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The role of built environments and use of communal spaces in helping facilitate social connections of older people living in housing with care schemes.

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**Abstract Purpose** – This paper examined the social significance of built environments for shaping inclusion and social connections in housing with care (HwC) schemes for older people in England and Wales. The aim was to develop a better understanding of how the availability, absence and use of communal spaces impacts social connections with other residents.

**Design/methodology/approach** – Longitudinal and cross-sectional qualitative interviews were conducted with 72 residents across three HwC providers in England and Wales. Data were analysed using a thematic framework approach to examine how residents experienced their living environments.

**Findings** – Whilst the presence of communal shared spaces helps facilitate social connections and the development of friendships, full and equal access to these spaces remains challenging for residents with minority characteristics. Building designers need to ensure they are complying with building regulations and the Equalities Act. The presence of onsite staff may also help to manage the impact of discriminatory attitudes.

**Originality/value** – This study offers insights into how built environments support the development of social connections and friendships in HwC schemes. It also identifies ways that housing managers can ensure that all residents are equally valued and included.

**Keywords** Older people, housing and social care, social connections and inclusion

## The role of built environments and use of communal spaces in helping facilitate social connections of older people living in housing with care schemes

Housing with care (HwC), which includes extra-care housing, sheltered housing, independent living schemes, and some retirement communities, have increased in number in the United Kingdom (UK) and are key in supporting independence as people age (Commission on the Role of Housing in the Future of Care and Support, 2021). Built environments can facilitate wellbeing through their design and operation (Altomote et al, 2020) and stimulate physical and social activities (Chau and Jamei, 2021). A scoping review found that older adults living in various housing models across different continents, believed that well-designed communal spaces play a critical role in fostering residents' social participation (Nguyen and Levasseur, 2023). Another study of community dwelling older people in the USA, found a positive association between social satisfaction and community infrastructure, (i.e. availability of services) (Suen et al., 2017). However, when places are perceived as unsafe and unwelcoming (Curl et al., 2015; Lindahl, Anderson and Paulsson, 2018) they can equally provide barriers to social participation. Loneliness and small social networks have been associated with mortality risk in older adults (Schutter et al., 2022).

Much previous research on the impact of built environments focuses on associations between physical health, wellbeing and green infrastructure on community-dwelling older people, with many coming from an architectural standpoint (Guo et al., 2021; Kerr et al., 2012; Moore et al., 2018). Adopting as survey design, Black and Jester (2020) explored how older people's characteristics (e.g. health, age and socio-economic status) impact their perception of built environments, whilst Cameron, Johnson and Evans (2020) explored older people's views of living in integrated housing from the management of care perspective. A literature review was conducted (Figueiredo et al., 2022) to explore older people's perceptions of outdoor built environments with an aim of informing urban design and policy guidelines.

## **The dynamic relationship between space/place and inclusion/exclusion**

Space and spatial organisation are important for understanding inclusion and exclusion within HwC schemes, which ultimately impact wellbeing. Berglund-Snodgrass and Nord (2019) examined two contrasting housing schemes in Sweden to show the importance of spatial organisation for facilitating safe spaces for ageing and providing opportunities to develop and maintain meaningful relationships. Where housing was sensitively designed around open spaces with shared communal areas, residents perceived these spaces as safe to participate in activities fully or partially (as observers). Residents living in a scheme located next to a road, split over three floors, with multiple entrances and a lack of communal spaces, perceived these spaces as unsafe. This made it difficult to develop relationships with other residents. Communal environments that facilitate residents' autonomy and choice of participation in social activities, was also favoured in a study exploring senior housing as a living environment that supports wellbeing (Jolanki, 2021). A study focusing on local social innovation in Finland found that the social hub model, developed to support community building at a neighbourhood level, was valued as a resource that offered residents shared spaces for social encounters (Rantala et al., 2024).

