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Housing Conditions and Integrated Care for Older People

Tallaght University Hospital and partners, identifying common housing conditions affecting older people in South Dublin

Key Findings and Recommendations Report 2024



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Key Findings and Recommendations Report 2024

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The **Housing Conditions for Older People Group**

(See Acknowledgements for all members of the Research Group/Steering Committee)

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This project was undertaken by TrinityHaus (TCD), AFI, BRE, and Tallaght University Hospital, in collaboration with the research group opposite. For more information on this research, or other work in this area please visit <https://www.tcd.ie/trinityhaus/>

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This report can be found on the HAFH website: <https://agefriendlyhomes.ie/> and on the AFI website: <https://agefriendlyireland.ie/age-friendly-resources/>

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- **Prof. Sean Kennelly** – Tallaght University Hospital



Integrated Care Team and Tallaght University Hospital:

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Executive Summary

A. Project Introduction and Overview

Tallaght University Hospital (TUH) and the HSE Integrated Care Team are part of the Integrated Care Programme for Older People (ICPOP) aimed at promoting the development of services and care pathways to improve outcomes for older people in the community.

These care pathways involve various aspects of the built environment including housing, which acts as critical infrastructure for the hospital and community care ecosystem. It is important to understand the impact of housing on the health of older people in the Tallaght area and the downstream consequences for the community and TUH in terms of preventative medicine and the ongoing care of older people.

A research team consisting of TrinityHaus (TCD), Tallaght University Hospital (TUH), Building Research Establishment (BRE), and Age Friendly Ireland (AFI), working with a range of partners including The Housing Agency, Age Action, South Dublin County Council (SDCC), Meath County Council (MCC) and the Centre for Excellence in Universal Design at the National Disability Authority (CEUD; NDA) conducted this study to explore the links between housing conditions and the health of older people. This research aims to inform housing providers (e.g., local authorities), policy makers, and healthcare providers about the key aspects of healthy homes as well as the most common housing hazards experienced by older people.

Through stakeholder and research activities, and 10 housing case studies in the Tallaght/SDCC area, the project investigated the links between housing conditions and the health of older people, and their impact on the TUH Integrated Care Team for Older Persons (ICTOP; HSE).

This research was conducted as part of **The Meath Foundation** funded project **‘Supporting Tallaght University Hospital’s (TUH) Integrated Care for Older Persons: Testing an approach to identify the common housing hazards in housing affecting older people in South Dublin (Funded by the Meath Foundation)’**

Research aims and objectives

Research aims: The research investigates the link between common housing conditions and hazards and the health and wellbeing of older people, explores existing housing data and potential auditing methodologies, and outlines the implications for key organisations responsible for the integrated care of older people in the South Dublin area.

Objectives:

1. Identifying the common conditions and hazards in housing that affect older people and impact on their health. Poor housing conditions affect the work of the Integrated Care Team through poor general health outcomes for older people in the hospital catchment area, hospitalisation due to poor housing or hazards, or patient discharge issues due to housing that is unsuitable for recovery or rehabilitation.
2. Working with the TUH-based Integrated Care Team, SDCC, and AFI to determine how these findings can be used to enhance care pathways and inform decision making around housing adaptations.
3. Initiating a wider conversation about the relationship between housing conditions and the health of older people, the role of housing in the integrated care of older people, and the relationship between TUH and local housing in terms of preventative medicine and healthcare delivery.
4. Using this project to investigate and identify opportunities for further investigation of housing conditions for older people and the interaction with integrated care. This primarily involves the identification of appropriate technical assessment methodologies and processes to be used in any future projects.

B. Key Findings and Recommendations

This research highlights three main issues including:

- **The serious implications that poor housing conditions have for older people in Ireland, the consequences for health and wellbeing outcomes, and the impact this has on the integrated care for older persons.**
- **The urgent need for better housing data, national housing condition surveys, and centralised data platforms.**

- **The need to support and expand integrated approaches to housing and the care of older people in Ireland by bringing together key partners including: hospitals; the Integrated Care Programme for Older People; local authorities; and the Healthy Age Friendly Homes Programme.**

Expanding on these three main issues, a set of Key Findings and Recommendations, organised into seven themes (see Figure 1 below), are presented in the following sections. These themes are informed by the research activities, namely: the focus groups, expert interviews, case studies, various literature reviews, and steering committee feedback.

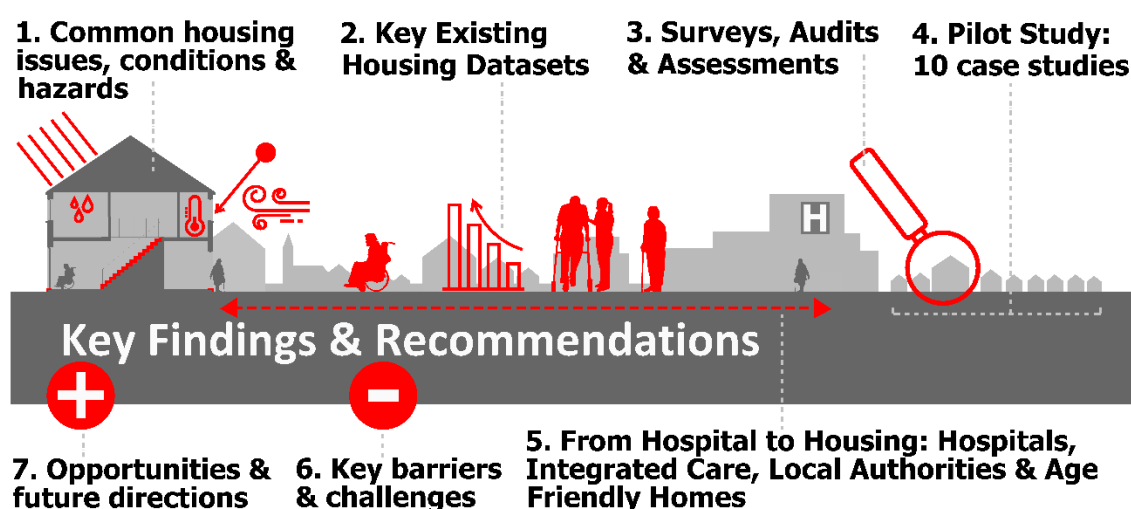


Figure 1 - Key Findings and Recommendations

This project was solely focused on housing for older people, particularly those who are patients of TUH-based Integrated Care Programme for Older Persons. However, where relevant, the recommendations refer to a) a general housing conditions survey; b) a housing survey for older people; and c) the housing conditions for ICPOP patients (with relevance for Tallaght and the wider country).

1. Common housing issues, conditions, and hazards

Common housing hazards

The 2020 scoping study, 'The Cost of Poor Housing in Ireland 2020¹, conducted by the BRE Trust, used international research, data from the 2016 Irish national census, and the 2016 Northern Ireland House Condition Survey, to estimate the likely health impact of poor housing in Ireland. This concluded that approximately 160,000, or 8% of Irish homes, are

¹ Nicol et al 2020 The Cost of Poor Housing in Ireland – See https://files.bregroup.com/bretrust/BRE_Trust_The_Cost_of_Poor_Housing_in_Ireland.pdf

likely to present serious health and safety risks, the most common and severe of these relating to cold and home accidents – particularly falls. According to the report, the estimated total health impact is costing the state approximately €1.25 billion a year, plus the distress and lost opportunities to the residents and their families. Furthermore, the report highlights that older people are particularly affected by poor housing conditions because a) in the first place, older people are more likely to live in poor housing conditions; b) they often spend more time at home and as a result face greater exposure to housing hazards; c) are typically more vulnerable to housing hazards (i.e. more likely to be affected by the cold or a fall).

The 2016 Northern Ireland House Condition Survey, as mentioned above, used the ‘Housing Health and Safety Rating System’ (HHSRS) to identify and measure housing hazards. The HHSRS was also used in this current research to identify the potential housing hazards that would affect older people in typical private dwellings in Ireland.

The HHSRS has four categories containing a total of 29 potential hazards. These include Physiological Requirements (e.g., damp & mould growth, or excessive heat and cold); Psychological Requirements (e.g., crowding, poor lighting, noise); Protection from Infection (e.g., hygiene, food safety, poor sanitation and drainage); and Protection from Accidents (e.g., hot surfaces, scalding, and collision). Using the HHSRS as a starting point, key findings from the literature, and feedback from participants across the various research activities, were overlaid on the HHSRS hazards to highlight key concerns as follows:

HHSRS hazards and impacts on older people are of particular concern due to a range of typical age-related difficulties such as physical frailty; physical, sensory, and cognitive impairment; or comorbidity.

HHSRS hazards and issues related to accessibility, usability, and safety are closely linked to age-related impairments. Among other challenges, heat and cold, lighting, and fires are some of the major concerns for people with disabilities. Lack of space is also an issue, primarily due to mobility issues, and the use and storage of mobility devices.

HHSRS hazards and implications for dementia and cognitive impairment are important considerations in terms of safety, comfort, accessibility, and independence. Many of these are covered by the various hazards in the HHSRS categories, however, there are specific

issues that are either exacerbated by dementia or that are unique to dementia and cognitive impairment in relation to thermal comfort, lighting, circadian rhythms and sleep disturbance, falls, and noise.

Key Recommendations: Common housing conditions and hazards

- Building on 'The Cost of Poor Housing in Ireland 2020' report and this project, conduct a focussed systematic literature review, coupled with stakeholder engagement, to further examine the impact of common housing conditions and hazards in Ireland for a) older people (accounting for emerging challenges and new age-related research); b) persons with disabilities accounting for accessibility, usability, and safety for a wide diversity of people; and c) people with dementia and cognitive impairment.

Hazards and issues across the key spatial scales

The focus groups, expert interviews, and case studies identified housing issues and hazards across key spatial scales including: Location (e.g., importance of neighbourhood quality, community connectivity); Site Design (e.g., level pathways, lack of space for extension); Entry and Internal Circulation (e.g., level access, stairs); Key Internal and External Spaces (e.g., ground floor bathroom); Internal Environment (e.g., excess cold); Finishes, Fittings & Furniture (e.g., non-slip floors); and Technology (e.g., fall alarms, security).

Key Recommendations: Built environment issues across key spatial scales, and the relevant HHSRS categories

- Ensure that measures to improve housing conditions are considered across all spatial scales including: Site Location (Safe, well-maintained neighbourhood, community connectivity, public transport, etc); Site Design; Entry & Internal Circulation; Key Internal & External Spaces; Internal Environment; Finishes, Fittings, & Furniture; and Technology.
- Ensure that flexibility and adaptability underpin both new-build and retrofit/ upgrade projects to cater to the diverse, varying, and ongoing changes in care needs that people experience over the short, medium, and long term.

Overall issues and emerging concerns

Several other themes arose from the research activities and the literature including challenges related to renting in older age; under-occupation and difficulties managing the home, rising energy costs and increased cost-of-living; and the impacts of climate change.

Key Recommendations: Overall issues and emerging concerns

- Further research is required at a national level to explore emerging concerns including: tenure, under-occupation and difficulties managing the home, inaccessible homes, cost-of-Living and Rising Energy Costs, and the impacts of climate change.

- The development and updating of housing policy related to older people should be informed by these issues and underpinned by evidence from research in these areas.
- Future housing surveys and assessments should take account of these key emerging issues and ensure that quantitative and qualitative data is collected in relation to these concerns.

2. Key Existing Housing Datasets

Despite the importance of housing-related data, and a relatively high volume of data being gathered by a range of Irish organisations, there is no centralised database that collates key data regarding the condition of the Irish housing stock. Instead, data is largely spread across numerous key housing-related datasets. Lack of detailed national data regarding tenure types, age profiles of residents, and housing conditions hampers research, policy, and practice.

Key Recommendations: Housing-related data

- Provide a centralised, integrated, and accessible database for all publicly available data on housing, health, disability, and ageing.
- Datasets should disaggregate data to include a) the ages of household members; and b) housing tenure (e.g., privately owned, private rented, local authority etc).
- Datasets should collate data on Universal Design dwellings, Age Friendly dwellings, adapted dwellings, energy retrofitted dwellings, and should include information about existing dwellings and dwellings at planning stage.
- Liaise with The Irish Longitudinal Study on Ageing (TILDA) to explore options for including more in-depth housing-related research in their longitudinal studies on ageing.
- Datasets should identify the proportion of households with disabilities or those with health conditions which may be impacted by their housing and housing conditions.
- A national database of information gathered by Integrated Care Teams (ICTs)/Multi-Disciplinary Teams (MDTs) nationwide would allow for detailed information about the health, housing, and social wellbeing of older people throughout the country to be accessed by relevant organisations. It would allow the ICT to identify information or care gaps, or to identify older people who are not being reached by the programme.

Note: See Section 4.4 of the full report for a discussion and recommendations related to future housing conditions survey

3. Surveys, Audits and Assessments

Following a review of the HHSRS methodology, this research confirms that the HHSRS is a very comprehensive housing survey tool. Furthermore, it should be noted that the UK methodology contains a social survey element that gathers qualitative information on residents. Notwithstanding this, it may be beneficial to consider some additional survey questions/topics to account for the specific needs and vulnerabilities of older people, those with dementia or cognitive impairments, and particularly patients of the Integrated Care for

Older Persons Programme (ICPOP). Additional elements may also need to be considered in terms of emerging challenges including under-occupation, or the impacts of climate change such as excess heat or extreme weather events, which can disproportionately affect older people or people with impairments or health conditions.

Key Recommendations: Building and housing assessment tools and processes

- The HHSRS methodology is a comprehensive housing survey tool and should be considered as part of any Irish housing condition survey.
- Consider how an additional/supplemental module of the HHSRS could be introduced to focus specifically on housing conditions and hazards for a) older people, b) people with disabilities and, and c) for older people with dementia or cognitive impairments.
- Consider how the HHSRS could account for emerging challenges such as under-occupation, or the impacts of climate change.

4. Pilot Study – 10 case studies to test a methodology and identify typical hazards

The research team completed 10 case studies in the SDCC/TUH catchment area. These were based on patient file reviews, interviews, and technical dwelling assessments using the House Condition Survey and Housing Health and Safety Rating System (HHSRS). There were three main outcomes from these cases studies. Firstly, the House Condition Survey and HHSRS methodology was found to be an appropriate tool in the Irish context (as recommended above). Secondly, it performed well in relation to housing for older people (notwithstanding the potential additional features outlined above). Thirdly, it provided data for a small sample of Irish houses from which to identify some typical hazards and challenges². These align with the housing conditions highlighted in the HHSRS categories, literature review, and stakeholder feedback, and include damp and mould growth, excessive cold, falls on stairs and steps, lack of ground floor bathrooms, under-occupation and management issues, among others.

An overall learning from the case studies includes the value of using the House Condition Survey and HHSRS, and the evident need for a comprehensive housing survey in Ireland.

² Due to the focus, scope, and nature of this research, the selected sample of dwellings were generally of a high quality, and therefore not fully representative of older people's housing in South Dublin, nor nationally.

Key Recommendations: Overall learnings from the case studies

Housing condition surveys for the general population

- There is an evident need for a housing conditions survey of the housing stock in the Republic of Ireland for the general population at least every five years (data to be collated and stored as recommended in key finding 2 above).
- In advance of a national survey, conduct a nationwide pilot project with approximately 1000 dwellings across representative geographical locations and key housing typologies.

Housing conditions survey and Integrated Care Teams for Older People

- Consider a survey to focus on older people who are patients of Integrated Care Teams across the country to assess and understand housing conditions for older people with complex health issues and high care needs. This would enhance the work of the National Integrated Care Programme for Older People, while also collecting data and supporting policy and practice around older persons' housing in general.
- Considering the complex health issues and high care needs, and prevalence of dementia and cognitive impairment found within ICPOP patients, any such survey should take account of the additional assessment questions and topic areas recommended throughout **section 4.3 of the full report**.

5. From Hospital to Housing: Hospitals, Integrated Care for Older People, Local Authorities, and Age Friendly Homes

The TUH-based Integrated Care Team (ICTOP; HSE), SDCC, and AFI and the Healthy Age Friendly Homes (HAFH) Programme are working closely to address health and housing in the South Dublin area.

The TUH ICTOP provides multi-disciplinary care to older persons living in the surrounding area who are referred to the programme. The team allows for improved coordination between all aspects of care, health, and housing, supporting older people in their homes. SDCC provide support for older people through their numerous adaptation grants as well as their Age Friendly Homes Technical Advisor. Similarly, AFI and the HAFH Programme provide a local coordinator in each local authority, including SDCC, to assess the needs of older people living in the community and provide advice and support regarding adaptations, grants, and other services available to them.

Key Recommendations: Integration across key partners and programmes

TUH: The role of the hospital and the Integrated Care Team

- Examine ways to anonymise, digitise, and make available the data collected by the ICT to inform housing and health-related research, policy, and practice, including issues related to older people with complex care needs.
- All members of ICT teams should be fully briefed on the HAFH Programme and carry referral forms for HAFH when they undertake home visits to patients.

The role of local authority

- Investigate how relevant local authority housing data can be made available to the ICT as part of their assessments in relation to the housing conditions of specific patients, where available.
- The SDCC Age Friendly Housing Technical Advisor should attend ICT/MDT meetings where appropriate, to reinforce the exchange of information between different sectors and to increase the local authorities' understanding of the lived experience of older people living in the community.

AFI and the Healthy Homes Programme

- Continue and increase the support for the HAFH Local Coordinator's attendance at the ICT/MDT meetings.
- Local coordinators should continue to collaborate with local authorities, ICTOP and other key agencies to provide an essential overview of the housing issues being experienced by individual older people and to ensure a more informed and less fragmented approach.
- Research, feedback, and experiences from the HAFH should be better utilised to inform housing, and age-related housing issues at local authority and national level.

Key integration issues and opportunities

- Provide a coordinated and centralised housing database to support the work of the local authorities (e.g., housing provision and adaptations), the HAFH programme, and ICTs. This should provide detailed information on the housing stock within each local authority and where supports may be best needed.
- In many cases, the ad-hoc nature of the relationships between patients, carers and family members, healthcare professionals, housing professionals, or local authority undermines support for older people in the context of housing, care, and health. To address this there should be an overarching care professional who provides continuous support for the patient from hospital or short-term residential care to home, or at home if this is the main setting for their care journey.

6. Key barriers and challenges

Throughout the various research activities, several barriers and challenges that impede older people's ability to, or likelihood of completing housing adaptations were identified. These are critical issues which must be overcome in order to better support older people to adapt their homes and allow them to age in their home. These include a complex grants process; occupant decision-making difficulties; financial costs; disruption and having to leave the home during works; and fragmentation between various healthcare and housing professionals and support.

Key Recommendations: Barriers and Challenges

- The continued expansion of the HAFH Programme, and the roll-out of the Local Coordinator across all 31 local authorities in Ireland, will provide much-needed support and advice for older people and help them navigate the grants process.

- The potential of an overarching care professional who would provide continuous support for the patient from hospital or short-term residential care to home, or at home if this is the main setting for their care journey. This would help deal with the fragmentation between various healthcare and housing professionals and support as experienced by some stakeholders, as highlighted in Section 4.5.4.

