Article

Apartment Living and Community Care: Experiences of People With Intellectual Disability, Their Families, and Support Staff

Phillippa Carnemolla

School of Built Environment, University of Technology Sydney, Australia; phillippa.carnemolla@uts.edu.au

Abstract
Understanding how the design of urban infrastructure influences the independence and autonomy of people with intellectual disability has far-reaching implications for community inclusion and participation. This article explores how urban design elements of an apartment complex influence how a person with an intellectual disability receives support and participates in the wider community. The study reports on the post-occupancy evaluation of an Australian development of over 400 apartments in Sydney, where 25 people with intellectual disability received 24-hour support. Fifty-three interviews were conducted with people with intellectual disability, their families, and disability support staff. Participants with intellectual disability described what living in their new apartment was like and appreciated the outdoor gardens. However, they also explained that wayfinding was more difficult than in their previous homes—all free-standing group homes. Disability support staff discussed how providing community care for people with intellectual disability in an apartment differed from a suburban free-standing house. Findings were translated into design suggestions for improving service provision to people with disability through the urban design around multi-tower sites of mixed-tenure apartments. The article concludes with recommendations for urban design features to support safe, efficient, and quality care in a high-density urban setting. When viewed through a lens of social infrastructure, the results show how urban design has the potential to influence the collective independence and provision of care to diverse communities in urban centres and cities and is relevant to people with disability, older people, and other community groups who rely on community-care support to remain living independently at home.

Keywords
Australia; disability housing; group home; high-density apartment; intellectual disability

1. Introduction

Considering urban settings as social infrastructure to support caregiving and community participation contributes to our understanding of models of disability support that prioritise agency and autonomy for people with disability (Eisenberg & Maisel, 2021). Research in health and urban planning recognises how urbanised, high-density settings influence a population's health, well-being, and participation in growing cities (Giles-Corti et al., 2016; Sallis et al., 2016). However, less research has been conducted that explores how high-density urban settings operate as both a "landscape of care" and as "social infrastructure," contributing to the public life of cities and how its spaces afford participation and social interaction.

The concept of "landscapes of care" has been applied in a wide range of care and support settings, including family care (Power, 2016), institutionalisation (Gleeson & Kearns, 2001), guardianship of minors (De Graeve, 2017), mental health care (Högström, 2018), and dementia care (Egdell, 2013). One of the most highly cited articles on "landscapes of care" explores the inter-dimensionality of care and spatiality, including concepts of proximity, distance, and reciprocity (Milligan & Wiles, 2010). In this article, we consider the role of urban design in relation to autonomy, independence, and the provision of support

for people with intellectual disability. In particular, we consider how design can give people with intellectual disability greater access to the city and the potential for community participation. People with intellectual disability continue to experience low levels of social and community participation (Robinson et al., 2022), and the framing of "social infrastructure" as including outdoor places that can support community interaction and encounters is important as a means of understanding how to improve these low levels.

Klinenberg (2018) explores the concept of social infrastructure and its role in supporting participation and inclusion in civic life. Social infrastructure can be considered as public spaces where people encounter one another. The physical design of our social infrastructures can shape how people interact, whether they can experience public spaces independently, and whether support (both paid or unpaid) to perform daily tasks and participate in daily life can be provided effectively and safely. Klinenberg (2018, p. 17) defines social infrastructure as including:

> Public institutions, such as libraries, schools, playgrounds, parks, athletic fields, and swimming pools, are vital parts of the social infrastructure. So too, are sidewalks, courtyards, community gardens, and other spaces that invite people into the public realm. Community organisations, including churches and civic associations, act as social infrastructures when they have an established physical space where people can assemble, as do regularly scheduled markets for food, furniture, clothing, art, and other consumer goods. Commercial establishments can also be important parts of the social infrastructure.

This article focuses on a very particular type of public space as social infrastructure: the public, shared areas between and around apartment buildings as social infrastructure. This social infrastructure is studied from the perspectives of people with intellectual disability who live and receive support in their apartments and is triangulated with interviews with family members who visit them there, and the support workers who provide 24-hour, daily support. People with intellectual disability have largely been excluded from discussions around urban planning, most likely because they have historically lived in forms of congregate care in institutional settings or, more recently, in group homes in suburban housing settings. In design research, there has been a focus on physical accessibility when designing housing and a lack of discussion around design and diverse models of community support, living, and inclusion. As a result, we know very little about the implications of urban design on how disability support is provided to and received by people with intellectual disability and their levels of community participation.

Terashima and Clark (2021) and Zallio and Clarkson (2021) have called for a more diverse understanding of disability in architecture and planning research, including people with intellectual disability, and implications for housing design and urban settings. Wright et al. (2017, p. 33) develop a set of design principles for housing design appropriate for people with complex physical and cognitive disabilities and calls for "housing for individuals with complex disabilities [to] move beyond narrow considerations of physical health to embrace a broader biopsychosocial environmental approach to residential design and development." Although recent research has explored the relationship between housing design, care provision, and independence (Carnemolla, 2018; Carnemolla & Bridge, 2016, 2019), they have not included the influence of the housing model (free-standing, apartment, low, medium, or high density) or the perspectives of people with intellectual disability.

