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Personal Social Services Research Unit

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REPORT OF RESEARCH FOR THE COMMISSION ON FUNDING OF CARE AND SUPPORT

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The analysis set out in this report is the responsibility of the authors and does not necessarily represent the views of the Department of Health or the Commission for the Funding of Care and Support.

Introduction

This paper presents projections of demand for social care and disability benefits for older people (aged 65 and over) in England to 2030 and associated future expenditure. They cover publicly and privately funded social care – assessments, community-based services and residential care. They also cover long-term health care and disability benefits relevant for care – attendance allowance (AA) and disability living allowance (DLA) care component.

The projections were produced using an updated and expanded version of the Personal Social Services Research Unit's (PSSRU) aggregate long-term care projections model and the University of East Anglia's CARESIM dynamic micro-simulation model. The versions of the models used here have a base year of 2010 and incorporate the latest official population projections and projections of Gross Domestic Product (GDP) that were available in July 2011. This set of projections was prepared for the Commission on Funding of Care and Support, which reported in July 2011.

The Commission was established by the Coalition Government in July 2010 and published its report on 4 July 2011. Its terms of reference stated:

'The Commission is asked to make recommendations on how to achieve an affordable and sustainable funding system or systems for care and support, for all adults in England, both in the home and other settings….The approach recommended must be affordable and sustainable in both the short and long term. ….' (Dilnot et al, Commission on Funding of Care and Support, 2011).

Social care for younger adults and older people in England is not free at the point of use like health. Eligibility for publicly funded social care is subject to an assessment of care needs and a means test of savings and incomes. A Royal Commission recommended in 1999 that nursing and personal care should be free. While free nursing care was introduced throughout the United Kingdom, free personal care was introduced only in Scotland. The Royal Commission was followed by a number of reports recommending reforms to the funding system. The previous Labour Government published a Green Paper on this topic followed in March 2010 by a White Paper which recommended a National Care Service with social care free at point of use.

The Commission's key recommendations are:

- Individuals' lifetime contributions towards their social care costs – which are currently potentially unlimited – should be capped. After the cap is reached, individuals would be eligible for full state support. This cap should be between £25,000 and £50,000. The Commission considered that £35,000 is the most appropriate and fair figure;
- People in residential care should contribute a standard amount of between £7,000 to £10,000 to their living cost.
- The asset threshold for residential care, above which people are liable for their full care costs, should be increased from £23,250 to £100,000;
- National eligibility criteria and portable assessments should be introduced to ensure greater consistency; and
- All those who enter adulthood with a care and support need should be eligible for free state support immediately rather than being subjected to a means test.

The Commission estimates that its proposals – based on a cap of £35,000 – would cost the State around £1.7 billion (Commission on Funding of Care and Support, 2011).

The Government responded that it will consider each recommendation carefully to test whether it meets the wider objectives for reform, including increased personalisation, choice and quality, closer integration of health and social care and greater prevention and early intervention. It indicated that it will need to consider the costs of the recommendations against other calls on constrained resources. It announced that it will be engaging with the care sector over the autumn to develop and refine priorities and plans for action, bearing in mind the financial context and that, following this engagement, it will publish a White Paper on wider social care issues next spring, and a progress report on funding reform. (Department of Health, 4 July 2011).

The Commission's report sets out and draws on some of the findings of the analysis reported in this paper as well as analyses by ESHCRU reported in PSSRU discussion papers 2800/3 (Snell et 2011) and 2794 (Forder and Fernandez 2011).

Description of the PSSRU long-term care projections model for older people

The PSSRU long-term care projections model aims to make projections of four key variables: the future numbers of disabled older people, the likely level of demand for long-term care services and disability benefits for older people, the costs associated with meeting this demand and the social care workforce required. The model is cell-based (a macro-simulation model) and takes the form of an Excel spread-sheet.

The model does not make forecasts about the future. It makes projections on the basis of specific assumptions about trends in such variables as future mortality rates and disability rates. The approach involves simulating the impact on demand for care and support of specified changes in demand drivers or specified changes in policy. It does not involve forecasting future policies or future patterns of care. This means that the projections reported in this paper should be treated as indications of likely future expenditures on care and support if policies are unchanged and drivers of demand follow the specified trends. They are not forecasts: in practice not only may drivers of demand not follow the assumptions but policies are likely to change. Since the purpose of the projections is to inform policy development it would not be helpful to take account of views about possible policy changes.

The model is updated regularly as new data become available, in particular population projections, data on numbers of older people in care homes and numbers of users of home care services, data on social care expenditure and estimates of the unit costs of care. The version of the model that has been used to make the projections in this paper utilises official 2008-based population and marital status projections, data from the 2001/2 General Household Survey, the 2005 PSSRU survey of older care home admissions, March 2009 data on residential care and home-based care, expenditure data for 2009/10 and unit costs adjusted to 2010/11 prices.

Data and methods are discussed further in the Annex and in Wittenberg et al (2006).

