



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

## Describing transitions in residential status over 10 years in the very old

**Citation for published version:**

Davies, LE, Brittain, K, Wilkinson, H, Lewis, S, Robinson, L & Kingston, A 2022, 'Describing transitions in residential status over 10 years in the very old: Results from the Newcastle 85+ Study', *Age and Ageing*, vol. 51, no. 3. <https://doi.org/10.1093/ageing/afac056>

**Digital Object Identifier (DOI):**

[10.1093/ageing/afac056](https://doi.org/10.1093/ageing/afac056)

**Link:**

[Link to publication record in Edinburgh Research Explorer](#)

**Document Version:**

Publisher's PDF, also known as Version of record

**Published In:**

Age and Ageing

**General rights**

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

**Take down policy**

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact [openaccess@ed.ac.uk](mailto:openaccess@ed.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.



## SHORT REPORT

# Describing transitions in residential status over 10 years in the very old: results from the Newcastle 85+ Study

LAURIE E. DAVIES<sup>1</sup>, KATIE BRITAIN<sup>1</sup>, HEATHER WILKINSON<sup>2</sup>, SUE LEWIS<sup>2</sup>, LOUISE ROBINSON<sup>1,†</sup>, ANDREW KINGSTON<sup>1,†</sup>

<sup>1</sup>Population Health Sciences Institute, Newcastle University, Newcastle upon Tyne, NE4 5PL, UK

<sup>2</sup>Advanced Care Research Centre (ACRC), University of Edinburgh, Edinburgh, EH16 4UX, UK

Address correspondence to: Laurie E. Davies, Population Health Sciences Institute, Biomedical Research Building (Room 2.39, Second floor), Campus for Ageing and Vitality, Newcastle University, Newcastle upon Tyne, NE4 5PL, UK.

Tel: +44(0)1912085668; Fax: 01912081101. Email: [laurie.davies@newcastle.ac.uk](mailto:laurie.davies@newcastle.ac.uk)

<sup>†</sup>Joint senior author

---

## Abstract

**Background:** the very old (aged  $\geq 85$ ) are the fastest growing subpopulation of many developed countries but little is known about how their place of residence changes over time. We investigated transitions in residential status in an inception cohort of 85-year-olds over 10 years.

**Methods:** data were drawn from the Newcastle 85+ Study, a population-based longitudinal study of individuals aged 85 in 2006 (i.e. born in 1921) and permanently registered with a Newcastle or North Tyneside general practice ( $n = 849$ ).

**Results:** 76.3% lived in standard (non-supported) housing at baseline (age = 85) and few moved into a care home. The majority either remained in standard housing or died over the study period. A significant number who lived in standard housing had dependency and frailty at baseline.

**Discussion:** given the undersupply of care homes, and preference of older people to remain in their own homes as they age, the questions posed by this analysis are how to survive to 85 and remain in standard housing until the age of 85? And how, and by whom, are such a group being supported to remain at home? We need qualitative research to explore the informal-formal care networks of the very old.

**Keywords:** very old, housing, care homes, transitions, older people

## Key Points

- We investigated transitions in residential status in an inception cohort of 85-year-olds over 10 years.
- Few moved into a care home.
- The majority either remained in standard (non-supported) housing or died over the study period.

---

## Background

Most people would prefer to remain in their own homes as they age [1]. The home sustains self-identity, and offers connection to others, for example [1]. It can guard against the potential threat of being labelled ‘old’ by others, and the loss of autonomy that goes with it [2]. For some, ‘ageing in place’ can mean moving to a home in the same vicinity that is safer and more adapted to their needs [3], such as

sheltered housing. Once the ability to carry out activities of daily living crosses a certain threshold (e.g. needing help to eat), a transition to long-term care can follow, but many older people with substantive care needs remain in the community with various means of assistance [4].

The very old (aged  $\geq 85$ ) are the fastest growing subpopulation of many developed countries [5], but little is known about how their residential status changes over time [6, 7].

This is despite the undersupply of care home places, and the expected decline in availability of family carers to support people living at home [8].