This research study has been driven by a national Australian policy move towards person-centred, individualised housing planning and support for people with disability, and is implemented by the National Disability Insurance Agency (NDIA; Australian Government Productivity Commission, 2017). The introduction of consumer-led health and disability funding such as the NDIA across the globe (including the US, UK, parts of Europe, and Australia) has changed how disability housing support is provided and brought the opportunity for individualised living plans and accommodation settings. In the first wave of deinstitutionalisation, people with intellectual disability moved from large-scale, institutional settings into suburban, group home settings (four to six people with disability living together in a house, often with live-in staff). The NDIA continues to develop its policy and strategy narrative towards supporting greater housing choice, including more individualised housing alternatives to group homes. This provides the opportunity for people to live in a smaller household, such as in their own apartment, whilst still receiving 24-hour disability support. Despite the social policy narrative about the importance and benefits of community living for people with disability, we know very little about what influences outcomes for people with intellectual disability who live in these new, individualised settings, how they compare with other accommodation models, such as group homes, and what it means for support provision. In the Australian context, housing in which people with disability receive high levels of disability support is known as "specialist disability accommodation." The Australian National Disability Insurance Scheme, which funds specialist disability accommodation, defines it as "accommodation for participants who require specialist housing solutions to assist with the delivery of supports that cater for their extreme functional impairment and very high support needs" (NDIA, 2022).

1.1. Models of Housing and Community Care for People With Intellectual Disability

There continues to be a limited choice of supported accommodation options for people with intellectual

disability, and group homes have remained the predominant model of supported accommodation since deinstitutionalisation (Bigby & Bould, 2017). Australia's policy move towards more individualised support packages has encouraged choice of support and housing packages and, in turn, hoped-for innovation in housing (NDIA, 2022). However, evidence suggests that many young people with disability continue to live in aged care facilities (Barry et al., 2019). Evidence for the lack of choice within the housing market for supported accommodation can be found in Australian research (Parker & Fisher, 2010) as well as internationally (Gorfin & Mcglaughlin, 2003; Phillips, 2012; Power & Gaete-Reyes, 2019; Šiška & Beadle-Brown, 2022).

Given the prevalence of group homes as a community-based option, it is unsurprising that research has been undertaken to understand what characteristics of the group home setting make a difference to people's quality of life. Bigby and Bould (2017) and Clement and Bigby (2010) identify several propositions about group homes and quality of life outcomes in supported accommodation services that focus on staffing culture and practices and policy and procedural contexts. However, few studies have addressed the specific influence of built environment design details on outcomes for people with intellectual disability. This means we know very little about how different models of housing influence the receipt and provision of care.

1.2. Access to More Urbanised Parts of the City

In an Australian setting, studying apartment living as a place for receiving 24-hour disability support is essential to improving choice and equity of access in our cities. The building of new group homes is increasingly limited to the outskirts of central and regional cities because they require affordable, large flat land packages, most likely found in less populated areas. A consequence of this, over the long term, is that people with intellectual disability will be far less likely to live close to the city in urbanised areas, where infrastructure and services are more likely to be available. People with disability have the right to the city and the choice to live in more urban areas, close to established infrastructure and services, and to be near family and social networks. Therefore, studying apartments (or high-rise homes) as a viable supported housing option for people with disability contributes to opportunities for greater choice and access to more densified central city locations.

1.3. Group Home Vs. Individualised Apartment: What Are the Main Differences?

In a group home, up to six people with disability receive support in a single dwelling with multiple bedrooms and often an "office" or a "staff bedroom." In this high-density setting, referred to as an individualised apartment form of supported accommodation, people with disability live independently in a one-bedroom apartment or with one other person with a disability in a two-bedroom apartment. The apartments are "salt and peppered" throughout a larger apartment site of over 400 in a typical mixed-tenure setting, both privately owned and rented. The "salt and pepper" style of integrated community living was intended to reflect the housing options available to all and to support opportunities for social connection and participation that may not be possible where specialist disability accommodation is separate from other types. Another critical difference between the two accommodation models is that the new apartments do not have bedrooms or work areas for staff to sleep in, as the removal of sleepover shifts was expected to create more personalised support in a home-like, non-institutional setting.

1.4. Objective and Research Questions

The objectives of this study are to explore how urban design elements of an apartment complex influence how a person with intellectual disability receives support and participates in the wider community. We ask the following research questions:

RQ1: How does the urban design of apartment settings influence how disability support is received by and provided to people with intellectual disability?

RQ2: What are urban design considerations for future apartment settings as places of community participation for people who receive care in their daily lives?

This study explores the outcomes associated with a model of 24-hour disability support provided in a high-density apartment setting and frames them in the context of urban planning elements such as layout, landscape, and transport and site navigation. It specifically examines how the design of the built environment influences a range of outcomes for people living in supported accommodation and how it influences the provision of personal support. It builds a picture of the interdisciplinary relationship between the model of disability support, well-being, participation, design, and spatiality. It garners the perspectives of people with intellectual disability receiving support in the supported apartments, their families, and their primary support givers.

2. Methodology

This study is part of a more extensive investigation into housing options for people with intellectual disability (Carnemolla, 2020). This article reports on interview data designed to give detailed and rich insights into the impact of design elements in the built environment when providing high levels of support for people with intellectual disability in an apartment complex. The use of in-depth, semi-structured interviews enables

the researchers to explore the "deep meaning" and "inside view" that lie beneath the human behaviours and choices being explored in this research (Sechrest & Sidani, 1995). There are three main participant groups: people with intellectual disability living and receiving support in the accommodation, paid support staff, and the families of those with intellectual disability. The research applies a general inductive approach to analysing the interview data, whereby meaning and concepts are derived from the accounts of participants in the study (Neuman, 2006; Thomas, 2006).

