The oldest old in Great Britain: change over the last 20 years

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This article examines twenty-year trends in several demographic and socio-economic characteristics of the oldest old. Using data obtained by merging consecutive waves of the General Household Survey (GHS), this study offers detailed descriptive and multivariate analyses of the use of selected health services and the living arrangements of the oldest old over the last 20 years.

The results provide an insight into the characteristics of the oldest old and changes over time in the selected characteristics, that is, the increase in the proportion living alone and in hospital out-patient visits, in contrast with the stability in the proportion visiting their General Practitioner (GP).

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Introduction

This article follows a previous analysis of the oldest old (those aged 85 and over) in the UK at macro level which was recently published in *Population Trends*.[1] In line with the previous study, the current goes beyond the general practice of treating the oldest old as part of a homogenous older group. On the contrary, this study aims to disentangle the effects of the individual characteristics of interest and how they vary in this age group when compared with the older population as a whole over the last twenty years.

The article is divided into three parts. The first examines the individual characteristics of the oldest old and how they compare to the characteristics of the older population in general. The second section presents the results of bivariate and multivariate analyses of the General Household Survey (GHS) in the 1980s, 1990s and 2000s. The third section discusses past trends and future implications for the characteristics of the oldest old in Great Britain.

Data issues

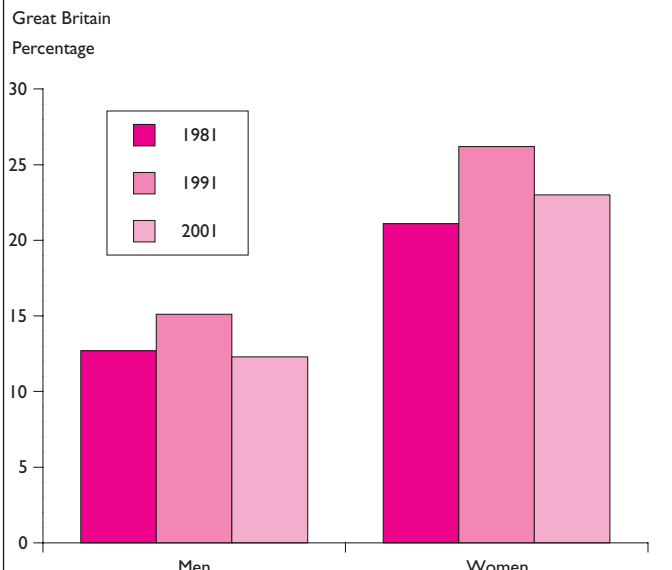
The study of the individual characteristics of the oldest old started to be an important topic for gerontological research only recently, given the constraints in the availability of suitable data. In Great Britain, as in many other developed countries, the numbers of very old people in most surveys are not sufficient for complex analyses; therefore a typical strategy is to combine different waves of cross-sectional data to assemble a suitable sample of the oldest old. This approach has been implemented in this article.

In order to have reliable information on this fast-growing age group, other countries have started to collect data on the oldest old. Denmark has set up three important longitudinal studies to explore the characteristics of the last stages of life: a study covering all people resident in the country born in 1905[2], a study of all Danish centenarians and a study of all Danish twins aged 75 and over.[3] In China, a recent study covered 11 thousand people aged 80 and over.[4] In Sweden a longitudinal study of the oldest old started in 1992.[5] Other countries follow a strategy of boosting the sample size for the oldest old or organising special modules in currently running surveys.

Another important problem for using data from household surveys for the oldest old is the explicit exclusion of those living in communal establishments. For the other age groups of the population, those excluded would represent a small proportion of the population of interest, but for the oldest old this exclusion may seriously bias the results especially when time trends are investigated. The oldest old living in communal establishments are usually more likely to be women, unmarried and have limiting long-standing illnesses. Fluctuations in the proportion of oldest old living in communal establishments are likely to affect trends in the characteristics of those living in private households. In the period considered in this analysis, the proportion of oldest old living in communal establishments has varied considerably. Figure 1 shows the proportion of oldest old living in communal establishments by sex for the last three censuses in Great Britain. For both sexes the proportion increased between 1981 and 1991 and then decreased in the following decade. Many commentators have suggested that the most recent decrease may be largely due to reforms which have sought to reduce the dependency on institutional care.[6] These differences in the proportion of oldest old in communal establishments should be kept in mind when comparing the three decades. It is possible that the lower proportion of the institutionalised oldest old in the 1980s and 2000s may have had an influence on the health status, on the use of health services and on living arrangements of those living in private households when compared with the 1990s.

