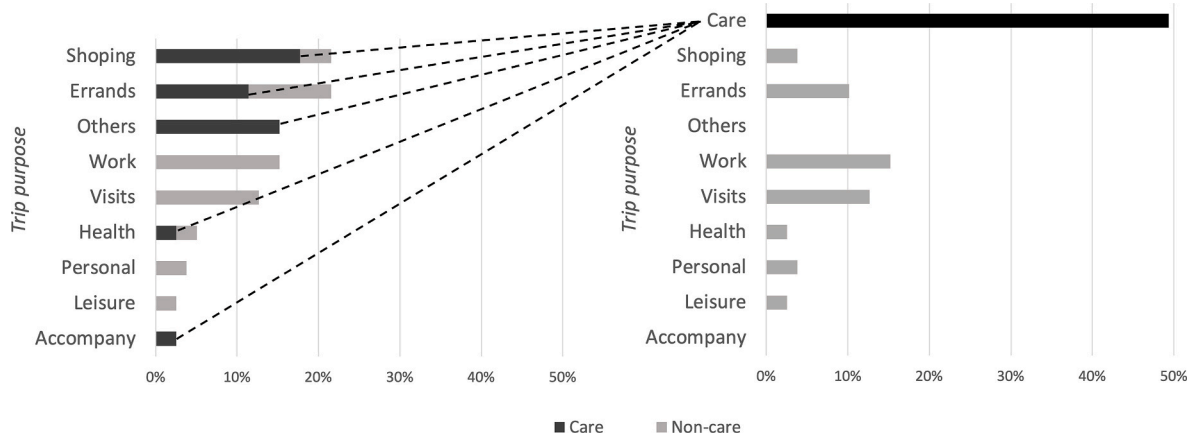

Fig. 4. Classification of trip purpose according to traditional categories and to umbrella category of mobilities of care. All return home trips have been excluded from the list. This classification does not include trips to care for themselves.

justice to the multiple activities and social interactions in which she is involved there and the meanings those activities and interactions has for her. In her story she talked mostly about trips to work but she renders them meaningful because they enable her to care for her loved ones. Care is a key motivation for those trips in a way that is not captured through a taxonomical reformulation of declared trip purposes, as Sánchez de Madariaga and Zucchini (2020) pursue. Mobilities of care are a relationally constituted category of movement that can seep into many different types of trips, seemingly undertaken for other reasons.

Paula's experiences offer another example of how caring for family members and work trips are intertwined in ways that taxonomical redefinition may not capture. With two daughters aged 5 and 9, her pre-pandemic monthly household income was between $100,000 and $500,000 COP (US$ 27.50–137.50) earned by herself and augmented by her employed father. Her mother helped her by looking after her daughters but not during lockdown:

> *"I've had to leave the girls alone. My mum gave me a camera so I can keep an eye on them through my mobile phone when I'm out [delivering products], and that way I just leave them with everything they need. I feed them before, so they are full, and they know I am always watching, so they think twice before doing any wrong. But thank God for that. When my mum gave me that [camera] I was dancing on one foot, my mum helps me a lot with those things (…). I can't take the girls to my mother's house now because it is $20,000 COP [US$ 5.50] to go [by taxi], and another $20,000 COP to come back. And she is not doing ok health-wise either, so the girls just have to behave. They are very well behaved anyway."*

Her mother's gift extended Paula's capabilities to care for her daughters and offer some emotional support when she is out delivering her products, which she needs to do to secure income. Her mobile phone-based method is far from ideal but knowing her daughters are alright gives her peace of mind when she travels.

Among the Dimú women care and associated mobilities extended beyond relatives and close ties in social networks to the wider community through what could be called expressions of solidarity. For Mason (2000), solidarity is one of two conditions that need to be met for a group to constitute a community in a moral sense. Solidarity may have various definitions, but we follow Mason's for whom it refers to members of a group giving each other's interests some non-instrumental weight in their practical reasoning. During the COVID-19 pandemic, the word solidarity was also used by the Colombian government, who called its main instrument to alleviate financial pressures induced by the lockdown the "solidary income". This instrument was a direct cash transfer which originally focused on 3 million households in Colombia and was subsequently extended to 4.85 million. Households' eligibility was based on their SISBEN rating, an index used in Colombia to prioritise social expenditure, but even before COVID-19 local authorities had been made aware of inconsistencies in the index that resulted in people in the poor areas of Itagüí being systematically and erroneously awarded scores that excluded them from some social programmes. However, it is important to stress that the role of the government in guaranteeing the livelihoods of the poorest of the poor does not fit most definitions of solidarity, given its clear instrumental orientation and legal basis (which forces the government to offer it). Nevertheless, none of the women in Dimú reported having access to the "solidarity income" over the course of our project.