2.1. Scope

The built environment has been defined as the "[constructed] surroundings that provide the setting for human activity, ranging in scale from personal shelter to neighbourhoods to the large-scale civic surroundings" (Tiwari et al., 2010, p 90). In this article, the built environment is considered as publicly accessible areas around the site of the apartments. It includes all outdoor and garden areas and extends to the streetscapes, building locations, and surrounding neighbourhood. This article does not consider the interior spaces within apartments.

2.2. Setting and Participants

The setting where the study was undertaken is a high-density Sydney apartment block of multiple towers. There are over 400 apartments in the complex. Disability support is provided for people with intellectual disability in 22 apartments (one- or two-bedroom) that are "salt and peppered" across the site. In those 22 apartments, staff provide 24-hour "awake" support.

2.3. Recruitment and Interviews

Self-selection sampling was used in this study to recruit participants with intellectual disability living and receiving support in apartments, their families, and support staff. Posters explaining the research were placed in staff quarters, and the researchers attended family and staff meetings to explain the research aims. Because of guardianships in place, all guardians and families were initially approached to obtain consent to approach their intellectually disabled family member. Researchers then met prospective participants with intellectual disability and introduced the research project. To be recruited, the person with intellectual disability and their family members provided consent separately. A family member or guardian's consent was required for the researcher to approach the person with intellectual disability. However, the person with intellectual disability's consent was the decider as to whether a participant and family member were included in the study.

The research team prepared easy-read versions of all written material, including consent forms and project information sheets. The easy-read forms were developed to inform participants with intellectual disability of the research's purpose and processes before recruitment and consent provision.

To understand the impact of apartment design on the well-being outcomes and quality of support provided, semi-structured interviews were conducted with the following:

- Eighteen people with intellectual disability who live in and receive 24-hour support in an individualised apartment;
- Fifteen family members and guardians of people who live in the supported accommodation;
- Twenty staff members provide support in an individualised apartment setting to people with intellectual disability who receive 24-hour support.

The interviews were conducted on-site in apartments where interviewees live and receive support. Because of the importance of relating the discussions to the apartments and site spatially, during interviews, the researcher invited the interviewees to give a guided tour of the apartment and surrounding site. Moving through and discussing different areas and parts of the site became an important trigger of discussion that linked activities and outcomes to the built environment. This type of interview is known as a "go-along" interview, the framing of which as a distinct qualitative method is attributed to Kusenbach (2003). The go-along interviews ranged in time duration from 21 minutes to 65 minutes. Each interview was audio recorded then recordings were transcribed and deidentified before analysis.

2.4. Analysis

Exploring the relationships in supported accommodation settings provides opportunities to examine how the built environment influences a range of outcomes for people with disability who receive support in their home environment, and to assist the providers who deliver that support. Interview data with people with intellectual disability, their families, and primary paid support staff were thematically analysed and coded to indicate where the support was delivered or how the outcomes of people living in the supported accommodation were influenced directly by an aspect of the built environment (design layout, spatiality, size, location). The coded results were then mapped thematically in terms of built environment elements, with further description of the impacts on people receiving support, implications for staff working practices, and examples of supporting quotes.

The analysis was conducted in two parts. The researcher first conducted a reflexive thematic analysis of the interview data using an inductive approach to identify broad patterns of meaning (Braun & Clarke, 2019; Braun et al., 2018). We then coded our data according to features of the built environment, enabling the data to be contextualised within the realm of the built

environment, and spatiality and care outcomes to be viewed through a lens of urban design and space.

We applied the results of our analysis to an illustration of a "typical apartment site" and have annotated the range of urban planning influences that were found to be important influences on community participation and the provision of high levels of support to the people with intellectual disability who live there (see Figure 1 at the end Section 3).

Ethics approval was granted by the University of Technology Sydney Human Research Ethics Committee Approval No. ETH17–2032: Supported Living Accommodation—Housing, Quality of Life and Support Services for People With Intellectual Disability. Participants (including people with intellectual disability, their families or guardians, and support staff) were required to sign a consent form to indicate their willingness to participate. Voluntary participation and the right to ask questions and decline participation at any time were emphasised during the data collection.

3. Results

This study explores participant perspectives of the outdoor areas of the apartment site and the independence and autonomy of people with intellectual disability. The apartment towers are surrounded by neighbourhood streets, one of which has heavy traffic during the day. The site includes several outdoor garden areas, including a heritage memorial garden, pathways, community buildings, and gardens.

3.1. What People With Intellectual Disability Told Us About Their Apartments

Analysis of the interview transcripts with people with intellectual disability revealed that, overall, they enjoyed living in their new apartment, including the flatmates with whom they lived. They also conveyed that they felt greater ownership of their apartments—including the living spaces around their apartments. This was in contrast to their experiences in group homes: "This is my chair here; I sit here…no one else" (participant, person with intellectual disability); "I have my family here to visit; they like to come; it is my own place to live…my own…we can have family barbeques here, but I couldn't really do that in the [group home]" (participant, person with intellectual disability); "I live with [flatmate, also with intellectual disability]; they are my best friend, it is just the two of us. It is good" (participant, person with intellectual disability).

3.2. Public and Shared Outdoor Spaces

The interviews with all participants often discussed outdoor areas. These were highly valued by people with intellectual disability themselves, as well as by family and staff as recreational spaces, calming spaces, and links to the wider community. What became apparent was that the urban design elements, in partnership with the model of support (the ratio of support staff to persons with intellectual disability) directly influenced whether and how these spaces were accessed. Analysis of the interview transcripts with people with disability, their families, and support staff indicate that there were three main areas within public spaces surrounding the apartment towers and streetscapes that influenced their independence, access to outdoors, and their visitability, as well as affecting how staff provided support: (a) complexity of site navigation, (b) shared garden landscapes, and (c) parking/transport and drop-off zones

3.2.1. Site Navigation

The interviews revealed how significantly the site design influences whether people move through and explore outdoor areas, visit people in the same apartment complex, and how easily they can access transport to areas beyond the site itself.