An alternative data source which overcomes both the problems of small numbers and the exclusion of oldest old in communal establishments is the Office for National Statistics (ONS) Longitudinal Study (LS) covering England and Wales. Previous studies have focussed on the changes in the proportion of older people in England and Wales moving from independent living to 'supported' living arrangements (co-residence with others in private households or in communal establishments) during the decades 1971–81 and 1981–91.[7] However, this data source does not contain some of the variables able to be examined here.

Figure 1 **Proportion of those aged 85 and over living in communal establishments, 1981–1991–2001 Censuses**



Source: 1981, 1991 and 2001 Censuses, Great Britain

Research aims

The oldest old are more likely to experience frailty, illness and dependence in comparison with younger old people (those aged 65–84). It follows that the oldest old are the main per capita users of health services compared with other age groups of the population.[8] The growth of the oldest old population thus presents an emerging issue for population scientists and policy makers, due to concerns about the potential increase in health and social care provision. It is, therefore, important to explore individual characteristics that are associated with the use of health services to provide information on the drivers for further expansion in service supply. This analysis explores individual characteristics linked to the use of two health services: visits to the GP and hospital out-patient visits.

Living arrangements are another important aspect of life for the oldest old since they are less likely to live with a spouse or partner compared with younger old people. Therefore the living arrangements of the oldest old are more likely to be affected by other factors in addition to marital status such as financial well-being and health status.[9] Additionally, living arrangements are also affected by, on the one hand, cultural attitudes (for example, by the value attributed to residential independence) and on the other by the availability, cost and quality of social services to support people living in their own homes. All these factors determine the choice between living independently or with other people (mainly spouse and/or children). This analysis investigates trends in living arrangements of the oldest old and their associated determinants. It focuses on the living arrangements of the oldest old without a partner (that is, never-married, divorced and widowed) mainly because this is the prevailing marital condition of this age group. Also, living arrangements of those without a partner but not living alone could represent a possible indicator of the availability of potential carers and family support for older people (compared with those with a partner, assuming a partner is able to provide care).

Data and methods

As stated before, the numbers of very old people in most surveys are usually not large enough for sophisticated statistical analyses. In order to solve this problem, this analysis has been run combining three years of data from the GHS, using the same questions asked each year, thus assembling a robust sample of very old people. The survey years used in this analysis are 1980–1981–1982 (described as 1980s in this article), 1990–1991–1992 (described as the 1990s) and 2000–2001–2002 (described as the 2000s). The GHS has a limited core of questions that have been asked consistently throughout the whole period examined. We selected all people aged 85 and over thus obtaining a sample size of 751 for the 1980s, 913 for 1990s and 818 for 2000s. Note that in the descriptive statistics section of this article the 2000s data are weighted The special modules on older people included in the 1980, 1985, 1991, 1994, 1996, 1998 and 2001 GHS questionnaires would have been a better source from which to derive time trends over the period. However, the gaps between the available years meant it was not possible to create consistent and compatible datasets to analyse time trends.

The overall frequencies from using this procedure may differ slightly from the ones obtained using other surveys or the 1981, 1991 and 2001 Censuses. This may be due to different response rates of the oldest old in different surveys, and also the different mode of collection for census. It

has been suggested that the oldest old normally have a higher proportion of refusals on general surveys, but they have relatively high response rate in surveys specifically designed for older people.[10] A recent evaluation of non-response rates in the ONS social surveys showed that the GHS has a lower non-response rate among people aged 75 and over compared to other government surveys.[11] Since the main aim of this article is to explore the relationships between the individual characteristics of the oldest old, the selected samples should provide reliable estimates for those relationships, although non-response may affect the strengths and weaknesses of the relationships found.

This article uses logistic regression to estimate the probabilities of:

- visiting the GP in the two weeks before the interview
- hospital out-patient visits in the three months before interview
- living alone among the unmarried oldest old

Predictor variables in these three models are sex, presence of limiting long-standing illnesses, marital status, tenure, presence of central heating and social class (based on the last occupation for those who were retired at interview). The choice of the covariates was driven by previous studies on the topic and the constraints imposed by the datasets.

Sex is an important variable since several studies have shown that women in general use more health care services than men and are more likely to comply with doctors' recommendations than men.[12] Possible explanations for the greater use of health services among women may be linked to the fact that they report higher levels of disability and give greater attention to their health in general.[13]

Health is clearly related to both living arrangements and use of health services. For example, when severe health problems appear, older people may decide to move and live with their relatives to receive care. In this analysis, the presence of limiting long-standing illnesses has been used in preference to the self-rated general health status question, since the oldest old are more likely to have a proxy interview in the GHS. For example, in the 2000s sample almost 10 per cent of the interviews of the oldest old were proxy interviews so there was no answer for the question on general self-rated health.