Communal facilities, such as restaurants, lounges and shops, can become the main hub of interaction and encourage friendships development (Callaghan, et al. 2009; Evans et al., 2020). Centrally located, accessible and easy to see into lounges are particularly valued as are features such as glass atriums which can create the "*ambience of an indoor street*" (Evans, 2009). Conversely, aspects of physical environments (e.g. a large cricket pitch at the centre of a village) and use of physical space (e.g. spatial clustering of tenures i.e. privately rented apartments clustered away from publicly funded apartments) can create barriers to social interactions. Through understanding the dynamic nature of space and place and the social activities which occur within these spaces, we can better understand HwC schemes as sites in

which inclusion and exclusion is constantly negotiated, contested, and reshaped by daily encounters. Residents' experiences of inclusion and exclusion are shaped by the organisation of housing schemes and the dynamic intersection of individual, interpersonal (relationships), environmental, and macro-scale factors such as policies on ageing. For example, active ageing policies and discourse could lead to exclusionary practices for those with physical and cognitive impairments who are perceived as 'less active' and limited in social participation (Herron et al., 2020; Wiles, 2005).

### **Communities and social inclusion: A theoretical framework**

Community infrastructure - space outside the home - has been conceptualised as the 'third place', where the 'first' and 'second' place reflect the home and the workplace, respectively (Oldenburg and Bissett, 1982; Yarker, 2021). 'Third places' comprise community spaces located near housing, that are equally accessible to all members of the community (e.g. libraries, green spaces, and cafes). They provide an opportunity to co-exist and socially connect with a diverse range of people from the community. Applying the 'third place' concept to retirement housing, Campbell (2015) found that more highly used and well-liked communal spaces were likely to possess typical 'third place' characteristics (e.g. be homelike, have casual décor and lively, welcoming atmospheres). Built areas such as balconies and patios have been conceptualised as 'thresholds', or areas of social engagement where residents can connect with neighbours actively in conversation or passively through observation of neighbourhood activities (Gardner, 2011). Similarly, Gardner labelled pass-through areas such as lobbies and corridors are 'transitory zones', which play a role in facilitating casual, unplanned social interactions.

In the UK, the relationship between the Equality Act 2010 (England and Wales) and building regulations related to accessibility in design of built environments, should be noted. This includes housing for older people. The Equality Act 2010 (Part 4) requires that “*due regard must be given to any specific needs of likely building users that might be reasonably met*”. Part M4(2) and (3) of the Building Regulation 2010 (‘Access to and use of buildings’) sets out a minimum requirement for housing providers to ensure that a broad range of people can access and use facilities within a building. Further, the revised National Planning Policy Framework (2019) makes explicit that building designs must be easily accessible, barrier-free, enabling environments, designed to mitigate the impact of physical, cognitive and sensory impairments (Ministry of Housing, Communities and Local Government, 2019). A study exploring architectural design professionals’ understanding of ‘inclusive design’ of built environments, found a general misunderstanding of the concept. Several participants believed it related to physical accessibility and compliance with the Disability Discrimination Act (UK, 1995 – superseded by the Equalities Act 2010), rather than the wider concept of supporting the inclusion of all potential users (Zallio and Clarkson, 2021).

While a definitive approach to measuring social inclusion is lacking (Warburton and Shardlow, 2013), this dynamic and multifaceted concept speaks of the full and fair access to community-based resources and activities, having relationships with family, friends and acquaintances, and a sense of belonging within a community. It represents more than the mere physical presence in mainstream society but also the participation and engagement in it (Cobigo, Ouellette-Kuntz, Lysaght and Martin, 2012). Social inclusion involves both a process and an outcome of eliminating barriers to participation in relationships and activities within a particular environment (Levitas et al., 2007).

Another factor contributing to social inclusion is digital connectivity - this was highlighted during the global pandemic as an important resource for preventing loneliness and isolation (Sixsmith et al., 2022). Willis et al (2023) found that digital connectivity with outside groups was especially important for older people whose identities are minoritised (e.g. sexuality and/or disability) and may not experience their HwC scheme as protected safe social spaces.

The current paper aims to explore residents' experiences and perceptions of communal spaces within built environments of HwC schemes and how these spaces support inclusion and social connections with other residents. We look at the role of shared semi-private spaces (e.g. corridors, refuse areas, patios and balconies) and how they operate as socially significant 'threshold' areas and 'transitory zones' (Gardner, 2011), important for bolstering residents' social wellbeing and connectedness.