For people with disability, the site design directly influenced levels of autonomy and independence relating to independent movement outside their apartments. The need to swipe in and out of the site, coupled with the complex site plan of multiple towers and gardens, means that people receiving disability support on site were less likely to move independently from apartment to gardens: "I don't think [my brother] gets out of the apartment much in the afternoon on a weekday" (participant 4, family). People with disability also expressed that they do not leave the building independently: "I don't go out on my own. I always have my support person take me downstairs. We go together" (participant 17, person with intellectual disability).

Researchers also heard of a recent situation where a person with an intellectual disability had become separated from a group heading back to their apartments after a day excursion: "We lost [a person with intellectual disability] in the car park the other day. It was stressful. They walked away while [support person] was helping us get out of the car….They got found in another lift somewhere else" (participant 29, support staff).

For support staff, the design of pathways and navigation between apartments was complicated. When providing support across multiple apartments, walking between apartments took long periods and was rarely direct. It often involved going down lifts into underground parking to access the lifts of other towers. In some cases, staff reported that the cognitive load on them when they started working on the site was high—It took up to a month to remember the best routes between apartments, for example. The combination of a locked site and swipe access was seen as a positive for security reasons—Staff feel safe moving around the site at night; however, it makes accessing different areas more difficult:

> We are constantly ringing each other to let each other into the different tower lifts or to get the van or car

keys. It took me a good month before I could work out how to get from apartment to apartment because the site is complicated. (Participant 22, support staff)

For families, the apartment complex was large and initially daunting. Families and staff expressed concern that the inherent security design of apartments, coupled with the complex navigation, made it difficult for support staff to respond to people's needs to go outside (because going anywhere outside depended on them having assistance): "When providing support for two people with high support needs in an apartment, both have to want to go outside; otherwise, [I] cannot leave" (participant 19, support staff).

Families also expressed concern that their family members living in apartments and receiving disability support may become disoriented—and that the risk of becoming lost was high. Older parents of people with intellectual disability considered the distance between the complex's entrance and the front door of their son or daughter's apartment to be too long and exhausting, given their age and mobility:

> We can really only visit once a week because the trip is very tiring for us. It isn't like it was when [our son] was in the group home, where we could park out the front and walk a few metres to the front door. We have to walk a long distance from the car park to the lift and then to the apartment door. (Participant 38, family)

3.2.2. Shared Garden Landscapes

The interviews indicate that the shared gardens surrounding the apartment towers are essential social infrastructure that may not have been designed to maximise accessibility and safe and comfortable use. People with disability who lived in apartments on the site often expressed joy and connection to outdoor elements on site: "I love the rose garden, and my favourite tree is there" (participant 1, person with intellectual disability).

The site has a heritage garden site and house. However, support staff reported in their interviews that they did not visit it often for a number of reasons. Firstly, there is little shade or rain protection and not much seating available. This is a particular problem in the hot and sunny Australian summers:

> There is nowhere for us to sit comfortably, so we cannot really plan for any outdoor activities in the garden landscapes surrounding the apartments. I would love to do some art classes out here, but there is nowhere to sit in the shade. We provide support to people with mobility limitations—We cannot just sit on the grass. (Participant 7, support staff)

The physical limitation of the landscape designs was not the only reason that support staff did not plan for more outdoor experiences. The interviews revealed that the support staff routines and task expectations for each shift meant that there was no time or capacity for any incidental walks in the garden: "Our shifts are too busy, our schedules too tight at the end of the day to even think about going outside for a walk" (participant 2, support staff). This was supported by interview data from other participants, with people with intellectual disability talking about not going out much in the afternoons: "I just stay inside in the afternoon. We don't go out then. I just stay home until it is time for us to go out the next day" (participant 12, person with intellectual disability).

Some people had a balcony overlooking the central garden and courtyard and enjoyed watching passers-by in the gardens. This was used in different ways by the households. For some participants, it was considered an outdoor space: "I like the balcony….I sit there sometimes….I sometimes just sit and watch people who go past…and their dogs and stuff…" (participant 9, person with intellectual disability). However, for others, it was not used: "The balcony just has our laundry; I don't sit there….If we go out, it is all the way outside….I don't go onto the balcony much" (participant 42, person with intellectual disability).

Family members expressed a concern that their family members did not get outdoors as much as when they were living in a suburban free-standing house:

> I have noticed that [my family member] doesn't talk about the garden anymore. I understand that it is just too risky to let [him] leave the apartment on his own, the paths are complicated, and he could get lost. He might not find his way back to the correct lift well. It is a shame because the garden surroundings are beautiful with many plants. But [he] doesn't get to enjoy them much anymore. In the group home, he could come and go outside to the garden all the time, and he loved it. (Participant 24, family)

3.2.3. Parking and Transport

In this large apartment complex, teams of disability support staff provide high levels of support to people with intellectual disability in 22 apartments dispersed across the site. In the interviews, participants reflected on the location of the apartment site as a place where people who receive care can live with autonomy and be visited by their families and friends as well as a place where support staff are required to meet workplace expectations as a disability support worker. These expectations may include accompanying people with disability to appointments, day programs, and social visits.