Marital status has been found to be important for living arrangements and use of health services for older people. Among older people those who are unmarried, widowed or divorced have been found to be more likely to live alone than the never-married.[14, 15] Additionally, Waite (1995) noted that 'marriage provides individuals with someone who monitors their health and health related behaviours, and who encourages self-regulation'.[16] It is not clear what the relationship is between marital status and heath use. It is possible that for married couples greater monitoring may lead to greater service use, however having someone to care may mean that emergency and acute episodes are less likely.

Tenure and *social class* are proxy indicators for the socio-economic status of older people. Housing tenure was included in the model because of its strong association with co-residence, as home-ownership is more likely to be associated with living alone than other forms of housing tenure.[17]

Presence of central heating is an indicator of the quality of housing that used to be important in past decades, even if nowadays the vast majority of houses have central heating. It is important to note that tenure and presence of central heating were collected at household level, therefore it is possible that they may represent either the housing characteristics of the oldest person (especially if he/she is living alone) or the characteristics of the household into which the oldest person has moved (for example, their son or daughter).

Social class is based on the last job held by the person and can be an indicator of financial well-being: older people of higher socio-economic status have been found to be less likely to co-reside with other family members[14] and less likely to use standard health services, because they are able to purchase private health care.

Results

Descriptive analysis

The following section describes some of the trends found over time in the selected variables of interest or the oldest old in Great Britain.

The trend in proportion of oldest old that visited their GP in the two weeks before the interview has not changed significantly in the period considered, especially for men (Figure 2). Note that the oldest old in communal establishments are excluded from this analysis; they are more likely to have health problems requiring GP attention. This result seems to confirm previous studies based on the GHS for people aged 75 and over (for the period 1982–1994).[18] When the oldest old are compared with the population aged 65 and over, they have only a slightly higher probability of having visited their GP in the two weeks before the interview (except for women in the 1990s). It is possible that the oldest old are accepting health problems that would entail a GP visit by the younger older population. It could also reflect that the oldest old are of a generation that have different attitude to use of the health service. Those sampled in the population aged 85 and over in the 2000s data are survivors from the population aged 65 and over in the 1980s, so there is an upward gradient with age in GP use for those cohorts.

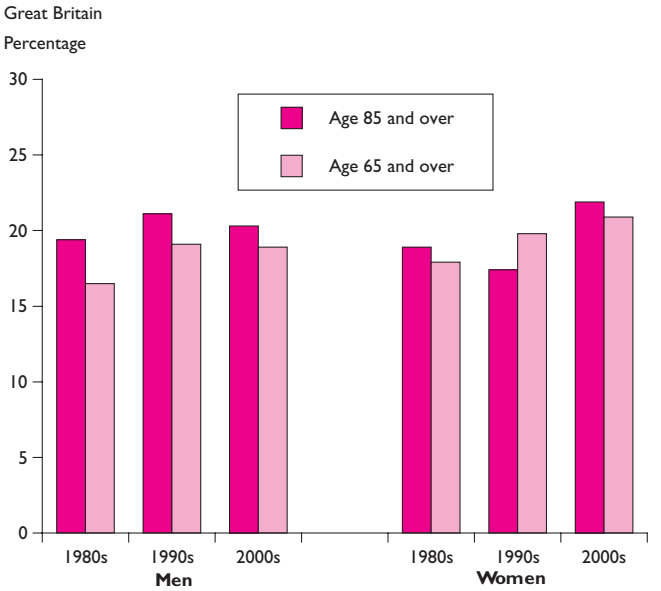
The GHS data show a sharp increase in the proportion of hospital out-patient visits among the oldest old. Between the 1980s and 2000s for both men and women the proportion doubled, from 13 to 28 and from 12 to 24 per cent respectively. A similar trend was seen among people aged 65 and over. However, in the 1980s the proportion was higher among older people aged 65 and over when compared with the oldest old. In the most recent period the situation is reversed. This matches the general trend in increasing use of out-patient services. Between 1995/96 and 2003/04 the increase in the rate of 'day cases' was 34 per cent while in-patient cases rose 2 per cent.[19]

In Britain, as in other developed countries, the proportion of people aged 65 and over living alone stabilised during the 1990s, due mainly to the increase in the proportion of those who are married and to the trend of postponing leaving the parental home among young adult children and an increasing proportion of children coming back to their parents' home after a marriage breakdown.[20] However, the data show that for the oldest old, for both for men and women there has been an increasing proportion living alone (Figure 4). The proportion of the oldest old living alone has increased in the last two decades by over one third for men and one quarter for women between the early 1980s and the early 2000s. Figure 4 shows that oldest old men are less likely to live alone compared with women, since they are more likely to be married.[21]

When only older people without a spouse are considered (Figure 5) the proportion of oldest men living alone is higher than for women, except in the 1980s. In the 2000s among the unmarried (single, widowed or divorced) oldest old, 84 per cent were living alone compared with 77 per cent of oldest old women. However, among people aged 65 and over in the 2000s, women had a higher proportion living alone (80 per cent) compared with men (78 per cent).

