



Health Intelligence Team



Assessing the needs of individuals with high levels of dependency in NHS Highland

March 2018

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Note: this paper is Appendix to NHS Highland Board paper Item 4.7, March 2018.
<http://www.nhshighland.scot.nhs.uk/Meetings/BoardsMeetings/Pages/March2018.aspx>

Summary

The Highland population is ageing and the proportion of older people is increasing. This has a number of important implications for the provision of health and social care now and in the future. Not only are the numbers of people in older age ranges increasing but at the same time the number of people of working age available to provide care for those who need it, are decreasing. In this paper, the data refers to the Highland Health and Social Care Partnership area (HSCP).

The population of Highland in 2016 is estimated to be 234,700. In all, 50,076 of people (21.3% of the population) are aged 65 years or more. Life expectancy at birth in the HSCP area from 2014 to 2016 inclusive was 77.9 years for males and 82.9 years for females. At age 65, life expectancy for males is estimated at 18.3 years and females at 21.0 years (National Records of Scotland 2017b).

The general epidemiological picture in Highland is similar to that nationally. Most deaths occur in adults, and chronic and degenerative diseases are the most common form of morbidity. As the population ages, there is an increasing prevalence of age-related conditions, including musculoskeletal problems, mental health conditions such as dementia, and conditions affecting the circulatory system such as stroke, coronary heart disease and hypertension. Conditions increasing quickly in the population are cancer, diabetes and chronic kidney disease. The risk of multi-morbidity (having several chronic health conditions at the same time) increases with age and is correlated with limitation of day to day activity that can require a more complex care environment. Prevention, delaying onset and slowing progression of long term conditions can happen through improved public health, targeted personalised care planning and supported self-care.

The oldest elderly are the fastest growing age group in Highland and have a substantial risk of requiring long-term care. This results in a spectrum of care needs from early mild impairments in functionally independent people through to complete dependence in daily living in those with severe impairments. Coexisting illness and challenging behaviour pose special problems in care and supervision, with most of the burden of care falling on informal caregivers and residential and nursing homes. Between a quarter and a half of people over 85 years of age are estimated to be frail, which is associated with disability and requirement for formal care.

Over the last 20 years, the management of adult care for daily living has moved from secondary care in the hospital setting to primary and community care, with older people receiving more of their care from family and other unpaid carers. This trend is set to continue as people want and need to be looked after as close to home and family as possible.

Highland population dynamics

The first section of this report provides information on population changes.

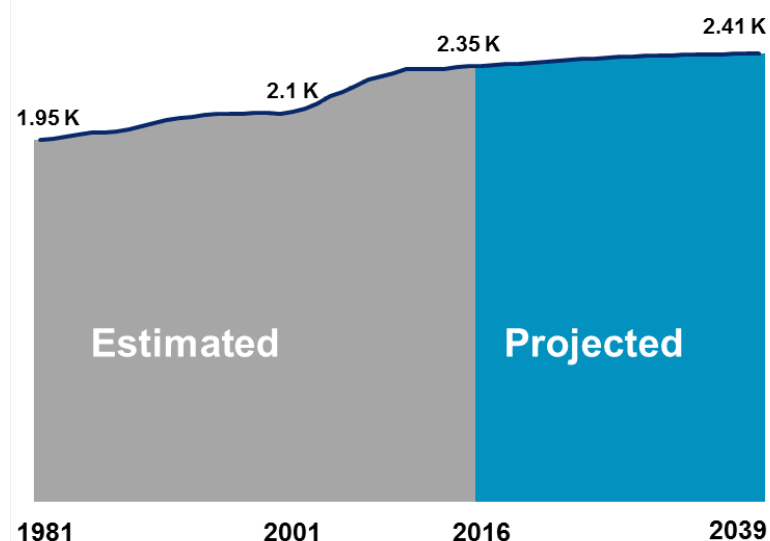
Figure 1: Highland population age structure by age group and sex in 2016

Age group	Gender		
	Male	Female	Persons
00-15	20,496	19,476	39,972
16-29	17,811	16,548	34,359
30-44	19,659	20,963	40,622
45-59	25,955	27,487	53,442
60-74	21,983	22,898	44,881
75-84	6,874	8,782	15,656
85+	2,068	3,770	5,838
Total	114,846	119,924	234,770

Data source: National Records of Scotland (NRS) Mid-year estimate population 2016. Available online: <http://nationalrecordsofscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2016>

The latest available population projection for Highland suggests that the total population will increase by 3 percent to around 240,971 over the next 25 years with net migration ‘replacing’ population loss resulting from negative natural change as deaths exceed births (National Records of Scotland 2016).

Figure 2: Estimated and projected change in the size of the Highland population



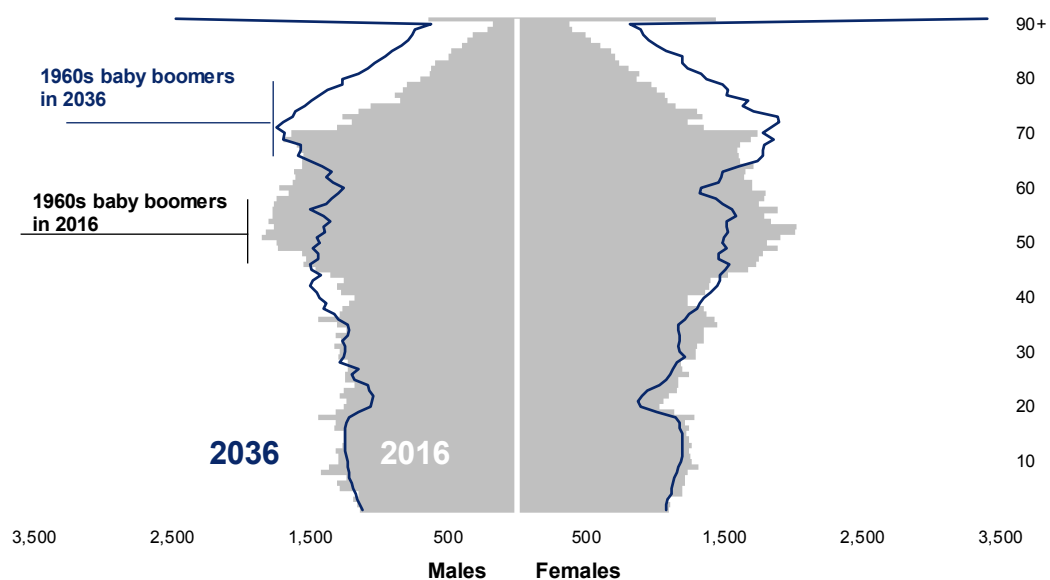
Data source: National Records of Scotland (NRS) Population Projections for Scottish Areas (2014 based) – Principal Projection 2014 -2039. Available online: <http://nationalrecordsofscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/sub-national-population-projections/2014-based>

Population ageing

All the variants of the population projections for the Highland area highlight that the population is projected to age considerably, with older individuals making up proportionately larger shares of the population over time (National Records of Scotland 2016). Primarily as a result of past trends in fertility, although falling mortality at older ages is increasingly important, larger cohorts are moving into older age groups and themselves being followed by smaller numbers at younger ages.

Figure 3 shows the principal population projection for Highland with the top heavy structure becoming increasingly pronounced as the 'baby boom' cohort age.

Figure 3: Projected population of Highland



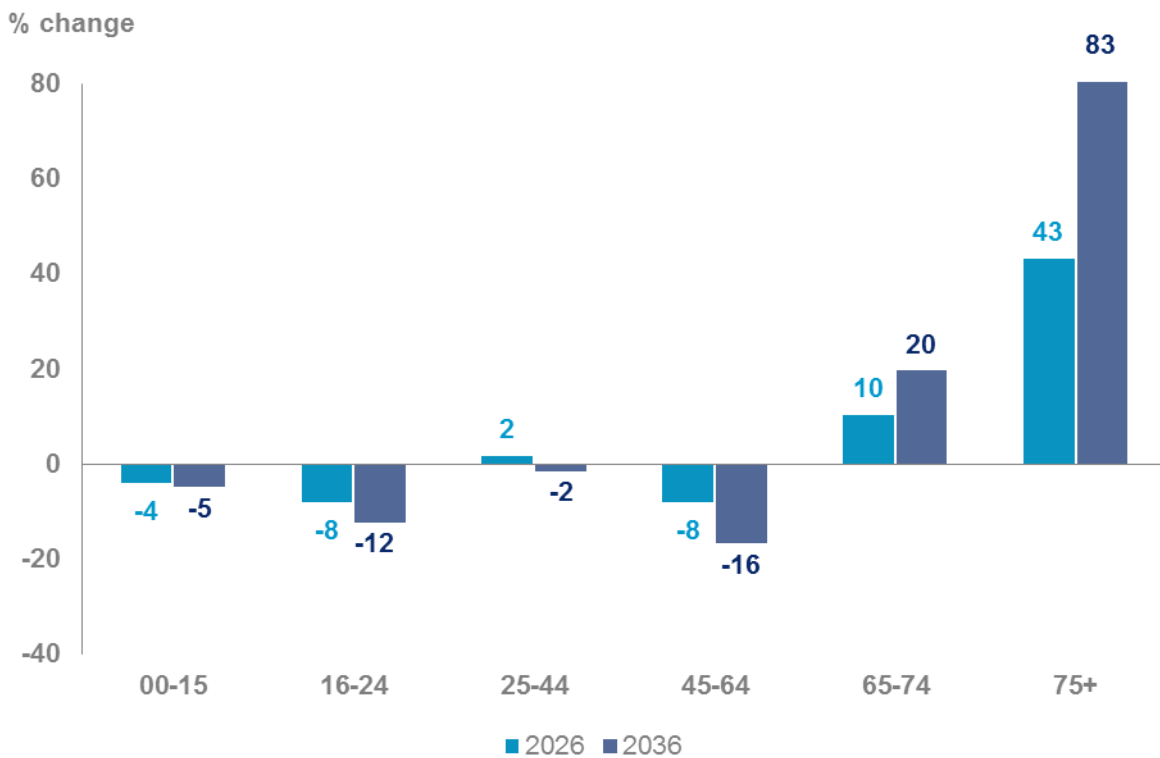
Data source: National Records of Scotland (NRS) Population Projections for Scottish Areas (2014 based) – Principal Projection 2014 -2039

Available online:

<http://nationalrecordsofscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/sub-national-population-projections/2014-based>

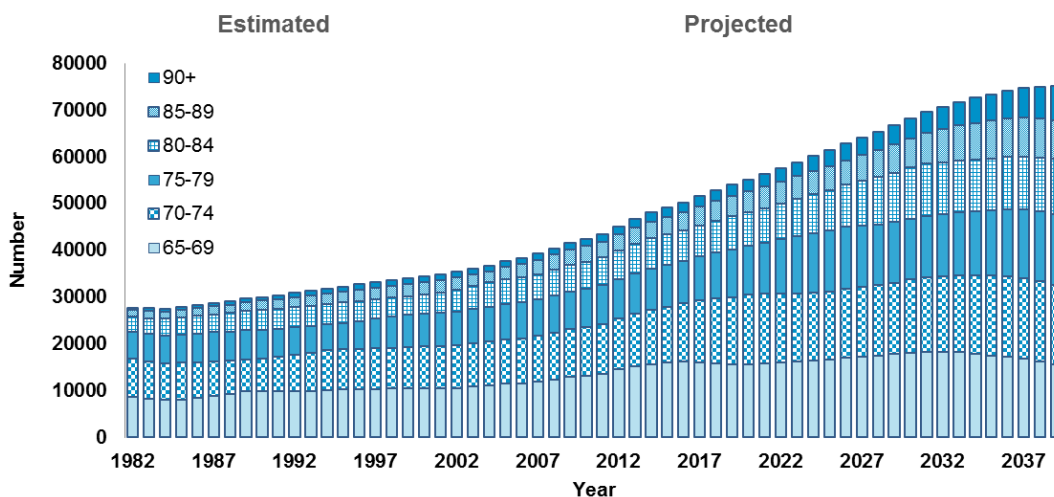
The numbers of people aged over 65 in the area is expected to be over 70,000 by 2035, an increase of over 50 percent from 2014. In 2014 about one in twenty people are aged over 80 years old, but by 2035 this figure will be over one in ten.