Description of CARESIM

CARESIM is a microsimulation model which uses a pooled sample of 25,747 people aged 65+ living in England from the 2002/3, 2003/4 and 2004/5 UK Family Resources Survey (FRS). Information on sample members' incomes, assets (including estimates we make of their housing wealth) and other relevant characteristics are used to simulate their liability to pay for care, should care be needed, under the current and alternative means tests. The simulations are performed for a base year and for future years. Money values from the FRS are uprated to the prices of the base year. For future years the sample is 'aged'. Death of sample members is simulated using Monte Carlo techniques in which the probability of death follows official 2008-based projections of age and gender specific mortality rates. The evolution of gross incomes and capital is modelled under certain assumptions and taking account of the inheritance of pension rights and assets when a partner is simulated to die. Further details are given in the Annex.

Linkage between the two models

The PSSRU and CARESIM models have been used together to produce the projections of long-term care expenditure. Within CARESIM, simulations are performed for three types of care home place (nursing care in independent sector homes; places which provide personal but not nursing care in independent homes; and places in LA run homes which also provide personal but not nursing care) and 4 intensity levels of home care (low, medium, high and very high). For residential care, the national (England) means test is applied. For home care where there is no national mean test, a stylised standardised mean test based on the principles in national guidance is modelled. Income up to 125% of the Pension Credit Guarantee Credit excluding disability premiums is disregarded. Income includes any AA/DLA left after disregarding assumed levels of disability related expenditure which increase with the level of home care received. Housing wealth is not included in the capital test for home care in the base funding regime.

The PSSRU model provides estimates of the numbers of people by age, gender, marital status and housing tenure projected to receive each type of care. These estimates are used as weights which are applied to adjust CARESIM output to be representative of people in care homes or receiving home care[1]. For the current and alternative means tests and for each type of care, CARESIM provides age group-specific estimates to the PSSRU model of: the proportion of residents who self-fund; the proportion of costs which are met from AA/DLA; and the proportion contributed by LA-supported users met from their assessed income and assets. These are then used in the PSSRU model to apportion total expenditure amongst its constituent components and funding sources. If for example CARESIM estimates that the proportion of nursing home residents who are self-funders is expected to be 10% higher in 2015 under a reform option than under the current funding system, this uplift of 10% is applied in the PSSRU model.

[1] This also adjusts for the exclusion of the care home population from the initial FRS sample by increasing the relative weight given to sample members in age, gender, marital status and housing tenure categories where care home residence is most likely.

Results from the models provide point-in-time estimates of public and private expenditure on care under the current and alternative funding systems, and of changes in care home residents' disposable incomes that would result from reforms to the funding system.

Base case English funding scenario assumptions

The PSSRU model produces projections on the basis of specific assumptions about future trends in the key drivers of demand for long-term care. The main assumptions used in the base case of the model are summarised in box 1 below. The base case projections take account of expected changes in factors exogenous to long-term care policy, such as demographic trends. The base case projections hold constant factors endogenous to long-term care policy, such as patterns of care and the funding system. The base case is used as a point of comparison when the assumptions of the model are subsequently varied in alternative scenarios.

Box 1

KEY ASSUMPTIONS OF THE BASE CASE OF THE PSSRU MODEL

- **The number of people by age and gender changes in line with the Office for National Statistics (ONS) 2008-based population projections.**
- **Marital status changes in line with GAD 2008-based marital status and cohabitation projections.**
- **There is a constant ratio of single people living alone to single people living with their children or with others and of married people living with partner only to married people living with partner and others.**
- **Prevalence rates of disability by age group (65-69, 70-74, 75-79, 80-84, 85) and gender remain unchanged, as reported in the 2001/2 General Household Survey (GHS) for Great Britain.**
- **Home-ownership rates, as reported in the 2001/2 Family Resources Survey (FRS), change in line with projections produced by the University of East Anglia.**
- **The proportions of older people receiving informal care, formal community care services, residential care services and disability benefits remain constant for each sub-group by age, disability and other needs-related characteristics.**
- **Health and social care unit costs remain constant in real terms to 2015 and then rise by 2% per year in real terms (but non-labour non-capital costs remain constant in real terms). Real Gross Domestic Product rises in line with Office for Budgetary Responsibility projections (OBR, 2011).**

- **The supply of formal care will adjust to match demand[2] and demand will be no more constrained by supply in the future than in the base year.**

There is ample scope to debate these base case assumptions. It could be argued for example that mortality rates will fall more rapidly than official projections, disability rates may rise (or fall), the supply of informal care by adult children may not rise in line with needs, the supply of residential care may not rise in line with severe disability and/or average earnings in the care sector may not rise by as much as 2% per year in real terms from 2015. We have conducted a wide range of sensitivity analyses on these issues in previous studies – see for example Wittenberg et al 2006. In this study the Commission requested sensitivity analysis just on trends in disability, as reported below.

It is likely that there will be changes over time not only in the balance between informal and formal care but also in the balance between residential and home-based care. The former will be affected by the future supply of informal care, which in turn may reflect changing attitudes toward caring and changing patterns of employment. The latter will be affected not only by policies to promote home-based care but also by the future supply of residential care, which may in turn be affected by the availability and cost of capital for the development of care homes. Since the Commission requested projections in respect of funding reform, which lay at the heart of their remit, we did not explore the impact of changes in the balance of care in this study.