Some of the Dimú participants' stories do nonetheless suggest that solidarity within the community as defined by Mason (2000) offered an alternative organisational response to the COVID-19 and lockdown crisis in places like the Corregimiento. Solidarity expressions frequently went beyond occasional help and were often highly organised, if also gendered. Rosa, for example, was the first one to bring this idea of solidarity to our attention:

> *"I didn't have enough time anymore; everything revolved around showing solidarity with others. I started to ask for help for families with a latent need. God puts earthly angels in one's way"*.

Rosa is financially better-off than other women in Dimú and has two older daughters who demand less attention than most younger ones do. She decided to spend a good deal of her lockdown organising help in her community. She had contacts in the main fruit and vegetable distribution centre in the area and received donations from them that she distributed in coordination with other community leaders.

As a result of her activity, Rosa took trips to care for a substantial number of people beyond her family and immediate neighbours but categorised these trips as "*personal*" in the surveys. When asked about these trips and their connection to mobilities of care during the follow-up interview, Rosa still classified them as personal errands, given the voluntary basis of her community engagement. This instance offers yet further evidence that mere reclassification of individual trip purposes may not capture the complexity of how mobilities enable care activities.

4.3. Mobilities of self-care

As explained in Section 2, previous studies have generally excluded trips for leisure activities such as personal walks for recreation or meeting friends and family as manifestations of mobilities of care. The stories by, and interviews with, the women of Dimú nonetheless suggest that those trips can be an integral part of care for oneself, especially when mobility is so limited by the State as it was during Colombia's COVID-19 lockdown.

Tronto (1993) argues that it is important to recognise that care can generate conflicts as meeting someone's needs will often imply that someone else's will go unmet. For the women in Dimú caring for and giving care to family members and other people in their community very often came at the expense of taking care of themselves. The de-prioritising of self-care seemed deeply rooted, and sometimes appeared to reflect little attentiveness to, and caring about, their private self. Here is Mireya who, when asked to tell us about *her* life before and during the COVID-19 pandemic, related to following:

> *"Once upon a time, in the city of eternal spring, there was a man who had two beautiful children whom he loved very much, but he worked long hours every day and had little time to spend with them. His daughter would be taken to school every day by their mother while his older son would wait at home […]. Dad was very worried because if he didn't work, how were the grocery shops going to get supplies, as his job was to supply them every day? Finally, we all understood it was time to stay at home because COVID-19 could hurt us a lot. Super-dad was convinced that this would all pass if we just had patience and faith"*.

Throughout the story she was only the narrator of the story titled "Superhero Dad", and sometimes referred to herself in the third person as the children's mother, a secondary character. This invisibility of her own needs and feelings in the story is a – probably subconscious – reflection of how her life revolves around others. Mireya is not alone in putting others' needs first, and children were commonly the women's focus. When commenting on the draft Development Plan, they mostly discussed how their children lacked safe places to play and spend time. Road safety measures were justified "*so our children can go out freely*", parks and green spaces were identified as "*inadequate for my children to play in*". When asked by the research team about what they could offer to the Development Plan, one said: "*we can share the ideas we have as mothers and heads of our family*". This is significant as these specific subjectivities have received little attention in Development Plans in Colombia so far, in contrast to those of citizen and woman (Lozano-Torres, 2021). However, the women in Dimú mostly made no mention of things they wanted or needed beyond their role as a mother. Their own needs and concerns played a secondary role and the wellbeing of others, and particularly their children, was commonly prioritised.

At the beginning of the lockdown, stories would frequently mention how the Dimú women were grateful to spend more time with their families. At the same time, the extra time spent on caregiving meant there was very little time left for them to relax and be on their own. Paula mentioned this during the follow-up interview:

> *"When I have too much on my mind I like to go out. I like to be alone, go out, clear my mind, go to a place I don't know. But that is something that I can't do now, it's not a personal space but something that I try to fit into my schedule when I have to do errands, for example (…). But being alone is something that one needs every once in a while, as a mother, or as a woman, I guess"*.