### **Research design and methods**

This paper reports findings from a larger mixed-methods study exploring social inclusion amongst residents living in a range of HwC schemes in England and Wales (The DICE project). The study received ethical approval from the Faculty of Social Sciences and Law research ethics committee, University of Bristol (Reference 94582). Fieldwork was conducted from November 2019 to July 2021, resulting in necessary modifications due to the COVID-19 pandemic. Purposive sampling was applied to identify two groups of interest. The first, composed of cross-sectional interviews with residents from across participating schemes, aimed to reflect differences in geographical location (i.e. rural and urban) and type of housing scheme. The second group, which made up the longitudinal sample, focused on residents who identify with minoritised social groups (i.e. LGBT+, Black, Asian and other minority ethnic groups and/or disabled). (Table 1: Participants' demographics – Supplementary material).



An initial recruitment call was included in a self-completion survey completed as part of the The DICE project. Recruitment flyers were also distributed to various schemes and specific resident groups aimed at those with social minority characteristics. Prior to the pandemic, the research team visited participating sites to meet residents in-person. From March 2020, recruitment flyers highlighting the option to conduct interviews by telephone/online, were distributed via housing managers. Prior to the pandemic, 25 cross-sectional interviews were conducted in-person, with 26 residents interviewed remotely by telephone following the start of COVID-19 lockdowns. In total 51 residents at nine different HwC schemes took part in a cross-sectional interview. Longitudinal respondents participated in up to three sequential interviews, conducted four months apart, resulting in 53 interviews among 21 participants. Fourteen wave 1 interviews were conducted in-person before lockdown.

The overall focus of all the interviews was on how living environments and housing providers facilitate the inclusion and social connections of residents. Interviews varied in duration from 45 minutes to 1.5 hours. In line with ethical requirements, all interested residents were provided with an information sheet (with accessible formats available, including in different languages). Written consent was sought prior to participation. Informed consent continued to be gained across the series of longitudinal interviews. All participants were provided with information on local and national support services for older people.

### Data analysis

All interviews were recorded and transcribed verbatim. Transcripts were anonymised during transcription. Data were imported into a framework matrix in NVivo 12, using the framework approach for analysis and data management (Gale et al., 2013). A sample of

transcripts were initially read by four members of the research team, with two members subsequently developing initial coding frameworks for both longitudinal and cross-sectional data. The frameworks included a priori categories as well as categories arising inductively. An additional category and sub-categories based on COVID-19 data was added to the two frameworks following the completion of interviews. Categorical data was then thematically analysed using an iterative process of moving between initial coding and defining and naming recurrent themes across the dataset (Braun and Clarke, 2021).

### **Findings:**

Our analysis yielded four themes related to the intersection of built environments, identity, and social connections: 1) the use and role of communal spaces; 2) the boundaries between public and private spaces; 3) the role of outside communal spaces; and 4) communal areas as exclusionary zones. Twenty of the 26 HwC schemes had communal lounges, and one had a seated area with a communal kitchen situated in a large open-plan space in the main entrance of the building. Other communal spaces included libraries in eight schemes, activity/hobby rooms at nine schemes, and hair salons at nine schemes. Four schemes had therapy/treatment rooms, one had an internet café and another a computer room. One scheme had an onsite shop, which was used by the wider community, another had a mobile general store/shop for use by residents only. Two schemes had on-site cinema rooms, four schemes had no communal spaces. Two of these did, however, have laundry rooms. Outside space included communal gardens at 22 schemes with private gardens present at the other four schemes. (Table 2: Details of HwC schemes – Supplementary material).

#### **1. Use and role of communal spaces**

Communal spaces within housing schemes provided spatial contexts for the development of social ties with other residents. Several participants spoke of how relationships with other

residents had developed within these communal spaces around activities mainly scheduled by housing providers (e.g. bingo, fish and chip suppers, quiz nights):

*We have a communal lounge and there are communal events from time to time, so I know quite a few people. (P15: female, 60-70 years, retirement living, longitudinal interview).*

The depth of relationships with other residents is unclear from the above quote. Nevertheless, these shared spaces and communal activities provide opportunities for residents to socially connect. The presence of communal lounges also facilitated casual or spontaneous social interactions with other residents outside of scheduled events:

*So, we go over there [lounge], and I'll sometimes find someone in there and I'll stay and talk for a while. (P3: female, 70-80 years, retirement living, longitudinal interview).*

Communal spaces, as settings where both planned and unplanned interactions took place, were important spaces for preventing boredom, loneliness and isolation:

*“Then in the afternoon, if we feel like we’ve got nothing to do, “Oh, let’s go and see who’s in [communal space].” [...] Which is nice here, because you don’t have to be lonely. (B6: female, 60-70 years, independent living, cross-sectional interview).*

These spaces could be likened to ‘third places’ conceptualised by Oldenburg and Bissett (1982), in that they provided safe, accessible, social spaces outside of the private domain of the home or ‘first place’ for residents to make social connections.