Projections under base case assumptions

The ONS 2008-based principal population projections for England project that between 2010 and 2030 the numbers of people aged 65 or over will rise by 51%. The numbers of those aged 85 or more are projected to rise faster during this period, by over 101%, from almost 1.2 million in 2010 to just over 2.4 million in 2030. Much of this increase is a result of a projected rise in male life expectancy.

Under the base case assumptions, the numbers of disabled older people, defined as those unable to perform at least one instrumental activity of daily living (IADL) or having problems with at least one activity of daily living (ADL), would rise by 61% between 2010 and 2030, from around 2.5 million to around 4.1 million. The number of older people with moderate or severe disability, that is, needing help with one or more ADL tasks, would increase by 66% from around almost one million in 2010 to just over 1.6 million in 2030.

The numbers of disabled older people in households receiving informal care are projected to increase by 60%, from approximately 1.9 million in 2010 to just over 3.0 million in 2030. The numbers of disabled older people receiving care from a spouse or partner are projected to increase faster than the numbers receiving care from an adult child, under base case assumptions. Yet care by children will still need to increase by approximately 50% over the next 20 years, if the proportion of disabled older people (by age, gender and marital status) receiving care from their children is to

[2] The model effectively assumes that the assumed real rise in care costs will be sufficient to ensure that supply will rise to meet projected demand.

remain the same as it is today. Whether the supply of care by children will actually rise in line with need is very uncertain (Pickard et al 2007).

The numbers of users of non-residential formal services would need to rise by 59%, from 1.6 million to 2.6 million, to keep pace with demographic pressures. Within this total the numbers receiving local authority home care are projected to rise by 71% from 280,000 in 2010 to 480,000 in 2030. The numbers of older people in care homes (and long-stay hospital care) would need to rise by 67%, from 345,000 in 2010 to 575,000 in 2030 to keep pace with demographic changes. Within this total the numbers of local authority supported residents are projected to rise by 40% in comparison with a rise of 106% in the numbers of privately funded residents. The main reason for this difference is the projected rise in the proportion of older people who own their own home and so are generally not eligible for local authority support. The total number of older service users, including residential and non-residential care, would need to rise, to keep pace with demographic pressures, from 2.0 million in 2010 to 3.2 million in 2030, an increase of around 60% over 20 years. The proportion in care homes would rise from 21% to 22% of all older service users, if there is no change in the balance of care among those with the most severe disability.

Table 1. Projected expenditure on long-term care for older people, 2010-2030, England, under base case assumptions, in £million at constant 2010 prices

	2010	2015	2020	2025	2030	% growth 2010 to 2030
Social Care Users under the Current Funding System						
Home care users (LA funded)	283,200	296,000	332,900	393,700	483,400	71%
Day care users (LA funded)	83,200	91,900	101,600	114,200	131,600	58%
Care home residents (NHS funded)	24,700	27,100	30,600	35,400	41,100	66%
Care home residents (LA funded)	183,000	188,100	200,900	219,800	256,900	40%
Privately funded residents	128,200	153,800	184,500	227,300	264,000	106%
Social Care Expenditure under the Current Funding System						
NHS expenditure	4,200	4,700	5,800	7,300	9,300	120%
LA net expenditure	7,700	8,100	9,700	11,900	15,400	101%
Private expenditure	6,800	8,000	10,200	13,400	16,700	146%
AA use to fund care services[3]	900	1,000	1,200	1,400	1,600	77%
Total public expenditure	12,800	13,700	16,600	20,600	26,300	105%
Total spend on services	20,600	22,800	28,000	35,300	44,800	117%
Total spend on services as % of GDP	1.63%	1.58%	1.76%	2.01%	2.31%	42%

Public expenditure on social services for older people is projected to rise under the current funding system from around £7.7 billion (0.6% of GDP) in 2010 to £15.4 billion (0.8% of GDP) in 2030 in constant 2010 prices. Private expenditure is projected to rise from £6.8 billion in 2010 to £16.7 billion in 2030. Total expenditure on long-term care services, including health, social care and disability benefits used to fund care, is projected to rise from £20.6 billion (1.6% of GDP) in 2010 to £44.8 billion (2.3% of GDP) in 2030 in constant 2010 prices. It should be noted that the figures for private expenditure are estimates drawn from various sources on the numbers of privately funded

[3] AA to fund care would be 1,100 in 2010 and 1,900 in 2030 if all privately funded care home residents were assumed to receive higher rate of AA.

care home residents, the numbers of privately funded home care users and the weekly costs of privately funded care and data on councils' income from user charges. This means that the projections for private expenditure should be treated with caution.

Sensitivity to assumptions about trends in functional disability

The sensitivity analysis reported in Wittenberg et al (2006) showed that projected future demand for social services and disability benefits for older people is sensitive to assumptions about future mortality rates and life expectancy and about future prevalence rates of disability. It also showed that projected future public expenditure on care and disability benefits for older people is also sensitive to assumptions about future rises in the real unit costs of services, such as the cost of an hour's home care. The sensitivity analysis reported here concentrates on trends in functional disability.