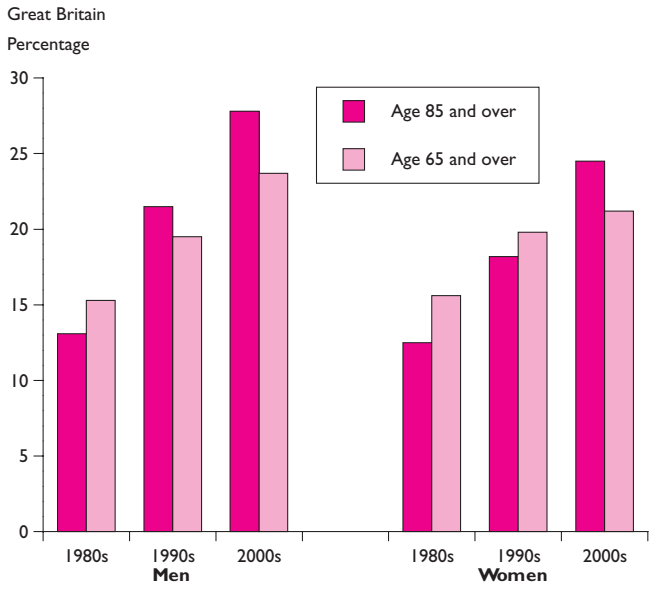
For ease of reference, Table 1 provides the percentages for the 85 and over group used in Figures 2 to 5.

Figure 2 Proportion of older people who have visited the GP in the two weeks before the interview, by sex and age



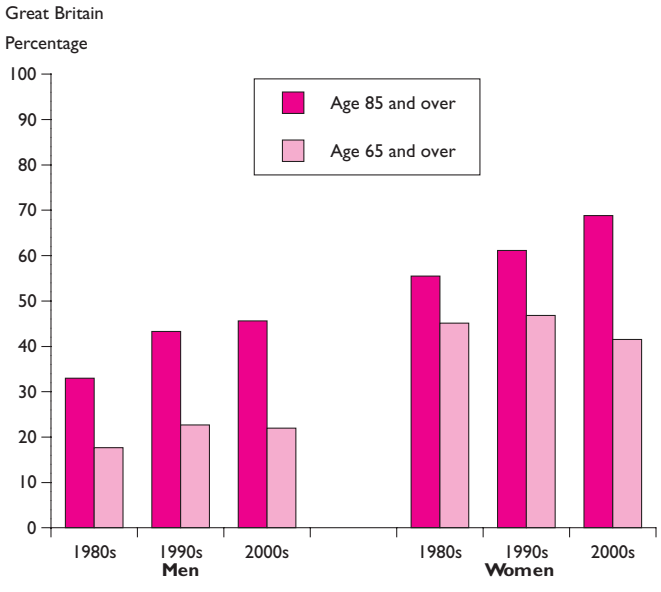
Source: ONS General Household Survey (author's calculations)

Figure 3 Proportion of older people who have visited the hospital as an out-patient in the three months before the interview, by sex and age



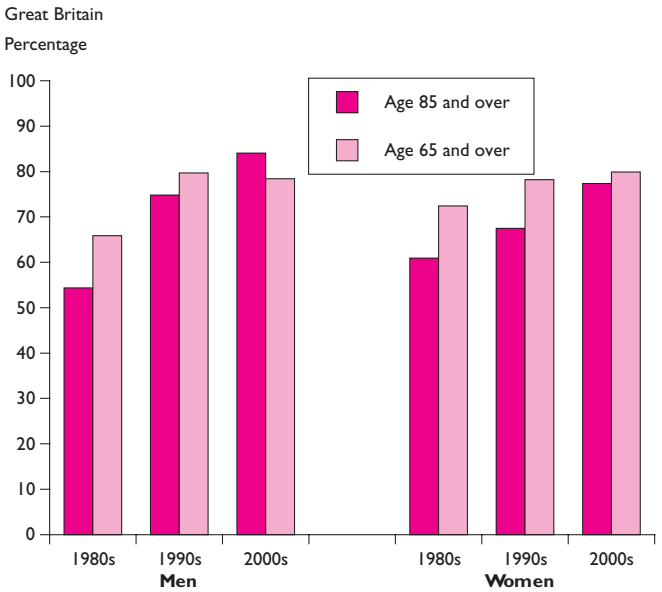
Source: ONS General Household Survey (author's calculations)