The presence of free Wi-Fi and digital connectivity was an important part of the infrastructure that encouraged residents to occupy communal spaces:

*The Wi-Fi has helped [use communal spaces] as well because people are coming in [...] the lounge and use their laptops there. (P11: gay man, 70-80 years, retirement living, longitudinal interview).*

The importance of digital connectivity was highlighted during the COVID-19 pandemic in facilitating wider social connections with family and friends and preventing older people's loneliness and isolation. P13, a gay woman who has physical and mental health difficulties that prevent her leaving her home, spoke of how she stayed socially connected to external contacts via digital technology:

*I belong to some websites or groups on websites as an active member just to keep up with everybody and occurrences and everything. (P13, gay woman, 60-70 years, retirement living, longitudinal interview).*

Whilst P13 does not explicitly identify the groups and websites to which she has contact, it could be assumed that without digital connectivity she risked becoming extremely isolated from others who share her identity, interests and with whom she has a more profound connection.

Four HwC schemes lacked indoor communal spaces for residents. Most did, however, have shared laundries. Several participants spoke about how these laundry areas were used as 'substitute' social spaces:

*Some of the sites do have communal areas, this one doesn't. It's just the laundry room. But sometimes you can get 2 or 3 people out there all having a chat. Summertime is the chatty time, winter nobody comes out. (P14: trans gay woman, 60-79 years, retirement living, longitudinal interview).*

P14 also speaks of laundries as places where between neighbour disputes occur and that she adopts strategies to avoid these situations:

*I think laundries are traditionally a place where arguments take place. But I just make sure that I go down there at 4:00pm (P14).*

As P14's quote infers, without indoor communal spaces, residents risk becoming seasonally isolated. Residents were, however, creative in their use of the minimal communal spaces, such as outdoor refuse or bin areas and corridors. These spaces could facilitate the development of acquaintances and friendships over shared, routine activities, like taking the rubbish out:

*I met first [neighbour] when I went down to the bin areas. We all just sort of congregated and got to know each other. (B12: female, 61-70 years, independent living, cross-sectional interview).*

The creative use of spaces highlights the human need for social interaction and how routine activities provide a common bond over which social interactions can occur.

'Transitory zones', such as corridors and lobbies, were often the first point of social interaction with other residents when newly moved to schemes, as highlighted by one couple who moved into their housing scheme during the global pandemic:

*.... so he [husband] walks round the corridors when he can't go out, and he will see people then occasionally. (D9, female, 80-90 years, extra-care, cross-sectional interview).*

'Transitory zones' were especially important in emulating casual social interactions and connections that might occur within neighbourhood streets. 'Transitory zones' within HwC

schemes are therefore important in providing safe 'public spaces' that facilitate social connections and a sense of neighbourhood within these micro-communities.

## **2.0 Boundaries between public and private spaces**

In line with previous research on communal living (Abbott, Fisk and Forward, 2000), most participants, across all housing providers, spoke of the value they placed on communal spaces, such as lounges, for keeping their private and public lives separate:

*We love going in there [communal lounge]. You don't have to have everybody in and out of your home.* (B11: female, 55-60 years, retirement living, cross-sectional interview).

The desire to keep private and public lives separate and how this was made possible with the presence of communal spaces, was a recurring theme across the data:

*I might go to the atrium and there might be some residents down there. [...] We don't tend to go to each other's flats. [...] I find this with practically everybody.* (D2: female, 61-70, extra-care housing, cross-sectional interview).

These quotes highlight the micro nature of housing schemes as a reflection of wider society and neighbourhoods and echoes Oldenburg's (1999) conception of home being the 'first place' which is separated from social community or 'third places'. Ensuring that those whose physical health rather than choice, prevents them using these spaces and risk becoming socially isolated within their homes, remains a concern that needs consideration by housing providers and staff.

The restaurant and on-site shop at one extra-care housing scheme was open for use by the neighbouring local authority run flats. This helped residents feel more rooted in the community:

*People next door, [...] there is a link between here and there, although they are council, and we are not. But, you know, people can come in and have a meal.*

(H4: female, 71-80, extra-care housing, cross-sectional interview).