Figure 4: Percentage change in the Highland population by broad age group



Data source: National Records of Scotland (NRS) Population Estimates (Time Series) and NRS Projections for Scottish Areas (2014 based) – Principal Projection 2014 -2039. Available online: <http://nationalrecordsofscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/sub-national-population-projections/2014-based>

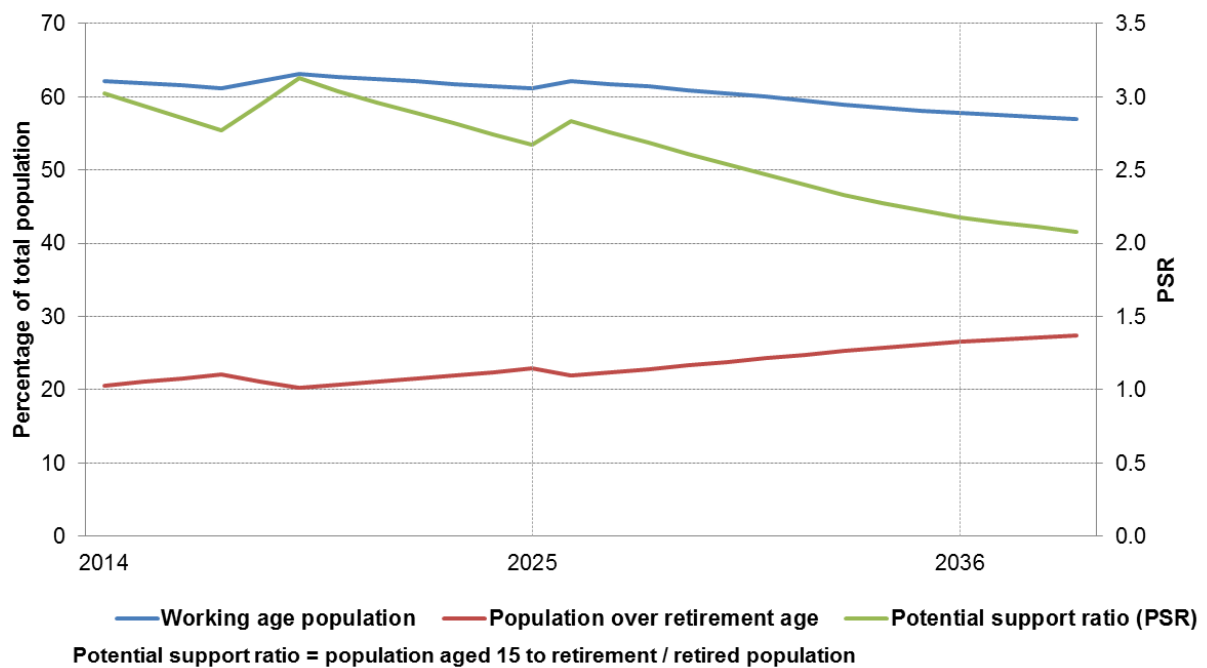
Figure 5: Highland population change in those aged 65 years and over



Data source: National Records of Scotland (NRS) Population Estimates (Time Series) and NRS Projections for Scottish Areas (2014 based) – Principal Projection 2014 -2039. Available online: <http://nationalrecordsofscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/sub-national-population-projections/2014-based>

Long-term demographic trends result in population ageing in which older individuals make up a proportionally larger share of the total population over time. This sequence of population changes began with a decrease in the proportion of young people and an increase in the number of the working age group (aged 16-64 years). Over time the larger cohorts at working age have themselves aged and have been replaced by smaller numbers of people. Increasingly the population structure is a smaller and older workforce. Figure 6 shows the decreasing potential support ratio as there are fewer people in the population of working age, but more people in older age groups.

Figure 6: Change in the Highland potential support ratio

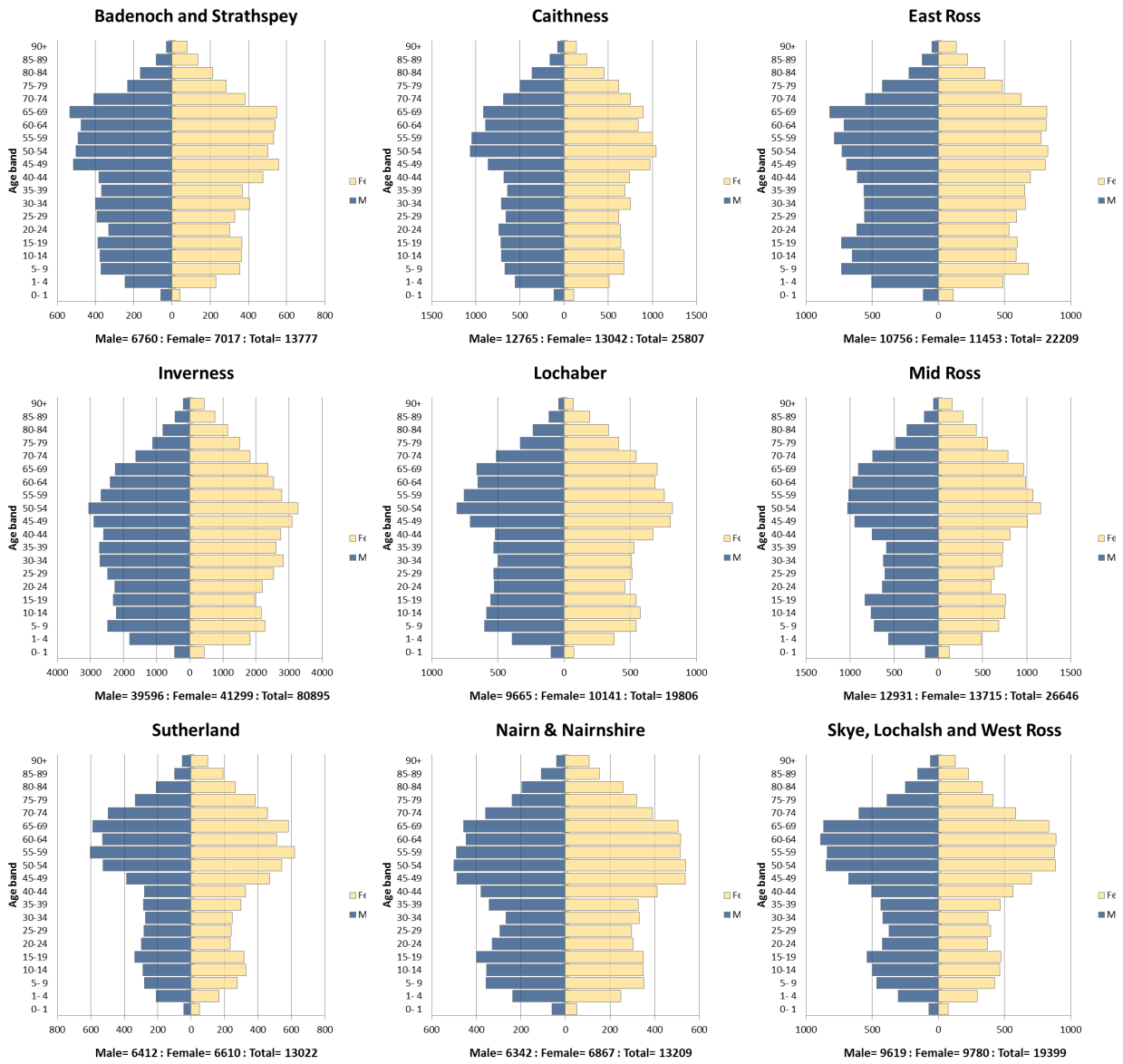


The figures for working age and pensionable age take into account the changes in the state pension age as set out in the 2014 Pensions Act. Between 2014 and 2018, the state pension age will rise from 62 to 65 for women. Then between 2019 and 2020, it will rise from 65 years to 66 years for both men and women. A further rise in state pension age to 67 will take place between 2026 and 2028. The UK Government plans to review state pension age every five years in line with life expectancy and other factors.

Data source: National Records of Scotland (NRS) Population Projections for Scottish Areas (2014 based) – Principal Projection 2014 -2039. Available online: <http://nationalrecordsofscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/sub-national-population-projections/2014-based>

Within Highland there are significant variations in the population structures of areas. The most remote and rural communities have large cohorts at older ages with limited numbers of people at working ages available to provide support for services.

Figure 7: Population structures of Highland Community Partnership areas (2016)



Data source: National Records of Scotland (NRS) Small area population estimates (SAPes) for 2016 – best fit between data zones and Highland Community Partnership boundaries

The figure below, based upon projections produced by National Records of Scotland in 2014, highlights the variation in the number of people of working age compared to those 65 years and older across Highland areas, and the anticipated progressive reductions in those ratios.

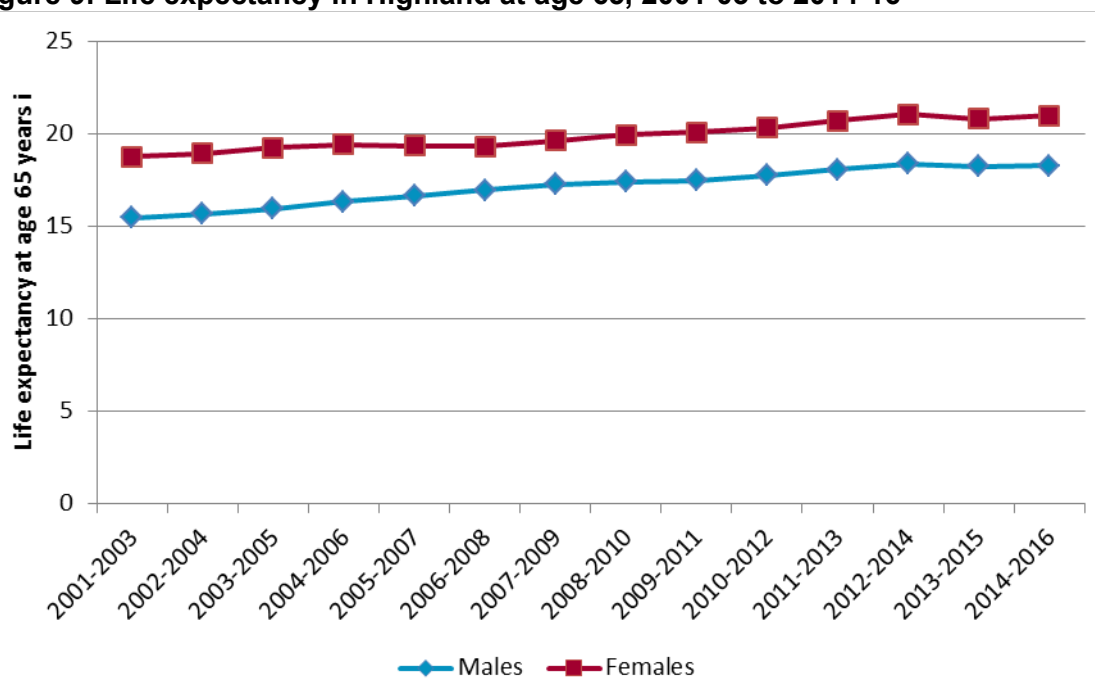
Figure 8: Projected number of adults of working age (16-64 years) for every person aged 65 years and older

	2015	2025	2030
Badenoch and Strathspey	2.8	2.2	2.0
Inverness	3.7	3.1	2.7
Nairn	2.6	2.0	1.7
East Ross	2.8	2.1	1.8
Mid Ross	2.7	2.0	1.7
Caithness	2.7	2.0	1.6
Sutherland	2.0	1.5	1.3
Lochaber	3.0	2.3	2.0
Skye and Lochalsh	2.6	1.6	1.2
West Ross	2.3	1.5	1.2
Highland	2.9	2.3	2.0

Life expectancy and health life expectancy

Increasing life expectancy is a societal success story that was initially driven by improvements in infant and child mortality rates. Today the dominant factor in improvement has been the reduction in death rates in those 65 years and older. On average, a woman aged 65 in Highland can expect to live another 21 years, while a man can expect another 18 years. Recent gains in life expectancy were concentrated in the earlier years of the new century.

Figure 9: Life expectancy in Highland at age 65, 2001-03 to 2014-16

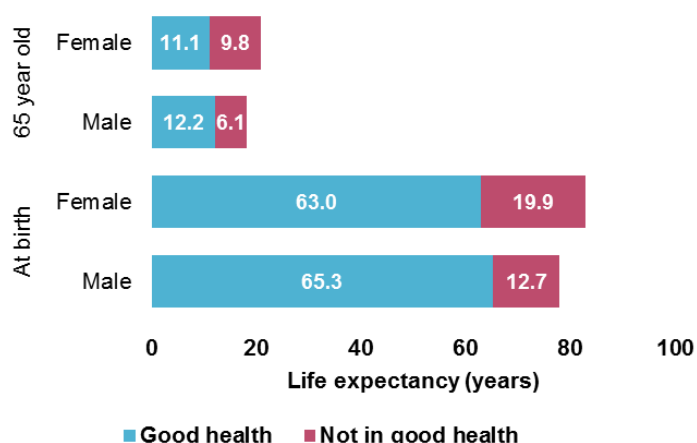


Data Source: ONS (2017) Life Expectancy across local areas in the UK:
<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies>

Continued improvements in life expectancy, particularly among the growing numbers of older people, without improvement in health will increase demands for resource to meet age-related health and social care pressures.

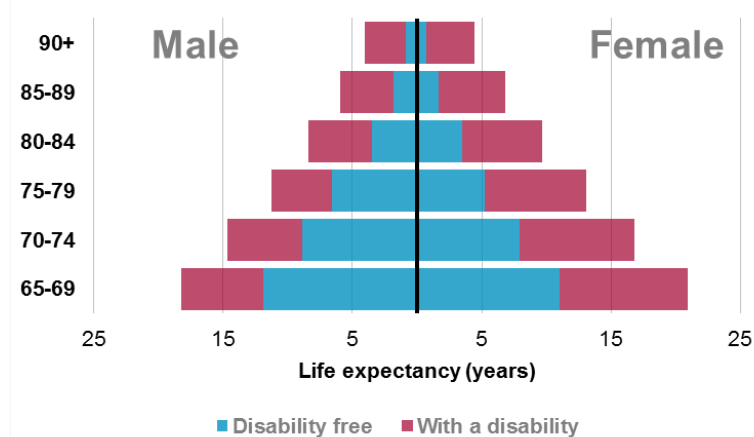
Not all years of life will be spent in good health and there is a continuum between age and population morbidity. Rates of longstanding illness, disability and co-morbidity increase dramatically with age and are particularly high in men and women aged 85 years and over.

Figure 10: Life expectancy and years of healthy life expectancy in Highland (2014-2016)



ONS (2017) Healthy State Life Expectancy. Available online: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/healthstatelifeexpectancyallagesuk>

Figure 11: Life expectancy and years of disability in Highland in those age 65 years and over in 2014-2016



ONS (2017) Healthy State Life Expectancy. Available online: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/healthstatelifeexpectancyallagesuk>

Long-term conditions, multi-morbidity and population ageing

Long-term conditions are usually managed with drugs and other treatment. Examples include diabetes, depression, chronic obstructive pulmonary disease, arthritis and hypertension.