7. Opportunities and future direction

Despite the challenges outlined above, there are many developments and initiatives that can be used to improve housing conditions for older people in Ireland. The Housing Options for Our Ageing Population policy statement, the HAFH programme, and new national documents such as the upcoming Universal Design Dwellings standard create greater awareness and knowledge around better housing for older people. In terms of broader urban planning, policies such as ‘Sustainable Residential Development and Compact Settlements: Guidelines for Planning Authorities’ and the upcoming revision of the National Planning Framework, recognise the need to improve the built environment for Ireland’s ageing population. All of the above, which deal with housing across key spatial scales, from individual dwellings to the wider community, provide opportunities to reinforce the connections between health, ageing, and housing, and help improve conditions for older people in existing, and in future housing.

Key Recommendations: Opportunities and future direction

- Capitalise on the current interest and momentum for change regarding housing policy for older people and the expansion of the HAFH programme, to ensure that improved housing conditions for older people and the impact on health, wellbeing, and inclusion, are central to upcoming and future national and local authority housing and planning policy, practice, and initiatives

Next Steps

To advance the ambitions set out above a number of actions are necessary:

- Promote the findings set out in this report and engage with key stakeholders to discuss the key issues and identify next steps beyond those outlined here.
- Explore the development of a national housing condition survey conducted at five-year intervals. While this survey should be based on the HHSRS, the development of additional survey questions or topic area should involve key stakeholders, a representative group of residents and family members, disabled persons' organisations, and other groups as required.
- In advance of any large-scale nationwide survey, conduct a nationwide pilot project including approximately 1000 dwellings across representative geographical locations and involving key housing typologies.
- Based on this current research, and drawing on the HHSRS, conduct further pilot studies in a range of health regions in Ireland to further explore the connection between age-related health and housing and provide support to the National ICPOP.
- Liaise with TILDA regarding the data they have in relation to housing and explore options for including more in-depth housing-related questions as part of their longitudinal studies.
- While this research carried out a brief review of available housing and ageing related datasets, a more comprehensive analysis is required to identify all existing data sources and potential data gaps.

1 Project Introduction and Overview

Housing is critical to the health and well-being of older people and is vital for preventative medicine in the community. Supporting community health is central to Tallaght University Hospital's (TUH) Integrated Care for Older Person's Team who provide multi-disciplinary care to "...improve the quality and outcomes of care for older persons and their carers and support persons to live well in their own homes and communities"(Reilly et al., 2017).

The TUH team is part of the Integrated Care Programme for Older People (ICPOP) aimed at promoting the development of services and care pathways to improve outcomes for older people in the community. These pathways involve various aspects of the built environment including housing, which acts as critical infrastructure for the hospital and community care ecosystem. In this regard it is important to understand the impact of housing on the health of older people in the Tallaght area and the downstream consequences for TUH in terms of both preventative medicine and the direct care of older people as patients.

Good quality housing conditions are an important factor in people's ability to maintain good mental and physical health, as well as quality of life, particularly for older people who spend more time at home than other demographics (Coyle et al., 2020). This study explores the links between housing conditions and the health of older people, and aims to inform housing providers (e.g., local authority) and policy makers about the key aspects of healthy homes as well as the most common housing hazards, specifically for older people. Through various stakeholder and research activities, as well as 10 housing case studies in the Tallaght/South Dublin County Council area, the project investigated the links between housing conditions and the health of older people, and its impact on Tallaght University Hospital (TUH) based Integrated Care Team for Older Persons (ICTOP; HSE).

1.1 Research aims and objectives

Research aims: The research aims to investigate the link between common housing conditions and hazards that affect older people's health in the South Dublin area, and their impact on TUH healthcare delivery.

Objectives: these aims will be achieved through the following objectives:

1. Identify common conditions and hazards in housing that affect older people and impact on their health.
2. Outline the implications of these housing conditions for the work of the Integrated Care Team. These conditions may include poor general health outcomes in hospital catchment areas, hospitalisation due to poor housing or hazards, or patient discharge issues due to housing that is unsuitable for recovery or rehabilitation.
3. Work with the TUH Integrated Care Team, SDCC, and AFI to determine how these findings can be used to enhance care pathways and inform decision making around housing adaptations.
4. Initiate a wider conversation about the relationship between housing conditions and the health of older people, the role of housing in the integrated care for older people, and the relationship between TUH and local housing in terms of preventative medicine and healthcare delivery.
5. Use this project to investigate and identify opportunities for further investigation of housing conditions for older people and the interaction with integrated care. This will primarily involve the identification of appropriate technical assessment methodologies and processes to be used in any further project.
6. This project has widescale replicability and scalability throughout the network of 31 local authorities in Ireland. Working through Age friendly Ireland, a shared service of local government, the methodology, findings, and recommendations will be shared with all local authorities, particularly through the recently assigned Age Friendly Housing Advisor roles in housing department, and with Age Friendly Ireland's governance infrastructure which includes the Department of Housing, Local Government and Heritage and the Department of Health and the HSE.

1.2 BRE Trust Report - The Cost of Poor Housing in Ireland

In 2020, a scoping study commissioned by BRE reviewed international research on the impact of housing on health, particularly the health of older people, entitled *The Cost of Poor Housing in Ireland* (Nicol et al., 2020). It used data from the 2016 Irish national census and the 2016 Northern Ireland House Condition Survey to estimate the likely impact of poor housing on health in Ireland.

The research concluded that that:

- The Housing Health and Safety Rating System, or HHSRS (developed in the UK but now applied internationally, including the USA and New Zealand), is the most appropriate tool to measure the impact of housing on health in Ireland.
- Around 160,000 (8%) of Irish homes are likely to present a serious health and safety risk to their occupants (and visitors), as measured through the HHSRS.
- The most common severe home hazards likely to be found in Ireland are those relating to cold and home accidents – particularly falls. These are, generally, not expensive to rectify compared with the long-term cost to the health services and society if they are ignored.

Older people are particularly affected by living in poor housing conditions:

1. Older people (in particular homeowners and private tenants) are more likely to live in poor housing conditions.
2. Older people are more likely to be affected by poor housing conditions (i.e., more likely to be affected by a cold home or a fall).
3. Older people are likely to spend more time at home exposed to poor housing conditions (the 'dose effect').

According to this report, the estimated total health impact to society of leaving these hazards un-rectified is costing the Irish health and care services approximately €1.25 billion a year, as well as the distress and lost opportunities to the residents and their families.

Improving poor housing has multiple benefits, beyond those that just relate to the health of their occupants. These include reduced costs to the local and national healthcare sector, reduced entry to long-term residential care, reduced energy costs and carbon emissions, higher residual asset values, and local job creation opportunities.

The report recommended that “a pilot survey is designed and delivered to validate the findings of this research, and to demonstrate the wider value of housing surveys to inform policies in Ireland.” The pilot survey would include a technical inspection of a sample of the homes of older people, plus a follow-up interview with households to establish how they are managing their housing conditions and their health. The output of such research might be used to inform guidance to households on how to live healthily and safely in their homes, and to provide local authorities, landlords, integrated health professionals and carers with the tools to assist vulnerable people in their jurisdictions.

2 Project Methodology

This research utilised a strong stakeholder engagement strategy involving focus groups, diaries, and interviews to place the perspectives of older people living in the South Dublin County Council area at the centre of the work. The project also involved a series of case study visits and interviews with patients of the Integrated Care Team, a literature review, and ongoing steering committee meetings to discuss and refine the research. The purpose of this strategy was to ensure that the research was co-created with residents, patients, staff, and other key stakeholders, and that the results were person-centred, and addressed the diverse needs of this population. This mixed methods approach is described in the following sections.

2.1 Focus Groups

Two focus groups/stakeholder workshops were scheduled to take place in September 2022, aiming to hear from older people living in the South Dublin County Council area/TUH catchment area about the common difficulties they experience relating to housing upkeep, repair and retrofit, as well as their relevant health issues and concerns.

Diaries: Participants were also asked to complete a diary over the 2-week period between the first and second focus group sessions. They were asked to make daily entries to the diary to be threaded through the focus group findings. The purpose of the diary was to give the research team insight into the impact of housing conditions on the health and wellbeing of older people in South Dublin, with a view to informing housing providers and policy makers of the key components of healthy homes.

2.2 Expert Interviews

Approximately 20 interviews were conducted with various stakeholders, experts, and industry representatives within the area of housing and healthcare for older people. The aim of these interviews was to identify the key issues related to housing, health and supporting older people in the community, amongst experts in this area. These interviews took place between July and October 2022.

2.3 Case Studies

10 patients of the integrated care programme for older people (TUH) were visited in their home as part of the research. The participants were selected to include a representative range of health and ageing issues including cognitive impairment, and to represent people living alone and with others.

The case studies represented the key housing typologies within the South Dublin County Council (SDCC) area including: detached houses; semi-detached/terraced houses; flats/apartments; and other key house types in both rural, suburban, and urban locations, where possible.

For each case study the following activities were completed:

- Review of their Comprehensive Geriatric Assessment file to identify key health-related housing issues, and potential housing adaptations to improve housing conditions and provide greater support.
- House Condition Survey and Housing Health and Safety Rating System (HHSRS) – using a standard survey schedule (completed by BRE) to collect detailed HHSRS calculations, plus information on the dwelling age, type, size, material and age of construction materials, disrepair and recent work done.
- Semi-structured interviews with participants in their home.

See **Section 4.4** for more information.

2.4 Literature Review: Examining typical housing conditions for older people and related assessment tools

Using the Housing Health and Safety Rating System (HHSRS) as a starting point, literature was examined to identify the key typical housing conditions that affect older people. In addition, the major built environment concerns for a person with dementia were reviewed, and while many of these concerns are covered to a large extent by HHSRS, there are certain issues that are either exacerbated by dementia or that are unique to dementia and cognitive impairment, these were discussed under the existing HHSRS categories.

Building on the HHSRS categories and hazards, the research briefly examined a small selection of built environment assessment methodologies to determine if there were any

additional issues or hazards that may be relevant to housing for older people, particularly those who may be patients within an integrated care for older person's programme.

See **Section 4.3 and 4.4** for more information.

2.5 Key Housing-Related Datasets

This part of the research examined the relevant datasets collected, both internationally and nationally, regarding ageing and housing conditions. This identified a number of useful datasets, while also highlighting data gaps and the highly fragmented nature of housing condition data in Ireland.

See **Section 4.2** for more information.

2.6 Steering Committee Engagement and Feedback

The Housing Options for Older People Group formed the steering committee supporting this research project. Throughout the course of the project, the core research team held 8 meetings with members of the steering committee, to update them on the research progress and to share and get feedback on the research findings and working papers.

Certain members of the steering committee also attended and helped to facilitate the focus groups, including representatives from the Housing Agency and Age Friendly Ireland.

Members of the steering committee were also interviewed as expert representatives of relevant organisations: Age Action, Age Friendly Ireland, BRE, CEUD/NDA, the Housing Agency, the National Clinical and Integrated Care Programme – Older Persons, Tallaght University Hospital, HSE, Meath County Council, and South Dublin County Council.

The research team also met with partners from the Integrated Care Team for Older Persons (based in Tallaght), Tallaght University Hospital, South Dublin County Council and Age Friendly Ireland (including a Healthy Homes officer). This meeting allowed the research team to discuss the findings from the research with key partners and to examine the decision-making processes around housing adaptations and housing delivery for older people including TUH outpatient, day hospital service users, or patients discharged to home.

Organisations represented on the steering committee can be found in the Acknowledgements Sections.

2.7 Key Terms and Definitions

2.7.1 Healthy Age Friendly Homes Local Coordinator

As part of the Healthy Age Friendly Homes (HAFH) Programme, a national programme jointly led by the Department of Health, Sláintecare and Age Friendly Ireland (Meath County Council), each participating local authority employs a HAFH Local Coordinator. The Local Coordinator's role involves carrying out needs assessments in the homes of older people with the aim of enabling them to continue living independently in their own home and avoiding premature admittance to residential long-term care.

2.7.2 Age Friendly Housing Technical Advisor

Each local authority also has an assigned staff member, providing specialist advice for matters relating to age friendly housing, designing for life and universal design principles. The technical advisor responds to queries from the local authority, the private sector and external stakeholders and agencies regarding age friendly housing.

3 Background: Housing, ageing, inclusion & health

3.1 A brief overview of ageing and disability in Ireland

In 2022, more than 15% of the Irish population (> 0.8 million) was over 65 years old, and this is estimated to grow to nearly 1.6 million by 2051 (CSO, 2023c).

In terms of disability, Census 2022 data states that over 1.1 million people (22% of the population) experienced at least one long-lasting condition or difficulty (CSO, 2023a). In terms of households, the census states that 37% of households have at least one person who report having a disability to some extent, that 17% of households have at least one person reporting a disability to a great extent, while the overall percentage of households with at least one person with a disability is 41% (NDA, 2023).

Furthermore, to illustrate some of the overlaps between ageing and disability, CSO data in 2019 reported that approximately 12% of people over 65 years had difficulties with personal care activities, with just over 40% reporting difficulties with household activities (CSO, 2010).

Using the above information as a background, the following sub-sections contextualise the key findings to be set out in Section 4 by highlighting important issues related to housing and healthy ageing, ageing in place, and the role of universal design and age friendly housing. These issues provide a backdrop to the findings, while also outlining some ageing and housing-related research and policy relevant to the common housing conditions that affect older people in Ireland.

3.2 Housing and healthy ageing across the life course

According to the WHO 'Housing and Health Guidelines' (2018, p.XV) "Improved housing conditions can save lives, prevent disease, increase quality of life, reduce poverty, help mitigate climate change and contribute to the achievement of the Sustainable Development Goals (SDGs), including those addressing health (SDG 3) and sustainable cities (SDG 11)"

Moreover, as argued by Donald (2009), housing quality affects older people to a greater extent, firstly due to the prevalence of long-term conditions in this age group, and secondly due to the fact that many people over 85 years spend 90% of their time at home, resulting

in a situation where “older people are the most vulnerable to the ill effects of poor housing and are the age group most likely to occupy poor housing” (Donald, 2009, p.364).

For example, Gibney et al. (2018) identify strong connections between poor housing and ‘non-communicable adverse health outcomes for older people’ including respiratory health problems, and bone and joint conditions.

In the Irish context, research from TILDA confirms the challenges related to poor housing faced by many older people in Ireland (Orr et al., 2016). According to this research, over half of adults aged over 50 years report some housing problems, most commonly damp/mould, structural problems, and heating difficulties.

In 2018, as part of the Healthy and Positive Ageing Initiative (HaPAI), interviews were conducted with over 10,000 people over the age of 55. From these interviews, 10.2% reported having housing condition problems (primarily rot, damp, or leaks in walls or roof), 10.4% reported having inadequate heating, while 2.3% had both condition problems and inadequate heating (Gibney et al., 2018).

While the relationship between housing and health has long been recognised, it is only during rare periods of history, such as the post-World War 2 programme in the UK (Murphy, 1970) that this relationship has been seen as a fundamental part of societal wellbeing. In this regard, the ‘Housing Options for Our Ageing Population - Policy Statement’ (Government of Ireland, 2019), primarily developed by the Department of Housing, Planning and Local Government, recognises this relationship and proposes a range of actions to support housing for healthy ageing.

The link between health and housing is also identified and supported by the expert interviews with the identified themes including: *Increased/improved awareness and understanding around the link between housing and health and undertaking a more holistic approach to health and well-being.*

3.3 Ageing in place: The importance of good housing conditions

Gibney et al. (2018) argue that poor housing conditions undermine ageing-in-place, a concern that is supported by research such as Bosch-Farré et al. (2020) and reflected in national policy (Government of Ireland, 2019). More recently, Cartagena Farias et al. (2023)

refer to ‘the protective role of housing conditions’ stating that a “lack of suitable housing means people are moving to residential care prematurely or staying in hospital unnecessarily rather than recovering in their own homes.” (p6).

How housing can support older people to remain at home and age in place, is also identified by interviewees in this project’s expert interviews: “We are aware that housing conditions are fundamental to maintain health and well-being [for older persons] to be able to return home, to stay at home ... and age well and in place.”

Ageing in place is the first of six principles that underpin the ‘Housing Options for Our Ageing Population - Policy Statement’ (Government of Ireland, 2019). A key part of achieving this is set out in principle three ‘Achieving this Promoting Sustainable Lifetime Housing’, which advocates accessibility, flexibility, and adaptability to “enable older people, who wish to remain independent in their own home, to do so without the need for costly and disruptive remodelling of the dwelling.” (p5).

3.4 Ageing in place: The role of universal design

The 2015 ‘Universal Design Guidelines for Homes in Ireland’ (CEUD, 2015) promote dwellings that can be “accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability.” Planning for an ageing population and supporting people to age in place through accessible, safe, adaptable housing is a key aspect of this guidance.

These guidelines support the aims of the ‘Housing Options for Our Ageing Population - Policy Statement’ (Government of Ireland, 2019). In this regard, Action 4.6 within the policy statement proposes that “30% of all new dwellings are built to incorporate universal design principles to accommodate our ageing population.”

In this regard, a new Universal Design Dwellings standard is being developed through the National Standards Authority of Ireland (NSAI, 2023), while this is primarily aimed at new dwellings, it will also be of assistance in assessing the design of existing dwellings and to inform retrofit and refurbishments. This standard will also provide requirements and recommendations to achieve the quota of universal design dwellings set out in the Housing Options for Our Ageing Population-Policy Statement’.

3.5 Ageing in place: The role of age healthy age friendly homes

Launched in 2021, the 'Healthy Age Friendly Homes Programme' (Age Friendly Ireland, 2023), is an initiative by the Department of Health, Sláintecare, and Age Friendly Ireland, to:

“...enable older people to continue living in their homes or in a home more suited to their needs, to live with a sense of independence and autonomy, to be a part of their community, and to avoid early or premature admission to long term residential care”

3.6 Ageing in place and the role of the integrated care for older person programme

In Ireland, the Integrated Care Programme for Older People (ICPOP), a coordinated approach between Community Healthcare Organisations (CHOs) and acute hospitals, is developing services and care pathways to improve health outcomes for older people (HSE, 2023). ICPOP (HSE programme) was established in 2016 to improve the health of older people with high or complex care needs, by supporting them at home. Initially, Integrated Care Teams or multi-disciplinary teams (MDTs) were piloted in 13 sites around the country between 2016 and 2018 (Barry et al., 2021). (For more information on ICPOP see <https://www.hse.ie/eng/services/list/2/primarycare/enhanced-community-care/>)

4 Key Findings and Recommendations

The key findings and recommendations that have emerged from the research are organised into a set of seven themes (see Figure 1). These themes are underpinned by the various research activities described earlier, namely: the focus groups, expert interviews, case studies, various literature reviews, and steering committee feedback.

This project was solely focused on housing for older people, particularly those who are patients of TUH’s Integrated Care Programme for Older Persons (ICPOP). However, where relevant the recommendations refer to a) a general housing conditions survey; b) a housing survey for older people; and c) the housing conditions for ICPOP patients (with relevance for Tallaght and the wider country).