For this reason, it is essential to explore the site's design in relation to transport and parking. These concepts arose in all interviews with staff, families, and also those with disability; for them, the proximity of drop-off zones and access to a range of transport options arose in interviews: "I don't go out on my own. I have [support staff] with me….If they are busy, I don't go. I don't want

to go [to the doctor] all the time. I get tired walking" (participant 30, person with intellectual disability).

For staff, the interviews revealed that transport options for their support of people with disability were limited. One of the impacts of this is that non-urgent or spontaneous trips, which can be just as important as formal appointments, are impossible. Priority has to be given to all formal planned appointments and activities. Having multiple people with a disability needing to be at different places and activities in the community puts pressure on vehicle resources: "There are not enough transport options. There is a lack of vehicles and uncertainty around transport and NDIA funding—I have one vehicle and six people to transport" (participant 50, support staff).

Families expressed concern that the drop-off by taxis and vans was not in a safe pedestrian area: "They need a safe, dedicated drop-off zone. The road is so busy we are concerned for [our family member]" (participant 16, family). This concern was supported by one participant who relayed their stressful experiences of having to rush to get in and out of a taxi on a busy street: "I had to rush; I can't rush, I don't like it….I could fall over….But the car was honking us…we had to rush too much" (participant 36, person with intellectual disability).

3.3. Urban Planning Design Elements: Influencing Landscapes of Care

This article focuses on how urban design elements influence how people with intellectual disability receive 24-hour disability support and participate in their local community. The analysis shows that the details of cross-site navigation, shared garden landscapes, parking, and transportation (see Figure 1) directly influence the nature of independence and disability care provision in a high-support apartment setting, such as our study. These outdoor settings and landscapes play various roles for any apartment dweller. They are places to experience the outdoors, as well as public areas where social encounters take place.

Figure 1, below, captures the elements that have been shown to directly influence the nature of independence and disability care provision in a high-support apartment setting. People with intellectual disability, their family, and their support staff all revealed how the urban environment of the apartment complex, as a site of care, acted as a barrier to or an enabler of more independent lives with community participation.
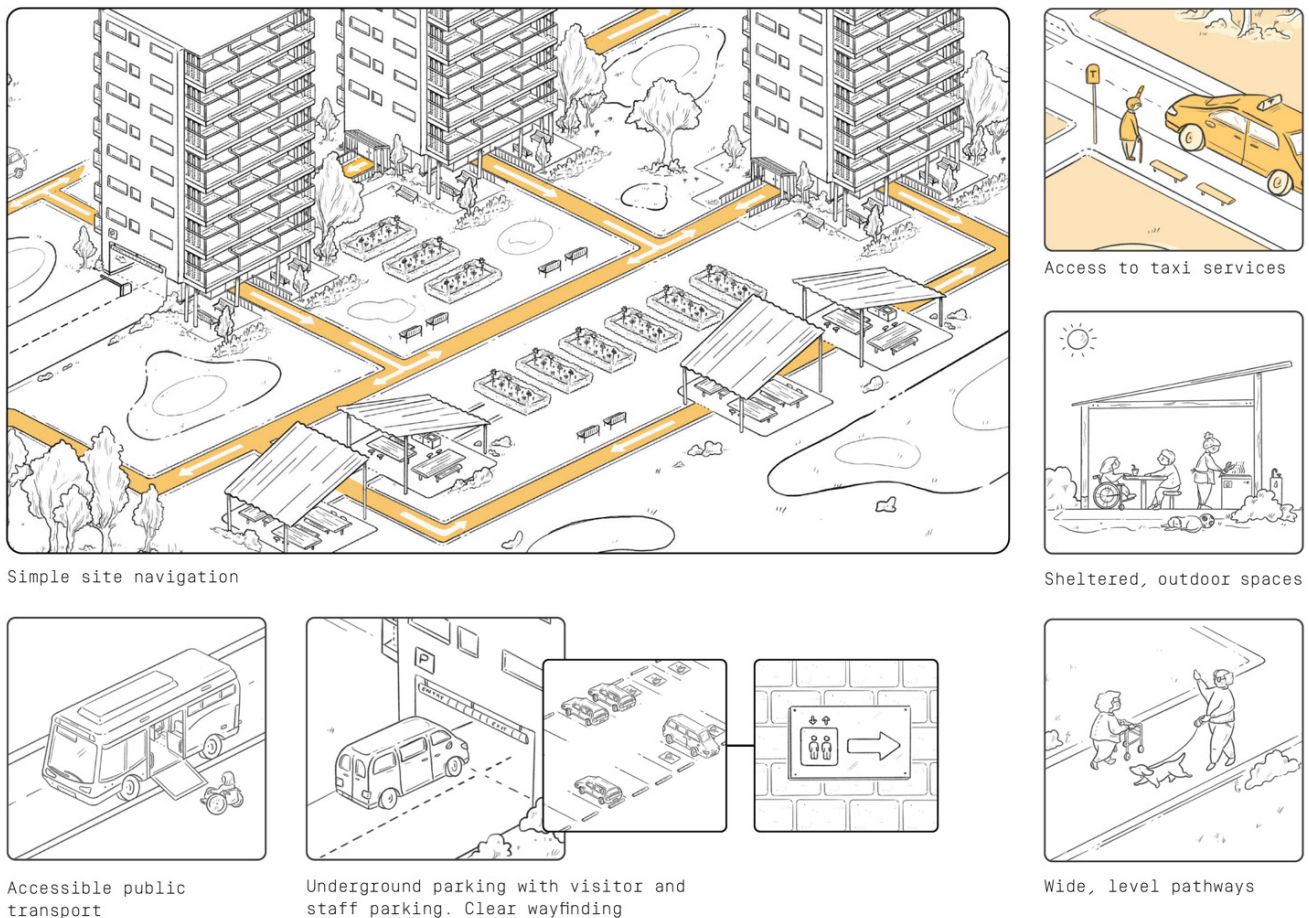

Simple site navigation

Access to taxi services

Sheltered, outdoor spaces

Accessible public transport

Underground parking with visitor and staff parking. Clear wayfinding

Wide, level pathways

Figure 1. Outdoor urban setting elements that influence the independence of people with intellectual disability and the quality and effectiveness of disability support provided in a community setting. Source: Illustration courtesy of Kristelle de Freitas.