Figure 4 Proportion of older people living alone, by sex and age



Source: ONS General Household Survey (author's calculations)

Figure 5 Proportion of unmarried (single, divorced and widowed) older people living alone by sex and age



Source: ONS General Household Survey (author's calculations)

If we consider the covariates used in this analysis, the trends found for the oldest old are in line with the recent changes that have occurred for the UK population as a whole. Regarding tenure, home ownership has increased steadily in the last 20 years from 50 per cent in the 1980s to 61 per cent in 2000s and conversely social renting decreased from 38 to 30 per cent in the same period. The majority of the accommodation occupied by the oldest old nowadays has central heating (around 90 per cent) compared to 50 per cent in the 1980s. A greater number of the oldest old were from non-manual occupation-groups in the 2000s compared to the 1980s; among men, 41 per cent were in non-manual social classes in the 1980s compared to 48 per cent in the 2000s.

Table 1 Percentages in each outcome variable used for population aged 85 and over

Great Britain

	Men			Women		
	1980s	1990s	2000s	1980s	1990s	2000s
Visited GP in last two weeks	19.4	21.1	20.3	18.9	17.4	21.9
Visit to Hospital in last three months	13.1	21.5	27.8	12.5	18.2	24.5
Proportion living alone - all	33.0	43.3	45.6	55.5	61.1	68.8
Proportion living alone - unmarried	54.4	74.8	84.1	60.9	67.5	77.4

Note: 2000s percentages calculated from weighted data.
Source: ONS General Household Survey (author's calculation)

Trends in health status are more difficult to assess. Using the GHS the proportion of oldest men with limiting long-standing illnesses has increased from 44 to 55 per cent, but it has decreased for women from 62 to 57 per cent between the 1980s and the 2000s. Since health problems are the main reasons for entering communal establishments, changes in the proportion of oldest old with limiting illnesses and disabilities are closely linked to the variation in the proportion of the institutionalised population. For the same reason the proportion of the oldest old with limiting long-standing illness found among the oldest old participating in the GHS is lower when compared with the census since the latter includes oldest old living in communal establishments.[1]

Multivariate analysis

This section presents the results of three logistic analyses to model the probabilities of:

- visiting the GP in the two weeks before the interview or
- hospital out-patient visits in the three months before the interview
- living alone for the oldest who are currently unmarried

All three models use the same covariates illustrated in the previous section. The reference categories for the covariates are indicated in brackets in the tables. Box 1 briefly explains logistic regression and the interpretation of odds ratios.

Table 2 shows the effect of the explanatory variables (sex, social class, tenure, marital status and presence of limiting long-standing illnesses) on the probability of visiting the GP or the hospital as an out-patient in the 1980s, 1990s and 2000s. The effects of the covariates are expressed as odds ratios. These indicate how much more or less likely those aged 85 or over with each of the characteristics are to visit the GP or hospital as an out-patient compared to those in the reference category, controlling for all the other factors in the model. The only constant significant association with the use of GP or out-patient services in the three periods considered is the presence of limiting long-standing illness. An oldest old person with such an illness had around twice the odds of visiting the GP compared with one without any illness in the three periods considered. The other covariates have either no significant association, or they have it only in one of the periods considered. Oldest old men are not significantly less likely to visit the GP or the hospital as an out-patient compared to oldest old women as shown in other studies.[1,2] Also, the married oldest old are not significantly more likely to visit the GP or the hospital, again differing from other studies which have suggested that marriage acts as a promoter of health protection. Although the model shows that the oldest old who were in non-manual social classes are more likely to visit the GP or the hospital compared with those in manual or other social classes, the relationship is not significant, except in the last period when the effect is significant for visiting the GP (OR 1.44). Private renters were twice as likely to have had a hospital out-patient visit compared to property owners in the 1980s, but the relation was not found in the following periods. There is a significant effect of being a private renter in the last period in lowering the probability of visiting the GP (OR 0.35). The oldest old who were social renters had a significantly higher probability of visiting their GP (OR 1.56) in the 1980s, but the association decreases in the following two decades to become not significant.

