INTERNATIONAL JOURNAL OF URBAN AND REGIONAL RESEARCH
DOI:10.1111/1468-2427.13359

– EMBODYING AND RESISTING URBAN HEAT INJUSTICE: Migrant Vulnerabilities and Radical Adaptations in El Raval, Barcelona

PANAGIOTA KOTSILA, VALERIA-CAROLIN CUENCA, MANUEL FRANCO, LOURENÇO MELO AND SAM PICKARD

Abstract

Heat is a central concern for many cities whose efforts for adaptation tend to reproduce inequities. While community-led adaptation has been considered key for enhancing just outcomes, how migrants from majority world countries are in- or excluded from local visions and practices of adaptation has rarely been asked. Through participatory photography and in-depth interviews, we examine the ways through which migrant residents strive for a healthy and meaningful life in marginalized neighbourhoods, and consider the limitations they face during extreme heat. We find labour and housing precarity and limited access to public spaces of heat relief shaping heat injustice, driven by neoliberal urbanism trends and systemic racism that migrants experience in their day-to-day lives. By seeing social and spatial margins that migrants often inhabit as places where exclusion and empowerment converse, we advance a notion of vulnerability as an embodiment of intersectional injustices and a positionality from where radical adaptations emerge. We find such adaptations in the form of self-organized spaces and networks of solidarity and resistance in the city, and therefore argue that pathways of just adaptation demand revisiting and redefining adaptation to include the everyday knowledges and practices of marginalized residents to address underlying and intersecting drivers of vulnerability.

Introduction

> 'A sense of despair, grief, rage, suffocation, abandonment, and regression coexists with that of a revolutionary potentiality, alternative possibilities, collectivizing, determination, worldmaking and critical hope'
>
> Sultana *et al.* (2023: 59)

In this article we focus on migrants from majority world countries (hereafter MW migrants). These represent some of the most climate-vulnerable and climate-affected people, because of their exposure to systemic, ongoing and everyday forms of discrimination and violence during and after their migration journeys, which shape negative outcomes of health and wellbeing (Abi Deivanayagam *et al.*, 2023; Devakumar *et al.*, 2022; Issa *et al.*, 2023; Kotsila and Anguelovski, 2023). Migrants are often minoritized and racialized in places of migration destination, such as European cities. They represent the consequences of historical dispossessions linked to colonial and racial oppressions that have forced large parts of the majority world into debt, conflict, poverty and/or oppressive government regimes. While critical work on migration has shown how borders, anti-immigration measures, xenophobic discourse and institutionalized racism

We want to thank the participants in this research, who offered their time, energy and valuable thoughts. We also thank the Barcelona City Council and the Biennale event Ciencia i Ciutat organization committee, and especially Dr Helen Cole, for trusting us with the task of moving this research forward. Panagiota Kotsila acknowledges the Spanish Ministry of Science, Innovation and Universities for the Juan de la Cierva—incorporación fellowship (IJC2019-040934) for research support, as well as the Maria de Maeztu Programme for Units of Excellence at ICTA-UAB (CEX2019-000940-M). We are also grateful to Melissa García-Lamarca, Isabelle Anguelovski, Isabela Vera, Beatriz Daunt and Austin Matheney for their insightful comments on previous versions of this article.

have defined and permeated the lives of MW migrants and racialized minorities in Europe, this rarely includes questions regarding climate impacts (Hansen *et al*., 2013; Wiesböck *et al*., 2016; Turhan and Armiero 2019; Issa *et al*., 2023).

We know, for example, that Europe's 2022 heatwave caused an estimated 61,000 heat-related deaths (Ballester *et al*., 2023) and that the most severe health impacts from heat (mortality, heatstroke, exhaustion) are being documented for vulnerable populations such as the elderly, infants, pregnant women, people with underlying health conditions and low-income groups (Romanello *et al*., 2022; van Daalen *et al*., 2022; Liu *et al*., 2023). Moreover, as the intensity and frequency of heatwaves are increasing worldwide, it is becoming more obvious that the unequal experience of heat is a socioclimatic phenomenon, connected, for example, to historical processes of racial segregation in the United States, or to more recent trends, such as neoliberal governance tearing apart social welfare and the fabric of social life in many cities in Europe (Keller, 2015; Klinenberg, 2015). However, we do not know how this intersects with migrant status, as there are very limited disaggregated climate health data by country of origin, race or ethnicity, and limited studies on how sociospatial phenomena such as gentrification or neighbourhood abandonment interact with the presence of migrant residents in cities to cocreate heat vulnerabilities and heat injustice.

While the nexus of migration and climate change has mostly been examined in relation to whether, how and to what extent climate acts as a push factor for migration, how migrants are affected by, adapt to and mobilize around climate change also *after* they migrate is less interrogated (however, see MacGregor *et al*., 2019; Kotsila, 2023; Fry *et al*., 2024). To turn our attention to these questions would extend the work of scholars such as Gatt *et al*. (2016), who view migration as a conscious, negotiated and agential process. This carries important implications for a postcolonial and feminist climate urbanism that departs from acknowledging the intersectional drivers of climate vulnerability and constructs responses to address it based on the embodied experiences and knowledge of residents, including some of the most marginalized (Kotsila, 2023). While community-based adaptation and the integration of 'local knowledge' have, for example, long been considered key for enhancing just adaptation (Archer *et al*., 2014; Schipper 2020), the notion of local community has seldom been problematized in relation to migration. In this article, we therefore ask: What shapes intersectional vulnerability to heat-related impacts for MW migrants and what knowledges and practices are mobilized by MW migrants to confront the impacts of extreme heat? We build on prior environmental and climate justice studies and intersectional feminism theories to bring those together with studies on migrant realities, inequalities, racism and discrimination as experienced in the urban milieu of European cities. Inspired by radical feminist work on the potentiality of 'the margin', as a concept that knits together notions around vulnerability and migration, we further sketch a concept of 'situated forms of radical adaptation' generative of more just urban adaptation futures.

We centre the experiences and practices of MW migrants as place-based and experiential knowledge around urban heat adaptation, which includes a 'broader array of actions that are being taken by a variety of climate actors to construct security in relation to thermal concerns' (Hamstead, 2023). We focus on El Raval in Barcelona, Spain, a historically neglected and stigmatized neighbourhood, but also one that has historically been the centre of many revolutionary and anarchist organizations and arguably the epicentre of the birth of the labour movement in the mid-nineteenth century (Assemblea del Raval, 2020) up to the rise of civic platforms in the early 2000s. El Raval has carried a notion of marginality and stigma since the eighteenth century (McDonogh, 1987) and there has always been a tension between survivability and togetherness in the neighbourhood's

social fabric and life.[1] The neighbourhood has in the past three decades undergone urban regeneration and transformation, with new hotels, renovated luxury apartments, expensive restaurants and cultural hotspots existing side by side with run-down apartment buildings, local migrant-owned shops and occupied spaces. To situate our study within El Raval's history, we engage with the notion of 'the margin' as a place, an identity and a life condition that is both constructed and experienced, and which encapsulates vulnerability as much as it carries agency and inspires transformation.

In the section that follows we review literature from the fields of (urban) political ecology and environmental/climate justice, as well as from the broader field of urban studies and feminist theory, and specific contributions of these fields to the concepts of vulnerability and adaptation, to sketch our conceptual approach to intersectional heat vulnerability and radical adaptation. This is followed by the methodological section in which we present our research methods, which consisted mostly of a participatory photography project with migrant residents and some complementary in-depth interviews. Subsequently, we present our findings on labour and housing precarity as well as inaccessible public spaces as expressions of urban climate injustice, and on how reclaiming space and cultivating sense of place emerge as situated forms of radical adaptations to heat. In the final section we provide a discussion of our findings and a concluding reflection on the value and limitations of our methodological approach.

From intersectional heat vulnerability to marginality as generative of radical adaptation futures

In this article we draw on feminist political ecology and environmental/climate justice studies, treating heat vulnerability and adaptation as historically contingent, uneven and deeply political 'all the way through' (Eriksen *et al*., 2015) both in terms of impact distribution and epistemologically, related to how climate change impacts and adaptation are framed, what responses are considered adequate and whose interests are represented at multiple levels of decision making (Anguelovski, Connolly *et al*., 2019; Smith *et al*., 2022; de Rosa *et al*., 2022; Hamstead, 2023). A critical understanding of urban heat vulnerability demands paying attention to its multiple factors (e.g. non-resilient homes, precarious employment, lack of climate preparedness policy), the multiscalar processes that sustain such factors (e.g. rapid urbanization, lack of social welfare institutions, dept repayment) and the root causes of such processes (e.g. unequal power relations, structural inequalities, racial capitalism, colonial relations) (Wisner *et al*., 2004). Establishing this *contextual* understanding of vulnerability beyond a mere focus on exposure, susceptibility or health outcomes is an important aspect of how we understand and problematize heat (in)justice. Typical vulnerability indicators such as pre-existing health issues or lack of access to air conditioning are often the result of structural drivers such as poverty, labour exploitation and social marginalization (Mayrhuber *et al*., 2018; Hambrecht *et al*. 2022; Abi Deivanayagam *et al*., 2023). Research with communities of colour in North America has shown how structural injustice is expressed in racial and ethnic segregation and in unequal exposure to environmental degradation and climate-aggravated extreme weather phenomena (Bullard and Lewis, 1996; Pulido, 2000, 2017; Anguelovski, 2014; Ranganathan and Bratman, 2021).

Socioeconomic vulnerability and unequal experiences of climate and heat therefore have common roots. Existing socioeconomic injustice is expressed, reproduced and

1 A famous song title, 'Indios de Barcelona' by the local band Mano Negra, characteristically narrates: 'Welcome anywhere you come from | You'll lose your life or find a home here. The Indigenous of Barcelona | Are more indigenous than those of Arizona! … Lot of soul in my block | From St Pau to the dock | Are you ready to be hurt and shocked? | Barrio Chino never fails to rock' (from the album 'Patchanka', 1988).

exacerbated through the intersectional and unequal ways in which heat is experienced. Moreover, this heat injustice reveals potential contradictions and unexpected or invisible ways in which adaptation strategies can result in maladaptive or inadequate consequences for marginalized collectives. While, for example, municipal infrastructures for heat sheltering might be considered ideal in terms of their cooling effect and public character, people already experiencing various forms of exclusion and violence (owing to gender identity, cultural background or physical ability) might consider them unwelcoming, inadequate or hostile (Amorim-Maia *et al*., 2023; Hamstead, 2023). In this vein, Hamstead (*ibid*.) argues for a critical heat studies agenda that centres the role of power relations in the embodied and lived experiences of heat, because such experiences are not only a quantitative matter of temperature and humidity, but also a qualitative matter of contextual conditions, affects, subjectivities and values, and thus a political matter of structured thermal insecurity. Centring the experiences of migrant residents in relation to heat brings together intersectional migration studies with climate justice by revealing how intersectional vulnerabilities are exacerbated and redefined by changes in climate and weather patterns, yielding important lessons for more just urban climate adaptation.