About 43,000 people, or nearly 20 percent of the population in Highland, live with one or more long-term conditions. In those over 65 years of age 11,000 (25% of the age group) experience conditions that limit daily life 'a little'. A further 9,600 (22% of the age group) have conditions that limit daily life 'a lot'. Long-term conditions are more prevalent in more deprived groups (Figures 12-14).

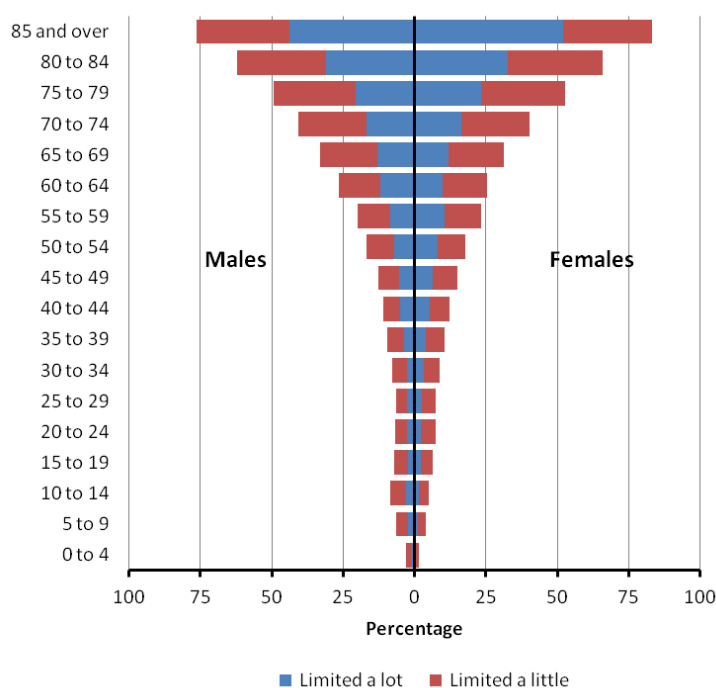
As shown in Figure 14 people living in deprived areas will experience life limiting health problems on average 20 years earlier than people living in the least deprived areas.

Figure 12: Number of people with one or more long-term conditions by age group in Highland

	0 to 15	16 to 24	25 to 34	35 to 49	50 to 64	65 to 74	75 to 84	85+	Total
Day-to-day activities limited a little	1,376	1,002	1,205	3,453	6,252	5,133	4,306	1,593	24,320
Day-to-day activities limited a lot	677	518	719	2,472	4,776	3,421	3,713	2,471	18,767

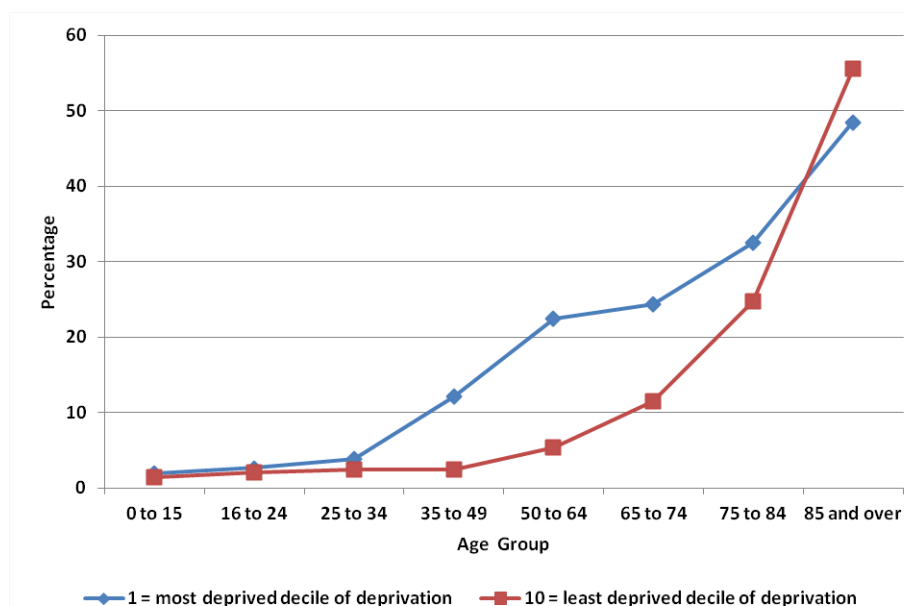
Data source: Census 2011 - Table DC3016SC © Crown Copyright

Figure 13: Percentage of the population with a health problem or disability that limits day to day activity by age band and sex in Highland



Data source: Census 2011 – Table DC3101SC © Crown Copyright

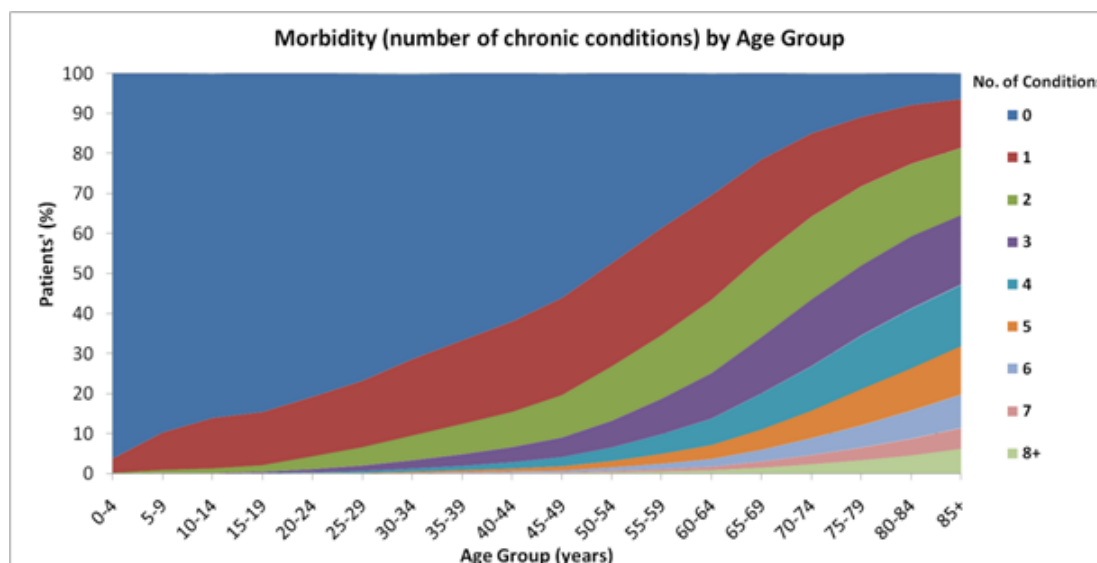
Figure 14: Percentage of the Highland population with day to day activity limited a lot by longstanding health problem or disability by age in the most and least deprived deciles of multiple deprivation



Data source: Census 2011 – Table DC3101SC © Crown Copyright and the Scottish Index of Multiple Deprivation (SIMD 2012)

Multi-morbidity refers to those who have two or more chronic conditions. Multi-morbidity is highly correlated with age and is associated with high mortality, limitation of day to day activity, and increased use of both General Practice and hospital based health care. There is evidence that the number of conditions involved can be a greater determinant of an individual's use of health and social care service resources than the specific diseases alone (Barnett, Mercer et al 2012). Population ageing will mean that there will be a rising demand for the prevention and management of multi-morbidity rather than of single diseases.

Figure 15: Number of chronic disorders by age group in patients registered with 314 Scottish General Practices



Data source: Scottish School of Primary Care’s Multi-morbidity Research Programme Slide Pack.

Figure 15 highlights that the majority of patients of 310 Scottish General Practices over 65s have two or more conditions and the majority of over 75s have three or more conditions. More people have two or more conditions than only have one (Barnett, Mercer et al 2012). By the time we are aged eighty five years old, only about 1 in 10 of us will not have a chronic condition.

However, having a health condition does not necessarily result in high levels of dependency on health and care services. As shown in Figure 15, over 80% of people aged 75 years and over will have a diagnosed chronic health condition, but Figure 13 suggest that only 32 percent (N=6,184) people over this age felt that they had a health problem or disability that limited their day to day activity a lot.

Equally, the onset of many age-related conditions and disabilities can be prevented and delayed and there remains an opportunity to invest in prevention while the baby boom generation are in their fifties and early sixties. Figure 15 shows that at 60 years of age, nearly 40 percent of people do not have a diagnosed condition, but this falls sharply throughout people’s seventies.

Action to mitigate the development of long term conditions in the population is required now as the numbers of older people living with long-term conditions and disabilities is going to increase significantly over the next 20 years as the older population expands.

Much of the demand for health and care services is driven by the increasing complexity of some people’s health needs as they experience multiple long-term conditions and disabilities or become frail. Frailty is a health state relating to the ageing process in which multiple body systems can lose their built in resilience. This affects around 10 percent of people aged 65

years and over, rising to between 25 and 50 percent of those aged 85 and over. Older people living with frailty are at risk of dramatic change in their physical and mental wellbeing even from a minor adverse health event. On the basis of published literature we can infer that about 9,300 people aged over 60 years of age live with frailty in the community in Highland. Prevalence rises with age as highlighted in the table below.

Figure 16: Expected numbers of older frail people living in the community in the Highland area

	Prevalence of frailty (%)		Expected numbers	
	Men	Women	Non-frail	Frail
60-69	6.0	7.0	30420	2120
70-79	10.5	14.5	18690	2700
80-89	24.0	37.0	7160	3320
90+	65.0	57.5	790	1170
ALL	12.0	16.0	57060	9320

Source: Gale CR et al applied to Highland Council NRS mid-year population estimate for 2016 as quoted in the Report of the Director of Public Health (NHS Highland 2017).

In summary, while having a health condition does not necessarily impact on daily life, having more long term conditions or experiencing frailty will increase the likelihood of someone needing health and social care support. Population ageing and longer lives, potentially without improvement in healthy years of life, will have a large effect on the total amount of ill-health and disability in the population. At the same time, changing dependency ratios will mean that while the need for caring services and informal support increases there will be proportionately fewer people to provide it.

Dementia in the future

Dementia poses a major care challenge for an ageing society and it is already a significant source of reduced quality and length of life and demand on formal and informal care. Age is the major risk factor for dementia and its gradual progression results in a spectrum of care needs and challenges for daily living. Coexisting illness and behavioural issues can cause special problems for care and supervision of individuals. There is no common journey for people with dementia. Many people with undiagnosed dementia will be able to live at home with the support of family and friends, or may be waiting for formal diagnosis.

It is estimated that in 2016 there were 4,600 people with dementia in the Highland HSCP area (Alzheimer Scotland 2017). Unless ways are found to prevent, delay progress or cure dementia the number of people projected to be living with dementia is projected to double over the next 25 years.

Dementia - who is affected in the Highland population

Identifying the number of people with dementia is difficult. Diagnosis is based on a pattern of symptoms and functional limitations. NICE guidance requires a mental health assessment which includes:

- a detailed history from the patient and carer
- cognitive tests and an assessment of symptoms
- medical examination to exclude reversible causes of cognitive impairment such as depression, infection, adverse medication reaction or drug/alcohol abuse;
- brain imaging (either via a CT (computerised tomography) or MRI (magnetic resonance imaging) scan).

Service based statistics, such as those available from registers of patients with dementia held by General Practice as part of the Quality Outcomes Framework (QoF), identify those who have been through such processes but cannot provide the true population prevalence, as not all affected people will have received a diagnosis. At January 2018 there were 2,173 people on GP disease registers with a diagnosis of dementia in the Highland HSCP (NHS Highland QoF calculator).

Many people with undiagnosed dementia will be able to live at home with the support of family and friends, or may be waiting for formal diagnosis.

Estimating dementia prevalence

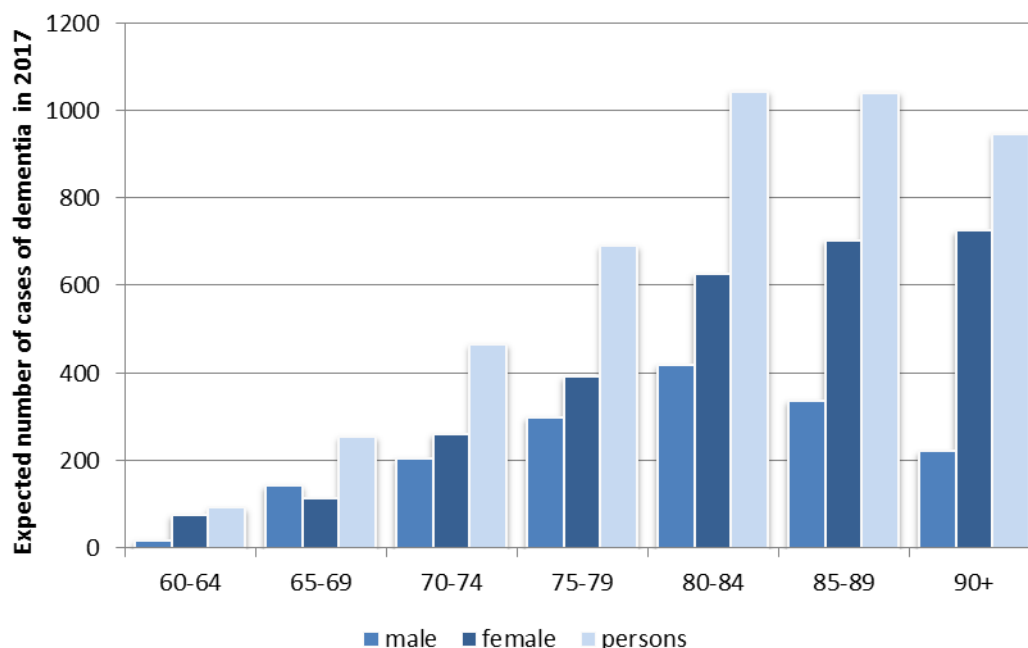
The dementia prevalence model developed by Alzheimer Scotland known as EuroCODE (plus Harvey) can be used to estimate the number of people living with dementia. EuroCODE provides age-specific rates from a synthesis of twenty nine European studies as part of a wider programme called the European Collaboration on Dementia.