4. Discussion

This study frames the outdoor setting of an apartment complex as a "landscape of care" (Högström, 2018; Milligan & Wiles, 2010): a site where people live and receive care as well as work and provide care. As such, the design elements in the urban environment can serve as enablers or barriers to successful outcomes for people with disability and their carers. We can consider the built environment as an enabler of autonomy and independence for people with intellectual disability, thereby reducing the need for disability care and support. We can also view the built environment through a lens of enabling higher quality, more effective disability support. This reflects the concepts of care described in Milligan and Wiles (2010), where care is framed as reciprocal, relational, and involving a complex network of actors and actions (see also Milligan, 2000; Tronto, 1993; Wiles, 2003a, 2003b).

Our research questions asked how the urban design of apartment settings influences how disability support is received by and provided to people with intellectual disability. We found that the way apartment towers are connected, and the navigation required to travel from, to, and between apartments can be relatively complex, requiring swipe cards, lifts, and multiple keys. Redesigning sites to consider ease of cross-site navigation and intuitive wayfinding would positively influence the independence of people with intellectual disability, the visitability of the apartments by family, and the effectiveness and efficiency of disability support provided by staff across the site. Including well-designed accessible pathways (with a continuous path of travel without steps or stairs) was noted as necessary by family and staff when considering the independence of the people with intellectual disability whose safety they were responsible for. The more complicated process of accessing outdoor areas (including swipe cards and lift wells) coupled with the requirement that staff support more than one person at a time meant that people receiving support were less likely to experience the outdoors or garden area. This directly affects their autonomy within the community. By simplifying the navigation and wayfinding required to travel in and around the buildings, as well as reducing the perceived risk of trips or falls, people receiving support would be more likely to have the opportunity to leave their apartments independently.

Our analysis of the interview data enabled us to develop an illustration that maps a range of urban design considerations for future apartment settings—so that the design can support them as places of community participation for people who receive care in their daily lives. The results reported in this article provide new insights into how urban design can influence the independence, participation, and receipt of high levels of support for people with intellectual disability living in diverse local communities. This research demonstrates that the perspectives of people with disability, their fam-

ilies, and staff can give rich insight into how public spaces and urban elements operate as social infrastructure for people with intellectual disability. It explores how the urban design of apartment sites can influence the nature of independence, autonomy, support, and participation. Our illustration of outdoor urban design elements shows that the experiences of providing and receiving care can be mapped directly to the design elements, the structure, and the scale of the surrounding built environment in a way that informs our understanding of how and why different designs of supported accommodation settings work well, or not so well.

Historically neighbourhoods, communities, and cities have been designed to operate without the influence and input of marginalised communities, including, but not limited to, people with intellectual disability. Understanding what practices support their inclusion within the local community contributes to making neighbourhoods and communities more socially responsible and inclusive so that all people, regardless of disability or disadvantage, have opportunities to feel a sense of local belonging. Klinenberg's (2018) work has drawn attention to the role of social infrastructure in establishing equal and united societies. Our study highlights that access to public space and engagement in the local community, and therefore opportunities for social encounters, depend highly on urban design. The findings explain why considering social infrastructure as a landscape of care will contribute to greater inclusion for people with intellectual disability and other community groups.

In this research, we have drawn attention to how access to outdoor spaces can be reduced or limited through design, particularly for those who require high levels of support to perform daily activities. The findings complement the work by Power (2016), who describes the socio-spatial experiences of carers and writes about being tied to the home and having limited public outings. The research expands upon established landscapes of care research in several ways. Gleeson and Kearns (2001) examined community care compared to institutionalisation and conceptualised the new landscapes of inclusive and ethical community care. Our research is an example of how the community care landscape includes all of the community—its shared and public spaces, rather than just the homes in which care takes place. Our research, although it examines paid care and not family care, reinforces that built environments and limitations of care models can mean people with intellectual disability are less likely to experience their local community. Where Milligan and Wiles (2010) brought a new understanding to landscapes of care in terms of proximity, this research expands the concept of landscapes of care to include shared public spaces and show how design can influence the social sustainability of our current and future cities.

This article focuses on a particular type of public space as social infrastructure: the public, shared areas between and around apartment buildings. The findings

demonstrate how "landscapes of care" extend beyond the walls of the housing, facilities, and infrastructure where care is received, and that outdoor areas are integral to experiences of community participation for people who receive support in the community, especially those with intellectual disability. These outdoor spaces connect where people live with the outdoors and their local community and influence how the outdoors are experienced, if at all. Whilst being a particular type of public and shared space, exploring urban outdoor areas in this way has implications for how we consider cities and neighbourhoods more generally as landscapes of care and social infrastructure.