Intersectionality allows us to examine how positions of oppression or privilege are not tied to the single identity (of the migrant) but to multiple aspects of subjectivation to intersecting systems of oppression and privilege (Collins, 2022). In this sense, power differentials are not only conditional to migrant/non-migrant identity, but also to the different trajectories of migration (e.g. recent/more established, or unauthorized/temporary/permanent legal status), alongside class, gender, sexuality, religion, income or education level. Applied to the nexus of migration and urban climate justice, this prompts us to 'dismantle the individual and structural architectures of marginalization, exploitation and oppression' (Mikulewicz *et al*., 2023) people are facing after their migration journeys, as they settle in a new place, and to examine this in relation to climate impacts. Racism, discrimination and structural disadvantage have been shown to be crucial factors of climate vulnerability for minority communities (Abi Deivanayagam *et al*., 2022; Smith *et al*., 2022; Kotsila and Anguelovski, 2023; Li *et al*., 2023), while research has shown that MW migrants have overall limited political agency in decision making on climate adaptation (Anguelovski, Connolly *et al*., 2019; Chu and Michael, 2019; Abi Deivanayagam *et al*., 2023; Issa *et al*., 2023). To advance intersectional urban climate justice would thus mean to redress the drivers of differential vulnerabilities by centring the local, embodied and situated knowledges arising from diverse experiences of place (Ranganathan and Bratman 2021; Amorim-Maia *et al*., 2022; Mikulewicz *et al*., 2023; Kotsila, 2023; Rudge, 2023).

This leads to the second, related, theoretical axis of this article, which concerns the conceptualization of everyday resistance and social infrastructures emerging from marginalized people, places and communities as forms of radical adaptation generative of more just urban adaptation futures. In his book *Extreme Cities*, Ashley Dawson describes radical urban climate adaptation as an approach that 'necessitates a significant power shift' and includes proposals that 'confront questions of power, of conflicting interests, control, and ownership—as well as legacies of colonialism, racism, and class- and gender-discrimination—in the provision of resources such as energy, food, and transportation' (Dawson, 2017: 233). When we move away from depoliticized notions of 'becoming resilient' (Kaika, 2017) while everything else remains the same, we see radical adaptations (in the plural) as a compendium of practices and knowledges that may also include formal and informal labours, social relations and daily life processes through which spaces and places are redefined by people and collectives in ways that shape exposure, experience and impacts related to climate change. These are considered radical because they collectively challenge and/or resist root causes of vulnerability, both at structural/systemic and everyday/local levels.

In this compendium of radical adaptations, we include what Power *et al*., (2022) have called shadow care infrastructures, 'through which marginalized people seek

survival' in a context of post-welfare cities, such as improvised practices by formal and informal institutions (e.g. the non-profit sector, community networks, informal material exchange networks), where the boundaries between givers and receivers of care are blurred. Indeed, recent work calls attention to a 'broader array of actions that are being taken by a variety of climate actors to construct security in relation to thermal concerns' (Hamstead, 2023). Radical adaptations can further include resistance to mainstream climate adaptation initiatives (Brink *et al*., 2023), as well as everyday adaptations in 'small, incremental changes made in our daily lives to accommodate the shifting ecologies in which we live' (Castro and Sen, 2022) and collective practices and making of places as 'refuges of collaborative survival' in the face of climate change (di Chiro, 2018). We also concur with de Rosa *et al*. (2022) who explain how activism and social justice coalitions act as social infrastructures that intermediate between vulnerable communities and climate movements, thus politicizing and advancing transformative adaptation. Importantly, this does not contradict or deny vulnerability, but rather emanates from vulnerability as a context-specific and dynamic condition. By moving away from dualistic framings of vulnerability versus resilience we can better understand how 'adaptive and maladaptive practices, agency, powerlessness and resistance, play out in people's everyday embodied and mundane experiences' (Hamstead, 2023: 4). Likewise, we understand sociospatial 'margins' as places where exclusion and empowerment converse, and not as mono-dimensional or fixed in terms of vulnerability (Tsing, 1994; Eriksen *et al*., 2015), that is, the margin as 'a space of radical openness' where 'one is always at risk' and 'one needs a community of resistance' (hooks, 1989: 19).

As Ananya Roy (2011) notes, it is the liminality and ambivalence of marginal spaces, agential yet always targeted for obsoletion, that might allow us to approximate the subaltern at the limits of its recognition (Yiftachel, cited in Roy, 2011). Neferti Tadiar (2022) similarly describes practices and lifeways often designated to social and geographical margins as forms of 'remaindered lives', which exhibit the potential to escape 'dominant protocols for being human and the war to be human, … for making life into labour and for wasting life as enterprise' (*ibid*.: 14). A focus on radical adaptations is not to deny the structural inequalities and risky life situations that MW migrants are systemically forced into. Such radicality and its generative potential is still predicated at the margins of a wider context where neoliberal urbanism prevails and patterns of institutional racism against MW migrants persist. Nevertheless, such spaces and practices of radicality present and prefigure alternative ways of thinking, doing and existing, including questioning dominant paradigms of climate urbanism. We depart from this theoretical framework of intersectional, contextual and dynamic heat vulnerability as core to understanding heat injustice in relation to MW migrants' marginalization in European societies, while paying attention to the generative potential of radical practices emerging from such margins as crucial for envisioning just urban adaptation pathways.

Methods

Our methodological approach consisted mainly of a Photovoice (participatory photography) project, which was complemented using two semi-structured interviews with two selected key informants (see Appendix 1 for details on participant demographic characteristics).

Photovoice is a participatory action research methodology that stimulates social change by putting cameras into the participants' hands to help them document, reflect on and communicate issues of concern (Wang and Burris, 1997). Ten people (seven women and three men—seven from Latin America, two from Morocco and one from Nigeria) were recruited through the local branch of the Catalonia-wide renters' union, Sindicat de Llogateres i Llogaters. Through our focus on migrants who have organized

around housing rights we intended to highlight the concerns and claims of grassroots activists. We organized six group sessions across four separate days, with each day dedicated to a different theme. The workshops on the first day provided information about the project and its aims, on the second day we collected and commented on the photos, on the third day participants reflected on emerging themes and on the fourth day they discussed policy recommendations. The prompt for taking pictures was to reflect on places and situations that offered relief or caused discomfort during the heatwaves of 2022. Their explanations of their photographs led to discussions around broader experiences of heat by their communities, the factors and barriers that determined their worst moments, and their recommendations for mitigating or alleviating the negative effects of future heatwaves.

All sessions took place in the local civic centre, between mid-January and mid-February 2023. Because the Photovoice sessions were held during the winter months, participants were invited to also provide photographs they had taken during past summers to evoke memories of the conditions experienced during prior extreme heat episodes. Two of the team of four researchers involved in the Photovoice project lived in shared accommodation in El Raval, three did not hold Spanish citizenship (two were born in southern Europe and one in Latin America) and one is a long-term member and activist with the renters' union. Sessions were recorded, transcribed and analysed, focusing on the discussions that emerged (Díez *et al*., 2017; Sánchez-Ledesma *et al*., 2020). As this project was part of the Barcelona City Biennale event Ciutat i Ciencia, selected photographs and the outcomes of the collective discussions were presented during a public event with participants in March 2023. The event was held at the Centre of Contemporary Culture of Barcelona (CCCB), located in El Raval, and provided an opportunity for participants to express their views and opinions to a broad audience that included city officials.

For the interviews, we identified two key representatives of migrant associations: the president of a South Asian workers' association (interview 1) and the president of a South American community centre and member of the city's immigration council (interview 2). These were selected to provide a comprehensive view of the experiences of highly represented migrant communities and ensure that there are no great contradictions or gaps when comparing the narratives of individual and militant migrant individuals with those of more organized and institutionalized organizations such as unions, migrant community centres and their interactions with local authorities. Despite the limited number of interviews conducted, we consider the results as important complementary findings.

Semi-structured interviews were conducted in July and August 2022. Interviewees were prompted to explain how they saw extreme heat affecting life in the city and specifically what they regarded as the impacts of heat on migrants with whom they work within the respective associations. We further prompted them to reflect on their own and the broader collective of migrants' participation in local government-led efforts for heat adaptation. With permission from the interviewees, we recorded, anonymized and transcribed the interviews. Full transcripts and a synthesis of the key findings were presented to the interviewees to ensure that the analysis was a fair reflection of their views.

In the section that follows we describe our theoretical framework of analysis, which aims to address the complexity of how and why MW migrants face the impacts of extreme heat in cities acutely, while also paying attention to the generative potential of everyday practices of radicality and resistance found in marginal spatialities (such as an occupied building or an urban garden) and places of marginality (such as private and public spaces used and transformed by migrant residents). We now present and discuss our core findings.

Vulnerability as intersectional injustice and a place for radical adaptations, in El Raval, Barcelona

The neighbourhood of El Raval in Barcelona, Spain, is part of the Ciutat Vella historical centre district. More than 60% of its 48,000 current residents were born outside of Spain, and 53% are registered as foreigners, mostly from Pakistan, the Philippines, Bangladesh and South America, making it the most diverse neighbourhood in Barcelona. El Raval's residents earn an average disposable income that lies 43% below the city's average (Barcelona City Council, 2021). Simultaneously, the area is characterized by luxury hotels, expensive renovated Airbnb apartments and some of the most frequented tourist bars and restaurants in the city (Quaglieri-Domínguez and Scarnato, 2017).