The Scottish Government endorses the EuroCODE prevalence method but commitment 19 of the revised National Dementia Strategy 2017-2020 indicates that fresh work on prevalence is to be commissioned in Scotland. NHS England use a model developed by the Alzheimer's Society that would produce a lower prevalence estimate.

Table 1: Estimated total numbers of people living with dementia in Highland

	Number with early onset dementia	Number with late onset dementia	Total estimated number with dementia	Prevalence of late onset dementia among those 65+
Highland HSCP	150	4,400	4,550	8.6%

Figure 17: Expected number of dementia sufferers, by age group and gender, people aged 65 years and over, HSCP Area.



Actual numbers are highest amongst those aged 80-84 years. Estimates of the numbers of men with dementia peak between ages 80-84 whereas the peak for women occurs at 90 years and over.

The Alzheimer’s Society in the report *Dementia UK* (Alzheimer’s Society 2014) estimate the proportions of people with dementia by severity are: 55.4% mild, 32.1% moderate and 12.5% severe. These proportions are based upon on the age and sex distribution of the study population and would be expected to change in future years, given an ageing population.

Applying these proportions to the current Highland HSCP population aged over 65, the estimated numbers with mild, moderate and severe dementia are:

- mild =2,460
- moderate = 1,420
- severe=555

Knowledge of the severity of the condition is important to plan for service support. With an estimated 4,400 people aged over 65 years with dementia, about 2,500 of these will be mild and would be potentially able to live independently in a community with support. The table below shows estimates of the numbers with dementia by severity in Highland Community Partnerships.

Using the EuroCODE prevalence model and small area population estimates, expected numbers of sufferers by area can be calculated. The gradient in severity uses the proportions discussed above. Diagnosed prevalence is that reported in the final publication from the

General Practice Qualities and Outcome Framework based upon reported practice prevalence within each Community Partnership (Information and Services Division 2016a).

Figure 18: Estimated numbers of people in Highland Community Partnership areas with dementia

	mild	moderate	severe	total	QoF diagnosed*
Badenoch and Strathspey	140	80	30	250	110
Inverness	740	430	170	1,340	660
Nairn & Nairnshire	160	90	40	290	170
Mid Ross	280	160	60	500	200
East Ross	230	130	50	410	230
Lochaber	190	110	40	340	180
Skye, Lochalsh and West Ross	230	130	50	410	150
Caithness	280	160	60	500	280
Sutherland	180	110	40	330	150
Highland	2,430	1,410	550	4,390	2,130

*Numbers have been rounded to the nearest 10 and for this reason totals may not add

People with dementia in care homes and receiving care at home

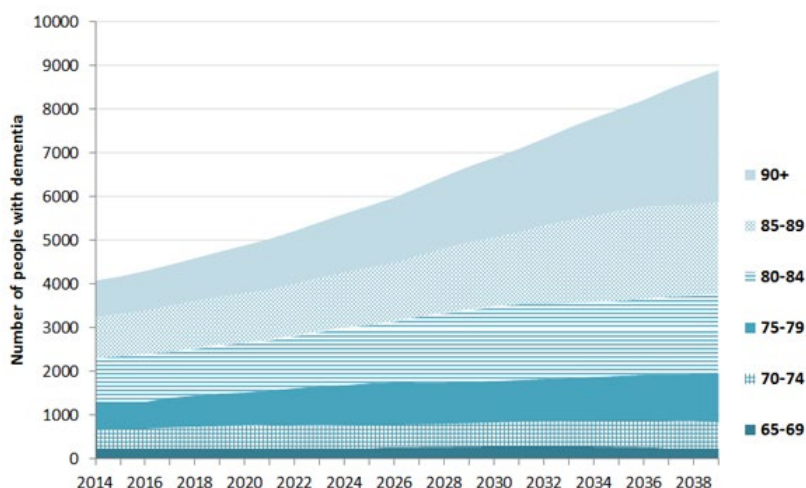
At the care home census point at March 2016, 50 percent of the 1,576 long-stay care home residents aged over 65 in Highland had a medical diagnosis of Dementia (Information Services Division 2016). A further 180 people can be identified as having dementia recorded as the principal reason for them receiving care at home (Scottish Government 2017). This is likely to be a substantial underestimate.

Projections

Projections of the future number of people with dementia can be calculated by taking current age-specific rates from EuroCODE, and applying them to the expected future number of older people in Highland. The single largest risk factor for dementia in the general population is age. This assumes that age-specific prevalence remains stable and increases are only driven by demographic ageing.

In Highland this would suggest that, at the current estimated prevalence, there will be 5,700 people aged over 65 years of age with dementia in Highland by 2025, and 8,000 people by 2035.

Figure 19: Projected increases in the number of people with dementia in Highland, by age group (2014-2039)



Data source: Alzheimer Scotland EuroCODE age-sex prevalence rates applied to NRS Population Projection for Highland (2014 based)

The above graphic should probably be best considered as a “worst-case scenario”. Improvements to treatment education standards, cardiovascular health, activity levels and other known risk factors may all help reduce dementia incidence and prevalence in coming years. Some recent evidence from high-income countries suggests a ‘compression of cognitive morbidity’ with both a reduced age-specific incidence of dementia, and reduced survival after onset. However, whether this decrease in incidence will be sufficient to compensate for increasing expectation of life is in question. The available research in this area is not currently sufficient to adjust the forecast of projections (Alzheimer’s Society 2014).

As shown above the majority of the projected increase is in people aged 80 years and over. There is a multiplying effect of more people living into the very oldest age ranges, combined with a higher prevalence in these age groups. A small reduction in prevalence in age bands can, therefore, potentially result in a very different picture. The youngest people in the 80–84 age-band in 2035 will, at present, be in their early sixties and the majority of the 1960’s baby boom generation still in their fifties. This again highlights that the period of potential intervention. The importance of preparation and incorporation of work on dementia in to routine practice is apparent, as is the potential value of intervention (Stark and Connelly 2013).

More people spending longer in milder stages of the disease rather than progressing to more severe stages would mean major improvements in quality of life. Because people with severe dementia generally need far more care than people with milder dementia, slowing the progression of dementia would lead to reductions in the amount of care required.

Generally, care demands from dementia fall heavily on informal caregivers and on care homes. Current care provision is largely targeted at moderate and severe dementia but well organised community provision is necessary to avoid avoidable acute hospital admission, as this is often a challenging setting for people with dementia.

Population change and changes in the way we live

At the same time as the population is ageing, social trends mean that there are increasingly heterogeneous family structures resulting from changing attitudes towards marriage, cohabitation, single parenthood, divorce and childlessness. Families are also becoming more geographically dispersed as a result of the need to move for educational and employment opportunities.

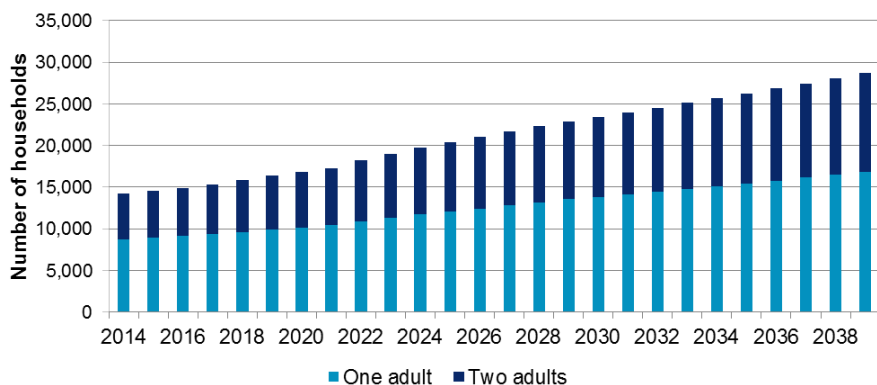
The population dynamics of ageing and increasing life expectancy also impact on family structures. Low mortality has resulted in an increase in the number of living generations, but at the same time delay in childbearing means that there are larger gaps between generations. The result is that there are fewer family members to look after older relatives.

Household projections suggest that, in the future, many older people will live in, smaller or single households. and that there will be fewer inter-generational households. The trends highlighted above raise issues about the capacity for smaller families to provide care, the interrelationship of the supply of informal and formal care and also the need for more property designed specifically for older people who will live increasingly on their own.

In 2014 there were just over 14,000 adults aged 75 years and over living in one or two adult households in Highland but by 2039 this number is projected to increase steadily to over 28,500. By the end of the projection period these types of households will make up a quarter of all households in Highland. Over this period there are projected to be proportionately very large increases in the number of people living alone at very old ages. By 2039 it is projected that there will be 8,000 single households of people aged over 85 years of age an increase of nearly 200 percent.

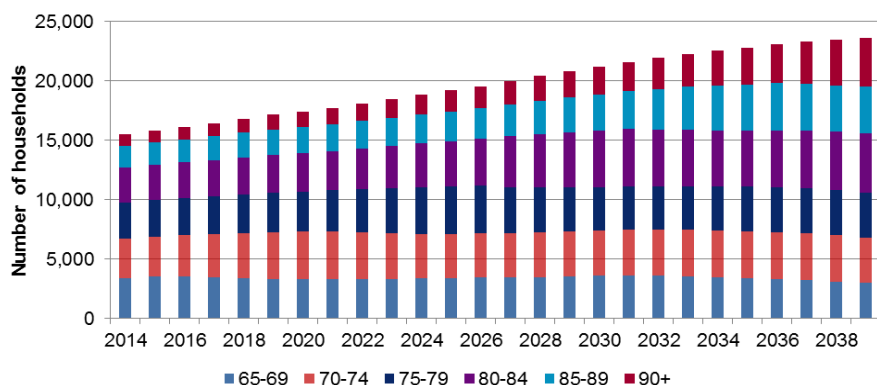
It is known that those living alone are more likely to enter residential care compared to individuals who are living with family (Grundy, 2008). Therefore these changes in the proportion of single individuals living alone could have an impact on demand for residential care.

Figure 20: Estimated and projected number of households occupied by one or two adults where the head of household is aged over 75 years of age



Data source: National Records of Scotland (NRS) Household Projections for Scottish Areas (2014 based) – Principal Projection 2014 -2039. Available online: <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/households/household-projections/2014-based-household-projections>

Figure 21: Estimated and projected number of households in Highland occupied by single older adults by age group



Data source: National Records of Scotland (NRS) Household Projections for Scottish Areas (2014 based) – Principal Projection 2014 -2039. Available online: <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/households/household-projections/2014-based-household-projections>

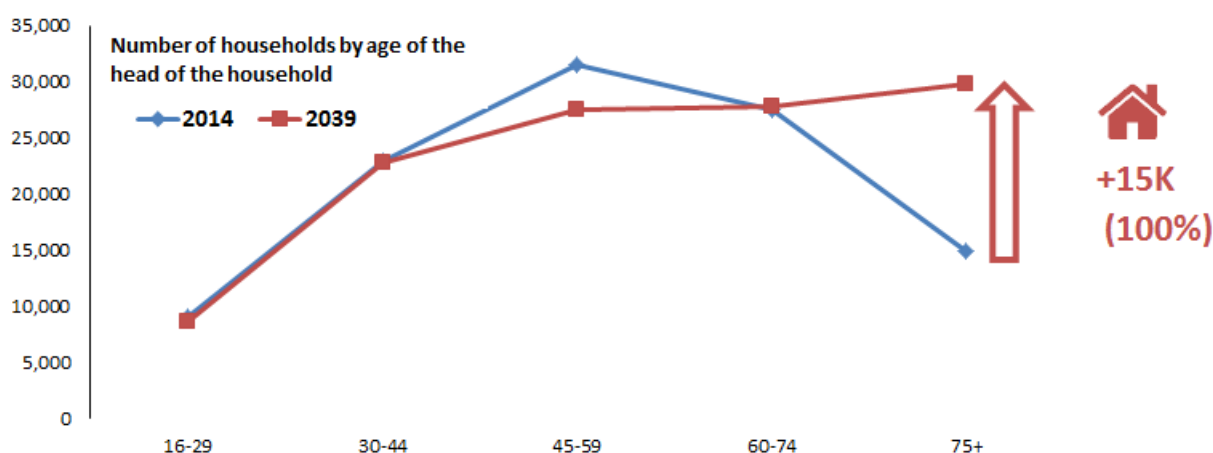
Homes are an essential part of the health care picture and their good design can create safe, adaptable and accessible spaces that can reduce demand on informal, community and institutional care. This can be achieved by the design of good homes and the appropriate use of technology. The ageing population of Highland will result in considerable change in the demand for housing over the next twenty five years. The proportion of households where the oldest person is over 75 years will grow faster than any other age group. By 2039 there are projected to be 15,000 thousand more such households in Highland, an increase of 100 percent.

