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CARE, HEALTH, AND HOUSING

Crisis, Experiences, and Answers

EDITED BY LIDIA KATIA C. MANZO

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WITH A PREFACE BY
SUSAN J. SMITH

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In memory of my mother, whose care and strength shaped my understanding of the world, and in honour of the women who hold communities together through care, solidarity, and everyday acts of resistance.

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Notes on contributors

Gearóid Carvill sits on the Sustainability Working Group of the Architects' Council of Europe and lectures at Technological University of the Shannon and Technological University Dublin (TU Dublin).

Kevin Credit is Assistant Professor at the National Centre for Geocomputation at Maynooth University.

Gayle Cullen Doyle is Chairperson of the Oliver Bond Residents Group in Dublin and a long-standing community advocate for residents' rights and improved housing conditions.

Clodagh Daly is Manager of Community Law and Mediation's (CLM) Centre for Environmental Justice.

Dáithí Downey works with Dublin City Council where he leads the European and International Relations Office.

Gavin Elliott is a qualified barrister and has been called to the Bar of Ireland and Northern Ireland.

Hannah Grove is a health geographer and urban planner, currently working as a Postdoctoral Research Fellow at the Global Centre on Healthcare and Urbanisation, University of Oxford.

Rory Hearne is an Irish Social Democrats politician and TD (Irish Parliament) for the Dublin North-West constituency since the 2024 general election, and Associate Professor of Social Policy at Maynooth University.

Mary Heavey is a senior social justice solicitor, specialising in housing, homelessness, and social welfare law at CLM.

Rob Kitchin is Professor in the Maynooth University Social Sciences Institute and Department of Geography.

Jack R. Lehane is Research Fellow at the University College Dublin School of Information and Communication Studies.

Joseph Little is Head of Construction in the School of Architecture, Building and Environment, TU Dublin.

Andrew Lundberg is an industry-based low-energy building consultant specialising in Certified Passive House Design, Thermal Modelling services, and Part L and NZEB compliance.

Lidia Katia C. Manzo is Associate Professor in Sociology at Mercatorum University of Rome and a Marie Skłodowska-Curie Fellow at the University of Milan (CITY-OF-CARE, 2020–22).

Declan Redmond is Associate Professor of Housing and Planning at University College Dublin.

Jeffrey Roe is Head of Engineering at Telclic, a Director of Tog Hackerspace, and a Lecturer in the Department of Design Innovation at Maynooth University.

Susan J. Smith is Honorary Emerita Professor of Social and Economic Geography at the University of Cambridge, where she was Mistress (Head) of Girton College (2009–22), and President of the British Academy (2025–29).

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Preface

It is often forgotten that some of the earliest housing interventions – from as early as the 1850s in Britain and Ireland – were driven by a concern for public health. Indeed, they came in the form of public health Acts, tackling not only building standards, but infrastructural features including water supply, drainage, and street lighting. Later – spreading across most of north-west Europe post-1945 – in response to poor housing conditions and chronic undersupply, state housebuilding and social ownership got under way. This means that for over a century, governments explicitly acknowledged the special qualities of housing – qualities that goods produced and consumed in markets rarely have, social costs and benefits that pricing cannot capture, qualities which explain why healthy, enabling homes are the heart of a 'good society'.

Those special qualities of housing enabled some governments to argue not only that it might be appropriate to suspend the price mechanism in certain settings, allocating homes according to need rather than ability to pay, but also, that housing interventions more generally could be used to meet social as well as economic aims, including health and wellbeing. We were close to locating care as a practical standard against which the achievements not just of housing systems, but entire societies in which those systems are embedded, could be measured. What has gone wrong?

It may seem ironic, in light of the present housing emergency, to begin by acknowledging that housing for health was,

from the start, a cross-sector, interdisciplinary, infrastructural enterprise, integral to social and economic wellbeing. Yet, it is important to recognise that the present dilemma has not arisen because these foundational principles have never been fully appreciated, but rather because it has been so easy to cast them aside. Living in a stock of ageing, under-improved, unhealthy housing is the norm for millions of families; the harms that flow from this have been steadily accumulating for years, gradually spilling through whole communities and cascading across generations to devastating effect. On the evidence of this book, as a minimum, these principles are something that any civilised, compassionate, deliberative democracy would do well to revive.

Social housing has a distinctive space in these debates. In the UK, for example, which built the largest social housing estate in the world in 1923, council housing allocations systems were for many years driven by 'medical priority for rehousing', ensuring that households with a range of health and mobility needs were offered priority access to homes whose rents were subsidised and whose characteristics were regarded as enabling and therapeutic. This became unsustainable in the face of what is now recognised as a crisis of homelessness. Even so, using data from the Gallup Poll for 158,765 individuals in 32 countries between 2016 and 2022, a recent study showed that housing insecurity – which has far-reaching consequences for life satisfaction – is powerfully mediated by tenure, and that countries with a larger social housing stock (compared to those with lower stock), show less widespread housing insecurity, and less damage to the life satisfaction of those who are socioeconomically disadvantaged (Park et al, 2025).

The paradox, of course, as the City of Care initiative recognises, is that, post-1980s welfare states have rolled back to the extent that social sectors are struggling to provide the quantity and quality of accommodation that labels like housing for health, or healthy housing, imply. As for the ethics and practicalities of care, these are – as the chapters in this book

powerfully demonstrate – very far from the centre-stage they should occupy.

With social housing bearing the brunt of the present emergency, and owner-occupation – generally selective against health and disability needs, often celebrated for its therapeutic qualities – proving increasingly stressful across an expanding indebted margin, the alternatives hardly appeal. Private renting generally contains the worst quality homes with least financial and tenure security, and – thanks to a turn to rentier capitalism – steeply rising costs and outlays. Decision takers, policy makers, and entire systems of governance desperately need a manifesto containing a clear-sighted vision of what to do. This book is it.

There is, of course, massive, perhaps overwhelming lock-in of vested interests to the present status quo. But that is not a reason to leave it unchallenged, and this book is clear and persuasive in its insistence that there is an alternative. Part of the answer, unsurprisingly is to create more and better social housing. That is the obvious way to formalise the special qualities of housing, position it as a human right, and create a space to accommodate that bundle of entitlements along with all those other things that philosopher Michael Sandel argues that money should not be able to buy. A revival of social renting perhaps offers the best chance of explicitly using housing to build an infrastructure, and an ethics, of care.

We should at the same time be wary of returning to the idea of a sector for the needy provided by states that care, and one dominated by markets that work for some but not others. And we should not underestimate the challenge of moving from demand- to supply-side subsidies at a time when government budgets are incomparably stretched. A welcome strand in this book, therefore, suggests that housing can break the own–rent dualism apart, that there are ways to free up the institutional imaginary sufficiently to recognise the special qualities of housing across the board. If enough scholars and practitioners dare to believe that we can build capacity for enabling,

therapeutic, health-promoting homes across the piece, and that we can turn entire housing systems into an infrastructure of care, there is a chance it will happen.

It is a big ask. Yet, as the editor and commentators in this book show, an ethic of care, which has been largely a feminist project, is not a genteel suggestion from a bunch of well-meaning women about how to be kinder to others. It is a powerful style of politics with an eye to transforming the future, just as the welfare ideal transformed the past. Engaging with an ethic, a politics, a practice, of care is arguably the only way of fully and properly recognising the interdependency of human life. It is an opportunity, finally, to acknowledge how absurd it is to think that a stock of housing created by the labour, resources, materials, and often-public investments of the past is for individuals and institutions to exploit for our own gain, at the expense of others, including future generations.

In seizing this opportunity, a book like this is neither the start nor the end of the matter. It is a pathway to more participatory research to better identify and respond to housing need, by building from local knowledge and experience. It calls for better data, that are more open and complete. It anticipates a new flow of funds (a reform of property tax, perhaps) to prioritise not-for-profit home-building, infrastructural reinvestment, and renewal. It demands a round of regulation to limit the value that rentier capitalism can extract from the sector. Critically, it valorises the importance the City of Care programme attaches to interdisciplinary and cross-sectoral working for a fairer future. Thanks to initiatives like that, and books like this, when faced with the question 'Why should we care about healthier homes', we will, inspired by a different vision for the future, not only say 'because is it the right thing', but also 'because we can'.

Susan J. Smith
April 2026, Honorary Emerita Professor of
Social and Economic Geography, Cambridge University

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ONE

Why care, health, and housing?

Lidia Katia C. Manzo

Introduction: Housing, health, and the imperative of care

Housing – particularly public and social housing – is where societies declare whose lives matter.

It is the foundation of safety, dignity, wellbeing, and social belonging, but it is also a powerful mirror: it reflects the priorities embedded in public policy, the inequalities produced through markets, and the forms of care – or carelessness (Smith, 2005, 2010, 2012) – that states extend to their most vulnerable populations. This book begins from a simple proposition: adequate housing is an essential condition for life, and when that condition erodes, so too does the possibility for individuals and families to thrive.

Across Europe and beyond, housing systems are straining under the combined pressures of financialisation, austerity, ageing stock, climate change, and widening social inequalities. Ireland is no exception. The current housing crisis is not only a matter of affordability or supply; it is also, and perhaps most urgently, a crisis of adequacy, safety, and health. The evidence is unambiguous: inadequate housing conditions – cold,

damp, mould, overcrowding, environmental stressors, and the social ones associated with unsafe or highly deprived neighbourhoods – are consistently linked to respiratory and cardiovascular illness, chronic stress, depression, anxiety, and reduced life expectancy (Marmot, 2015). These impacts are not evenly distributed but follow familiar lines of class, gender, age, ability, and race.

Yet these structural harms are often normalised, rendered invisible, or reframed as individual failings rather than systemic ones. In the case of the social housing community of Dublin's Oliver Bond House, one of the central empirical threads running through this volume, residents have lived for years with condensation, mould, ventilation problems, infrastructural decay, and the health issues that follow from such conditions. Resident-led research has repeatedly documented how these environments compromise wellbeing, particularly for children, older adults, and those already living with illness (Manzo and Grove, 2024). These are not isolated cases but symptoms of a wider pattern of institutional neglect – what scholars of urban inequality describe as 'slow violence' (Nixon, 2011), harm that accumulates gradually, predictably, and preventably over time.

This book positions these experiences within a broader analytical framework: the ethics of care (Tronto, 1993; Sevenhuijsen, 2003) and the Health in All Policies approach (Braubach, 2011; Sharpe et al, 2018), articulated here through the City of Care model (Manzo, 2023). Care is understood not as sentiment, but as a political, material, and organisational principle – one inseparable from responsibility (Manzo, *forthcoming*). It names the obligations that institutions hold toward those whose lives are shaped by their decisions: the duty to recognise vulnerability, to respond competently, and to remain accountable for the conditions they create. A caring city is one in which the conditions necessary for life to flourish are secured: adequate housing, healthy indoor environments, robust community infrastructures, and social capital that enables residents to mobilise, participate, and hold institutions accountable.

Figure 1.1: The City of Care model: a Health in All Policies framework linking adequate housing, community infrastructure, and social capital



As Figure 1.1 illustrates, the City of Care model provides the conceptual architecture for this volume by linking a Health in All Policies perspective to housing, community infrastructure, and social capital as mutually reinforcing conditions of urban wellbeing.

Read in this way, housing is not a discrete policy field but part of a wider ecology of care that connects homes, neighbourhoods, institutions, and health outcomes. As the chapters in this volume demonstrate, care must therefore become central to how we design, maintain, govern, and imagine housing systems. Without care, housing becomes a

site of harm. With care, housing becomes an infrastructure of health, dignity, and democratic possibility – opening space for repair and hope.

Housing and health: what the evidence shows

Housing adequacy is shaped by social, economic, cultural, climatic, ecological, and political forces. According to the UN (UN-Habitat, 2009; UN, 2023), *adequate housing* requires privacy, space, safety, security, habitability, lighting and ventilation, basic infrastructure, access to services, and affordability. This multidimensional definition highlights that inadequacy is rarely reducible to a single defect; rather, it emerges through interacting physical, social, and psychological factors. Yet these interconnections are often absent from policy frameworks, leading to persistent gaps in how housing adequacy is assessed and addressed.

Housing is lived and experienced across multiple scales – from individual households to neighbourhood environments and broader governance regimes – and intersects with structural inequalities (Borrell et al, 2023). The relationship between housing and health is well documented, but the mechanisms through which environments shape wellbeing, and the criteria for defining adequacy, remain unevenly conceptualised. Substandard housing increases the risk of infectious disease, chronic illness, injury, and mental distress (Krieger and Higgins, 2002; Adamkiewicz et al, 2014). These risks fall disproportionately on those already disadvantaged by class, gender, age, ability, and racialisation, reinforcing cycles of inequality.

Across Europe, social housing – central to ensuring adequate homes for those most in need (European Commission, 2016) – faces severe pressures. Many estates suffer from outdated infrastructure, insufficient maintenance, and chronic underinvestment (Pittini et al, 2017; Aernouts et al, 2020; Eurofound, 2023) – problems that recent policy research

highlights as critical barriers to improving housing quality and energy performance in older housing stock (Gibb, 2025). Existing metrics, such as the World Bank's Adequate Housing Index (2021), capture essential deficits in sanitation and basic services, but fail to account for the complex realities of developed countries, where welfare state retrenchment (Aalbers, 2008, 2016; Haffner et al, 2009) has led to ageing stock, deteriorating buildings, and persistent structural neglect. The Council of Europe's Commissioner for Human Rights (2019) warns that Europe's social housing crisis is worsening, with inadequate policies and declining investment failing to meet increasing need. Large estates constructed for the 'urban poor' in the early twentieth century (Whitehead and Scanlon, 2007) now exhibit dampness, mould, inadequate heating, poor ventilation, and structural degradation (Power, 1997; Housing Europe, 2023), and require urgent, large-scale regeneration (European Parliament, 2013).

Evidence consistently shows that improving housing conditions – through ventilation, insulation, moisture control, and structural repair – reduces respiratory and cardiovascular disease and supports mental wellbeing (Richards et al, 2025). Recent studies, including my own with Grove (Manzo and Grove, 2024), demonstrate how inadequate housing in gentrifying areas of Dublin exacerbates stress and ill-health among long-term residents. These findings reinforce the need for interdisciplinary approaches that integrate social, environmental, regulatory, and health dimensions.

The COVID-19 pandemic rendered these connections impossible to ignore and materially more severe, exposing how existing inequalities in housing conditions translated directly into heightened health risks. Stay-at-home directives, while essential for infection control, exposed stark disparities in housing quality (Barry, 2020; Logan, 2020; Robb et al, 2024). Globally, those living in inadequate or overcrowded homes faced significantly greater risks (Ahmad et al, 2020; Bambra et al, 2020; Harlem, 2020; Mehdipanah, 2020;

Lee et al, 2022). In Chelsea, Massachusetts, residents in substandard housing faced a 48 per cent higher risk of infection during lockdown compared with those living in adequate homes (Robb et al, 2024). The lesson is clear: housing inadequacy directly compounds vulnerability during public health crises, making housing quality a core pillar of health protection.

Housing also has profound intergenerational effects. Research shows that environmental stressors within inadequate homes can influence mental health and biological processes through DNA methylation (Bollati and Baccarelli, 2010; Chambers et al, 2015; Sanders et al, 2023). Krieger's ecosocial theory (2005) explains how bodies *embody* their environments, while the Developmental Origins of Health and Disease framework shows how early-life exposures shape health trajectories across the lifespan and, potentially, across generations (Martin et al, 2022). Yet capturing these long-term effects in economic analyses remains difficult. As Fenwick et al (2013) note, ideal evaluations would span the lifetime of interventions, but long-term attribution is hindered by confounding factors and data attrition – highlighting the need for new longitudinal approaches.

Recent policy debates reflect growing recognition of these challenges. *The Lancet* (2024) calls for integrating housing quality into public health strategies. Harvard's Joint Center for Housing Studies (Wedeen and Martín, 2024) identifies home repair programmes as critical interventions for low-income and racialised communities. Robb et al (2024) show that linking housing inspection data with health outcomes can help identify high-risk areas and guide targeted interventions.

Taken together, the evidence demonstrates a compelling conclusion: *housing is health* – materially, biologically, emotionally, socially, and across generations. If housing shapes embodied experiences, relationships, and life chances, then improving population health requires placing housing quality at the centre of public strategies. And if housing systems can produce harm through neglect, fragmentation, and

underinvestment, they can also produce wellbeing through care, coordination, and accountability.

The City of Care framework develops this argument further by recognising that the environments in which people live are inseparable from the conditions that sustain healthy and dignified lives. Investing in adequate housing, responsive institutions, community infrastructure, and transparent data systems is therefore not only a matter of policy design – it lays the foundation for the more integrated, care-oriented approach to health presented in the next section.

The ethics of care as an urban paradigm

The ethics of care begins from a simple but radical insight: life is sustained through relations of interdependence, and societies are judged by how they organise the work of maintaining, continuing, and repairing the worlds they inhabit (Tronto, 1993; Held, 2006). As articulated in the feminist tradition (Sevenhuijsen, 2003; Barnes, 2006; Lawson, 2007; Puig de la Bellacasa, 2017), care is not merely a moral sentiment but a material, political, and relational practice. It encompasses the mundane labour that sustains life, the infrastructures that enable wellbeing, and the collective responsibilities that bind individuals, communities, and institutions together. Care, in this sense, is woven into everyday urban life. It is lived through corporeal experiences and practices, embedded in particular places and institutions, and unevenly distributed across social groups and neighbourhoods.

This inequality becomes especially visible under neoliberal restructuring. Neoliberal reform individualises risk, responsibilises households, and redefines housing as an asset rather than a right (Brenner and Theodore, 2002). It shifts care away from public systems and toward families, communities, and overstretched local authorities – an ideological move that narrows vulnerability to a matter of personal failure rather than political design (Tronto, 2013; Power and Mee, 2019). In housing policy and provision,

this has produced decades of privatisation, disinvestment, outsourcing, and short-term 'care fixes', weakening the infrastructures on which collective wellbeing depends.

An ethics of care helps us diagnose these failures for what they are: systemic withdrawals of responsibility. Deferred repairs, inadequate maintenance regimes, slow or stalled regeneration, inaccessible complaints systems, and fragmented governance do not simply 'happen' – they reflect political choices about whose lives are protected and whose lives are left to absorb harm (Manzo, 2025a). These omissions interrupt what Tronto (2013) describes as the work of democratic life: the collective labour required to sustain the social and material conditions under which democracy can function. When systems of care are withdrawn or fragmented, this work does not disappear; it is displaced onto households, communities, and informal networks.

Care ethics therefore foregrounds the importance of everyday infrastructures of support – those community institutions, practices, and relationships that sustain people where formal systems fail. In my work, I describe these as networks of care (Manzo, 2023a): relational formations built through mutual aid, shared labour, and cross-generational organising that enable communities to endure structural neglect. Across housing movements and neighbourhood struggles, such networks operate as a form of collective capital, accumulated through long-term practices of solidarity and care. In Dublin's Liberties, a gentrifying inner-city neighbourhood, as my ethnographic research shows (Manzo, 2026), women have long played a central role in sustaining these networks through informal support, campaigning, and forms of 'activist mothering' (Naples, 1992). In doing so, they provide precisely the kinds of stability, care, and relational resources that policy frameworks routinely overlook. These networks constitute vital forms of care capital – assets that allow communities to survive austerity, displacement, and disinvestment.

This resonates with the *Care Manifesto*'s argument that caring communities are democratic communities: local infrastructures

of support strengthen participation, collective agency, and the capacity to contest injustice (Care Collective, 2020). As debates on urban justice increasingly show, housing struggles are not only about access to dwellings but about the right to shape the city itself (Aalbers and Gibb, 2014). A caring city, therefore, cannot rely on private profit, outsourcing, or market logics. It requires public, socialised, co-produced forms of care, rooted in shared resources, inclusive planning, and community-driven decision-making. Only such arrangements can generate what Dowling (2018) calls 'municipal care'; institutional structures that enable both workers and residents to care well.

Housing becomes a crucial arena within this paradigm. Following Power and Mee (2019), we can understand housing as an infrastructure of care: not only supporting domestic life, but shaping the flow of care across neighbourhoods, markets, and governance systems. Recent empirical work has further shown how such infrastructures of care are sustained through community networks and collective practices of solidarity within social housing contexts (Manzo, 2025b). Adequate, affordable homes; maintained and safe buildings; child-friendly and accessible public spaces; responsive local services; and transparent data systems all form the conditions of urban care.

Seen through this lens, the ethics of care is both analytical and actionable. It illuminates how vulnerabilities are produced and distributed, reveals the political nature of neglect, and offers tools for imagining alternative futures. It asks a fundamental question – is this a city that cares? – and challenges us to redesign housing systems so that care, not market value, becomes their organising principle. A city organised around care is not an aspiration but a necessity for building environments in which wellbeing, dignity, and democratic life can flourish.

Thinking housing through care: a framework, a method, a book

This book emerged from the EU-funded CITY-OF-CARE project,[1] a comparative research initiative across Ireland and

Italy conceived before the COVID-19 pandemic, aimed at contributing to healthier, more supportive cities. When the research began in Dublin in 2021, however, the conditions under which urban life was being lived – and studied – had profoundly changed. The pandemic had reshaped everyday realities, rendering the links between housing, health, and care newly visible, particularly in neighbourhoods marked by long-term deprivation and inadequate living conditions. In Oliver Bond House, inadequate housing was not an analytical category but a lived condition – one in which poor housing translated directly into poor health, especially under the pressures of lockdown, confinement, and prolonged time spent indoors. This encounter marked a turning point in my role as a researcher. Observation alone was no longer sufficient; the research itself demanded responsibility, both in how knowledge was produced and in how it might support residents' ongoing struggles for change.

From this point onward, care became not only a theoretical lens but a research commitment. As a social researcher, I understand care not as an abstract ethical stance but as an embodied and relational responsibility that shapes how research relationships are built, sustained, and mobilised. Caring research does not claim neutrality in the face of injustice; it acknowledges that how we study housing, health, and inequality matters for the possibilities of transformation. This book, therefore, treats care as integral to the pursuit of healthier and more equitable urban environments.

As the previous sections have shown, the systems that shape housing, health, and community life are deeply interdependent. They succeed or fail together. When housing is inadequate, governance fragments responsibility, data remain inaccessible, or neighbourhood infrastructures erode, the consequences reverberate through corporeal experience, households, communities, and democratic life. Conversely, when these systems are aligned around principles of care – responsiveness, responsibility, repair, and relationality – they can generate conditions that support collective wellbeing.

Grounded in the CITY-OF-CARE project and informed by long-term ethnographic engagement, resident-led research, participatory mapping, building-science analysis, legal inquiry, and sustained community partnerships, this book advances care not as a fixed model to be applied, but as *a framework, a method, and a mode of intervention*. It responds directly to the experiences of crisis produced by decades of privatisation, disinvestment, and fragmented governance, proposing a counter-approach grounded in collective responsibility, democratic repair, and infrastructural realignment. Housing systems, as the book demonstrates, are never neutral or merely technical: they are moral and political architectures that embody decisions about whose lives are protected and whose are exposed to harm. Seen in this way, housing becomes a key infrastructure through which care circulates – or is withheld – across buildings, bureaucracies, markets, and communities.

The structure of this volume reflects this perspective. The chapters that follow explore the relationship between housing, health, and care from different disciplinary and methodological angles, showing how these dynamics unfold across multiple scales of urban life. Each contribution offers a distinct entry point into what can be understood as the broader ecology of urban care.

Part I grounds the book in the lived realities of residents and in the politics of rights, recognition, and responsibility. Chapter Two, by Lidia Katia C. Manzo and Gayle Cullen Doyle, positions resident expertise at the centre of analysis, treating the knowledge produced through damp walls, unventilated rooms, and the exhausting temporality of 'waiting' as valid and necessary evidence for evaluating housing systems. Drawing on long-term qualitative engagement and resident-led research, the chapter shows how inadequate housing is experienced not simply as material discomfort, but as a sustained withdrawal of institutional care that shapes health, dignity, and everyday life.

In Chapter Three, Rory Hearne expands this perspective by situating the Irish housing crisis within global debates

on the right to adequate housing. Hearne advances health and human rights frameworks as critical counter-narratives to financialised logics that reduce homes to commodities, arguing instead that housing must be understood as a public good and a foundational condition for dignity, wellbeing, and democratic participation.

Chapter Four, by Mary Heavey, Clodagh Daly, and Gavin Elliott, turns to the legal field, tracing both the possibilities and the limits of litigation and policy advocacy as tools for change. Drawing on the work of Community Law and Mediation, the chapter reveals the fractured governance landscape in which tenants navigate overlapping authorities, weak enforcement mechanisms, and the absence of a constitutional right to housing. Legal advocacy emerges here not merely as a technical instrument, but as a contested terrain where care, accountability, and institutional responsibility are actively negotiated.

Taken together, these chapters demonstrate that the everyday life of social housing is shaped by how care is withdrawn, demanded, mobilised, and contested – across households, communities, and systems of governance. Declan Redmond's Commentary on Part I deepens this analysis by situating the chapters within longer histories of state retrenchment, residualisation, and the erosion of public housing as a core civic responsibility. Rather than treating care as an abstract ethical ideal, he reads it as a practical standard against which housing systems and institutions must be judged. Drawing the chapters together, Redmond highlights three central propositions. First, housing itself is a condition of care: the Oliver Bond House case shows how inadequate homes intensify the labour of caregiving and shift responsibilities onto households when the state withdraws from maintenance and renewal. Second, care is political. Hearne's rights-based framing reveals how poor housing standards reflect structural patterns of residualisation and financialisation rather than isolated failures. Third, care must be institutionalised: ethical commitments alone cannot produce habitable homes without enforceable standards and

legal frameworks capable of compelling action. Redmond also cautions against romanticising resilience, warning that care discourse can obscure institutional underperformance if it substitutes for public responsibility. In this sense, the commentary offers a clear test for the Care in the City agenda: a caring city is defined not by the language of care, but by whether housing systems prevent avoidable harm and treat adequate housing as a civic guarantee rather than a deferred aspiration.

Part II shifts the analytic lens to the material, environmental, and technological infrastructures through which care is made – or unmade – in everyday urban life. In Chapter Five, Hannah Grove reframes ageing in place through a capability-based and relational perspective, highlighting how ageing well depends on neighbourhoods as infrastructures of care rather than on housing conditions alone. The chapter reveals a persistent gap between age-friendly policy rhetoric and everyday realities of mobility, access, and support, questioning how such agendas can be realised under governance arrangements that individualise responsibility and under-resource caring urban environments.

Chapter Six, by Joseph Little, Gearóid Carvill, and Andrew Lundberg, brings building science into direct conversation with questions of justice and care. Through forensic analysis of ventilation systems, retrofitting strategies, and building performance, the chapter traces how decades of partial interventions and structural neglect translate into concrete health harms, including mould, cold, and poor indoor air quality. Crucially, it shows that repair is not merely a technical matter of maintenance, but a form of care whose absence produces preventable suffering.

Chapter Seven, by Kevin Credit, conceptualises open data as a civic infrastructure of care. The chapter demonstrates how the availability, governance, and quality of data shape the capacity of communities and institutions to identify environmental risks, trace inequalities, and design evidence-informed public

health interventions. By reframing data justice as a form of care justice, Credit positions information systems as central to housing equity and democratic accountability.

In Chapter Eight, Jack R. Lehane and Jeffrey Roe extend this argument through an examination of grassroots citizen science. Focusing on community-led air quality monitoring and low-cost sensor networks, the chapter shows how residents generate forms of evidence that institutions have historically overlooked or ignored. These practices redistribute expertise, challenge data asymmetries, and enable communities to make informed claims on the state.