Nonetheless, the need for time for oneself could sometimes be identified in the Dimú women's stories, and before the pandemic churches and places of worship offered welcome opportunities for this. The importance of churches and worshipping reflected a wider prominence of spirituality in their self-care routines. Their spiritual lives played a key role in their daily activities and during the pandemic offered an essential source of hope and mental wellbeing which is why one of story-telling rounds was centred on their spirituality. Even before explicitly asking about this, our stories were accompanied by phrases such as "*thank God they are opening Churches again […] so we can go to mass and give God thanks for everything*", or "*I only ask God to give us a new opportunity to […] say together thank you God for giving us the chance to sing and pray together in fellowship*". Nevertheless, the role church plays as part of self-care activities has not been included in previous discussions of mobilities of care.

4.4. The interface of mobilities and immobilities of care

One of the major changes compared to pre-COVID times was that the women's physical trips to take children to school or day-care centres were replaced by full-time dedication to children at home. This is explicit in both surveys and stories. The survey data suggest that the women in Dimú spent on average 113 min per day cleaning the house, 90 min helping children with homework, and 89 min preparing food for the family. Activities classified as 'other' (49 min on average) included 'playing with my children', 'taking care of my father' and 'washing clothes'. On average, 70% of the time at home was devoted to giving care to others, and this was not dependent on whether the women lived with their partner or not, suggesting that male partners did not share much of the additional childcare duties. María shared:

> *"In these quarantine times, we've been isolating, at home, sharing a lot with my husband and my son, doing the activities that my son's school sets […] the little free time, because in quarantine it is not much free time that I have, we spend it as a family"*.

In other words, the physical immobility of care that resulted from not being able to take their children to their childcare, implied near-permanent care. Here, Tronto (1993) again offers important distinctions. Taking care of (phase ii) may imply, for example, taking a child to day-care centres where trained teachers, nurses and others will give care (phase iii). The physical trip a parent takes to a day-care enables them to separate the taking care of from the giving care and is dependent on the immobile day-care infrastructure and the constant presence of their staff (a combination of mobile and immobile actions). During the COVID lockdown, different phases of care collapsed into one as this balance of mobilities and immobilities was severely altered and impeded a shared responsibility of care.

The stories offer further insight into the Dimú women's lived experiences at home. Some, for example, had to get up earlier than before the lockdown to complete various chores, as explained by Catalina:

> *"Very often we have no running water here, so we need to wake up early [to collect it] and make it last for our meals and everything [else]. And when it rains a lot, the water comes down [the hill] very dirty. It is impossible to clean the dishes or wash our clothes. We also have the other water, the one from the public services, but that one comes at specific times. First at 5am, then at 4pm, and finally at 7 or 8pm"*.

The need to fetch water was a change of routine in Catalina's life in response to her having a full house all day and not being able to rely on the water services that day-care facilities and schools offered. The way Catalina obtained fruits and vegetables for her household also changed. At the beginning, she shared:

> *"Thank God we have lacked nothing […], we don't buy all the fruits and vegetables; many are given to us as a gift […] We have a lot of acquaintances that work in fruit supermarkets, wholesalers, or in the plaza so we've had enough fruits and vegetables"*.

Later on, Catalina explained, still in an upbeat tone, that she had resorted to cultivating their own food out of necessity as the severe restrictions had made providing food for her family extremely challenging:

> "*We have enough room for many things. We can labour the land, cultivate, have a garden. Things that we never paid attention to before*".

As María and Catalina highlight, taking care of their families during the lockdown took more effort as getting essential services like food and water for their family before the lockdown relied heavily on mobilities to child-care centres, schools, or local markets and the expected immobilities of those service providers. During COVID all phases of care needed to be performed by the women themselves in their homes.