– Labour and housing precarity as urban climate injustice

With nearly 44,000 people per square kilometre, El Raval's population density is 2.7 times greater than the city average (Barcelona City Council, 2021). Most of its building stock was constructed prior to 1960 and has poor thermal performance. The neighbourhood experiences almost double the number of 'tropical nights' (during which the temperature does not fall below 20°C) compared to other neighbourhoods in the city; 128 of such nights were recorded in 2022 (Pareja, 2023). Measured levels of health-related vulnerability are among the highest in the city (Marí-Dell'Olmo *et al*., 2022; AMB, 2023). El Raval residents also face the highest energy poverty rates in the city (Marí-Dell'Olmo *et al*., 2022). Its poorly insulated or non-energy-efficient flats make comfortable temperatures at home unattainable for low-income residents. Most residents rent rather than own their homes, which allowed us to connect our focus on heat justice to what is perhaps the most controversial issue in Spanish politics over the past two decades: housing. In the aftermath of the 2008 global financial crisis, legislative changes allowed for deeper processes of housing financialization, including through rent, that had severely negative repercussions for urban social life, such as mortgage defaults, evictions and chronic housing precarity (García-Lamarca and Kaika, 2016; García-Lamarca, 2021). Barcelona is a top international holiday destination and attracts wealthy migrants from richer countries. However, its housing prices are among the highest in Spain, as tourism and the arrival of digital nomads have fuelled the rapid gentrification of its central neighbourhoods (Cocola-Gant and Lopez-Gay, 2020).

MW migrants experience constrained access to housing, not only because of exorbitant rents but also as a consequence of discriminatory attitudes of homeowners and real estate companies. A study found that in 462 phone calls to real estate agencies, 69.8% denied the availability of flats for rent to people with an immigrant background (Contreras Hernández, 2019). Rental contracts often require formal employment and residence documents, both of which MW migrants may find challenging to obtain. As others have noted, migrants' housing precarity 'is institutionally constructed, maintained and shaped' (Dotsey and Chiodelli, 2021: 720) by a profiteering housing market, racial and ethnic discrimination, the spread of informal and exploitative housing arrangements with inadequate security nets, as well as by broader labour- and migration-related policies that cement structural inequalities in access to housing. In El Raval, specifically, migrants spend most of their income on rent (Metawala *et al*., 2021).

Participants confirmed that heat vulnerability is tightly connected to housing insecurity. One long-term resident and activist explained that owners splitting bigger flats into several rental units meant that most rentals were overcrowded and had only one window, precluding air flow (see also Figure 3 in Appendix 2). She describes the result of this as follows:

> It is impossible to be in the house during the summer—impossible. One would have to use an electric fan, but it costs a lot of money to run it, so people go out on the street, whether they want to or not. If they stay in their homes with

> this heat, they get nervous, they get upset, they cry, because it is unbearable (Photovoice participant #3).

Such conditions make heatwaves an extremely difficult time for people to carry out basic activities in their own homes:

> In a flat of 50 square metres you might have six or seven people, who cook three times a day. The kitchen turns into a very hot place. They cook even if it's 32 degrees outside; it surely is not comfortable (interview 1).

> Many live in shared housing conditions. But not sharing the whole flat, [they are] paying for and are assigned only a room. It is different. For example, you can use the bathroom and the kitchen, but not the living room. Many live like this (interview 2).

> This summer I had a very hard time. I changed flats, and in that one it was unbearable. It is on the ground floor, and there is a lot of humidity, and it did not have windows. This summer was horrible. That is why I spent more time on the street than in the house (Photovoice participant #2).

As respondents also noted, those who could afford to run a fan, did so for a limited time during the day, but most cannot afford the electricity costs. Air conditioning is rarely installed, and the cost to use it is usually prohibitive too. At night, opening the windows often means being exposed to noise from the busy streets. Indeed, sleep deprivation was found to be one of the most common health impacts of gentrification in Barcelona (Sánchez-Ledesma *et al*., 2020; Anguelovski, Triguero-Mas *et al*., 2019). As one Moroccan mother explained:

> I can only go outside after 10 p.m. with the kids, going around until 1 a.m. or 2 a.m., because we can't stand the heat in the house; we cannot sleep (Photovoice participant #6).

When homes become uninhabitable owing to the heat, the impacts of this are often gendered. Women, typically the main carers, spend much of their time at home, cleaning, cooking and performing physically demanding tasks. One participant described how she needed to stay home to take care of house chores, but that this becomes extremely challenging at times of high heat:

> My house is hell, you know? My husband takes the kids out when it's hot, going to shopping malls, where it's cooler. But I stay at home. What I mostly hate is staying at home … I have already had several heat episodes (Photovoice participant #6)

Many people, especially those who work informally, face similar challenges in the workplace. Migrant women are typically employed to provide care or cleaning services in private homes. One informant who works as a cleaner described how small flats and narrow staircases create hot and humid conditions that made her work insufferable. She also explained how employers would be inflexible, not allowing employees to shift their working hours to cooler parts of the day, or prohibiting them to switch on the air conditioning while cleaning:

> I get out of there dripping sweat. There is no ventilation; these stairs have no windows. In a flat I clean, I asked to go earlier to avoid the heat, but they told me it is not possible because they work from home and so I go when they go out for lunch. Yesterday I had to say no because of the heat, and they got mad at me. But who can I complain to? Who can we complain to when there is no contract? (interview 2).

Another sector dominated by migrant workers is the gig economy, and particularly food delivery platforms or ecommerce deliveries. In these precarious jobs that are highly prone to workplace accidents, workers are subcontracted as freelancers to circumvent legal restrictions (which only allow work permits for high-skill workers with valid work contracts) (Ortega, 2021). While in 2023, some countries in the European Union (such as Greece and Spain) issued recommendations for employers to protect workers and not assign them outdoor tasks during the hottest hours of the day, the legal status of many gig workers is not officially that of employee. Such regulations therefore do not apply to them. Many cannot afford the option of not working during these hours, as they need to make a living (Haeck, 2023). As one of our interviewees confirmed, many men from South Asia typically work in delivery jobs or are informally employed in restaurants, working long hours in small kitchens that lack ventilation or air conditioning (interview 1).

Migrants from MW countries take on such jobs because of the restrictions that the Spanish legal framework on labour and immigration sets as to when and under what conditions non-EU migrants can attain a residence permit. People must have resided in the country for three years minimum before being able to work; this indirectly forces people to work informally. This precarity, in turn, defines the amount of disposable income migrants can direct towards basic goods and services, such as housing or electricity (Metawala *et al*., 2021). This links concerns about climate justice and health to what Luke and Huber (2022) term 'electricity capital'—a fraction of capital that defines everyday life and operates 'within and reinforces difference through the ongoing processes of racialization, patriarchy, and colonialism' (*ibid*. 1699), showing how heat vulnerability is indeed historically contingent, uneven and deeply political 'all the way through' (Eriksen *et al*., 2015: 523). In sum, conditions of labour, housing and (resulting) energy precarity operate in conjunction to define heat vulnerabilities at home and at work owing to insufficiently regulated (labour and housing) markets in capitalist economies; together, these enable the exploitation of renters and workers. While this situation affects many socioeconomically marginalized and disenfranchised groups, the accompanying challenges are magnified for MW migrants in particular and reinforced by the legal restrictions and racist exclusions they face from European states and social actors.

– Inaccessible public spaces as spatial outlets and expressions of urban climate injustice

From the 1930s onwards, regenerating neighbourhoods constituted an urban biopolitics of sort in which public institutions portrayed neighbourhoods such as El Raval as 'an internal enemy'—a menace to public health and social order that had to be 'sanitized' through governmental interventions of policing and social control (Fernández González, 2012: 116). A process of gentrification ('the new urban colonialism') unrolling throughout the city permitted and facilitated a gradual substitution of social 'underdogs' with middle-class residents and tourists, also in El Raval (*ibid*.: 375). These trends have continued to today, and apart from leading to the rising housing prices mentioned earlier, they have also radically changed the configuration and usage of public space in the neighbourhood, with implications for heat justice.

For many, spending time outdoors is a crucial strategy to combat the heat, especially for MW migrants in Barcelona (Amorim-Maia *et al*., 2023). But public spaces

of heat relief, such as shaded parks and playgrounds, pools or air-conditioned public libraries, are scarce and can be inaccessible. Green areas, for example, are unwelcoming if the needs and experiences of different groups are not represented in their design and functioning (Anguelovski *et al*., 2020). Ciutat Vella is one of the least green districts in Barcelona (see Figure 1), and the small pockets of greenery, such as those along the Rambla de Raval,[2] are largely taken up by the tables of bars and restaurants, many of which charge prices that only well-off customers can afford on a frequent basis (Kotsila *et al*., 2021).

As participants have recognized, the presence of luxury hotels and Airbnb flats in the neighbourhood has created tourist-driven gentrification over the past decades. This not only impacts housing costs, but also affects the character and prices of local businesses and limits possibilities for lower-income residents to access such places as shelters in times of heat (interview 2). This turns 'things as basic as eating into a luxury … making something as simple as having a refreshment in a bar impossible … even in what used to be local and accessible places' (Photovoice participant #8). When we consider urban greening (coupled with broader neighbourhood regeneration) as a common urban heat adaptation strategy, the potential for maladaptation is clearly expressing here, in combination with pre-existing socioeconomic inequalities, in the form of exclusion from green spaces of heat relief due to tourism-led gentrification (Kotsila, Oscilowicz *et al*., 2021). This also applies to the accessibility of municipal pools, another important category of places of heat relief. In Barcelona's 16 open-air pools, the average entrance cost in 2019 was 8.2 euros per person, the highest in Spain (Mercader, 2019). For families with two or three kids, these costs can be prohibitive (Photovoice participant #6). Respondents feel they should be entitled to free access to pools in the summer, since they are maintained with public funds, and ask: 'Why should we pay the same price as a tourist?' (Photovoice participant #8). Moreover, one of the closest municipal pools for the residents of El Raval, Piscina Municipal de Montjuic, famous for its panoramic views and its iconic location, has expanded its bar restaurant to attract hundreds of tourists in the summer months who take up significant space, making it less attractive for locals.

The experienced inaccessibility of places of heat relief also creates tensions in the neighbourhood. While, for example, street-level noise makes it hard for people to sleep with windows open, for others, socializing outdoors (a la fresca) during the late-night hours (thus generating noise) is the only way 'to survive the heat' (Photovoice participant #1). Likewise, during the daytime, incompatible uses of the neighbourhood's scarce shaded public spaces also put stress on residents. As one mother describes, the enclosed garden surrounded by the National Library of Catalunya, for example, is well protected from the heat, but also frequented by people experiencing homelessness and drug addiction, making it less welcoming for kids. As she states:

> it is not a matter of who is more, or less, entitled to be in a space, nor is intense policing the solution; what we need is more spaces for everyone to be able to find a refuge (Photovoice participant #8).