Rob Kitchin's Commentary on Part II foregrounds the politics of data in the fields of care, health, and housing, drawing attention to the persistent data gaps, silences, and quality issues that undermine evidence-based policy and obscure everyday harms. Rather than treating these absences as merely technical shortcomings, he shows how they often reflect forms of data power, including institutional choices about what data are produced, how they are processed, and whether they are made public. In particular, the commentary highlights how the strategic non-publication or limited release of data can prevent inconvenient truths from coming to light, deflecting responsibility and limiting accountability. At the same time, Kitchin points to the growing importance of community-led data practices, citizen science, and counter-data initiatives, through which residents and researchers collaboratively reconstruct evidence, challenge institutional narratives, and make housing harms visible as matters of care, justice, and democratic responsibility.

Across the volume, a shared methodological positionality becomes visible: *care as method*. Care-based research works relationally; it values experiential knowledge; it co-produces understanding; it attends to power and responsibility; it foregrounds maintenance, repair, and accountability; and it makes visible the often-invisible labour that sustains communities. This approach aligns with the transformative paradigm articulated by Mertens (2021), which seeks to challenge structural inequalities

by centring marginalised voices and redistributing power through participatory knowledge production.

In this sense, the City of Care is not merely descriptive. It is a transformative orientation that asks how housing, neighbourhoods, institutions, and data systems might be reorganised to sustain life, deepen democracy, and make care an organising principle rather than an afterthought. It is this orientation that binds the chapters of this book together – and that frames housing not as a site of inevitable crisis, but as a critical arena to care for health, dignity, and repair.

Note

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PART I

Crisis, experiences, and the legislation

TWO

Nothing fancy, just basic rights: women, care, and housing struggles at Dublin's Oliver Bond House

Lidia Katia C. Manzo and Gayle Cullen Doyle

Prologue: Residents' voices

Public housing is often described in statistics – units, square metres, waiting lists, levels of disrepair. But its reality lives in people's voices: in the stories passed across balconies, in everyday gestures of care, in the worries whispered at night when the damp rises from the walls.

This chapter begins in Dublin's Oliver Bond, but it could begin anywhere. Across cities where public housing has been neglected, residents live with the weight of homes that no longer protect them. Yet in Oliver Bond – a place we have come to know through different paths – we encountered something often missing from public debate: the dense fabric of care that women weave across those courtyards, balconies, and kitchens. These networks of solidarity long predate the language of 'care' now theorised in academia, and they remind

us of what is often lost when discussion centres only on decline, deterioration, or stigma.

'We only want the basics,' Caroline said. 'Just a home that doesn't make us sick.'

At 94, Nora put it this way: 'It's a home of caring. People look out for each other.'

And Gayle, who grew up in the flats and now fights for their future, spoke for many: 'We are sick waiting.'

These voices are not unique. They echo across other estates where families scrub mould from ceilings, where grandmothers raise grandchildren, where women hold communities together through hardship and hope.

This prologue honours those voices – not as local curiosities, but as evidence of what inadequate housing does to people: to their bodies, their emotional lives, and the social fabric that sustains urban communities.

What follows is one story among many, rooted in a specific place yet speaking to broader truths: that everyone deserves safety, warmth, and the basic right to live in a home that supports life, not harms it.

Nothing fancy.

Just the basics.

Just basic rights.

Introduction: Housing, health, and everyday life

As the voices in the prologue suggest, housing failures are never only technical; they are lived through bodies, emotions, and relationships.

Oliver Bond makes this visible with particular clarity. While similar struggles exist across ageing public housing, residents' everyday experiences offer a close lens on what inadequate housing means for health, dignity, and care. Through their words, we see how damp, disrepair, and prolonged uncertainty shape daily life – from health and family routines to the informal support networks that emerge when systems fall short.

Oliver Bond is a large public housing complex in Dublin's Liberties, one of the city's oldest working-class neighbourhoods. Built in the 1930s as part of a slum clearance programme, the flats initially marked a significant improvement for families moving from inner-city tenements. Over time, however, inadequate ventilation, damp, mould, poor insulation, substandard repairs, and delayed regeneration have transformed this promise into a site of accumulated neglect. These trajectories reflect wider classed and gendered struggles in Dublin's estates, where residents – particularly women – have long organised around housing, dignity, and the right to remain (Bissett, 2023).

Today, the estate sits at the intersection of multiple urban pressures: population growth, rising housing costs, ageing public stock, and political ambivalence toward social housing investment. This convergence makes it a critical lens for understanding broader dynamics of health, care, and housing justice.

As shown in Figure 2.1, the complex is organised around central courtyards that have long functioned as shared spaces for children, families, and everyday social life. These layouts have historically supported dense forms of neighbourly interaction and care, even as the buildings have deteriorated.

Within Dublin City Council such complexes have increasingly been framed as unsustainable communities (Norris and Hearne, 2016). This reflects the long-term residualisation of social housing, shifting it from a mainstream tenure to a marginal and stigmatised form of provision (Byrne and Norris, 2019; Manzo, 2025a). This process resonates with Wacquant's (2007, 2008) concept of territorial stigmatisation, whereby neighbourhoods and residents are discredited through association with dysfunction or danger. Importantly, this stigma is not inherent but produced through political discourse, media narratives, and institutional practices (Slater, 2021). It shapes both external perceptions and residents' self-understandings, often generating shame, embarrassment, and withdrawal that compound material hardship.

Figure 2.1: Oliver Bond House in inner-city Dublin



Source: Photo by Pierluigi Cattani Faggion

Against this backdrop, mixed-tenure regeneration and public–private partnerships (PPPs) have been promoted as solutions to disadvantage and ageing housing stock (Hearne and Redmond, 2014; MacLaran and Kelly, 2014; Hearne, 2020). However, research shows that these often produce displacement, inequality, and loss of community infrastructures (Watt, 2021). While framed as renewal, they also reconfigure the meaning of public housing and the futures available to residents (Redmond, 2001; Byrne and Norris, 2019). Regeneration thus becomes a deeply political process, raising concerns about displacement and the erosion of long-standing care networks.

This analysis draws on participatory ethnographic research conducted through the EU-funded CITY-OF-CARE[1] project (2021–23). Working alongside the women of the Oliver Bond Residents Group – including the co-author Cullen Doyle – the research was co-produced, foregrounding residents' lived expertise and interpretive labour (Horvath and Carpenter, 2020).

Housing is increasingly recognised as a key social determinant of health, shaping people's exposure to illness, stress, and chronic conditions as much as – if not more than – healthcare access (Marmot, 2010; Bambra et al, 2021). In Ireland, poor housing quality – mould, cold, overcrowding, and inadequate maintenance – disproportionately affects low-income communities (Manzo and Grove, 2024; *The Lancet*, 2024). International evidence shows that substandard housing contributes to respiratory illness, infection, mental distress, poor sleep, and reduced social participation (Bonnefoy, 2007; Gibson et al, 2011). These effects are not only biomedical; they shape how people feel, parent, and connect with others.

Equally important are the forms of care that emerge in contexts of infrastructural failure. When public systems fall short, communities compensate through informal support networks, reciprocity, and gendered unpaid labour (Milligan and Wiles, 2010). In places like Oliver Bond – where women sustain much of the emotional and organisational labour of community life – care becomes an infrastructure in its own right: a collective response to structural neglect. This aligns with feminist scholarship on care as both labour and political practice (Tronto, 1993; Sevenhuijsen, 2003).

International frameworks, including the UN definition of 'adequate housing', recognise the home as a foundation for health, security, and social participation (UN-Habitat, 2014). When residents ask for 'nothing fancy – just basic rights', they resonate these standards while exposing their erosion in everyday life. This chapter therefore uses Oliver Bond not as an exception, but as a lens onto wider systemic issues in housing policy and urban inequality, asking what homes should provide: health, dignity, care, connection, and the right to live without fear of decay or displacement.

Nothing fancy – just basic rights

When residents in Oliver Bond speak about their homes, they rarely use the language of policy or technical standards.

Their words challenge the stigma attached to public housing, reframing everyday demands not as dysfunction but as claims to dignity, health, and basic urban citizenship. They do not speak of 'adequacy' or 'ventilation rates', but in terms that are ordinary yet deeply political.

Caroline, a long-term resident, captured this clearly: families 'only want the basics – a home that doesn't make us sick'. Others echoed: warmth in winter, air that does not carry mould, enough space for children to sleep without crowding, a sense of safety, and the dignity of not being ashamed to open the door. These are not extravagant demands; they align with international definitions of adequate housing – habitability, privacy, security, affordability, and access to services (UN-Habitat, 2014). Yet, for many residents, these rights are not experienced as entitlements but as distant promises. The gap between normative standards and lived reality is felt most acutely through the body: breath, sleep, and the child's cough in the night.

Residents' descriptions of home are also deeply affective. A 'good' home is one that lets them breathe, rest, concentrate, raise children, and welcome friends without fear of judgement. A 'bad' home is not just deteriorated or cold; it is a home that makes them feel lesser, invisible, ignored. Inadequate housing does not simply violate a standard – it erodes dignity and the sense of being recognised as a full citizen. 'It's the humiliation,' one woman said. 'It's feeling like nobody cares what we're living in.' These emotional experiences show that adequacy is lived and relational, not abstract.

The discourse of 'basic rights' is also deeply gendered. Women describe how housing conditions shape their ability to care for children, relatives, and neighbours. Damp bedrooms make it hard for children to sleep or focus on schoolwork; mould triggers respiratory problems requiring constant vigilance; poor insulation increases heating costs and financial strain. The effort to maintain normality becomes a daily, unrecognised form of care work. In this context, housing is

Figure 2.2: Natasha O'Keeffee, a proud resident of the Oliver Bond social housing complex and the third generation of her family to live there, stands resolutely in front of her flat.



Source: Photo by Pierluigi Cattani Faggion

not merely a structure but an infrastructure of care (Power and Mee, 2019; Maalsen, 2025). When housing deteriorates, the burden of care intensifies, falling disproportionately on women (Manzo, 2025c).

'Nothing fancy, just basic rights' is, therefore, more than a request for repairs. It expresses what homes should enable: health, family life, relationships, and dignity (see Figure 2.2). What follows examines how far current conditions fall short, and how residents live with and respond to homes that harm.

Living with homes that harm

For many residents, the experience of home in Oliver Bond is felt through the body. Damp air clings to clothes, a sour smell rises from wardrobes, and black mould spreads across

ceilings, returning no matter how often it is scrubbed. Rooms that are cold even with heating on; windows that drip with condensation for much of the year. These are not occasional inconveniences but the everyday conditions in which families live, sleep, and raise children.

One woman showed us her bedroom blinds, once white, now mottled with mould. 'You can clean it today,' she said, 'and in two days it's back. It gets into everything.' The smell settles into bedding and clothing; 'they smell rotten again an hour later'. Another resident described the bathroom ceiling as 'alive', with mould creeping across surfaces. 'You go to shower and it's like you're breathing it in.' Caroline illustrated this when she checked her children's clothes for the smell of mould (Figure 2.3).

These accounts reflect long-term patterns of poor ventilation, water ingress, and insulation failure. In some flats, windows no longer close properly; in others, draughts makes

Figure 2.3: Caroline checking the clothes in her children's wardrobe for the smell of mould



Source: Photo by Pierluigi Cattani Faggion

rooms impossible to heat. Cold, damp, and poor airflow create perfect conditions for persistent mould, illustrating what has been described as the 'double precarity' of housing and energy (Waldron et al, 2025). Residents describe fighting a losing battle: wiping surfaces daily, applying anti-mould treatments, repainting walls only for stains to return. 'No matter what you do,' one mother said, 'the flat is working against you.'

The health consequences are significant. Parents describe children with chronic chest infections, persistent coughs, asthma flare-ups, and disrupted sleep. Adults report sinus problems, dermatitis, headaches, and a constant sense of fatigue that they attribute to the damp environment. 'You wake up tired,' said a woman in her thirties. 'You're breathing it in all night.' Some residents avoid certain rooms altogether: 'If I sleep in the small bedroom, I'm sick the next day,' explained another. 'It's like the air is heavy.'

These harms extend beyond individual bodies to the relationships between residents and the institutions responsible for their homes. Residents describe years of reporting problems, only to receive superficial repairs. 'They paint over it, and it's back,' one woman said. 'It doesn't solve anything.' Another recalled a repair visit where a pipe was replaced but the rotting wood beneath the sink was left untouched. 'You touch it, and it crumbles.' Such experiences contribute to what residents often describe as a sense of being 'left to it' – abandoned to manage conditions that would be unacceptable elsewhere in the city. 'If this was private housing,' a young mother said, 'it would've been fixed years ago … but because it's social housing, they think we should just put up with it.' This perception of unequal treatment aligns with research linking poor housing to widening health inequalities (Dunn, 2002; Manzo and Grove, 2024).

Earlier research in Dublin similarly shows how chronic exposure to damp and mould constitutes not only a public health issue but a violation of the right to adequate housing, particularly when combined with delayed regeneration and

ineffective responses (Hearne and Kenna, 2014). Crucially, residents have mobilised around these harms, reframing everyday struggles as rights-based claims. In this sense, mould becomes a site where health, rights, and collective action intersect. Living with homes that harm is, therefore, not only a technical issue but a form of everyday structural violence (Nixon, 2011): harm produced through cumulative failures in policy, budgeting, and maintenance (Manzo, 2025a). Long delays in planned regeneration amplify this sense of injury. 'We're living in limbo,' said one resident. 'Waiting, waiting, waiting – and in the meantime the flats are falling apart around us.'

Yet residents are not passive. They adapt routines, manage risk, and support one another. They share tips about cleaning products, heaters, and dehumidifiers; they reorganise sleeping arrangements to protect the most vulnerable family members; they open windows against the cold to clear the smell. These strategies cannot resolve the problem, but they show the constant, often invisible labour required to endure it.

Emotional toll and infrastructures of care

If the physical impacts of inadequate housing are visible on walls, ceilings, and window frames, their emotional effects are inscribed in bodies, relationships, and sense of self. Residents describe not only cold, damp, and mould, but also embarrassment, anxiety, exhaustion, and the fear that these conditions are shaping their children's futures. Poor housing seeps into the emotional fabric of everyday life.

Shame is one of the most frequently cited feelings. Not a dramatic or spectacular shame, but a slow, persistent one: the shame that makes a mother apologise before someone enters her flat; the shame that stops a teenager from inviting friends over; the shame of smelling mould on freshly washed clothes; the shame of being thought 'dirty' when the root cause lies in infrastructure, not neglect. 'It's not me,' one woman insisted,

gesturing to the spreading patches on her bedroom wall. 'People think your house is dirty, but it's the flat.' This kind of shame narrows social life and leads to self-isolation.

Anxiety forms a second layer. While shame is outward-facing, anxiety is tied to worry, uncertainty, and the caregiving responsibility. Parents fear the health implications of mould and cold for their children: the recurring chest infections, the weeks off school, the nights of disrupted sleep, the medication, the hospital visits. 'Every winter is the same,' one mother said. For some, this becomes hyper-vigilance: checking walls, sniffing the air, monitoring condensation. One woman described 'mould anxiety' – the feeling that the smell was always present, even when others could not detect it.

These emotional burdens are also gendered. Women describe carrying the mental load: monitoring health, managing routines, masking smells, adjusting daily life, and managing guilt. 'You feel responsible for everything … even though it's not your fault.' Residents also highlight the strain of prolonged uncertainty – waiting not only for repairs but for clarity and commitment. Many describe living 'in limbo'. Repeated cycles of promise and delay generate distrust, fatigue, and emotional burnout, especially in communities already subject to neglect. 'You learn not to get your hopes up.'

Yet within these conditions, 'networks of care' (Manzo, 2023) become essential infrastructures. These are woven through gestures, routines, and favours. Women rely on one another for childcare, for lifts to hospital appointments, for shared meals, for checking on older residents. 'If I needed someone,' an older woman said, 'I know who I'd ring first.' Care also circulates through attentiveness: noticing when someone has been quiet too long, when curtains stay closed, when a neighbour seems overwhelmed. Over time, these practices create an intergenerational ethic of 'looking after our own'.

As feminist scholars argue, care is often the 'hidden infrastructure' that holds communities together when formal systems fail (Tronto, 1993; Milligan and Wiles, 2010).

In Oliver Bond, this care extends into community organising and activism (Manzo, 2026b). Women leading residents' groups mobilise neighbours and advocate for change, transforming emotional labour into civic action. Campaigns such as *We Are Sick Waiting*[2] were driven by women coordinating meetings, gathering testimonies, and challenging officials (Manzo, 2026a). Their activism transforms care into a form of resistance. At the same time, this labour is fragile. Many women speak of burnout and fatigue. 'You're fighting for everyone … and you're tired.' Care here is not idealised but lived as survival, obligation, and protest.

Recognising these networks of care as infrastructure shifts the narrative from decline to capability, and from stigma to solidarity. It shows what is lost when communities are displaced or fragmented, and reinforces a central argument: adequate housing is not only about bricks and mortar, but about sustaining the care and relationships that make community life possible.

Conclusions: What housing should enable

The testimonies from Oliver Bond point to a broader pattern: housing harms people not only physically but also emotionally, relationally, and politically.

Throughout this chapter, we have seen how structural disrepair intertwines with everyday stress, and how both are absorbed and resisted through gendered practices of care. Housing emerges not simply as infrastructure, but as an environment that shapes wellbeing across multiple dimensions: sleep, illness, caregiving, sociability, work, rest, and the mental load carried in everyday life. Residents' voices also reveal the cumulative injury of waiting – for repairs, regeneration, and recognition – producing frustration, fatigue, and distrust. Yet within this uncertainty, communities generate their own forms of care and solidarity when institutions fall short.

An ethics-of-care perspective makes these dynamics visible. Adequate housing is essential to caregiving, social

connection, and resilience. When these conditions collapse, the burden falls disproportionately on women, whose labour sustains households and communities but should not substitute for safe and healthy homes. As Manzo (2025b) argues, housing neglect is not only unjust but fiscally irrational: it produces ill health, erodes trust, and places additional pressure on fragile care networks. Embedding care into housing policy – through health audits, participatory regeneration, and support for community infrastructures – is, therefore, a precondition for healthier and more equitable cities, not an optional add-on.

Seen through this lens, Oliver Bond reveals both profound harm and significant capacity. The harm lies in the mould, damp, cold, and decades of deferred decisions. The capacity lies in the social fabric built over generations, in mutual care and collective action. Homes should protect the body, support the mind, and sustain the everyday labour of care; they should enable people to imagine a future rather than fear it.

The stories from Oliver Bond – and from similar communities – show that residents are not asking for anything extraordinary. They are asking for conditions that meet established standards of adequate housing, for rights already recognised but unevenly realised. They are asking for homes that allow them to live, care, and belong.

As the next chapter turns to human rights and a health-based approach to housing, these experiences offer essential grounding. They remind us that housing policy is not abstract: it is felt in the chest of a child coughing at night, in the return of mould, in the exhaustion of care, and in the fragile yet persistent hope for change.

Notes

[1] European Commission Horizon 2020 Marie Skłodowska-Curie Individual Fellowship (G.A. 890603). Ethical approval granted by the EU Ethical Review Board (April 2021); all participants provided written informed consent (see www.cityofcare.org; https://cordis.europa.eu/project/id/890603).

[2] The *We Are Sick Waiting* campaign called on DCC to fast-track regeneration and introduce urgent interim measures to improve living conditions in Oliver Bond (see www.irishtimes.com/news/ireland/irish-news/residents-living-with-mould-and-damp-campaign-for-fast-track-regeneration-1.4608001).

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THREE

The need for a human rights and a health approach to housing

Rory Hearne

Introduction: Housing, health, and human rights

Housing, health, and care are deeply intertwined. Public housing was historically introduced as a public health measure, aimed at addressing population ill health and the harms caused by poor housing conditions (Drudy and Punch, 2005; Hearne, 2020). Housing needs are therefore fundamentally health needs: the need for physical safety, shelter from the elements, and a stable environment for rest, recovery, and everyday life (Hearne, 2022). This is particularly critical for children but applies across the life course.

The foundational role of housing for health and wellbeing is well captured by Maslow's (1943) theory of human need. Shelter is identified as one of the most basic physiological needs, but considering the broader meanings of home, decent housing underpins the satisfaction of needs across all levels of Maslow's hierarchy, from basic physiological security to safety, belonging,

esteem, and self-actualisation. A decent home therefore enables the fulfilment of a wide range of needs essential to wellbeing.

This understanding underpins why housing is widely recognised in public health research as one of the key 'social determinants of health'. A substantial international evidence base demonstrates that substandard housing conditions – such as damp, mould, cold indoor temperatures, and overcrowding – have well-established impacts on physical and mental health (Manzo, Chapter One in this volume). Evidence from the Irish context illustrates these dynamics clearly. Damp and mould are associated with respiratory illness, asthma, headaches, fever, and increased vulnerability to poor health, while cold homes are linked to raised blood pressure, cholesterol, and excess winter mortality (Royal College of Physicians of Ireland, 2019). Poor housing is also strongly associated with negative mental health outcomes, reinforcing the central role of housing quality in overall wellbeing.

The psychosocial impacts of housing are particularly significant where individuals experience high levels of stress combined with low levels of control. Health impacts are shaped by perceived ability to control sources of stress (Hearne, 2022). In public housing contexts, tenants often have very limited control over maintenance, repairs, and estate management. Persistent housing problems – such as unresolved structural defects, damp, mould, leaking roofs or pipes, or broken appliances – can remain unaddressed for months or even years, generating chronic stress and anxiety. Over time, this can erode self-esteem and identity, and lead tenants to internalise blame for housing conditions beyond their control, producing feelings of shame and failure (Hearne, 2022). These psychosocial dynamics are especially acute for children and families. Children require safe, secure, and adequate housing to develop to their full potential. Housing deprivation has been shown to increase the risk of severe ill health or disability during childhood and early adulthood by up to 25 per cent (Royal College of Physicians of Ireland, 2019). Empirical studies have demonstrated strong

links between damp housing and respiratory illness in children, including significantly higher risks of asthma and recurrent wheezing (Moorcroft et al, 2025). Overcrowding and poor-quality housing are also associated with higher rates of injury and adverse developmental outcomes. Chronic housing stress constitutes sustained adversity with lasting physical, cognitive, and emotional effects (Hearne, 2020). Evidence from research with families living in severely substandard housing in Dublin – including cases of damp, mould, and wastewater discharge – shows that housing-related illness can also disrupt children's education, particularly for those with additional care needs (Hearne and Kenna, 2014), compounding inequalities across health, education, and wellbeing.

Beyond these direct health impacts, housing also plays a crucial social and psychological role. A home is not merely shelter, but a space imbued with meaning, memory, and identity. Housing contributes to a sense of belonging, attachment, and control over one's environment, extending from the home to the street and neighbourhood. These dimensions of home are central to wellbeing yet are often overlooked in the policy and practice of social housing provision, where housing is treated primarily as a physical unit rather than as a deeply social and emotional space (Hearne, 2022).

Self-esteem and self-respect are fundamental components of wellbeing (Wilkinson and Pickett, 2018), and housing conditions can either support or undermine these. Living in poor-quality or stigmatised housing can threaten people's sense of self, producing feelings of shame, stigma, and status anxiety. Conversely, when people feel secure and valued in their housing and neighbourhood, housing can become a source of pride, stability, and positive identity.

While much social housing succeeds in providing security of tenure and affordability, shortcomings in standards, maintenance, and tenants' control over their homes can erode these wider wellbeing benefits (Hearne, 2020). A housing system grounded in care must, therefore, attend not only to

physical adequacy, but also to the psychosocial dimensions of home, recognising housing as a central site through which health, dignity, and wellbeing are either supported or undermined.

This understanding of housing as foundational to health, dignity, and wellbeing is reflected in international human rights frameworks, which recognise adequate housing as a basic human right. The right to housing is articulated not simply as access to shelter, but as the right to live somewhere in security, peace, and dignity, with adequate space, privacy, safety, light, ventilation, and access to essential services (UN, 1991). This framing underscores that decent housing is not optional, but a core responsibility of the state.

A theory of care in public housing

Lynch et al (2021) in the area of affective care relations, define care as an ethic of other-centredness, caring for the need in others, the concern for the development and wellbeing of another. These are nurturing, non-alienating, and non-exploitative social relations. Lynch highlights a deep ambivalence in Western society about caring, where care is often equated with feminised, emotionally driven labour, assumed to require neither resources nor political support. Yet economic, political, and cultural institutions cannot function without care. She further argues that dominant forms of rationality – particularly economic utilitarianism – deny the centrality of emotions, defining individuals as rational maximisers of satisfactions, and separating emotion from rationality.

Drawing on Lynch's framework, and linking it to housing, health, and the right to housing discussed earlier, this chapter identifies three core areas for a theory of care in public housing (Table 3.1). First, the extent to which the state accepts and fulfils its responsibility to provide public housing in line with the right to adequate housing. Second, the nature of the relationship between the state (local authorities) and those in

Table 3.1: A theory of care in public housing

Area of care	A policy of care	A care-less policy/neglect
Responsibility to deliver public housing	Adequate housing (meeting housing needs)	Inadequate housing – housing needs unmet
Tenant relationship	Participation, empowerment, respect	Exclusion of tenants, poor individual and community care
Tenant capacity for care	Enabling and nurturing care in social relations and democratic participation	Damaging care capacity and deepening alienation

need of housing, including respect, power, participation, and emotional impact. Third, how public housing provision affects tenants' capacity to care in their everyday social relations – whether it enables or undermines caring roles and relationships. Overall, this framework asks whether the state meets housing need beyond shelter, addressing broader dimensions of housing-related wellbeing.

At a macro level, this framework raises interrelated questions about the role of the state and the extent to which housing policy is shaped by an ethics of care. It asks whether the state operates through care in practice, and what the consequences are when care is absent. This includes examining relationships between tenants and institutions, and how housing delivery and maintenance support health, dignity, and wellbeing. It also considers how housing systems respond to heightened care needs (age, illness, disability), and whether they enable or constrain caring relationships through allocation, design, rent supports, and participation. Finally, it asks how communities respond where state care is lacking – whether through isolation or mutual support. Together, these questions point to what public housing would look like if care were placed at its centre.

Adopting a care-centred approach requires recognising people as relational beings with diverse needs and capacities, in contrast to neoliberal housing models that individualise responsibility. Within neoliberal discourse, public housing is framed as residual, and tenants as 'deserving' or 'undeserving', undermining a politics of care by obscuring structural inequalities.

The rejection of care under neoliberalism can be illustrated through parent–child relations, where care involves meeting physical and emotional needs to support development. Applied to the state, neoliberal ideology casts such care as fostering dependency and weakening responsibility. As articulated by Margaret Thatcher, the welfare state becomes a 'nanny' or 'smothering mother', and care is reframed as a moral and economic failure.

Care under neoliberalism is also deeply gendered and class-based. It is expected to be performed without cost, disproportionately by women, and confined to the private sphere (Harvey, 2005; Lynch et al, 2021). As a result, public institutions are not seen as sites of care but as systems that should minimise support. Housing under neoliberalism is, therefore, not only indifferent to care, but structured to be uncaring.

In the Irish context, this logic has shaped social housing policy since the 1980s, producing a sustained abandonment of care (Hearne, 2011, 2022). As Bissett (2023) argues, the concept of structural violence helps explain how harm is produced through prolonged neglect, underinvestment, and indifference – a form of 'slow violence' embedded in institutional abandonment (Manzo, 2025a). Rather than isolated policy failures, the cumulative effects of inadequate housing standards, poor maintenance, and lack of tenant voice constitute practices that actively damage health, dignity, and wellbeing (Manzo and Grove, 2024). This constitutes an ethics of carelessness, in contrast to a care-based approach in which, as articulated by Manzo in this volume, the state assumes responsibility for ensuring the right to adequate housing and associated health rights within public and social housing

systems. Those most dependent on social housing – low-income households, lone parents, disabled people, and older adults – are also those most in need of stable caring relationships and most exposed to harm from uncaring environments.