4.1. Future Research

Our results have raised some interesting discussion points around urban design and the nature of risk in the neighbourhood for those with intellectual disability. When we consider the importance of community participation, we also consider such people's agency and autonomy to live and make decisions in the community. This raises the consideration of the *dignity of risk*—What is an acceptable risk? And what level of independence and autonomy is traded when families and support staff want to minimise the risk of a person leaving their apartment unattended? The findings from these interviews indicate that an important area of future urban design research is how to design apartments and surrounding urban landscapes that consider safety and prioritise agency for more accessible and inclusive participation. This has implications not only for people with intellectual disability but also for children and those with dementia.

5. Conclusion

This research has examined how urban design elements of an apartment development can influence how a person with an intellectual disability receives support and participates in the wider community in connecting outdoor spaces. This provides rich insight into how external spaces operate as both a "landscape of care" and as "social infrastructure"—contributing to the public life of cities and how spaces afford participation and social interaction. Using qualitative enquiry, we have closely examined a model of 24-hour disability support provided in a high-density apartment setting. The perspectives provided by people with intellectual disability, their families, and support staff were framed in the context of urban planning elements such as layout, landscape, and transport and site navigation. Exploring the links between autonomy, community participation, and disability support provided in an apartment setting has value for several reasons. Firstly, the research demonstrates that individualised apartment living is a valued housing-choice option by people with intellectual disability, even if there are urban design elements that can be

improved. Secondly, the study provides a useful comparison to the predominant *group home* model of supported housing for people with intellectual disability. Thirdly, it highlights the importance of increasing the housing type and support model options available to people with intellectual disability. Doing so will increase the number of location options, enabling greater housing choice for people with disability who receive high levels of support in daily life (e.g., in city centres and close to amenities, transport, and infrastructure).

People with intellectual disability expressed how much they enjoyed their new apartments, the flatmates they lived with, and how the space felt like their own. This contrasts with group homes where the living spaces are shared by up to five others. The interviews with participants also raised some defining characteristics of apartment living when discussing outcomes and support, including multi-level living, access to transport, larger complex overall sites, and shared gardens. The results revealed that these characteristics of apartment living worked in contrasting ways to either support better outcomes for people with intellectual disability or act as influences which need to be overcome through the provision of quality support. This highlights the role of quality support models in ensuring people with intellectual disability can access outside areas when and how they choose to. The characteristics of high-density apartments posed some challenges among the disability support workers; they felt that providing support across a large site (as opposed to a single suburban group home) was more physically demanding and complex. This feature of apartment living, combined with the care service models and shifts in place, also limited the number of times people left their apartment.

These experiences of people with intellectual disability, their families, and support providers highlight the significance of the urban setting in receiving and providing quality support and designing more inclusive cities for people receiving care. The results show how urban design can influence the collective independence and provision of care to diverse communities in urban centres and towns and are relevant to people with disability, older people, and other community groups who rely on community-care or support to continue to live independently at home.

Conflict of Interests

The author declares no conflict of interests.

References

Australian Government Productivity Commission. (2017). *National disability insurance scheme (NDIS) costs: Case study report*.

Barry, S., Knox, L., & Douglas, J. M. (2019). "Time's up": The experience of entering residential aged care for young people with acquired neurological disorders and their families. *Brain Impairment*, *20*(1), 37–48. https://doi.org/10.1017/BrImp. 2018.13

Bigby, C., & Bould, E. (2017). *Guide to good group homes: Evidence about what makes the most difference to the quality of group homes*. Centre for Applied Disability Research. https://disability.royalcommission.gov.au/system/files/submission/ISS.001.00062.PDF

Braun, V., & Clarke, V. (2019). *Answers to frequently asked questions about thematic analysis*. Unpublished manuscript. https://cdn.auckland.ac.nz/assets/psych/about/our-research/documents/Answers%20to%20frequently%20asked%20questions%20about%20thematic%20analysis%20April%202019.pdf

Braun, V., Clarke, V., Terry, G., & Hayfield, N. (2018). Thematic analysis. In P. Liamputtong (Ed.), *Handbook of research methods in health and social sciences* (pp. 843–860). Springer.

Carnemolla, P. (2018). Ageing in place and the internet of things—How smart home technologies, the built environment and caregiving intersect. *Visualization in Engineering*, *6*, Article 7. https://doi.org/10.1186/s40327-018-0066-5

Carnemolla, P. (2020). Individualized apartment accommodation for people with intellectual disability: Protocol for a qualitative study examining the wellbeing and support outcomes linking housing and health. *JMIR Research Protocols*, *9*(8), Article e18248. https://doi.org/10.2196/18248

Carnemolla, P., & Bridge, C. (2016). Accessible housing and health-related quality of life: Measurements of wellbeing outcomes following home modifications. *ArchNet-IJAR: International Journal of Architectural Research*, *10*(2), 38–51.

Carnemolla, P., & Bridge, C. (2019). Housing design and community care: How home modifications reduce care needs of older people and people with disability. *International Journal of Environmental Research and Public Health*, *16*(11), Article 1951.

Clement, T., & Bigby, C. (2010). *Group homes for people with intellectual disabilities: Encouraging inclusion and participation*. Jessica Kingsley Publishers.

De Graeve, K. (2017). Classed landscapes of care and belonging guardianships of unaccompanied minors. *Journal of Refugee Studies*, *30*(1), 71–88.

Egdell, V. (2013). Who cares? Managing obligation and responsibility across the changing landscapes of informal dementia care. *Ageing & Society*, *33*(5), 888–907.

Eisenberg, Y., & Maisel, J. (2021). Environmental contexts shaping disability and health. In D. J. Lollar, W. Horner-Johnson, & K. Froehlich-Grobe (Eds.), *Public health perspectives on disability* (pp. 107–128). Springer.