Figure 22: Estimated and projected number of households in Highland by age group of the head of the household

	Year						Average annual change	Overall change	
	2014	2019	2024	2029	2034	2039		2014-2039	
16-29	8,984	9,132	8,828	8,480	8,652	8,535	-18	-449	-5%
30-44	22,869	22,455	23,512	23,787	23,324	22,797	-3	-72	0%
45-59	31,557	31,125	28,521	26,541	26,181	27,564	-160	-3,993	-13%
60-74	27,434	29,350	30,369	31,424	30,607	27,740	12	306	1%
75+	14,867	17,148	20,658	23,872	26,739	29,802	597	14,935	100%

Data source: National Records of Scotland (NRS) Household Projections for Scottish Areas (2014 based) – Principal Projection 2014 -2039. Available online: <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/households/household-projections/2014-based-household-projections>

Figure 23: Estimated and projected number of households in Highland by age group of the head of the household in 2014 and 2039



Data source: National Records of Scotland (NRS) Household Projections for Scottish Areas (2014 based) – Principal Projection 2014 -2039. Available online: <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/households/household-projections/2014-based-household-projections>

Currently 29 percent of housing in Highland is occupied by people aged over 65 years living alone or with one other person, but by 2039 this is expected to be 40 percent. However, most houses are generally designed for families with 40 percent of properties in Highland having six or more rooms (Census 2011: table DC4403SC – accommodation type by household spaces).

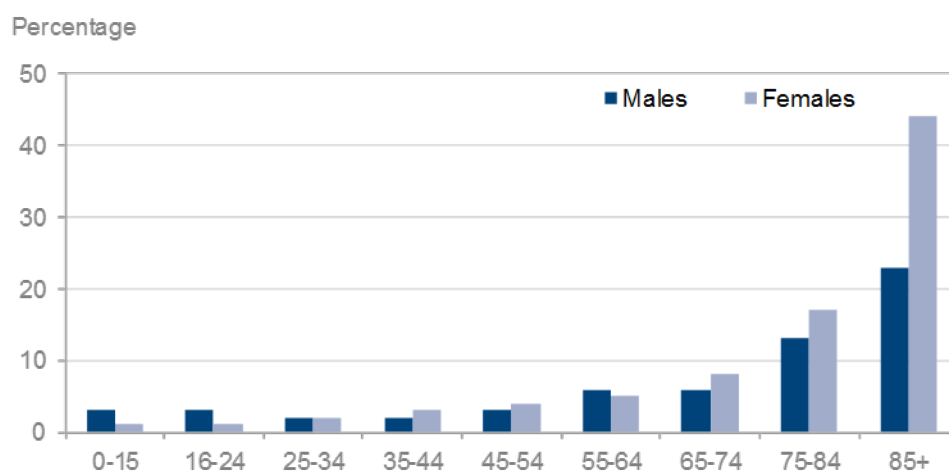
There is an opportunity in this picture to ensure that new built homes are designed to meet the needs of people as they age and it would be expected more adaptable and specialised housing will be required in all communities in Highland. Currently there are only 842 places in sheltered housing and 185 places in very sheltered housing in Highland (Scottish Housing Regulator 2018).

Informal care in Highland

The sustainability of long-term care to older people relies heavily on the supply of informal care. As the number of older people increases in future years, demand for informal care is also likely to increase substantially. Most informal care for older people is provided either by spouses or adult children. Care by children is particularly important for people aged 85 years and older, who constitute the fastest growing age group in Highland. The majority of this age group have no spouse or partner and will increasingly live alone. At younger ages it is possible that the supply of care from spouses or partners may increase, primarily because of improvements in male mortality rates.

The data from the results of the most recent Family Resources Survey can be used to estimate the number of people receiving care in Highland. Additionally, assuming current patterns of care will continue, the demand for informal care in the future can be estimated. The figure below shows that the proportion of people receiving care increases progressively in older age, with gender differences in mortality resulting in the greater number of older women being cared for by caregivers.

Figure 24: Percentage of people receiving informal care by age and gender, 2015/16, United Kingdom

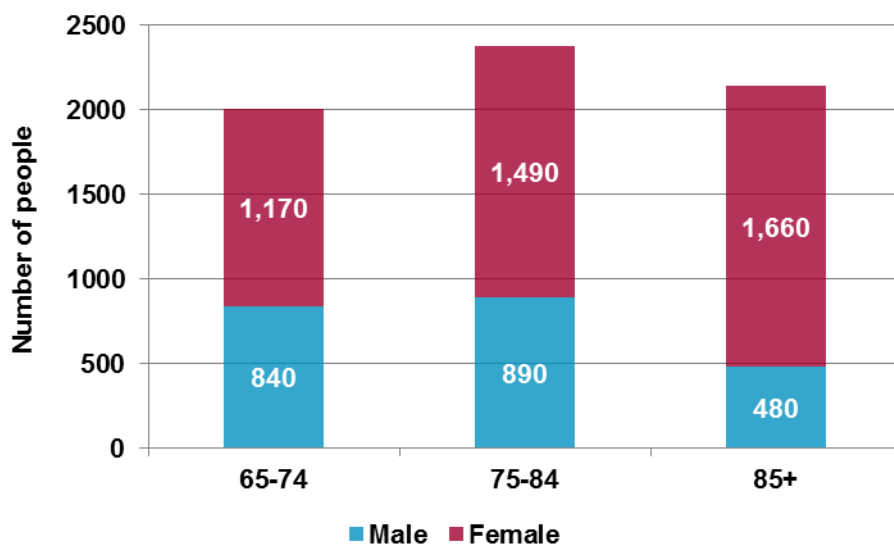


Data source: Family Resource Survey (2017): Available online: <https://www.gov.uk/government/statistics/family-resources-survey-financial-year-201516>

Applying the above proportions to the Highland population structure would suggest that there are about 6,500 people aged over 65 receiving informal care in the area. The amount of care received varies by age and gender. Using the Family Resource Survey data on the frequency of informal care allows a further estimate of the numbers in Highland who are likely to be receiving more. This would suggest that 1,350 people receive care several times a day and a further 2,370 need continuous support from caregivers.

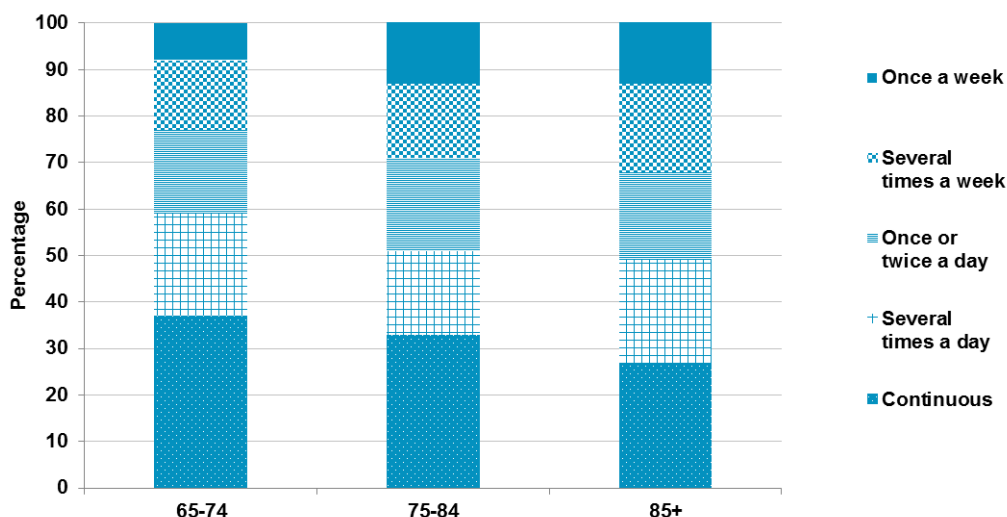
Projections of the future number of people who may need to receive informal care can be estimated by assuming that the current age-specific rates shown above will apply to the projected number of older people in Highland. By 2026 there would be 8,700 people, and by 2036 over 11,000 people aged sixty-five years and older receiving informal care.

Figure 25: Estimated number of people receiving informal care by age and gender in Highland in 2016



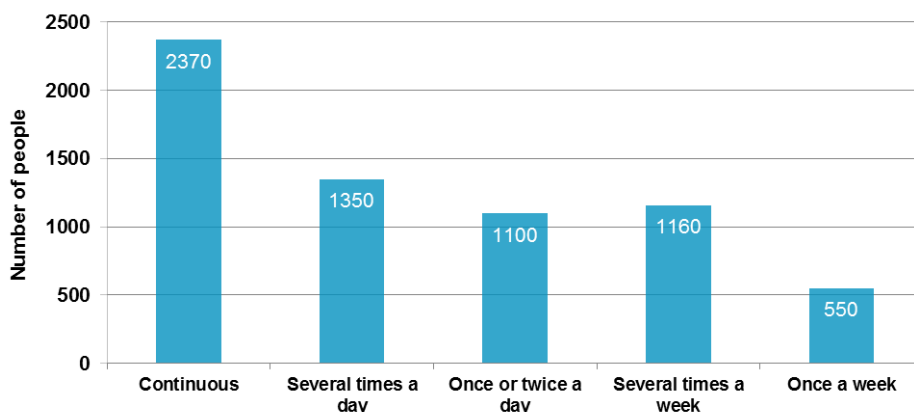
Data source: Family Resource Survey (2017) <https://www.gov.uk/government/statistics/family-resources-survey-financial-year-201516> and NRS population estimate for Highland 2016

Figure 26: Proportion of people receiving informal care more than once a week, 2015-16, United Kingdom



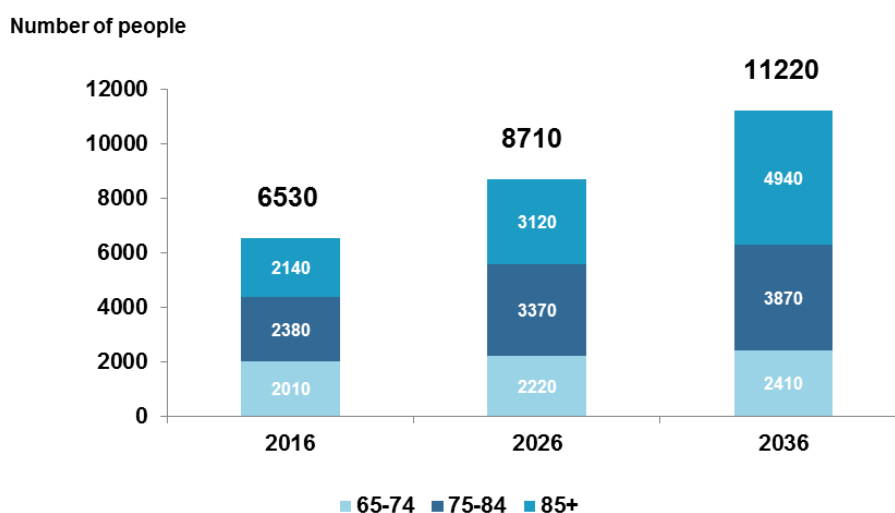
Data source: Family Resource Survey (2017): <https://www.gov.uk/government/statistics/family-resources-survey-financial-year-201516>

Figure 27: Estimated number of people receiving informal care in Highland by frequency of contact in 2016



Data source: Family Resource Survey (2017) <https://www.gov.uk/government/statistics/family-resources-survey-financial-year-201516> and NRS population estimate for Highland 2016

Figure 28: Estimated and projected number of older people in Highland receiving informal care



Data source: Family Resource Survey (2017) <https://www.gov.uk/government/statistics/family-resources-survey-financial-year-201516> and NRS population estimate for Highland 2016

The National Institute for Health and Care Excellence (NICE) in its national costing report put the ratio of informal carers to dementia patients at 0.85 (NICE, 2006). Independently, Lakey and colleagues (2012) suggest an informal carer to dementia patient ratio of 0.84. Like the total informal care giving population, informal carers for people with dementia are likely to be female and to be the spouse (Carers UK, 2012).

Applying these ratios to the estimates of the number of older people with dementia in Highland suggest there are currently 3,740 people with dementia receiving informal care. If this ratio remains stable in the future this would indicate that by 2026 there would be 4,800

older people with dementia in Highland receiving informal care and by 2036 this would rise to 6,000 people.

The trends in population ageing and changes in the structure of families highlighted above have led to forecasters projecting a “tipping point” for care, where the numbers of older people needing care will begin to exceed the numbers of family members available to provide the care (Carers UK, 2010).

Either the groups of people that currently provide informal care must increase their supply – which may not be possible - or other groups must opt into informal care. If this does not happen to a sufficient extent, the alternative is a substitution between informal and formal care.

Pickard (2008; 2013) projected the supply and demand of informal care for older people provided by their adult children in England to 2041. Under a number of assumptions, she suggests that the predicted demand for unpaid care would begin to surpass supply by 2017 and that the gap between demand and supply would increase in later years.

Population dependency

A key question for care providers is the number of individuals who are likely to require formal supporting services and where that care can be provided. For any given individual, dependency state will vary with time and be influenced by a variety of factors. These will include the degrees of physical illness, co-morbidity, disability, intellectual decline, behaviour disturbance, but also the presence of informal caregivers.

Based on a recent paper published in the Lancet (Kingston et al 2017) from the Cognitive Function and Ageing Studies (CFAS) it is possible to estimate how many of the Highland population are likely to require care due to dependency in the next 10 to 20 years, and with what intensity of care.

The work published in the Lancet used data collected during 1991 and in 2011 from the study of two cohorts aged 65 years and over. Each cohort consisted of registered GP patients in three areas in England. The data collected allowed the assignment of 4 levels of dependency. The studies also recorded the usual setting of residence. The following definitions were used:

Classification of dependency states:

- High dependency (24h care): Help may be required at any time or constant supervision needed
- Medium dependency (care at regular times each day): help required at regular intervals each day

- Low dependency (care less than daily): Requires help less often than daily
- Independent: Supervision or help for any activity is not essential

Applying the age and sex specific proportions by dependency status of the 2011 study cohort to the current estimated population of Highland Council allows estimates to be made. This assumes the local profile by dependency is similar to the English cohort of 2011 and it should be noted that analysis of the life expectancies of the study cohort and the Highland population suggests that this scenario may under-estimate the numbers considered to be in the medium or higher dependency levels in Highland.