The consequences of absent care extend beyond housing conditions. Persistent neglect erodes trust in institutions, weakens democratic participation, and fosters disillusionment. Where the state is experienced as indifferent, tenants may disengage from wider society. As Manzo (2025b) argues, care is a civic infrastructure essential to democratic governance, making its integration into housing policy a structural requirement for dignity and health.

These harms do not manifest uniformly. They may be expressed as withdrawal, anger, or behaviours labelled 'anti-social', reflecting socially mediated responses to marginalisation. At the same time, care is unequally distributed: those with greater resources receive more protection, while social housing communities receive less. Inequality of care is thus a central dimension of housing injustice.

Finally, just as parental withdrawal of care has lasting effects, the neglect of care by the state can have profound emotional consequences. Tenants may experience abandonment, internalise blame, and suffer diminished self-esteem. While they retain agency, structural inequalities mean they cannot resolve issues such as mould or safety alone. Addressing these harms requires not only technical fixes, but sustained and active care by the state.

Principles for a caring public housing system

There is a growing critique of the neoliberal, patriarchal view of the welfare state, advancing a feminist, anti-capitalist perspective that places care at the centre of social justice (Fraser, 1990). This calls for a state that actively cares.

An ethics of care in housing requires the state to assume responsibility for those in need of housing – ultimately,

everyone. It reconfigures housing away from neoliberal models toward one centred on public responsibility and the provision of high-quality public housing. Care extends beyond shelter to include the ongoing responsibility to maintain decent standards and to deliver housing as a co-produced, empowering process with tenants. Housing must be treated as a public good, evaluated not only in terms of supply but through safety, ventilation, insulation, and energy efficiency – the conditions that enable people to flourish (Manzo, 2025b).

A caring approach to housing therefore engages tenants throughout the full process of housing design, delivery, and management, enabling them to care for themselves, for others, and for their wider community. Through the provision of high-quality, universal public housing, a caring society can be fostered, supporting wellbeing, belonging, and collective flourishing. Housing is thus foregrounded as an infrastructure of wellbeing, enabling healthy, dignified, and meaningful lives.

Public housing delivered according to principles of care supports both individual and community flourishing. It enhances physical and mental health and wellbeing, provides a sense of belonging and rootedness, and creates environments where people can grow up safely, take pride in their homes, and access appropriate shared and play spaces. Care in housing also enables and promotes empowerment and political participation of those excluded and marginalised in society from democracy and politics. Fraser (1990) outlines a critical and feminist theory of social justice that incorporates political *representation* and highlights the importance of participation and empowerment in addressing social injustice. Public housing that cares, a caring public housing, by enabling people to participate in society through being healthier, having a place to call home, a sense of positive identity, of feeling part of society, involving them in both day-to-day decision making in estate management, in wider community activities, would also provide a path to, and nurture, political participation, and enhance democracy and trust in society. Thus, a housing of care also has a strongly

political dimension. The alternative possibility is a public housing of care that actually enables empowerment and participation of social housing tenants in processes that affect them, in regeneration plans, in wider community events, in politics, in voting, in the media. Such a housing of care would nurture their empowerment and participation.

Public housing understood through an ethics of care is not merely a facilitator of care, but a process of care in and of itself, both materially and symbolically. Care is expressed through the design of housing and neighbourhoods in ways that support health and wellbeing, including environments that are disability-enabling and supportive of mental health. It is embedded in systems of management and maintenance that ensure homes remain safe, dignified, and liveable over time. Care is also enacted through the facilitation of respectful and equal relationships – between residents themselves and between social housing tenants and wider society. Crucially, a caring public housing system enables meaningful participation and involvement of tenants and communities in estate management and decision-making processes, embedding care through tenant democracy. Finally, care is realised by supporting tenants' autonomy and freedom of expression within their homes, including control over personal space, interior modification, and the creation of outdoor and shared environments that foster belonging and identity. Clearly, within public housing there are persistent failures of care, including overcrowding, the displacement of children into hidden homelessness, the continuation of substandard and unsafe housing conditions, the exclusion of tenants from decision-making processes, and the routine denial of respect and dignity in their treatment by housing authorities. These patterns of neglect (Manzo, 2025a) constitute not only an inadequacy of care, but in many cases an absence of care altogether. Such conditions have significant consequences for residents' mental health, self-esteem, and capacity to care for themselves and others, increasing both their need for care and their exposure to harm. A central

issue, therefore, is how substandard and unsafe public housing undermines not only individual wellbeing, but also collective capacities for care within communities.

At a macro level, these failures reflect the systematic undervaluing of social housing within neoliberal housing policy, and the erosion of responsibility for its long-term management and maintenance. This is evident in regeneration processes that dismantle and disperse established social housing communities, and in the retreat of local authorities from their role as public housing providers. Yet within these contexts of neglect, care continues to be asserted from below. Tenants and communities support one another, mobilise collectively, and demand recognition of a right to housing and a right to be cared for through decent public housing delivered by the state. Together with allies in academia and politics, they articulate the need for a housing policy grounded in care – one in which the state explicitly accepts and fulfils its obligation to care for those living in, and in need of, public housing. Placing care at the centre of housing policy thus represents a profound challenge to the neoliberal, financialised, and commodified conception of housing. A public housing of care redefines the state as a caring agent rather than a negligent one. It recognises that housing is not merely a policy field but a vital public health and human rights infrastructure. Within a City of Care (Manzo, 2023), public housing becomes a collective act of social repair – restoring trust, dignity, and health in communities long deprived of both.

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FOUR

Using law as a tool for change: experience, limitations, and opportunities

Mary Heavey, Clodagh Daly, and Gavin Elliott

Introduction: Law, housing, and health

Substandard living conditions are one aspect of the ongoing housing crisis which the Irish state urgently needs to tackle, in particular across social housing stock. We frequently advise tenants in our legal advice clinics who are living with damp and mould, inadequate heating, and pest infestations. Inadequate housing can directly undermine a community's physical and mental health, as evidenced in the City of Care project which found that 65 per cent of social housing participants surveyed felt that their substandard housing conditions negatively impacted their families' health (Manzo, 2024; Manzo and Grove, 2024; Trinity College Dublin, 2024). In addition, the housing crisis is unfolding within a climate and biodiversity emergency. Climate change is linked with worsening housing conditions. For instance, increased rainfall has led to higher levels of mould, dampness, and leakage indoors (Norbäck et al, 2017).

Protecting the most vulnerable in society is central to a fair and inclusive transition to a completely decarbonised economy and society.

Housing and the environment should protect, rather than undermine, a community's health and dignity. Embedding an ethics of care within housing and environmental policy could reframe state obligations not merely as compliance duties but as expressions of collective responsibility for communities' health and dignity. Inadequate housing and insufficient protections from environmental harms arising within the home and its surroundings not only undermines health and dignity but negatively impacts on the ability of an individual to vindicate other fundamental rights, including their right to access employment, education, and to equal and full participation in society.

In this chapter, we explore the inadequacies of Ireland's legal framework regarding the protection of social housing standards and how the recognition of the right to housing and the right to a healthy environment may address these gaps.

Social housing standards in Ireland

Ireland's substandard social housing stock was highlighted by the collective complaint raised by the International Federation for Human Rights (FIDH) against Ireland in 2014 to the European Committee of Social Rights (hereafter, 'the Committee').[1] The Committee found that Ireland was in breach of Article 16 of the Revised Social Charter, which protects the right of the family to social, legal, and economic protection, for the state's failure 'to take sufficient and timely measures to ensure the right to housing of an adequate standard for not an insignificant number of families living in local authority housing'.[2] The Committee also noted that the substandard conditions, including sewage invasions, dampness, and persistent mould 'go to the core of adequate housing'.[3]

Unfortunately, the decision of the Committee failed to bring about a systemic improvement in social housing standards, with

poor conditions persisting, as evidenced by a recent resident-led health survey conducted at Dublin's Oliver Bond House (Manzo and Grove, 2024). This may be down to the fact that decisions of the Committee, while legally binding on the state, are not justiciable in the Irish courts.

The Committee conducted an assessment of the follow-up in 2023. It found that Ireland continued to be in breach of Article 16.[4] The Committee noted that a significant number of families were still living in substandard conditions, there were no national statistics on housing conditions, and many regeneration programmes were delayed. Of note, the Committee reminded the state that the ultimate responsibility for ensuring policy implementation rests with the government.

The legal framework and its gaps

Constitutional right to 'adequate housing'

A fundamental gap in the Irish legal regime remains the fact that there is no right to housing in the Irish constitution, our foundational law.

The constitution provides for the protection of private property rights,[5] and for other related and ancillary rights which are invoked in the housing context.[6] The state has also agreed to be legally bound by housing rights at the international level.[7] However, there is currently no express right to housing in the Irish constitution.

The Irish Government made a commitment in the Programme for Government 2020 (Irish Government, 2020) and its related housing plan (Department of Housing, Local Government and Heritage, 2021) to hold a referendum on amending the constitution to address housing. In July 2023, the Housing Commission published a majority report following public consultation on this issue and recommended that a referendum be put to the public to insert a right of access to adequate housing as a standalone right in the constitution (Irish Government, 2023a). Several submissions made as part

of the public consultation referenced poor living conditions and low-quality housing stock (Irish Government, 2023b).

Unfortunately, the Irish Government has not taken any action to progress this. At the time of writing, there is no mention of a referendum on housing in the current Programme for Government and there is a notable lack of political appetite to put a referendum on housing before the Irish people.

That stated, it is imperative that the right to housing remains on the agenda. We at Community Law and Mediation (CLM), along with many other social justice groups, have long called for the insertion of a right to adequate housing into the Irish constitution (Community Law and Mediation, 2022). *Adequate housing* has been considered by the United Nations Committee on Economic, Social and Cultural Rights, with the UN determining that a number of conditions must be met in order for housing to be considered adequate, including habitability.[8]

Housing standards go to the very core of a right to adequate housing. The inclusion of a robust constitutional right, which would include a right to a habitable home, represents a crucial step in ensuring that minimum standards of housing are met, and improving housing stock in Ireland.

The right to housing would require the state to take action, be it through legislation, policies, or other measures, to ensure the right to adequate housing, including the right to a habitable home, is vindicated. It would represent a fundamental shift toward a rights-based approach to housing, which is needed to effectively and appropriately reshape the state's housing policy to address the ongoing housing and homelessness crises, and the climate and biodiversity emergency.

Regulations, tort, and contract law

There are legal obligations on local authorities to maintain both social and private rented housing to a minimum standard, as contained in the Housing (Standards for Rented Houses) Regulations 2019 (hereafter, the '2019 Regulations').

Regulation 4(1) of the 2019 Regulations requires that houses covered by the regulations are kept in proper structural repair, defined as being sound inside and out and free from defects such as dampness.[9]

The effectiveness of the 2019 Regulations in relation to local authority housing is undermined by the fact that local authorities themselves are responsible for their enforcement. This creates an inherent conflict of interest in the implementation of the 2019 Regulations (Kenna, 2011). Furthermore, as tenants in the private rental sector have recourse to the Residential Tenancies Board (RTB),[10] the vast majority of rented housing standards enforcement is a matter for the individual renter, rather than the state taking a proactive approach to enforcement.

The law relating to the standards of local authority housing has further developed in tort and in contract law (Kenna, 2011, pp 11–58). For example, in the leading case of *Siney v Dublin Corporation*,[11] the Supreme Court found that the local authority was in breach of an implied warranty under contract in providing accommodation that was 'reasonably unfit for human habitation'.[12]

The protection offered by the legal regime in guaranteeing minimum standards of local authority housing is limited. Bringing a legal action in the courts for a breach of tort or contract can be a long and expensive process. This is compounded by the fact that state legal aid is not generally available for disputes concerning 'rights and interests in or over land',[13] which, in practice, appears to prevent legal representation in cases of this nature. Unlike private renters, who may have recourse to the RTB if their landlord refuses to carry out necessary repairs, local authority tenants have no independent governing forum to bring these issues. Tenants may be able to raise a complaint to the Office of the Ombudsman and/or the Ombudsman for Children, who have oversight over public service providers. The effectiveness of these bodies is undermined by the fact that they are only

empowered to make recommendations, and their findings are not binding.

The UK recently introduced the Hazards in Social Housing (Prescribed Requirements) (England) Regulations 2025, on foot of the Social Housing Regulation Act 2023, otherwise known as Awaab's Law. This introduced obligations for social housing landlords to address all emergency hazards, and all damp and mould hazards which present a significant risk of harm to tenants, within a strict timeline. This law was introduced following an extensive public campaign arising from the tragic death of a toddler, who the coroner determined had died following 'prolonged exposure to mould at his family's home'.[14] There are also plans to extend Awaab's Law to include further hazards which present a risk of significant harm, including excess cold and heat, structural collapse and fire, and electrical hazards.

Housing and environmental rights

The housing and climate crises are deeply connected, and we cannot solve one without addressing the other. Ireland has the second highest emissions per capita in Europe (Central Statistics Office, 2025) and recently exceeded its first legally binding carbon budget (2021–25) (Climate Change Advisory Council, 2025). Emissions in the built environment sector account for 37 per cent of national emissions, equal to agriculture (Irish Green Building Council, 2025). The Paris Agreement makes clear that climate action should respect human rights,[15] and the European Court of Human Rights has found that Article 8 of the European Convention on Human Rights protects against the serious adverse effects of climate change on life, health, and wellbeing.[16] To address the housing and climate crisis together, recognition of the right to adequate housing should be pursued alongside the right to a healthy environment. In this section, we explore how the right to a healthy environment can support the right to adequate housing.

Ireland's constitution does not mention the environment. The Supreme Court in 2020 did not recognise the right to a healthy environment as a 'derived' right within Ireland's Constitution in *Friends of the Irish Environment v the Government of Ireland*, indicating that such a right would require constitutional referendum.[17] In 2021, Ireland joined 68 other countries in calling for the United Nations to recognise the right to a healthy environment (Department of Climate, Energy and the Environment, 2021), which contributed to the recognition by the UN of this right in 2022. In 2023, both the Citizens' Assembly on Biodiversity Loss (Citizens' Assembly, 2023) and the Joint Committee on Environment and Climate Action (2023) recommended a referendum to incorporate the right to a healthy environment into the Irish constitution. This proposal has not been advanced by government and it is not part of the current Programme for Government (Department of the Taoiseach, 2025), despite recognition that Ireland faces a climate and biodiversity emergency (Cunningham, 2019).

Before considering how the right to a healthy environment could support and reinforce the right to adequate housing, we will first briefly turn to what this right should include. The landmark Advisory Opinion from the Inter-American Court of Human Rights outlines that the right to a healthy environment should include procedural (Centre for Environmental Justice, 2023) and substantive protections (Inter-American Court of Human Rights, 2025). We will focus on the substantive elements of the right, which includes six interdependent aspects: clean air; a safe climate; access to safe water and adequate sanitation; healthy and sustainably produced food; non-toxic environments in which to live, work, study, and play; and healthy biodiversity and ecosystems (Inter-American Court of Human Rights, 2025). The recognition of environmental rights can strengthen existing legal obligations, fill gaps where legal protections are insufficient, and can serve as a powerful legal tool for those most impacted by environmental harms (Kelleher and Dobbs, 2025), particularly where current

protections undermine the right to adequate housing, as outlined here:

- *Indoor air quality*: EU citizens spend an estimated 90 per cent of their time indoors (World Health Organization, 2014), yet legal protections against indoor air pollution remain inadequate. Although the EU's Ambient Air Quality Directive was recently revised to bring outdoor air pollution limits closer to the World Health Organization (WHO) guidelines, there are no equivalent limits for air quality indoors. The recast Energy Performance of Buildings Directive requires member states to set national requirements for adequate indoor environmental quality, but it does not set EU-wide binding limits for specific pollutants indoors. Each member state sets their own targets in relation to indoor air quality (European Public Health Alliance, 2025). The health implications of inadequate regulation are clear: poor air quality contributes to 1,300 deaths in Ireland annually, primarily due to the burning of solid fuels (Goodman et al, 2023). Children, pregnant women, low-income and minority groups, older people, and people with pre-existing health conditions are particularly vulnerable to air pollution (Kiernan, 2022). Housing cannot be considered adequate where indoor air quality exposes residents to harmful levels of pollution.
- *Energy poverty*: 29 per cent of the population experience energy poverty (Economic and Social Research Institute, 2022), an issue which is closely connected to air pollution. Sixteen per cent of households burn solid fuels as their primary source of heating (Eakins et al, 2022), which contribute to indoor and outdoor air particulate pollution, increasing health risks for vulnerable households (Waldron et al, 2025). Ireland has no legislative protections specifically addressing energy poverty, despite a European Commission recommendation that Ireland adopt a specific measurable reduction target as required by Regulation (EU) 2018/1999

(European Commission, 2024). Housing quality can further impact energy affordability. Of local authority homes, 73.3 per cent have a Building Energy Rating of C, D or E, indicating that some homes are poorly insulated (Just Housing, 2025). While the Climate Action Plan aims to retrofit 25 per cent of social housing stock by 2030, just 2,634 social housing units were retrofitted in 2024. The National Oversight and Audit Commission warned that the 2030 target is unlikely to be met (National Oversight and Audit Commission, 2024).

- *Access to active and public transport*: many areas of Ireland experience transport poverty, with 50 per cent of rural settlements not covered by the Rural Transport Service considered deprived (O'Neill et al, 2022). This limits access to employment, education, healthcare, public services, or social and community life. In Dublin, 77 per cent of 150 survey participants reported inadequate or poorly maintained roads, footpaths, and cycle lanes as a key environmental challenge (Centre for Environmental Justice, 2025). If the living environment around a home is unsafe or inaccessible, the right to adequate housing cannot be effectively supported.
- *Climate change*: we have advised families living in homes that will become uninhabitable due to flooding, driven by coastal erosion and sea-level rise. Sea levels are rising at twice the global rate in Dublin (Nejad et al, 2022), and more than 40 per cent of Ireland's population lives within five kilometres of the coast (Central Statistics Office, 2016). Approximately 350 km^2 of land in Ireland is vulnerable to flooding if sea levels rise by one metre (Stori and O'Mahony, 2021). The distribution of such impacts will not be felt equally. While some households will have a second home to relocate to, and some will have savings, residents of social housing may not have savings, insurance, mobility, or work.

While the recognition of the right to a healthy environment will not be a silver bullet, it may fill gaps which currently

serve to undermine the right to adequate housing. Pursuing the right to adequate housing alongside the right to a healthy environment is, in our view, essential to protecting the health, wellbeing, and equality of communities across Ireland.

Conclusion: Toward a rights-based and caring legal system

Ireland remains in violation of Article 16 of the Revised Social Charter, as it has failed to ensure an acceptable standard of living for local authority housing residents. Ongoing issues reported at CLM's free legal advice clinics, and experiences of tenants in Oliver Bonds, reveal the inadequacy of the current legal framework in guaranteeing minimum housing standards. In addition, current gaps in environmental legislation serve to undermine the right to adequate housing. A transformative shift toward a rights-based approach to housing and environmental policy could enhance individual rights to habitable homes, impose obligations on the state and local authorities to elevate social housing standards, and ensure environmental standards that protect health and wellbeing. Furthermore, the recognition of the right to adequate housing and a healthy environment could present the basis for developing a City of Care framework, which places public health, community wellbeing, and social justice principles at the fore of housing policies (Manzo and Grove, 2024). This could lead to the delivery of both habitable homes and healthy communities.

Notes

1 *International Federation for Human Rights (FIDH) v Ireland* (No. 110/2014).

2 *International Federation for Human Rights (FIDH) v Ireland* (No. 110/2014) [121].

3 *International Federation for Human Rights (FIDH) v Ireland* (No. 110/2014) [119].

4 Follow-up to Decisions on the Merits of Collective Complaints – Findings 2023, European Committee of Social Rights, pp 128–130.

5 Bunreacht na hÉireann, Article 40.3.2 and Article 43.

6 For example, children's right under Article 42A, and unenumerated rights.

7 For example, International Covenant on Economic, Social and Cultural Rights, Article 11.1. See also Universal Declaration of Human Rights; UN Convention on the Rights of the Child; International Convention on the Elimination of All Forms of Racial Discrimination and the UN Convention on the Elimination of All Forms of Discrimination Against Women; Sustainable Development Goals, Target 11.1 of Goal 11; Charter of Fundamental Rights of the European Union, Article 34.

8 For further see Offices of the United Nations High Commissioner for Human Rights, *The Right to Adequate Housing*, Fact Sheet No. 21 (Rev. 1). www.ohchr.org/sites/default/files/Documents/Publications/FS21_rev_1_Housing_en.pdf

9 Regulation 4(2) of the Housing (Standards for Rented Houses) Regulations 2019, Regulation 4(2).

10 Residential Tenancies Act 2004, section 12 (1)(b)(i).

11 *Siney v Dublin Corporation* [1980] IR 400.

12 *Siney v Dublin Corporation* [1980] IR 400 at 412. See also *Burke (a minor) v Dublin Corporation* [1991] 1 IR 341, where the Supreme Court held that this was an ongoing duty.

13 Civil Legal Aid Act 1995, section 9(a)(ii).

14 *Regulation 28: Report to Prevent Future Deaths*, 16 November 2022, Coroner Report.

15 United Nations Framework Convention on Climate Change (2015) *Adoption of the Paris Agreement*, Paris: United Nations.

16 *Verein KlimaSeniorinnen Schweiz and Others v Switzerland*, Application no. 53600/20, Judgment, European Court of Human Rights, 9 April 2024. https://hudoc.echr.coe.int/eng?i=001-233206

17 *Friends of the Irish Environment CLG v Government of Ireland* [2020] IESC 49.

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Commentary on Part I: Social housing as a test of Care in the City

Declan Redmond

Chapters 2–4 make a coherent and important contribution to Care in the City by treating social housing not as a subsidiary concern but as a central test of whether care is actually embedded in housing systems. Taken together, they advance an argument that is straightforward but far-reaching. That is, care is a practical standard against which housing systems can be evaluated. The sequence of chapters is also effective, moving from the embodied realities of neglected public housing, to a systemic critique of care and carelessness in Irish policy, and then to a legal analysis of the mechanisms through which obligations might be asserted and enforced.

The cumulative effect is to present Irish social housing as a policy arena where care is simultaneously visible and contested and oftentimes absent. Everyday practices of sustaining neighbours, families, and children are strongly in evidence, but institutional care remains uneven and too often very fragile and piecemeal. The chapters also underscore a point that is sometimes underplayed in wider urban debates, namely that care is encoded in budgets, maintenance systems, regulatory systems, and refurbishment and regeneration cycles. This

insistence on the material and administrative bases of care gives the chapters much of their value within the volume. The chapters implicitly situate housing not only as an infrastructure of care but as a primary determinant of health, raising questions about the preventability of harm within publicly governed housing systems.

Social housing and care in the city

A strength of these chapters is the refusal to treat care as an abstract ideal. For many residents, care is first experienced through the home and its basic performance – in other words, whether it is dry, warm, and safe. Or whether daily life can proceed without constant vigilance against damp, mould, disrepair or the stress of prolonged waiting for repairs and maintenance. This pushes against an implicit hierarchy in which housing is treated primarily as an instrument of growth management or market functioning, while care is relegated to social services and community programmes. Instead, the chapters collectively argue that housing is a foundational infrastructure of care. That is, decent housing is a prerequisite for health and dignity. In that sense, the chapters provide a necessary anchor within the edited collection. They offer a Dublin-based, policy-relevant story that is easy to follow and analytically productive. These chapters remind us that public housing remains one of the clearest empirical tests of whether a city or its governors can credibly claim to be caring.

Chapter Two, by Lidia Katia C. Manzo and Gayle Cullen Doyle, on Oliver Bond House, grounds the set in lived experience. The estate is presented as a large 1930s' public housing complex in the Liberties, originally associated with slum clearance and an earlier public commitment to improved living conditions. The chapter shows how inadequate ventilation, weak insulation, persistent damp and mould, substandard repairs, and delayed regeneration have eroded that historic promise (Manzo and Grove, 2024; Manzo, 2025). The

result is a contemporary site of accumulated neglect rather than renewal. The use of participatory ethnography through the project is significant here. Residents' accounts are not treated as illustrative background but are positioned as knowledge that should, in important ways, shape policy interpretation and prescriptions. The repeated insistence on 'only the basics' and a home that 'doesn't make us sick' operates as a vernacular version of international standards of adequate housing.

Importantly, the chapter avoids reducing inadequate housing to a narrow technical discourse. The harms described are multidimensional: illness, disrupted sleep, stress, shame, financial strain, and the exhausting work of maintaining normality in conditions that undermine wellbeing. The chapter, therefore, frames the issue as one of dignity and citizenship, not just of comfort or aesthetic standards. A recent piece in a national newspaper shows that not much has changed in recent years (*The Irish Times*, 2026).

The gendered analysis also makes a clear and salutary contribution. Women's caregiving roles appear to intensify in conditions of disrepair, involving monitoring children's health, cleaning mould, managing energy costs, and sustaining informal networks of mutual aid. The authors' argument that housing is an infrastructure of care is persuasive because it shows how deterioration redistributes care obligations downward, intensifying already unequal burdens. The insistence that housing should enable health, dignity, and rest is a simple normative claim, but it also provides a clear bridge to the policy and legal chapters that follow.

Care and carelessness in Irish housing policy

In Chapter Three, Rory Hearne scales up from Oliver Bond to a broader diagnosis of Irish social housing policy and practice. The framing is clear and useful. The chapter analyses how care is present, absent or inconsistently operationalised in Irish public housing, and argues for a rights-based approach that

centres care and wellbeing as core functions rather than optional aspirations. One of the chapter's strengths is to connect housing not only to health outcomes, but to the social foundations of everyday life, namely a sense of safety, identity, and a secure base for family life. The use of Maslow operates as a bridge for readers beyond housing studies, reinforcing that decent public housing supports multiple layers of need, not simply shelter. The chapter's political argument appears in the claim that tenants and community groups 'assert a right to care', and that placing care centrally challenges the neoliberal and financialised treatment of housing in Ireland (see Hearne and Redmond, 2014; Hearne, 2022). The value of this is that it renders care an institutional and political question, rather than a generic ethical aspiration. In combination with the Oliver Bond chapter, the argument also works across scales. The daily experiences of damp, mould, disrepair, and waiting become visible as the indefensible symptoms of deeper structural choices about investment priorities, governance cultures, and policy normalisation of poor maintenance. Carelessness appears not only in material neglect, but in temporal deferral, in repair cycles that stretch indefinitely, and regeneration processes that suspend residents in prolonged uncertainty.

Law and social housing rights

Mary Heavey, Clodagh Daly, and Gavin Elliott, in Chapter Four, address the question that follows these diagnoses. If care is to be more than an ethic, what will make it durable? The chapter argues that inadequate housing undermines health and also impairs the capacity of individuals to vindicate other rights, including dignity, education, employment, and participation in society. This broadens the relevance of the legal discussion beyond housing specialists. The chapter's linkage of housing rights and environmental rights is important. It suggests that Ireland's housing crisis cannot be disentangled from the climate and biodiversity emergency, and that households without

adequate housing are likely to bear disproportionate impacts. The implication is straightforward. A credible care agenda must be aligned with ecological and environmental realities.