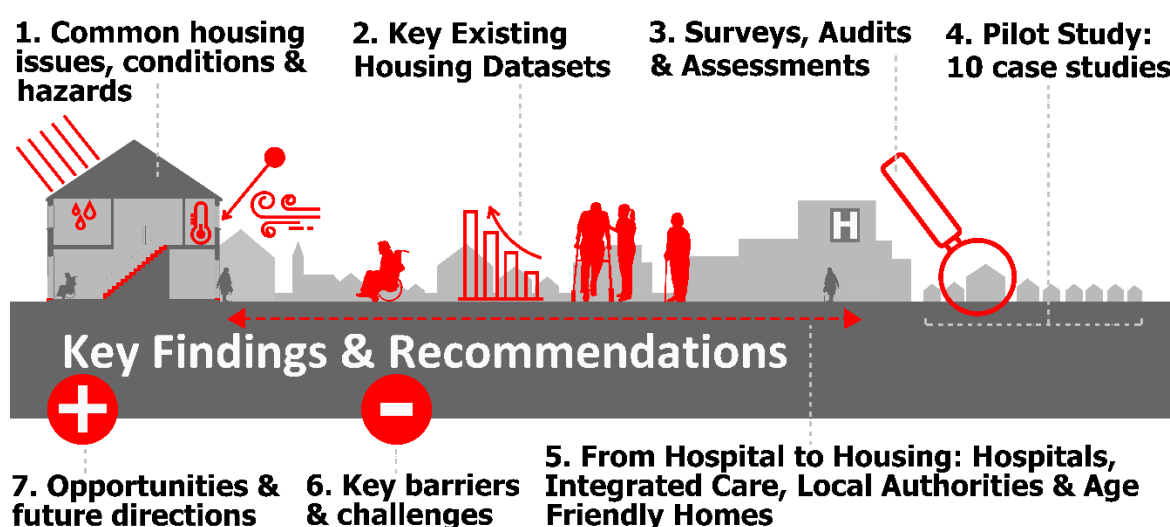


Figure 1 - Key themes – Findings and Recommendations

4.1 Housing issues, conditions, and hazards

As discussed in Section 1.2, the BRE Trust report 'The Cost of Poor Housing in Ireland' estimated the likely health impact of poor housing in Ireland and highlighted issues such as cold and home accidents (particularly falls). Moreover, it highlighted that older people are particularly affected by poor housing conditions because a) in the first place, older people are more likely to live in poor housing conditions; b) they often spend more time at home and as a result face greater exposure to housing hazards; c) are typically more vulnerable to housing hazards (i.e. more likely to be affected by the cold or a fall).

Following on from this BRE report, this section uses the HHSRS to examine some of the major housing issues, conditions and hazards experienced in typical private dwellings, with a focus on older people. Table 1 below describes the various HHSRS categories, where they align with the literature, and the impact or outcome that hazard has for older people. Additionally, Table 2 focuses on the various HHSRS categories and accessibility, usability and safety. Finally, table 3 identifies the specific built environment considerations for people with dementia.

This section also explores the various built environment issues raised by participants across the various research activities, and where they align with the HHSRS categories described below.

4.1.1 HHSRS categories and the impact on older people

Table 1 follows the 4 HHSRS categories: Physiological Requirements, Psychological Requirements, Protection from Accidents, and Protection from Infection. Within each of these categories is a set of sub-categories resulting in a total of 29 potential HHSRS hazards.

To identify where the HHSRS categories and subcategories can also be found in the wider literature, the research team reviewed a sample of literature relating to housing hazards and their impact on health generally, and more specifically on the health and wellbeing of older people.

Annex D of the 'Housing Health and Safety Rating System- Operating Guidance' (ODPM, 2006) details profiles of potential health and safety hazards in dwellings, and highlights issues that may affect more vulnerable occupants to a greater extent, including older people. A selection of key outcomes from this annex are presented in the righthand column in the table below, along with any other outcomes identified in the additional literature reviewed.

These built environment related hazards may be of particular concern for older people due to a range of typical age-related impairments (Grey et al., 2018) including:

- **Physical frailty**
- **General mobility difficulties leading to increased risks of falls.**
- **Partial and severe sight loss.**

- **Hearing loss.**
- **Circadian rhythm difficulties resulting in sleep disturbance or disruption**

While these age-related impairments highlight many accessibility issues, section 4.1.2 takes a closer look at accessibility, usability, and safety in relation to a wider range of users needs beyond age-related issues.

Exposure to extreme **heat and cold is also major concern for older people due to problems with thermoregulation** associated with ageing (Ratwatte et al., 2022).

Table 1: HHSRS categories and the impact on older people		
	HHSRS Hazards	Outcome/impact on older people
<p>Physiological requirements</p> <p><u>Aligned Literature:</u> Braubach et al. (2011) Park and Kim (2022) García-Esquinas et al. (2016) Cartagena Farias et al. (2023) McLoughlin and Scarlett (2018) Wang (2021) Ratwatte et al. (2022)</p>	<p>Damp & mould growth Excessive cold Excessive heat Asbestos Biocides Carbon monoxide Lead in water Radiation Un-combusted fuel Gas VOCs</p>	<p>HHSRS – Damp and Mould Growth:</p> <ul style="list-style-type: none"> • “Both house dust mites and moulds flourish in damp or humid conditions, and their growth is also influenced by temperatures.” • “Exposure to high concentrations of these allergens over a prolonged period will cause sensitisation of atopic individuals [...] and may sensitise non-atopic individuals.” <p>From the research:</p> <ul style="list-style-type: none"> • Prolonged exposure to damp and mould growth is particularly problematic for vulnerable groups such as older people with respiratory conditions e.g., COPD, asthma. <p>HHSRS – Excessive cold:</p> <ul style="list-style-type: none"> • “A healthy indoor temperature is around 21°C, although cold is not generally perceived until the temperature drops below 18°C. A small risk of adverse health effects begins once the temperature falls below 19°C. Serious health risks occur below 16°C with a substantially increased risk of respiratory and cardiovascular conditions. Below 10°C the risk of hypothermia becomes appreciable, especially for the elderly <i>[sic]</i>”. • “ Low temperatures can impair the thermoregulatory system of the elderly <i>[sic]</i>, and the very young whose thermoregulatory system is immature. Both these groups may spend a greater time indoors in cold weather and both will not move about as much as other groups in the cold.” <p>HHSRS – Carbon Monoxide</p> <ul style="list-style-type: none"> • “The most vulnerable age group is all persons aged 65 years or over.” • “Those most vulnerable to carbon monoxide exposure include unborn children, infants, the elderly <i>[sic]</i> and people with anaemia or heart or lung disease. The highest rate of deaths from carbon monoxide poisoning occurs in older age-groups, especially in people aged 75+ years. This may be several reasons, including the increasing prevalence of cardio-vascular illness and neurological decline at older ages, and the fact that the elderly <i>[sic]</i> tend to spend a high proportion of their time at home indoors.” <p>HHSRS – Excessive heat:</p> <ul style="list-style-type: none"> • As temperatures rise, thermal stress increases, initially triggering the body’s defence mechanisms such as sweating. High temperatures can increase cardiovascular strain and trauma, and where temperatures

		<p>exceed 25°C, mortality increases and there is an increase in strokes. Dehydration is a problem primarily for the elderly [<i>sic</i>] and the very young.”</p> <ul style="list-style-type: none"> • “The elderly [<i>sic</i>], especially those with pre-existing cardiovascular disease, and the very young (infants) are more vulnerable than other groups.” • From the research: older people are more at risk of adverse outcomes such as mortality when exposed to higher temperatures, such as heatwaves. This is of particular concern as climate change continues to increase the incidence of higher summer temperatures and extreme weather events such as heat waves. • According to Alied et al. (2022) “<i>Heatwaves have a direct (physiological) and indirect (environmental) adverse effects on human health. Heatstroke, exhaustion, cramps, oedema, and rash can all occur due to extreme heat. Furthermore, heatwaves can exacerbate some cardiovascular, respiratory, and other diseases</i>”. They point to greater risks for older people due to age-related impairments and illnesses, and also the effects of certain medications which may exacerbate the impact of heat on older people. • Furthermore, as many older people are likely to live poor housing conditions, and more likely to spend longer periods of time at home than younger people (BRE, 2021), these poor housing conditions such as poor insulation and ventilation, or poor maintenance will increase the impact of heat waves. While older people with a fear of crime are less likely to open windows and doors in the evening to flush heat from the house (Loughnan et al., 2015). Finally, older people may not be able to adapt the house, or their own thermal comfort to deal with excess heat (ibid).
<p>Psychological requirements</p> <p><u>Aligned Literature:</u> Braubach et al. (2011) Yang and Fu (2019) García-Esquinas et al. (2016) Cartagena Farias et al. (2023)</p>	<p>Crowding & space Entry by intruders Lighting Noise</p>	<p>General psychological wellbeing (from the research):</p> <ul style="list-style-type: none"> • Poor housing causes stress as residents worry about hazards and safety, hassles with maintenance and financial worries. • Poor maintenance of essential facilities (e.g., working toilet) impacts on residents ability to perform daily routine tasks that improve personal hygiene. <p>HHSRS – Crowding and space:</p> <ul style="list-style-type: none"> • “There appears to be no particular age group which is more vulnerable than others. However, those most vulnerable will be those who spend the most time at home, typically the elderly [<i>sic</i>], the very young, the mobility impaired and their carers.” • From the research: Overcrowded housing leads to feelings of annoyance and chronic fatigue due to lack of privacy. <p>HHSRS – Lighting:</p>

<p>McLoughlin and Scarlett (2018)</p>		<ul style="list-style-type: none"> • “The elderly <i>[sic]</i> and those with impaired vision are more likely to be unable to detect potential hazards, where there is inadequate or excessive light. In addition, the vision of the elderly <i>[sic]</i> is slow to adjust to changes in light levels.” <p>HHSRS – Noise:</p> <ul style="list-style-type: none"> • “Those most vulnerable are those who are likely to spend more time at home, including the elderly <i>[sic]</i>, the very young and their carers. Noise causing sleep disruption will affect all groups, but particularly the elderly <i>[sic]</i>.” • From the research: High noise levels can cause hearing loss and tinnitus, as well as stress, anxiety, and depression.
<p>Protection against infection</p> <p><u>Aligned Literature:</u> Cartagena Farias et al. (2023) Nolan and Winston (2011) McLoughlin and Scarlett (2018)</p>	<p>Domestic hygiene, pests, refuse Food safety Hygiene, sanitation, drainage Water supply</p>	<p>HHSRS – Food safety:</p> <ul style="list-style-type: none"> • “Food poisoning is observable in all age groups, and in residents of all types and ages of dwelling. However, those most susceptible are the young, especially infants, the elderly <i>[sic]</i> and pregnant women. These groups may also suffer more severe outcomes.” <p>HHSRS – Personal hygiene, sanitation, and drainage:</p> <ul style="list-style-type: none"> • “The highest risk groups are the very young (0-4), the elderly <i>[sic]</i> and the immunocompromised. Those in houses in multiple occupation with shared personal hygiene and sanitary facilities are at increased risk, as are low socio-economic groups.” <p>HHSRS – Water Supply:</p> <ul style="list-style-type: none"> • “Young children and the immuno-compromised are most at risk from ingested pathogens, and the elderly <i>[sic]</i> and immuno-compromised are most at risk from Legionella.”
<p>Protection against accidents</p> <p><u>Aligned Literature:</u> Braubach et al. (2011) Yang and Fu (2019)</p>	<p>Falls Electrical hazards Fire Flames Hot surfaces Scalding Collision and entrapment</p>	<p>HHSRS – Falls:</p> <ul style="list-style-type: none"> • “Although typically the harm suffered from a fall is a physical impact type of injury, the health of an elderly <i>[sic]</i> person can deteriorate generally following a fall, and the cause of death of an elderly <i>[sic]</i> person within weeks or months of the initial fall injury can be cardio-respiratory illness, including heart attack and pneumonia.” • “Following a fall, the health of an elderly <i>[sic]</i> person can deteriorate generally, and the cause of death following an initial fall injury can be cardiorespiratory. This may include heart attack and pneumonia and may not necessarily result directly from the impact injury sustained at the time of the fall.”

<p>García-Esquinas et al. (2016) Cartagena Farias et al. (2023) McLoughlin and Scarlett (2018)</p>	<p>Explosions Ergonomics</p>	<ul style="list-style-type: none"> • From the research: Injury burden attributable to home injury hazards, such as inadequate handrails, poor lighting, slippery surfaces, and poor ergonomics, impacts on older people with limited mobility or balance difficulties. <p>HHSRS – Fire:</p> <ul style="list-style-type: none"> • “The incidence of burns and scalds is greater for those over 65 years of age than for other adults ... The health outcome for the elderly [<i>sic</i>] is usually more serious than for all other age groups.” • “...the elderly [<i>sic</i>] are more than three times as likely to die from a fire, and therefore are more at risk. People over 80 years of age have the highest rate of death per million population, and 36% of fire deaths are to people over 65 years of age.”
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Table 1 above describes the HHSRS categories, where they align with the literature, and the impact or outcome that hazard has for older people. While a rapid review of the literature supports these issues and categories, it would be beneficial to conduct a systematic review of current and up-to-date literature to ensure all key concerns and hazards are included, particularly those associated with emerging challenges such as climate change.

Note: See combined recommendations for this section at the end of Section 4.1

4.1.2 HHSRS categories and focus on accessibility, usability, and safety for a wide diversity of people

Section 4.1.2 discusses age-related impairments and in turn highlights many issues related to accessibility. This current section takes a closer look at accessibility, usability, and safety in relation to a wider range of user's needs, beyond age-related issues.

From large-scale natural disasters to smaller-scale, local incidents such as fires, Abbot and Porter (2013) argue that people with disabilities are disproportionately affected by the impacts of these environmental hazards. With 22% of the population experiencing at least one long-lasting condition or difficulty (CSO, 2023a), this represents a large number of people who may be more vulnerable to housing hazards and poor housing conditions in Ireland. Therefore, while all of the HHSRS categories and hazards apply to people with disabilities, there are many hazards that are increased for a person with a disability due to restricted mobility, sensory or cognitive issues, or dependency on others for care or activities of daily living. While acknowledging the diversity of disability, it is important to carefully consider the impact of all housing hazards on people with disabilities given their vulnerability in this regard. Furthermore, there are other issues that pose unique challenges in relation to certain disabilities.

Both sets of issues are discussed in Table 2 below under the existing HHSRS categories. Heat and cold, lighting, and fire are all real concerns. Lack of space is a key issue, primarily due to mobility issues and devices. Closely related to this is 'Position and operability of amenities', which is major issue in terms of Universal Design principle 7: Space for Approach and Use (CEUD, 2023).

Physiological requirements	Heat & cold	Kim and Lee (2021) highlight how people with disabilities are more susceptible to the ill-effects of extreme heat, a finding that aligns with concerns that climate change disproportionately affects people with disabilities due to various mechanisms including bodily impairments, exacerbation of symptoms, and difficulties with thermal regulation, and activity limitations (King and Gregg, 2022).
Psychological requirements	Crowding & space	<p>In the HHSRS, this category relates to “hazards associated with lack of space within the dwelling for living, sleeping and normal family/household life.” It is linked to a range of health outcomes such as psychological distress, increased hygiene risks, and an increased risk of accidents, among others.</p> <p>As stated earlier, many common housing hazards may disproportionately affect people with a disability, including stress associated with lack of space and crowding. Moreover, based on the impact of heat on people with disability, the research by Lo et al that links ‘space poverty’ (i.e. lack of indoor space) with heat stress vulnerability (Lo et al., 2022) may have increased relevance for people with disabilities living in spatially inadequate dwellings.</p> <p>Finally, adequate space is necessary for many people with disabilities to access and use buildings easily, safely, and comfortably. For instance adequate space is required for moving, manoeuvring, turning, and storing wheeled mobility devices, while others may require enough space for assistive products or assistance dogs (CEN-CENELEC, 2021) (See Protection against accidents/ Position and operability of amenities below for further discussion space, access, and usability)</p>
	Lighting	The importance of good lighting for older people is identified by the HHSRS, however high-quality lighting with high levels of even, non-glare illumination is particularly important for people with visual impairments.
Protection against accidents	Falls	Disability may involve mobility and balance issues, sensory issues including visual impairment, and cognitive impairment, therefore the risk of falling is always a major concern.
	Fire	The HHSRS identifies issues around disability and fire and states that “Impairment of mobility will increase vulnerability as it affects the ability to, and speed of, escape.”
	Electrical hazards Fire, Flames Hot surfaces	Electrical hazards, Flames, Hot surfaces, Scalding, Collision (e.g., window or shelf at head level) may pose a risk for a person with mobility, visual, or cognitive impairments.

	Scalding, Collision etc	
	Position and operability of amenities (Also referred to as ergonomics)	<p>This HHSRS category refers to <i>‘threats of physical strain associated with functional space and other features at dwellings.’</i> The potential for ‘strain and sprain injuries’ is highlighted, along with fall injuries. The causes of these ill-health effects are defined as <i>“The positioning and location of amenities, fittings and equipment and the design and layout of dwellings has an effect on convenience of use. Inappropriate positioning of amenities and equipment may cause physical strain. For example, strain can result from awkward positioning of windows, difficult to operate window catches, inadequate functional space such as low headroom, inadequate space around bathroom or kitchen facilities, or inappropriate siting of facilities.”</i></p> <p>As discussed above in ‘Crowding & space’, adequate space is necessary for many people with disabilities to access and use buildings easily, safely, and comfortably. Universal Design principle 7: Size and Space for Approach and Use, requires “Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.” (CEUD, 2023). The guidelines associated with this principle include:</p> <ul style="list-style-type: none"> • Provide a clear line of sight to important elements for any seated or standing user. • Make reach to all components comfortable for any seated or standing user. • Accommodate variations in hand and grip size. • Provide adequate space for the use of assistive devices or personal assistance.

Table 2 above identifies heat and cold, lighting, and fire as some of the major concerns for people with disabilities. Furthermore, lack of space is a key issue, primarily due to mobility issues, and the use and storage of mobility devices. While the HHSRS categories provide a comprehensive overview of issues that impact people with disabilities, it would be helpful to conduct a more focussed review investigating housing conditions and hazards specific to people with disabilities, including older people with disabilities.

Note: See combined recommendations for this section at the end for Section 4.1

4.1.3 HHSRS categories and implications for dementia and cognitive impairment

According to the Alzheimer Society of Ireland (ASI, 2023) there are 64,000 people with dementia in Ireland, and by 2025 this number will increase to over 150,000. Furthermore, 63% of these people live at home and in the community. In addition to this, in excess of 180,000 people in Ireland are currently or have been carers for a family member or partner with dementia. Whether living with dementia, or caring for a person with dementia, the home environment plays a critical role in supporting quality of life, safety, and independent living.