Discomfort was also noted around playgrounds in busy areas that serve both as places to pass the time and as thoroughfares. For example, one photo from a participant showed that the playground on the Rambla del Raval is designed for younger children but often occupied by older children and teenagers (Figure 1 in Appendix 2). Participants questioned the playground's relocation from near the Filmoteca cultural centre and film archive, where it was used by more kids and families, suggesting that the decision was motivated by residents' complaints about migrant children making too much noise (Photovoice participant #3).

2 Rambla de Raval has been one of the most emblematic urban regeneration interventions in the neighbourhood. It was created at the beginning of the new millennium and required the demolition of almost 3,000 houses in its historic centre (Degen, 2018).

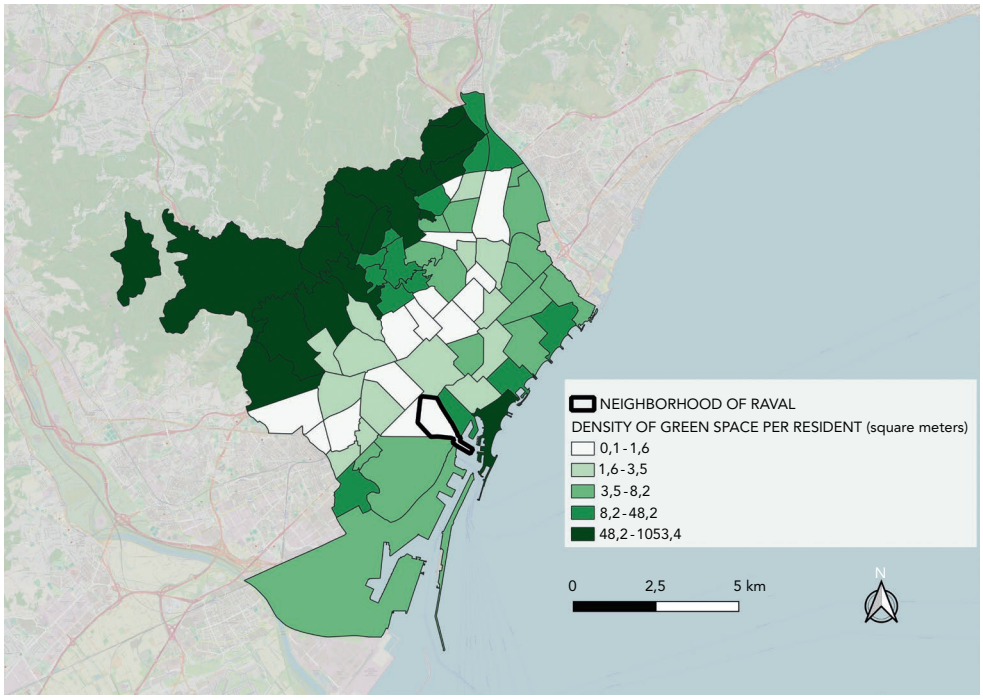

FIGURE 1 Green space distribution per neighbourhood; El Raval today is one of the least green neighbourhoods in Barcelona (*source*: Data from Barcelona City Council open data portal, available at https://opendata-ajuntament.barcelona.cat/, updated for 2023; map drawn by Austin Gage Matheney)

In the same vein, participants felt that when they and other racialized migrants made use of public space, they often experienced dismissal and acts of discrimination by other residents. When, for example, the kids of migrant families play in squares and open spaces at night, other residents complain of the noise. In the context of a densely populated neighbourhood where noise pollution by tourists and visitors from other places of the city coming to El Raval in search of nightlife and entertainment is common, such complaints received by migrant collectives are regarded as targeted and racist. Moreover, where such complaints were met with municipally enforced prohibitions, such as new rules that forbid playing with a ball in open squares, migrant participants felt that their practices in particular were being ostracized and criminalized, despite El Raval's cultural diversity having been mobilized as a point of attraction by city authorities and tourist agents alike since the area's regeneration in the 1990s (Degen, 2018).

In response to the general lack of urban green space in Barcelona's city centre, the progressive government of Barcelona en Comú, which prioritized climate action, feminism and social justice between 2016 and 2023, implemented projects of urban greening, traffic reduction and pedestrianization across the city. A key policy has been to increase the number of sites within the network of indoor and outdoor climate shelters—such as libraries, parks and civil centres—that can provide heat relief, particularly to the most vulnerable populations (Barcelona City Council 2018; 2020). In the Ciutat Vella district, the number of climate shelters gradually increased, reaching 26 in 2023 (see Figure 2).

However, research in Barcelona has shown that MW migrants are largely unaware of this network and unlikely to use such spaces as heat shelters (Amorim-Maia *et al*., 2023). Some emphasized that many of these spaces are partially or completely

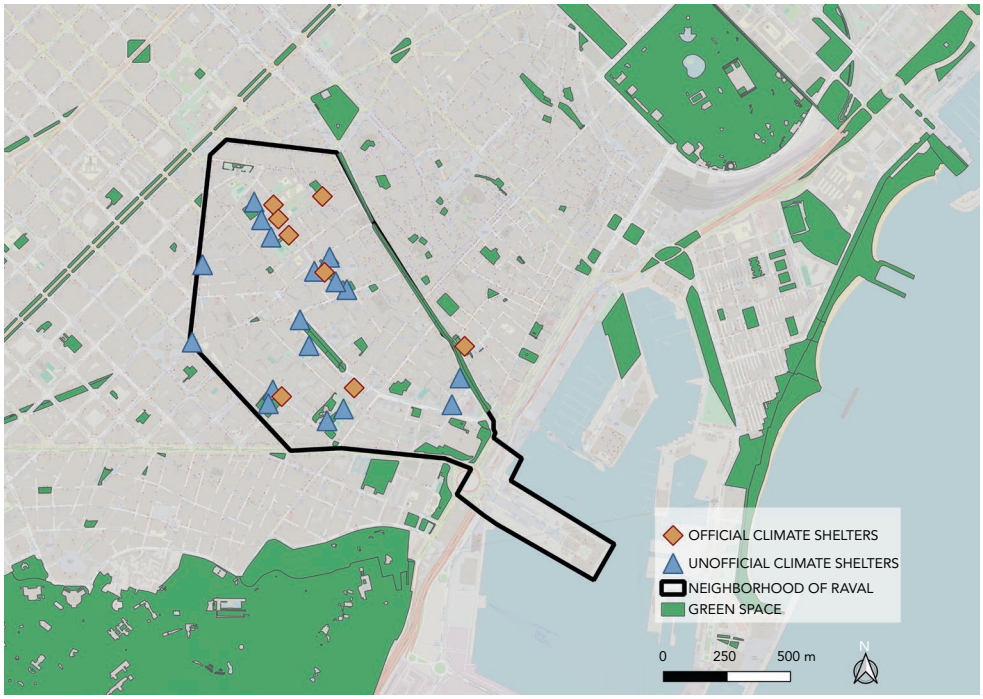

FIGURE 2 Location of climate shelters in El Raval and nearby green space areas: official climate shelters are those designated by the city council; unofficial climate shelters indicate those that have been created by community organization Tot Raval (*source*: based on www.barcelona.cat and https://totraval.org/; map drawn by Austin Gage Matheney)

closed during the month of August, when they are most needed, as this is when many of Barcelona's residents with regular employment go on vacation. Even when these spaces are accessible in terms of proximity and public nature, as some migrant participants explained, these places often feel unwelcoming to them, as they feel too noticed and/or unwanted. As one participant stated regarding the elderly residents of a South Asian community:

> Look, they usually will not go. They know there is an elderly home in the neighbourhood where they can get cheap coffee with milk, et cetera, and sometimes they will pass by, but normally they stay out of that place, because they are always in groups of many, and when they go inside, they talk a lot with each other, and they feel that they annoy other people, who usually just come on their own. They always go in groups (interview 1).

Another interviewee described the situation as follows:

> It is difficult [for older people of my community] to open up, to say what they need or what they want, so they would not go to these places [heat shelters] to socialize (interview 2).

Although it is not clear whether it is lack of good communication around their existence, the 'institutional' stamp of the municipality or simply a culturally specific and distant environment that spaces officially designated as climate shelters carry that

make migrants access these less frequently, but these testimonies point to an existing problem of access and of heat injustice. They emphasize the importance of ensuring that state-supported climate shelters are social spaces of emotional and not only physical comfort and exemplify how heat experiences depend not only on temperature and humidity levels, but also on contextual conditions, affects, subjectivities and values (Hamstead, 2023). Furthermore, from an intersectional perspective we see the combined effects of age, class, housing conditions and migration background. Although the proportion of elderly people in El Raval is lower than the Barcelona average (11% compared to 21%), many elderly people in El Raval live alone (32%), facing heightened heat vulnerability (Reid *et al*., 2009; van Daalen *et al*., 2024). These elderly people, who are physiologically more sensitive and live in isolation, have few opportunities for social gatherings and low participation in mutual aid networks. Therefore, they cannot care for or protect themselves from the impacts of extreme heat (Keller, 2015; Kim *et al*., 2020).

A counterexample is a place with an established presence of migrant residents of all ages that, according to participants, also serves as a place of heat relief— a football pitch and its surroundings on the Montjuic hill. Bordered by vegetation, with a small snack bar (often serving Latin American food) overlooking it, it offers shaded seating and a children's play area and is a place of socialization for many, especially for families with young children:

> I go three times a week, because my son plays football there, in the club. He plays and we sit there, drinking something. There is a nice playground for the younger ones nearby. When it's hot, it's nice over there; it has trees, there are tables you can sit at, and they allow you to bring your own food and watch the kids play. The football pitch is open; kids can go in and play even if they are not part of the club, unless there is training or a game on. It's open all summer long (Photovoice participant #6).

The freedom of access, all summer long, supported by amenities that serve many needs (sport, play, relaxation), combined with no obligation to pay for food and drinks and the opportunity to buy refreshments at accessible prices, makes this place a favoured community resource that also functions as a heat refuge.