The institutional diagnosis is also to the point. The absence of a clear constitutional right to housing leaves protection reliant on a patchwork of statutory mechanisms. The chapter highlights a structural weakness with clear relevance. Local authorities are responsible for enforcing minimum standards in their own housing stock, creating an inherent conflict of interest. The discussion of practical routes for tenants reinforces this point. The pathways are slow or expensive. For example, legal aid is typically unavailable for land disputes, while local authority tenants lack an independent forum equivalent to the Residential Tenancies Board. The chapter's reference to findings of the European Committee of Social Rights helps to underline the risk of a care framework without enforceability. The language around care can drift into language that is morally evocative but institutionally weak.

Synthesis

Taken together, these chapters clarify three propositions. First, they show that housing is a condition of care. The Oliver Bond case demonstrates how inadequate housing intensifies the labour of caregiving, redistributing burdens to households and especially to women. The empirical message here is straightforward. When the state, whether the central or local government, withdraws from maintenance and renewal, care does not disappear. Instead, it is displaced onto residents. Second, they show that care is political. Hearne's rights-based framing is effective precisely because it refuses to treat poor standards as accidental or exceptional. Carelessness appears as an institutional pattern linked to residualisation and financialisation. This strengthens the conceptual ambition of the volume by linking ethics-of-care language to political economy. Third, they show that care must be institutionalised.

The legal chapter is persuasive in arguing that ethics alone will not produce habitable homes. If care is to be lasting, it requires independent enforcement and legal scaffolding capable of compelling timely action. The chapters, therefore, offer a useful template for Care in the City scholarship more widely: begin with lived harm, connect it to policy structures, and test reform claims against the legal and administrative machinery that must sustain change (Gabauer et al, 2021). A key issue is the risk of romanticising resilience. The Oliver Bond chapter is careful to show both harm and community capacity, but a broader caution still seems warranted. Care discourse can be appropriated as a malleable substitute for public or state responsibility, allowing institutional underperformance to be masked by celebration of local coping strategies (Healey, 2024).

What emerges is a clear test for the Care in the City agenda. A caring city is not defined by the warmth of its language. It is defined by whether residents can live without preventable illness caused by damp and mould; whether the everyday labour of care is supported rather than stretched to breaking point; and whether legal and governance systems treat adequate housing as a civic guarantee rather than a delayed aspiration. In that sense, the call for 'nothing fancy – just basic rights' works as a fitting refrain.

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PART II

Healthy homes and communities, air quality, and the data

FIVE

Caring neighbourhoods for ageing well in place

Hannah Grove

Introduction: Ageing in place – home and neighbourhoods as spaces of care

Ageing in place is commonly defined as staying in your own home or community as you age, or 'growing older without having to move home' (Phillips et al, 2010, p 17; Wiles et al, 2012). Across policy and academic literature, supporting ageing in place through the provision of age-friendly environments has become a central objective (World Health Organization, 2007; Buffel et al, 2012; Beard and Montawi, 2015). The home environment holds significant meaning for older people, playing a central role in providing familiarity, stability, and a continued sense of identity in an ever-changing world (Sixsmith and Sixsmith, 1991; Hatcher et al, 2019). This importance is heightened as declining mobility can lead to greater amounts of time spent indoors (Baker et al, 2007). It is well recognised that the condition, quality, and suitability of the home environment are key factors in the overall experience

of ageing in place (Sixsmith and Sixsmith, 1991; Stones and Gullifer, 2016). Continuing to live at home as independently as possible can present significant challenges for older people as needs and capacities change over time (Hatcher et al, 2019).

The meaning of home extends beyond the physical dwelling to incorporate the surrounding neighbourhood and community. For many older people, a vital aspect of overall 'homeliness' is the ability of the home to act as somewhere you leave, rather than simply a place to reside (Ewart and Luck, 2013, p 41). Being able to leave the home is a fundamental and inherent need, recognising the limits to comfort and security that a home alone can provide (Tse and Linsey, 2005, p 137). The home environment can be a place where negative feelings such as boredom, frustration, worry, and distress can manifest, particularly when leaving the home becomes difficult (Sixsmith and Sixsmith, 1991; Tse and Linsey, 2005). Leaving the home, even on occasion, can provide a distraction from the challenges associated with home life, help to obtain perspective, and offer a more positive outlook upon return (Beard et al, 2009). It can provide a change of scenery and fresh air, in contrast to the stale 'sameness' that some participants associate with being indoors for long periods (Gardner, 2014, p 1252). Benefits to health and wellbeing can be obtained through several pathways, including restorative effects associated with engaging with the natural environments and with being outdoors; social benefits linked to interaction with others; and physical health benefits arising from activity and movement (Alves and Sugiyama, 2006; Sugiyama and Ward Thompson, 2007). In addition, being mobile is closely associated with wellbeing, recognising it as being the physical enactment of freedom and independence (Metz, 2000; Mollenkopf et al, 2011; Schwanen and Ziegler, 2011).

Our health and wellbeing is shaped by the social, physical, and environmental contexts in which we live and age (Marmot, 2015; Vine et al, 2023). In later life, neighbourhoods are especially significant as 'arenas' where health, mobility, social

relations, and care intersect in complex ways (Gilroy, 2008; Wiles, 2018). High streets, shops, and community spaces function as sites of care, where formal and informal supports can develop through routine encounters and social practices (Conradson, 2003; Newton et al, 2010; Gardner, 2011; Wiles et al, 2012; Milligan, 2014; Fullilove, 2020). Supportive environments can be understood as spatial expressions of care where the physical design, social infrastructure, and everyday practices of care intersect across scales. Neighbourhoods can care by enabling safe mobility, offering places to rest, providing opportunities for social interaction, and fostering a sense of being known and supported beyond the home (Gilroy, 2008; Rowles, 2018). At the same time, neighbourhood environments can fail to care through systemic neglect, through poor maintenance, inaccessible design, or a lack of social infrastructure (Finlay et al, 2019). Neighbourhoods, therefore, are not neutral backdrops, but active in producing wellbeing and belonging, or vulnerability and exclusion.

While leaving the home has the potential to support wellbeing, it can involve challenges, fear, and risk, depending on an individual's personal circumstances and the environments they must navigate. When these challenges are judged to be too great, leaving the home may be avoided altogether (Peace et al, 2011). Ageing in place, therefore, is best understood as an ongoing and dynamic process, involving a balance between environmental demands and individual capacities (Bigonnesse and Chaudhury, 2021). Whether ageing in place is experienced positively depends not only on attachment to home and neighbourhood, but on how well environments can accommodate shifting needs and abilities over time. Ageing well in place is strongly influenced by a person's 'fit' with their environment (Lawton and Nahemow, 1973) and the resources they can draw on to adapt and cope with change (Peace et al, 2011). Depending on the supportiveness of local environments, this process can be far easier for some than for others.

Empirical case study: negotiating care, risk and everyday mobility

Drawing on doctoral research (Grove, 2022), this section presents an empirical case study from qualitative and spatial research conducted with older adults living in the Greater Dublin Area. The wider study employed focus groups, in-depth interviews, mapping exercises, and go-along interviews to explore everyday routes, routines, and places of significance. This chapter focuses on the experiences of one individual, 'Dolores' (a pseudonym), providing a detailed account of how care, risk, and mobility are negotiated in everyday neighbourhood life.

Living alone in an inner-suburban Dublin neighbourhood, Dolores (aged 89 at the time of the interview) was the only participant recruited via a public health nurse and received the most extensive in-home support. This included home modifications such as a stair lift and assistive devices. Dolores lived with multiple health and mobility challenges and relied on a walker when leaving her home. Despite these challenges, Dolores was determined to remain engaged with her neighbourhood. She described a 'good day' as one where she could walk to Mass, approximately 800 metres or 20 minutes from her home. On days when she managed this journey independently, she was 'delighted' with herself. This routine was deeply meaningful to her and illustrates how wellbeing in later life is tied to the ability to carry out specific, valued activities beyond the home. Dolores received formal care through health services and home adaptations, while informal care was embedded in her neighbourhood through supportive neighbours who assisted with shopping, giving her a lift to Mass on Sundays, and checking in with her during adverse weather: 'It is a very friendly neighbourhood and people are so kind, can I open the gate for you, can I get you a message [something from the shop]? And during the snow there I was … There was a queue at my door [laughs].'

Dolores emphasised how fortunate she felt to live in a supportive area, describing herself as 'truly blessed'.

However, she was careful about what she asked of others, expressing a desire not to be a burden. While she would accept help for what she considered more necessary activities, she was reluctant to seek support for trips she viewed as more discretionary, such as visiting gardens or the seaside: 'I would love to go to the Botanic Gardens, but I don't feel like paying a taxi there and back. My neighbours are great, but I am not going to ask them to bring me to the Botanic Gardens, they are busy working or whatever.'

Dolores' ability to leave home was shaped by a continual negotiation of risk. On any given day, she had to assess how she felt physically, considering her health, energy levels, and mobility, as well as external conditions such as the weather and time of day. She was highly sensitive to windy conditions, which heightened her fear of falling and could be enough to deter her from leaving the house altogether. Features of the built environment further amplified risk for Dolores, shaped in part by previous negative experiences and falls that had undermined her confidence over time. Uneven pavements and poorly maintained footpaths (Figures 5.1 and 5.2) made walking with a walker increasingly difficult. During her go-along interview, Dolores pointed out several locations in her neighbourhood where she had fallen in the past. She described how, more recently, she had lost strength and found it difficult to lift her walker off the ground, making cracked or uneven surfaces particularly hazardous. These experiences heightened her sense of vulnerability and made even short journeys feel riskier. Public transport posed similarly high-stakes challenges for Dolores. Although a bus stop and train station were both within walking distance of her home, inconsistent assistance from bus drivers and inaccessible vehicle and station design had taught her, through experience, that she could not rely on these systems to keep her safe. Dolores described how getting on and off the bus could be particularly stressful when it was busy: 'You couldn't go from town to get off at [my stop] because there would be people standing … how are you

Figure 5.1: Broken footpaths in the local area, photographed during a go-along interview



Figure 5.2: Dolores using her walker, photographed during a go-along interview



going to get your rollator [walker] past all these legs? … So that really is a no-no.' She also highlighted the variability in driver behaviour, explaining that 'some of them are very good, they will lower the ramp … some of them won't bother'. This left her struggling to lift the heavy walker, tap her card, and find a seat before the bus moved off. In these moments, she described being 'afraid of my life of falling because I am not steady on my feet'. Past experiences reinforced these fears. On one occasion, when travelling to hospital for an appointment, Dolores decided to 'chance' the bus because of the higher costs associated with taxis. Although she managed to board and sit on her rollator, the sudden movement of the bus caused her to injure her elbow, which started bleeding. Reflecting on these experiences, Dolores concluded that saving money when compared with taking a taxi was 'not worth ending up in A&E'. Over time, these cumulative barriers narrowed Dolores' world. While she remained appreciative of her neighbours and community, her capacity to engage beyond her immediate neighbourhood had diminished. Central to this experience was the delicate and often negotiated balance between independence and dependence. Dolores expressed a strong desire not to be a burden on others, a finding that resonates with a substantial body of research on ageing and independence (Schwanen et al, 2012; Bell and Menec, 2013; Hillcoat-Nallétamby, 2014). Existing studies show that independence in later life is rarely absolute; rather, it is relational and contingent, sustained through negotiated forms of support and reciprocity (Borglin et al, 2005). Research has shown that older people are more willing to accept help and less likely to perceive themselves as dependent, when they can reciprocate in some way, reinforcing the importance of altruism, mutual aid, and *interdependence* (White and Groves, 1997; Bell and Menec, 2013).

Dolores remained determined to leave the home in some form, even when it became increasingly challenging to do so, underscoring how engagement with place remained central

to her wellbeing and how she conceptualised a 'good day'. Many of the high levels of risk she faced were not inevitable consequences of ageing, but products of careless design, inconsistent service provision, and mobility infrastructures that lacked care and consideration of the needs of older people with health and mobility challenges. This example highlights the need to move away from viewing ageing well in place as an individual achievement, and toward understanding it as a collective, place-based societal responsibility; one that planning, transport, and housing systems play a central role in shaping. The final section of this chapter now considers how neighbourhoods might be deliberately designed and governed as collective infrastructures of care, to enable more inclusive, relational, and socially sustainable forms of ageing well in place.

Designing neighbourhoods of care: implications for policy and practice

Planning systems play a critical role in shaping the everyday environments through which care is enacted, including how easily people can move through cities, access essential services, and maintain social connections within their neighbourhoods (Buffel et al, 2018; Buffel and Phillipson, 2024). The findings presented in this chapter have highlighted the need for planning and ageing policy to move beyond aspirational commitments to age-friendliness, health, and resilience, towards approaches that explicitly recognise care, interdependence, social infrastructure, and accessible mobility as central.

Integrating planning and public health to address inequalities

An explicit '*Health for All Policies*' is required to align planning, public health, housing, sustainability, and integrated care agendas (Greer et al, 2022). Designing neighbourhoods that care for their residents requires coordinated action across planning, public health, housing, and transport, so that decisions about social infrastructure, housing, and everyday

mobility reinforce public health objectives rather than operating in isolation. Stronger coordination at neighbourhood and community scales can support preventative, place-based approaches to care that extend the period during which people can remain connected within their communities, while also contributing to reductions in persistent health inequalities (Buffel and Phillipson, 2018). Addressing inequality must be central to this integration. Older people's experiences of ageing well are shaped by accumulated advantage and disadvantage across the life course (Dannefer, 2003). Age-friendly, healthy, or resilient city frameworks risk obscuring and reinforcing these inequalities if applied without explicit attention to power and the uneven distribution of resources (Buffel et al, 2023). Planning authorities can use existing health and demographic data to better map socio-spatial inequalities and to recognise that different population subgroups have unequal capacities to benefit from more supportive environments.

Embedding care within healthy place-shaping principles

Planning policy should embed City of Care and healthy place-shaping principles as core components of spatial decision-making, rather than treating them as supplementary or aspirational goals. Long-standing research on healthy urban planning demonstrates that the design of neighbourhood environments, such as walkability, accessibility, and access to social spaces, can have profound implications for health and wellbeing across the life course (Barton and Grant, 2006). Investment in pavements, seating, shelter, legible routes, accessible transport, and local social spaces should, therefore, be understood and valued as essential health-promoting infrastructures. Investments in this type of infrastructure support the development of everyday caring practices, enable interdependence, and reduce the risk of social isolation, particularly in later life (Buffel and Phillipson, 2024). Framing these elements as core infrastructure strengthens the case for

their prioritisation within planning policy and development decision-making.

Social infrastructure needs to be better recognised as a foundational component of caring and socially sustainable cities. Facilities such as community centres, libraries, health services, places of worship, local shops, and informal meeting spaces are critical sites through which everyday care, social connection, and mutual support are organised (Klinenberg, 2018). Planning policy has a key role in protecting and promoting social infrastructure, yet it is consistently undervalued in developer-led and economically driven planning systems. More could be done through local plan-making to safeguard existing community assets and to ensure that new developments include accessible and inclusive social spaces, recognising the importance of small-scale and informal third places, such as cafés, benches, sheltered public spaces, and toilets, as everyday infrastructures of care (Oldenburg, 1989; Gardner, 2011; Finlay et al, 2019; Yarker, 2021; Buffel and Phillipson, 2024).

Everyday mobility and the ability to move through cities

The ability to move easily, safely, and confidently through neighbourhoods is central to whether urban environments are experienced as caring. Barriers such as uneven pavements, inadequate crossings, lack of seating and shelter, poor lighting, and inaccessible public transport disproportionately affect older people and those with mobility or cognitive impairments, shaping decisions about whether to leave the home at all (Burton and Mitchell, 2006; World Health Organization, 2007). Planning policy should therefore prioritise walkability, accessibility, and comfort as core design principles. Investment in pedestrian infrastructure, accessible transport, and age-friendly street design should be understood as preventative health and care interventions. Relatively modest interventions, focused primarily on more supportive and caring local mobility services, could have significantly enhanced Dolores'

ability to age well in place. Such interventions require a combination of both physical and tangible infrastructure, but also more intangible aspects of the social environment. These more intangible elements are central to enhancing social sustainability, understood as the capacity of places to support wellbeing, social cohesion, and mutual care over time (Dempsey et al, 2011). However, these dimensions are rarely captured within formal planning evidence bases.

These concerns point toward the importance of proximate urban development patterns, including the principles underpinning *15-minute neighbourhoods*, where essential amenities, services, and destinations are accessible within a 15-minute walk or cycle (Moreno et al, 2021). While such frameworks are often framed primarily in terms of promoting environmental sustainability and carbon reduction, this research highlights their significance for care, social infrastructure, and everyday mobility. Ensuring that essential services, social spaces, and everyday destinations are accessible within short, walkable distances is particularly important for older people and others whose mobility is constrained by age, health, or caring responsibilities (Buffel et al, 2018; Moreno et al, 2021). However, proximity cannot be understood solely in terms of distance or travel time. It must also account for the pace, rhythms, and temporalities through which people move through cities. Research on ageing and mobility emphasises that older people often experience urban environments at slower speeds and through more episodic, relational rhythms, shaped by bodily change, confidence, and the need for rest, social interaction, and familiarity (Lager et al, 2016). Even routes that might be considered objectively 'accessible' can become effectively inaccessible if they are rushed, uncomfortable, or physically demanding, or if they fail to accommodate pauses, lingering, and informal encounters. This highlights the importance of designing proximate neighbourhoods that are not only compact, but also temporally inclusive. Wide pavements, frequent seating, safe crossings with sufficient

crossing times, sheltered waiting areas, and legible, familiar routes enable older people to move at their own pace and to integrate everyday journeys with social interaction and caring practices. Without attention to pace and rhythm, proximate urban models such as 15-minute neighbourhoods risk reproducing spatial and temporal inequalities, privileging those who are mobile, confident, and time-efficient, while marginalising those who move more slowly or cautiously.

Valuing participation and lived experience as evidence

How care is understood and enacted in later life is shaped by wider social, political, and economic belief systems that define rights and responsibilities at both individual and societal levels (Milligan, 2014). These belief systems influence what forms of knowledge and evidence are recognised as legitimate within planning and policy processes. Planning systems have traditionally prioritised objective, measurable indicators, often privileging professional expertise over lived experience (Hockey et al, 2013). As a result, the subjective, relational, and experiential dimensions of ageing in place, such as how people feel, move, connect, and negotiate their everyday environments, are frequently overlooked. Yet it is precisely these experiential qualities that shape whether neighbourhoods are experienced as caring or supportive. Feelings of safety, familiarity, confidence, and being known within a place play a critical role in sustaining independence and wellbeing in later life (Rowles, 2018). Participatory mapping, in-situ methods such as go-along interviews, and spatial storytelling approaches can help to ensure that policy interventions better incorporate the lived realities of ageing (Carpiano, 2009; Finlay and Bowman, 2017; Grove, 2021). Through person-in-environment interventions, participatory approaches can support older people to identify what matters most to them, recognise existing resources, and articulate where additional support may be needed (Finlay and Rowles, 2021). This aligns

with broader calls for forms of *collaborative urbanism*, which emphasise co-production and the active involvement of older people in shaping neighbourhood change (Buffel, 2018; Buffel and Phillipson, 2024).

A primary barrier to creating caring cities lies less in the availability of local authority resources than in the values embedded within planning systems and urban development policies. Building on the City of Care framework, originally articulated by Manzo (2023) and further developed by Manzo and Grove (2024), and grounded in an ethics of care centred on public health, community wellbeing, solidarity, empowerment, and social justice, this chapter calls for a reorientation of planning policy that recognises neighbourhoods as collective infrastructures of care. From this perspective, ageing well in place is shaped not only by the quality of housing, but by the supportiveness of everyday neighbourhood environments to enable engagement beyond the home. This understanding reframes older people as active contributors to care through informal practices and everyday mobilities, rather than solely as recipients. Embedding caring city principles in planning and policy requires an acknowledgement of our collective interdependence, the need to address unequal environmental supports, and to broaden what counts as evidence to include lived experience alongside conventional indicators. Together, these shifts invite a reimagining of neighbourhoods as shared spaces of care, which can support human flourishing throughout the life course.

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SIX

A way forward: understanding causes of, and solutions to, insanitary conditions in Oliver Bond House, Dublin

Joseph Little, Gearóid Carvill, and Andrew Lundberg

Introduction: The provision of adequate sanitary standards in the home

Inadequate sanitary standards in Irish social housing

For many Irish people, especially those living in social housing, the home may be the place where they experience the poorest environmental conditions.[1] It took the tragic death of two-year-old Awaab Ishak in December 2020, after sustained exposure to mould in his home in Rochdale, UK, to make unequivocally clear the potential impact of such environmental hazards (Figure 6.1).

There are over 130,000 local authority homes in Ireland housing approximately 355,000 people. For several decades certain departments in Irish housing authorities laid the blame for the existence of unsanitary conditions in flats and houses they own solely on the residents, rather than looking at their own actions or wider systemic causes. Certain departments in

Figure 6.1: A mould-laden ceiling in the bedroom of a flat in Oliver Bond House



Dublin City Council (previously Dublin Corporation) played a leading role in this pushback. In so doing they advanced arguments that are not founded on science or standards and added greatly to the stress of tenants who lived in unsanitary conditions. For instance, until recently tenants were required

to sign agreement to a standard document which stated that 'repairs due to condensation' and 'all internal decoration' were the responsibility of tenants, although the construction, thermal performance, and ventilation of the building fabric, which is owned and controlled by the local authority, greatly impact on both.

In this context, in 2014 – after five years of preparation – the International Federation for Human Rights (FIDH) lodged a case against Ireland's national and local governments on behalf of 20 local communities supported by various NGOs. In 2017, the European Court of Social Rights found that the defendants had failed to take sufficient and timely measures to ensure the right to housing of an adequate standard for many families living in local authority housing (Council of Europe, 2017). Responses to the judgment have been delayed and piecemeal.

Causes and responsibilities of surface condensation and mould growth

Readers may consider reviewing 'The causes of surface condensation and mould, and the responsibility of relevant parties to alleviate them' (Little, 2021). As the name suggests, the paper (a) presents various issues, (b) cites and critiques the relevant regulations and standards, and finally (c) suggests an attribution of responsibility to the parties that may be responsible. The parties are several – national government, specifier, builder, owner, occupant, weather, and force majeure.

> Condensation and mould growth on the internal surface of a room are caused by a combination of factors due to specific conditions. In severe cases, one of these factors may lead to surface condensation and/or mould growth, but in general, surface condensation and/or mould growth occurs when two or three of these occur together. A selection of these basic factors includes: inadequate rapid ventilation, inadequate levels of extract ventilation where the moisture is generated,

> high moisture generation rates, cold surfaces (due to a lack of insulation or very low external temperatures), and partial insulation renovations that leave some surfaces warmer than others.
>
> As insulation renovations generally allow higher room temperatures to be maintained for longer, they also ensure that more vapour can be held in the air. The use of a psychrometric chart will show that double jeopardy arises where moisture levels are higher than before, but poorly specified, poorly implemented, or partial insulation renovation result in surfaces that in winter are as cold – or even cooler – than before the works were undertaken. Confounding the expectation of owner and occupant, more condensation (and therefore more mould) may form at these locations than before. (Little, 2021, p 2)

This chapter will explore a selection of these factors through the lens of the Oliver Bond House flat complex. The complex's challenging infrastructural issues, such as foul waste system failure, bad plumbing, roof leaks, and water pressure are beyond the scope of this discussion. Unless mentioned otherwise, references to research, measurements, and survey relate to work by Carvill and Little.

Design, construction, and the systemic impact of changes

Historical context

Dublin has historically suffered from poor housing conditions, a reality highlighted by the 1911 Census. Significant reform began only in 1932, focused on clearing slums for inner-city flats and suburban terraces. Herbert G. Simms, Dublin's first Housing Architect, oversaw 17,000 new dwellings before his death in 1948 (Cullen, 2017). Notable among these is Oliver Bond House (1938) in the Liberties. Comprising 391 units, these four-storey blocks feature communal courtyards and open-access galleries. The architecture mirrors contemporary

English social housing, such as London's Oaklands Estate. Interestingly, due to 1924 legislation prescribing room standards, the interiors are similar to the suburban cottages Simms designed for areas like Crumlin, despite their external forms and aesthetic being very different.

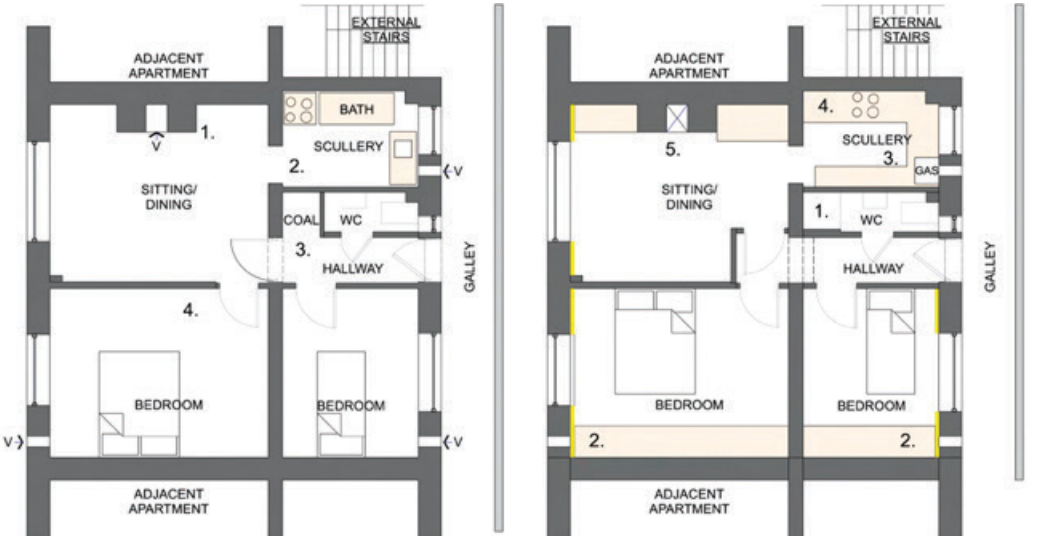
Building fabric, services, and renovation

Apart from the brick external façade, the structure of the building is formed of mass concrete, lightened by the use of clinker aggregate (a waste material created in the production of town gas from coal). The external access galleys, internal floors, and partitions were all cast in situ using this material. Walls were finished internally with painted lime plaster, floors were exposed floor boards, and naturally furnishings were non-synthetic.

The flats were originally heated by an open fire with a back boiler in the living room that provided hot water for the scullery, or kitchen. The scullery also contained a gas cooker and a copper bath with a fold-down timber lid, which provided additional counter space. Each flat had an internal fuel storage area located behind the water closet (WC). The bedrooms were unheated. All the living spaces had some form of ventilation (indicated by 'V' and an arrow in the left plan of Figure 6.2), whether a fixed vent (bedrooms), an open flue (living room), or a fixed louvred vent in the external wall (scullery). The WC was the exception as it had an openable window.

Renovation has taken place periodically since the complex was built almost 90 years ago. Landlords tend to renovate units as they become available between tenancies, whether simply redecorating or making significant changes to building fabric or services. Tenants tend to renovate finishes and fittings incrementally. As a response to the fuel stringencies created by the First and Second Oil Crises (in the late 1970s), basic energy efficiency measures were increasingly included in landlord-initiated works. As we will see, many changes had an unintended negative impact on indoor environmental

Figure 6.2: Original layout of 1938 (left) and revised layout of 1990 (right). Partial drylining indicated in black stripes.