Box one

Logistic regression and odds ratios

Logistic regression analysis has been used in the analysis of the survey data to provide a measure of the effect of various socio-demographic variables on the probability of three outcomes: visiting the GP; visiting hospital as an out-patient and the probability of living alone for those oldest old who are unmarried (single, widowed or divorced). Unlike cross-tabulations, logistic regression estimates the effect of each socio-demographic variable while controlling for the confounding effects of other variables in the analysis. Logistic regression produces an estimate of the probability of an event occurring when an individual is in a particular category compared to a reference category. This effect is measured in terms of odds. For example, Table 2 shows that suffering from the presence of limiting long-standing illnesses doubles the odds of visiting the GP in the two weeks before the interview compared to the reference category of those without such illnesses. The amount by which the odds of the probability actually increases is shown by the Odds Ratio (OR). In this case, the OR in the 2000s is 1.85 indicating that having limiting-long standing illnesses increases the odds of visiting the GP by about 85 per cent, controlling for the possible confounding effects of the other variables in the statistical model, for example, age, sex, social class and tenure.

Table 2 **Odds ratios of visiting the GP or the hospital as an outpatient for people aged 85 and over in the 1980s, 1990s, and 2000s**

Great Britain

	1980s		1990s		2000s	
	Outpatient	GP visits	Outpatient	GP visits	Outpatient	GP visits
Sex (ref. Women)						
Men	1.12	1.04	1.14	1.31	1.15	0.91
Social class (ref. Manual and others)						
Non-manual	1.37	0.91	1.21	0.97	1.24	1.44*
Tenure (ref. Owner)						
Private renter	2.46**	0.72	1.20	1.10	0.51	0.35*
Social renter	1.38	1.56*	1.20	1.25	0.84	0.90
Central heating (ref. no central heating)	1.73*	1.00	0.96	1.37	1.07	1.32
Presence of limiting LSI (ref. no LSI)	1.85*	1.92**	1.56**	2.10**	1.34	1.85**
Marital status (ref. married)						
Widowed/divorced	1.07	0.64	0.67	0.88	1.17	1.18
Never Married	0.77	0.55	1.26	1.02	0.66	0.93
Sample Numbers	*751*		*913*		*818*	

Note: *p<0.05, **p<0.01
Source: ONS General Household Survey (author's calculations)

Table 3 shows the results of the logistic model for living alone among the oldest old who are not currently married. This model finds some relationships which appear to be different from previous studies conducted on the older population as a homogenous group. Like previous studies of the older population,[14] there is not a significant difference between men and women in the probability of living independently. Although none of the odds ratios are significant, the association has changed from the 1980s when men were less likely to live alone (OR 0.89) to the most recent period when men are more likely to live alone when they are not married (OR 1.49). Being never-married has no significant association with living independently among the oldest old in any of the three periods analysed. This result contrasts with previous studies on older people,[14] where the never-married were less likely to live alone, compared with the widowed or the divorced. The oldest old who were in the non-manual social class were found to be more likely to live independently in all the three periods analysed. Being in the non-manual social class may be thought of as a proxy for higher social status and wealth. This would be consistent with the results suggesting that increased material resources may assist in enabling residential independence. Private and social renters are more likely to live alone compared with homeowners. Reverse causation may also explain this relationship: the oldest old who remained alone may be more likely to claim social housing accommodation than the oldest old who have family support. An additional explanation may be that if an older person has moved to a relative's home, the survey collects the tenure status of co-resident relative. When the model was tested with the interaction between social class and tenure, being non-manual was not significant any more in explaining the probability of living independently. Presence of central heating in the house was significantly associated with the probability of living alone (the oldest old with central heating were less likely to live alone) in the 1980s and 1990s, but the relationship is not significant in the last period.

The effect of having limiting long-standing illnesses on living alone has changed in the period considered. In the 1980s there was no significant association between having limiting long-standing illnesses and living independently. In the 1990s those with health problems were less likely to live alone (OR 0.66 $p<0.05$). In the 2000s the relationship became strongly significant as the probability of living alone for those with limiting long standing illnesses is half of the probability for those without such illnesses.

Table 3 **Ratios of living alone for unmarried people aged 85 and over in the 1980s, 1990s and 2000s**

Great Britain

	1980s	1990s	2000s
Sex (ref. Women)			
Men	0.89	1.31	1.49
Social class (ref. Manual and others)			
Non-manual	1.93**	1.71**	2.57**
Tenure (ref. Owner)			
Private renter	3.14**	10.63**	8.30**
Social renter	3.24**	6.44**	3.23**
Central heating (ref. no central heating)	0.64**	0.51**	0.88
Presence of limiting LSI (ref. no LSI)	1.20	0.66*	0.57**
Marital status (ref. Widowed/divorced)			
Never married	1.17	1.05	0.54
Sample Numbers	*625*	*718*	*635*

Note: *$p<0.05$, **$p<0.01$
Source: ONS General Household Survey (author's calculations)