In contrast to previous assumptions about the importance of fostering wider community inclusion (Evans et al., 2017), for most residents, offering activities to select outside groups of residents only, provided the right balance between connectivity with the outside community, whilst still offering safe ‘third place’ community spaces within housing schemes.

For some, the design of apartments, with the kitchen windows facing outwards into communal indoor corridors helped prevent isolation and validated residents’ presence:

*You can walk past, and they'll see you [...], so you are noticed. You're not an isolated person.* (B3: Male, 51-60, independent living, cross-sectional interview)

However, for other residents, this design was experienced as an invasion of ‘first’ or private spaces:

*Oh, I keep that down [window blinds], yes. I like my privacy.*  
(B7: Male, 61-70, retirement housing, cross-sectional interview)

Amalgamating both public and private domains within HwC will therefore be experienced very differently by individuals and may also depend on relationships with neighbours.

### **3.0 Social significant of outside communal spaces**

Across housing schemes, residents described both private and communal gardens as places which were used to connect with others, whether for ‘casual’ or more regular interactions.

These spaces became crucial sites of connection and mitigated against the risk of isolation during the COVID-19 lockdowns:

*Living in a scheme like this, even if you're just waving to somebody as they walk past, or sitting in the garden and talking to them, that's made it [lockdown] so much better.* (P18: gay female, 71-80 years, sheltered housing, longitudinal interview).

Balconies and patios, lying between indoor apartments and outdoor communal spaces, could provide excellent 'threshold' spaces for connecting new neighbours:

*There's a man underneath me that the first day we were in here he was laughing with my daughter, [...] and I've got a little Juliet balcony [...]. She was an English teacher, so she was quoting Romeo and Juliet and he was answering back. He said he'd be our Romeo.* (E2: female, 81+ years, extra-care, cross-sectional interview).

Balconies also facilitated spontaneous interactions:

*Quite a few of the residents just walk around the block, and where we've all got balconies, you'll see someone going past, so you stand on your balcony, and you can have a chat.* (P5: female, 61-70 years, independent living, longitudinal interview, post first lockdown).

Balconies and outside garden spaces, therefore, provide vital 'thresholds' which link between private and public spaces. These 'thresholds' proved essential 'safe spaces' for reducing isolation during the COVID pandemic lockdowns.



#### 4.0 Communal areas as exclusionary zones

Residents at several housing schemes spoke of how built environments could create exclusionary zones, especially for residents who were reliant on aids to assist mobility. One participant, whilst herself not a wheelchair user, observed barriers for wheelchair users accessing the communal laundry:

*Because the residents' laundry upstairs the doors are so narrow. If they're in a wheelchair they can't get into the laundry. (A1: female, 71-80 years, extra-care, cross-sectional interview).*

Another structural barrier for wheelchairs users was highlighted by a participant who spoke about the limited space available in a cinema room:

*[...] it's a proper cinema room, but you can't get all the wheelchairs in because, I don't know if it's 12 or 16 that it seats. (H2: female, 81+ years, widowed, extra-care, cross-sectional interview).*

Architects and housing providers have a legal obligation to ensure that older people's housing is fit for purpose for every resident, in accordance with building regulations and the Equality Act 2010.

Other participants spoke of the exclusionary impact that dominant social groups (referred to as 'cliques') occupying communal spaces caused. These groups comprised of small tight-knit groups of residents who had formed close social bonds and whose interactions, attitudes and occupation of areas could impact negatively on other residents. For example,

some residents spoke of feeling intimidated to access certain communal spaces when these groups were present:

*We were going up there [activity room] for a few years, I said to [other resident], "I just can't stand the gossiping." They gossip. [...] all they do, is talk about people. (A9: female 61-70 years, ethnic minority background, extra-care housing, cross-sectional interview).*

The impact these 'cliques' had upon some residents resulted in one participant talking about a move away from her HwC scheme.