In sum, in a context of dense urbanization and neighbourhood gentrification and touristification (Rius-Ulldemolins and Klein, 2020; Kotsila, Anguelovski *et al*., 2021; Kotsila, Oscilowicz *et al*., 2021) that makes green and blue spaces of climate relief harder to access, MW migrants face additional challenges relating to their subjective experiences of place that are tied to a sense of hypervisibility, unwelcomeness or negative targeting in places commonly perceived to be 'public', 'open', 'cooling' and 'comfortable'. This apparent contradiction between thermal versus emotional comfort points to the racial and migration-relevant constituents of place and sense of belonging and thus to the need to centre the diverse embodied (emotional and physical) experiences of place when designing for heat sheltering within the field of climate justice (Amorim-Maia *et al*., 2023; Hamstead, 2023).

– Reclaiming space and cultivating sense of place as situated forms of radical adaptation to heat

Finding spaces of heat relief that are accessible, proximate and welcoming to MW migrants can be challenging in a context of neighbourhood touristification and gentrification when also taking into account tensions that may result from high density, diverse needs and the fragmentation of social welfare and social bonds because of racist policies and the extension of borders into spaces of everyday life in the city (de Genova, 2015). In response, we have seen improvised practices from local formal and informal bottom-up institutions (in the broader sense) emerging and serving as

infrastructures of care, especially for the most vulnerable. Since 2019, for example, separate to the city's formal network of climate shelters, the Tot Raval foundation[3] has been incorporating various spaces and free activities, including community education programmes, with the specific goal of offering protection from heat during the summer. In 2024 these included 14 activities in places with amenities such as rest areas, air conditioning and water provision for a variety of ages, from reading spaces, kids' corners and sports (see Figure 2). These activities are well attended and known, as Tot Raval works with organizations rooted in the everyday realities of the neighbourhood. Their actions are attuned to the role of social obstacles, such as integration and cultural or linguistic barriers to accessing resources that migrant residents often face and which are often ignored in traditional analyses of heat vulnerability to inform urban and regional policies (Barcelona City Council, 2018; Generalitat de Catalunya, 2022).

Apart from these local, yet more institutionalized efforts to address heat vulnerability, participants focused their descriptions of collective ways to protect themselves against and adapt to heat on two community-run activist spaces that they believe serve as places of heat protection and relief. First, participants brought pictures and spoke of Agora Juan Andrés Benítez—a squatted communal garden where food, herbs and flowers are grown and where residents gather for recreational activities and to coordinate initiatives within a broader context of collective remembering and struggle against injustices endured by residents of the neighbourhood (Astudillo Salazar, 2019), with strong support by and participation of migrants. The name of the garden honours the life of Juan Andrés Benítez, a prominent gay activist from the neighbourhood who was killed by the police in 2013 (Bueno and Carranco, 2013). The incident triggered a societal outcry against police brutality, particularly by LGBTQ+ and sex worker collectives, who demanded justice and accountability (Assemblea del Raval, 2018). A year after his death, which resulted in no legal consequences for the officers who committed the crime, residents of El Raval occupied the empty lot that was located on the street where Benítez was killed (*ibid.*). Here, memory of LGBTQ+ violence is combined with the fight against tourist-led gentrification, as the lot had originally been earmarked for the construction of a hotel (Rosa, 2018). Respondents recalled the summer of 2022 and mentioned the activities in the Agora, including an inflatable pool, table games for children who were unable to join summer camps (owing to the limited number subsidized places) (see also Figure 2 in Appendix 2) and communal dinners where people could escape the confines of their homes and bring food to share and to survive the hot summer nights. Other occasional activities included an open-air cinema, foosball, billiards and workshops for adults and children (Photovoice participant #6). During these community events people shared resources, caring responsibilities and stories, thereby contributing to a feeling of 'withstanding heat' together.

Secondly, participants presented a number of pictures of the Antiga Massana—a place that forms part of a building originally constructed during the fifteenth century as an integral component of the Hospital de la Santa Creu (Agut, 2008). In 1935, the building was transformed into an art school called La Massana that vacated the premises in 2017, which resulted in the building's abandonment. In 2019, several neighbourhood collectives squatted this site (López, 2020). Squatting this space was planned over the course of several months in response to the severe crisis of shrinking public and available space being felt by the neighbourhood, and was deemed indispensable for collectives to convene and coordinate their activities (Merino, 2020). At present, Antiga Massana serves as a multifaceted centre accommodating, among other things, a renters' union, a labour union, a food network, a popular school and gym. Its internal patio and abundant spaces offer shade and a slight breeze, and provide a pleasant micro-environment that

3 The Tot Raval foundation consists of around fifty social organizations, educational centres, cultural institutions, commercial associations and people linked to El Raval that form a network to improve social cohesion, coexistence and quality of life in the neighbourhood (see https://totraval.org/ca/noticies/4a-edicio-del-ravalestiueducatiu).

protects from the heat. Participants referred to Antiga Massana as a space of refuge that 'substantially complements the lack of social welfare and infrastructures needed in the neighbourhood and which the government has not been providing' (Photovoice participant #5). The centre was particularly effective, for example, at organizing help and care for those in need during the Covid-19 pandemic. Participants shared their memories of summer gatherings over the past three years, during which grassroots mobilization for the right to housing and against homelessness combined with shared childcare, the development of neighbourhood bonds and protection from the heat. In their words:

> [Antiga Massana] is the only space in the neighbourhood where we can get in, have a nice time with our families or friends, not having to spend a lot of money. The people who live in this neighbourhood, we do not have the means to eat or drink out. The best thing that happened these last few years is to have this space for ourselves (Photovoice participant #1).

> We're lucky to have spaces like Massana and Agora, because it provides a space to do different activities, to stay cool in summer. And this is work that, in the end, we put in and we do for ourselves (Photovoice participant #6).

Our findings on Agora and Antiga Massana demonstrate the importance of using and supporting existing common infrastructures of care as heat shelters, as they provide a sense of place and ownership. In the case of El Raval, this realization is tied to the fact that these spaces have been created and maintained through shared struggles around shared needs, 'through which marginalized people seek survival' (Power *et al*., 2022). Such grassroots infrastructures of care combine thermal and emotional comfort, as they are shaded, green and cooler, while also operating as places of neighbourhood connection and resistance against neoliberal austerity. Simultaneously, these are tied to broader struggles against evictions, racism and discrimination, and provide support for housing, LGBTQI+ and migrant rights. Participants highlight that, through these (and several other)[4] initiatives constituting a network of urban commons of support that is constantly under pressure and oppression but also always evolving, shifting and re-inventing itself, El Raval provides a sense of place and refuge. From a plural base they have built on a sense of common belonging to make of places 'refuges of collaborative survival' in the face of climate change (di Chiro, 2018). This sense of place appears as quite distinct from public infrastructures, which often rely on a foundation of citizenship that assumes whiteness, local nationality or certain cultural traits. As Morrow and Parker (2020) emphasize, social infrastructure, such as public libraries and civic spaces, as well as parks and squares, are important, but can be exclusive 'design fixes for social inequalities that fail to engage or benefit those urban residents most impacted by inequality and offer lifestyle amenities for those already well-off' (*ibid*.: 5). Reclaiming spaces in the city is thus tightly connected to climate justice. Social justice activism from and for migrant residents emerges as an insurgent form of climate citizenship, allowing residents to adapt to the impacts of climate change while also combatting deeper drivers of climate vulnerabilities.

Discussion and conclusions

Community knowledge around climate vulnerability and adaptation is often rendered irrelevant through the discrediting of practices that do not align with powerful visions of climate urbanism (Robin *et al*., 2020; Shi, 2020). This is heightened in the

4 See, for example, Ateneu del Raval (https://www.barcelona.cat/culturaviva/es/nodo/ateneu-del-raval) and EL Lokal (https://ellokal.org/).

case of collectives who struggle for legal citizenship and broader cultural belonging in Europe (Hawthorne, 2021), such as migrants from majority world countries. MacGregor *et al*. (2019), for example, have shown how Somali immigrants in the UK have knowledge that could be useful when designing green policy agendas, but that their engagement in sustainable household practices is challenged by material/structural, ideational and social factors. We shift the focus away from viewing migration as a response to climate change towards a view of migration as a process of adjustment, struggle and creativity that continues after the migration journey, and which carries lessons for urban climate adaptation justice. More concretely, this article provides two main contributions.

First, we show how vulnerability to heat links to historical and systemic racism facing MW migrants in a city in Europe. Dealing with heat is increasingly becoming a concern for migrant residents, as multiple issues collide (housing rights, labour conditions, access to public space, access to welfare state policies, neighbourhood segregation, sense of belonging). Migrant residents in vulnerable neighbourhoods such as El Raval have marginal opportunity to benefit from adaptation interventions, such as urban greening, housing retrofits or at-home healthcare for the elderly, owing to their precarious employment and low income, as well as to the everyday exclusions they experience from local institutions, such as real estate agencies, private employers, public spaces and neighbourhood networks. Such exclusions are cast in intersectional ways: elderly migrants who do not hold residency documents, for example, are vulnerable owing to their weak health and because they are excluded from official welfare programmes (if they are not officially registered as residents).

In the case of El Raval, we showed how heat vulnerability is linked to historical disinvestment and lack of natural/green and cooler public spaces, as well as to the slow but steady changes owing to tourist-driven gentrification, making the neighbourhood increasingly hostile towards working-class residents, including MW migrants, through high rental prices and increasingly populated and commodified public spaces. Embodied and lived experiences of heat are also tied to contextual conditions, affects, subjectivities and values (Hamstead, 2023) that specifically relate to racial discrimination and exclusion, as when, for example, families feel that their daily practices (socializing, playing or caring for dependents) are being considered unfitting or even disturbing to others because of their ethnic/cultural background. Limited access to public spaces and infrastructures of heat relief thus emerges as a reflection of deeply engrained structures of marginalization, exploitation and oppression (Mikulewicz *et al*., 2023), which operate within broader contexts of exclusionary urban planning and are upheld by ideas of anti-blackness and white/Western superiority and historically linked to the construction of national Spanish and European identities. As Hamstead (2023: 11, citing Pellow) notes, 'public heat relief spaces can be subject to racialized practices of exclusion, both because communities of color have experienced historical neighbourhood disinvestment in such infrastructure, and due to racialized policing of public spaces'.

Secondly, our findings speak to why adaptation should go beyond top-down, big-scale infrastructure interventions, as well as beyond targeting people's behaviours (as 'unfit' or 'non-resilient'), as both types of explanation and action boil down to climate-inflected iterations of neoliberal urban development and individualized (health) responsibilities (Leitner *et al*., 2007; Ayo, 2012; Robin and Castán Broto, 2020). Crucially, in this regard, the embodied and situated knowledges around heat and adaptation from marginalized MW migrant residents reorients common views on what might count as adaptation, and what kind of adaptations can gear towards climate justice, including at the local level. Beyond the question of 'what' (materials, buildings, services, temperatures) is ideal for adaptation, the voices of migrant residents from El Raval force us to pay attention to 'how' and 'for whom'—in other words, to look at adaptation to heat as an issue of process, ownership, belonging and solidarity.