There are different views about whether age-specific disability rates can be expected to rise, fall or remain broadly constant in the future (Bone et al 1995 and Dunnell 1995). Constant age-specific disability rates may be regarded as a neutral assumption and this is our base case. Yet, if age-specific disability rates remain constant while life expectancy rises, the number of years with disability will rise as well as the number of years without disability.

The numbers of disabled older people in the future will depend on the disabling diseases they suffer from and whether optimal treatments to alleviate or postpone the disablement are both available and widely diffused throughout the population in need. As part of the evidence for the Wanless review (Jagger et al., 2006) and later the MAP 2030 project, the PSSRU aggregate older people's model has been linked to POPSIM, an epidemiological model (see, for example, Jagger et al. 2009a) that simulates how changes in the prevalence, disablement and mortality consequences of chronic conditions will affect future disability rates. As well as considering individual scenarios for the specific diseases: dementia, arthritis, stroke and coronary heart disease, Jagger et al. (2009b) have built up three combined scenarios:

• **no change in age-specific prevalence of diseases** – with falling mortality rates this implies rising age-specific prevalence of disability;
• **continued current trends** – as discussed below; and
• **improving population health** – there is a decline in risk factors, particularly smoking and obesity, and in the prevalence of diseases.

The Dilnot Commission requested sensitivity analysis of the impact of alternative assumptions about future disability rates on the projections carried out for them. To illustrate this sensitivity, they asked us to explore two disability scenarios:

- a 1% decrease per year of the prevalence rate of disability, and
- the continuation of current trends scenario.

Under the continuation of current trends scenario developed by Jagger et al (2009):

- obesity trends of 2% increase every year continue, which increases the prevalence of arthritis, stroke, coronary heart disease (CHD) and vascular dementia but also the resulting dependency associated with these diseases;
- the emergence of ethnic minorities in significant numbers into the older population adds to the prevalence of stroke and coronary heart disease;
- some prevention strategies are in place but they fail to offset the increasing prevalence;
- treatments continue to focus on reducing the mortality from diseases rather than reducing the disabling effects;
- The prevalence of disability in the 65-66 age group remains constant;
- increase in the prevalence of arthritis, stroke, CHD and mild dementia by 2% every two years from 2012 and for moderate/severe dementia of every two years from 2016;
- an increase of 10% in beta (disability) for arthritis, stroke and CHD from 2012 and a reduction in beta (death) of 5% for mild dementia, stroke and CHD from 2016.

The results of the sensitivity analysis using these two scenarios on trends in disability are presented in table 2. The numbers of severely disabled older people (defined as needing help with 2 or more ADLs) are projected to rise from around 240 thousand in 2010 to around 310 thousand in 2030 under the decreasing disability rates scenario or 495 thousand under the continued trends scenario compared with 385 thousand under the base case assumption of constant age-specific prevalence of disability.

Table 2. Projected expenditure on long-term care for older people in 2030, England, under different assumptions about future disability rates, in £ million at 2010 prices.

	2030		
	Base case	Decreasing disability rates	Continued trends
NHS	9,300	7,800	11,100
PSS net	15,400	12,600	18,300
Private	16,700	14,500	20,600
Total expenditure on services	44,800	37,700	54,400
Total exp. on services as % of GDP	2.31%	1.94%	2.80%

Funding scenarios

The Commission recommended a cap on (notional) life-time expenditure on care, as discussed above**.** They recommended that this cap should be between £25,000 and £50,000 and considered that £35,000 is the most appropriate and fair figure. We investigated the costs of caps of £25,000,

£35,000 and £50,000. For residential care the cap would apply to that part of a care home's fee that is deemed to cover personal care costs and not to the part attributable to accommodation costs.

To conduct analyses of the cap we had to make some important assumptions:

- People receiving home care of lower intensity than 10 hours per week had not been assessed by their council as meeting the eligibility criteria for care before they started to receive home care;
- People receiving higher intensity home care of 10 or more hours per week had spent (or were deemed by their council to have spent) an average of £5,000 on lower intensity care before starting to receive higher intensity care; and
- People in care homes had on average spent (or been deemed by their council to have spent) an average of £10,000 on home-based care before entering residential care.

Assumptions on these lines were necessary since the Caresim and PSSRU aggregate models do not track transitions between different levels of disability or types of care. There is currently little data on transitions between different types or intensities of care.

The results of our analyses on the costs of varying the cap are presented in table 3. We assume that no changes are made to the current funding system except for the introduction of the cap. We also assume that demand for care is not affected by the introduction of the cap: whether individuals' demand for care would in practice be much affected by the cap until they had actually reached the cap and started to receive free care is debatable. The accommodation cost in residential care, which is not covered by the cap provisions, is set at £10,000 per year as recommended by the Commission. The care component of fees is then taken to be the difference between the LA fee rate (less the NHS contribution to nursing care in nursing homes) and this accommodation cost. It is assumed that when self-funders become eligible for state funded care after reaching the cap, they would continue to be liable for the self-funder fee rate but receive a non means-tested contribution from the state equal to this care component.

Table 3. Projected expenditure on social care and on disability benefits used to fund care for older people, 2010-2030, England, under different levels of the cap on life-time costs, in £ million at constant 2010 prices.