However, the built environment may create barriers and hazards to a person with dementia due to the range of typical symptoms including:

- **Cognitive impairment:** Indicated by problems with memory (amnesia), speech or understanding of language (aphasia), a failure to carry out physical tasks despite having intact motor function (apraxia), and failure to recognise objects or people despite having knowledge of their characteristics (agnosia).
- **Reactive behaviour:** Formerly described as Behavioural and Psychological Symptoms of Dementia (BPSD) - depression, delusions, hallucinations (visual and auditory) – and behaviours such as wandering, incessant walking or agitation. These are thought to represent responses to altered perception of environments and interactions, or reaction to unarticulated stress, pain, disorientation, or other discomforts.
- **Dysfunction in activities of daily living (ADL):** In the early stages of dementia these can include difficulties with complex tasks such as shopping, driving, or handling money, while in the later stages more basic tasks may be affected such as dressing, eating, and bathing.

Moreover, depending on the type and stage of dementia, or the way it affects a specific individual, a person with dementia may also experience:

- Gait disorders impacting on mobility and stability while walking.
- Muscular strength loss and associated functional decline.
- Visual and perception issues related to visuospatial and visuoperceptual defects.

(Grey et al., 2018, Grey et al., 2015, Pierce et al., 2015)

Table 3 below describes the various major built environment concerns for a person with dementia. Many of these concerns are covered to a large extent by the various hazards in Table 1 and Table 2 above (e.g., falls, excess heat, etc), however, there are certain issues that are either exacerbated by dementia or that are unique to dementia and cognitive impairment.

Table 3: HHSRS categories and implications for dementia and cognitive impairment		
Physiological requirements	Heat & cold	<p>van Hoof et al. (2010) identifies a number of mechanisms that affect how a person living with dementia experiences thermal comfort (both hot and cold). Firstly, the pathology of dementia and the impact on brain tissue may impact thermoregulation and secondly, because of perceptual problems they may experience temperature differently to others in the home. Furthermore, through cognitive issues, persons with dementia may not realise that a room is too hot or too cold, or that there is a draught coming in from somewhere - they may only feel uncomfortable and not understand why (Pierce et al., 2015). Gong et al. (2022) also highlight that excess heat can affect certain dementia-related medication, and that cognitive impairment may prevent a person recognising the threat from excess heat and therefore may not adapt, seek cooler conditions, or hydrate.</p> <p>As a result of climate change, many countries are experiencing more frequent, intense, and prolonged heatwaves, which have significant health implications for older people (Alied and Huy, 2022). Gong et al. (2022) have examined the impact of heatwaves on people with dementia (due to the issues described above) and estimate that there is a 4.5% increase in risk of dementia-related hospital admission for every 1°C increase in temperature above 17 °C. They argue that “people living with dementia should be considered a high-risk group during hot weather. Our results support arguments for more stringent climate change mitigation policies.”</p>
Psychological requirements	Lighting	<p>The importance of good lighting for older people is identified by the HHSRS, however high-quality lighting with high levels of even, non-glare illumination is particularly important for people with dementia who may have age-related visual impairment or visuospatial and visuo-perceptual defects.</p> <p>People with dementia may experience sleep disturbance, and therefore good levels of natural lighting will help to regulate circadian rhythms and sleep/wake patterns (Pierce et al., 2015).</p>
	Noise	<p>The impacts of noise may exacerbate the effects of age-related hearing loss in terms of communication and concentration. Moreover, noise is a known cause of stress, disorientation, overstimulation, and communication difficulties for people with dementia (Bakker, 2003, Pierce et al., 2015). The impacts of noise may exacerbate the effects of age-related hearing loss in terms of communication and concentration. Moreover, noise is a known cause of stress, disorientation, overstimulation, and communication difficulties for people with dementia (Bakker, 2003, Pierce et al., 2015).</p>

	Various stress – relevant environmental conditions	<p>The HHSRS highlights numerous environmental conditions that may cause stress, including overcrowding, fear of burglary or entry by intruders, noise, the emotional stress of pests or refuse, odours, or poor maintenance, and others. The symptoms of dementia, as described in the introduction to this table, may increase the seriousness of all these issues due to the acute sensitivity to the environment, and increased anxiety and stress that often accompanies dementia (Pierce et al., 2015).</p> <p>Cognitive impairment can include amnesia, apraxia, agnosia, or visual and perception issues and may result in spatial disorientation, a person getting lost, or not recognising everyday objects in the home. Furthermore, due to these cognitive or perception issues, wall coverings with repetitive patterns or images/graphics depicting real life objects such as plants can cause fear, restlessness, frustration, confusion (Cohen-Mansfield et al., 1990).</p> <p>All of this can exacerbate the stress and anxiety already being experienced by a person with dementia (Pierce et al., 2015). In this regard, clutter, a confusing building layout, poor lighting, monochrome interiors (a lack of colour or tonal contrasts), finishes with strong visual patterns, or doors or important everyday objects obscured or hidden from view can contribute to disorientation or stress.</p>
Protection against infection	All	<p>Through frailty, mobility or sensory issues, cognitive impairment, or difficulties with activities of daily living, some people living with dementia may not comprehend these hazards, or they may not be able to sufficiently maintain domestic hygiene, sanitation, or food safety conditions.</p>
Protection against accidents	Falls	<p>Frailty, balance and mobility issues, and visual impairment are often experienced by people with dementia and therefore the risk of falling is always a major concern.</p> <p>In addition, due to cognitive impairment and visual and perception issues, reflections from glossy surfaces can be perceived as water. For instance, light reflection from a glossy floor tile may be misinterpreted as wet and slippery, causing a person with dementia to alter their gait, or to step over the perceived wet area, and possibly result in a fall (Fuggle and DSDC., 2013).</p> <p>Furthermore, strong contrasts in flooring colour tones can be perceived as a step or hole by a person living with dementia. Similarly blocks of contrasting colour tone or high contrasting floor patterns may be perceived as objects on the floor, resulting in stepping over, or sidestepping (Fuggle and DSDC., 2013).</p> <p>In this context, high gloss floor finishes and floor coverings with sharp colour contrast or strong patterns may be a hazard within the home for people with dementia.</p>

	<p>Electrical hazards, Flames, Hot surfaces, Scalding, Collision</p> <p>Due to the symptoms of dementia described earlier, providing a safe and secure home environment is a priority. Electrical hazards, open flames, hot water or surfaces, or objects that may result in a collision (e.g., window or shelf at head level) may pose a high risk for a person with cognitive impairment, dysfunction in activities of daily living, or visual and perception issues.</p>
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Table 3 above illustrates that many concerns related to dementia and cognitive impairment are covered to a large extent by the various hazards in the HHSRS categories. However, it also highlights that there are specific issues that are either exacerbated by dementia or that are unique to dementia and cognitive impairment. As proposed in previous sections, further research is warranted to examine the impact of common housing conditions and hazards for people with dementia living at home.

Key Recommendations: HHSRS categories and implications for older people, persons with disabilities, and people with dementia or cognitive impairment.

- Conduct a focussed systematic review of literature and stakeholder engagement to examine the impact of common housing conditions and hazards for a) **older people** (accounting for emerging challenges and new age-related research); b) **persons with disabilities** accounting for accessibility, usability, and safety for a wide diversity of people; and c) **people with dementia** and cognitive impairment.

4.1.4 Built environment issues across the key spatial scales, and the relevant HHSRS categories

As mentioned previously, several research activities were conducted to identify the key built environment issues in the homes of older people living in the community, including focus groups, expert interviews, and case studies (**Section 2**). The built environment issues identified are explored across the key spatial scales: 1. Site Location, 2. Site Design, 3. Entry and Internal Circulation, 4. Key Internal and External Spaces, 5. Internal Environment, 6. Finishes, Fittings and Furniture, and 7. Technology, below. The common housing conditions and hazards, as described in the HHSRS categories, can have significant impacts on older people living in the community. As such, the following section explores the key built environment issues identified throughout the research activities, across the key spatial scales and the relevant HHSRS category.

Site Location

Key issues raised across the various research activities related to the spatial scale *Site Location* are described below.

Neighbourhood: Across the various research activities, the importance of a well-maintained and safe neighbourhood has been noted, reducing psychological stress and security concerns as well as allowing older people, especially those with mobility difficulties, to ‘get out and about’ in their community (**HHSRS Cat.: Psychological Requirements**).

Community Connectivity: Additionally, housing that is well-connected to a local community, especially housing with proximity to public transport, supports older people living in the community to remain at home, and reduces social isolation (**HHSRS Cat.: Psychological Requirements**).

Public Transport Access: Access to public transport is of particular importance, as older people with certain health conditions are no longer able to drive, limiting their access to the community without good transport links (**HHSRS Cat.: Psychological Requirements**).

Site Design

Key issues raised across the various research activities related to the spatial scale *Site Design* are described below.

Level Access: Easy, level access to the site is noted as being of particular importance for older people with mobility issues being able to access various parts of the site including outdoor spaces, especially for those using mobility aids such as wheelchairs. For example, a level, paved driveway or pathway connecting the site to the public realm.

Parking: Sufficient parking is also preferable so that wheelchair users can be easily collected and delivered to the home.

Lack of Space: Participants also identify sufficient space for extensions and adaptations to homes as important, particularly for the construction of ground floor WC/wet rooms or ground floor bedrooms where necessary. Lack of space is noted as being a key issue in the context of homes continuing to support people as they age.

Entry and Internal Circulation

Key issues raised across the various research activities related to the spatial scale *Entry and Internal Circulation* are described below.

Level Access: In terms of accessing the home, level access is preferable for those with health conditions impacting on mobility, with graduated ramps that replace steps or sufficient handrails/grabrails for navigating steps, being helpful where there is not level access. (**HHSRS Cat.: Protection against Accidents**).

Staircases: Moving inside, staircases can be hazardous for older people, with very narrow staircases, or those with a turn or window being of particular concern. Stair/chair lifts and

secondary handrails are possible adaptations which allow older people with mobility issues, or who are at an increased risk of falls, to retain access to upper levels of their homes (**HHSRS Cat.: Protection against Accidents**). Maintaining this access also allows occupants to keep their bedrooms upstairs and maintain their access to a full bathroom, should that be located upstairs.

Internal Corridors: Finally, regarding circulation around the home, corridors should be sufficiently spacious, with widened doorways to allow ease of access by wheelchair users/mobility aid users. Occupants note that difficult entry and internal circulation can prevent older people from being discharged home from hospital, specifically where they require the use of mobility aids or easy access to a ground floor bathroom.

Key Internal and External Spaces

Key issues raised across the various research activities related to the spatial scale *Key Internal and External Spaces* are described below.

Bathroom/WC: A key internal space issue identified through the various research activities was easy access to bathroom and washing facilities, preferably on the ground floor, especially where access to the upstairs is hindered, either due to the occupant's health issues or the built environment. Adapted bathrooms are of particular importance because falls related to baths are noted as being a potential hazard in the HHSRS (**HHSRS Cat.: Protection against Accidents**). Interviewed experts add that baths are a 'no-go' and are being replaced with the more age-friendly option of showers with level access.

Outdoor Space: Regarding outdoor spaces, participants felt that quality gardens and outdoor spaces are hugely appreciated, for mental health as well as to provide extra space for entertaining in the summer, for the grandchildren to play etc. (**HHSRS Cat.: Psychological Requirements**). They add that overgrown or uneven gardens present trip hazards and that there should be an accessible route to the outdoor space (**HHSRS Cat.: Protection against Accidents**).

Social Spaces: Finally, participants from the focus groups felt that it was important to retain the social spaces within a home, wherever possible, and that this is of particular concern when changing a dining or living room into a bedroom for an occupant who can no longer access the upstairs. They felt that an extension to the home is preferable when creating a

new bedroom, as opposed to repurposing a social space for downstairs living, as this encourages socialisation and reduces the risk of isolation.

Internal Environment

Key issues raised across the various research activities related to the spatial scale *Internal Environment* are described below.

Excess Cold: A key issue identified in the housing of older people, throughout the research activities, is excess cold (**HHSRS Cat.: Physiological Requirements**). Participants report difficulty in keeping heat inside their home during the colder months, often citing poor insulation or single glazed windows as the cause. Several participants report moving into and heating one or a few rooms to save heat or retiring to bed early with a water bottle to keep warm. Excess cold is of particular concern for older people, especially those with mobility issues or whose medications make them more susceptible to the cold, as not only do they tend to be more sedentary, but their ability to thermoregulate is also impacted as they age. As discussed previously, excess cold is of particular concern for older people living with dementia as there are a number of mechanisms which affect their experience of both hot and cold (van Hoof et al., 2010).

Aspects of the built environment related to this issue include the widespread use of open fireplaces as well as conservatories, allowing for loss of heat and reduced energy efficiency. It was also noted that while older homes tend to be well-built and relatively dry, they are often poorly insulated: ‘a lot of older homes...open the door and the heating is gone’. Historical housing standards often allowed for single-glazed windows and less insulation and can often lack central heating (**HHSRS Cat.: Physiological Requirements**). Not only does excess cold represent a risk for older people relating to excess winter mortality and general ill-health but can also result in other risks such as older people ‘falling asleep next to a fire’ or covering up vents because of cold (**HHSRS Cat.: Protection against Accidents**).

Excess Heat: However, large windows which allow a lot of light in, can also make the internal environment excessively warm during periods of high temperature or heatwaves (**HHSRS Cat.: Physiological Requirements**). Excess heat is a major hazard for older people, especially those with disabilities or people living with dementia (van Hoof et al., 2010). This is an

increasing concern as climate change induced extreme weather events become more common (see Impacts of Climate Change in Section 4.1.5)

Lighting: Additionally, sufficient natural light is beneficial in terms of visibility, mental health as well as being helpful for those with a cognitive impairment or dementia (Pierce et al., 2015) (**HHSRS Cat.: Psychological Requirements**). High quality lighting (high levels of even, non-glare illumination) is of particular importance for people living with dementia who may have age-related visual impairment/visuo-perceptual defects.

Noise: Excess noise can impact both physical and mental health, including raised blood pressure, headaches, and stress/sleep disturbance. Excess noise is also associated with increased stress, disorientation, overstimulation and difficulties communicating for people with dementia (Bakker, 2003, Pierce et al., 2015) (**HHSRS Cat.: Psychological Requirements**).

Finishes, Fittings, and Furniture

Key issues raised across the various research activities related to the spatial scale *Finishes, Fittings, and Furniture* are described below.

Flooring: In terms of flooring, non-slip tiles in areas where standing water may be present, such as bathrooms is important to prevent falls. Similarly, low-slip floors without door saddles throughout the home, facilitate safely moving around the home for people who use mobility aids (**HHSRS Cat.: Protection against Accidents**). Finally, although carpet can be softer to land on should a fall occur, it can also hold dust and be problematic for those with respiratory issues as well as be more difficult to move mobility aids over (**HHSRS Cat.: Physiological Requirements**). Additionally, for older people living with dementia/cognitive impairment with visual and perception issues, reflective flooring surfaces can be perceived as water causing the older person to alter their gait, or step over the 'wet' area possibly resulting a fall. Similarly, strong tonal contrasts in flooring or blocks of contrasting colour tones/high contrast floor patterns may be perceived as steps/holes or as objects on the floor, resulting again in stepping or the altering of the persons gait, resulting in a fall (Fuggle and DSDC., 2013) (**HHSRS Cat.: Protection against Accidents**).

Technology

Key issues raised across the various research activities related to the spatial scale *Technology* are described below.

Fall Alarms: Personal alarms and fall alarms were mentioned across the research activities as being beneficial for older people living in the community (**HHSRS Cat.: Protection against Accidents**).

Security Technology: Additionally, several interviewees had security systems installed in their homes, which provided some comfort regarding home intrusion. Similarly, technology such as video doorbells can be helpful as they allow occupants to see who is at the door, before opening the door itself (**HHSRS Cat.: Psychological Requirements**).

Technologies to Reduce Risk: Especially for older people with a cognitive impairment or dementia, technologies which reduce risk such as auto-shut off cookers and heaters, smoke and carbon monoxide alarms, as well as automatic doors can support them to remain living at home and reduce hospital admissions (**HHSRS Cat.: Protection against Accidents**).

Sections 4.1.1 to 4.1.3 used the HHSRS categories to explore the key housing conditions and hazards affecting older people, people with disabilities, and then specifically, people living with dementia. This current section builds on this through findings gathered from stakeholder consultation and the literature regarding all main spatial scales related to housing. While some of these repeat the issues covered in the previous sections, they show their connected nature and illustrate how a continuum of accessible spaces are required for safe, comfortable and easy movement into and throughout the building. However, this continuum is also contingent on suitable finishes and fixtures that support a diversity of physical, sensory, and cognitive needs.

These findings highlight how occupant behaviour is influenced by housing conditions, for example people going to bed early with a hot water bottle to cope with the cold, or blocking vents to reduce heat loss from the house.

When considering the built environment and what adaptations and retrofits can be made to reduce hazards, it is essential to consider the personal preferences of the individual, and accept that a 'blanket' or 'one-size-fits-all' approach is inappropriate within this population.

Some examples from the research activities where the standard adaptation recommendations did not meet the personal preferences of the older person include:

- One participant was not comfortable with the idea of having their bedroom downstairs, stating that “people do say, would you sell up and buy a bungalow? I wouldn’t like a bungalow, you know why? I feel more protected living upstairs”.
- One of the homes included in the case studies, was heated primarily by a 40+ year old oil boiler. Although quite energy inefficient, the boiler’s reliability put the resident at ease, and he was not willing to upgrade it.
- In one of the case studies, although the residents agreed with the adaptations that needed to take place, they were deeply uncomfortable with the idea of leaving their home for a prolonged period of time to permit the works to take place. Their concern stemmed mainly from security concerns surrounding having strangers in their home unsupervised as well as the infection risk of moving into RLTC for a short stay.
- Some participants had very little interest in installing additional technology, such as security measures e.g., ring doorbells etc.

Finally, considering the diversity of occupant health conditions, levels of care required, needs, and preferences of residents, it is vital that flexibility and adaptability are built into all new dwellings or extensions. However, it is equally important that retrofitting or upgrading of existing dwellings has the flexibility and adaptability to cater to further and future resident needs that may be required beyond those considered at that specific time.

Key Recommendations: Built environment issues across key spatial scales, and the relevant HHSRS categories

- Ensure a holistic and integrated approach taken to the assessment, and analysis, adaptation and retrofit of housing so that measures to improve housing conditions are considered across all spatial scales including: Site Location (Safe and well-maintained neighbourhood, community connectivity, public transport access); Site Design; Entry and Internal Circulation; Key Internal and External Spaces; Internal Environment; Finishes, Fittings, and Furniture; and Technology.
- Conduct in-depth resident engagement so that the specific health conditions (e.g., dementia or respiratory conditions such as COPD) inform retrofit or adaptation measures carried out in people’s homes.
- Ensure that flexibility and adaptability underpin both new-build and retrofit/upgrade projects to cater to the diverse, varying, and ongoing changes in care needs that people experience over the short, medium, and long-term.

4.1.5 Overall issues and emerging concerns

Several other themes arose from the research activities and the literature that were not characterised as specific housing issues, conditions, or hazards, but relate more to barriers and challenges to secure, quality housing for older people.

Tenure: One such theme which arose in several pieces of literature, as well as throughout the various research activities, was tenure. Although statistics suggest that, in Ireland, the majority of older people own their own home (McLoughlin and Scarlett, 2018), participants feel that private renting has become more prevalent among older people. Participants add that generally, the local authorities housing stock has decreased, which also contributes to the increased prevalence of private renting.