In this light, improvised practices, such as the occupation of an empty public building (La Massana) and its use by the renters' union or the amplification of local climate shelters designed to fit the neighbourhood needs by a local non-profit foundation (Tot Raval), become more clearly visible as places of heat relief because of the processes through which they came to be (guided by residents' needs), the processes they enable (reciprocal care and the linkage of socioecological struggles) and the people they serve (multiplicity of neighbours, including some of the most marginalized). As Ranganathan and Bratman (2021) argue, based on their research in Washington, DC, to unearth historical oppressions and look for the intersectional drivers of trauma beyond those strictly associated with climate is essential for abolitionist climate justice, but so is attention to the 'ethics of care and healing practices by those most at risk to climate change' (*ibid*.: 2). In the case of El Raval, we saw how activism in the Agora garden not only addressed issues of social justice (access to housing and urban nature, action against LGBTQ+ violence and against racism) but also acted as a soft infrastructure of adaptation: reclaiming self-managed/autonomous and community-geared spaces of heat protetion and relief, and providing a platform for interaction, care and solidarity between marginalized groups in the neighbourhood and the broader city.

As Tsavdaroglou and Kaika (2022) have demonstrated, new forms of collective care that emerge from the creation of 'caringspaces' by and for refugees constitute important levers for imagining 'a less individualistic, less divisive, and less isolated world' (*ibid*.: 233), even if not enough to fully address the exclusion and marginalization facing these collectives. This makes evident how the racial and migration-specific aspects of social determinants of heat vulnerability need to be better addressed when designing for climate adaptation. In our analysis, this marks the need to look at urban climate adaptation as an issue of housing justice and labour rights, as well as one of more inclusive immigration policy in general. It also pushes towards a reconsideration of climate urbanism and urban regeneration tactics, emphasizing the need to prioritize the diverse everyday realities and needs of residents. This, more specifically, points, first, to the importance of transforming existing spaces of heat protection to become more inclusive, diverse and participatory places with the help of grounded organizations and collectives. And secondly, we need to reconsider the concept of heat relief/comfort to include emotional and community feelings of belonging, and thus to include in climate action, funding and support existing spaces that already serve as 'caringspaces' (Tsavdaroglou and Kaika 2022), infrastructures of care (Power *et al*., 2022) and 'refuges of collaborative survival' in the face of climate change (di Chiro, 2018).

Overall, our analysis contributes to a framing of vulnerability that goes beyond prescribing unidimensional or fixed positionalities to vulnerable and marginalized people or places, and instead considers vulnerability as embodiment of intersectional injustices and a place from where radical adaptations can emerge (González-Hidalgo, 2023; von Meding and Chmutina, 2023). We recognize how, for migrant residents, such positionalities often shift and overlap, for example, belonging to vulnerable communities facing structural constraints at the same time as mobilizing in social justice activist groups and engaging in practices that advance urban climate justice in everyday life practices. This multiple positionality, or intersectionality, resembles what Turhan and Armiero (2019) call 'insurgent forms of citizenship (citing Holston, 1998) rooted in grassroots mobilization and the prefiguration of everyday state practices' as key for addressing the challenges of climate change and xenophobia. By thinking of (identarian, social and spatial) margins as places where vulnerability is both inhabited and confronted, we are inspired by bell hooks, who spoke of the experience of the margin as 'a space of radical openness' where 'one is always at risk' and 'one needs a community of resistance' (hooks, 1989: 19). Indeed, while labour and housing precarity and limited access to public spaces were found to be the main drivers of heat injustice, communities of resistance generated through marginal inhabitations of historically

stigmatized neighbourhoods such as El Raval are reclaiming space and cultivating sense(s) of place as a form of radical adaptation. We thus call for further research to investigate such modalities of everyday practice and organization by and for some of the most marginalized residents as pathways to more just urban climate adaptation.

Finally, in this article we point to the role of methodological and epistemological ways of studying climate change impacts and responses. Participatory action research approaches provide opportunities for participants to reflect on and communicate how climate change is experienced in their everyday lives, so as to link a complex phenomenon to their own realities, while knowing that these explanations constitute primary, valuable data. Although projects such as this can only contribute a small part of what is required to generate social change, this work shows the importance of producing knowledge based on migrant residents' embodied experiences. These experiences allowed us to interlink seemingly disparate issues, including activism, housing, labour, climate, health, urban greening and use of public space. The public event then provided a platform to communicate our findings and residents' concerns to a wider audience, including policy makers. The process gave different social movements the opportunity to come together, recognize common concerns and highlight urban climate injustices. Most importantly, this was achieved by directly using the voices of those whose lives and livelihoods are most affected. This links back to an understanding of climate/heat justice not only as a demand for compensation or equal treatment of oppressed subjects 'from a system that in fact thrives on producing such groups themselves, and not just the harms they suffer' (Velicu and Barca, 2020: 65), but as a demand for political recognition of people at all levels, independently of identity or citizenship.

Panagiota Kotsila, Institute of Environmental Science and Technology, Universitat Autónoma de Barcelona (ICTA-UAB), Barcelona, Spain, panagiota.kotsila@uab.cat

Valeria-Carolin Cuenca, Public Health and Epidemiology Research Group, Faculty of Medicine and Health Sciences, Universidad de Alcalá, Madrid, Spain, valeria.cuenca@uah.es

Manuel Franco, Basque Centre for Climate Change Research, BC3, 48940 Leioa, Biscay, Spain, manuel.franco@bc3research.org

Lourenço Melo, Institute for Environmental Science and Technology, Universitat Autónoma de Barcelona (ICTA-UAB), Barcelona, Spain, lourenco.hmelo@gmail.com

Sam Pickard, Barcelona Supercomputing Centre—Centro Nacional de Supercomputación (BSC), Barcelona, Spain, samuel.pickard@bsc.es

References

Abi Deivanayagam, T., S. English, J. Hickel, J. Bonifacio, R.R. Guinto, K.X. Hill, M. Huq, R. Issa, H. Mulindwa and H.P. Nagginda (2023) Envisioning environmental equity: climate change, health, and racial justice. *The Lancet* 402.10395, 64–78.

Abi Deivanayagam, T., S. Selvarajah, J. Hickel, R.R. Guinto, P. de Morais Sato, J. Bonifacio, S. English, M. Huq, R. Issa and H. Mulindwa (2022) Climate change, health, and discrimination: action towards racial justice. *The Lancet* 401.10370, 5–7.

Agut, J. (2008) El Hospital de La Santa Creu i Sant Pau, más de cinco siglos de historia [The Hospital of La Santa Creu i Sant Pau, more than five centuries of history] *Catalònia* 10 (June), SE-Articles.

AMB (Àrea Metropolitana de Barcelona) (2023) Index de vulnerabilitat al canvi climàtic (IVAC) [Climate change vulnerability index] [WWW document]. URL https://ide.amb.cat/Visor/?title=Índex+de+vulnerabilitat+al+canvi+climàtic+(IVAC)&resource=ags%3Ahttps%3A%2F%2Fide.amb.cat%2Fservei%2Fcatalunya%2Findex_vulnerabilitat_canvi_climatic%2Frest&locale=ca (accessed 10 April 2025).

Amorim-Maia, A.T., I. Anguelovski, E. Chu and J. Connolly (2022) Intersectional climate justice: a conceptual pathway for bridging adaptation planning, transformative action, and social equity. *Urban Climate* 41, 101053.

Amorim-Maia, A.T., I. Anguelovski, J. Connolly and E. Chu (2023) Seeking refuge? The potential of urban climate shelters to address intersecting vulnerabilities. *Landscape and Urban Planning* 238, 104836.

Anguelovski, I. (2014) *Neighborhood as refuge: community reconstruction, place remaking, and environmental justice in the city*. MIT Press, Cambridge, MA.

Anguelovski, I., A.L. Brand, J.J.T. Connolly, E. Corbera, P. Kotsila, J. Steil, M. García-Lamarca, M. Triguero-Mas,