We examine transitions in residential status in the very old over 10 years with a rich dataset: the Newcastle 85+ Study.

## Methods

### Participants

The Newcastle 85+ Study is a population-based longitudinal study of people born in 1921, aged 85 in 2006, and registered with a participating general practice in Newcastle or North Tyneside [9]. When the study began (2006), participants were broadly representative of 85-year-olds in England and Wales by sex, care home residence and whether living alone, but those with end-stage terminal illness were excluded ( $n = 11$ ; [10]). Of the potential baseline sample ( $n = 1040$ ), 849 people (forming the basis for this analysis) agreed to multidimensional health assessment in their place of residence, inclusive of care homes, with review of general practice records; 188 to GP record review only, and three to multidimensional health assessment. By 2016, participants were 95-years-old and 90 of them remained for a fifth wave of data collection. Full details of study design, participant recruitment and representativeness are reported elsewhere [9–11]. Further details, including study questionnaires and the GP record review proforma are available on the Newcastle 85+ Study website <https://research.ncl.ac.uk/85plus/>, whilst Appendix 1 outlines study retention.

### Ethical approval

The Newcastle and North Tyneside Local Research Committee One approved the Newcastle 85+ Study (Ref: 06/Q0905/2).

### Residential status definition

Participants lived in standard (non-supported) housing (owner occupied, social housing or private rented), sheltered housing (a private independent unit with some shared facilities and an onsite warden) or a care home (nursing or residential).

### Statistical analysis

Baseline sociodemographic and health characteristics of participants and differences by residence type were analysed using the chi-squared or Fisher exact test. We highlight transitions in residential status over 10-years through an Alluvial diagram. To model transitions over 10-years we fitted a multi-state model with four states: standard accommodation, sheltered accommodation, care home and death (Appendix 2). Age was used as the temporal metric to mitigate some of the effect of the Markov assumption i.e. that only the current state influences future progression. Survival time was calculated from the date of baseline interview to the

date of death or censoring at 120 months (if a participant had taken part in the 10-year follow-up). Models were adjusted for sex and multimorbidity. Using the model parameters, we calculated the probability of living in the various residential statuses from age 86 to 95, conditional on residential status at 85. Analyses were performed using R V.4.0.2.

## Results

### Participant characteristics

At baseline (age = 85,  $n = 849$ ), most participants lived in standard housing (76.3%, 648/849) (Appendix 3). Of whom, 58.6% (380/648) were women, 78.7% (509/647) were cognitively intact, 40.1% (259/646) had four or more diseases and 22.2% (129/581) were frail (Fried's phenotype). Approximately half were dependent (requiring care less than daily (39.2%, 244/622), regularly each day (10.5%, 65/622) or 24 hourly (2.1%, 13/622)).

### Residential transitions

Few participants in standard housing at baseline moved into sheltered housing or a care home over the study period. Most remained in standard housing or died, depending on time of follow-up, with more deaths occurring as a function of time of follow-up (Figure 1).

Men and women in standard housing at 85 years of age had an 86.9 and 89.6% chance of remaining in standard housing by age 86, respectively, and a 24.8 and 33.6% chance of remaining in standard housing by age 95. For both sexes the chance of staying in standard accommodation decreased with age through an increased risk of mortality, not from transitions into sheltered housing or care homes. Men in standard housing had less chance of dying than men in sheltered accommodation through to age 95. This pattern was reversed but less pronounced for women up to age 94 (Figure 2).