Notes: Some units are 'handed' with the bedrooms against the stair wall and kitchen/WC on the other side of the hallway.
Key – Original layout: 1. Sitting room w/open fire. 2. Scullery w/gas hob and external wall vent 'V'. 3. Fuel store to rear of hallway. 4. Bedroom with air vent 'V'. Key – 1990s' refurbished layout: 1. WC with new shower. 2. Wardrobes blocking air vents. 3. Fitted kitchen with gas boiler. 4. Electric hob with recirculating 'extract' fan. 5. Fireplace covered over.

condition. Many residents have commented that before the period of energy efficiency-related renovation works they had little experience or memory of mould. By the late 1980s, 50 years after Oliver Bond House was built, many of the flats were in poor condition. As lifestyles changed and higher expectations of thermal comfort became normal in the 1990s and 2000s, conditions declined even further.

Impact of renovation works on indoor environmental quality (IEQ)

Since the early 1980s Dublin Corporation (then City Council) decommissioned open fires and back boilers, installed gas central heating, converted fuel stores into shower rooms, and installed air-tight windows. Some internal insulation was added, however large thermal bridges (for instance, where an external galley might be located over a bedroom) and external walls (for instance, facing stair cores or walls to which fitted cabinets and WCs were fitted) were often left uninsulated. While less clean and more expensive to fuel than the convective wall heaters fitted by the local authority, the radiant heat of a wood or coal fire has the advantage of first heating the surfaces and residents of a room rather than its air. This difference is important if some surfaces are under-insulated and cold, as warm air can hold more moisture, enabling a greater 'dump' of condensate on those cool surfaces.

Crucially, the landlord failed to compensate for the loss of passive ventilation. Blocking fireplaces eliminated the extract ventilation (powered by stack effect) of an open, vertical chimney flue. Previously this vigorous natural extraction flushed out stale air, moisture, and any other contaminants (such as volatile organic compounds and mould spores) while pulling fresh untempered air into the flat via vents, gaps, and cracks in the external envelope. It is clear from inspection that contractors have been allowed to use original kitchen wall vent opes as routes for new boiler flues, leading to further declines in background ventilation. Finally, recent installation of mechanical fans in shower rooms (also using the route of

original wall vent opes) appear to be compromised due to being sited far from the main moisture source: the shower head.

Tenants have inadvertently compounded these issues. Besides lifestyle changes (for example, more hot showers, lighter winter clothing, and so on) they have installed fitted furniture against external walls of these small flats, often obstructing remaining wall vent opes. Given a reluctance or inability to bore through walls that they do not own, tenants tend to install cooker hoods that filter and recirculate moist air rather than extract that air to the outside.

Commonly used fitted furniture in bedrooms and kitchens, suspended ceilings, and bulky loose furniture can create bodies of still air isolated from the main volume of rooms where large currents of air slowly move (driven by heat, differential air pressure, and the residents themselves). Based on inspection in many social housing units, it is clear that stagnant, mould-laden air can gather in these spaces, especially if bounded by one or more cold surfaces. Finally, as houseproud families wishing to combat mould and ease cleaning, many tenants fit non-hygroscopic materials like vinyl wallpaper, fully vitrified floor and wall tiles, and leatherette furniture. While practical, these surfaces reduce a room's ability to buffer moisture – absorbing and releasing humidity as the conditions allow.

Changes made by landlords and tenants can be seen in the right plan of Figure 6.2. While the works shown and described were undertaken by different parties for the best reasons over many years, together they constitute a *moisture-stressing system*. Ultimately, the combination of greater moisture generation, inadequate ventilation, cold (often non-hygroscopic) surfaces, and moisture-trapping interiors ensure that humidity and poor IEQ are likely to remain elevated throughout the year.

Measuring, surveying, and calculating moisture stress

Research and surveys

A self-reported survey of residents carried out in March 2021 recorded that 82.8 per cent of flats in Oliver Bond House

had mould, and 73.7 per cent of residents complained of draughts and lack of insulation. Additionally, 55.4 per cent of the tenants reported being told that the mould and damp was their own fault or responsibility. Furthermore, 44.6 per cent reported that they had been told by medical practitioners that the conditions they were living in were contributing to the ill-health of their families.

Analysis of this survey by Manzo and Grove (2024) provides further evidence of the scale and multidimensional nature of these challenges. Their findings show that 65 per cent of residents reported direct negative impacts of inadequate housing on their health and wellbeing. Issues such as dampness, mould, cold conditions, and ventilation problems were prominent, alongside psychosocial consequences including stress, anxiety, fear, and reduced social interaction. These results reinforce and expand upon the 2021 data outlined earlier, illustrating how inadequate IEQ intersects with emotional and community-level harms.

Finally, a study completed by researchers of Trinity College Dublin in 2024 found that residents of Oliver Bond House were between 1.9 and 2.4 times more likely to have asthma than other clients of a local general practitioner clinic (McCarthy et al, 2024). While the link between poor IEQ and asthma is considered correlative not causative, it is challenging to reach other conclusions.

Ventilation regimes and moisture load

Many of the tenants surveyed describe lengthy, daily regimes to manage the elevated moisture levels, including fully opening windows at specific times to purge the air of their flat. This practice, called *lüften* in Germany, has recently received international attention as best practice. It is worth noting that, while beneficial, it does not meet the building regulations requirement to install a background ventilation system that actively or passively provides a full change of air approximately 0.75 to 1.5 times per hour.

Two flats in Oliver Bond House (to be referred to as Flats A and B) were selected for temperature and humidity data collection. They are both mid-floor, east-facing, 50 m^2 in size and contain two bedrooms. Temperature and humidity data were collected from July to October of one year (Figure 6.3). The units were lightly occupied: two people occupied each flat, all adults and working outside the home. A purge ventilation regime was in place in one flat but not in the other. Neither flat reported any leaks and NO moisture ingress was evident during the course of the study, therefore the humidity recorded relates to the metabolic activities of the residents, normal domestic activities (sleeping, showering, cooking), and ambient conditions.

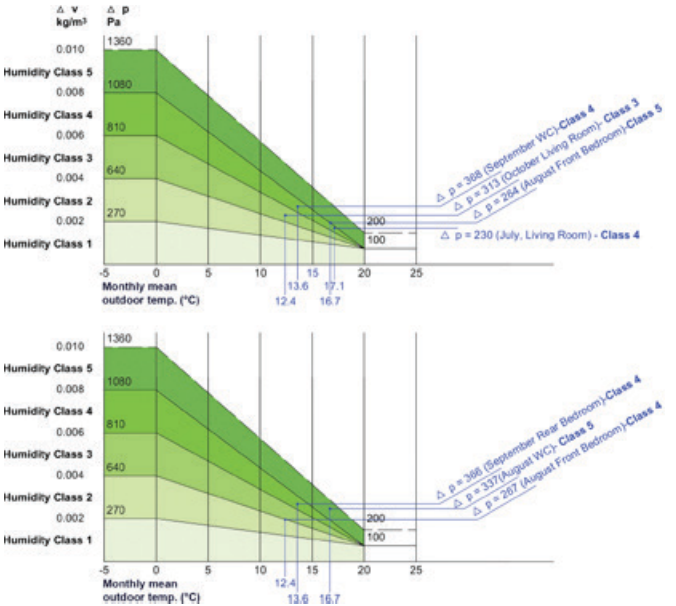
The results were charted using a standard for classification of buildings by measuring absolute humidity (gH_2O/m^3) which is available in both BS 5250[2] and EN 13788.[3] Mean monthly data for two study apartments were classified using this method. The key to the classes is shown in Table 6.1. It can be seen that the level of moisture present at the times measured was indicative of buildings of Class 3 'unknown occupancy', Class 4 'sports hall or canteen', and even Class 5 'brewery', two to four times higher than a dwelling (that is, Class 2).

Given that measurements in summer can be higher than in winter, due to lack of space heating, it is accepted that a clearer understanding of the extent to which moisture is elevated beyond norms would be provided if these measurements were repeated throughout the year. What can be said for now is that the assumption that standard guidance (on how to control moisture in dwellings) applies to dwellings of this kind should be challenged. A new, systemic focus on what is going wrong and how healthy living conditions can be assured is surely needed.

Physical survey and thermal modelling

A survey of ten Oliver Bond House flats was also undertaken, including flats in good decorative order and others less well-tended. Patterns became evident where mould manifested.

Figure 6.3: Vapour pressure differential and external temperature of Flats A (top) and B (bottom) at certain times of the year overlaid on a graph from EN 13788 that presents internal humidity classes.

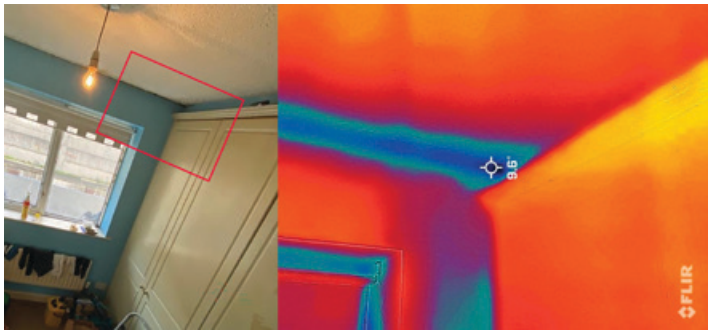


Source: Figure A.2, ISO EN 13788 (2012)

Table 6.1: Internal humidity classes as set out in Table A.1 of IS EN ISO 13788 (2012)

Humidity class	Building
1	Unoccupied buildings, storage of dry goods
2	Offices, dwellings with normal occupancy and ventilation
3	Buildings with unknown occupancy
4	Sports halls, kitchens, canteens
5	Special buildings, e.g. laundry, brewery, swimming pool

Figure 6.4: Photograph and infrared image of junction of wall above window with ceiling and fitted wardrobe



Note: Spot measurement of 9.6 °C in infrared image

Three location types in particular were studied: (a) ceilings along the junction of external wall with the external access galleys, (b) window reveals, and (c) the junction of external walls with unheated stairwells which, depending on the type of flat, were lined with either fitted wardrobes or kitchen cabinets (Figure 6.4).

Through physical survey it was established that internal wall insulation had not been returned at the window reveals to the windows. Infrared images (created using a thermographic

camera) show significant drops in temperature from the internal ambient air to the wall surface temperature, across the depth of the window reveal, and across the ceiling from the head of the window. For example, the photograph and infrared image of the front bedroom of Flat A in Figures 6.1 and 6.4 reveal a dramatic thermal bridge at the ceiling–wall junction, attaining its lowest temperature (9.6 °C) over the fitted wardrobe. The room temperature at that moment was 17.5 °C.

Figure 6.5 shows one of Flat A's uninsulated window reveals with black mould and an output from a thermal model which indicates a temperature of 9.73 °C at the window frame to window reveal junction (where temperatures are fixed at 20 °C inside and 0 °C outside as per standard). As can be seen using a psychrometric chart,[4] an indoor relative humidity (RH) of less than 50%RH would be necessary to prevent surface condensation with temperature drops of this size. As Dublin's ambient average relative humidity varies from 80 to 90%RH through the year and the flats are partially heated and naturally ventilated, a relative humidity as low as that is not achievable.

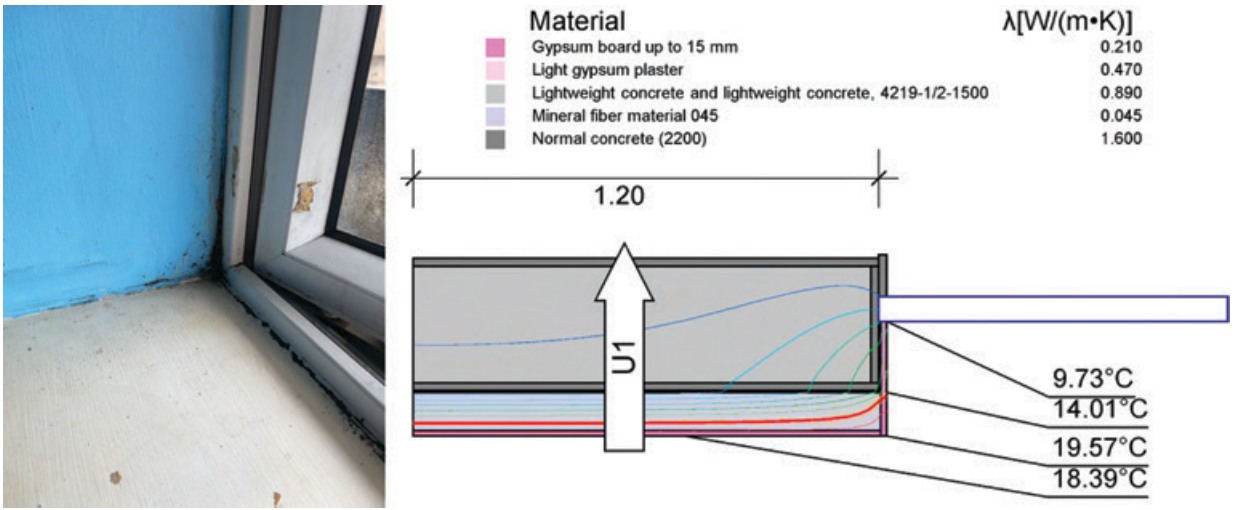
Thermal models were then created[5] of the key junction types listed here, to assess the risks of surface condensation with and without insulation. This confirmed that non-uniform heat loss increased at junctions where insulated areas of building fabric met uninsulated areas, increasing the risk of mould growth. Thermal modelling also showed the importance of 'improvement' works being carried synchronously to adjoining groups of flats. This is because the surface temperature at the junction of the party wall or floor of an uninsulated flat will actually reduce after internal insulation works are completed to an adjoining flat, further increasing moisture stress and the likelihood or extent of mould.

Exploring impacts of furniture on moisture stress

The under-regarded problem of isolated bodies of still air

It is clear that mould can form in isolated bodies of still air in dwellings where ambient moisture content is high and extract

Figure 6.5: Uninsulated window reveal with black mould in front bedroom of Flat A (22 August 2022, 11:31 a.m.) (left) and output from thermal model showing surface temperatures (right)

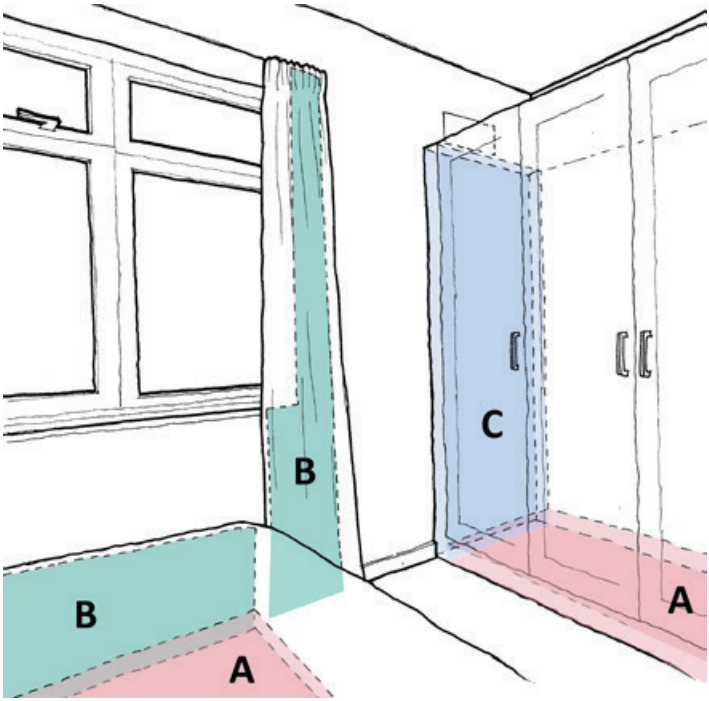


ventilation is poor or absent. Tenants of Oliver Bond House have witnessed mould forming on the clothing and apparel stored within their closed wardrobes and under beds many times. In the worst cases mould can manifest on fabrics in as little as two days after the items were stored. Naturally, this is deeply upsetting. Residents do not understand why mould is forming so quickly and how to permanently prevent it. Some residents have responded by removing fitted wardrobes, insulating, and, in some cases, re-insulating walls, followed by reinstatement of new, fitted wardrobes. To their great upset the mould returned. Others accept the mould to an extent while keeping their clothes in sealed plastic boxes within their wardrobes, and regularly cleaning the outside of the boxes.

It is significant that surfaces bounding isolated bodies of still air do not experience the evaporative, or drying, effects of convection currents, which pass other room surfaces (created by the heating of air, by air pressure differences and drafts, and by residents moving through the dwelling). The temperature of those surfaces is also significant: if one or more of them is also at lower temperatures, the likelihood of condensation forming, and the greater and faster manifestation of mould, increases.[6]

One can differentiate between three types of spaces of this kind, as shown on Figure 6.6: (A) spaces isolated within or behind fitted furniture (such as wardrobes) and large pieces of furniture (such as beds) that are located away from the thermal envelope; (B) spaces partially isolated by furnishings (such as the side of a bed or curtain) that are located against a wall, ceiling, or floor that forms part of the thermal envelope; and (C) spaces permanently isolated by fitted furniture (such as wardrobe or kitchen units fitted up) against the thermal envelope. To understand how such conditions can lead to greater moisture stress and mould growth, and to provide better guidance to residents, it is useful to consider heat transfer and surface resistances of walls.

Figure 6.6: Three types of isolated spaces: (A) spaces isolated within or behind fitted furniture and large pieces of furniture; (B) spaces isolated by furnishings located against the thermal envelope; and (C) spaces permanently isolated by fitted furniture located against the thermal envelope



The contribution of surface resistance values in thermodynamics

Heat transfer is dynamic. It can occur in three modes – conduction, convection, and radiation – with all contributing to the overall heat transfer. Standards have been created to enable steady state measurement and calculation of heat transfer, as this greatly supports understanding, building works, and regulations.

Uniform heat transfer through plane elements (walls, floors, roofs, windows, and so on) is measured and calculated as thermal

transmittance (U).[7] The units are Watts per square metre of surface area, per degree of temperature difference between inside and outside (W/m^2K). As shown in Table 6.2, to calculate the U-value one first lists all layers. Most of these are building materials that transfer heat primarily through conduction, however the impact of outer and inner surfaces and any continuous cavities contained within the buildup must also be accounted for. This is because measured surface resistances vary due to radiative effects (for example, emissivity and temperature of surfaces) and convective effects (air speed and local geometry, and so on).[8] The thickness of each building material layer (m) is divided by its thermal conductivity (W/mK) to arrive at a thermal resistance (m^2K/W). Thermal resistance values for internal (R_{si}), external (R_{se}), and cavity resistances are then included, and all thermal resistances are summed.[9] The resulting total is then inverted to give the thermal transmittance (U) of the plane element.

The regulatory authorities of Ireland and the UK guide the use of 0.13 m^2K/W as the conventional value to be used for internal surface resistance (R_{si}) of walls in calculations of thermal transmittance (U), linear thermal transmittance (Ψ) and assessment of interstitial condensation risk. The standard IS EN ISO 6946 (2017)[10] states that value 'should be used in the absence of specific information on the boundary conditions'. IS EN ISO 13788 (Section 4.4.1) further states that 0.25 m^2K/W, a value almost twice that of 0.13 m^2K/W, 'shall be taken to represent the effect of corners, furniture, curtains or suspended ceilings if there are no national standards'.

In super-insulated homes these surface resistances contribute very little to the U-value, but in historic solid-walled buildings, or in under-insulated buildings, their contribution can be significant. By way of example, Table 6.2 shows calculations of the external solid walls of Oliver Bond House, where conditions at a corner or piece of furniture are considered. The left side calculates the U-value of the original, uninsulated walls (U = 1.49 W/m^2k) and the right side calculates the U-value of the same wall once insulated to current building

Table 6.2: Thermal transmittance calculations for the solid walls of Oliver Bond House – uninsulated on the left side and insulated on the right side – emphasising the importance of the contribution of internal and external surface resistances to the thermal transmittance

Original uninsulated rear external wall build up					Notional external wall build up insulated to B. Regs backstop U-value				
Material	**Data source**	**Thickness (m)**	**Lambda (W/mK)**	**Resistance (R)**	**Material**	**Data source**	**Thickness (m)**	**Lambda (W/mK)**	**Resistance (R)**
External	Table 1 ISO 6946			0.0400	External	Table 1 ISO 6946			0.0400
Render		0.025	1.6	0.0156	Render		0.025	1.6	0.0156
Concrete		0.305	0.89	0.3427	Concrete		0.305	0.89	0.3427
Dense Plaster		0.020	1.6	0.0125	Dense Plaster		0.020	1.6	0.0125
Finish Plaster		0.005	0.47	0.0106	Finish Plaster		0.005	0.47	0.0106
Internal	Table 1 ISO 13788			0.2500	New Insulation		0.105	0.022	4.7727
	Total d	0.355		0.6715	Plasterboard		0.015	0.21	0.0714
					Internal	Table 1 ISO 13788			0.2500
						Total d	0.475		5.5156
			U-Value	**1.4893**				**U-Value**	**0.1813**
% Contribution of surface resistances (Rsi + Rsi) to U-value				**43.2%**	***% Contribution of surface resistances (Rsi + Rsi) to U-value***				**5.3%**

regulations (U = 0.18 W/m^{2}k). The surface resistances selected (R_{se} = 0.04 and R_{si} = 0.25 m^{2}K/W) contribute 43.2 per cent to the thermal transmittance of the uninsulated wall, while on the right they contribute only 5.3 per cent to thermal transmittance of a possible energy efficiency retrofit of the same wall. Clearly then, selecting the right surface resistance values for uninsulated or poorly insulated buildings *is* of particular importance.

Assessing the accuracy of surface resistance values

Infrared images in one of the study flats recorded a drop in temperature from 17.5 °C in the middle of the room to 6.1 °C on the back surface within the wardrobe. That is a remarkable difference of 11.5 °C over a distance of only 1.5 m. However, U- and Ψ-value calculations did not reflect these measured values, even when the heightened internal surface resistance of R_{si} = 0.25 m^{2}K/W was selected. It is important to note there could be many reasons for this, beside a varying surface resistance. These include *material types*, *thicknesses*, and *thermal conductivities* within the wall buildup, as well as their current *moisture content*.[11] Accepting this, the potential impact of different internal surface resistances was explored further.

Several national standards of European countries were reviewed to see if different internal surface resistances (R_{si}) were in use that enabled an improved correlation. It was established that the regulatory authority in Germany guides additional internal surface resistances of 0.50 and 1.0 m^{2}K/W for calculations where loose furniture and fitted furniture, respectively, are placed against external walls. Notably, these values are almost four and eight times higher than the standard value (of 0.13 m^{2}K/W) used in thermal bridge and U-value calculations in Ireland. How is that possible where calculations are based on common international standards?

The reason is that international standards not only provide standard calculation methodologies, they also include guidance on default and calculable values for use in those calculations.

This enables regulatory authorities to either restrict their national guidance to use of the default values only, or to provide additional calculated values where they believe (1) conditions necessitate it, (2) greater detail is beneficial, and (3) industry knowledge and practice would support it. In the case of surface resistances, the UK and Irish authorities adopted the default values provided in Table 7 of EN 6946, while the German authorities calculated additional values and then published these values in their national standard DIN 4108-8.[12]

Table 6.3 shows key inputs and outputs for a two-dimensional thermal model of the junction of the external wall with the external galley walkway and internal floor slab above (for standard boundary ambient air temperatures of 20 °C inside and 0 °C outside). It can be seen that as higher internal surface resistance values are used the calculated surface temperature of the ceiling at its junction with the top of the wall (see far right

Table 6.3: Impact of internal surface resistance values used on the calculated surface temperature[13] at a wall–ceiling–galley junction

Inputs					Outputs		
Ex T	Int T	Rse	Rsi	Rsi Data Source	U-value	fRsi	Surface T ceiling
0	20	0.04	**0.13**	EN 6946	0.682	0.77	15.31
0	20	0.04	**0.25**	EN 13788	0.63	0.68	13.64
0	20	0.04	**0.5**	DIN 4108-8	0.544	0.60	11.92
0	20	0.04	**1**	DIN 4108-8	0.428	0.50	9.98

Notes: Results of thermal modelling at Junction of ceiling and rear external wall with galley, showing the impact of different surface resistance values on internal surface temperature. Thermal model was for construction as found in apt 181, inside to out; gypsum plasterboard, 38mm mineral wool, 5mm lime plaster, 20mm cement render, 300mm 'clinker' concrete, 25mm external render.

column of table) drops successively from 15.31 to 9.98 °C. This is a difference of 5.33 °C if the standard R_{si} for plane wall surfaces is chosen, but still a 3.66 °C difference when $R_{si} = 0.25$ m^2K/W (for 'corners, furniture, curtains or suspended ceilings') is used. Given that a psychrometric chart can show that approximately 50 per cent of moisture held in the air condenses for a 7 K drop in room temperature, a calculation difference/error of 3.66 K is significant and concerning, especially *if* a more conservative R_{si} value is available and more accurate.

Accepting the limitations of what is known about the building materials and wall buildups (listed in italics in the first paragraph of this section), the partially measured and calculated conditions in the Oliver Bond case study flats were used to facilitate this exploration. Table 6.4 presents measured and calculated values for five locations from Flats A and B in four charts, side-by-side:

1 The first chart identifies locations.
2 The second chart records measured external and internal ambient temperatures for each junction (column identifiers #1 and #2) as well as the temperature of the room surface (column #3) and the surface risk of condensation (f_{Rsi}) based on those measurements (column #4). (Please note that any value less than $f_{Rsi} = 0.75$ indicates an elevated risk of mould growth on absorbent surfaces, assuming an RH of approximately 58 per cent and an ambient air temperature of 20 °C.)
3 The third chart presents thermal modelling calculations leading to a *calculated* surface risk of condensation (f_{Rsi}) using the internal surface resistance $R_{si} = 0.25$. To see how accurate it is, the value in column #7 is compared with the measured value of column #4. The resulting difference is recorded in column #8 and column #9 provides a judgement on the correlation.
4 The fourth chart repeats this pattern using internal surface resistance $R_{si} = 0.50$ and 1.00 as appropriate, based on the central European approach.

Thus it can be seen that, *all other things being equal*, the internal surface resistance R_{si} = 0.25 for the isolated body of air ('bulkhead') just above the fitted wardrobe in the front bedroom of Flat A (see Figures 6.1 and 6.4) results in a *calculated* surface risk of condensation of f_{Rsi} = 0.68 (column #7), which is 0.19 (column #8) above the *measured* value of 0.49 (column #4). The more cautious internal surface resistance R_{si} = 1.0 (column #10) results in a calculated surface risk of condensation of f_{Rsi} = 0.50 for the same junction, which is 0.01 (column #13) above the measured value of 0.49, resulting in a good correlation. Similar improvements can be seen for two other junctions listed, and results for the remaining two were hampered by the inability to measure behind the bulkhead without an invasive survey.

This brief study suggests that the use of elevated surface resistance values in calculations (that is, beyond 0.25 m^2K/W) to better understand what may exacerbate surface condensation risk now, or could do so in the future, is worth exploring further. There appears to be value in housing authorities undertaking calculations using *elevated* surface resistance values, alongside physical surveys and measurements of the building fabric of social housing they care for, to better understand where surface condensation and poor IEQ are *most likely to manifest* in future tenancies, *regardless* of the residents and their actions.

Registered thermal modeller and co-author Andrew Lundberg makes clear that for now such an approach is not required to prove compliance with building regulations in Ireland. Technical Guidance to Part L (Conservation of Fuel and Energy) refers to BR497:2016, which states that the f_{Rsi}-critical value (f_{CRsi}) to be achieved in dwellings (for example, 0.75) already includes the effects of reduced surface convection at junctions. However, where one is determining risk of surface condensation or mould growth on planar element surfaces in accordance with ISO 13788 then the elevated R_{si} value 0.25 m^2K/W is used.