Cap	2010	2015	2020	2025	2030	% growth 2010 to 2030
Social care (net)						
No cap	7,700	8,100	9,700	11,900	15,400	101%
£25k	9,400	10,100	12,300	15,400	19,800	111%
£35k	9,100	9,700	11,800	14,700	19,000	109%
£50k	8,700	9,300	11,300	14,000	18,100	108%
AA used to fund care						
No cap	900	1,000	1,200	1,400	1,600	77%
£25k	700	700	800	1,000	1,100	68%
£35k	700	800	900	1,100	1,200	71%
£50k	800	800	1,000	1,200	1,300	72%

Our analysis shows (Table 3) that if a cap had been in place in 2010 social care expenditure (net of user charges) would have been £8.7 billion under a cap of £50k, £9.1 billion under a cap of £35k and £9.4 billion under a cap of £25k, compared with £7.7 billion under the current funding system. We therefore estimate the cost to social services of a cap of £35k as being around £1.4 billion in 2010 rising to around £3.6 billion in 2030 at constant 2010 prices.

There would be a saving to disability benefits of some £200 million in 2010 rising to around £400 million in 2030. These arise because publicly funded (but not privately funded) care home residents lose their disability benefits after 4 weeks, and the cap would mean that a proportion of privately funded residents – those who had reached the cap – would become publicly funded.

The Commission recommended that accommodation costs in care homes would not be covered by the cap. They asked us to model accommodation costs of £7,000, £10,000 and £13,000 per year. Table 4 shows net social care expenditure and expenditure on disability benefits used to fund care under these three variants, with a cap of £35,000 in each case.

Table 4. Projected expenditure on social care and on disability benefits used to fund care for older people, 2010-2030, England, under different levels of accommodation costs, in £ million at constant 2010 prices.

Accommodation cost per year	2010	2015	2020	2025	2030	% growth 2010 to 2030
Social care (net)						
No cap	7,700	8,100	9,700	11,900	15,400	101%
£7k	9,400	10,200	12,400	15,500	19,900	111%
£10k	9,100	9,700	11,800	14,700	19,000	109%
£13k	8,800	9,400	11,400	14,100	18,200	108%
AA used to fund care						
No cap	900	1,000	1,200	1,400	1,600	77%
£7k	700	800	900	1,000	1,200	70%
£10k	700	800	900	1,100	1,200	71%
£13k	700	800	900	1,100	1,300	72%

The net cost to social services in 2010 would be £9.4 billion under an accommodation cost of £7,000 per year, or £8.8 billion under an accommodation cost of £13,000 per year, compared to £9.1 billion under an accommodation cost of £10,000 per year. The social services cost of the cap in 2010 would be £1.7 billion under the lower accommodation cost and £1.1 billion under the higher accommodation cost, compared with £1.4 billion under the accommodation cost of £10,000 per year. There would again be a saving to disability benefits.

The Commission recommended that the upper capital limit in residential care should be raised (from £23,250 in 2010/1) to £100,000 but that the lower capital limit (£14,250 in 2010/1) should not be raised and the minimum capital limits for home care should not be raised. People with savings above the upper capital are not eligible for local authority support. The value of the person's home is generally included in the assessed savings of care home residents but not in the assessed saving of home care users. Those with capital between the upper and lower capital limits may be eligible for council support depending on how much income they have. In assessing their income, their savings above the lower limit are treated as producing a notional income of £1 per week for every £250 of savings above the lower limit. Savings below the lower limits are fully disregarded.

Table 5 shows the estimated costs of the Commission's recommendations for a lifetime cap of £35,000 covering care costs but not accommodation costs (taken to be £10,000 per year) and an upper capital limit of £100,000 for residential care.

Table 5. Projected expenditure on social care and on disability benefits used to fund care for older people, 2010-2030, England, under a cap of £35,000 on life-time costs, an accommodation cost of £10,000 and an upper capital limit of £100,000 in care homes, in £ million at constant 2010 prices.

	2010	2015	2020	2025	2030	% growth 2010 to 2030
Social Care Users under the New Funding System						
PSS Home care users	299,700	316,100	357,800	424,000	517,600	73%
Day care users	83,200	91,900	101,600	114,200	131,600	58%
NHS care home residents	24,700	27,100	30,600	35,400	41,100	66%
PSS care home residents	262,400	282,100	311,400	354,100	414,000	58%
Privately funded residents	48,900	59,900	74,000	93,000	106,900	116%
Social Care Expenditure under the New Funding System						
NHS expenditure	4,200	4,700	5,800	7,300	9,300	120%
PSS net expenditure	9,200	9,900	12,000	14,900	19,200	108%
Private expenditure	4,100	4,800	6,100	7,800	9,700	138%
AA use to fund care services	700	800	900	1,000	1,200	73%
Total public expenditure	14,100	15,300	18,600	23,200	29,600	110%
Total spend on services	20,300	22,500	27,600	34,700	44,100	117%
Total spend on services as % of GDP	1.61%	1.56%	1.74%	1.98%	2.27%	42%
Social Care Expenditure under the Current Funding System						
NHS expenditure	4,200	4,700	5,800	7,300	9,300	120%
PSS net expenditure	7,700	8,100	9,700	11,900	15,400	101%
Private expenditure	6,800	8,000	10,200	13,400	16,700	146%
AA use to fund care services	900	1,000	1,200	1,400	1,600	77%