## Discussion

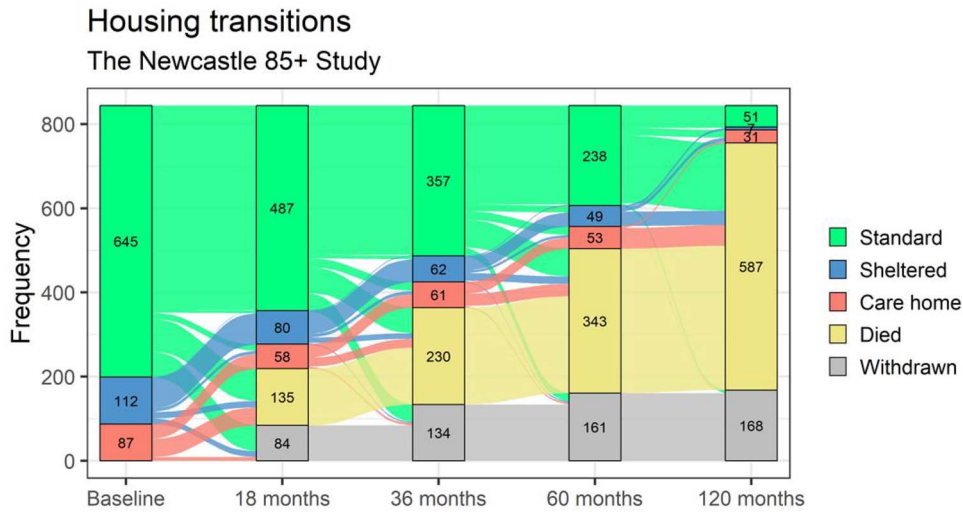
### Principle findings

Most 85-year-olds lived in standard (non-supported) housing at baseline and either remained in standard housing or died over the study period.

### Comparison with existing literature

Most older people want to remain in their own homes as they age [1] and there are many reasons for this. An aversion to residential care, strong feelings of attachment to place and the memories embodied there; to sustain self-identity, autonomy and social connections; for quality of life, familiarity with resources and affirmation of security [1, 12–14]. Our descriptive analyses (Appendix 3), and the wider literature [15], also suggest that older community-dwellers

## Describing transitions in residential status over 10 years in the very old



**Figure 1.** Housing transitions in the Newcastle 85+ Study. <sup>a</sup>Numbers may vary due to missing values at follow up.



**Figure 2.** Conditional probability of residential status.

avoid care home admission through belonging to multi-morbidity clusters without dementia. Within the United Kingdom there is an ongoing shift from high-cost, reactive, bed-based care, to care that is preventive, proactive and based closer to home [16]. In many countries ageing in place is the preferred strategy [17], and complex interventions based on comprehensive geriatric assessment can support independent

living [18]. Another of many potential explanations for our findings is the contribution of formal but mainly informal carers [19], whose help is positively perceived by those aged 85 and over, so long as they can still make their own decisions concerning daily life at home [20]. We found a significant number in standard housing were dependent and frail at baseline for example, but individuals with low dependency

are unlikely to qualify for publicly funded care, and many older people feel the responsibility for care should be with the family rather than the State [4]. Informal care networks traditionally relied upon are however becoming more fragile for reasons including extended working life, greater female labour market participation and more geographically disparate families [4]; more too must be done to support unpaid carers following COVID-19 [21], and this backdrop informs our future work.

### Strengths and limitations

Over long-term follow-up and with a large dataset we highlight a misconception: that very old people move into care homes. Most 85-year-olds from this study in the North East remained in the community, whilst often living with complex multimorbidity, frailty and dependency. This extends the limited evidence on residential transitions in older people [6, 22, 23] and directs future research with respect to how they are supported and by whom.

Our work has limitations, mainly, not knowing the residential history of the Newcastle 85+ Study participants before baseline, but thereafter few moved into care homes, which broadly aligns with how ‘ageing in place’ is defined. For those living in sheltered housing and care homes at baseline, we do not know what prompted the move, but relocation risk factors are examined elsewhere (for examples, see [15, 22, 24]). Extra care housing has also since developed in place of sheltered housing. Interval-censoring means we cannot exclude the possibility that those who died between 60 and 120 months follow-up moved into care homes during this time. We could not examine end-of-life transitions, but previous research shows acute hospitals are the place of death for most community-dwelling 85-year-olds [6]. Furthermore, remaining at home is not ideal for everyone [25], may not always be by choice [3] and is not without challenges [26]. For example we await social care reform, require more community-based geriatric teams supporting and mentoring generalists in primary care, and recognise that very old people living at home with frailty are in a precarious situation. Lastly, it was beyond the scope of this research to examine the resources very old people utilise over time to stay at home with often complex conditions, for example the neighbourhood, social networks and social care support. A future longitudinal analysis will examine the care provided to the very old in standard housing (who helps, how and how often, what is their age, health status and proximity?). Understanding these care networks might inform future support needs for this age group—and how else to support unpaid carers—, as we look ahead to rising dependency, multimorbidity and frailty with population ageing [4, 27, 28], reduced caregiver availability [19] and how to recover from the COVID-19 pandemic [21].