Table 6.4: Chart (in four main sections) presenting a comparison of measured and calculated values leading to a comparison of surface risk of condensation and a judgement on level of correlation

Location			Measured conditions			
Calculation column identifier			1	2	3	4
Surveyed flats in Oliver Bond House			Measured onsite (digital thermometer and thermal imaging)			
			Temperature (degrees C)			(-)
Apartment and room		Location	θ e	θ i	θ si	f_{Rsi} (eq)
A	Front Bedroom	Bulkhead over wardrobe	2.4	17.5	9.8	0.49
		Inside wardrobe	2.4	17.5	12.5	0.67
	Kitchen	Side wall – adj. external stairs	2.4	16.5	9.1	0.48
B	WC	ceiling above drylining	2.4	19.1	9.5	0.43
	Front Bedroom	Closet – side wall adj. ext. stairs	2.4	17.5	11.4*	0.6

Notes:

*It was not feasible to measure the surface wall temperature behind the built-in closet so temperatures listed are for the back of the closet. The reasonable assumption has been made that the wall surface temperature would be lower than the back of the closet.
**Standard internal surface resistance from EN 6949:2007 is 0.13 m^2K/W. The elevated value of 0.25 m^2K/W is listed in EN 13788 and would mathematically result in a lower result for surface temperature.
***In each of the above cases the default values of 0.13 m^2K/W and 0.25 m^2K/W will not properly account for how cold the internal surface of an external wall will be behind built in furniture. In each case use of these values calculated a higher temperature than one recorded on site.

Table 6.4: Chart (in four main sections) presenting a comparison of measured and calculated values leading to a comparison of surface risk of condensation and a judgement on level of correlation (continued)

Calculated values A (using standard Rsi**)					Calculated values B (using alternative Rsi)				
5	6	7	8	9	10	11	12	13	14
Internal surface resistance – elevated value	Calculated internal surface temperature and surface temperature factor (EN 10211)		Relationship between measured and calculated values, when standard Rsi selected (columns 4 and 7)		Internal surface resistance – alternate values	Calculated internal surface temperature and surface temperature factor (f_{Rsi})		Relationship between measured and calculated values, when alternative Rsi selected (columns 4 and 12)	
m^2K/W	degrees C	(-)	(-)		m^2K/W	degrees C	(-)	(-)	
Rsi	ϴ si (eq)***	f_{Rsi}	Δf_{Rsi}	Correlation	Rsi	ϴ si (eq)	f_{Rsi}	Δf_{Rsi}	Correlation
0.25	12.7	0.68	-0.19	**POOR**	1.0	10	0.5	-0.01	**GOOD**
0.25	12.7	0.68	-0.01	**n/a***	0.5	11.5	0.6	0.07	**n/a***
0.25	10.4	0.57	-0.09	**POOR**	0.5	8	0.4	0.08	**GOOD**
0.25	12.9	0.63	-0.2	**POOR**	1.0	10.8	0.5	-0.07	**GOOD**
0.25	12.2	0.65	-0.05	**n/a***	1.0	6.2	0.3	0.35	**n/a***

Time for a new approach to retrofit in social housing

A useful predictive design tool or a change to regulatory guidance

Establishing a closer correlation between measured and calculated conditions in corners and behind fitted and loose furniture of flats with uninsulated and under-insulated solid walls can aid efforts of landlords and building design professionals to remotely assess elevated risks of surface condensation using validated tools and standards-based processes and inputs. Even where all building material characteristics are (as yet) unknown, such calculations would surely show that conditions, which many residents experience daily, *are calculable and therefore predictable and avoidable*, before fitted furniture is purchased and located, and before tenants take up residency.

Arguably the adoption of higher surface resistance values for the Irish regulatory guidance of new buildings is unnecessary, but there would be *clear benefits* for its adoption to guide works to existing dwellings. Of course, the Building Regulations Team of the Department of Housing, Local Government and Heritage and the standards section of the National Standards Authority of Ireland (NSAI) would have to be convinced the change was necessary. As mentioned, the precedent provided by Germany should make adoption relatively straightforward.

Research with a systemic bias

Together, the outdoor climate, dwellings (including building fabric, systems, and furnishings), and the actions of their residents and landlord may be considered a complex system. Successful retrofit works will *not* result if only isolated aspects of this system are considered.

1. Research on the impacts of partial internal wall insulation is well established but this has not been properly communicated within the industry. The presence of only 14 thermal modellers on NSAI's register and the absence

of a national register for hygrothermal risk assessment are, in themselves, significant impediments. It is clear we need more skilled professionals in this area: with a target of 500,000 homes to be thermally upgraded by 2030, a wider understanding of building fabric performance is crucial.

2. Resilience should be a key focus of refurbishment upgrades. One of the observed results of climate change is more extreme weather. Our buildings need to be more resilient to deal with conditions which might include higher and lower temperatures and higher levels of humidity and rainfall. The use of a ventilation system that evidentially supports IEQ is crucial.
3. Better understanding of the impact of fitted furniture on interior surface temperatures should have great relevance to building owners and designers given that there are over 300,000 pre-1940 solid wall structures in Ireland. Fitted and loose furniture is often installed after a tenant has taken possession, or an architect has completed their work, so communication on potential moisture impacts of fitted furniture is key.
4. Much useful research can be undertaken, some by scientists or building professionals, but other valuable research could be undertaken by undergraduate students or the residents themselves (in the spirit of 'citizen scientists'). Here are a few examples:
    a. The ability of surfaces to buffer moisture can have a positive impact on IEQ, reducing moisture peaks. There would be great value in recording the ratio of areas of hygroscopic to non-hygroscopic surfaces in flats. It would be very interesting to see if a correlation exists between flats experiencing the most extreme conditions and those with the lowest ratio of hygroscopic surfaces.
    b. Given the amount of surface condensation and mould spores that can be found in the isolated spaces described, the ratio of the volume of still bodies of air to the volume of all air in social housing flats such as Oliver Bond

House is also worth studying. It appears to be higher than one might find in private flats and houses. These conditions and possible resulting impacts on IEQ are certainly worth study.

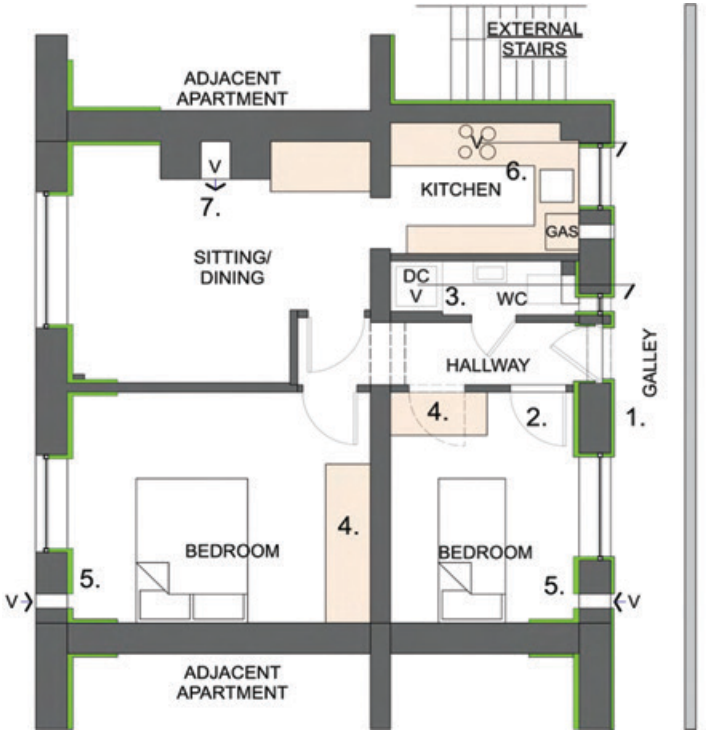
c. Chemistry is also relevant. The original lime plaster finish was not only hygroscopic but biocidic, its chemical composition inhibits mould growth. Research could explore the relative contribution the chemistry of original and current room finishes make to sanitary conditions and IEQ.

A modest retrofit design proposal

Some of the biggest contributors to unsanitary conditions and poor IEQ in Oliver Bond House are incomplete thermal renovations and inadequate ventilation. Furniture layouts have exacerbated both. There is no doubt that the flats are small by current national house building design standards, however this is not the main reason for the poor IEQ in many units. With some simple changes these flats could be upgraded at modest cost, potentially providing life-changing improvements to the health of residents. In the context of international precedents where social housing units have been upgraded *en masse*, with residents in situ, the authors present the approach shown in Figure 6.7. This should be compared to the existing situation in Figure 6.2 (right).

This proposal allows the flat to be refurbished with continued occupancy (no requirement to evict tenant) in a low-embodied carbon manner. A modest application of continuous, breathable external and internal wall insulation is shown. A change in position of an internal door encourages the relocation of fitted furniture away from external walls and restores access to wall vents. A properly designed and installed demand controlled mechanical extract system and separate extract duct from the kitchen hob are also advised. Finally, additional natural extract ventilation using a restricted

Figure 6.7: Plan of a typical flat showing minor internal alterations, including alterations to fitted furniture and ventilation



Note: Key – 1. External and internal insulation (illustrated as dark grey). 2. Relocated door to front bed. 3. DCV ventilation. 4. Relocated closet. 5. Reservice vents. 6. Cooker extract ducted to outside. 7. Fireplace reopened.

diameter of the original chimney flue could be considered. Crucially, all ventilation must be independently audited and the first flats refurbished independently monitored to ensure quality is delivered and lessons learned. These works would be complemented by provision of better communal facilities (for example, laundry, social, and communal) which could remove much of the moisture being generated in each flat,

while providing significant social benefits. In each case, the focus must be holistic and centred on wellbeing and occupant health instead of speed, cost or even a lower building energy rating (BER).

Beneficial change to priorities of an energy efficiency retrofit

Much of the current dialogue between Dublin City Council and the tenants of Oliver Bond House appears to relate to the extent of the works that are believed to be necessary to ensure conditions in the complex are judged acceptable. In 2022 the council was seeking to enlarge flats at a ratio of two new flats for every three existing, and to carry out significant energy efficiency works (to address unsanitary conditions and fuel poverty). The estimated cost of these works was so high that the council have suggested that it could take as long as 15 years before the substantive works are completed. The tenants responded that a delay of this duration was unacceptable and made clear that the proposed works should be planned so as to minimise negative impacts on their strong community (as might happen if, for instance, substantial numbers of tenants were decanted to facilitate the works). The authors are aware (at time of publication in early 2026) that the council's plans may well have changed since.

It should be clear from this chapter that many of the issues contributing to unsanitary conditions in Oliver Bond House are not to do with size and can be addressed, even predicted. If the primary focus of the proposed project were shifted from (a) size increases and deep retrofit to (b) maintaining community while implementing a modest retrofit that ensured sanitary conditions and enhanced thermal comfort, a different kind of retrofit project would surely emerge. The authors believe such a project would have lower financial costs, enabling the council to secure funding and commence work much sooner than currently estimated. It would also have a lower impact on the state's housing crisis and its increasingly constrained carbon budget.

Shared responsibility and robust approaches

> Even though multiple causes and shared responsibility may disappoint or confuse, the building physics of surface condensation is actually well understood and unambiguous. It becomes clear that reducing the risk of surface condensation to acceptable levels requires agreement, cooperation and action by owners and residents. (Little, 2021, p 2)

The responsibility for the current conditions within Oliver Bond House cannot be solely laid on tenants or landlord. However, to understand and respond successfully to the problems manifested, all parties, including council, government, and tenants, need to (a) be better informed by building science and standards, (b) acknowledge the systemic, reinforcing nature of many of the factors, and (c) support research and dialogue.

Strategies should be holistic and consider the impact of interventions at room, flat, block, and estate level. Data gathering, tighter specifications, works supervision, independent commissioning of systems, and post-occupancy monitoring will ensure better conditions, lower energy bills, and happier, healthier tenants in Oliver Bond House. The authors are convinced that big budgets and deep retrofit are unnecessary to secure the most significant health and energy efficiency benefits.

Lessons learned here can have value nationwide. It is conceivable that information such as that presented in this chapter could also be incorporated into a simple but useful illustrated guide that could be distributed to social housing tenants in Dublin and beyond.

Notes

[1] 'If you have damp and mould in your home you're more likely to have respiratory problems, respiratory infections, allergies or asthma. Damp and mould can also affect the immune system'. www.nhs.uk/common-health-questions/lifestyle/can-damp-and-mould-affect-my-health

[2] BS 5250 (2021) Management of moisture in buildings – Code of practice. https://knowledge.bsigroup.com/products/management-of-moisture-in-buildings-code-of-practice-1

[3] ISO 13788 (2012) Hygrothermal performance of building components and building elements – Internal surface temperature to avoid critical surface humidity and interstitial condensation – Calculation methods. www.iso.org/obp/ui/es/#iso:std:iso:13788:ed-2:v1:en

[4] Psychrometric charts are excellent tools for understanding the relationships between the various parameters of air and relative humidity. See Annex G of BS 5250 (2021).

[5] Using validated finite element analysis software applications, such as Psi-Therm.

[6] It is always the case that a reduction in convection across a surface or a junction will reduce its surface temperature, compared to the surface temperature on an identical surface or junction which has higher air flow rates across it.

[7] IS EN ISO 6946 (2017) Building components and building elements – Thermal resistance and thermal transmittance – Calculation method.

[8] IS EN ISO 6946 Annex A.1, for surface resistance calculations, the convective coefficient (h_{ci}) is given as 2.5 W/(m^2K) for horizontal heat flow.

[9] Non-ventilated and semi-ventilated cavities are given an equivalent thermal conductivity based on a calculated thermal resistance in accordance with ISO 6946:2017, which includes surface emissivity values, and assigned as quasi-solid components in the calculation.

[10] IS EN ISO 6946 (2017), Annex C Surface Resistances, C.1 Plane surfaces.

[11] This is because there is a functional relationship between the moisture content of a building material and its Thermal Conductivity. The impact of changing moisture levels on heat flows (U-values, linear psi-values, and so on) across a year can be significant, particularly in poorly insulated traditional buildings. Invasive site surveying and certified laboratory test data would be necessary to conclusively confirm certain values.

[12] DIN stands for the *Deutsches Institut für Normung* (German Institute for Standardisation), a national organisation that develops and publishes technical standards.

[13] Thermal model results were for a wall buildup as found in Flat A, modelled at the junction of the ceiling and rear external wall with galley, inside to out; gypsum plasterboard, 38 mm mineral wool, 5 mm lime plaster, 20 mm cement render, 300 mm 'clinker' concrete, 25 mm external render.

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SEVEN

Tensions and solutions in using open data for studying urban health and environment

Kevin Credit

Introduction: Open data and urban health

Currently, cities face a number of important, interlinked environmental and social challenges that impact the health and wellbeing of their residents. Air quality, ambient noise, the form of the built environment, and access to urban green and blue space have measurable impacts on physical and mental health outcomes (Lindström, 2008; de Nazelle et al, 2011; Hanigan et al, 2019; Callaghan et al, 2021; Kabisch et al, 2021; Soares et al, 2022). Furthermore, the layout of urban land use and transportation systems facilitate access to health services, community amenities, healthy food outlets, and employment opportunities, all of which influence population health and foster better life outcomes (Wrigley et al, 2002; Shi et al, 2005; Starfield et al, 2005; Clampet-Lundquist and Massey, 2008; Talen and Koschinsky, 2014; Andersson et al, 2018). Unfortunately, in most cities the spatial distribution of

environmental health hazards – such as air pollution – and access to social resources and amenities is significantly structured by race, age, and class, which in turn are often structured and maintained by urban development patterns, institutionalised environmental racism, and political-economic relations (Kain, 1968; Schulz et al, 2002; Mobley et al, 2006; Vojnovic and Darden, 2013; Hahn, 2017; Vaz et al, 2017). This means that in order to foster healthier neighbourhoods and cities, policy makers, researchers, and citizens need a better understanding not only of the fine-grained spatial patterns of health hazards and resources, but also how these patterns relate to the underlying urban form, demographics, and socioeconomic conditions of specific areas, as well as the spatial processes that produce these patterns and the forces that underpin them (that is, capital, political power, and social relations).

Of course, generating insights that can lead to sustained action ('wisdom' in the parlance of Adler (1986) and Weinberger (2011)) on these interlinked phenomena is not a trivial task. Wisdom fundamentally relies on high-quality, temporally and spatially granular data to support an understanding of baseline conditions, which can then be critically analysed and interpreted to produce actionable knowledge (Kitchin, 2022). Given the complexity of the overlapping connections between the social, natural, and built environments and health outcomes in urban areas, the data required to disentangle these relationships involve a number of different subjects, producers, and owners that are often disconnected, both administratively and conceptually. And while the recent advent of 'big' data in both the private and public sectors has the potential to provide useful new information for studying dynamic aspects of urban health and environment, many of these resources do not have clear quality standards or are not as easy to access as they proport.

Open and linked data have the potential to overcome these problems by providing a common resource for citizens, academics, and governments to use to improve scientific research

on urban health and environment, democratise knowledge, and influence more equitable policy decision-making (Janssen et al, 2012). In a larger sense, we can conceptualise open data not merely as technical artefacts but as social infrastructures of care that can nurture trust and collective capacity to act on urban health inequities (Manzo and Grove, 2024). However, there are tensions inherent in some of the key dimensions of open data sources – as they are currently structured – that make it difficult to unlock the full potential of these data for generating actionable insights for improving urban health and wellbeing. Thus the purpose of this chapter is to describe a conceptual model, based on the existing literature, that exposes the interlocking tensions between openness, public ownership, and quality in open data resources and then to use that model to analyse the most common existing types of open data (with examples in the Irish context) related to urban health and environment in the Irish context. This analysis flows into a discussion of the potential solutions to these challenges, which will provide a better understanding of the ways in which open data resources can be improved to support more equitable planning, research, and resource targeting to foster healthier neighbourhoods and cities.

Conceptualising open data: dimensions and tensions

While early definitions of open data primarily focus on *free use*[1] (Pollock, 2006), defining this concept is not necessarily straightforward (James, 2013; Kitchin, 2022). In reality, data 'openness' exists along a continuum, with multiple constituent dimensions, including legal openness, technical openness, ownership, and others. Some data may be open to use or view but not to analyse or download in bulk,[2] while other data may be free to access only in some spatial or temporal aggregation. Since these 'less-than-open' resources can still be used to analyse urban health and environment, it is necessary to develop a conceptualisation of open data that recognises the

continuous nature of data *openness*, alongside other important facets (Kitchin and Mutter, forthcoming).

In fact, as the literature on open data has evolved – and more open data resources have been introduced – scholars have identified several additional dimensions of data that are critical for assessing their openness and usability in democratising knowledge and improving research and policy, which are summarised in Table 7.1: ownership, openness, and quality.[3] Given the large role that governments and other public organisations play in funding and developing open data, much of the research in this area has focused explicitly on open government data initiatives and their potential for improving democratic processes (Attard et al, 2015; Ruijer et al, 2017; Lnenicka and Nikiforova, 2021). Some have even defined open data directly in terms of public funding (Janssen et al, 2012). While this is perhaps too narrow, it highlights the importance of resource provision and *ownership* for assessing data openness. To that end, Kitchin et al (2015) outline 14 specific funding models for open data that help to elucidate the variety of links between organisation types, goals, and (potentially) data collection and dissemination strategies. Even within public sector institutions, open data may be funded by different mechanisms – for example, core funding, public/private partnerships, or data consortia – that influence the accessibility and ultimate use of these resources.

The identification of the importance of organisational roles and funding structures in collecting and delivering open data has also led to a deeper conceptualisation of the institutional data 'ecosystems' – the 'complex socio-technical network that enables collaboration between autonomous actors in order to explore data' that 'provide an environment for creating, managing, and sustaining data sharing initiatives' (Oliveira et al, 2019) – that open data themselves are situated within. On this view, open data have to be understood in the context of the larger organisational systems – and networks – in which they are produced and

Table 7.1: Dimensions of open data

Dimension		Description	Issues/types
Openness	Collection	Who are the data collected from?	Access, redistribution, reuse, attribution, licensing
	Dissemination – data as a 'service'	Who is publishing the data, and how?	Data warehouse, interactive dashboard, or curated 'story' map
	Format	Ability to link to other data?	Machine-readable, (non)-proprietary, metadata
Ownership	Ownership and funding	Who is funding the collection and dissemination of the data? Who owns the data?	Government, academia, business, non-profit organisations, individuals
Quality	Quality	Are the data precise and accurate?	Collection methods, accuracy, missingness, update frequency, structure
	Purpose fit	Are the data useful for answering the research and policy questions at hand?	Temporal and spatial granularity, representatives, bias, sufficiency, design purpose

used. Helpfully, this body of work has identified a number of different organisational models for open data ecosystems that highlight the critical importance of understanding the constituent institutional perspectives, roles and relationships, funding mechanisms, platform architecture, and the nature of the data when evaluating ecosystem success (Dal Bianco

et al, 2014; González-Zapata and Heeks, 2015; Oliveira et al, 2019; Runeson et al, 2021; Kitchin, 2022).

From a practical standpoint, the design (and ownership) of the technological platforms for disseminating open data and the collection process, formatting, and quality of the data themselves play important roles in determining their ultimate usefulness, and thus the success of a given open data ecosystem (Ruijer et al, 2018). For the most part, governments view and develop their open data as a discretised 'product' that is published on a warehouse-type platform with minimal conceptual context or opportunity for interaction or co-production with users (Sieber and Johnson, 2015; Kitchin, 2022). However, open data are much more impactful when conceptualised as a part of a larger 'service' that recognises their use for specific goals and places them within a substantive context (Gurstein, 2013; Anttiroiko, 2021; Kitchin, 2022), including providing the requisite contextual metadata for a particular dataset (Kubler et al, 2018), as well as employing more interactive or curated platforms, some of which provide for user feedback or direct data entry and co-creation.

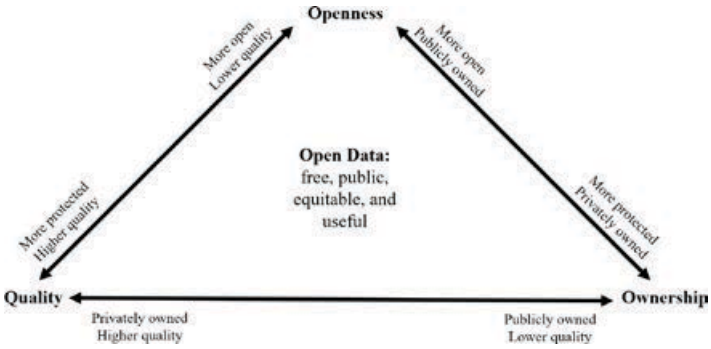
Of course, the characteristics of the data themselves are also critically important for supporting their usability as a service. This means not only ensuring basic quality standards and lack of error – which may not be readily apparent from sources of 'big' data that are generated automatically as part of administrative processes – but also in providing the data in machine-readable formats that can be easily linked to other datasets, updating at regular intervals, and providing data from the primary source rather than in aggregation (Berners-Lee, 2009; Miller, 2010; Attard et al, 2015; Sunlight Foundation, 2017; Lnenicka and Komarkova, 2019; Kitchin, 2022). Importantly, data *quality* involves not only the bare technical features of the data but also how useful they are for achieving a given purpose or understanding a given problem (Donker and van Loenen, 2017). Thus temporal and spatial granularity play a salient – and somewhat understudied – role in the quality of open data,

as some highly rated open data portals foreground aggregated reports or summaries rather than individual data (Wang and Shepherd, 2020).

The open data triangle

While the normative continuum of the various forms of open data has been recognised (whether implicitly or explicitly) in the existing literature, the ways in which these dimensions stand in direct tension with one another has been relatively less explored. By way of analogy to Campbell's famous 'planner's triangle' (1996), which describes the conflicts inherent in the three sustainable development goals of social justice, economic development, and environmental protection, Figure 7.1 shows a conceptual model for thinking about the tensions inherent in achieving the highest ideals of open data as described by the Open Knowledge Foundation and Sunlight Foundation (among others). Each of these features can be thought of as existing on a continuous scale from 'more open', 'publicly owned', or 'high-quality' to 'more protected', 'privately owned', or 'low quality'. On the left side of triangle we see a tension between data quality and openness. In general, this arises because

Figure 7.1: The triangle of conflicting dimensions for achieving the ideal standard of open data



organisations or companies with larger financial resources for data collection and management tend to create data that are more highly curated, better quality, and more targeted to specific purposes. Businesses whose revenue model is built around providing high-quality data will have little incentive to make those data freely accessible. We can also observe the conflict between openness and quality in public institutions operating without a direct profit motive: either due to privacy concerns (for example, protected Census microdata) or due to 'cultural barriers' in public institutions, such as where an agency or department that takes particular pride in a well-curated dataset is loathe to release it openly due to risk aversion or fear of public scrutiny (Meijer, 2015).

The tension described on the bottom of the triangle between public ownership and quality is related: many publicly owned data have systematic errors or bias due to the fact that the data are produced as a by-product of an administrative process rather than being designed explicitly for scientific analysis (Kitchin, 2022). Likewise, these data are often not purpose fit for answering the pressing substantive research questions of interest. For instance, local governments and municipalities sometimes lack the technical or human capital to link and analyse existing data sources on administrative processes for particularly pressing or understudied aspects of urban development, such as building-level energy characteristics, leaving potentially useful data ungenerated (Kontokosta, 2018).

The final tension, on the right side of the triangle, is between public ownership and openness. This trade-off is often taken for granted in the open data literature as 'open data' and 'open government data' are sometimes treated as synonymous. However, it is important to highlight that, even in public organisations, 'openness' occurs along a spectrum with regard to the extent to which a given agency or group views data as a service rather than a product (Kitchin, 2015). In some cases, government-owned data may not be fully open due to a lack of *platform* openness (for example, when provided through a

proprietary platform such as ESRI's ArcGIS Online). Similarly, some public-facing third-party organisations that advertise themselves as 'open' platforms for collecting crowdsourced data may not provide the data in aggregate for download and use without a subscription, closing the dissemination process.

Types of data for healthier cities

As in many domains, open data have the potential to be useful for studying the contemporary environmental, social, and health-related issues that cities face in the 21st century (Kontokosta, 2018). However, while some previous work has outlined the general types of open data available for urban analytics in general, there is relatively little research on, or delineation of the types of, open data that may be used specifically for studying social, physical, and environmental determinants of health in urban areas (Arribas-Bel, 2014; Han et al, 2023).

Table 7.2 presents a categorisation of common data types used for studying health and environment in Ireland, along with specific examples and links. Crowdsourced data are generated or volunteered by individual members of the public (such as OpenStreetMap). Citizen sensor data describe services that allow individuals to collect data using either their smartphones or a specialised sensor for detecting and monitoring local conditions, for example, air quality or traffic.