A 2023 research report prepared for the organisations 'Threshold' and 'Alone' highlights how 17% of all renters in Ireland in the private rental sector are over 45 years of age (Haran et al., 2023). The research team interviewed a range of private renters over 45 years to find that 42% of those interviewed reported high levels of stress related to the insecurity of their rented accommodation. While 25% of these believe that they would remain in the private rented sector for the rest of their lives due to a lack of alternative options open to them.

The unprecedented housing crisis in Ireland, with many people unable to save to buy a home due to high private rental costs, creates major concerns for the affordability of housing, particularly for older people on set incomes (pensions/social security) who may be unable to keep up with rising private rental costs. This does not only put older people at risk of homelessness and poverty, but also limits their capacity to afford other costs associated with ageing and declining health e.g., home care, home adaptations (Aplin and Petersen, 2023).

Additionally, many of the government grants for older people and people with disabilities to modify and adapt their home to fit their needs and allow them to remain at home, assume that the applicant owns their own home. While local authority renters can avail of their own supports from their relevant council, this is not available for private renters. This is further exacerbated by private renters having to seek the permission of their landlords to perform any modifications or adaptations to the property and being required to return the property in its original state at the end of lease.

Although tenure is not identified in the HHSRS, research partner BRE have published a document exploring the cost of poor housing in England by tenure (Garrett et al., 2023). Herein, the most common hazards are explored by tenure type. For *Excess Cold*, this hazard causes the largest poor-housing-related cost burden to the NHS in both owner-occupied and privately rented homes, where the homes are very energy inefficient. As of April 2020, private landlords are no longer permitted to let properties with an Energy Performance Certificate (EPC) Energy Efficiency Rating band of F or G, without a valid exemption. In England, the largest tenure (64%) are owner occupied homes with 10% of these having a Category 1 hazard, with the most common hazard being *falls* on the stairs. Private rented homes represent around 19% of homes in England, with around a third (32%) having been built before 1919 and are more likely to suffer from disrepair and tend to be more difficult and expensive to retrofit. In England, the private rented sector has the largest number of homes classified as poor housing specifically surrounding hazards related to damp and mould growth. Finally, social rented homes comprise 17% of English homes, but have much lower rates of poor housing and housing costs to the NHS (9% and 6% respectively). Unlike private rented homes, falls on stairs were the most common hazard.

Under-occupation and difficulties managing the home: Several of the case study participants were residing within three or four bedroom homes, living either alone or with a spouse and leaving much of the home vacant. In some cases, the residents of these houses had difficulties maintaining or heating their entire home. In this context, 'rightsizing' has been identified through the research as a potential solution for 'over-housed' older people who may benefit from moving to a smaller, more accessible/adapted home. This process is identified as being relatively straight forward for local authority tenants and those who own their own home; however, this is often not possible for private renters due to high rental costs and a lack of accessible housing available on the private rental market.

Inaccessible homes: While some issues related to accessibility have already been identified in Section 4.1.2, it is worth reiterating the challenges that many residents face, particularly people with disabilities and older people.

The HaPAI based research by Gibney et al. (2018) as discussed earlier, found that 20% of the over 55 year olds interviewed reported accessibility issues such as "a lack of indoor flushing toilet; lack of a bath or shower; lack of downstairs toilet/bathroom facilities".

More recently, various reports by disability representatives (Alone, 2018, Browne and Mac Eochaidh, 2022, Inclusion Ireland, 2019) highlight the inadequacy of much of the existing Irish housing stock in terms of supporting people with disabilities. In this context, the Irish Wheelchair Association campaign 'Think Housing, Build Accessible' (Irish Wheelchair Association, 2023) states that:

- "Almost 1,500 people with physical disabilities are trapped on the social housing list, some for over seven years."
- "1,300 people under 65 years of age live in nursing homes primarily occupied by older people. Many of these wish to have a home of their own in a community of their choice."
- "Thousands more are coping with whatever accommodation they can find, including barriers such as stairs and rooms that can't fit their wheelchairs."

While there is little data on housing conditions in Ireland, data from England provides a good comparison in terms of housing type, building regulations, climate, and other similarities. Key findings from the 'English Housing Survey - Older people's housing, 2020-21' (Department for Levelling Up Housing and Communities, 2020) show the following:

- "Most older households (86%, 6 million) had a private plot, of these only 2% (713,000 households) had level access from outside into their building".
- "Around half (46%, 3.2 million) of older households had a bathroom on the entry level of their home".
- "Nearly three quarters of older households (72%, 5 million) had a room at entrance level that was suitable to be used as a bedroom." (It is not clear from the report whether this room was a living room or other non-bedroom space).

Similarly, with the households visited as part of the case studies, half had some kind of adaptation providing level access for residents (50%), in the form of wheelchair accessible ramps. Where there was not level access, grab bars had been installed, which mitigated the risk of falls but did not eliminate it. Additionally, half of the case study sites did not have a fully accessible bathroom on the entry level (50%), and where this was present it was often a WC only. In households where residents were considering or had already moved their

bedroom to the entry level, this nearly always involved repurposing an existing social space on the ground floor, such as the living or dining rooms. Only one household had had an extension to their home, permitting the inclusion of a separate, accessible bedroom with ensuite on the entry level.

This is echoed in the focus group findings, with participants preferring extensions to homes over the repurposing of social spaces, citing isolation, lack of privacy, and not having room to entertain as difficulties.

From the limited research available, and the concerns expressed by disability and ageing organisations, it is clear that much of our current housing is inaccessible for many older people and people with disabilities. While the 'National Housing Strategy for Disabled People 2022 – 2027 (Government of Ireland, 2022) is a welcome development, it will be a major task to deal effectively with the existing Irish housing stock of over 2 million homes (CSO, 2023b).

Participants also noted rising energy costs and increased cost-of-living as being worrying, especially moving into the colder winter months. Participants discussed resisting turning on their central heating for as long as possible, instead supplementing with extra clothing layers, hot water bottles and electric blankets, and retiring to bed early. In many of the case study dwellings visited there was very poor insulation (60%). In many cases, it was not possible to install additional insulation, often due to the presence of narrow cavity walls. However, half of the case study sites had double glazed windows, offering some insulation (50%).

Impacts of Climate Change: Many participants acknowledged that climate change will have an impact on older persons and housing conditions into the future. Specifically, one interviewee noted that “a big social policy issue, that is connected to the general issue around housing is climate change...an all of government approach is required”. Participants also expressed concern around climate change and rising temperatures generally, often on behalf of their children and grandchildren, noting the hotter summer temperatures (Summer 2022), as well as increased rates of flooding and storms.

Climate change and increasing temperatures were also identified as hazards for older people in the literature, as more frequent, intense and prolonged heatwaves have

significant health implications for older people (Alied and Huy, 2022). Heatwaves especially impact on older people living with dementia: “people living with dementia should be considered a high-risk group during hot weather” (Gong et al., 2022).

Key Recommendations: Overall issues and emerging concerns

- Further research is required at a national level to explore emerging concerns including tenure, under-occupation and difficulties managing the home, inaccessible homes, cost-of-living and rising energy costs, and the impacts of climate change.
- The development and updating of housing policy related to older people should be informed by these issues and underpinned by evidence from research in these areas.
- Future housing surveys and assessments should take account of these key emerging issues and ensure that quantitative and qualitative data is collected in relation to these concerns.

4.2 Key Existing Housing Datasets

4.2.1 Key Existing Housing Datasets – International and National

Key existing housing-related datasets relevant to the Irish housing landscape allow the various governmental departments, NGOs, and research groups to gain insight into the general outlook of housing provision, condition, and suitability in Ireland. At present, there is no centralised dataset detailing the condition of the Irish housing stock, with the information instead being spread across numerous key housing-related datasets.

The table below lists the relevant datasets collected, international and nationally, regarding ageing and housing conditions, as well as those specific to the South Dublin County Council area and the Integrated Care Team. More details on these datasets can be found in the appendices.

Table 4: Key Housing Datasets

International Datasets	Ageing Europe
	Korean Welfare Panel Study
	UK Housing Surveys
National Datasets	Irish National Survey of Housing Quality
	Dept. of Housing, Local Government, and Heritage – housing datasets
	Housing Agency Data Hub
	CSO Housing and Households Data
	Rental Tenancies Board Research and Data Hub
	TILDA
	Age Action Submissions
The Healthy and Positive Ageing Initiative (HaPAI)	

	Alone – Housing Choices for Older People in Ireland
South Dublin County Council Datasets	HaPAI Report
	SDCC Datasets
	Age Friendly Strategy Survey
Integrated Care Team for Older Persons	Interdisciplinary Initial Assessment Form

4.2.2 Housing Datasets - Key Findings and Recommendations

Importance of centralised and accessible data: Data collected by international, national, and local organisations and governments can be utilised by various stakeholders in many ways, including informing policy for older people, supporting older people to remain at home, and protecting older people’s health and wellbeing.

For healthcare providers such as Tallaght University Hospital and the Tallaght-based HSE Integrated Care Team for Older Persons, gathering and having access to data regarding common housing conditions and hazards in the homes of the older people they support, might allow care workers to identify underserved populations of older people not being reached by ICTOP, such as those living in very rural communities where housing is older and the prevalence of poor housing conditions or hazards may be higher. Awareness of the condition of housing stock and common housing hazards in the communities served by Tallaght Hospital and ICTOP is of particular importance as research increasingly supports the strong association between housing conditions and health, especially for older people.

Relevant datasets are also of interest to organisations which support older people generally, particularly those involved with housing such as Age Friendly Ireland and the Age Friendly Homes Initiative. Such organisations may use the datasets to support many aspects of healthy ageing including housing and health.

Age Friendly Ireland and South Dublin County Council’s Age Friendly County Programme have created an online survey to gather information and consult older people in South Dublin on their new age friendly strategy.

The local authority relevant to this research, South Dublin County Council, gathers detailed information about housing and population demographics, and uses this information to make informed decisions regarding housing. This includes where and what kind of housing to

build, how to support the rotation of housing stock as the population ages and how best to support the adaptation of existing housing.

In conclusion, despite the importance of housing-related data, and the various data being gathered by organisations as outlined above, there is no centralised database that collates key data regarding the condition of the Irish housing stock. Instead data is largely spread across numerous key housing-related datasets.

Importance of Tenure: Organisations such as Age Friendly Ireland, as well as local authorities such as SDCC, may also use information regarding tenure. This is of particular importance for local authorities who have responsibility for any local authority tenants. Additionally, information regarding the proportion of privately owned or rented housing (both local authority and private rented) is essential to best advise older people on the various grants and funding options available for home adaptation and retrofit when attempting to improve housing conditions, remove hazards and adapt homes to make them more accessible and allow older people to live at home for longer.

Data on ageing: Much of the data contained within these datasets does not specify the age of participants in any more detail past 65+ years of age (where likelihood of disability or older housing increases).

Data on health and disability: Much of this data does not seem to account for the proportion of disabled residents or residents who may require more specific adaptations to their homes due to health conditions. Additionally, while the 2016 TILDA data does describe the condition of the Irish Housing Stock occupied by older people, there does not appear to be any database describing the condition of the Irish housing stock, nationally or within local authority areas.

ICPOP Data: A data limitation within the ICPPOP data, identified by both the research team through their contact with the ICT based in TUH, as well as through a review conducted by Barry et al. (2021), is the reliance on paper records. Members of ICTOP use physical assessment forms when visiting a patient at home for the first time, and keep detailed physical files on all ICTOP patients, past and present. Digitising these records would allow for anonymised datasets to be compiled, producing detailed information about the population of older people referred to ICPPOP. Barry et al. (2021) cite slow progress on

implementing the national eHealth Strategy as a potential delay to the digitisation of health records throughout the various ICPOP sites.

Key Recommendations: Housing-related data

Importance of centralised and accessible data

- Provide a centralised and integrated database for all publicly available data on housing, health, disability, and ageing.

Data Tenure

- It should be possible to disaggregate datasets containing data regarding older people and their housing by tenure type, i.e., privately owned, private rented, local authority etc.

Data on ageing

- Datasets containing data related to the housing stock should be able to be broken down by the ages of the household members.
- Liaise with TILDA to explore options for including more in-depth housing-related research in their longitudinal studies on ageing.

Data on health and disability

- Datasets should identify the proportion of households with disabilities or those with health conditions which may be impacted by their housing and housing conditions.

Using and sharing ICPOP data

- A national database of information gathered by ICT/MDTs nationwide would allow for detailed information about the health, housing, and social wellbeing of older people throughout the country to be accessed by relevant organisations. Additionally, it would allow the ICT to identify information or care gaps, or to identify older people who are not being reached by the programme.

Note: See Section 4.4 for a discussion and recommendations related to future housing conditions survey

4.3 Surveys, Audits and Assessments

4.3.1 Building and housing assessment tools and processes

Overall assessment and rating tools and processes: Building on the Housing Health and Safety Rating System (HHSRS) categories and hazards discussed above, this section briefly examines the methodology used by HHSRS to measure these hazards. We then briefly review a small selection of built environment assessment methodologies to determine if there are any additional issues or hazards relevant to housing for older people, particularly those who may be patients within an integrated care for older person's programme.

Housing Health and Safety Rating System (HHSRS): As discussed in the previous section, the HHSRS contains 4 categories: Physiological Requirements, Psychological Requirements, Protection from Accidents, and Protection from Infection. Within each of these categories there is a set of sub-categories that result in a total of 29 potential HHSRS hazards.

Through these categories and hazards, the HHSRS system can identify defects in dwellings and evaluate the potential effect of these defects on the health and safety of building occupants. The system also rates the seriousness of any hazard to differentiate between hazards – from major hazards (i.e., a threat of major harm or even death) down to minor hazards (i.e., occasional severe discomfort, etc.) Figure 2 below sets out the key classes of HHSRS harms (Davidson et al., 2012).

Class	Examples	Weightings
Class 1	Death, permanent paralysis below the neck, malignant lung tumour, regular severe pneumonia, permanent loss of consciousness, 80% burn injuries	10,000
Class 2	Chronic confusion, mild strokes, regular severe fever, loss of hand or foot, serious fractures, very serious burns, loss of consciousness for days	1,000
Class 3	Chronic severe stress, mild heart attack, regular and persistent dermatitis, malignant but treatable skin cancer, loss of a finger, fractured skull, severe concussion, serious puncture wounds to head or body, severe burns to hands, serious strain or sprain injuries, regular and severe migraine	300
Class 4	Occasional severe discomfort, chronic or regular skin irritation, benign tumours, occasional mild pneumonia, a broken finger, sprained hip, slight concussion, moderate cuts to face or body, severe bruising to body, 10% burns, regular serious coughs and colds.	10

Figure 2 – Key Classes of HHSRS harms

Using the BRE housing survey document, a trained inspector visits and assesses the house, completes the survey document, and uses the results to create a ‘hazard score’ for each hazard within all four categories (i.e., Physiological Requirements, Psychological Requirements, Protection from Accidents, and Protection from Infection). Hazard scores range from 1 (very safe) to over 5,000 (very dangerous), resulting in the classes of HHSRS harms outlined in the table above.

In addition to the inspection outlined above, the UK national survey methodologies also contain a social survey element (which was replaced in this research by semi-structured interviews conducted by TCD). This element collects detailed information on households,

their circumstances and their health. Again, this information, when matched with the physical inspection data, can have multiple uses in developing and monitoring housing policies.

Age-related audit tool: Age Friendly Ireland produced the 'Age Friendly Homes Rating Tool' in 2021 (Age Friendly Ireland, 2021). The tool includes the following categories: Home Location and Approach; Entering and Moving Around; Spaces for Living; and Elements and Systems. A total of 100 points is available across all categories, a score of 65 points or more, means the home is considered to be 'Age Friendly'. A score of between 50-64 points means the home has some Age Friendly features but still requires adaptations, while a score lower than 50 points means the home requires enhanced measures to support ageing in place.

Dementia design audit tool: A range of dementia related design tools have been developed over the years to assess existing and proposed settings for people living with dementia. One of the key tools developed by the 'Dementia Services Development Centre' (DSDC) at Stirling University was the 'Design for People with Dementia Audit Tool' (DSDC, 2008). This was based on a set of key design features as set out by Mary Marshall (Marshall, 1998) including small size, domestic and home-like, scope for ordinary activities, safety features, rooms for different functions, outside space, single rooms of an adequate size, good signage and multiple cueing, use of objects rather than colour for orientation, enhancement of visual access, and control of stimuli.

This audit tool breaks the setting into key spatial scales: from hall/entrance, lounge or dayroom, and bedrooms, down to bathrooms/shower room (ensuite). Across all these spaces a range of statements or standards and corresponding scores (standard met=1/ partially met=0.5/ not met=0) are presented that facilitate auditing of the setting.

A setting where 50-60% of standards are met receives a 'Bronze' certification, 60-75% receives a 'Silver', while 75% or above gets 'Gold'. While this tool is primarily designed for long-term residential care settings, it provides a valuable insight into the kinds of features that may be relevant in the domestic setting. A selection of standards is presented below:

- Comfortable handrails to give both physical assistance and a sense of direction/distance
- Floors are not shiny or highly polished, leading to high degrees of reflection.

- The room has a quiet ambience. Soft furnishings and other sound-absorbing materials have been used.
- The carpet/floor covering is blended into the overall colour-scheme yet contrasts with walls and furniture. Large patterns and strong contrasting colours are avoided.
- Toilet facilities are near at hand and either visible from a seated position or well signposted.
- The colour-scheme makes good use of contrasting colours to aid visibility. For example, skirting boards are in colours that contrast with wall and floor finishes.
- The floor coverings have consistent colours and textures to minimise confusion.
- Wallpaper/carpet patterns that are jazzy or contain images of real-life objects have been avoided.
- There is imaginative use of techniques to make fire doors less obvious or to conceal areas where residents are denied access for safety reasons, e.g., doors blended into colour schemes, with lengths of skirting and handrails applied to them.
- There is creative use of technology to support a resident in their independence or in doing what they wish to do, e.g., passive alarms, sensor pads, gas sensors, carer call system.
- Handrails and door handles are comfortable and contrast in colour with the walls or doors.
- Lifts operate either with assistance or have easy-to-understand instructions.

The design features from DSDC audit tool outlined above provide a useful indication of the kind of issues that may be considered as part of a housing survey with an age-specific focus.

Specifically, this section has examined the Housing Health and Safety Rating System (HHSRS), while also briefly looking at some other built environment audit tools to determine what additional aspects may be required in relation to age-related conditions and housing surveys.

While the HHSRS is one of the most comprehensive housing survey tools available, and as noted the UK methodology contains a social survey element that gathers qualitative information on the residents, it is worth considering how certain issues and elements covered in other tools such as the Age Friendly Homes Rating Tool and the DSDC 'Design for

People with Dementia Audit Tool’ could be incorporated into a version of the HHSRS. Or whether it would be worth including an additional/supplemental module of the HHSRS that focuses specifically on housing for older people.