## **Discussion**

To our knowledge, this is the first study to explore how built environments and presence of communal spaces, 'thresholds', such as balconies and patios and 'transitory zones', such as lobbies and corridors can facilitate both social connections and exclusionary zones within HwC schemes. We identified four themes whereby HwC residents' social experiences are shaped by the presence and use of communal spaces. In line with previous research (Campbell, 2014; Berglund-Snodgrass and Nord, 2019) this paper highlights the important role communal spaces play within HwC schemes in offering older people safe, accessible spaces where new social connections can develop. This is especially important during a life stage when social networks and opportunities for social interactions decline (Wrzus et al., 2013). The availability of communal spaces within HwC also enable residents to separate public or 'third places' from the privacy of home or 'first places'. In care and older age, privacy has been linked to control and dignity, both indicators of quality of life (Hughes, 2004). This paper also found, however, that communal spaces can generate zones of

exclusion, particularly for residents already at risk of marginalisation through physical impairments (Kuboshima et al., 2021) or discriminatory attitudes (Willis et al., 2023).

### *Strengths and limitations*

A key strength of this study is its design, both in employing longitudinal and cross-sectional interviews and in recruiting respondents with marginalised characteristics. Another strength, albeit unexpected, is that our study was able to capture perspectives across the onset of the COVID-19 pandemic. The pandemic restrictions, however, limited our ability to engage face-to-face within housing schemes whose residents were predominantly from different ethnic minoritised groups, and it therefore limits the inclusion of the voices and experiences of these groups. Responses in later interviews may also have been influenced by the changes in social engagement stimulated by lockdowns and may only be specific to the context of the pandemic. However, the findings reported here focus on the role and use of built environments, and much of the interview content would feasibly apply regardless of the pandemic.

### *Implications for scheme design and further research*

Our research offers some key insights and implications for housing providers and architects. In line with previous research (Gardner, 2011), this paper highlights the importance of shared corridors, patios and balconies in enabling spontaneous, yet regular social interactions with other residents over shared activities and practices. These ‘threshold’ areas (e.g. balconies) and ‘transitory zones’ (e.g. corridors) have been defined as a hybrid of semi-public and pass through spaces for informal social interactions which are important to ageing in place. As vital sites for spontaneous interaction, ‘threshold’ areas and ‘transitory zones’ would benefit from being subject to *intentional* co-design. Architects and providers

should, therefore, consider the design and build of corridors, balconies and bin areas with

interaction in mind and in collaboration with older people.

Housing providers and architects must ensure that the design of HwC schemes, affords all residents access to every area of built environments to maintain independence, autonomy and to adopt the ethos of the ageing in place agenda. If communal areas are to function as ‘third places’ for residents, then architects and providers must ensure these areas are accessible to all residents in line with building regulations and the Equality Act (2010). This finding, based on residents’ voices, highlights the importance of co-designing schemes in collaboration with older adults with varying care and support needs and from diverse social backgrounds at early points of planning and construction.

Our findings highlight the importance of investment in outdoor green spaces that provide a social ecosystem as areas of social interaction, physical engagement (through gardening) and mental engagement with natural environments, particularly for those with limited mobility. We argue that designers and housing providers should consider the integration of ‘transitory spaces’, such as outdoor corridors, with green spaces, such as raised gardening beds for boosting the wellbeing benefits of these ecosystems. However more evidence is needed on the impact of green spaces on resident wellbeing.

Whilst the presence of communal spaces is particularly important to facilitating interactions between residents living in HwC schemes, the interplay of housing managers within these environments and those living with them is critical for ensuring that these interactions are inclusive, safe and welcoming communities for all. Housing staff also need to balance intervening in the natural development of friendship groups with the potential of the formation of exclusionary ‘cliques’. Such cliques threaten the accomplishment of communal areas as ‘third places’ and can impact the quality of life for residents. In line with previous

research into communal living (Abbott, Fisk & Forward, 2000), the act of sharing built living environments and being at similar life stages, does not guarantee shared interest or the desire for friendship. Adopting a community integrated approach whereby members of the local community are welcomed to use on-site facilities or take part in activities, both integrates older people's housing within the community and has the potential of reducing loneliness and isolation (Evans et al, 2017). This may also introduce more diversity into housing schemes which could facilitate friendships beyond just housing settings.

Avenues for further research in this field include the potential impact of emerging technologies and innovative co-design approaches on enhancing social connections in HwC schemes. An additional area for enquiry is the impact of small-scale design in strengthening resident autonomy and social bonds within schemes.

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Link to The DICE project resources:

<https://www.housinglin.org.uk/Topics/browse/loneliness-and-isolation/DICE/>

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## Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.