Giles-Corti, B., Vernez-Moudon, A., Reis, R., Turrell, G., Dannenberg, A. L., Badland, H., Foster, S., Lowe, M., Sallis, J. F., Stevenson, M., & Owen, N. (2016). City planning and population health: A global challenge. *The Lancet*, *388*(10062), 2912–2924. https://doi.org/10.1016/S0140-*6736*(16)30066-6

Gleeson, B., & Kearns, R. (2001). Remoralising landscapes of care. *Environment and Planning D: Society and Space*, *19*(1), 61–80.

Gorfin, L., & Mcglaughlin, A. (2003). Housing for adults with a learning disability: "I want to choose, but they don't listen." *Housing, Care and Support*, *6*(3), 4–8.

Högström, E. (2018). "It used to be here but moved somewhere else": Post-asylum spatialisations—A new urban frontier? *Social & Cultural Geography*, *19*(3), 314–335.

Klinenberg, E. (2018). *Palaces for the people: How to build a more equal and united society*. Random House.

Kusenbach, M. (2003). Street phenomenology: The go-along as ethnographic research tool. *Ethnography*, *4*(3), 455–485. https://doi.org/10.1177/146613810343007

Milligan, C. (2000). "Bearing the burden": Towards a restructured geography of caring. *Area*, *32*(1), 49–58. https://www.jstor.org/stable/20004036

Milligan, C., & Wiles, J. (2010). Landscapes of care. *Progress in Human Geography*, *34*(6), 736–754.

National Disability Insurance Agency. (2022). *Specialist disability accommodation*. https://www.ndis.gov.au/providers/housing-and-living-supports-and-services/specialist-disability-accommodation

Neuman, W. L. (2006). *Social research methods: Qualitative and quantitative approaches*. Allyn & Bacon.

Parker, S., & Fisher, K. (2010). Facilitators and barriers in Australian disability housing support policies: Using a human rights framework. *Disability Studies Quarterly*, *30*(3/4). https://doi.org/10.18061/dsq.v30i3/4.1283

Phillips, S. D. (2012). Implications of EU accession for disability rights legislation and housing in Bulgaria, Romania, Croatia, and the former Yugoslav Republic of Macedonia. *Journal of Disability Policy Studies*, *23*(1), 26–38.

Power, A. (2016). *Landscapes of care: Comparative perspectives on family caregiving*. Routledge.

Power, A., & Gaete-Reyes, M. (2019). Neoliberal abandonment in disability housing provision: A look at England and Chile. *Housing Studies*, *34*(5), 741–760. https://doi.org/10.1080/02673037.2018.1478068

Robinson, S., Carnemolla, P., Lay, K., & Kelly, J. (2022). Involving people with intellectual disability in setting priorities for building community inclusion at a local government level. *British Journal of Learning Disabilities*, *50*(3), 364–375. https://doi.org/10.1111/bld.12469

Sallis, J. F., Bull, F., Burdett, R., Frank, L. D., Griffiths, P., Giles-Corti, B., & Stevenson, M. (2016). Use of science to guide city planning policy and practice: How to achieve healthy and sustainable future cities. *The Lancet*, *388*(10062), 2936–2947. https://doi.org/10.1016/S0140-6736(16)30068-X

Sechrest, L., & Sidani, S. (1995). Quantitative and qualitative methods: Is there an alternative? *Evaluation and Program Planning*, *18*(1), 77–87. https://doi.org/10.1016/0149-7189(94)00051-x

Šiška, J., & Beadle-Brown, J. (2022). Progress on deinstitutionalisation and the development of community living for persons with disabilities in Europe: Are we nearly there? *Disability & Society*. Advance online publication. https://doi.org/10.1080/09687599.2022.2071676

Terashima, M., & Clark, K. (2021). The precarious absence of disability perspectives in planning research. *Urban Planning*, *6*(1), 120–132.

Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, *27*(2), 237–246. https://doi.org/10.1177/1098214005283748

Tiwari, R., Pandey, M., & Sharma, A. (2010). An approach to human adaptability towards its built environment: A review. *Energy and Power Engineering*, *2*(2), 90–94. https://doi.org/10.4236/epe.2010.22013

Tronto, J. (1993). *Moral boundaries: A political argument for an ethic of care*. Routledge.

Wiles, J. (2003a). Daily geographies of caregivers: Mobility, routine, scale. *Social Science and Medicine*, *57*, 1307–1325.

Wiles, J. (2003b). Informal caregivers' experiences of formal support in a changing context. *Health and Social Care in the Community*, *11*, 189–207.

Wright, C. J., Zeeman, H., & Whitty, J. A. (2017). Design principles in housing for people with complex physical and cognitive disability: Towards an integrated framework for practice. *Journal of Housing and the Built Environment*, *32*(2), 339–360. https://doi.org/10.1007/s10901-016-9517-2

Zallio, M., & Clarkson, P. J. (2021). Inclusion, diversity, equity and accessibility in the built environment: A study of architectural design practice. *Building and Environment*, *206*, Article 108352.

About the Author

Phillippa Carnemolla (PhD) is an industrial designer and an expert on policy and practice focused on developing more inclusive cities. She applies inclusive design principles to remove barriers to inclusion in homes, workplaces, public spaces, and cities. Dr Carnemolla's research sits across two streams. Firstly, she investigates how design outcomes impact the autonomy and well-being of people with disability and older people. Secondly, she explores how shared decision-making in the design process can lead to more effective design outcomes. Her cross-sectorial research includes strategy and policy development, planning, construction, and design, focusing on diversity, inclusion, and participation.