Our current population structure and CFAS(ii) dependency ratios indicates that in Highland there are likely to be 2,700 people currently needing 24 hour care or supervision with a further 2,900 requiring help at regular intervals each day.

Figure 29: Estimated number of the Highland population by dependency status

	65-74	75-84	85+	total
Independent	20,745	7,659	1,040	29,444
Low Dependency	5,798	6,110	3,115	15,023
Medium Dependency	1,000	996	893	2,889
High Dependency	1,025	892	790	2,706
Total	28,568	15,656	5,838	50,062

Data source: Dependency prevalence from CFAS (ii) and NRS Mid-Year Population Estimate for 2016

Assuming that the dependency rates are applicable at smaller area level in Highland, the distribution of those needing higher levels of care or supervision are shown by Community Partnership area in the table below.

Figure 30: Estimated number of the Highland population aged over 65 years of age who have medium or high dependency needs that require regular daily contact or 24 hour care or supervision

	Medium Dependency	High Dependency
Badenoch and Strathspey	170	160
Caithness	330	310
East Ross	270	260
Inverness	860	800
Lochaber	230	220
Mid Ross	340	320
Nairn & Nairnshire	190	170
Skye, Lochalsh and West Ross	280	260
Sutherland	220	210
Highland	2,890	2,710

Data source: Dependency prevalence from CFAS (ii) and NRS Small Area Population Estimates for 2016

Projection Scenario 1: Population change and CFAS (ii) dependency rates

In scenario 1, to predict the future number of the population who might be dependent, the age and sex specific proportions by dependency status of the CFAS (ii) 2011 study cohort were applied to the projected population of Highland Council. This suggest that by 2025 there will be 3,780 people aged over 65 years who require care at regular times each day and a further 3,480 people who will require 24 hour care or supervision. The sort of help required for each dependency state is highlighted in the box below.

Classification of dependency

High dependency (24-h care)

At least one of the following: unable to get to or use the toilet (self-report), bed bound or chair bound (interviewer observed), needs help feeding (self-report or proxy rated), be often incontinent and need help dressing (self-report or proxy rated), or have severe cognitive impairment (mini-mental state examination score <10).

Medium dependency (care at regular times each day)

Either needs help preparing a meal (self-report) or putting on shoes and socks (self-report).

Low dependency (care less than daily)

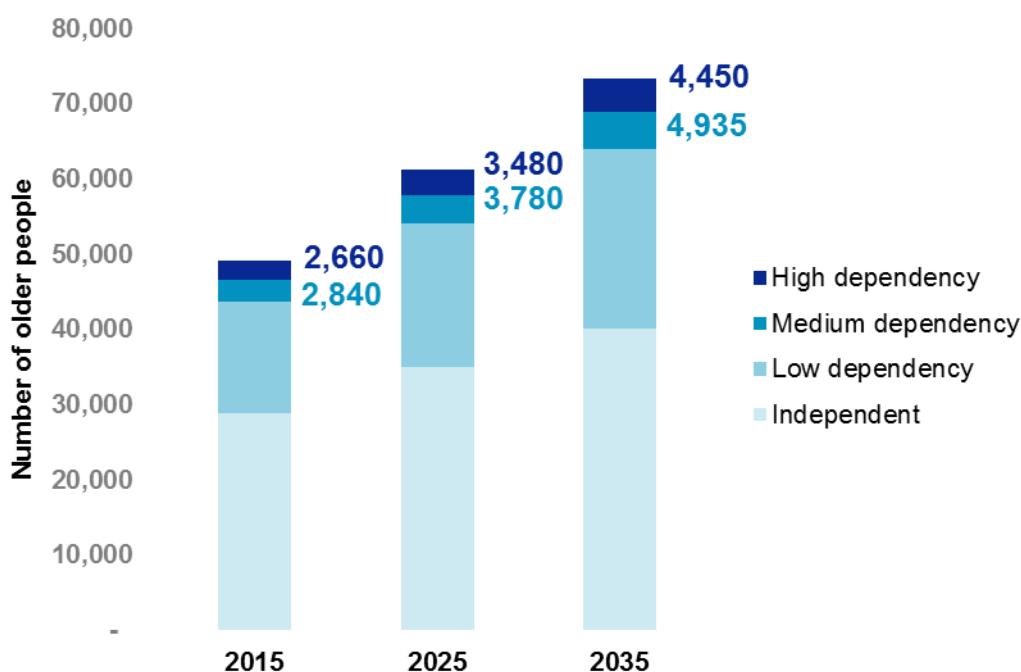
At least one of the following: needs help to wash all over or bath (self-report), cut toenails (self-report), shop (self-report), or do light or heavy housework (self-report), or have considerable difficulty with household tasks, for example making a cup of tea (informant report).

Independent

Not classified as high, medium, or low dependency.

Data source: Kingston at al (2017) Is late-life dependency increasing or not? A comparison of the Cognitive Function and Ageing Studies (CFAS). Available online: [http://dx.doi.org/10.1016/S0140-6736\(17\)31575-1](http://dx.doi.org/10.1016/S0140-6736(17)31575-1)

Figure 31: Highland projected population aged over 65 years and their dependency states



Data source: Kingston et al (2017) and National Records of Scotland (27 October 2016) **2014-based Population Projections for Scottish Council areas by sex, single year of age and year.** <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/sub-national-population-projections/2014-based/detailed-tables>

Figure 32: Scenario 1 - Highland projected population aged over 65 years and their dependency states

Highland (Council area)	2015	2025	2035	Total increase from 2015 to 2025 (% increase)		Total increase from 2015 to 2035 (% increase)	
Projected numbers of older people							
Independent	28,880	34,920	40,080	6,040	21%	11,200	39%
Low dependency	14,770	19,130	23,840	4,370	30%	9,070	61%
Medium dependency	2,840	3,780	4,930	940	33%	2,100	74%
High dependency	2,660	3,480	4,450	820	31%	1,790	67%
Total	49,150	61,310	73,310	12,160	25%	24,160	49%

Data source: Kingston et al (2017) and National Records of Scotland (27 October 2016) **2014-based Population Projections for Scottish Council areas by sex, single year of age and year.** <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/sub-national-population-projections/2014-based/detailed-tables>

Projection Scenario 2: Population change and change in CFAS dependency rates

In scenario 2 applying the changes in the dependency rates between the two cohort studies, one in 1991 (CFAS (i)) and one 20 years later in 2011 (CFAS (ii)) to the projected populations in Highland produces an alternative estimate. A linear projection from 2015 to 2035 applied 50 percent of the change to 2025. This assumes that the prevalence of dependency states in the study cohorts would be relevant to the Highland population and also that the trends seen in the previous 20 years would continue over the next 20 years.

Kingston et al found an increase in years lived with low dependency between the cohorts that would suggest increased demand for informal care, and also increases in high dependency that would suggest increased demand for supervised care in both community and institutional settings.

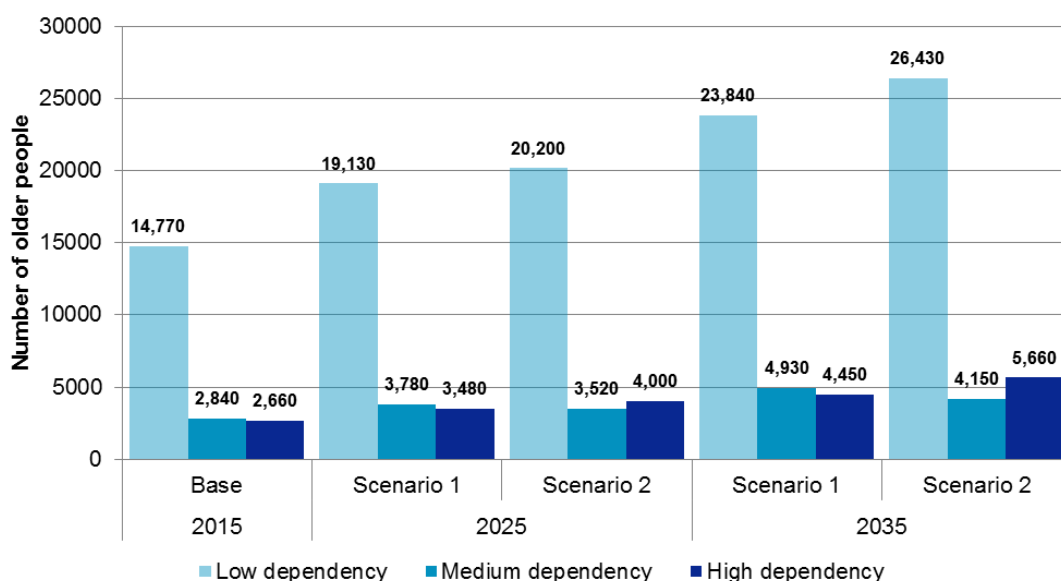
The increases in high dependency over time were found to be due to significantly greater need for help with toileting, being in bed or chair bound and being incontinent and requiring help dressing.

Figure 33: Scenario 2 - Highland projected population aged over 65 years and their dependency states

Highland (Council area)	2015	2025	2035	Total increase from 2015 to 2025 (% increase)		Total increase from 2015 to 2035 (% increase)	
Projected numbers of older people							
Independent	28,880	33,580	37,040	4,700	16%	8,160	28%
Low dependency	14,770	20,200	26,430	5,430	37%	11,660	79%
Medium dependency	2,840	3,520	4,150	680	24%	1,310	46%
High dependency	2,660	4,000	5,660	1,340	50%	3,010	113%
Total	49,150	61,300	73,280	12,150	25%	24,130	49%

Data source: Kingston et al (2017) and National Records of Scotland (27 October 2016) **2014-based Population Projections for Scottish Council areas by sex, single year of age and year.** <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/sub-national-population-projections/2014-based/detailed-tables>

Figure 34: Comparison of scenarios 1 and 2 - projected population aged over 65 years and their dependency states (excluding those who are independent)



Data source: Kingston et al (2017) and National Records of Scotland (27 October 2016) **2014-based Population Projections for Scottish Council areas by sex, single year of age and year.** <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/sub-national-population-projections/2014-based/detailed-tables>

Care projection model

The future numbers of people living in care homes in Highland if there is no change to the way services are provided can be estimated. The age and gender demographics available about Highland care homes from 2015 (ISD 2016) were, applied to 2014 based population projections for Highland (NRS 2016). This assumes that care home supply side factors and commissioning policy remain constant in the future with the current provision of care home places remaining in proportion to the populations in ten and twenty years' time.

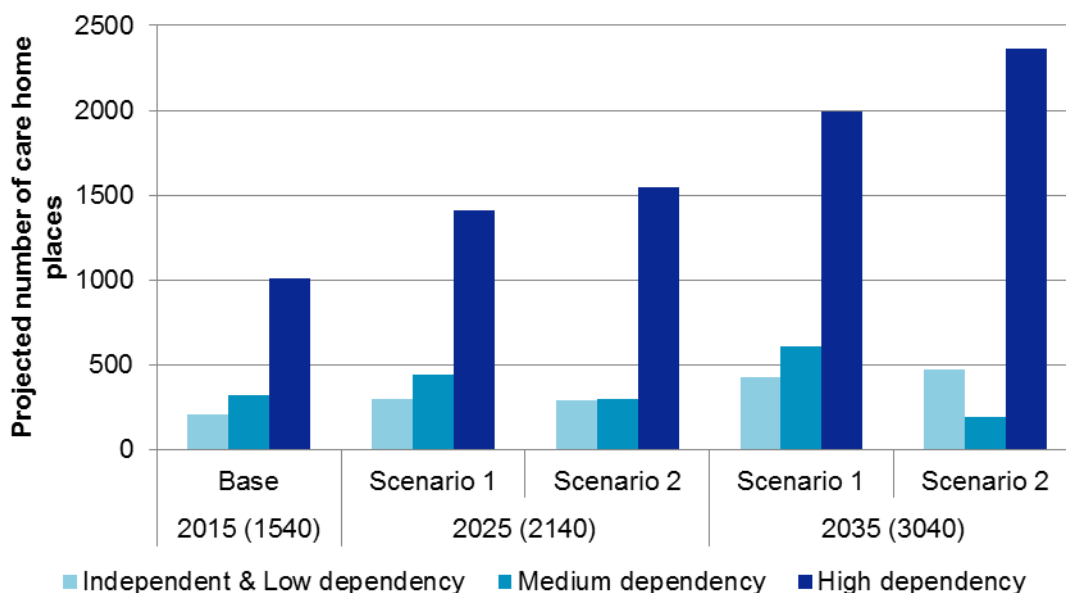
This work suggest that population ageing alone would result in an increase from 1,540 care home places in Highland in 2015 to 2,140 in 2025 and to 3,040 by 2035. Care home places would need to increase by 60 places a year between 2015 and 2025 and double between 2015 and 2035 to meet demand from population change if care continued to be delivered in the same settings.

No adjustment has been made in this work for other variables such as the rate of disability in the population or to consider the extent to which the choices that older people and their families make regarding entering care homes are driven by the supply of informal care and formal care available at home.

In scenario 1 the proportions of the dependency states in care homes in the 2011 CFAS(ii) cohort were applied. Scenario 2 assumes that the changes in the prevalence of dependency states in the CFAS between 2001 and 2011 are relevant to the Highland population and that

these trends will continue in the future. In both scenarios the most notable increase is in the group of people in care homes with more severe dependencies.