Total public expenditure	12,800	13,700	16,600	20,600	26,300	105%
Total spend on services	20,600	22,800	28,000	35,300	44,800	117%
Total spend on services as % of GDP	1.63%	1.58%	1.76%	2.01%	2.31%	42%

The net cost to social services of this combination of a cap of £35k and an upper capital limit of £100k for residential care would be £9.2 billion in 2010 rising to £19.2 billion in 2030. This means a cost to social services relative to the current funding system of £1.5 billion in 2010 rising to some £3.8 billion in 2032 at constant 2010 prices. Private expenditure would be lower than under the current funding system: in 2010, rather than £6.8 billion under the current system, under the Commission's proposal it would be £4.1 billion, or more realistically £4.4 billion on the basis that privately funded care home residents who reached the cap would still have to meet the difference between the fees care homes charge councils and the fees they charge self-funders. Expenditure on disability benefits used to fund care in 2010 would be £700 million under the reform as against £900 million under the current funding system.

If a cap of £35k and an upper capital limit in residential care of £100k were introduced, there would be only an estimated 60,000 privately funded care home residents in 2015 and 105,000 in 2030 as against an estimated 155,000 in 2015 and 265,000 in 2030 if the current funding system continued. This suggests that the reform recommended by the Commission would reduce the number of privately funded care home residents at a point in time by around 60%. There would be little impact on the numbers of privately funded care home admissions but many of those admitted as self-funders would reach the cap and become publicly funded (and as now some would reach the upper capital limit and become publicly funded).

The Commission also recommended that consideration be given in due course to two changes to the charging system for home care. These are that the value of the person's home should be taken into account for home care and that there should be a taper of 65% for assessed income for home care charging.

Currently users of publicly funded home care pay user charges based on their incomes and liquid assets (excluding housing wealth). Every pound of assessed income above a threshold of around £170 per week is taken into account in charging for home care for older people. This amounts to a 100% marginal 'tax' rate on income. The Commission argued that this is unfair and reduces incentives for people to take measures to boost their pension income. They recommend that a taper should be applied in the means test such that for every pound of income above the threshold only a proportion, such as 65%, should be taken as a user charge (Commission on Funding of Care and Support, 2011, pages 63-65). In modeling this scenario we assume the taper would work in a manner similar to the taper in Housing Benefit.

Table 6. Projected expenditure on social care and on disability benefits used to fund care for older people, 2010-2030, England, under a taper of 65% in the means test of income for home care, in £ million at constant 2010 prices.

	2010	2015	2020	2025	2030	% growth 2010 to 2030
Social Care Users and Expenditure under the New Funding System						
PSS Home care users	310,400	331,400	386,200	457,200	576,300	86%
NHS expenditure	4,200	4,700	5,800	7,300	9,300	120%
PSS net expenditure	7,900	8,300	10,000	12,300	16,000	102%
Private expenditure	6,700	7,900	10,000	13,100	16,300	144%
AA use to fund care services	900	1,000	1,100	1,300	1,500	73%
Total public expenditure	13,000	14,000	16,900	21,000	26,700	106%
Total spend on services	20,600	22,800	28,100	35,300	44,900	118%
Total spend on services as % of GDP	1.63%	1.58%	1.76%	2.01%	2.31%	42%
Expenditure under the Current Funding System						
NHS expenditure	4,200	4,700	5,800	7,300	9,300	120%
PSS net expenditure	7,700	8,100	9,700	11,900	15,400	101%
Private expenditure	6,800	8,000	10,200	13,400	16,700	146%
AA use to fund care services	900	1,000	1,200	1,400	1,600	77%
Total public expenditure	12,800	13,700	16,600	20,600	26,300	105%
Total spend on services	20,600	22,800	28,000	35,300	44,800	117%
Total spend on services as % of GDP	1.63%	1.58%	1.76%	2.01%	2.31%	42%

As shown in table 6, the numbers of council funded home care users would rise, from around 310,000 in 2010, to around 575,000 in 2030 under this scenario, compared to 285,000 in 2010 and

485,000 in 2030 under the current funding system. Net expenditure by social services under a 65% taper would be £7.9 billion in 2010 rising to £16.0 billion in 2030. The cost of this change to social services would be £200 million in 2010 rising to some £600 million in 2032 at constant 2010 prices.

The Commission believed that 'there may be a case for housing wealth to be included in the domiciliary means test in the longer term (once the cap is in place)' (Commission on Funding of Care and Support, 2011, page 63). They argued that the inclusion of housing assets in the means test ensures that all types of wealth are treated consistently and avoids creating incentives to hold more wealth in housing than people might otherwise want to hold. They recognised however that taking the house into account for domiciliary care would be difficult as the use of housing assets to pay for care is an emotive issue. Moreover, since housing assets are illiquid, it is difficult to access them without selling the home or taking out an equity release product, which usually involves either an interest-bearing loan or sale of part of the housing equity. If housing wealth were to be taken into account in the home care means test, it would probably require that the system of interest-free loans from councils, known as deferrals, which are currently available from many councils for residential care be extended to home care.