### Implications

All countries in Europe are facing insufficient availability of residential care for older people [29]. Given the undersupply

of care homes, and preference of older people to remain in their own homes as they age, the questions posed by this analysis are to: (i) better understand the (biopsychosocial/environmental) factors, which enable people to survive to 85 and remain living in their own home, (ii) explore in-depth the care and social networks that support 85-year-olds to remain at home and (iii) determine at an early, proactive phase those older people who are at higher risk of moving into a care home and how and when to intervene to better support them to stay at home.

**Acknowledgements:** Mortality data were obtained from NHS Digital. We acknowledge the operational support of the North of England Commissioning Support Unit, the National Institute for Health Research Clinical Research Network North East and North Cumbria, local general practitioners and their staff. We thank the research nurses, laboratory technicians, data management and clerical team for their work throughout, as well as many colleagues for their expert advice. Thanks are due especially to the study participants and, where appropriate, their families and carers.

**Supplementary Data:** Supplementary data mentioned in the text are available to subscribers in *Age and Ageing* online.

**Declaration of Conflicts of Interest:** None declared.

**Declaration of Sources of Funding:** The Newcastle 85+ Study has been funded by the Medical Research Council, Biotechnology and Biological Sciences Research Council, the Dunhill Medical Trust and the National Institute for Health Research School for Primary Care. Parts of the work have also been funded by the British Heart Foundation, Unilever Corporate Research, Newcastle University, NHS North of Tyne (Newcastle Primary Care Trust). K.B. is funded by the National Institute of Health Research (NIHR) Applied Research Collaboration (ARC) for the North East and North Cumbria (NENC). L.R. is supported by an ‘NIHR Senior Investigator Award scheme’ (reference number NF-SI-0616019954).

This research was funded by the Legal & General Group (research grant to establish the independent Advanced Care Research Centre at University of Edinburgh). The funder had no role in conduct of the study, interpretation or the decision to submit for publication. The views expressed are those of the authors and not necessarily those of Legal & General.

### References

1. Stones D, Gullifer J. ‘At home it’s just so much easier to be yourself’: older adults’ perceptions of ageing in place. *Ageing Soc* 2016; 36: 449–81.
2. Degnen C. Minding the gap: the construction of old age and oldness amongst peers. *J Aging Stud* 2007; 21: 69–80.
3. Forsyth A, Molinsky J. What is aging in place? Confusions and contradictions. *Hous Policy Debate* 2021; 31: 181–96.