Conclusions and discussion

There is a growing demand for data and analysis of the oldest old not only because they are the fastest growing age group in the UK population, but also because they present some specific demographic characteristics that are different from those of any other age group. As distinct from the young older people, the oldest old are in general more likely to be widowed, to suffer from limiting long-standing illnesses, to visit the GP or to visit hospital as an out-patient, more likely to live alone and more likely to be social renters. Some of these differences are specific to the biological ageing process, for example, the higher proportion among the oldest old of those who are in bad health with the resulting higher use of health services. Other characteristics, such as the higher proportion of those living alone when they do not have a spouse or higher proportion of social renters when compared with the whole old population, are affected by attitudes towards independent living, availability of kin with whom to co-reside and housing policies.

These results provide some important empirical evidence about the situation of the oldest old that help inform the debate on the consequences of an ageing population. The proportion of the oldest old visiting the GP has fluctuated in the period considered and the proportion of the oldest old visiting hospital as an out-patient has increased significantly. The use of these two types of health services is mainly explained by the presence of limiting long-standing illnesses, suggesting that the importance lies in changes in the health of the oldest old as this age group in the population continues to increase. The lack of significant association between visits to the GP or to hospital as an out-patient and the socio-economic characteristics of the oldest old suggest a universal use of these health services among the oldest old regardless of their socio-economic status, although in the latest period social class became significant in explaining visits to the GP.

Marital status estimates (Table 1.5 in the regular tables in this volume) show that the proportion of married men aged 65 and over in England and Wales has fallen slightly (from around 73 per cent in 1981 to 71 per cent in 2003) while for women the proportion has risen (from 37 per cent to 42 per cent). The Government Actuary's Department[21] projects that these trends will continue for the population aged 65 and over. However, they project the proportion of the married oldest old will increase for both men and women, from 11 to 25 per cent for women and from 46 to 51 per cent for men between 2003 and 2031. This trend should be associated with an increasing probability of the oldest old living as a couple. It must be noted though that being married is not necessarily associated with co-residing with a spouse among the oldest old due to the fact that the spouse may reside in a communal establishment.

Additionally, among the unmarried (single, widowed or divorced) oldest old, their sex and marital status seem not to have a significant effect on living alone. Another important issue for projecting future trends in living arrangements is the presence of kin with whom the oldest person may reside. Very few surveys collect data on non- living children or siblings for older people. Living with a sibling has been found to be very important for never-married people in other countries.[15] Living with children has been found related to the number of living children in some countries,[22] but not in others.[23] Therefore it is difficult to project the effect on living arrangements with the expected increase in the number of living children for women older than 80.[24]

For the most recent period, the presence of limiting long-standing illnesses becomes significant in explaining the lower probability of living independently. This result may suggest that recently, given the declining

Key findings

- The proportion of the oldest old (those aged 85 and over) visiting hospital as an out-patient in the three months prior to interview has doubled between the early 1980s and the early 2000s, a more rapid increase than the population aged 65 and over. The proportion of the oldest old visiting the GP within two weeks of interview has shown no clear trend over the same period.
- Both visits to the GP and out-patient visits to hospital are associated mainly with the presence of limiting long-standing illnesses and only weakly associated with other socio-economic characteristics.
- Sex and marital status are not significant in reporting the use of health services and living alone (for those without a spouse) for the oldest old.
- The proportion of the oldest old living alone has increased in the last two decades by over one-third for men and one-quarter for women between the early 1980s and the early 2000s.
- Living alone is also becoming more common among the oldest old without a spouse, in particular for men who show an increase of over one half in the proportion between the early 1980s and early 2000s. For the oldest old without a spouse, in both the early 1990s and 2000s, more men live alone compared to women. In the early 2000s 84 per cent of men without a spouse lived alone compared with 77 per cent of women.
- The characteristics that are significantly associated with living alone have been changing in the last twenty years. In the most recent years, in addition to tenure and social class, presence of limiting long-standing illnesses is associated with living with other family members.

probability of co-residence with family members, the oldest old who are living with children or other relatives are more selected in terms of health compared to the past. Fragile health for the oldest old may have become more important in leading to co-residence with family members, especially in a context where the proportion of the oldest old living in communal establishments is decreasing. This suggestion, however, can not be verified with cross-sectional data such as the GHS.

Nonetheless, several statistical problems remain regarding the representativeness of these results. The participation of very old people in surveys is likely to be hampered by their health status so that the use of proxy respondents may bias results. Another problem is the lack of comparable information through the years on the use of both in-patient visits to hospital and community care services for the oldest old. This information would have completed the picture on the use of health services by the oldest old. A further interesting analytical question is whether any of the relationships examined here are affected by the different life experiences of those who are the oldest old in the early 1980s, 1990s and 2000s.