Figure 35: Future care in care homes: a comparison of CFAS scenarios 1 and 2 - projected care home population aged over 65 years and their dependency states



*The total number of care home places is shown in brackets on the x-axis.

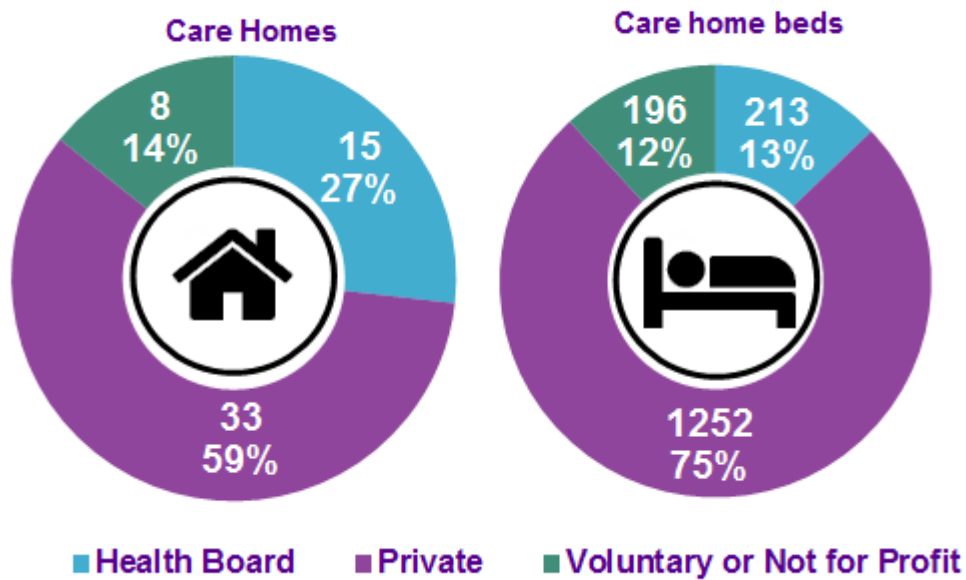
The scenarios above suggest that there will be increasing care demand from an ageing population with more people with dependency levels that require high levels of daily and continuous care and supervision. The direction of national policy in recent years has been to promote care at home and if this trend continues the above projections for care home places may not be applicable with a further shift in the balance of care from institutional to community settings. However, this will depend significantly on the level of home care that will be required to support an increasing number of older people living in the community and how well the home environment can be designed and adapted to meet the needs of an ageing society.

The work above has also highlighted the potential for a lack of informal care to support people in the community and a changing population structure that will result in there being fewer people of working age available to meet the demands of providing paid care in the coming years.

Current disposition of care services (Care Homes and Care at Home)

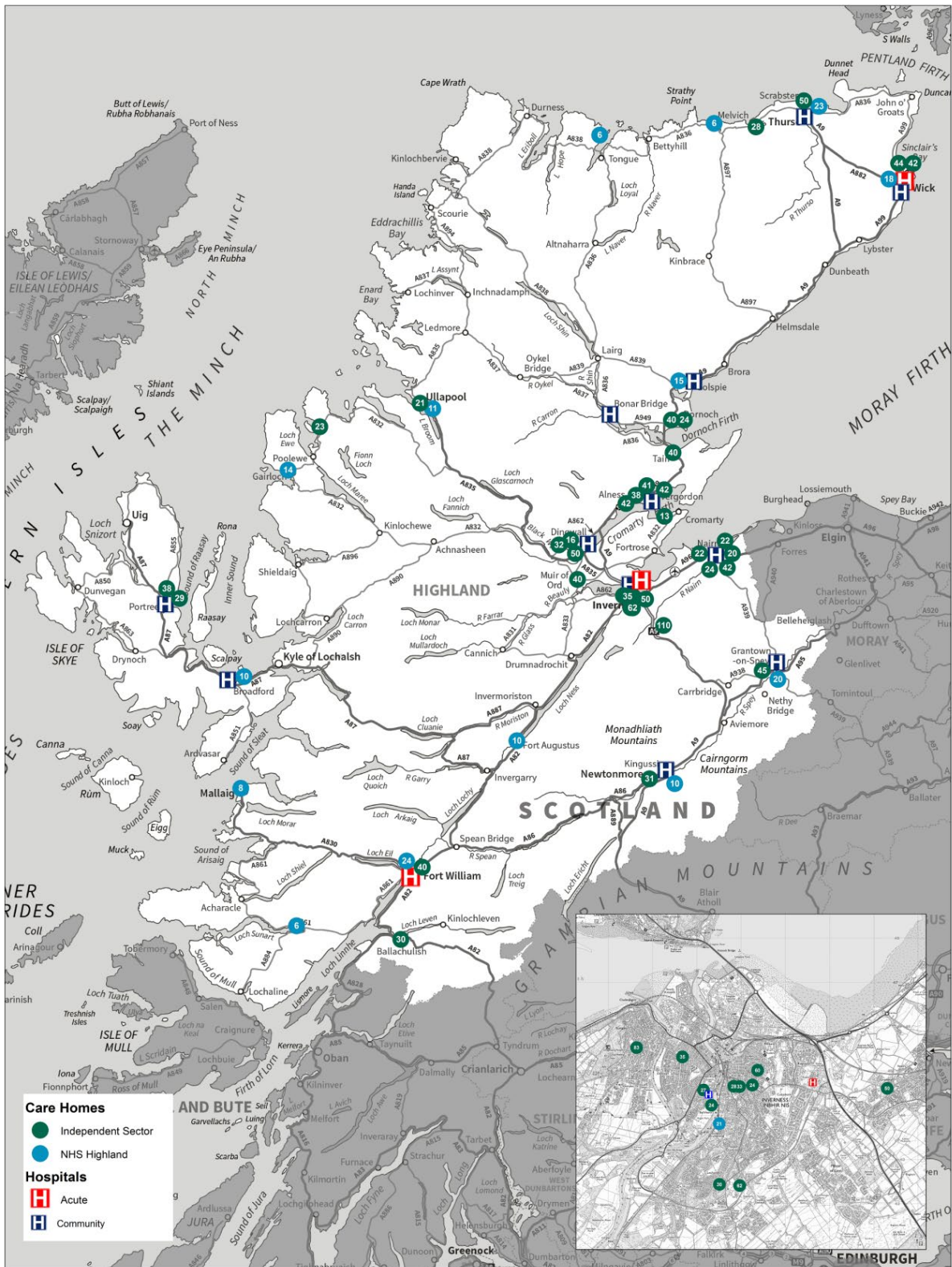
In Highland the majority of formal long-term care is provided by people working in care homes. There are 1,600 care home places in Highland (650 designated as nursing and 950 as residential). This provides care for 3 percent of the population aged 65 years and over and 15 percent of those aged 85 years and over. The majority of care home places in Highland are operated by the independent (IS) and voluntary sector (VS). NHS Highland currently operates 200 long stay care places in 15 homes. Seven of every ten care home places in Highland are publicly funded.

Figure 36: Number of care homes and care home beds (long and short stay) by provider in Highland, 2016



Data source: Information Services Division (2016), *Scotland; Care Home Census* (Table 5)

Figure 37: Care Home and Hospitals Locations in Highland



Highland HSCP Care Homes and Hospitals

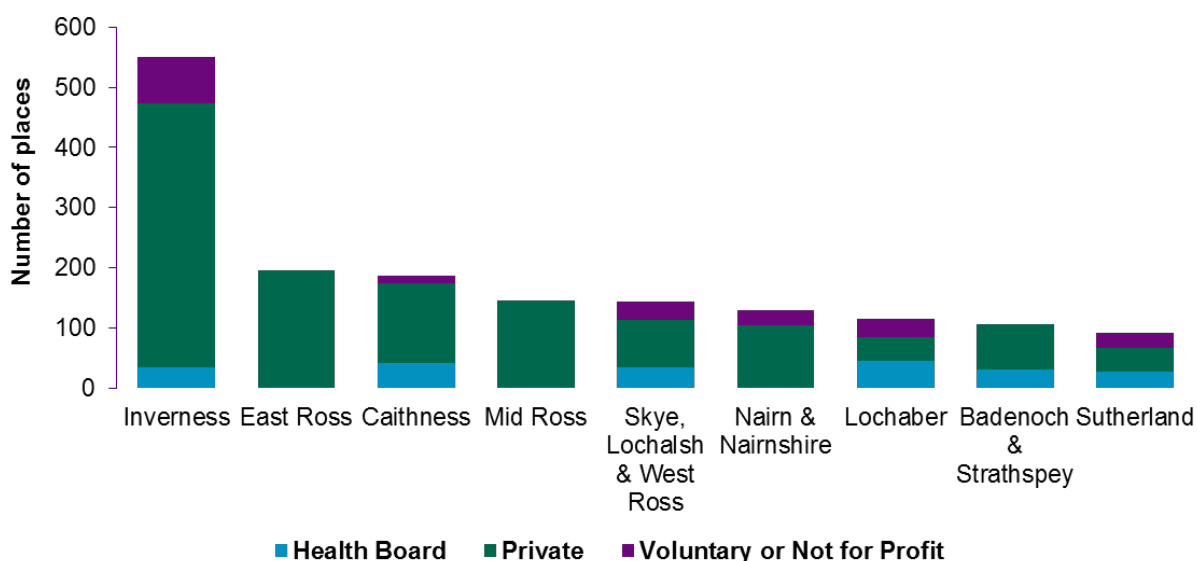
Please note locations are representative to avoid overlaps

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Directorate of Public Health
Health Intelligence Team
Larch House, Inverness
Date: 7 February 2018

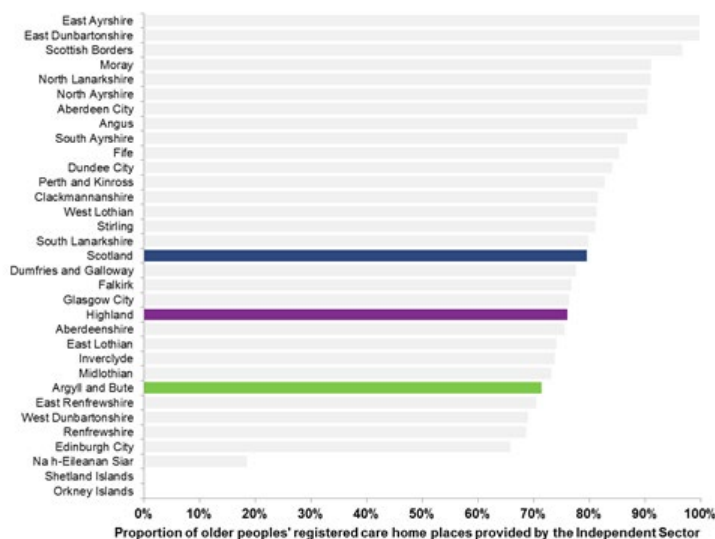
Figure 38: Number of care home places in Highland Community Partnership areas by provider



Data source: NHS Highland, Public Health Intelligence Team from Care Inspectorate and local data

Many other Council areas in Scotland have a different balance of care home provision by sector than Highland.

Figure 39: Percentage of older peoples' registered care home places provided by the Independent Sector (Year as at 31 March 2016)



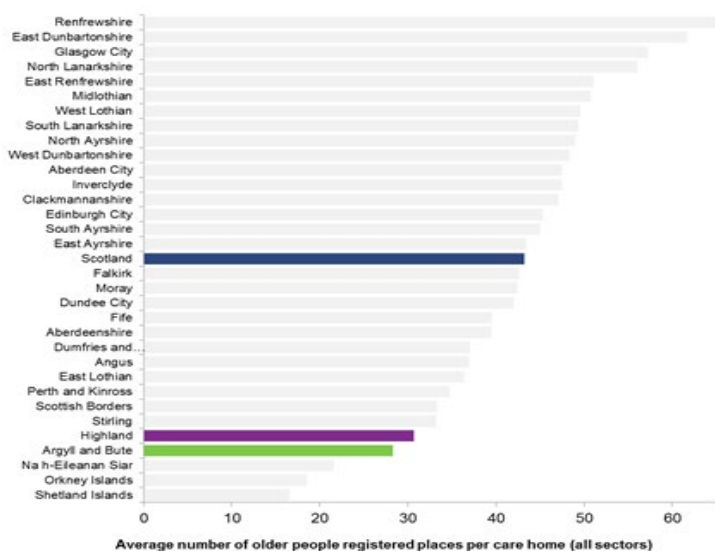
Data source: Information Services Division (2016), *Scotland; Care Home Census*

The average size of an NHS Highland care home in Highland is 14 beds. The IS average size is 38 beds. The average size of a care home in Highland is much smaller than those found in most other Council areas in Scotland. NHS Highland operates 8 care homes in Highland with 11 beds or less – provision is smaller scale, in more remote areas and more expensive. IS provision is larger in scale, currently cheaper and generally in more populated

areas. Both sectors deliver comparable quality – current average grade 4s (Care Inspectorate “good”).

The average size of a care home (all sectors) in Highland is much smaller than those found in most other Council areas in Scotland.

Figure 40: Average number of older people registered places per care home in Scotland (Year as at 31 March 2016)



Data source: Information Services Division (2016), **Scotland; Care Home Census**

Care home is a general term used for both Nursing homes (care homes with nursing care) and Residential homes (care homes without nursing care). Care homes with nursing care provide help and assistance with personal care, which is also provided by those without nursing care (residential care homes), but they also have professional registered nurses and trained care assistants who provide 24-hour nursing care services for people with more complex health needs. The regulator in Scotland is the Care Inspectorate (CI). The CI is responsible for assessing the quality of care against National Minimum Standards.