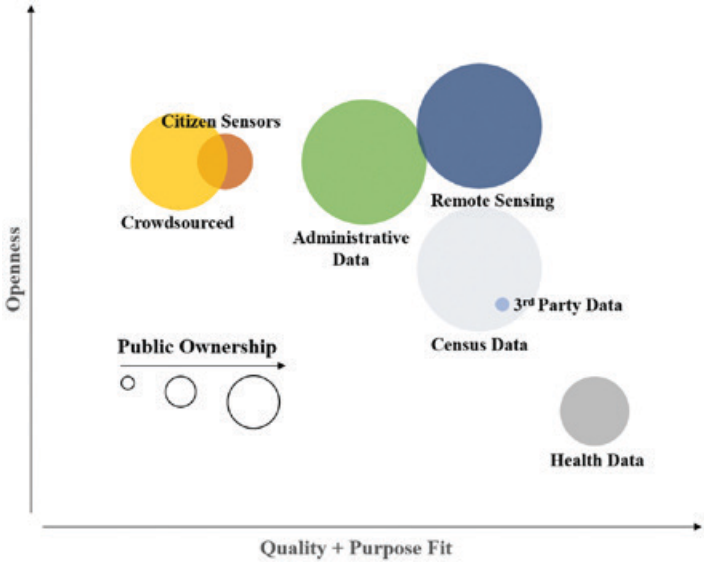
Administrative data are produced as an integral part of ongoing government processes or programmes and are published on open data portals, involving a diverse range of topics such as bikeshare usage, fire and ambulance calls, dog fines, and so on. Remote sensing data generally involve sensors deployed on satellites for detecting large-scale land-use patterns, vegetation, air quality, and temperature. Census data and other national statistics are collected as a part of official government statistical programmes, providing information on a variety of social, demographic, economic, transportation,

Table 7.2: Types of data for studying urban health and environment, with examples in the Irish context

Type	Description	Examples (w/Links)
Crowdsourced	Data generated or volunteered by members of the public	OpenStreetMap – community street mapping service
Citizen sensors	Data generated by members of the public using sensors	Clean Air Together – citizen air quality measurements (EPA project) Sensor.Community – citizen air quality and noise measurements (global open project) We-Count – citizen live traffic monitoring
Administrative data	Data generated through administrative processes and published online; often 'big' data	Dublinked – Open Data Portal for Dublin DATA.GOV.IE – Open Data Portal for Ireland
Remote sensing	Data generated by satellite sensors	Copernicus – EU remote sensing program
Census data	Data collected as a part of the national government Census or other official statistics	Central Statistics Office (CSO) – statistics agency for Ireland Eurostat – statistics agency for the EU
Third-party data	Data collected by private companies or other third parties	Vision-net – individual business location and financial data Google Environmental Insights Explorer – street-level air quality data
Health data	Data on population health outcomes, hospital visits, GP visits, prescriptions, etc.*	eHealth Ireland – Open Data Portal for Health Service Executive (HSE) in Ireland Health Data Research Innovation Gateway – Open Data Portal for health data in the UK European Environment and Health Atlas – curated data dashboard for health and environment in the EU

Note: * Generally is not publicly available in Ireland

Figure 7.2: Graph showing the general values of openness, public ownership, and quality for the identified health and environment data types



and housing features. Third-party data are collected by private or non-profit entities on a variety of topics, and are generally proprietary in some form; however, sometimes private entities partner with governments to produce open data, as in the case of the Google Air View project in Dublin. Finally, health data refers to granular information on population health outcomes, access to health services, and health system usage. Figure 7.2 plots these data types (roughly) according to their position on the three axes of the open data triangle.

In general, there is a negative correlation between openness (and public ownership) and quality, as the triangle describes. However, we can also see that certain types of publicly owned data, such as remote sensing and Census data, are both relatively open and high quality. Perhaps most importantly in the Irish context, the graph identifies that the majority of the extremely

useful population health data remain quite closed despite their public (or quasi-public) funding and collection through the Health Service Executive (HSE).[4] In this case, the UK's Health Data Research Innovation gateway provides a useful roadmap for opening health data that should be applied in Ireland.

Unlocking the centre of the triangle: policy and practice solutions

If housing and health are to be treated as interdependent rights, then data must also be treated as a commons that enables those rights. Fully free, public, equitable, and useful data can become a mechanism of collective care – helping communities see, measure, and respond to the environmental conditions that shape their wellbeing – and can be used in a number of ways. For instance, crowdsourced data can set a context for understanding the broader geographic settings of neighbourhoods and individual residential locations and their environmental conditions (for example, proximity to major trafficways or point source polluters). Citizen sensors and third-party data can collect and monitor more granular information on things like indoor and outdoor air quality, which is often difficult to obtain from any other source. Administrative and remotely sensed data provide information on features that promote health and wellbeing such as proximity to green and blue space, while Census data allow us to understand the social and demographic characteristics of urban areas, and thus potential social vulnerabilities and inequalities in the distribution of environmental burdens and benefits. And finally, open data on population health outcomes give researchers the ability to measure and verify the empirical impact of negative environmental exposures.

Unfortunately, one of the primary conclusions of this chapter is that more protected and privately owned data tend to align with higher levels of quality and purpose fit, while more open, publicly owned data tend to be lower in quality and purpose fit. From a 'City of Care' perspective

(Manzo, 2023), this is not a good outcome: data justice is a form of care justice. Therefore, ensuring that the information needed to protect public health is accessible, transparent, and used for the common good is critically important. If we are going to use open data to actually help understand (and thus solve) the pressing social, environmental, and health-related problems present in cities, we need to work to unlock the centre of the open data triangle to create *high-quality*, *publicly owned*, and *open* data.

Campbell (1996) offers a way to think about solutions in the sustainability context: all of the three tensions in the triangle are linked to one another, so by pulling on one thread in the triangle we can affect them all. In this way, increasing the quality and purpose fit of existing publicly owned data – by linking it with other related data and thinking critically about the design, use, and bias of administrative data – without making it more protected will necessarily reduce some of the tensions between openness, ownership, and quality. On the other hand, increasing the openness of high-quality data, where possible – whether through public incentives to private companies or mandates to government providers to release high-quality data – can help accomplish these same goals. This applies particularly to third-party and health data in the Irish context. While there is a difficult line to walk between privacy, market-orientation, institutional culture, and openness, it is possible to strike a balance. For example, the City of Chicago passed a 'Transportation Network Providers' Ordinance in 2014[5] that requires rideshare companies and taxis to report each of their individual trips – aggregated by 15-minute intervals and Census tract centroids – which are then published regularly on the city's Open Data Portal.

Another critical strategy to increasing the openness – and truly public ownership – of data is to encourage public data providers to think about their data as a *service* rather than a product. This means providing data within its larger substantive context, with opportunities for interactivity, links to other

related data, feedback, and opportunities for co-creation with citizens. It also means making the 'quasi-private' data currently available only on proprietary platforms truly public by opening the dissemination infrastructure for publicly owned or collected data. While the technological platforms for viewing or releasing the data may still be proprietary by necessity, the granular data themselves should always be made available for download in a non-proprietary format for free. In cases where third-party providers take crowdsourced or citizen sensor data and aggregate it for their own purposes, there should be legal requirements to release it in downloadable form back to the public (with requisite considerations for privacy concerns).

Despite the tensions inherent in the open data triangle, I think it is possible to promote truly open data with (1) an active national regulatory scheme and (2) better training, specialist positions, and funding for local government data scientists. Given the potential benefits of open data for improving research, increasing government transparency, and influencing more equitable policy making to create healthier neighbourhoods and cities, this effort is vitally necessary.

Notes

[1] 'Data is open if anyone is free to use, reuse, and redistribute it – subject only, at most, to the requirement to attribute and/or share-alike' (Pollock, 2006).

[2] For instance, Google (2023) allows users to view or embed any Street View image for their own purposes, but expressly restricts '[c]reating data from Street View images, such as digitizing or tracing information from the imagery' or '[u]sing applications to analyze and extract information from the Street View imagery'.

[3] The categories here are not rigid, and can overlap; for instance, proprietary aspects of dissemination platforms may fall under 'ownership' rather than 'openness'.

[4] In Ireland, the structure of the health system complicates this situation somewhat. Healthcare is not nationally provided, as in the UK, so, for example, GPs (and thus their data) are treated as private entities. A national mandate for data collection and dissemination at all levels of healthcare is necessary to centralise and streamline health data provision. However, it should be noted that most data currently collected by the publicly funded

HSE and Department of Health are generally also not made open to the public at any useful granularity.

5 More information on the ordinance can be found online. www.chicago.gov/city/en/depts/bacp/provdrs/vehic/svcs/tnp.html

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EIGHT

Grassroots citizen science and indoor air quality networks: tools for understanding inadequate social housing conditions

Jack R. Lehane and Jeffrey Roe

Introduction: Housing, health, and the power of citizen science

With urban populations expected to increase to 68 per cent of the world's population by 2050 (Zhou et al, 2019), the relationship between health and the built environment is foregrounded as an increasingly critical one. Housing forms a key determinant of urban health, whose conditions are consistently shown to have profound links to the health and wellbeing of its residents (Pevalin et al, 2017; Holding et al, 2019; O'Connell, 2022). While housing standard upgrades are already associated with improved social and health outcomes such as thermal comfort, mental and respiratory health (Poortinga et al, 2017; Ziersch et al, 2017; Swope and Hernández, 2019), so too are housing insecurity and inadequate environmental conditions linked to poor health

outcomes and unhealthy behaviours. With correlated health outcomes spanning a diversity of environmental characteristics such as the suitability, condition, layout, and location of housing stock, these interrelated determinants speak to wider social inequities (for example, Martens et al, 2014) and, by extension, health inequities that can persist across cities.

Grassroots citizen science is uniquely placed to interrogate this relationship, as its democratisation of data can incorporate local knowledge (Kelly et al, 2020; Göbel et al, 2021; Oudheusden and Abe, 2021), which can in turn enable access to more comprehensive and nuanced understandings of environment and housing. Helping residents document what they already know through lived experience, the use of low-cost environmental sensors in citizen science has gained traction as an accessible and cost-effective pathway to assess air quality (AQ) data (Brussel and Huyse, 2018). This relevance is twofold for cities within which inequitable or marginalised built environment contexts may exist, the active measurement of which could empower citizens to investigate health determinants in social housing, whereby housing conditions are not exclusively abstract 'outcomes', but ongoing impacts on their own health (Campos et al, 2021; Klimczuk et al, 2022) that affect dignity, wellbeing, and right to the city.

According to the Meikirch model of health definition, 'Health is a state of well-being emergent from conducive interactions between individuals' potentials, life's demands, and social and environmental determinants' (Bircher and Kuruvilla, 2014, p 368). Situated where such social and environmental concerns overlap, this chapter therefore frames how the extended role of grassroots indoor AQ networks can serve as a care-oriented infrastructure to critically engage health inequities, from which both current and future housing policy and praxis can be better enabled. It proceeds by outlining the democratising potential and limits of AQ data at the citizen level, then turns to the 'Sensor.Community' precedent and the Irish case of Tog Hackerspace in practice. Finally, it reflects

on future directions for policy makers, local government, educators, and community stakeholders alike, whereby citizen-sensor networks as 'networks of care' (Manzo, 2023) can be engaged, mobilised, and sustained in the pursuit of more just and health-equitable futures for the betterment of all.

Democratising data: citizens, sensors, and social housing

Citizen science, as a collaborative approach to research involving the public in scientific projects, has gained significant attention in recent years for its inclusive approach and potential to foster social innovation and community engagement. Recognised as a tool for building partnerships to broaden its impact through long-term community documentation, problem source identification, and advocacy (Dosemagen and Parker, 2018), it can foster place-based collaborative efforts between local community groups, schools, and universities in urban redevelopment (Haanstad et al, 2020). As such, it provides a means for wider publics and non-institutional communities to participate in knowledge generation around environmental and social challenges such as those connected to the Sustainable Development Goals, though difficulties exist in measuring its impact (Sprinks et al, 2021). Attempts to address these challenges include consolidated impact assessment frameworks (Wehn et al, 2021) and open evaluation to harmonise otherwise diverse citizen science activities (Kieslinger et al, 2018). Despite such frameworks and guidelines providing a structured approach to assessing citizen science effectiveness and impacts, a lack of consensus remains in certain sectors as to its potential processes and applications, not least because of how associated terms such as 'sustainability' should be defined and operationalised in a given context. This matters for social housing because evaluative frameworks can shape which forms of knowledge and which participants are recognised as legitimate partners in both evidence production and decision-making.

One such established definition, posited by the Brundtland Commission in 1987, states that sustainable development 'meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland, 1987, p 37). However, data increasingly show that the populations at greatest risk from unsustainable growth patterns are often those who contribute least to the same (see, for example, Maantay, 2007). Indoor AQ as a key health indicator can reveal housing conditions that reflect how we organise our cities and, thereby, their degree of 'just sustainability' (Agyeman et al, 2003, p 5) as a driver for population health (in)equities. AQ measurement can illuminate insights into the socioeconomic and cultural conditions that shape health, with exposure to air pollutants linked to predispositions to respiratory and cardiovascular diseases (Liu et al, 2019), as well as other adverse health outcomes. Deemed essential in controlling exposure to air pollution (Galán-Madruga, 2020), AQ monitoring networks as a form of citizen science have become increasingly important across both public and private sectors and, more broadly, the cross-sectoral approaches necessary to address multifaceted subject matters such as health and sustainability alike. However, challenges in data representativeness, whether it be sectoral, geospatial, or socioeconomic, raise questions about the reliability and efficiency of the network (for example, Schade et al, 2019; Zheng et al, 2011), underscoring the importance of inclusivity within them. It is how we interrogate these housing conditions that can serve as a wider reflection of how we organise our cities – revealing patterns in city planning, urban governance, and associated health disparities. As demonstrated by D'Ignazio et al (2019), citizen-led sensor deployment embodies a unique potential to transform invisible infrastructures into legible interfaces for civic pedagogies and meaningful oversight, echoed further in broader civic media and technology frameworks (for example, Gordon and Mihailidis, 2016), emphasising connection through common civic purpose. This is seen in extant and emerging examples

such as the Sensor.Community (formerly 'Luftdaten.info') and Tog Hackerspace, respectively, whose inclusive and grassroots approach might help address such gaps and unlock new insights within city design, air pollution, and socioeconomic impacts.

Tog Hackerspace and the Sensor.Community in Ireland

This section now turns to the Sensor.Community precedent and the Irish case of Tog Hackerspace in practice. Originating in Stuttgart, Germany, Sensor.Community is an international AQ monitoring initiative that connects individuals and communities in collective AQ data assessment, driving collaborations with public, private, and grassroots organisations alike (Castell et al, 2021). Within the City of Care framework (Manzo and Grove, 2024), citizen-led data practices such as Sensor.Community can be understood as 'infrastructures of care' – grassroots systems that connect health, housing, and environment through collective responsibility. At the time of writing, the contributor-driven sensor network has scaled to 75 countries with approximately 11,000 sensors worldwide (Sensor.Community, 2026). Their mission and goals have been further advanced through the adoption of the initiative by non-profit organisations, accelerated by the availability of low-cost sensors as an accessible technology. One such case is Tog Hackerspace in Dublin, Ireland – from the Irish/Gaelic verb *tóg* meaning to 'build' or 'construct' – which disseminates knowledge on low-cost DIY sensor building through public workshops (Figure 8.1).

Tog Hackerspace's roots can be traced back to the Dublin chapter of the international 2600 hacker network in Dublin City. Open to all levels of experience, members would gather each month at the Molly Malone Statue on Suffolk Street, before commuting together to another meet-up location to exchange knowledge of all things computers, privacy, security, telecoms, and communications. In December 2008, a small group from this Dublin 2600 chapter travelled to the Chaos

Figure 8.1: Workshop participants co-construct enclosures for environmental sensors, with wiring, tubing, and assembly tools visible in the workspace, July 2023



Source: Photograph by Tog Hackerspace; informed consent obtained

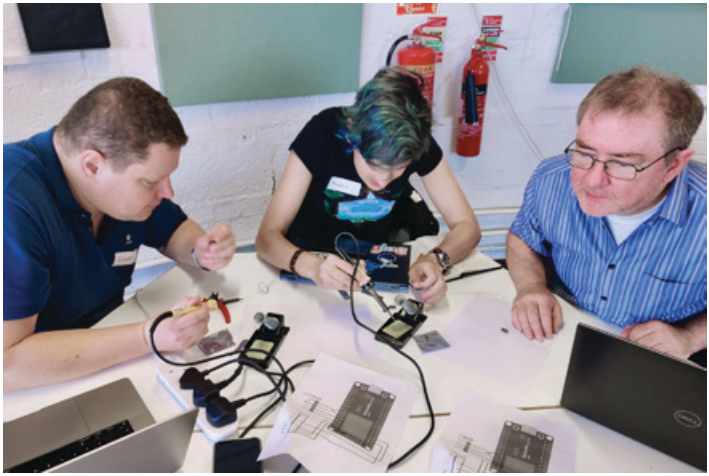
Communications Congress in Berlin, Germany, where visits to 'c-base' and other hacker collectives introduced them to the hackerspace model as a convivial, practical, community-driven infrastructure for learning and experimentation. Within three months, they had secured their own community space and started hosting events and workshops in the pursuit of

knowledge around new and old technologies through peer-to-peer learning and exchange. Now with over 100 members, Tog provides free beginner-friendly public workshops ranging from Arduino Internet of Things (IoT) projects and building Sensor.Community AQ nodes to sewing, soldering, welding, and even household basics such as wiring a plug – all designed to nurture practical competencies and demystify technology in the process. The hackerspace provides the Dublin community access to fabrication tools such as soldering stations, test equipment, 3D printers, and laser cutters, thereby creating a shared technical commons that would otherwise remain inaccessible to most individuals.

In the context of the Sensor.Community, Tog's hands-on workshops guide participants through assembling their own AQ sensor, where they combine off-the-shelf components (such as a 'BME280' environmental chip, particulate matter sensor, and microcontroller) and then house them in 3D-printed weatherproof cases. These devices (approximately the size of a small electrical outlet in a house) can then be mounted across a variety of living and working locations. Sensor nodes have also been installed in Tog's own workspace to capture dust and other particulate levels created in their making process. These data are then continuously uploaded to the Open Sense Map platform for public access, demonstrating how the same devices can be situated across a range of key indoor locations, whether they be balconies, bedrooms, common areas in apartment complexes, living rooms, near known damp patches, stairwells, and windowsills, or additionally on an exterior wall to assess the relationship between indoor and outdoor conditions. In doing so, citizens are empowered to actively participate in their own environment through monitoring and upskilling, and can collect AQ data in areas that may be underrepresented or excluded from official or even continuous monitoring, whether it be inner-city housing estates or wider areas with limited granularity or coverage by public networks.

In practice, these low-cost sensors are sensitive enough to both detect and quantify everyday variations in environmental conditions. Whether these are spikes in particulate matter during particular activities such as fabrication or cooking, periods of poor ventilation, or times when outdoor pollution intrudes indoors, they can make visible AQ dynamics in, around, and through homes. Community engagement measures in the south-west inner-city area of Dublin 8 further validate the importance of this, such as the initial assessment carried out by the Robert Emmet Community Development Project (RECDP) in Spring 2021, which examined environmental conditions and maintenance processes of the Oliver Bond House complex in collaboration with residents (RECDP, 2021). A subsequent resident-led survey, analysed by Manzo and Grove (2024), identified significant issues relating to maintenance and repairs, with 65 per cent of residents reporting that inadequate housing conditions were having negative impacts on their health and wellbeing, and 52.9 per cent reporting overcrowding, humidity, mould, or dampness – all of which form key indicators of poor indoor AQ, increased predisposition to respiratory illness, and wider impacts on residents' health and dignity. The significance of Tog Hackerspace is, therefore, underscored by its potential to bridge gaps in official data collection, as revealed by the qualitative patterns that indoor AQ networks can reveal, both legitimising and addressing resident reports of humidity, condensation, mould growth, and potential impacts on respiratory health (Creane et al, 2024, p 7; 2022). This is because DIY sensor networks embody the ethics of care by redistributing expertise (Figure 8.2) and empowering residents to document conditions that affect their dignity and health; providing a de facto network infrastructure as a critical component to reveal data asymmetries and, by extension, inequities that may persist at both city and community levels. Moreover, they posit a template for understanding the bottom-up motivations crucial for effective and sustained public engagement for such data gaps, where concerns about

Figure 8.2: Participants solder components with shared tools for Sensor.Community nodes and Arduino IoT devices, July 2023

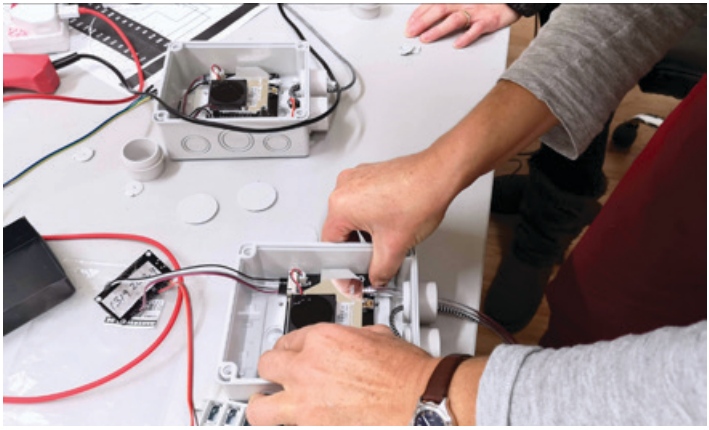


Source: Photograph by Tog Hackerspace; informed consent obtained

health risks, frustration with incomplete or contested data interpretation by local authorities, and the desire to document concerns that affect dignity and daily life form key motivators.

DIY low-cost environmental sensors, such as those advocated by Tog Hackerspace, offer one of many practical routes to document and validate such concerns in more systematic ways. Although low-cost sensors can raise technical challenges around performance, calibration, interpretation, and validation amid wider data quality issues in the built environment, they can still help identify patterns, whether it be high relative humidity consistent with damp risk, limited changes after repairs, or the recurrence of problems despite ventilation practices. Rather than mere data points, these sensors (Figure 8.3) represent the lived experience of care and neglect in the built environment – an empirical expression of the City of Care (Manzo, 2023). In supporting citizens to build low-cost DIY monitoring devices and install them on the walls of their houses or

Figure 8.3: Tog Hackerspace participant assembles a sensor during a hands-on sensor workshop, October 2019



Source: Photograph by Tog Hackerspace; informed consent obtained

adjacent buildings, AQ sensor networks such as those enabled by Tog Hackerspace thus do not simply provide isolated empirical observations, but empower citizens with objective evidence when engaging with their own environments. This serves as a 'missing link' to better allocate resources for targeted interventions, advocate for and secure maintenance improvements and repairs, inform other environmental measures and regeneration debates, and, critically, even recast perspectives within and without local authorities, researchers, and communities for structural interventions. More broadly, when combined with survey data and qualitative accounts of health impacts, sensor networks offer a valuable means of linking environmental measurements to wider debates on health equity and environmental justice in urban contexts.

Networks of care and the 'network effect'

In the context of ageing housing stock and AQ crises in Irish social housing, grassroots AQ monitoring provides not only

environmental data but also evidence for healthier home design and maintenance practices, even demonstrating insights that could scale to wider population health outcomes. Given that it is still an emerging and evolving field, many cross-sectoral applications of grassroots indoor AQ sensing are still uncharted. However, its most substantial value likely becomes clear when treated not simply as a technical exercise, but as a networked social practice. The 'network effect' whereby the value of a product, service, or system increases the more people use it (Trabucchi and Buganza, 2020), holds true for grassroots AQ monitoring; increasing adoption, diffusion, and shared utility. More distributed participation of actors – residents, community groups, local authorities, researchers, civic initiatives, or beyond – embodies the potential to co-create more data points and perspectives for shared insights. However, this is not a claim solely to increased data efficiencies. Participants in Tog's workshops consistently emphasise the appeal of the hands-on format; building the devices themselves, rather than purchasing proprietary products, fosters a sense that the sensor is their own (Figure 8.4). It is understandable, repairable, and something they can share with others, rather than a black-box instrument reserved for specialists. They feel ownership and empowerment, and can experience the data as a form of evidence that backs up how they already feel about their air and housing conditions. And it is this perceived legitimacy that forms a core part of why they value the process. By fostering and sustaining increased interaction between both institutions and citizens, different knowledge forms (for example, expertise-based, tacit, and codified; Raunio et al, 2018) can be combined, redistributing expertise, and strengthening the visibility and legitimacy of evidence around environmental conditions and maximising shared outcomes. As posited within emerging frameworks such as the City of Care (Manzo and Grove, 2024), the embedding of such 'ethics of care' within urban governance is critical to sufficiently engage the public beyond standard engagement pathways.

Figure 8.4: Internet of Things (IoT) workshop during the How It's Made Festival: Demystifying IoT with the SCÉAL Collective in Balbriggan, County Dublin, Ireland, 2024



Source: Photograph by Paul Sherwood, Coalesce; informed consent obtained

This especially matters in public health and housing because health determinants, environmental or otherwise, are rarely evenly distributed; often experienced as cumulative burdens rather than isolated incidents. With healthcare increasingly recognised as a complex network of interactions and relationships (Mitchell et al, 2014), the extended role of these 'networks of care' (Manzo, 2023) to cut across sectors and bureaucratic jurisdictions remains a systemic challenge that is argued as proportional to its opportunity. Echoing a paradigm shift from value capture to value co-creation, these networks of care embody a unique capacity to widen the community of actors who can respond, co-creating often called for new pathways for coordination, learning, and problem-solving across organisational boundaries (for example, Young et al, 2017). Citizen participation, such as through Tog Hackerspace,

can evolve attitudes and intentions called for amid fast-approaching urban transitions, which 'will require new forms of collaboration at neighbourhood and city-level' (Lyes, 2025, p 2). Embedding citizen science into housing policy could form part of a broader Health in All Policies approach (Manzo and Grove, 2024) where environmental monitoring, social housing management, and public health are integrated. Such cross-sectoral cooperation could enable real-time responses to hazards like mould, damp, and poor ventilation that undermine both health and dignity toward more coordinated, cross-sectoral responses required as core elements of a more just urbanism rather than fragmented, case-by-case interventions themselves.

Conclusions: Policy, ethics, and the right to the city

AQ sensor networks are not just sources of data points, but material traces of both care and neglect in the built environment, with ethical and political implications for how housing is governed. In much the same way that the value of data can be founded on how they are used, so too can their use be valued according to the diversity of cross-sectoral actors they can bring shared insights to beyond their immediate domain. The intricate entanglement between health and housing underscores the critical role that grassroots citizen science networks such as Tog Hackerspace and the Sensor. Community embody in illuminating and addressing wider structural inequities in the built environment. Although local governments are increasingly turning to more inclusive and participatory models for technological solutions, such initiatives can still often prioritise market-led solutions over civil, social, and political rights (Kitchin et al, 2019). In considering that the concept of the right to a city is oriented toward the everyday needs of all inhabitants (Strüver et al, 2021), it follows that structural exclusion of any citizen group to address such needs, whether technological or otherwise,

would cause such theoretical currency to decay. As such, citizen-generated data should not replace institutional accountability, but rather complement it by embedding these grassroots monitoring systems within a City of Care model (Manzo, 2023). This requires formal partnerships between local authorities, researchers, and residents – ensuring that citizen science strengthens trust, transparency, and health equity, while also providing a clearer route for translating evidence into action. In doing so, this wider structuring could seed a redefining of ownership, responsibility, and empowerment of policy and action that citizens would otherwise solely be influenced by – cyclically redefining not just democratic approaches to data, sensors, or networks but, by extension, the city itself.