When dealing with self-care activities, the relationship between mobilities and immobilities can also be explored further. Since churches and places of worship were closed during the lockdown, most of the Dimú women needed to adapt by praying at home or watching the Sunday sermon on television. A few were fortunate to have good and fast internet connections and hence were able to substitute virtual for physical (bodily) mobility and meet with their church group via Zoom. The virtual mobilities enabled by the Zoom platform were still focused on their 'local' church. At a time when many faith-based communities worldwide had to adapt in similar ways and it would have been possible to meet with communities across the planet, the women's need was to connect with people in their physical proximity. It was also clear that participating in church activities at home was a second-best solution because many spiritual rituals cannot be completed at a distance, with the holy communion singled out by those of the Catholic faith. When asked to rank what they thought would be essential trips after the pandemic, they prioritised going to church over all other trip purposes, including visiting family or going to the doctor. Going to work ranked seventh. These changes show the close relationship between physical mobilities, virtual mobilities and immobilities of care in a way that has not yet been explored in the literature.

5. Conclusions and discussion

In this paper we have argued that the identification of mobilities of care can be improved by paying greater attention to the linkages between trips, activities, and practices and by drawing on Tronto's (1993) conceptualisation of care. This has allowed us to contribute in three different ways to the mobility of care literature. First, by arguing in favour of a change from the taxonomical nature that the literature has given to the mobility of care to an ontological discussion where care exists at a higher level, we move from care being a new classification of some trips to an understanding of care being a combination of experienced realities that may involve many trips of networked people, each performing different expressions of the phases of care through mobile and immobile actions. Previous work on the mobility of care has been essential in foregrounding the importance of care within the transport literature. However, drawing on the influential work on care and the ethics of care by Tronto and others can further centre care in transport research on centre stage and allows researchers to recognise the multiple

links that exist between how people move and care for each other.

The perspective on mobilities of care offered in this paper enables the development of new classifications of mobility data that are not based on single trip purposes. Researchers could, for example, look at the role that the mobilities of different people, networks, goods, services, and information play in the four phases of care. If they take a holistic view on care, they may understand better the way that gender roles play out in different contexts, the agency different actors have, and imagine mobility futures in line with our capabilities to care for current and future generations.

Lockdown measures in response to the COVID-19 pandemic failed to protect the women in Dimú from extreme poverty and seem to have exacerbated existing social inequalities. Our research adds to existing literature on how policies in the Colombian context have ignored the way people in lower socioeconomic strata relate and build communities (Wainer & Vale, 2021). Furthermore, the severe restrictions on mobility placed even greater financial burdens on those who depend on the informal economy for livelihoods and live in peripheral locations. Losing sources of income while securing food, water, and shelter became more difficult, particularly on the outskirts of urban areas, reduced the capabilities of mothers and women relying on the informal economy to provide what they considered to constitute appropriate care to their families. A community already struggling to access places in the rest of the city through physical mobility, was left even more isolated. Virtual mobility enabled by smartphones to some extent substituted for bodily mobility, and the role of WhatsApp in the continuation of the Dimú group during the national lockdown is testament to this. However, due to extreme poverty many of the participating women lacked the infrastructure (laptops, broadband internet, and large data bundles) for extensive virtual mobility. Many of their pre-pandemic livelihoods could not be sustained by working from home aided by digital technologies, resulting in the adoption of other income-generating activities or making do with even less income than before the pandemic.

This study is set in a specific community in Colombia, but we believe that many of the ideas put forward in the current article resonate at least to some extent with the practices and experiences of low-income people living in the peripheries of other Latin American cities (Tiznado-Aitken et al., 2023). Our point is not to extend the category of mobilities of care so that it becomes all-encompassing, but to show that its boundaries can be drawn in more diverse ways than so far acknowledged, and that this can have analytical value. This is because pushing the concept's boundaries reinforces and extends arguments about the centrality of care to the everyday mobility of many – if not most – residents of cities around the world. This in turn can embolden claims of the deeply gendered nature of transport policymaking and aid in the imagining and development of future transport policies that foreground care as central to society and wellbeing.

Funding

This article was completed with support from the PEAK Urban programme, funded by UK Research and Innovation's Global Challenge Research Fund, Grant Ref: ES/P011055/1.

Author agreement statement

We the undersigned declare that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere. We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us. We understand that the Corresponding Author is the sole contact for the Editorial process. He is responsible for communicating with the other authors about progress, submissions of revisions and final approval of proofs.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Alcaldía de Itagüi. (2015). *Población. Población*. https://www.itagui.gov.co/anuarioitagui/poblacion.html.