Considering dementia when evaluating housing for older people is of particular importance as dementia and cognitive impairment are quite prevalent amongst older people, even more so, amongst the patients of the Integrated Care Team/Multi-disciplinary Team based in Tallaght University Hospital (CHO7), who participated in this project. Additionally, many older people’s preference would be to remain living at home as they age (Centers for Disease Control and Prevention, 2013). This is of particular concern for those with dementia as they often require a higher level of care and are more likely to require long-term residential care (Banaszak-Holl et al., 2004).

In conclusion, the HHSRS is a comprehensive and detailed assessment tool, however, when assessing the homes of older people, particularly those who are part of ICPOP, and to take account of emerging challenges, it would likely be beneficial to include some additional survey questions/topic to ensure there are no additional hazards for older people with dementia or cognitive impairments.

Key Recommendations: Building and housing assessment tools and processes

- Consider how certain issues and elements covered in other tools such as the Age Friendly Homes Rating Tool and the DSDC ‘Design for People with Dementia Audit Tool’ could be incorporated into a version or an additional/supplemental module of the HHSRS that focuses specifically on housing for older people.
- Consider the addition of survey questions or a topic area to assess general and specific hazards for people with disabilities and for older people with dementia or cognitive impairments.
- The development of this survey should involve key stakeholders, a representative group of residents and family members, disabled persons organisations, and other groups as required.

4.4 Pilot Study – Housing Conditions Survey and Older People

As part of the overall research programme, the research team completed 10 case studies based on patient file reviews, interviews, and technical dwelling assessments using the House Condition Survey and Housing Health and Safety Rating System (HHSRS).

These 10 cases studies represented key housing typologies within the SDCC area: semi-detached, detached, terraced, suburban, urban etc. Each case study site was the home of a

patient of the TUH-based Integrated Care Team (part of the Integrated Care Programme for Older People). The participants included were a representative range of health and ageing issues, including mild cognitive impairment, and lived alone and with others.

The following describes the process of recruiting participants and conducting case study visits. Participant recruitment took place throughout Summer 2022, with case study visits occurring in August, October, and November 2022. .

4.4.1 Participant Recruitment, Methodology and Process

Participants included individuals aged 65 and over, who were patients of the TUH Integrated Care Team, at the time of the research taking place, who resided within the jurisdiction of South Dublin County Council. Excluded participants included older people living in residential care or any form of supported housing, or who were without the capacity to give consent.

For approximately 4 months, a member of the research team attended the weekly ICTOP/MDT meetings in Tallaght Hospital to observe the workings of the Integrated Care Team and to identify potential participants from the discussed case files. Through discussion with ICTOP, participants who fit the inclusion criteria and who members of the team felt would be interested in the participating in the research were identified. Members of ICTOP would then introduce the research to the individual and get their consent to be contacted by the research team.

The research team would then contact the individual, explaining the research and organising a possible date for the home visit to take place.

The following tasks were carried out for each participant:

1. Review of their **Comprehensive Geriatric Assessment** file to identify key health-related housing issues, and potential housing adaptations to improve housing conditions and provide greater support.
2. **House Condition Survey and Housing Health and Safety Rating System (HHSRS)** inspection was completed by BRE using a standard survey schedule. This was part of a complete housing inspection methodology, as used in the English and Northern Irish surveys, that collects detailed information on all aspects of the home, including age, type,

size, repair and improvement costs, energy efficiency, amenities, services and the local area. It should be noted that this data has multiple uses beyond those of this study and would be of great utility to anyone considering commissioning an Irish national housing survey.

Using this survey process, health and safety is measured through the Housing Health and Safety Rating System (HHSRS), which scores the risk of 29 potential hazards in the home to a vulnerable person. Risk is assessed against the average for the age and type of dwelling and summarised for each case study. It should be noted that some hazards are much more common than others and present a greater average risk. For example, all homes have the potential to be cold; all homes with stairs or steps have the potential for a fall. While, for some hazards, the average risk is very low, e.g., radiation, explosions, volatile organic compounds.

3. **Semi-structured interviews** with participants in their home. The HHSRS rating and site analysis, and the semi-structured interviews both took place in the older person's home simultaneously, with a member of the research team conducting the interview with the older person, whilst the BRE surveyor assessed the home. This reduced the length of the visit, allowing for reduced impact on the resident and a more conversational interview. The interviews were audio recorded and transcribed.

Fully informed consent was obtained prior to the beginning of each interview, allowing the resident time to ask questions and express any concerns. At this time, residents also gave consent for their comprehensive geriatric assessment file to be reviewed by the research team.

The reviews of the comprehensive geriatric assessment files were completed by a member of the research team (who had completed a full staff induction at TUH) after gaining consent from the resident to identify any health conditions impacted by the housing conditions identified in the home. The files also gave insight into the ICTOP, and the kinds of information gathered in their initial assessments with patients.

Table 5 Snapshot of Case Studies

	Gender	Age	Occupancy	Type	Ownership	Year built	Floors
1	Male	75-84	Lives Alone	Mid-terrace	Council Owned	2000	1
2	Male	65-74	With Spouse	Semi-detached	Owner Occupied	1970	2
3	Male	85-84	With adult child	Semi-detached	Owner Occupied	1978	2
4	Male	75-84	With Spouse, adult child & grandchild	Semi-detached	Owner Occupied	1975	2
5	Female	65-74	Lives Alone	Apartment	Private Rented	2002	2
6	Male	65-74	Lives Alone	Terraced	Owner Occupied	1975	2
7	Female	85-94	Lives Alone	Semi-detached	Owner Occupied	1974	2
8	Female	75-84	With Spouse	Terraced	Owner Occupied	1979	2
9	Female	75-84	Other (with 'sister')	Terraced	Council Owned	1976	1
10	Female	75-84	With Spouse	Semi-detached	Owner Occupied	1966	2



Figure 3 – Collage of Case Studies 1 to 5



Figure 4 – Collage of Case Studies 6 to 10

4.4.2 Common Housing Conditions across the case studies

The following table describes the different HHSRS hazards across the various case studies, identified during the site surveys by BRE. The HHSRS has been applied, based on a standard vulnerable occupant occupying the home (typically a person over 60), for risks relating to falls and cold – the most common hazards, especially in the UK and Ireland. Table 6 and the subsequent paragraphs describe where the HHSRS hazards were identified within the case studies.

Note: Due to the limited sample size of the case studies (n=10) these findings are not fully representative of older people’s housing in SDCC, nor nationally. They instead represent a sample of the housing of older people who are patients of the ICTOP based in TUH. As the case studies involved visits to the participants homes, it is likely that older people living with very poor housing conditions would be uncomfortable with allowing researchers into their homes and as such, would not have volunteered or agreed to take part in the research. Additionally, as patients of the Integrated Care Team, participants were in receipt of a wide array of supports from ICTOP, including referrals to the Healthy Age Friendly Homes Programme where appropriate. As such, it is unlikely to find extremely hazardous living conditions amongst the ICTOP patients.

Table 5 HHSRS hazards across all case studies

Hazard	Significantly better than average	Average for age & type*	Significantly worse than average	Extreme risk
Physiological requirements				
Damp and mould growth		90%		10%
Excessive cold		90%	10%	
Excessive heat		100%		
Asbestos		100%		
Biocides		100%		
Carbon monoxide		100%		
Lead in water		100%		
Radiation		100%		
Un-combusted fuel gas		100%		
Volatile organic compounds		100%		
Psychological requirements				
Crowding and space		100%		
Entry by intruders		100%		
Lighting		100%		
Noise		100%		
Protection against infection				
Domestic hygiene, pests, refuse		90%	10%	
Food safety		90%	10%	
Hygiene, sanitation, drainage		90%	10%	
Water supply		100%		
Protection against accidents				
Falls on stairs and steps	20%	70%	10%	
Falls on level surfaces	30%	60%	10%	
Falls between levels	20%	80%		
Falls associated with baths etc.	70%	30%		
Electrical hazards		100%		
Fire		100%		
Flames, hot surfaces, scalding		90%	10%	
Collision and entrapment		100%		
Explosions		100%		
Ergonomics		100%		
Structural collapse	10%	90%		

Physiological Requirements

Damp and mould growth: (90% - Average for age and type / 10% - Extreme risk)

Although damp and mould was not found in many of the case study sites, where it was present required urgent rectification. In one setting, leaking pipework was identified, possibly leading to dampness throughout the house if unattended. Another setting reported

some difficulties ventilating an upstairs bedroom being utilised as a laundry room, causing condensation possibly leading to mould growth. However, the household was aware of this hazard and managing it. A poorly fitted kitchen extract fan was recorded in one case study and this leading to damp and mould growth within the kitchen.



Figure 5 - Damp and mould growth from an extractor fan without a duct to outside.

Excessive cold: (90% - Average for age and type / 10% - Significantly worse than average)

One hazard which was identified in several of the case studies was excessive cold. Open fireplaces were in place in several of the case study sites, resulting in heat loss. In conjunction with poor insulation and single glazed windows, common in older homes built to lesser energy standards, this resulted in relatively energy inefficient homes. Few of the case study sites were considered energy efficient, namely the homes where extensive improvements had already been made. This resulted in colder homes and concerns amongst occupants around sufficiently heating the home with rising fuel costs. Several interviewed occupants reported needing to utilise electric or gas heaters, or hot water bottles/electric blankets to keep warm, with one occupant even retiring to bed early to stay warm.



Figure 6- Open fireplaces.

Excessive Heat: (100% - Average for age and type)

Most occupants did not report any concerns around excessive heat, and many had enjoyed the summer heatwaves which characterised much of Summer 2022, when the research took place. However, occupants did report using black out curtains and primarily residing in their darker, cooler living rooms to make it through the warmer months where necessary, indicating that this hazard is impacting on occupants.

Psychological Requirements

Entry by Intruders: (100% - Average for age and type)

A vast majority of case study sites were in well-maintained suburban neighbourhoods, with no signs of social stress. Many of the settings had a security system installed, with most using the system regularly.

Other Psychological Impacts:

Some of the occupants who took part in the case studies were living with major mobility difficulties, resulting in them being unable to continue living upstairs without the use of a stair lift. One such gentleman had had to move his bedroom downstairs into what was originally the living room. However, due to space constraints, this room was still utilised as a living room, forcing the occupant to share his bedroom space with visitors and anyone who wished to use the living room and television. This lack of access to a dedicated bedroom had

implications for the mental health and privacy of the older person as well as the other occupants of the home. Similarly, the same occupant no longer had access to the fully adapted and accessible full bathroom on the first floor and was forced to use the very small ground floor WC due to his mobility issues. This WC did not provide facilities for bathing, impacting his personal hygiene and his mental health and wellbeing.

Protection against infection

Domestic hygiene, pests, refuse: (90% – Average for age and type / 10% - Significantly worse than average)

One property was identified as being of increased risk of pests due to the large amounts of refuse, including food waste, around the garden and garage.

Food safety: (90% - Average for age and type / 10% - Significantly worse than average)

Food safety was identified as being of increased risk in one case study site due to cleanability issues in the kitchen. These were identified as being mainly 'management' problems but were exacerbated by the lack of mechanical ventilation and many porous surfaces and grease throughout the cooking area. This hazard was identified as increasing the risk of food poisoning, which can impact more severely on older people or those with compromised immune systems.

Hygiene, sanitation, drainage: (90% - Average for age and type / 10% - Significantly worse than average)

In one case study site, the first floor WC had no working wash-hand basin nor installed bathtub or shower facility. Although there was a fully adapted and working bathroom on the ground floor, the first floor WC was used by the occupant during the night, allowing him access to toileting facilities without having to use the stair lift. However, this was deemed to be a significant hygiene risk.

Protection against accidents

Falls on stairs and steps: (20% – Significantly better than average / 70% - average for age and type / 10% - Significantly worse than average)

Stairs were identified as a common risk for many of the participating case study sites. This was due to the high proportion of mobility difficulties in the sample. All but one of the

occupants with mobility issues, living in homes with 2 or more storeys, were still sleeping upstairs. Similarly, many of these homes did not have a ground floor WC. As a result, occupants were forced to use the stairs, or a stair lift to access their bedrooms or the bathroom during the day. This increased their risk of falls on stairs.



Figure 7 - Most of the case studies were two storeys with stairs.

Falls on level surfaces: (30% – Significantly better than average / 60% - average for age and type / 10% - Significantly worse than average)

Minor slopes and trips represent a risk to homeowners, particularly those with a history of falls and/or those utilising a mobility aid to move around the home. Within the case studies, trip hazards were often seen in excessive clutter and slippery or overgrown outdoor spaces.

Falls between levels: (20% – Significantly better than average / 80% - average for age and type)

Within the case study sites, the risk of falls between levels had been largely reduced due to the installation of ramps and grab rails at level changes. In one setting, the occupant felt the ramp was much too steep, making him very anxious of falling whenever using it. In many settings, steps at front and rear entrances still pose a risk for many of the occupants.



Figure 8 - Stepped access at both front and rear entrances

Falls associated with baths etc.: (70% – Significantly better than average / 30% - average for age and type)

Many of the case study settings had had some, or several adaptations made to their bathrooms to reduce the risk of falls, including replacing bathtubs with walk-in showers, installing grab rails, or adding higher toilet seats. Where this had not been completed, residents were at an increased risk of falling.

Fire: (100% – Average for age and type)

Additionally to being a source of heat loss, open fireplaces can increase the risk of house fire, particularly where the occupant is living with dementia or a cognitive impairment.

Flames, hot surfaces, scalding: (90% – Average for age and type / 10% - Significantly worse than average)

Similarly, to above, where the occupant is living with dementia/cognitive impairment, electric and gas cookers can represent an increased risk of burn or scalding. This is identified as a risk in one case study particularly, where the occupant was living with dementia and had a history of delirium.

4.4.3 Priority issues identified in case studies

The previous section identifies various HHSRS hazards across the case studies. Prior to this, section 4.1.5 outlined a number of additional overall issues and emerging concerns that are

relevant to these case studies. The issues outlined below draw from both of these sections to outline a number of dwelling related priority issues that may help inform decision-making in SDCC and the Healthy Age Friendly Homes programme.

Dwelling-related issues based on cases studies

As outlined earlier, due to the focus, scope, and nature of this research, the selected sample of dwellings were generally of a high quality, and therefore not fully representative of older people's housing in South Dublin, nor nationally. Despite these limitations, there are a number of issues identified in the research that warrant the attention of SDCC, the HAFH, and the ICTOP.

A. HHSRS categories where some form of hazard was reported

Physiological requirements

- **Damp and mould growth:** largely arising from poor ventilation and condensation in one case, and leaking pipework in another.
- **Excessive cold:** due to open fireplaces, single glazing, and poor insulation.

Protection against infection

- **Domestic hygiene, pests, refuse:** increased risk of pests due to the large amounts of refuse, including food waste, around the garden and garage.
- **Food safety:** due to lack of mechanical ventilation / extract fan above cooker and cleanability issues in the kitchen.
- **Hygiene, sanitation, drainage:** Bedrooms on first floor, yet first floor WC without a working wash hand basin or installed bathtub or shower facility (Note: fully adapted and well-functioning ground floor WC considered out of reach at night).

Protection against accidents

- **Falls on stairs and steps:** common risk across many case studies and exacerbated by the lack of ground floor WCs.
- **Falls on level surfaces:** trip hazards due to excessive clutter and slippery or overgrown outdoor spaces.
- **Flames, hot surfaces, scalding:** electric and gas cookers presenting an increased risk of burning or scalding (occupant living with dementia and had a history of delirium).

B. Examine other dwelling issues (non HHSRS):

- **Bathroom on first floor:** Identified above as part of 'Falls on stairs and steps' but a major issue in its own right. While many of the case studies did not have a ground floor WC, most of the occupants who had mobility issues, had their bedrooms upstairs.

- **Large homes and maintenance challenges:** Several of the case study participants were residing in three or four bedroom homes, living either alone or with a spouse and leaving much of the home vacant. In some cases the residents of these houses had difficulties maintaining or heating their entire home
- C. Examine dementia-specific issues:** The ICTOP identify dementia as an equal risk to falls in their patient population, and where declining mobility is often linked with cognitive decline. In this regard, many of the issues outlined above such as falls on stairs, clutter, slippery surfaces, or burning or scalding hazards are exacerbated for residents living with dementia, and require careful attention.
- D. Examine emerging dwelling-related issues:**
 - **Excess heat:** While excess heat did not emerge as a hazard, occupants did report using black out curtains and moving to darker and cooler living rooms to make it through the warmer months where necessary, indicating that this hazard is impacting on occupants.

4.4.4 Overall learning from the case studies

While this project focussed on housing conditions and older people who are patients of the Integrated Care Team, it also presented an opportunity to explore the value of conducting a housing condition survey for the general population. Both of these aspects are discussed below.

Housing condition surveys for the general population

The use of the House Condition Survey and Housing Health and Safety Rating System (HHSRS) in these case studies demonstrates the practicality and value of conducting housing condition surveys. This methodology involves comprehensive data gathering and would prove an invaluable source of data for housing research, policy, and practice.

Should such a survey ever be developed, the datasets discussed in Section 4.2 (and the recommended centralised and integrated database) would allow housing condition surveyors, such as BRE, to familiarise themselves with the Irish housing stock in advance, such as identifying the proportion of different housing types throughout the Republic of Ireland, and where the highest likelihood of poor housing conditions or hazards might be.

In advance of any full-scale nationwide survey, it may be advisable to conduct a nationwide pilot project including approximately 1000 dwellings across representative geographical locations, and involving key housing typologies.

Centralised housing condition survey database: A centralised and integrated database for completed housing condition surveys would be critical to ensure easy access and use by various stakeholders.

Including semi-structured interviews in Housing Condition Surveys for the general population: Although organising and conducting the semi-structured interviews, in conjunction with the BRE survey, did require more time and consideration, the research team believe that interviews with residents are worthwhile should a nationwide or more scaled-up Irish housing condition survey be instated, such as the ones in the UK. While, due to time considerations, conducting a 30 min to hour long interview at each house may be impractical, conducting interviews with a representative sample of households would provide rich information regarding the role of housing in health, ageing, and a range of other important issues.

Key Recommendations: National housing conditions survey for the general population

- There is an evident need for a housing conditions survey of the housing stock in the Republic of Ireland at least every five years.
- In advance of any large-scale nationwide survey, conduct a nationwide pilot project including approximately 1000 dwellings across representative geographical locations and involving key housing typologies.
- Provide a centralised and integrated database for all publicly available data on housing, health, disability, and ageing.
- As part of any surveys, interviews should be conducted with a representative sample of residents to provide qualitative information regarding health and housing conditions. This would support the housing and health related work of the local authority, hospital, local ICT, and the HAFH programme, and help identify gaps or required changes in policy or practice.

Housing condition surveys and Integrated Care Teams for Older People

The housing condition surveys involving older people who are part of TUH's ICTOP provided deep insights into the impact of housing on the health and wellbeing of older people.

Beyond these dwelling-related issues that have been discussed in Section 4.1, the following sections outline some wider process related findings.

Issues around recruiting participants through ICTOP due to high care needs of patients: It was initially difficult to identify participants for the case study visits through patients referred to the Integrated Care Team (ICT) as ICTOP patients represent a population with very diverse and high care needs. Specifically, amongst this population was a high prevalence of dementia and cognitive impairment. This presented an obstacle due to ethical concerns, as only patients with the capacity to give consent could be included in the research. This delayed participant recruitment until late summer, as the research team and the ICT worked together to identify 10 case study sites.