This study shows how the characteristics of the oldest old and their associations with selected outcome variables are different from the rest of the older population, suggesting further exploration for this age group.

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Another detailed analysis of the oldest old can be found in Tinker *et al* (2001).[25]

Notes and References

1. Tomassini C (2005) The demographic characteristics of the oldest old in the United Kingdom. *Population Trends* **120**, pp 15–22.
2. 1905 Danish Cohort Study, Program on Population, Policy, and Aging, www.pubpol.duke.edu/centers/ppa/People/PIs.htm
3. Longitudinal Study on Ageing Twins, Program on Population, Policy, and Aging, www.pubpol.duke.edu/centers/ppa/People/PIs.htm
4. The Longitudinal Study of Oldest Old in China, Program on Population, Policy, and Aging, www.pubpol.duke.edu/centers/ppa/Public%20Use%20Data/Pr8data702.html
5. Panel Study of Living Conditions of the Oldest Old (SWEOLD) www.sweold.se/
6. Office for Economic Co-operation and Development (2005) *Long-term care for older people*. OECD Publishing: Paris.
7. Glaser K, Grundy E, Lynch K (2003) Transitions to Supported Environments in England and Wales Among Elderly Widowed and Divorced Women: The Changing Balance Between Co-Residence with Family and Institutional Care in *Journal of Women and Aging* **15(2-3)**, pp 107–126.
8. Seshamani M, Gray A (2002) The impact of ageing on expenditures in the National Health Service. *Age and Ageing* **31**, pp 287–294.
9. United Nations (2001) Living Arrangements of Older Persons. *Population Bulletin of the United Nations*, Special Issue 42/43/2001.
10. Rodgers W L, Herzog A R (1992) Collecting Data About the Oldest Old: Problems and Procedures in Suzman R M, Willis D P and Manton K G (eds) *The Oldest Old*. Oxford University Press: Oxford.
11. Foster K (1998) *Evaluating Nonresponse on Household Surveys*. GSS Methodology Series, No. 8. Office for National Statistics: London.
12. Bertakis K D, Azari R, Helms L J, Callahan E J, Robbins J A (2000) Gender differences in the utilization of health care services in *Journal of Family Practitioner* **49(2)**, pp 147–52.
13. Waldron I (1976). Why do women live longer than men? *Social Science and Medicine* **10**, pp 349–362.
14. Tomassini C, Glaser K, Askham J (2003) Getting by without a spouse: living arrangements and support of older people in Italy and Britain, in *Gender and ageing: Changing roles and relationships*, Arber S, Davidson K, and Ginn J (eds), pp 111–26. McGraw/Hill: London.
15. Tomassini C, Wolf D A (2000) Stability and Change in the Living Arrangements of Older Italian Women 1990-1995 *Genus*, **LVI(1-2)**, pp 203–219.
16. Waite L J (1995) Does Marriage Matter? *Demography* **32(4)**, pp 483–507.
17. Glaser K, Tomassini C (2000) Proximity to children: a comparison of Britain and Italy. *The Gerontologist* **40(6)**, pp 729–37.
18. Grundy E (1997) The health and health care of older adults in England and Wales, 1841–1994, in *The Health of Adult Britain* (eds) Charlton J and Murphy M, pp 128–155. TSO: London.

19. Coultard M (2006) Use of Services in *Focus on Health* 2006 edition. Palgrave Macmillan: Basingstoke.
20. Tomassini C, Glaser K, Wolf D, Broese van Groenou M, Grundy E (2004) Living arrangements among older people: an overview of trends in Europe and the USA, *Population Trends* **115**, pp 24–34
21. Government Actuary's Department. Marital status projections for England & Wales. www.gad.gov.uk/marital_status_projections/2003/index_principal.htm
22. Knodel J, Chayovan N, Siriboon S (1992). The impact of fertility decline on familial support for the elderly: An illustration from Thailand. *Population and Development Review* **18(1)**, pp 79–103.
23. Tomassini C, Wolf D A (2000) Shrinking Kin Networks in Italy Due to Sustained Low Fertility. *European Journal of Population* **16(4)**, pp 353–372
24. Murphy M, Grundy E (2003). Mothers with living children and children with living mothers: the role of fertility and mortality in the period 1911–2050. *Population Trends* **112**, pp 36–44.
25. Tinker A, Askham J, Hancock R, Mueller G, Stuchbury R (2001) *85 Not Out: A Study of People Aged 85 and Over at Home*. Anchor Trust: Oxfordshire.