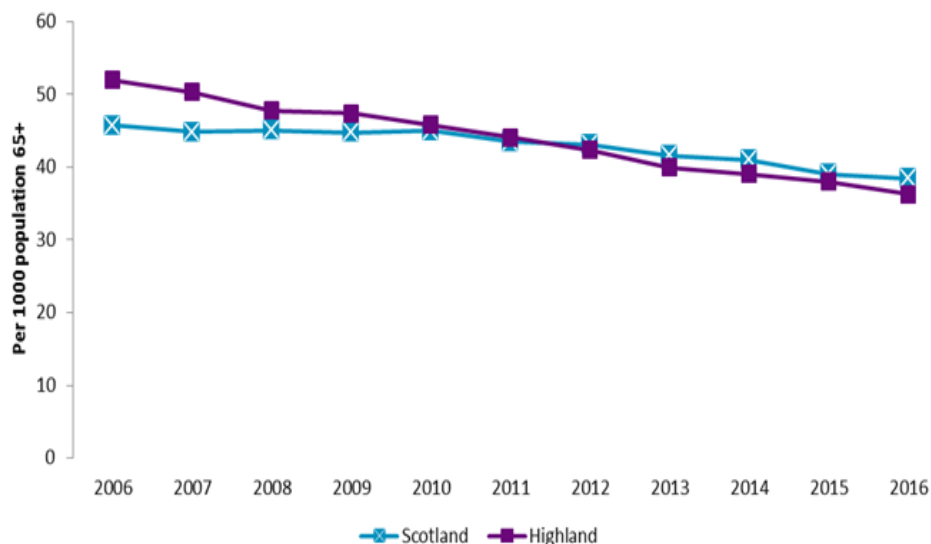
The NHS Highland operated homes in Highland are designated as providing residential care but Community Nursing teams work closely to support residents and staff in these locations. There is considerable overlap in health status and need for care and support amongst residents in all care homes, and in particular a high prevalence of cognitive impairment, co-morbidity and polypharmacy (people who are prescribed several types of medication). Increasingly care homes are becoming places where people with complex health care needs live. They are homes for people who are very frail or for people who are unable to care for themselves and who be a risk to themselves or others. Almost 60 percent of the current care home residents are considered to have some form of dementia, an increase of almost 20 percent since 2006.

The majority (70%) of care home residents are women and are over 86 years old, with an average life expectancy of less than two and a half years (ISD 2016). This means that end-of-life care is an important part of care home activity.

Care homes in Highland vary in size from less than 10 places to 110 places. The national trend is for care homes that have a higher number of beds due to the economies of scale and the increased potential to flex the care provision to meet the changing needs of individual residents.

The care home resident population for those aged 65 and over reduced by 3 percent in Highland between 2006 and 2016, despite growth of 31 percent in the overall population at this age. The rate of care home use in Highland for those aged over 65 years is now very similar in both Scotland and Highland.

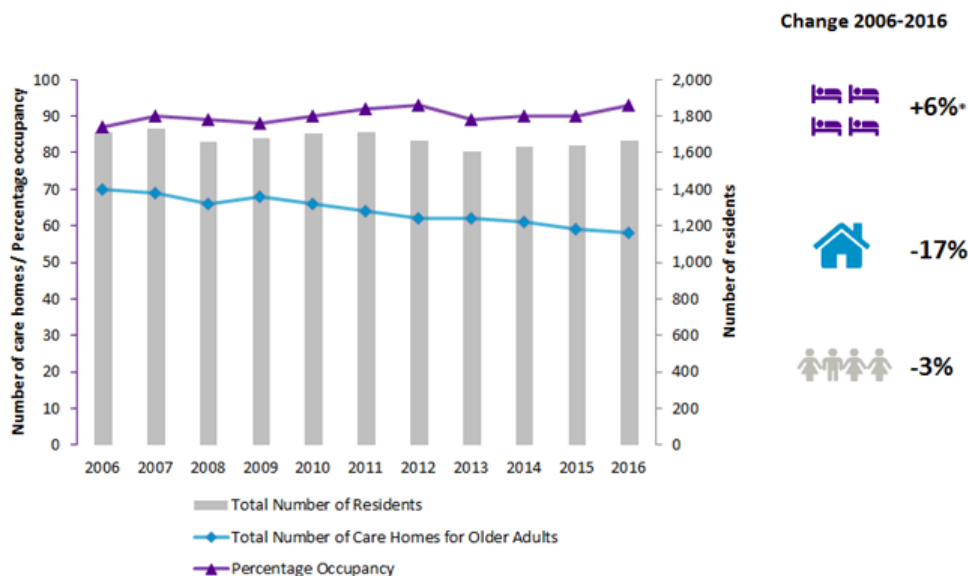
Figure 41: Number of Registered Places in Care Homes for Older People per 1000 population aged 65+, 31 March 2006 - 31 March 2016 (Year as at 31 March)



Data source: Information Services Division (2016), *Scotland; Care Home Census*

The median period from admission to the care home to death is 19 months and about 30% of people live in care homes for more than three years. Only 15% of people aged 85+ in Highland currently live in care homes.

Figure 42: Number of residents (long and short stay) in care homes for older people aged 65+, change in the number of care homes and percentage occupancy, 31 March 2006 - 31 March 2016 (Year as at 31 March)



Source: ISD Scottish Care Homes Census 2016 (Table 5) <https://www.isdscotland.org/Health-Topics/Health-and-Social-Community-Care/Publications/2016-10-25/2016-10-25-CHCensus-Report.pdf>

The number of care homes for older people reduced from 70 to 58 in Highland over this period, while average occupancy has risen to over 90%. All current care home capacity is being utilised and currently (February 2018) there are 62 people waiting in hospital for an available care home bed. Analysis of care home placements and discharges (primarily deaths) shows a ‘1 in and 1 out’ pattern operates in Highland. The high occupancy rate of care homes inevitably means that it can be very difficult to match the supply of places to the individual needs of those requiring the service.

Staffing levels and skill mix vary between types of care home (residential and nursing) and between individual care homes. Many staff working in care homes are female workers who work part-time or flexibly; they are often paid very close to the National Minimum Wage. The introduction of the Scottish Living Wage from May 2017 stipulates that all individuals employed in direct caring roles must be paid a minimum of £8.45 per hours.

Staff turnover can affect the stability of the working environment and turnover tends to be highest amongst junior care staff who provide the majority of personal care. High turnover can adversely impact on resident outcomes. The Care Home Workforce Data Report (Scottish Care 2017) highlights that the average turnover figure in Scotland was 22 percent and that there are major concerns in relation to attracting and retaining qualified nurses. These issues are exacerbated in rural areas where there is a limited workforce available to resource care at home, care homes and hospital services as all are competing for the same resource. Recruitment and retention challenges mean that there is major reliance on agency

staff to temporarily maintain services at minimum staffing levels as required by the Care Inspectorate in order to deliver safe care.

The projected number of older people with dependency levels requiring very regular or continuous supervision in the Highland of the future suggests that over the next 20 years there is likely to be a need to increase the size of the care sector workforce to maintain staffing standards and quality of care, no matter in what setting care is delivered.

After factoring in changes in retirement age over this period, population projections suggest that the number of people of working age will remain relatively constant, but there will be proportionately fewer people in the population working. It would therefore be anticipated, assuming current levels of high general employment pertain, that attracting staff to work at all levels in health and social care will remain a challenge for all areas in Highland. There are likely to be particular problems in remote and rural areas that experience net out migration as younger people move for education, training and employment opportunities.

The location of current care home provision is therefore not always where it is required in relation to populated areas from which to draw a workforce and location, matched to population need and workforce supply, would be important criteria for planning and commissioning sustainable care in the future.

The commissioning relationship between the NHS and the care home providers is however highly complex and at the micro level is impacted by the dependency and disability of individuals, whether an admission is from hospital, and the funding or payment method (self-funding, wholly public funding, public funding with top-up from resident or family). At the meso level the IS market has been unable to make confident investment decisions due to uncertainty about the longer term National Care Home Contract fee and NHS Highland's commissioning intentions in respect of the macro drivers of demographic change and the increasing levels of population dependency and disability. This may have restricted investment in appropriately sized, located and designed care homes and will have impacted on staffing levels and in the provision of appropriate training in the sector.

An overview of Care Home costs

In-house care homes

Highland Health and Social Care Partnership (HHSCP) spends circa £12m per annum operating 15 care homes of varying sizes to provide 200 in-house long stay residential care home places.

In-house costs per person per week (pppw) range from £870 to £2,075 between care homes. A typical weekly cost of operating an in-house residential care home place would be £1,100 pppw. Individuals with capital over the current nationally specified threshold of £26,500 pay £880 pppw less the Scottish free personal care allowance of £171 pppw. Under 15 percent of HHSCP in-house care home residents are self-funding.

People with assets under the threshold will be mainly publicly funded but will contribute from their income, including state pension, to leave them a minimum of the national personal expenses allowance of £26 pppw.

HHSCP receives about £2m funding from in-house care home residents, resulting in a net cost of around £10m per annum for 200 places.

Independent and Voluntary Sector care homes

The Independent and Voluntary Sectors currently provide ~1,400 care home places. Thirty percent of these places are self-funded by people who have assets over the current national threshold of £26,500; however, for these residents, NHS Highland pays the Scottish free personal care allowance of £171 pppw for residential beds and an additional £78 pppw for those receiving nursing care.

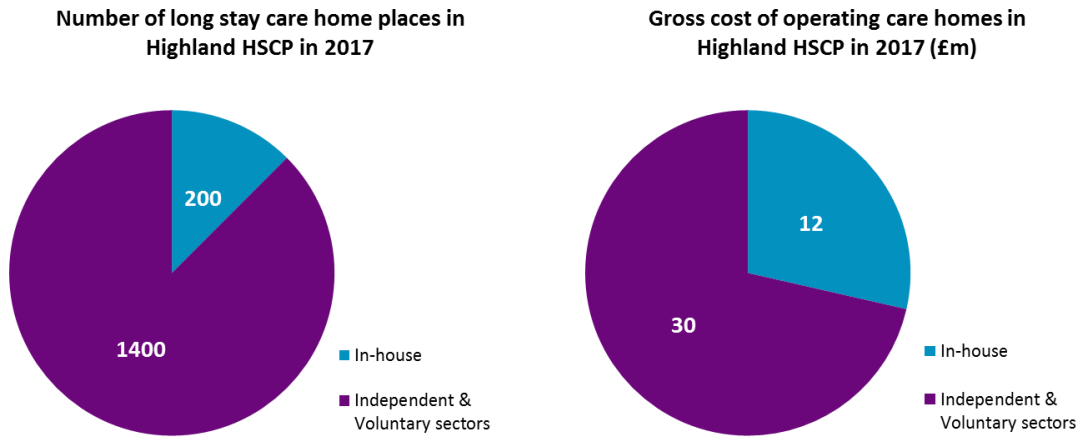
For people who are mainly publicly funded, HHSCP purchase places under the National Care Home Contract rate of £574 (residential) and £667 (nursing) pppw but receive contributions from residents income, including state pension, to leave them a minimum of the national personal expenses allowance of £26 pppw.

HHSCP currently spends £360k per annum on additional care charges with the Independent Sector for people who have needs with a dependency or complexity beyond that normally covered within the standard fee.

The total net cost to HHSCP for these 1,400 places is around £28m.

Comparing hospital, in-house and independent sector costs

Figure 43: Comparing in-house and independent sector activity and cost



Data sources: Activity and cost data extracts from NHS Highland CareFirst (2017) and financial reporting (2017 and 2018).

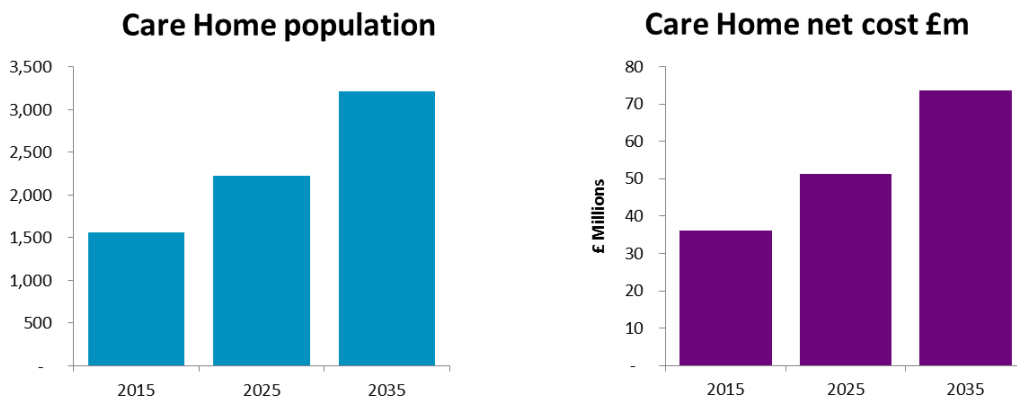
It would currently cost £6m to purchase from the Independent Sector, the 200 in-house residential places; half the cost of HHSCP delivering the same number of beds. This does not assume that the beds could be provided in the same scale of care home in rural areas, as is presently provided.

The cost of a patient delayed in an acute hospital bed is over three times more than the cost of an in-house residential bed and five times more than an Independent Sector place.

Future

If nothing other than population ageing were to change, by 2025, it is estimated HHSCP would face an additional cost of £15m per annum and a further £22m by 2035.

Figure 44: Projected care home population and cost in HHSCP based on population changes only



Data sources: NRS (2015); mid-2015 Population Estimates. NRS (2016); 2014-based Population Projections for Scottish Council areas. Activity and cost data extracts from NHS Highland CareFirst (2017) and financial reporting (2017 and 2018).

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