H. Cole and F. Baró (2020) Expanding the boundaries of justice in urban greening scholarship: toward an emancipatory, antisubordination, intersectional, and relational approach. *Annals of the American Association of Geographers* 110.6, 1743–69.
Anguelovski, I., J.J.T. Connolly, H. Pearsall, G. Shokry, M. Checker, J. Maantay, K. Gould, T. Lewis, A. Maroko and J. Timmons Roberts (2019) Opinion: why green 'climate gentrification' threatens poor and vulnerable populations. *Proceedings of the National Academy of Sciences* 116.52, 26139–43.
Anguelovski, I., M. Triguero-Mas, J.J.T. Connolly, P. Kotsila, G. Shokry, C. Pérez del Pulgar, M. García-Lamarca, L. Argüelles, J. Mangione and K. Dietz (2019) Gentrification and health in two global cities: a call to identify impacts for socially-vulnerable residents. *Cities & Health* 4.1, 40–49.
Archer, D., F. Almansi, M. DiGregorio, D. Roberts, D. Sharma and D. Syam (2014) Moving towards inclusive urban adaptation: approaches to integrating community-based adaptation to climate change at city and national scale. *Climate and Development* 6.4, 345–56.
Assemblea del Raval (2018) *Violencia y muerte de Juan Andrés Benítez* [Violence and the death of Juan Andrés Benítez]. Volume 8, El Lokal, Barcelona.
Assemblea del Raval (2020) *El Raval: el epicentro del Movimiento Obrero Revolucionario Barcelones* [El Raval: the epicentre of the Revolutionary Workers' Movement in Barcelona]. El Lokal, Barcelona.
Astudillo Salazar, A.E. (2019) Organización vecinal desde la memoria colectiva y la liberación del espacio: etnografía del Ágora Juan Andrés Benítez en El Raval [Neighborhood organization from collective memory and the liberation of space: ethnography of the Juan Andrés Benítez Agora in El Raval]. *Barcelona Revista Papeles de Relaciones Ecosociales y Cambio Global* 146 (August), 129–40.
Ayo, N. (2012) Understanding health promotion in a neoliberal climate and the making of health conscious citizens. *Critical Public Health* 22.1, 99–105.
Ballester, J., M. Quijal-Zamorano, R.F. Méndez Turrubiates, F. Pegenaute, F.R. Herrmann, J.M. Robine, X. Basagaña, C. Tonne, J.M. Antó and H. Achebak (2023) Heat-related mortality in Europe during the summer of 2022. *Nature Medicine* 29, 1857–66.
Barcelona City Council (2018) Pla clima 2018–2030 [Climate plan 2018–2030] [WWW document]. URL https://www.barcelona.cat/barcelona-pel-clima/sites/default/files/documents/pla_clima_cat_maig_ok.pdf (accessed 10 April 2025).
Barcelona City Council (2020) Xarxa de refugis climatics [Network of climate shelters] [WWW document]. URL https://www.barcelona.cat/barcelona-pel-clima/ca/accions-concretes/xarxa-de-refugis-climatics (accessed 10 April 2025).
Barcelona City Council (2021) Estadísticas de Barcelona, distritos y barrios [Statistics of Barcelona, districts and neighborhoods] [WWW document]. URL https://ajunt ament.barcelona.cat/estadistica/castella/index.htm (accessed 10 April 2025).
Brink, E., A.M. Vargas Falla and E. Boyd (2023) Weapons of the vulnerable? A review of popular resistance to climate adaptation. *Global Environmental Change* 80 (May): 102656.
Bueno, J.G. and R. Carranco (2013) El empresario del 'gayxample' murió por múltiples golpes en el cráneo ['Gayxample' businessman died from multiple blows to the skull]. *El País* 16 October.
Bullard, R.D. and J. Lewis (1996) *Environmental justice and communities of color*. Sierra Club Books, San Francisco, CA.
Castro, B. and R. Sen (2022) Everyday adaptation: theorizing climate change adaptation in daily life. *Global Environmental Change* 75 (July), 102555.
Chu, E. and K. Michael (2019) Recognition in urban climate justice: marginality and exclusion of migrants in Indian cities. *Environment and Urbanization* 31.1, 139–56.
Cocola-Gant, A. and A. Lopez-Gay (2020) Transnational gentrification, tourism and the formation of 'foreign only' enclaves in Barcelona. *Urban Studies* 57.15, 3025–43.
Collins, P.H. 2022. *Black feminist thought: knowledge, consciousness, and the politics of empowerment*. Routledge, Abingdon.
Contreras Hernández, P. (2019) Migración, racismo y exclusión: análisis de las experiencias de mujeres Latinoamericanas en Barcelona [Migration, racism and exclusion: analysis of the experiences of Latin American women in Barcelona]. *Oxímora. Revista Internacional de Ética y Política* 15 (July–December), 80–94.
Dawson, A. (2017) *Extreme cities: the peril and promise of urban life in the age of climate change*. Verso Books, London and New York, NY.
Degen, M. (2018) Timescapes of urban change: the temporalities of regenerated streets. *The Sociological Review* 66.5, 1074–92.
de Genova, N. (2015) Border struggles in the migrant metropolis. *Nordic Journal of Migration Research* 5.1, 3–10.
de Rosa, S.P., J. de Moor and M. Dabaieh (2022) Vulnerability and activism in urban climate politics: an actor-centered approach to transformational adaptation in Malmö (Sweden). *Cities* 130 (November), 103848.
Devakumar, D., S. Selvarajah, I. Abubakar, S.-S. Kim, M. McKee, N.S. Sabharwal, A. Saini, G. Shannon, A.I.R. White and E. Tendayi Achiume (2022) Racism, xenophobia, discrimination, and the determination of health. *The Lancet* 400.10368, 2097–108.
di Chiro, G. (2018) Canaries in the Anthropocene: storytelling as degentrification in urban community sustainability. *Journal of Environmental Studies and Sciences* 8.4, 526–38.
Díez, J., P. Conde, M. Sandin, M. Urtasun, R. López, J. Luis Carrero, J. Gittelsohn and M. Franco (2017) Understanding the local food environment: a participatory Photovoice project in a low-income area in Madrid, *Spain. Health & Place* 43 (January), 95–103.
Dotsey, S. and F. Chiodelli (2021) Housing precarity. *City* 25.5–6, 720–39.
Eriksen, S.H., A.J. Nightingale and H. Eakin (2015) Reframing adaptation: the political nature of climate change adaptation. *Global Environmental Change* 35 (November), 523–33.
Fernández González, M. (2012) Matar al 'Chino': entre la revolución urbanística y el asedio urbano en el barrio del Raval de Barcelona [Killing the 'Chino': between the urban revolution and the urban siege in Barcelona's Raval neighbourhood]. PhD thesis, Department of Cultural Anthropology and American and African History, University of Barcelona, Barcelona.
Fry, C., E. Boyd, M. Connaughton, W.N. Adger, M. Franco Gavonel, C. Zickgraf, S. Fransen, D. Jolivet, A.H. Fábos and E. Carr (2024) Migrants as sustainability actors: contrasting nation, city and migrant discourses and actions. *Global Environmental Change* 87 (July), 102860.
García-Lamarca, M. (2021) Real estate crisis resolution regimes and residential REITs: emerging socio-spatial impacts in Barcelona. *Housing Studies* 36.9, 1407–26.
García-Lamarca, M. and M. Kaika (2016) 'Mortgaged lives': the biopolitics of debt and housing financialisation. *Transactions of the Institute of British Geographers* 41.3, 313–27.
Gatt, S., K. Hazibar, V. Sauermann, M. Preglau and M. Ralser (2016) Migration from a gender-critical, postcolonial and interdisciplinary perspective. *Österreichische Zeitschrift für Soziologie* 41.3, 1–12.
Generalitat de Catalunya (2022) Pla d'actuació per prevenir els efectes de les onades de calor sobre la salut (POCS) [Action plan to prevent the effects of heatwaves on health] [WWW document]. URL https://salutpublica.gencat.cat/web/.content/minisite/aspcat/vigilancia_salut_publica/POCS/2022/Pla-dactuacio-POCS-2022.pdf (accessed 10 April 2025).
González-Hidalgo, M. (2023) Affected by and affecting forest fires in Sweden and Spain: a critical feminist

analysis of vulnerability to fire. *Sociologia Ruralis* 63.3, 729–50.
Haeck, P. (2023) Bike couriers face the heat—or risk losing income. *Politico* 20 July.
Hambrecht, E., R. Tolhurst and L. Whittaker (2022) Climate change and health in informal settlements: a narrative review of the health impacts of extreme weather events. *Environment and Urbanization* 34.1, 122–50.
Hamstead, Z.A. (2023) Critical heat studies: deconstructing heat studies for climate justice. *Planning Theory & Practice* 4.2, 153–72.
Hansen, A., L. Bi, A. Saniotis and M. Nitschke (2013) Vulnerability to extreme heat and climate change: is ethnicity a factor? *Global Health Action* 6.1, 21364.
Hawthorne, C. (2021) L'Italia meticcia? The black mediterranean and the racial cartographies of citizenship. In G. Proglio, C. Hawthorne, I. Danewid, P. Khalil Saucier, G. Grimaldi, A. Pesarini, T. Raeymaekers, G. Grechi and V. Gerrand (eds.), *The black mediterranean: bodies, borders and citizenship*, Springer, Cham.
hooks, b. (1989) Choosing the margin as a space of radical openness. *Framework: The Journal of Cinema and Media* 36, 15–23.
Issa, R., K. van Daalen, A. Faddoul, L. Collias, R. James, U.A.R. Chaudhry, V. Graef, A. Sullivan, P. Erasmus and H. Chesters (2023) Human migration on a heating planet: a scoping review. *PLoS Climate*. https://doi.org/10.1371/journal.pclm.0000214
Kaika, M. (2017) 'Don't call me resilient again!': the new urban agenda as immunology … or … what happens when communities refuse to be vaccinated with 'smart cities' and indicators. *Environment and Urbanization* 29.1, 89–102.
Keller, R.C. (2015) *Fatal isolation: the devastating Paris heat wave of 2003*. University of Chicago Press, Chicago, IL.
Kim, Y.-O., W. Lee, H. Kim and Y. Cho (2020) Social isolation and vulnerability to heatwave-related mortality in the urban elderly population: a time-series multi-community study in Korea. *Environment International* 142 (September), 105868.
Klinenberg, E. (2015) *Heat wave: a social autopsy of disaster in Chicago*. University of Chicago Press, Chicago, IL.
Kotsila, P. (2023) Immigrant communities in Europe as situated knowledge-holders for postcolonial and feminist urban adaptation to climate health risks. In M. Armiero, S.P. de Rosa and E. Turhan (eds.), *Urban movements and climate change: loss, damage and adaptation*, Amsterdam University Press, Amsterdam.
Kotsila, P. and I. Anguelovski (2023) Justice should be at the centre of assessments of climate change impacts on health. *The Lancet Public Health* 8.1, e11–12.
Kotsila, P., I. Anguelovski, F. Baró, J. Langemeyer, F. Sekulova and J.J.T. Connolly (2021) Nature-based solutions as discursive tools and contested practices in urban nature's neoliberalisation processes. *Environment and Planning E: Nature and Space* 4.2, 252–74.
Kotsila, P., E. Oscilowicz, F. Sekulova, M. Triguero-Mas, I. Anguelovski and J. Honey-Rosés (2021) Barcelona's greening paradox as an emerging global city and tourism destination. In I. Anguelovski and J.J.T. Connolly (ed.), *The green city and social injustice: 21 tales from North America and Europe*, Routledge, Abingdon.
Leitner, H., J. Peck and E.S. Sheppard (2007) *Contesting neoliberalism: urban frontiers*. Guilford Press, New York, NY.
Li, A., M. Toll and R. Bentley (2023) Mapping social vulnerability indicators to understand the health impacts of climate change: a scoping review. *The Lancet Planetary Health* 7.11, e925–37.
Liu, F., A. Chang-Richards, K. I-Kai Wang and K.N. Dirks (2023) Effects of climate change on health and wellbeing: a systematic review. *Sustainable Development* 31.4, 2067–90.
López, H. (2020) Okupada La Massana para convertirla en un punto de solidaridad vecinal [La Massana squat to become a neighborhood solidarity point]. *El Periódico*, 29 June.
Luke, N. and M.T. Huber (2022) Introduction: Uneven geographies of electricity capital. *Environment and Planning E: Nature and Space* 5.4, 1699–715.
MacGregor, S., C. Walker and T. Katz-Gerro (2019) 'It's what I've always done': continuity and change in the household sustainability practices of Somali immigrants in the UK. *Geoforum* 107 (December), 143–53.
Marí-Dell'Olmo, M., L. Oliveras, T. Arechavala, C. Ariza, C. Borrell, L. Font-Ribera, A. Gómez-Gutiérrez, P. González-Marín, E. Grau, L. Mercuriali, T. Montalvo, M. Olabarría, C. Pérez, S. Portaña, E. Realp, M. Rico, F. Sánchez-Martínez, N. Valero and J.R. Villalbí (2022) Canvi climàtic i salut a la ciutat de Barcelona [Climate change and health in the city of Barcelona] [WWW document]. URL https://www.aspb.cat/wp-content/uploads/2023/02/ASPB-Canvi-climatic-salut_230210.pdf (accessed 10 April 2025).
Mayrhuber, E.A.-S., M.L.A. Dückers, P. Wallner, A. Arnberger, B. Allex, L. Wiesböck, A. Wanka, F. Kolland, R. Eder, H.-P. Hutter and R. Kutalek (2018) Vulnerability to heatwaves and implications for public health interventions—a scoping review. *Environmental Research* 166 (October), 42–54.
Mercader, C. (2019) Las piscinas municipales descubiertas de Barcelona son de las mas caras de España [Barcelona's outdoor municipal swimming pools are among the most expensive in Spain]. *20minutos* 25 June.
McDonogh, G.W. (1987) The geography of evil: Barcelona's Barrio Chino. *Anthropological Quarterly* 60 (October), 174–84.
Merino, P.A. (2020) L'antiga (i ocupada) Escola Massana, nou centre d'operacions anticrisi del Raval [The old (and occupied) Escola Massana, new centre of anti-crisis operations in Raval]. *Nació Digital* 24 June.
Metawala, P., K. Golda-Pongratz and C. Irazábal (2021) Revisiting Engels' 'housing question': work and housing conditions of immigrant platform delivery riders in Barcelona. *Human Geography* 14.2, 243–57.
Mikulewicz, M., M.A. Caretta, F. Sultana and N.J.W. Crawford (2023) Intersectionality and climate justice: a call for synergy in climate change scholarship. *Environmental Politics* 32.7, 1275–86.
Morrow, O. and B. Parker (2020) Care, commoning and collectivity: from grand domestic revolution to urban transformation. *Urban Geography* 41.4, 607–24.
Ortega, F.F. (2021) The 'app-based' employment relationship: the Spanish case. In M. Carinci and F. Dorssemont (eds.), *Platform work in Europe: towards harmonisation?* Intersentia, Cambridge and Antwerp.
Pareja, P. (2023) Las noches tropicales se ceban con el barrio del Raval: 'Moriremos antes de calor que de hambre' [Tropical nights are taking their toll on the Raval neighborhood: 'We'll die of heat before we die of hunger']. *El Diario,* 21 July.
Power, E.R., I. Wiesel, E. Mitchell and K.J. Mee (2022) Shadow care infrastructures: sustaining life in post-welfare cities. *Progress in Human Geography* 46.5, 1165–84.
Pulido, L. (2000) Rethinking environmental racism: white privilege and urban development in southern California. *Annals of the Association of American Geographers* 90.1, 12–40.
Pulido, L. (2017) Geographies of race and ethnicity II: environmental racism, racial capitalism and state-sanctioned violence. *Progress in Human Geography* 41.4, 524–33.
Quaglieri-Domínguez, A. and A. Scarnato (2017) The Barrio Chino as last frontier: the penetration of everyday tourism in the dodgy heart of the Raval. In M. Gravari-Barbas and S. Guinand (eds.), *Tourism and gentrification in contemporary metropolises*, Routledge, Abingdon.
Ranganathan, M. and E. Bratman (2021) From urban resilience to abolitionist climate justice in Washington, DC. Antipode 53.1, 115–37.
Reid, C.E., M.S. o'Neill, C.J. Gronlund, S.J. Brines, D.G. Brown, A.V. Diez-Roux and J. Schwartz