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Commentary on Part II: Evidence-based interventions on care, health, and housing

Rob Kitchin

After a couple of centuries of factual evidence being employed to inform statecraft, policy making and governance (Porter, 1995), one might think that evidence-based approaches to care, health, and housing would be a completely normalised, standardised, and routine set of practices. That extensive sets of data – particularly those generated within an instrumental, scientific rationale that is seemingly objective and impartial and favoured by policy makers – would be providing deep insights, better choices, and positive outcomes (Sanderson, 2002). What the four chapters in Part II highlight, however, is that the production and use of evidence for understanding and responding to social issues remains partial, fragmented, and political. Although care, health, and housing are all core societal concerns – and the delivery of each is framed by extensive sets of policies and large volumes of regulation and legislation, and they consume significant amounts of resources annually to deliver – we still lack adequate data and analysis to make sense of them, whether that relates to knowing what sustains healthy ageing in communities (see Chapter Five by Hannah Grove), or how mould and poor air quality persist in some

housing units (see Chapter Six by Joseph Little, Gearóid Carvill, and Andrew Lundberg, and Chapter Eight by Jack R. Lehane and Jeffrey Roe), or the relationship between environments and health more generally. Instead, there are very few *high-quality*, *longitudinal* datasets that are *openly accessible* for researchers and policy makers to utilise (see Chapter Seven by Kevin Credit). Somewhat paradoxically, in neoliberal states that promote data-driven operations, evidence-based policy making, and open government data, and that employ forms of new public management that emphasise the adoption by the public sector of corporate practices, including performance metrics (Dunleavy et al, 2006; Kitchin et al, 2015), there remains a relative dearth of publicly available evidence.

There are three main sources of evidence for social research and policy making, none of which universally provide open data. The first is primary research in which researchers devise a research design to answer specific questions and fulfil research aims and directly generate, process, and analyse data (as in the case of Grove, Chapter Five this volume, and Little et al, Chapter Six this volume). Such studies are typically one-off rather than longitudinal in nature, fixing their analysis to a particular point in time and usually to a specific geography (for example, a neighbourhood or city rather than an entire country). The data generated can be shared as secondary or tertiary data for reuse, though the practice of open science is still relatively limited, curtailing its potential (Borgman, 2015).

The second key source of evidence is official statistical data produced by state agencies, or data produced through the state's administrative and operational systems, that are made available as open or public data (Attard et al, 2015; Credit, Chapter Seven this volume). These data have the benefit of being produced on a longitudinal basis, though the methods used and the specific variables generated might change (necessitating caution when making temporal comparisons). Since administrative and operational data are produced for the purposes of delivering state services, rather than being

tailored to answer specific questions, they may have to be transformed for repurposing.

The third source is commercial enterprises, which most often make data available for a fee and/or under licence (that delimits uses). In some cases, commercial data can be scraped from platforms, though this may have legal implications (Scassa, 2019). Commercial datasets often have the same issues as state data with respect to repurposing.

Even when research, state, and commercial datasets are accessible, many fail to fulfil open data principles (non-proprietary formats, machine-readable, non-tertiary [aggregated] data, no restrictions on access or use) (Lourenço, 2015; Wang and Shepherd, 2020). Moreover, the data published often possess a range of data quality issues – accuracy, precision (bias), fidelity (representativeness), cleanliness (errors), completeness (gaps), coverage (sampling), timeliness, granularity (resolution, aggregation), consistency (reliability over time), and poor metadata (provenance and lineage) and paradata (methodological transparency) – that limit their useability and utility (Kitchin, 2022).

As the emerging field of Critical Data Studies (CDS) has highlighted, what this discussion starts to reveal is that there is a data politics to producing evidence. Data politics refers to the choices and decisions regarding what data are generated and shared (and what is not), how they are produced, processed, and analysed, and how they are used to further the interests and power of select groups (Bigo et al, 2019). CDS recognises that data do not pre-exist their capture, but are created to fulfil certain functions using methods and processes that are inherently political (epistemological, institutional, cultural) and normative (ideological and ethical) (Markham, 2017). Indeed, all data work is contextually framed philosophically, technically, socially, and economically (Kitchin, 2022). From this perspective, the dearth of evidence and the lack of data quality arises in part because of the resources and capacities required to produce high-quality, long-term datasets, which requires significant investments in data governance, data infrastructures and management, and

data skills. Or because the evidence is a sufficiently valuable resource that it is enclosed by private interests (Sadowski, 2019). But it is also because institutions adopt strategic positions to constrain the publication of data that could be used to hold their work and policies to account, or reveal the weakness of their data practices or data quality, or might be misinterpreted or used in negative, unforeseen ways, or produce unwanted alternative narratives about an issue, or reveal inconvenient truths that might cause a political scandal (Dawes et al, 2016; Heimstädt, 2017). In other words, data gaps and silences are often the expression of data power, with the lack of evidence and analysis allowing some actors to hide or obscure issues, or to blame others and to off-load their responsibility to address an issue; such as landlords contending that tenants and their lifestyle are the primary reason dampness and poor air quality exist in their dwellings (Little et al, this volume).

One expression of data care with respect to such gaps and silences is crowdsourcing initiatives and citizen science in which members of the public work together to produce an open dataset about a phenomenon or issue (Credit, this volume; Lehane and Roe, this volume). However, data generated by such projects might suffer issues of spatial and temporal coverage due to the volunteer nature of the work (Dodge and Kitchin, 2013). Other forms of data care relate to data sovereignty and data justice movements that seek to place control of data about people and communities into their hands, and to challenge expressions of data power by seeking stronger protections against data-led practices such as profiling and social sorting of tenants (Kukutai and Taylor, 2016; Dencik et al, 2022). Such movements, as well as campaigns for open data or to limit privacy/surveillance infringements, are forms of data activism that seek to make data available for communities to use in counter-data actions (for data to speak truth back to power) or dismantle existing data regimes to replace them with more transparent, participatory regimes that have more citizen-centric and ethical modes of data governance (Milan

and van der Velden, 2016). Within the context of housing, the most common form of data activism are community-led anti-eviction campaigns that seek to capture and map the morally bankrupt and illegal actions of landlords (McElroy, 2023), in the Irish case undertaken by the Community Action Tenants Union (Tubridy et al, 2025). Related forms of counter-data practices can also be found within public housing contexts, including the Oliver Bond House case discussed in this volume, where residents and researchers have collaboratively reconstructed the failures of regeneration programmes and documented institutional abandonment through surveys, ethnographic evidence, and participatory research (Manzo, 2025).

What this discussion indicates is that care, health, and housing data, regardless of source, cannot be used denotatively (at face value), or assumed to be 'good enough' and 'fit-for-purpose' for science and policy making (Gabrys et al, 2016). Rather, connotative and deconstructive readings are required that uncover their values, meanings, biases, flaws, and absences, and takes account of the context of production and use (D'Ignazio and Klein, 2020). Yet, given the utility of factual evidence with respect to understanding and addressing care, health, and housing, it is remarkable how little critical attention is paid to these data politics (Kitchin et al, 2026). The chapters in Part II illustrate some of the issues and provide pointers for how they might be addressed. In particular, all four chapters point to what data are and are not being generated or shared, and the consequences of these data gaps and silences, particularly in terms of researchers and citizens having to produce their own data to provide the evidence needed to inform policy and services or push back against current 'wisdom' and practices, and what Marquardt (2016), writing about homelessness data, terms 'manufactured' and 'epistemological' ignorance.

In our study of the data terrain of housing, property, and planning in Ireland we identified 259 state-produced, longitudinal datasets, shared by 38 state organisations (excluding the 31 local authorities who share their data via

some of these bodies) via 57 websites (Kitchin et al, 2025; also includes a data directory). Two hundred and fifty-nine datasets sounds like a reasonably comprehensive set of data. However, our research participants also noted two critical issues. First, there are ten key issues with respect to those data that are published concerning: the lack of a central repository or directory, weak data access, poor choice of published data format, missing metadata and paradata, poor data quality, lack of data standardisation and linking data, weak consistency over time, little disaggregation and data granularity, lack of timeliness and timing of publication, and absence of comparative data. Second, they identified 190 datasets that they would like to see published that are presently missing, either because the data are not produced, or are not compiled for publication, or are produced by private enterprise and are available for a fee, or they exist but have not been made open access. In particular, nine significant data gaps were identified: land, commercial property, housing experiences and pathways, housing aspirations and preferences, housing conditions, planning compliance and enforcement, environment and the contribution of property to climate change, infrastructure, and historical data (Kitchin et al, 2025). In addition, they identified a number of other key data silences, where although some data were available other key measures were not, including vacancy, dereliction, obsolescence, net supply, planning, construction, homelessness, owner-occupier and rental market, finance and revenue, state grants, tax incentives, loans, and specific populations (for example, disability, old age, refugees). With respect to the chapters in this part, it is notable that housing experiences and housing conditions, relating to poor build quality, damp, subsidence, and poor insulation, and social conditions such as overcrowding, as well as housing and older people, are included in these lists of data gaps and silences.

The key questions this discussion and the chapters in Part II raise are: why are there so many issues with data that are

published and why is little being done to address them? Why do data gaps and silences exist – why has the state decided that the relationship between care, health, and housing does not merit the production of systematic, longitudinal data? And what can be done to plug the data gaps beyond one-off, targeted research projects and citizens having to do it themselves through citizen science? Answering these questions and filling the gaps requires much more critical attention being paid to uncovering the data politics of care, health, and housing if we are to truly tackle them through evidence-based policy and practice.

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NINE

Placing care and repair at the heart of housing and health strategies: responsibility, governance, and the role of communities

Lidia Katia C. Manzo and Dáithí Downey

Introduction

This concluding chapter is guided by a central question that emerges from the evidence and analyses presented across this volume: if the links between housing, health, and inequality are so well established, why do they so rarely lead to timely and meaningful change? At its core lies the question of care and repair across housing systems – how these are activated, distributed, deferred, or withheld. As Susan Smith notes in her Preface, the relationship between housing and health has long been recognised as central to social and economic wellbeing, yet it is frequently set aside in practice. Addressing this requires moving beyond diagnosis to examine how responsibility for care and repair is enacted – and where it breaks down.

Drawing together the interdisciplinary contributions of this volume, the chapter traces how care is materially, institutionally, and socially embedded in housing provision. The eight sections that follow develop this argument across governance, law, building science, data, and community action, each concluding with a set of key implications for policy and practice. Together, they provide a framework for translating the book's findings into action and for placing care at the centre of housing and health strategies.

The crisis of care and disrepair in housing

The evidence gathered throughout this volume leads to a clear and inescapable conclusion: improving population health requires improving housing, and improving housing requires reorienting urban governance around care. As the resident-led chapter by Manzo and Cullen Doyle (Chapter Two) powerfully demonstrates, the housing crisis is lived not as an abstract policy failure but as an everyday experience of waiting, frustration, shame, and deteriorating health.

However, the way in which these experiences are translated into policy and practice is mediated through language – particularly technical and administrative vocabularies that define and govern housing conditions. Explanations for inadequate care and repair are often reduced to narrow technical narratives. These terminologies, defined by service providers, shape how conditions are assessed and how responses are determined. They underpin compliance-based assessments of minimum standards, often detached from lived experience. Technical language can also narrow meaning. Terms such as 'repair' are stripped of their broader social and lived dimensions and assigned reductive definitions. As Gadamer (1975) suggests, this may amount to a form of violence against language. By privileging bureaucratic over everyday explanations, such discourse can obscure responsibility, remove agency, and shift the burden of disrepair onto the gendered 'hidden infrastructure' of care within communities.

While ordinary language is not the last word here, it is the first. As Anthony, a participant in the research underpinning this volume, reflects, 'we drown in the concrete of the city when not given a space to occasionally pop our heads out to breathe'. This stark expression captures how inadequate housing and limited access to supportive environments are experienced not only as physical deprivation, but as forms of spatial and sensory constraint that shape mental and emotional wellbeing. It reinforces a central argument of this book: housing and neighbourhoods are fundamental infrastructures of care, not secondary determinants of health. Residents' accounts are, therefore, not merely descriptive but constitutive, providing essential insight into how inadequate housing is lived as indecency. Their language must inform the terms through which housing conditions are defined and addressed, challenging narratives that individualise responsibility and obscure structural causes.

The absence of a 'decent homes' standard in housing policy, reflects the failure to embed care within operational housing standards and repair systems. This not only eschews opportunity to empower residents' participation in the daily practice required to endure living in present-day unhealthy housing, but more critically defers responsibility for necessary improvements, including adaptation, renovation, and retrofit. It also reduces opportunity for redress in pursuit of decent housing as a manifest social and economic right.

Across disciplines, methods and scales, the chapters show that inadequate housing is not an accidental result of individual occupancy and habiting, but a systemic harm arising from decades of underinvestment and environmental neglect produced via fragmented governance and eroded public responsibility. It is sustained through institutional carelessness, including delayed repairs, deferred maintenance, and bureaucratic inertia (Manzo, 2025), often rendered invisible through technical classifications. This harm is slow, cumulative, and predictable, manifesting in mould, illness, chronic stress, and prolonged waiting for repairs (Manzo and Grove, 2024).

Seen through this lens, the contemporary housing crisis is fundamentally *a crisis of care and disrepair*. It reveals how care is unevenly organised and withheld, becoming embodied as ill-health, insecurity, and diminished life chances. Recognising housing inadequacy as a failure of care – rather than a technical or behavioural issue – is a necessary step toward meaningful change.

Key implications for policy and practice

- Housing inadequacy should be addressed as a *systemic governance failure*, not a technical problem.
- Health harms linked to housing conditions constitute *embodied evidence of institutional care withdrawal*.
- An *ethics of care provides a framework* for identifying preventable harm and assigning responsibility.

Housing as an infrastructure of care

Building on the theoretical foundations articulated in Chapter One, this volume advances a central conceptual claim: *housing must be understood as an infrastructure of care*. Housing is not merely a physical container for daily life, nor simply a market commodity, but a material, institutional, and relational system through which care circulates – or fails to circulate – across citizens, neighbourhoods, and governance regimes (Tronto, 1993; Power and Mee, 2019).

Housing shapes health through multiple, interlocking pathways (Smith, 2012). As illustrated by the Oliver Bond case discussed by Manzo and Cullen Doyle (Chapter Two), the failure of housing as an infrastructure of care produces not only physical harm but also ontological insecurity, stigma, and institutional abandonment. Material conditions such as dampness, mould, cold, and poor ventilation directly affect respiratory and cardiovascular health (Krieger and Higgins, 2002; Jacobs, 2011; Adamkiewicz et al, 2014). At the same time, housing mediates psychosocial wellbeing through overcrowding, insecurity, stigma,

and prolonged exposure to stress (Marmot, 2015; Pevalin et al, 2017). These effects are unevenly distributed, following lines of class, age, gender, ability, and racialisation, reinforcing broader structures of inequality (Borrell et al, 2023).

When housing systems function through care – via adequate maintenance, timely repair, health-informed standards, and responsive governance – they support dignity, wellbeing, and social participation. When they fail, care is displaced onto households and communities, often sustained through informal and gendered networks of care that compensate for institutional absence. This displacement is not incidental but produced through institutional carelessness, including the under-resourcing of repair systems, the treatment of housing deterioration as inevitable rather than preventable, and the systemic prioritisation of capital investment in new development over ongoing maintenance and renewal.

Under neoliberal restructuring, responsibility is individualised, and structural neglect is reframed as personal failure. Maintenance, repair, and adequacy thus become political decisions about whose lives are protected and whose are left to absorb harm, as discussed by Manzo in Chapter One.

Key implications for policy and practice

- Housing policy must operate across *bodily, domestic, neighbourhood, and institutional scales*.
- Maintenance and repair should be recognised as *core public responsibilities and practices of care*, not residual services.
- Current housing systems displace care onto households and communities, *exacerbating gendered and social inequalities*.

From research to policy: Health in All Policies and care-centred governance

Moving from diagnosis to action, the collective evidence assembled in this book underscores the need for *integrated,*

care-centred forms of governance. As Mitchell et al (2017) note, the impact of community-based and participatory research cannot be assumed; it must be translated into policy and institutional dialogue.

Engagement alone does not guarantee change. Across the chapters, the persistence of harm is shown to stem not from a lack of evidence, but from failures in translating knowledge into action. These include fragmented governance structures that disperse responsibility; conflicts of interest where public authorities act as providers, regulators, and enforcers; temporal deferral of interventions through prolonged maintenance and regeneration cycles; and hierarchies of evidence that privilege technical and bureaucratic knowledge over lived experience. As Redmond (Commentary on Part I) argues, care is not abstract but embedded in budgets, maintenance systems, and regulatory frameworks. When these are fragmented or under-resourced, even robust evidence – whether from building science, legal advocacy, or resident-led research – fails to produce timely change. Addressing this requires not only coordination, but clear assignment of responsibility across institutional actors, particularly in social housing systems.

Improving housing conditions is one of the most powerful public health interventions available to policy makers, yet housing remains treated as a siloed policy field, disconnected from health, environment, transport, energy, and social policy generally, with responsibilities dispersed across institutions.

A Health in All Policies (HiAP) approach offers a practical framework to address this fragmentation (World Health Organization, 2014). As highlighted by Manzo (Chapter One), health outcomes are shaped less by healthcare than by housing quality, planning, infrastructure, and environmental conditions. From this perspective, housing policy is inseparable from public health policy, as decisions on design, maintenance, transport, and neighbourhood environments directly shape wellbeing.

Across the volume, evidence shows that health is shaped not only within the home but through mobility, access to services,

and social connection. As Grove (Chapter Five) demonstrates, inadequate housing and neighbourhood conditions constrain these everyday practices, particularly for older adults, children, and people with mobility challenges, reinforcing inequalities across the life course.

Within a City of Care, adopting HiAP requires moving beyond institutional silos toward sustained cross-sector collaboration – across government, housing providers, public health, planning, and community organisations. It also requires what Mitchell et al (2017) term critical audience engagement: ensuring that knowledge produced by residents, researchers, and practitioners reaches decision-makers and is acted upon.

Where coordination is absent, responsibility fragments, delays multiply, and harm persists. Conversely, when housing, health, data, legal frameworks, and community knowledge are aligned around care, prevention becomes possible, costs are reduced, and accountability is strengthened.

Key implications for policy and practice

- HiAP *provides a framework for integrating housing and health governance*.
- Housing should be treated as a *core pillar of public health policy*, not a separate sector.
- Effective care-centred governance requires *coordination across domains, institutions, and scales*.

Governing housing quality: accountability, rights, and care

The persistence of harmful housing conditions is not due to a lack of standards or knowledge, but to failures of governance. Fragmented responsibilities, weak enforcement, and institutional inertia allow substandard conditions to endure for decades, helping to explain why well-established evidence often fails to trigger intervention. These failures reveal how carelessness operates as an institutional process, rather than a passive condition.

Carelessness is produced through delayed decision-making, weak or internalised enforcement, fragmented accountability, and the prioritisation of new development over maintenance, embedding forms of managed decline in everyday governance. Where responsibility is diffuse, accountability weakens; where enforcement sits within provider institutions, conflicts of interest arise; and where repair and renewal are deferred, harm becomes normalised rather than addressed. Carelessness is thus actively reproduced through governance systems.

A care-based framework requires a shift from reactive, complaint-driven responses to *proactive systems of accountability*. As Manzo and Cullen Doyle show (Chapter Two), prolonged waiting for estate regeneration constitutes a form of institutionalised neglect that produces health harm in its own right.

Such a framework includes clear lines of responsibility, robust enforcement of safety standards, health-informed inspections, and maintenance systems oriented toward prevention. Rights-based approaches are essential for framing housing as a matter of dignity and wellbeing and ensuring access to redress (Hearne, Chapter Three). However, legal recognition alone is insufficient. Without political will, institutional capacity, and enforcement, rights risk remaining symbolic (Heavey et al, Chapter Four), experienced as promises deferred rather than protections realised.

Embedding housing rights within infrastructures of care means ensuring that legal frameworks are supported by material investment, transparent data, and meaningful community participation. Only then can rights translate into lived improvements in health and everyday life.

Key implications for policy and practice

- Accountability mechanisms are a *precondition for care* in housing systems.
- Legal rights to adequate housing remain ineffective *without enforcement, timelines, and institutional capacity*.

- Housing rights must be embedded within *material, legal, and participatory infrastructures of care*.

Building science, maintenance, and the material work of care

Care is not only relational or institutional; it is fundamentally *material*. The building-science analysis presented in this volume provides clear evidence of how decades of partial retrofits, inadequate ventilation strategies, and delayed maintenance translate directly into avoidable health harms. Damp, mould, and cold are not behavioural failures, nor inevitable features of older housing stock. They are the outcome of design, policy, and maintenance decisions that fail to prioritise health. These conditions reflect ongoing processes of institutional carelessness, rather than isolated technical failures.

Framing these issues as matters of occupant behaviour obscures their structural origins and perpetuates injustice. As Grove (Chapter Five) shows, material housing failures disrupt daily routines, social participation, and the ability to leave and return home safely – dimensions of wellbeing often overlooked in technical assessments. A care-centred approach reframes building science as a tool of prevention and responsibility, prioritising holistic retrofit strategies, continuous insulation, effective ventilation, and regular maintenance (Little et al, Chapter Six).

In the context of climate change, this material work of care becomes even more urgent. Ageing housing stock must be made resilient to extreme temperatures and humidity, without reproducing health risks through poorly designed energy-efficiency interventions. Preventive maintenance and health-informed design are therefore core components of housing and public health strategies, not optional enhancements.

Key implications for policy and practice

- Material housing conditions function as *everyday expressions of care or neglect*.

- Preventive maintenance and holistic retrofit strategies are *public health interventions*, not optional upgrades.
- Building science should be mobilised as a *tool for care-centred, health-informed policy design*.

Data, evidence, and civic care

Care is also mediated through *data systems* – through what is measured, shared, and acted upon. As several chapters in this volume demonstrate, data gaps, restricted access, and poor-quality datasets are not neutral, but political conditions that undermine accountability and delay intervention (Kitchin, Commentary on Part II).

Reimagining data governance through an ethics of care requires treating data as a public good. However, producing knowledge – whether from building science, housing and health data, legislative analysis, or residents' narratives – is only part of the process. The key question is: who listens, who interprets, and who acts? Without institutional engagement, data risks circulating without consequence.

This gap between evidence and action is structural. Data may be collected but not integrated into decision-making; evidence acknowledged but not prioritised; and community-generated knowledge made visible without institutional authority. These dynamics reflect hierarchies of knowledge, in which technical datasets are privileged over lived experience, shaping whose knowledge is recognised and translated into action.

The issue, therefore, is not only the availability of evidence, but the conditions under which it becomes actionable. Open data enable transparency, support evidence-based policy making, and allow communities to identify risks and advocate for change (Credit, Chapter Seven). At the same time, grassroots citizen science initiatives demonstrate how residents generate forms of evidence that official systems often overlook (Lehane and Roe, Chapter Eight).

A care-centred data strategy must expand access to housing, environmental, and health data; support citizen-led monitoring; ensure interoperability and intelligibility; and build institutional capacity to respond. In this sense, data care becomes a form of civic care, supporting democratic participation and collective responsibility (D'Ignazio and Klein, 2020).

Key implications for policy and practice

- Data gaps and poor-quality evidence constitute *forms of institutional neglect*.
- Open data and citizen science can operate as *infrastructures of civic and epistemic care*.
- Public institutions must not only collect data, *but respond meaningfully to it*.

Community organisations and actionable pathways to care

Across the volume, community organisations emerge as central to *translating knowledge into action*, transforming lived experience into claims, evidence, and ultimately into demands for institutional response. Manzo and Cullen Doyle (Chapter Two) show how women-led networks within the Oliver Bond Residents Group transformed everyday suffering into collective agency, advocacy, and political mobilisation. In contexts of institutional neglect, they sustain social relations, produce knowledge, and mobilise for accountability (Manzo, 2025).

Resident-led research, advocacy, and grassroots monitoring generate *care capital*: relational, epistemic, and organisational resources that enable communities to survive and contest harm (Flora and Flora, 2013; Manzo, 2023). The Oliver Bond case illustrates both the consequences of exclusion from decision-making and the transformative potential of community organising. When residents are recognised as partners rather than passive recipients, policy becomes more responsive, evidence more grounded, and interventions more effective.

However, participation must move beyond symbolic inclusion toward structured community–policy engagement, where input is linked to decision-making rather than remaining consultative.

A City of Care, therefore, requires sustained investment in community infrastructure as a public health strategy, including community centres, green spaces, accessible amenities, and mobility systems, alongside institutionalised co-production mechanisms such as participatory budgeting, resident-led inspections, and advisory bodies with real decision-making power. Without such investment, care remains informal, precarious, and unevenly distributed.

Innovation in community infrastructure – based on evidence and 'what works' approaches – is also needed to support place-based and person-centred services, including assisted living technologies and supported housing models. Without institutional responsiveness, however, community engagement risks reproducing frustration and fatigue, rather than enabling structural change.

Key implications for policy and practice

- Community organisations function as *core infrastructures of care, knowledge, and accountability*.
- Investing in community capacity strengthens *care capital and collective resilience*.
- Co-production mechanisms improve policy effectiveness by *grounding decisions in lived experience*.

Integration, repair, and the future of housing and health

The chapters gathered in this volume collectively demonstrate that harm is not inevitable. If cities can produce vulnerability, they can also cultivate wellbeing. This requires reframing *repair* as a political, ethical, and democratic practice – extending beyond buildings to include institutions, data systems, and relationships

between the state and residents. It also involves repairing the disconnections between community knowledge and policy action, ensuring that engagement is matched by accountability.

For this shift to occur, the structural barriers to action must be addressed. Without governance reforms – clear responsibility, stronger enforcement, reduced delays, and recognition of diverse forms of evidence – care risks remaining a normative aspiration rather than an operational reality. Across disciplines, the chapters in this volume show that living well, ageing in place, and sustaining community life require housing systems organised around care as a shared public responsibility.

Bad housing wrecks lives. Improving housing conditions through provision of affordable housing is one of the most effective ways to enhance population health and address structural inequalities. As Downey (2003, 2007) argues, housing affordability must be understood not only in terms of initial price and household residual income required for social inclusion and living well. It must incorporate secondary costs related to maintaining housing standards, accessing services and employment, and tertiary costs of social and civic infrastructure required for good habiting in communities and neighbourhood places that are thriving and sustainable.

The evidence presented in this volume shows how the consequences of inadequate housing extend far beyond market dynamics, becoming embedded in health outcomes, everyday life, and life chances. When homes are safe, warm, and well maintained; when neighbourhoods are connected; when data are actionable; when communities are empowered and institutions accountable, health improves, trust strengthens, and democratic life is renewed.

These transformations are neither automatic nor uncontested. They require sustained political commitment, institutional reform, and the redistribution of resources and responsibility. A City of Care is therefore not utopian, but a practical orientation, aligning housing, health, community, and data systems through an HiAP approach.

By bringing together ethnographic, legal, technical, and data-driven insights, this volume demonstrates both the multidimensional nature of housing harm and the conditions for building more just and caring systems.

As argued at the outset, the language used to describe housing is not neutral. Technical vocabularies often narrow the meaning of repair and responsibility, obscuring lived experience and shifting accountability away from institutions. Reclaiming the meaning of 'decent housing' is therefore a political and epistemic task.

Decent housing is where good health begins, is maintained and reproduced and where the significance of conditions of dwelling and the consequence of habiting become metonyms for the City of Care. It is not merely a technical standard, but a socially and politically grounded concept shaped by residents' lived experience, everyday practices, and claims to dignity – where rights are realised and care is either enacted or denied. A City of Care requires we are habiting well. As Lefebvre (1970: 85) advances: 'Habiting should no longer be approached as a residue, as a trace or result of so-called superior levels. It should, it can already, be considered as a source or foundation, as essential functionality and transfunctionality.'

Placing care at the heart of housing and health strategies is not optional – it is essential. The future of housing, and of healthy cities, depends on translating this commitment into sustained institutional practice and recognising communities as co-producers of care.

Key implications for policy and practice

- Repair is a *collective, ethical, and democratic responsibility*.
- Care provides a *criterion for evaluating housing and health policy success*.
- Housing systems organised around care are foundational to *healthy, inclusive, and democratic cities*.

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