Arellana, J., Márquez, L., & Cantillo, V. (2020). COVID-19 outbreak in Colombia: an analysis of its impacts on transport systems. *Journal of Advanced Transportation, 2020*, 1–16. https://doi.org/10.1155/2020/8867316.

Axhausen, K. W., & Gärling, T. (1992). Activity-based approaches to travel analysis: Conceptual frameworks, models, and research problems. *Transport Reviews, 12*(4), 323–341. https://doi.org/10.1080/01441649208716826

Bocarejo, J. P., & Oviedo, D. R. (2012). Transport accessibility and social inequities: A tool for identification of mobility needs and evaluation of transport investments. *Journal of Transport Geography, 24*, 142–154. https://doi.org/10.1016/j.jtrangeo.2011.12.004

Bourdieu, P. (1986). The forms of capital. In J. E. Richardson (Ed.), *Handbook of Theory of Research of education* (pp. 241–258). New York: Greenwood Press.

Church, A., Frost, M., & Sullivan, K. (2000). Transport and social exclusion in London. *Transport Policy, 7*(3), 195–205. https://doi.org/10.1016/S0967-070X(00)00024-X

Faria, G. C. (2020). Children and urban mobility: Care dynamics on family mobility patterns. In D. Oviedo, N. V. Duarte, & A. M. A. Pinto (Eds.), *Urban mobility and social equity in Latin America: Evidence, concepts, methods* (pp. 59–83). Bingley: Emerald. https://doi.org/10.1108/S2044-994120200000012007.

Hanson, S., & Hanson, P. (1981). The impact of married women's employment on household travel patterns: aSwedish example. *Transportation, 10*(2), 165–183. https://doi.org/10.1007/BF00165264

Hernández, D., & de los Santos, D. (2020). Mobility and gender equity in Latin America: Different mobile burdens and contributions in montevideo (Uruguay). In D. Oviedo, N. V. Duarte, & A. M. A. Pinto (Eds.), *Urban mobility and social equity in Latin America: Evidence, concepts, methods* (pp. 33–57). Bingley: Emerald. https://doi.org/10.1108/S2044-994120200000012006.

Hui, A., Schatzki, T., & Shove, E. (2017). *The nexus of practices: Connections, constellations, practitioners*. London: Routledge. https://doi.org/10.4324/9781315560816

Jiron, P., & Carrasco, J. A. (2019). Understanding daily mobility strategies through ethnographic, time use, and social network lenses. *Sustainability, 12*(1), 312. https://doi.org/10.3390/su12010312

Lozano-Torres, Y. (2021). The quest for gender equality: Understanding and measuring gender responsiveness in Colombia's municipal planning. *Cities, 119*, Article 103358. https://doi.org/10.1016/j.cities.2021.103358

Mason, A. (2000). *Community, solidarity and belonging: Levels of community and their normative significance*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511490309

Mauch, M., & Taylor, B. D. (1997). Gender, race, and travel behavior: Analysis of household-serving travel and commuting in San Francisco bay area. *Transportation Research Record, 1607*(1), 147–153. https://doi.org/10.3141/1607-20

Middleton, J., & Samanani, F. (2021). Accounting for care within human geography. *Transactions of the Institute of British Geographers, 46*(1), 29–43. https://doi.org/10.1111/tran.12403

Montoya-Robledo, V., & Escovar-Álvarez, G. (2020). Domestic workers' commutes in bogotá: Transportation, gender and social exclusion. *Transportation Research Part A: Policy and Practice, 139*, 400–411. https://doi.org/10.1016/j.tra.2020.07.019

Murillo-Munar, J., Gómez-Varo, I., & Marquet, O. (2023). Caregivers on the move: Gender and socioeconomic status in the care mobility in bogotá. *Transportation Research Interdisciplinary Perspectives, 21*, Article 100884. https://doi.org/10.1016/j.trip.2023.100884

Oviedo Hernandez, D., & Dávila, J. D. (2016). Transport, urban development and the peripheral poor in Colombia—placing splintering urbanism in the context of transport networks. *Journal of Transport Geography, 51*, 180–192. https://doi.org/10.1016/j.jtrangeo.2016.01.003

Oviedo Hernandez, D., & Titheridge, H. (2016). Mobilities of the periphery: Informality, access and social exclusion in the urban fringe in Colombia. *Journal of Transport Geography, 55*, 152–164. https://doi.org/10.1016/j.jtrangeo.2015.12.004

Plyushteva, A., & Schwanen, T. (2018). Care-related journeys over the life course: Thinking mobility biographies with gender, care and the household. *Geoforum, 97*, 131–141. https://doi.org/10.1016/j.geoforum.2018.10.025

Priya Uteng, T., & Turner, J. (2019). Addressing the linkages between gender and transport in low- and middle-income countries. *Sustainability, 11*(17), 4555. https://doi.org/10.3390/su11174555

QSR International Pty Ltd. (2020). NVivo (released in March 2020) [Computer software] https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home.