Table 7. Projected expenditure on social care and on disability benefits used to fund care for older people, 2010-2030, England, where housing assets are taken into account in the means test for home care, in £bn at constant 2010 prices.

	2010	2015	2020	2025	2030	% growth 2010 to 2030
Social Care Users and Expenditure under the New Funding System						
PSS Home care users	144,800	133,900	130,900	147,400	191,000	32%
NHS expenditure	4,200	4,700	5,800	7,300	9,300	120%
PSS net expenditure	6,500	6,600	7,700	9,300	12,000	84%
Private expenditure	8,000	9,500	12,200	15,900	20,100	150%
AA use to fund care services	900	1,100	1,200	1,500	1,700	85%
Total public expenditure	11,600	12,300	14,700	18,100	22,900	97%
Total spend on services	20,500	22,600	27,800	35,000	44,400	117%
Total spend on services as % of GDP	1.61%	1.57%	1.75%	1.99%	2.29%	42%
Expenditure under the Current Funding System						
NHS expenditure	4,200	4,700	5,800	7,300	9,300	120%
PSS net expenditure	7,700	8,100	9,700	11,900	15,400	101%
Private expenditure	6,800	8,000	10,200	13,400	16,700	146%
AA use to fund care services	900	1,000	1,200	1,400	1,600	77%
Total public expenditure	12,800	13,700	16,600	20,600	26,300	105%
Total spend on services	20,600	22,800	28,000	35,300	44,800	117%
Total spend on services as % of GDP	1.63%	1.58%	1.76%	2.01%	2.31%	42%

As shown in table 7, the numbers of council funded home care users would be around 145,000 in 2010 and 190,000 in 2030 under this scenario as against 285,000 in 2010 and 485,000 in 2030 under

the current funding system. This means that taking into account housing wealth substantially reduces the number of LA funded home care users. Net expenditure by social services if housing assets were taken into account for home care would be £6.5 billion in 2010 rising to £12.0 billion in 2030. This means a saving to social services relative to the current funding system of some £1.2 billion in 2010 rising to some £3.4 billion in 2032 at constant 2010 prices.

Distributional Analysis

To assess the distributional effects of changes to the funding regime we analyse the simulated financial gains to care recipients according to their position in the income distribution specific to their age group. The definition of income used here is the net income of the family unit (single older person or older couple) that would be received by the unit when living at home without any care needs. AA/ DLA, and associated additions to means-tested benefits are not included. To include them without any allowance for the costs of disability that they are designed to address, would overstate recipients' living standards (Stapleton et al. 2008; Hancock and Pudney 2010). Net income for this purpose includes investment income but does not take account of housing wealth. It is adjusted for composition of the family unit using the OECD modified equivalence scale (Haagenars *et al.* 1994) of 1 for the first adult, 0.5 for each subsequent adult or child aged at least 14 years and 0.3 for each younger child.

We classify care recipients by their position in the income distribution specific to their age group, rather than by their position in the income distribution for the whole population because we are examining reforms which affect only older people. Thus our analysis assesses the extent to which *among the age group affected* gains from the proposed reforms would be concentrated on those with relatively high or low incomes for that age group. In the base year, only 39% of those aged 65+ who were in the top income quintile for their age group, also had incomes in the top income quintile for the whole population; 54% had incomes in the fourth quintile for the whole population and 7% in the third quintile. However, the proportion with incomes in the lowest income quintile for their age group who were also in the lowest quintile for the whole population was only 3%, with 97% of them having incomes in the second quintile for the whole population. Thus 'high income' older population do not all have high incomes by the standards of the population as a whole, but 'low income' older people are unlikely to have incomes that are amongst the lowest by the standards of the whole population.

We also analyse the effects of the reforms by housing tenure and by whether the person receiving care has a partner living with them. These distinctions are particularly important for residential care because housing wealth is included in the asset test (after the first 12 weeks), unless a qualifying relative (most frequently a partner) continues to live in the home.

Gains from the reforms are measured as the absolute change in disposable income, net of contribution to care home fees. AA/DLA and associated additions to means-tested benefits are included in disposable income for this purpose, because the reforms may change whether such income is received. Since some of the benefit of the reform derives from a slower depletion of capital, disposable income includes an assumed 2% real return on any capital that is left at the point that we 'observe' recipients of care. Note that this presentation is different from that used in the

Commission's report which drew on the PSSRU microsimulation model, a separate model not used in the research described in this paper (see Forder and Fernandez 2011).

In this paper we focus on the distributional effects for the base year. Figures 1 to 3 show the distribution of weekly gains for care home residents of the variants on the reform which involve caps of £35,000 on liability for care costs. They all benefit home owners and those without partners most since these are the groups who pay most under the current system. The gains increase with income level although do not vary greatly in the lowest income quintiles. The gains from the cap are much smaller for home care recipients (figures 4-6) and for them there is little difference in the gains for home owners and non owners. This is because housing wealth is not included in the asset test for home care under the current funding system. Gains are highest in the highest income quintile but lowest in the middle income group. This may be because there are people in the lowest income groups who have financial assets which disqualify them from state help who thus gain from the cap.