Comprehensive Geriatric Assessment File Review: Another identified obstacle involved the research team's access to the comprehensive geriatric assessment files of participants. The purpose of the research team reviewing these files was to identify any housing-related health conditions amongst the case study participants. To gain access to these files, a member of the research team was required to register as specific-purpose TUH staff, including completing several HSE e-learning courses and attending a staff induction onsite at TUH. These had to be completed to access the files but resulted in a significant delay to the research progress.

Reviewing the files allowed for the research team to gain greater understanding of the ICTOP process, including the kinds of data collected and how the patient's and their homes are assessed. However, after completion of the research project, the research team felt that this aspect of the research was likely unnecessary and resulted in excessive delays to the research process. Relevant medical conditions could be ascertained through the in-person semi-structured interview with the patient themselves and reviewing a template of the assessment would likely have provided sufficient clarity around the work of ICTOP.

This project focussed specifically on the work of Tallaght University Hospital (TUH), the Integrated Care Programme for Older Persons, and their interaction with South Dublin County Council to identify the common housing issues and hazards affecting older people in South Dublin. This was limited to residents who were patients of the Integrated Care for Older Persons programme, resulting in a research and housing survey approach that has the capacity to investigate some of the most complex and highest care needs in the community. Therefore, providing the kind of bandwidth to include the vast majority of older people who may be on or below this level and who will have equal or lesser care needs.

Key Recommendations: Housing conditions survey and Integrated Care Teams for Older People

- While this report recommends a nationwide housing survey for the general population, it would also be valuable to carry out parallel surveys focussing on older people who are patients of Integrated Care Teams across the country, to assess and understand housing conditions for older people with complex health issues and high care needs. This would enhance the work of the National Integrated Care Programme for Older People, while also collecting data and supporting policy and practice around older persons housing in general.
- Considering the complex health issues and high care needs, as well as the prevalence of dementia and cognitive impairment found within ICPOP patients, any such survey should take account of the additional assessment questions and topic areas recommended throughout **section 4.3**.
- As outlined in the previous set of recommendations, interviews should be conducted with a representative sample of residents to provide qualitative data.

4.5 From Hospital to Housing: Integrated Care for Older People, Local Authorities, and Age Friendly Homes

The following sections describe the 3 key organisations involved in the research: The Integrated Care Programme for Older Persons (TUH), the local authority (South Dublin County Council) and Age Friendly Ireland and the Healthy Age Friendly Homes Programme. The Integrated Care Team based in Tallaght University Hospital provides multi-disciplinary care to older persons living in the surrounding area who are referred to the programme. The team allows for improved coordination between all aspects of care, health, and housing, supporting older people in their homes. South Dublin County Council provide support for older people through their numerous adaptation grants as well as their Age Friendly Homes Technical Advisor (see **Section 2.7.2**). Similarly, Age Friendly Ireland and the Healthy Age Friendly Homes Programme provide for a local coordinator in each local authority, including SDCC, to assess the needs of older people living in the community and provide advice and support regarding adaptations, grants, and other services available to them (see **Section 2.7.1**).

Section **4.5.4** will discuss the integration between these three areas and highlight any key issues surrounding their coordination.

4.5.1 Tallaght University Hospital: The role of the hospital and the Integrated Care Team

As part of the national Integrated Care Programme for Older People (ICPOP) (see Section 3.6) the Tallaght-based Integrated Care for Older Person's Team (TUH/ CHO7 team) has been providing multi-disciplinary care to older persons with multiple health and social comorbidities since 2017. The objective of the team is to "...improve the quality and outcomes of care for older persons and their carers and support persons to live well in their own homes and communities." The team acts as a communication bridge between acute and community health and social care services, employing a person centred, anticipatory, timely, well-coordinated and evaluated approach to care (Reilly et al., 2017). Interviewed members of the Tallaght-based Integrated Care for Older Person's Team add that they function as a link between the hospital and home, with one interviewee sharing that because of meetings between the hospital CEO and the local authority they "felt empowered to be able to link health, housing, and social aspects" to better support older persons in the community.

During the expert interviews conducted as part of this research, members of the Integrated Care Team based in TUH were interviewed, as well as other experts with experience of the ICPPOP programme. An identified strength of ICPPOP is described as: "we look at the whole picture. We would look at the health and also [the person's] environment. Is the house warm? Is there financial poverty? [The person] might be referred [to us] for a memory issue – but we need to look at the wider picture ... if [the person] can't maintain the home, it goes into disrepair."

Another identified strength of the team is their enhanced understanding of the link between health and housing, reflected in the composition of the Integrated Care Team itself, specifically: "the skill is in how you put the team together ... what is the strategy for knitting all the relevant expertise together ... that is the success ... and, also – how you address the social aspects (of health), and housing is key and this goes hand in hand with coordinating with relevant bodies." One interviewee also noted the benefits of the Integrated Care Teams; however, they acknowledged that "ICPOP doesn't exist in every hospital ... but they are growing and becoming more developed. There is light ... but need more time (to demonstrate impact)."

Finally, once an older person living in the community is referred to the ICT by an external agency or care provider, i.e., GP, respite centre etc., a member of ICTOP carries out a house visit to the patient and completes the Interdisciplinary Initial Assessment form. The form contains detailed data in relation to ICT patients during the initial assessment and is updated by case workers whenever necessary throughout the care process. Information gathered during this assessment includes health related data such as the reason for referral, medication, and scores on various medical assessments (Barthel index, continence, pain, vision and hearing etc.). The assessment also gathers social demographic information regarding the patient's personal circumstances (marital status etc.), their social history, and their routine/support schedule.

Regarding housing, the assessments gather information on the home such as tenancy, number of storeys, information on steps/staircases, number of rooms and bedrooms on each floor, and accessibility of bathing facilities. The assessment also identifies the type of heating in the home and whether this heating is sufficient.

Key Recommendations: Tallaght University Hospital: The role of the hospital and the Integrated Care Team

- Considering the expertise and multidisciplinary nature of ICTs, coupled with their high level of engagement with older people in their homes, explore how ICTs can be consulted on wider housing-related health and ageing policy and practice at both a local authority and national level.
- Examine ways to anonymise, digitise, and make available the rich data collected by the ICT to inform housing and health-related research, policy, and practice, including issues related to older people with complex care needs.

4.5.2 The role of local authorities (at both the individual dwelling and the neighbourhood level/including location, public realm, services etc.)

Local authorities administer a range of schemes that support older people's health and wellbeing at home including the 'Housing Aid for Older People Grant', the 'Housing Adaptation Grant for People with a Disability', the 'Mobility Aids Grant Scheme', and the 'Local authority home improvement loans' (Citizens Information, 2023).

Local authorities also play a wider age-related role through Age Friendly County Strategies. The South Dublin Age Friendly County Strategy 2020-2024 (South Dublin County Council, 2020) has a number of thematic actions including housing. This strategy highlights the role

of their ‘Age Friendly Housing Technical Specialist’ (see Section 2.7.2) in meeting the needs of older persons in terms of housing design, location and supports.

This action also pledges to “continue to provide housing adaptation grants and advise/assist older people on making their homes safe, energy efficient and how good design can make a difference when adapting homes to address age-related frailties” (p14)

Throughout the expert interviews, SDCC’s Healthy Age Friendly Home’s Programme, and the presence of a SDCC Age Friendly Housing Technical Specialist were cited as significant steps to reinforce a holistic approach to health (and the link to housing) – and a key element in strengthening the connection between the hospital and the local authority in terms of having a positive impact on the health and well-being of older persons.

Coordination with Age Friendly Ireland, the Healthy Homes Programme and the HSE ICPOP is seen, not just in TUH, but nationally wherever possible.

Key Recommendations: The role of the local authorities (at both the individual house and the neighbourhood level/including location, public realm, services etc.)

- Development Plans, Local Area Plans, and other key local authority planning instruments should contain explicit and specific references and actions regarding housing-related health issues.
- Investigate how relevant local authority housing data can be made available to the ICT as part of their assessments in relation to the housing conditions of specific patients, where available.
- The SDCC Age Friendly Housing Technical Advisor should attend ICT/MDT meetings where appropriate, to reinforce the exchange of information between different sectors and to increase the local authorities’ understanding of the lived experience of older people living in the community.

4.5.3 Age Friendly Ireland and the Healthy Homes Programme

Following extensive collaboration between Sláintecare and the local Government sector in 2021, and in response to the Housing Options for Our Ageing Population policy statement, in line with this Programme for Government’s vision for an Age Friendly Ireland, the **Healthy Age Friendly Homes programme** was established as an innovative, new support co-ordination service designed to support older people to age in place (Age Friendly Ireland, 2022).

The **Healthy Age Friendly Home programme** has 4 objectives:

- To enable older people to continue living in their homes, or a more suitable home (rightsizing)
- To support older people to live with a sense of independence and autonomy
- For older people to be and to feel a part of their community
- To avoid early/premature admission to residential long-term care

Initially, phase 1 of this programme ran in only nine local authorities around the country: Dublin City, South Dublin, Fingal, Tipperary, Cork County, Longford, Westmeath, Galway, and Limerick). Additionally, the management of the programme nationally is hosted by Meath County Council.

In 2022, an interim evaluation of the **Healthy Age Friendly Homes (HAFH) programme** was published to share insights from the first phase of the programme. The report shared the different prevalence of supports provided through the programme, such as:

Housing Supports:

- Grant Information Required: *SEAI Energy Efficiency Grants (35%), Housing Aid for Older People (HOPS; 35%), Housing Adaption Grants for People with a Disability (HAGS; 33%), Mobility Aid Grants (MAGS; 27%), Local Authority Adaption Works Scheme (L.A.A.W.s; 9%) and Financial Advice Required (5%).*
- Home Security Advice: *Panic Buttons (6%), Crime Prevention Information (5%), Advice on Home Alarm (3%), and Door Locks (3%).*
- Other: *Housing Adaption Required (41%), Help with the Application (31%), Required House BER Assessed (28%), Garden Maintenance (10%) and Want/Need Broadband (9%).*

Health Supports:

- Most common health supports include: *Referral to a Public Health Nurse (7%), Home Help/Carer Required (6%), Meals on Wheels Required (6%).*

Technology Supports:

- Most common technology supports include: *Pendant/Personal Alarm (22%), Carbon Monoxide Detector Alarms (14%) and Fall Detector (4%).*

The interim report also identified common participant profiles under three key categories: prevention, intervention, and reaction.

Prevention: 307 participants required housing adaptations, with 188 not having had a recent fall. 84 of these participants were assisted through HAFH to make a housing adaptation grant application and 70 were provided with information, and follow-up.

Intervention: 217 participants with difficulty using the stairs. 44 were assisted through HAFH to make a housing adaptation grant application and 64 were provided with information, and follow-up.

Reaction: 389 participants living alone, with 124 having had a fall within the last 6 months (74 did not have a pendant alarm/fall detector) and 77 having a history of falls (41 did not have a pendant alarm/fall detector)

As part of the interim report, a series of qualitative interviews with service users were carried out to record their experience. Participants reported positive experiences with the Local Coordinators (see **Section 2.7.1**) they interacted with, reporting feeling that they were listened to and understood by the Local Coordinator, and that it helped to reduce the stress and confusion around having adaptations completed. Participants also identified several barriers to housing adaptations, namely the up-front financial cost, and the prioritisation of one or a few 'big ticket items'.

The interim report found that the programme has achieved several objectives, including reducing premature admission to RLTC, promoting early hospital discharge, and improving the longevity of tenancies and making better use of the housing stock.

The key recommendations from the report were to roll the service out nationally, with 32 Local Coordinators (2 in Dublin City) to be given permanent roles in all 31 local authorities, and to continue to evaluate the programme as it rolls out.

The HAFH follows a cross-sectoral approach with local government, health, community, and others to support older people, reduce costs and increase quality of life outcomes for older people. Expert interviewees highlight how the HAFH programme has been significant in establishing better coordination and collaboration between and among governmental departments, agencies, and organisations involved in housing, and supporting the health

and well-being of older persons. It has a role in bridging different siloed sectors, and this will be further explored below (Section 4.5.4).

Key Recommendations: Age Friendly Ireland and the Healthy Homes Programme

- Continue the expansion of the Healthy Age Friendly Homes Programme and the roll-out of the Local Coordinator role across all 31 local authorities in Ireland, and ensure these positions become permanent.
- Continue and increase the support for the HAFH Local Coordinator's attendance at the ICT/MDT meetings.
- Local coordinators should continue to collaborate with local authorities, ICTOP, and other key agencies to provide an essential overview of the housing issues being experienced by individual older people and to ensure a more informed and less fragmented approach.
- Research, feedback, and experiences from the HAFH should be better utilised to inform housing, and age-related housing issues at local authority and national level.

4.5.4 Key integration issues and opportunities

Integration and good collaboration between South Dublin County Council, the ICT/MDT, and the Healthy Age Friendly Housing programme is essential to provide care and support for older people.

The expert interviewees identified some barriers to good collaboration between the 3 organisations/areas, namely the ad hoc nature of the relationships and how “there is no consistent structure” for how ICPOP teams would be made aware of potential issues specific to older persons in the community. They add that where there is good collaboration between different organisations, that this is reliant on individuals and the existence or strength of their connections, and that these relationships can be broken when staff leave or change jobs: “at the local authority level, if the liaison person leaves, it (how the LA becomes aware of issues) all falls apart”. Interviewees add that there is a need for better oversight, so that when patients are being “handed over from one system (i.e., health) to another (i.e., housing), there is an overarching care worker who can see the journey from hospital to home.”

Interviewees also note that there is a lack of or inconsistent mechanism for coordinating responses to housing conditions impacting on the health of older people. This is echoed by one interviewee who discussed the siloed approach to delivery of health services, noting

that “primary care and acute care have worked in silos ... so this idea of [integrated] health care pathway ... with full collaboration, and seamless care – is a big change”.

To better facilitate this coordination, the HAFH local coordinator for South Dublin County Council attends the weekly Integrated Care Team/Multi-disciplinary Team meeting based in Tallaght Hospital and advises on any housing needs wherever necessary.

Key Recommendations: Key integration issues and opportunities

- Provide a coordinated and centralised housing database to support the work of the local authorities (e.g. housing provision and adaptations), the HAFH programme, and ICTs. This should provide detailed information on the housing stock within each local authority and where supports may be best needed.
- In many cases the ad-hoc nature of the relationships between patients, carers and family members, healthcare professionals, housing professionals, or local authority undermines support for older people in the context of housing, care, and health. To address this there should be an overarching care professional who provides continuous support for the patient from hospital or short-term residential care to home, or at home if this is the main setting for their care journey.

4.6 Key barriers and challenges

Throughout the various research activities, several barriers and challenges that impede older people’s ability to, or likelihood of completing housing adaptations were identified. These are critical issues which must be overcome in order to better support older people to adapt their homes and allow them to age in their home.

Complex grants process: Another central theme identified relates to housing adaptations and the grants process. Research identifies older people’s positive pre-conceived impacts of housing adaptations such as improved safety, independence, ease of use, and comfort, with older people expressing positive feelings towards adaptations and anticipation of the future. However, there were also several barriers and reasons for delays to adaptations. The process of applying for and utilising grants that fund housing adaptations, is noted as being complex, inconsistent, and time-intensive throughout the research activities: “older people find the system hard to navigate; ...many people aren’t aware of what they can qualify for and find ... the complexity of the grants [system] daunting”. Identified barriers include administrative factors, financial costs, as well as difficulties accessing information (Age Action, 2022, Newton et al., 2021, Schorderet et al., 2022). Expert interviewees also identify these barriers as being particularly impactful on older people, with the complex and inconsistent processes

sometimes resulting in “a lot of people withdrawing from the process ... and living in poor housing conditions”.

Occupant decision-making difficulties: Additionally, barriers to implementing and using adaptations also include client’s not knowing when to make changes, general resistance to completing adaptations, either due to cost or other factors, by the older person’s carer or loved ones, as well as the overall unsuitability of the home for adaptation (Newton et al., 2021). Another major delay factor or challenge identified in the research was related to the client’s decisions, namely clients choosing to delay the start of work or deciding to not go ahead with the work, after the start date had already been significantly delayed (Zhou et al., 2019).

Financial costs: Another barrier/delay includes the gap between housing adaptation grants and the total costs of the work, as applicants are required to make extra financial contributions to cover the difference, possibly delaying the work (Zhou et al., 2019). This was also echoed in the research activities, with focus group participants citing cost as the main barrier to housing adaptation, specifically difficulties funding work upfront before they are able to claim back from grants. Additionally, several residents interviewed as part of the case studies believed that they would struggle to pay upfront for housing adaptations should they need them or were delaying works due to this upfront cost.

Disruption and having to leave the home during works: Some participants expressed concern around leaving their home for the duration of housing adaptation construction work, due to worries around leaving the home unattended or with ‘strangers’ to complete the work. There was also concerns around moving into nursing home or respite care for the duration of the work, particularly the participants concern around the infection risk (i.e., COVID-19) of moving into residential care. This was also noted during the focus group, with participants identifying the key barriers to adaptations being the length of time they take to complete, causing disruption to the homeowners for long periods of time. They add that this particularly difficult for older people who remain at home during construction and are unable to find or afford alternative accommodation.

Fragmentation between various healthcare and housing professionals and support: The connection between health and housing is identified throughout the research activities,

with widespread recognition that a mechanism for coordinating the holistic response to supporting the health and well-being of older persons is either lacking or inconsistent. One expert interviewee noted that there is a need for better oversight, with an overarching care worker being in place to oversee the care of a patient as they move between different services, i.e., their journey from hospital to home. An additional element which has been identified is the lack of integration across different services, with various areas working in silos: “we are bad at collaborating; we see health as our remit and nothing else”.

Although participants interviewed as part of the case studies, i.e., ICTOP patients, did not report experiencing this fragmentation, focus group participants reported that ICTOP’s coordination could not be seen in other services and that communication between the hospital and the local authority was poor, with many older people being unaware of the services/supports available to them.

Key Recommendations: Barriers and Challenges

- As discussed in **Section 4.5.3**, the continued expansion of the Healthy Age Friendly Homes Programme and the roll-out of the Local Coordinator across all 31 local authorities in Ireland, will provide much needed support and advice for older people and help them to navigate the grants process.
- **Section 4.5.4** discussed the potential of an overarching care professional who would provide continuous support for the patient from hospital or short-term residential care to home, or solely within their home, if this is the main setting for their care journey. This would help deal with the fragmentation between various healthcare and housing professionals and support as experienced by some stakeholders, as highlighted in Section 4.5.4.

4.7 Opportunities and future direction

While the prolonged housing crisis being experienced in Ireland is creating many challenges within housing, some of which have been discussed such as tenure and high private rental costs, there are many developments and initiatives that can be used to improve housing conditions for older people in Ireland. As outlined earlier, the Housing Options for Our Ageing Population policy statement, the Healthy Age Friendly Homes programme, and new national documents such as the upcoming Universal Design Dwellings standard create greater awareness and knowledge around better housing for older people.