R Core Team. (2020). *R: A language and environment for statistical computing* [Computer software] https://www.R-project.org/.

Raghuram, P. (2016). Locating care ethics beyond the global north. *ACME: An International Journal for Critical Geographies, 15*(3), 511–533. https://acme-journal.org/index.php/acme/article/view/1353/1198.

Rasouli, S., & Timmermans, H. (2014). Activity-based models of travel demand: Promises, progress and prospects. *International Journal on the Unity of the Sciences, 18*(1), 31–60. https://doi.org/10.1080/12265934.2013.835118

Ravensbergen, L., Buliung, R., & Sersli, S. (2020). Vélomobilities of care in a low-cycling city. *Transportation Research Part A: Policy and Practice, 134*, 336–347. https://doi.org/10.1016/j.tra.2020.02.014

Ravensbergen, L., Fournier, J., & El-Geneidy, A. (2023). Exploratory analysis of mobility of care in Montreal, Canada. *Transportation Research Record: Journal of the Transportation Research Board, 2677*(1), 1499–1509. https://doi.org/10.1177/03611981221105070

Rosenbloom, S. (1978). The need for study of women's travel issues. *Transportation, 7*(4), 347–350. https://doi.org/10.1007/BF00168035

RStudio Team. (2020). RStudio: Integrated development for R [Computer software] http://www.rstudio.com/.

Sagaris, L., & Tiznado-Aitken, I. (2020). Sustainable transport and gender equity: Insights from santiago, Chile. In D. Oviedo, N. V. Duarte, & A. M. A. Pinto (Eds.), *Urban mobility and social equity in Latin America: Evidence, concepts, methods* (pp. 103–134). Bingley: Emerald. https://doi.org/10.1108/S2044-994120200000012009.

Sánchez de Madariaga, I. (2013). From women in transport to gender in transport: Challenging conceptual frameworks for improved policymaking. *Journal of International Affairs, 67*(1), 43–65. https://www.jstor.org/stable/24461671.

Sánchez de Madariaga, I., & Zucchini, E. (2020). "Movilidad del cuidado" en Madrid: nuevos criterios para las políticas de transporte. *Ciudad y Territorio - Estudios Territoriales*, 89–102. https://doi.org/10.37230/CyTET.2020.203.08

Schwanen, T. (2007). Gender differences in chauffeuring children among dual-earner families. *The Professional Geographer, 59*(4), 447–462. https://doi.org/10.1111/j.1467-9272.2007.00634.x

Sevenhuijsen, S. (1998). *Citizenship and the ethics of care*. Routledge. https://doi.org/10.4324/9780203169384

Shove, E., Watson, M., & Pantzar, M. (2012). *The dynamics of social practice: Everyday life and how it changes*. Sage. http://digital.casalini.it/9781446258170.

Tiznado-Aitken, I., Vecchio, G., Guzman, L. A., Arellana, J., Humberto, M., Vasconcellos, E., & Muñoz, J. C. (2023). Unequal periurban mobility: Travel patterns, modal choices and urban core dependence in Latin America. *Habitat International, 133*, Article 102752. https://doi.org/10.1016/j.habitatint.2023.102752

Tronto, J. C. (1993). *Moral boundaries: A political argument for an ethic of care*. London: Routledge. https://doi.org/10.4324/9781003070672

Tronto, J. C. (2010). Creating caring institutions: Politics, plurality, and purpose. *Ethics and Social Welfare, 4*(2), 158–171. https://doi.org/10.1080/17496535.2010.484259

Wainer, L. S., & Vale, L. J. (2021). Wealthier-but-poorer: The complex sociology of homeownership at peripheral housing in cartagena, Colombia. *Habitat International, 114*, Article 102388. https://doi.org/10.1016/j.habitatint.2021.102388