4. Kingston A, Wohland P, Wittenberg R *et al.* Is late-life dependency increasing or not? A comparison of the cognitive function and ageing studies (CFAS). *The Lancet* 2017; 390: 1676–84.
5. Tomassini C. The demographic characteristics of the oldest old in the United Kingdom. *Popul Trends* 2005; 120: 15–22.
6. Fleming J, Zhao J, Farquhar M, Brayne C, Barclay S. The Cambridge City over-75s Cohort (CC75C) study collaboration. Place of death for the ‘oldest old’: ≥85-year-olds in the CC75C population-based cohort. *Br J Gen Pract* 2010; 60: e171–9.
7. Richards J-L, Rankaduwa W. Housing Canada’s oldest-old: correlates of their residential status. *J Hous Elderly* 2008; 22: 376–403.
8. Colombo F, Llena-Nozal A, Mercier J, Tjadens F. Help wanted? Providing and paying for long-term care OECD Health Policy Studies. Paris: OECD Publishing, 2011. <https://doi.org/10.1787/9789264097759-en>.
9. Davies K, Collerton JC, Jagger C *et al.* Engaging the oldest old in research: lessons from the Newcastle 85+ study. *BMC Geriatr* 2010; 10: 64.
10. Collerton J, Davies K, Jagger C *et al.* Health and disease in 85 year olds: baseline findings from the Newcastle 85+ cohort study. *BMJ* 2009; 339: b4904.
11. Collerton J, Barrass K, Bond J *et al.* The Newcastle 85+ study: biological, clinical and psychosocial factors associated with healthy ageing: study protocol. *BMC Geriatr* 2007; 7: 14.
12. Gabriel Z, Bowling A. Quality of life from the perspectives of older people. *Ageing Soc* 2004; 24: 675–91.
13. Wiles JL, Leibing A, Guberman N, Reeve J, Allen R. The meaning of “aging in place” to older people. *Gerontologist* 2012; 52: 357–66.
14. Lawler K. Aging in place: coordinating housing and health care provision for America’s growing elderly population (Working Paper W01–13). Cambridge, MA: Joint Center for Housing Studies of Harvard University, 2001.
15. Agüero-Torres H, von Strauss E, Viitanen M, Winblad B, Fratiglioni L. Institutionalization in the elderly: the role of chronic diseases and dementia. Cross-sectional and longitudinal data from a population-based study. *J Clin Epidemiol* 2001; 54: 795–801.
16. Oliver D, Foot C, Humphries R. Making Our Health and Care Systems Fit for an Ageing Population. London: King’s Fund, 2014.
17. Centre for Policy on Ageing. The Care and Support of Older People - an International Perspective, 2014. <http://www.cpa.org.uk/information/reviews/reviews.html> (accessed 12 July 2021).
18. Beswick AD, Rees K, Dieppe P *et al.* Complex interventions to improve physical function and maintain independent living in elderly people: a systematic review and meta-analysis. *Lancet* 2008; 371: 725–35.
19. Jagger C, Collerton JC, Davies K *et al.* Capability and dependency in the Newcastle 85+ cohort study. Projections of future care needs. *BMC Geriatr* 2011; 11: 21.
20. Haak M, Fänge A, Iwarsson S, Dahlin IS. Home as a signification of independence and autonomy: experiences among very old Swedish people. *Scand J Occup Ther* 2007; 14: 16–24.
21. State of caring. A Snapshot of Unpaid Care in the UK. London: Carers UK, 2021; 2021.
22. Vlachantoni A, Maslovskaya O, Evandrou M, Falkingham J. The determinants of transitions into sheltered accommodation in later life in England and Wales. *J Epidemiol Community Health* 2016; 70: 771.
23. Evandrou M, Falkingham J, Maslovskaya O, Vlachantoni A. Transitions into sheltered accommodation and residential care in later life: evidence from the British Household Panel Survey (1991–2008). European Population Conference, Stockholm, Sweden, 13–16 June 2012.
24. Gaugler JE, Duval S, Anderson KA, Kane RL. Predicting nursing home admission in the U.S: a meta-analysis. *BMC Geriatr* 2007; 7: 13.
25. Bigonnesse C, Chaudhury H. The landscape of “aging in place” in gerontology literature: emergence, theoretical perspectives, and influencing factors. *J Aging Environ* 2020; 34: 233–51.
26. Sixsmith A, Sixsmith J. Ageing in place in the United Kingdom. *Ageing Int* 2008; 32: 219–35.
27. Hoogendijk EO, Afilalo J, Ensrud KE, Kowal P, Onder G, Fried LP. Frailty: implications for clinical practice and public health. *The Lancet* 2019; 394: 1365–75.
28. Kingston A, Robinson L, Booth H, Knapp M, Jagger C. Modem project. Projections of multi-morbidity in the older population in England to 2035: estimates from the population ageing and care simulation (PACSim) model. *Age Ageing* 2018; 47: 374–80.
29. Spasova S, Baeten R, Coster S, Ghailani D, Peña-Casas R, Vanhercke B. Challenges in long-term care in Europe. A study of national policies. In: European Social Policy Network (ESPN). Brussels: European Commission, 2018.

**Received 15 October 2021; editorial decision 18 January 2022**