In terms of broader urban planning, policies such as the ‘Sustainable Residential Development and Compact Settlements: Guidelines for Planning Authorities’ (Government of Ireland, 2024), recognise that housing choice must respond to the needs of older people and people with disabilities. Furthermore, as part of the revision of the National Planning Framework (NPF), the NPF Expert Group highlights Ireland’s growing and ageing population and identifies “the need for creating a built environment that caters for overall changing needs of communities, and the important contribution that national spatial planning can make to better manage these demographic changes.” (Government of Ireland, 2023).

All of the above, which deal with housing across key spatial scales, from individual dwellings to the wider community, provide opportunities to reinforce the connections between health, ageing, and housing, and help improve conditions for older people in existing, and in future housing.

Key Recommendations: Opportunities and future direction

- Capitalise on the current interest and momentum for change regarding housing policy for older people and the expansion of the HAFH programme, to ensure that improved housing conditions for older people and the impact on health, wellbeing, and inclusion, are central to upcoming and future national and local authority housing and planning policy, practice, and initiatives.

5 Conclusion and Next Steps

5.1 Conclusion

This research focused on residents who were patients of the Integrated Care for Older Persons programme, therefore it resulted in a research and housing survey approach with the capacity to investigate complex and high care needs in the community. In doing so, it also created the bandwidth to include the vast majority of older people who will have equal or lesser care needs.

Using the Housing Health and Safety Rating System (HHSRS) provided the opportunity to explore a wide range of key issues across physical and psychological health, as well as issues related to infection and accidents. Age-related housing issues, accessibility for people with disabilities, and specific concerns related to people with dementia and cognitive impairment were also investigated.

Beyond this, tenure and rental issues, and emerging issues such as cost of living, high energy prices, and the impacts of climate change emerged as major concerns for older people.

Lack of housing data and the urgent need for a nationwide housing condition survey programme, ideally carried out at least every five years, has been identified as a critical recommendation.

Furthermore, fragmentation of policy and practice in relation to existing housing conditions for older people were highlighted. While the Housing Options for Our Ageing Population - Policy Statement is a huge step forward, there is still a need to strengthen references and actions related to existing dwellings and housing conditions for older people.

Barriers and challenges were identified that include a complex grants process, occupant decision-making difficulties, adaption costs, and a fragmentation between various healthcare and housing professionals and support structures for older people. However, it was also acknowledged that the Healthy Age Friendly Homes Programme and local coordinator will provide much needed support and advice for older people and help them navigate the grants process.

Policy such as the Housing Options for Our Ageing Population policy, initiatives such as the Healthy Age Friendly Homes programme, and new national standards around Universal Design Dwellings are recognised as unique opportunities to advance further research, the collection of housing data, and ultimately the improvement of the existing housing stock for older people in Ireland.

5.2 Next Steps

To advance the ambitions set out above a number of actions are necessary, these are outlined below.

- Promote the findings set out in this report and engage with key stakeholders to discuss the key issues and identify next steps beyond those outlined here.
- Explore the development of a national housing condition survey conducted at five-year intervals. While this survey should be based on the HHSRS, the development of additional survey questions or topic areas should involve key stakeholders, a representative group of residents and family members, disabled persons organisations, and other groups as required.
- In advance of any large-scale nationwide survey, conduct a nationwide pilot project including approximately 1000 dwellings across representative geographical locations and involving key housing typologies.
- Based on this current research, and drawing on the Housing Health and Safety Rating System (HHSRS), conduct further pilot studies in a range of health regions in Ireland to further explore the connection between age-related health and housing and provide support to the National Integrated Care for Older Persons programme.
- Liaise with TILDA regarding the data they have in relation to housing, and explore options for including more in-depth housing-related questions as part of their longitudinal studies.
- While this research carried out a brief review of available housing and ageing related datasets, a more comprehensive analysis is required to identify all existing data sources and potential data gaps.

6 References

- ABBOTT, D. & PORTER, S. 2013. Environmental hazard and disabled people: from vulnerable to expert to interconnected. *Disability & Society*, 28, 839-852.
- AGE ACTION 2022. Submission to the Independent Expert on the enjoyment of all human rights by older persons concerning the right to adequate housing of older persons in Ireland.
- AGE FRIENDLY IRELAND 2021. Age Friendly Homes Rating Tool.
- AGE FRIENDLY IRELAND 2022. Healthy Age Friendly Homes - Phase1 Interim Report June-2022.
- AGE FRIENDLY IRELAND. 2023. *Healthy Age Friendly Homes Programme* [Online]. Available: <https://agefriendlyireland.ie/category/healthy-age-friendly-homes-programme/introduction/> [Accessed 10-05 2023].
- ALIED, M. & HUY, N. T. 2022. A reminder to keep an eye on older people during heatwaves. *The Lancet Healthy Longevity*, 3, e647-e648.
- ALONE 2018. Housing Choices for Older People in Ireland - Time for Action.
- APLIN, T. & PETERSEN, M. 2023. Relationships between housing and health for older private renters: evidence from a pilot study in Australia. *Journal of Housing and the Built Environment*, 1-20.
- ASI. 2023. *Dementia in the Media - Facts & Figures* [Online]. Alzheimer Society of Ireland Available: <https://alzheimer.ie/creating-change/awareness-raising/dementia-in-the-media/> [Accessed 04-05 2023].
- BAKKER, R. 2003. Sensory Loss, Dementia, and Environments. *Generations*, 27, 46-51.
- BANASZAK-HOLL, J., FENDRICK, A. M., FOSTER, N. L., HERZOG, A. R., KABETO, M. U., KENT, D. M., STRAUS, W. L. & LANGA, K. M. 2004. Predicting nursing home admission: estimates from a 7-year follow-up of a nationally representative sample of older Americans. *Alzheimer Disease & Associated Disorders*, 18, 83-89.
- BARRY, S., FHALLÚIN, M. N., THOMAS, S., HARNETT, P. J. & BURKE, S. 2021. Implementing Integrated Care in Practice – Learning from MDTs Driving the Integrated Care Programme for Older Persons in Ireland. *International Journal of Integrated Care*.
- BOSCH-FARRÉ, C., MALAGÓN-AGUILERA, M. C., BALLESTER-FERRANDO, D., BERTRAN-NOGUER, C., BONMATÍ-TOMÀS, A., GELABERT-VILELLA, S. & JUVINYÀ-CANAL, D. 2020. Healthy Ageing in Place: Enablers and Barriers from the Perspective of the Elderly. A Qualitative Study. *Int J Environ Res Public Health*, 17.
- BRAUBACH, M., JACOBS, D. E. & ORMANDY, D. 2011. *Environmental burden of disease associated with inadequate housing: A method guide to the quantification of health effects of selected housing risks in the WHO European Region*, World Health Organization. Regional Office for Europe.
- BROWNE, M. & MAC EOCHADH, G. 2022. The Right Home: the Housing Needs of People with Disabilities. The Citizens Information Board (CIB) and the Disability Federation of Ireland (DFI).
- CARTAGENA FARIAS, J., BRIMBLECOMBE, N. & HU, B. 2023. Early onset of care needs in the older population: The protective role of housing conditions. *Health & Place*, 81, 103007.
- CEN-CENELEC 2021. EN 17210:2021 'Accessibility and usability of the built environment - Functional requirements.
- CENTERS FOR DISEASE CONTROL AND PREVENTION 2013. Healthy places terminology.
- CEUD 2015. Universal Design Guidelines for Homes for Ireland. In: (CEUD), C. F. E. I. U. D. (ed.).
- CEUD. 2023. *The 7 Principles* [Online]. Available: <https://universaldesign.ie/what-is-universal-design/the-7-principles/> [Accessed 11-05 2023].
- CITIZENS INFORMATION. 2023. *Housing for older people* [Online]. [Accessed 09-05 2023].
- COHEN-MANSFIELD, J., WERNER, P. & MARX, M. S. 1990. The Spatial Distribution of Agitation in Agitated Nursing Home Residents. *Environment and Behavior*, 22, 408-419.
- COYLE, C., BUGGY, S., CAGNEY, O., FARRAGHER, L., LEE, C., PATJE, D. & LONG, J. 2020. Housing with support for older people: a mixed-methods systematic review protocol [version 2; peer review: 2 approved]. *HRB Open Research*, 3.

- CSO. 2010. *Irish Health Survey 2019 - Carers and Social Supports - Personal Care and Activity Difficulties* [Online]. Central Statistics Office. Available: <https://www.cso.ie/en/releasesandpublications/ep/p-ihsc/irishhealthsurvey2019-carersandsocialsupports/personalcareandactivitydifficulties/> [Accessed 05-12 2023].
- CSO. 2023a. *Census 2022 Profile 4 - Disability, Health and Carers* [Online]. Central Statistics Office. Available: <https://www.cso.ie/en/releasesandpublications/ep/p-cpp4/census2022profile4-disabilityhealthandcarers/> [Accessed 05-12 2023].
- CSO. 2023b. *Census of Population 2022 - Preliminary Results* [Online]. CSO. Available: <https://www.cso.ie/en/releasesandpublications/ep/p-cpr/censusofpopulation2022-preliminaryresults/housing/> [Accessed].
- CSO. 2023c. *Older Persons Information Hub* [Online]. Central Statistics Office. Available: <https://www.cso.ie/en/releasesandpublications/hubs/p-opi/olderpersonsinformationhub/snapshot/> [Accessed 05-12 2023].
- DAVIDSON, M., NICOL, S., ROYS, M., GARRETT, H., BEAUMONT, A. & TURNER, C. 2012. The cost of poor housing in Northern Ireland. IHS Bre Press.
- DEPARTMENT FOR LEVELLING UP HOUSING AND COMMUNITIES 2020. English Housing Survey - Older people's housing, 2020-21.
- DONALD, I. P. 2009. Housing and health care for older people. *Age and Ageing*, 38, 364-367.
- DSDC 2008. *Design for People with Dementia Audit Tool*, Dementia Services Development Centre' (DSDC) at Stirling University.
- FUGGLE, L. & DSDC. 2013. *Designing interiors for people with dementia (4th edition)*, Stirling, Dementia Services Development Trust.
- GARCÍA-ESQUINAS, E., PÉREZ-HERNÁNDEZ, B., GUALLAR-CASTILLÓN, P., BANEGAS, J. R., AYUSO-MATEOS, J. L. & RODRÍGUEZ-ARTALEJO, F. 2016. Housing conditions and limitations in physical function among older adults. *J Epidemiol Community Health*, 70, 954-960.
- GARRETT, H., MARGOLES, S., MACKAY, M. & NICOL, S. 2023. The cost of poor housing in England by tenure. BRE.
- GIBNEY, S., WARD, M. & SHANNON, S. 2018. Housing conditions and non-communicable diseases among older adults in Ireland. *Quality in Ageing and Older Adults*, 19, 191-204.
- GONG, J., PART, C. & HAJAT, S. 2022. Current and future burdens of heat-related dementia hospital admissions in England. *Environment international*, 159, 107027.
- GOVERNMENT OF IRELAND. 2019. *Housing Options for Our Ageing Population - Policy Statement* [Online]. Available: <https://www.housing.gov.ie/housing/special-housing-needs/older-people/housing-options-our-ageing-population-policy-statement> [Accessed].
- GOVERNMENT OF IRELAND 2022. National Housing Strategy for Disabled People 2022 - 2027. Government of Ireland.
- GOVERNMENT OF IRELAND 2023. Report of Expert Group for the First Revision of the National Planning Framework. Government of Ireland.
- GOVERNMENT OF IRELAND 2024. Sustainable Residential Development and Compact Settlements: Guidelines for Planning Authorities. Government of Ireland.
- GREY, T., DYER, M., PIERCE, M. & CAHILL, S. 2015. Universal Design Guidelines: Dementia Friendly Dwellings for People with Dementia, their Families and Carers. Ireland The Centre for Excellence in Universal Design at the National Disability Authority
- GREY, T., XIDOUS, D., KENNELLY, S. P., MAHON, S., MANNION, V., DE FREINE, P., DOCKRELL, D., DE SIUIN, A., MURPHY, N., CRADDOCK, G. & O'NEILL, D. 2018. Dementia Friendly Hospitals from a Universal Design Approach : Design Guidelines 2018. Dublin, Ireland Health Research Board.
- HARAN, H., BUTLER, P. & FINNERTY, J. 2023. Double Deficit: Older and Ageing Persons in the Irish Private Rental Sector. Threshold and Alone
- HSE. 2023. *ICP for Older Persons* [Online]. Dublin: HSE. Available: <https://www.hse.ie/eng/about/who/cspd/icp/older-persons/> [Accessed 16-01 2020].

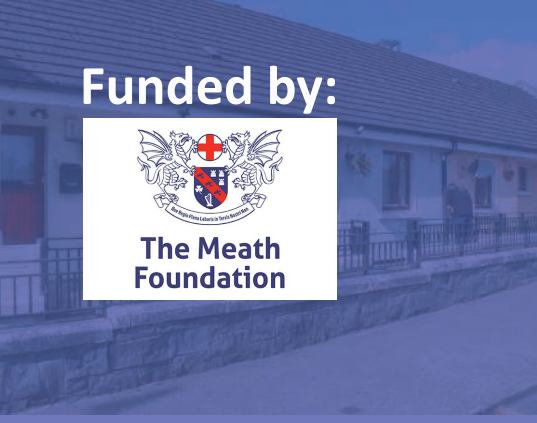
- INCLUSION IRELAND 2019. Housing for people with intellectual disabilities.
- IRISH WHEELCHAIR ASSOCIATION. 2023. *Think Housing, Build Accessible - End the disability housing crisis* [Online]. Available: <https://www.iwa.ie/get-involved/advocacy-campaigns/our-campaigns/think-housing-build-accessible/> [Accessed 12-05 2023].
- KIM, S. & LEE, J. T. Extreme temperature, health, and disability: A comparison of health effects between people with and without disabilities. ISEE Conference Abstracts, 2021.
- KING, M. M. & GREGG, M. A. 2022. Disability and climate change: A critical realist model of climate justice. *Sociology Compass*, 16, e12954.
- LO, A. Y., JIM, C. Y., CHEUNG, P. K., WONG, G. K. L. & CHEUNG, L. T. O. 2022. Space poverty driving heat stress vulnerability and the adaptive strategy of visiting urban parks. *Cities*, 127, 103740.
- LOUGHNAN, M., CARROLL, M. & TAPPER, N. J. 2015. The relationship between housing and heat wave resilience in older people. *International Journal of Biometeorology*, 59, 1291-1298.
- MARSHALL, M. 1998. Therapeutic buildings for people with dementia In: JUDD, S., PHIPPEN, P. & MARSHALL, M. (eds.) *Design for dementia*. London: Journal of Dementia Care.
- MCLOUGHLIN, S. & SCARLETT, S. 2018. Chapter 5: Living conditions of adults in Ireland. In: TURNER, N., DONOGHUE, O. & KENNY, R. A. (eds.) *Wellbeing and Health in Ireland's Over 50s 2009-2016*. Dublin, Ireland: The Irish Longitudinal Study on Ageing (TILDA).
- MURPHY, L. R. 1970. Rebuilding Britain: The Government's Role in Housing and Town Planning, 1945-57. *The Historian*, 32, 410-427.
- NDA. 2023. *Households and Disability, Census 2022 (to be completed)* [Online]. National Disability Authority [Accessed].
- NEWTON, R., ADAMS, S., KEADY, J. & TSEKLEVES, E. 2021. Exploring the contribution of housing adaptations in supporting everyday life for people with dementia: a scoping review. *Ageing & Society*, 1-27.
- NICOL, S., PIDDINGTON, J. & GARRETT, H. 2020. The Cost of Poor Housing in Ireland. BRE Trust.
- NOLAN, B. & WINSTON, N. 2011. Dimensions of Housing Deprivation for Older People in Ireland. *Social Indicators Research*, 104, 369-385.
- NSAI. 2023. *Call for experts in the development of a standard on - "Universal Design Dwellings : Requirements and Recommendations* [Online]. Available: <https://www.n sai.ie/about/news/call-for-experts-in-the-development-of-a-standard-on-universal-design-dwellings-requirements-and-recommendations/> [Accessed 15-06 2023].
- ODPM 2006. Housing Health and Safety Rating System: Operating Guidance. London: Office of the Deputy Prime Minister.
- ORR, J., SCARLETT, S., DONOGHUE, O., MCGARRIGLE, C. & PLACE, L. 2016. Housing Conditions of Ireland's Older Population. Implications for Physical and Mental Health. *The Irish Longitudinal Study on Ageing on behalf of TILDA. Dublin, Ireland*.
- PARK, G.-R. & KIM, J. 2022. Cumulative exposure to poor housing conditions and psychological well-being: Does the relationship differ for young and middle-aged adults and older adults? *Ageing & Mental Health*, 1-8.
- PIERCE, M., CAHILL, S., GREY, T. & DYER, M. 2015. Research for Dementia and Home Design in Ireland looking at New Build and Retro-Fit Homes from a Universal Design Approach: Key Findings and Recommendations. Ireland The Centre for Excellence in Universal Design at the National Disability Authority
- RATWATTE, P., WEHLING, H., KOVATS, S., LANDEG, O. & WESTON, D. 2022. Factors associated with older adults' perception of health risks of hot and cold weather event exposure: A scoping review. *Frontiers in public health*, 10, 4274.
- REILLY, P., BUGGY, A., DEWERGIFOSSE, J., MULLARKEY, C., O'NEILL, D. & KENNELLY, S. TALLAGHT INTEGRATED CARE FOR OLDER PERSONS TEAM-BRIDGING THE GAP. AGE AND AGEING, 2017. OXFORD UNIV PRESS GREAT CLARENDON ST, OXFORD OX2 6DP, ENGLAND.

- SCHORDERET, C., LUDWIG, C., WÜEST, F., BASTIAENEN, C. H. G., DE BIE, R. A. & ALLET, L. 2022. Needs, benefits, and issues related to home adaptation: a user-centered case series applying a mixed-methods design. *BMC Geriatrics*, 22, 526.
- SOUTH DUBLIN COUNTY COUNCIL 2020. South Dublin Age Friendly County Strategy 2020-2024.
- VAN HOOF, J., KORT, H. S. M., HENSEN, J. L. M., DUIJNSTEE, M. S. H. & RUTTEN, P. G. S. 2010. Thermal comfort and the integrated design of homes for older people with dementia. *Building and Environment*, 45, 358-370.
- WANG, Z. 2021. Use the Environment to Prevent and Control COVID-19 in Senior-Living Facilities: An Analysis of the Guidelines Used in China. *HERD: Health Environments Research & Design Journal*, 14, 130-140.
- WHO 2018. WHO housing and health guidelines. World Health Organization.
- YANG, Z. & FU, Y. 2019. Physical Attributes of Housing and Elderly Health: A New Dynamic Perspective. *Int J Environ Res Public Health*, 16.
- ZHOU, W., OYEGOKE, A. S. & SUN, M. 2019. Causes of Delays during Housing Adaptation for Healthy Aging in the UK. *Int J Environ Res Public Health*, 16.

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