(2009) Mapping community determinants of heat vulnerability. *Environmental Health Perspectives* 117.11, 1730–36.
Rius-Ulldemolins, J. and R. Klein (2020) From a Barrio Chino urban stigma to the Raval cultural brand: urban memory and cultural policies in the renewal of central Barcelona. *Journal of Urban History* 48.6, 1407–23.
Robin, E. and V. Castán Broto (2020) Towards a postcolonial perspective on climate urbanism. *International Journal of Urban and Regional Research* 45.5, 869–78.
Robin, E., L. Westman and V. Castán Broto (2020) For a minor perspective on climate urbanism: towards a decolonial research praxis. In V. Castán Broto, E. Robin and A. While (eds.), *Climate urbanism: towards a critical research agenda*, Palgrave Macmillan and Springer Nature, Cham.
Romanello, M, C. di Napoli, P. Drummond, C. Green, H. Kennard, P. Lampard, D. Scamman, N. Arnell, S. Ayeb-Karlsson and L.B. Ford (2022) The 2022 report of the *Lancet* countdown on health and climate change: health at the mercy of fossil fuels. *The Lancet* 400.10363, 1619–54.
Rosa, A. (2018) Benítez: un símbolo contra la especulación en el Raval [Benítez: a symbol against speculation in the Raval]. *El Nacional,* 8 October.
Roy, A. (2011) Slumdog cities: rethinking subaltern urbanism. *International Journal of Urban and Regional Research* 35.2, 223–38.
Rudge, K. (2023) Leveraging critical race theory to produce equitable climate change adaptation. *Nature Climate Change* 13, 623–31.
Sánchez-Ledesma, E., H. Vásquez-Vera, N. Sagarra, A. Peralta, V. Porthé and È. Díez (2020) Perceived pathways between tourism gentrification and health: a participatory photovoice study in the Gòtic neighborhood in Barcelona. *Social Science & Medicine* 258 (August), 113095.
Schipper, E.L.F (2020) Maladaptation: when adaptation to climate change goes very wrong. *One Earth* 3.4, 409–14.
Shi, L. (2020) The new climate urbanism: old capitalism with climate characteristics. In V. Castán Broto, E. Robin and A. While (eds.), *Climate urbanism: towards a critical research agenda*, Palgrave Macmillan and Springer Nature, Cham.
Smith, G.S., E. Anjum, C. Francis, L. Deanes and C. Acey (2022) Climate change, environmental disasters, and health inequities: the underlying role of structural inequalities. *Current Environmental Health Reports* 9.1, 80–89.
Sultana, F., R. Solnit and T. Young-Lutunatabua (2023) Decolonizing climate coloniality. In R. Solnit and T. Young-Lutunatabua (eds.), *Not too late: changing the climate story from despair to possibility*, Haymarket Books, Chicago, IL.
Tadiar, N.X.M. (2022) *Remaindered life*. Duke University Press, Durham, NC.
Tsavdaroglou, C. and M. Kaika (2022) Refugees' caring and commoning practices against marginalisation under Covid-19 in Greece. *Geographical Research* 60.2, 232–40.
Tsing, A.L. (1994) From the margins. *Cultural Anthropology* 9.3, 279–97.
Turhan, E. and M. Armiero (2019) Of (not) being neighbors: cities, citizens and climate change in an age of migrations. *Mobilities* 14.3, 363–74.
van Daalen, K.R., M. Romanello, J. Rocklöv, J.C. Semenza, C. Tonne, A. Markandya, N. Dasandi, S. Jankin, H. Achebak and J. Ballester (2022) The 2022 Europe report of the *Lancet* countdown on health and climate change: towards a climate resilient future. *The Lancet Public Health* 7.11, e942–65.
van Daalen, K.R., C. Tonne, J.C. Semenza, J. Rocklöv, A. Markandya, N. Dasandi, S. Jankin, H. Achebak, J. Ballester and H. Bechara (2024) The 2024 Europe report of the *Lancet* countdown on health and climate change: unprecedented warming demands unprecedented action. *The Lancet Public Health* 9.7, e495–522.
Velicu, I. and S. Barca (2020) The just transition and its work of inequality. *Sustainability: Science, Practice and Policy* 16.1, 263–73.
von Meding, J. and K. Chmutina (2023) From labelling weakness to liberatory praxis: a new theory of vulnerability for disaster studies. *Disaster Prevention and Management: An International Journal* 32.2, 364–78.
Wang, C. and M.A. Burris (1997) Photovoice: concept, methodology, and use for participatory needs assessment. *Health Education & Behavior* 24.3, 369–87.
Wiesböck, L., A. Wanka, E.A.-S. Mayrhuber, B. Allex, F. Kolland, H.P. Hutter, P. Wallner, A. Arnberger, R. Eder and R. Kutalek (2016) Heat vulnerability, poverty and health inequalities in urban migrant communities: a pilot study from Vienna. In W. Leal Filho, U.M. Azeiteiro and F. Alves (eds.), *Climate change and health*, Springer, Cham.
Wisner, B., P. Blaikie, T. Cannon and I. Davis (2004) *At risk. Natural hazards, people's vulnerability and disasters*. Second edition, Routledge, Abingdon.

APPENDIX 1: Participants' key demographic characteristics

#	Method	Country of origin	Gender	Age	Employment status
1	Interview	Pakistan	male	40+	Working
2	Interview	Bolivia	female	40+	Working
1	Photovoice	El Salvador	male	25+	Working
2	Photovoice	Peru (S)	female	35	Working
3	Photovoice	Brazil	female	60	Working
4	Photovoice	Colombia	female	40+	Working
5	Photovoice	Ecuador	male	40+	Working
6	Photovoice	Morocco	female	40+	Taking care of household
7	Photovoice	Peru (M)	female	55	Working
8	Photovoice	Morocco (H)	female	40+	Unemployed
9	Photovoice	Nigeria	male	30+	Working
10	Photovoice	Ecuador	female	60	Working

Note: To ensure the anonymity of participants, I refer to the numbers in Appendix 1, which lists their sociodemographic characteristics.

APPENDIX 2: Photographs taken by the participants of the Photovoice project

FIGURE 1 Playground in Rambla de Raval (*source*: photo by Photovoice participant #6, February 2023)

FIGURE 2 Inflatable pool in an urban community garden (*source*: photo by Photovoice participant #10, August 2022)

FIGURE 3 Block of buildings and a sign on a side wall against evictions (*source*: photo by Photovoice participant #5, February 2023)