Figures 7-9 show the distribution of gains from the two home care funding reforms. Clearly the inclusion of housing wealth in the asset test for home care would lead to substantial losses. Figure 9 suggests that these losses would be smallest (but at a mean of £26 per week, which is not negligible) in the highest income group –because they are more likely to be meeting their care costs from income and are unaffected by the inclusion or exclusion of housing wealth in the means test. Losses are larger in the lower income groups. The gains from the 65% taper on disposable income are fairly even across income groups and between home owners and non home owners. This reform is more beneficial to home care recipients without partners than those who have partners.

Figure 1

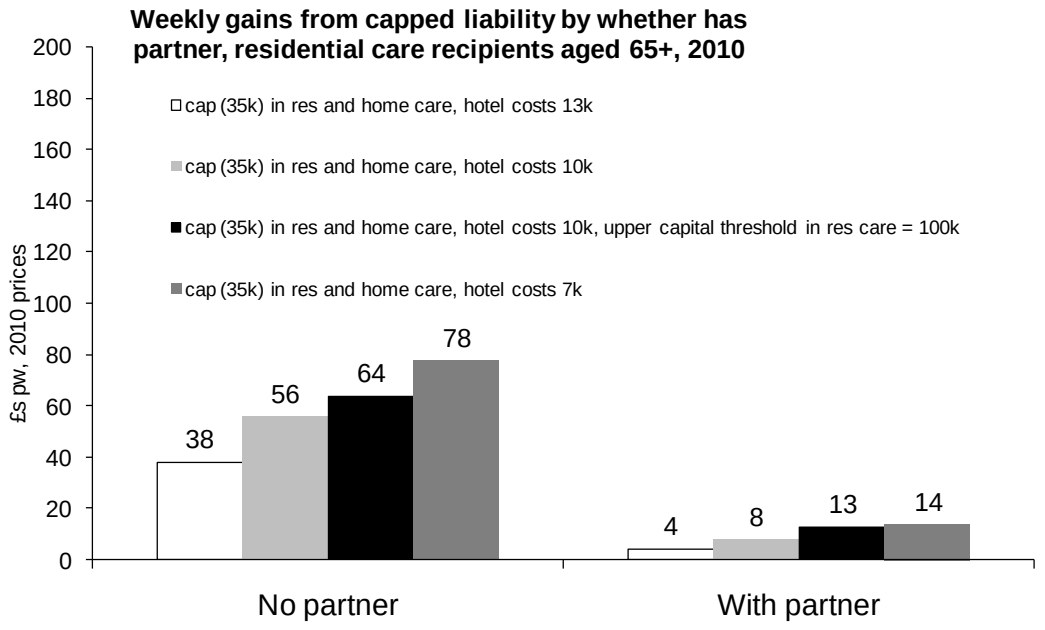


Figure 2

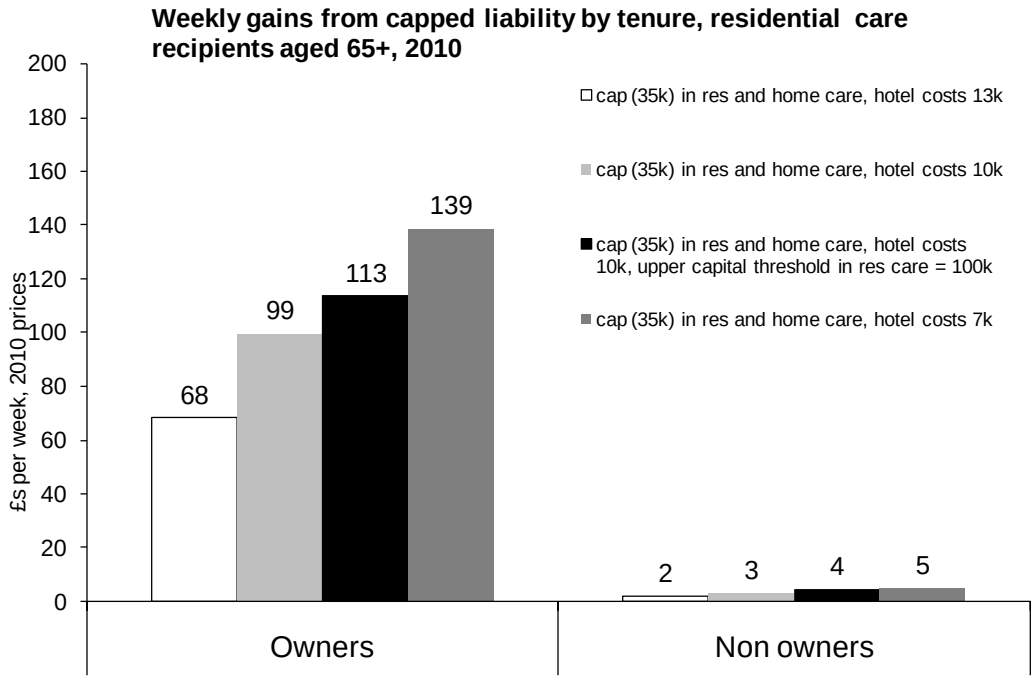
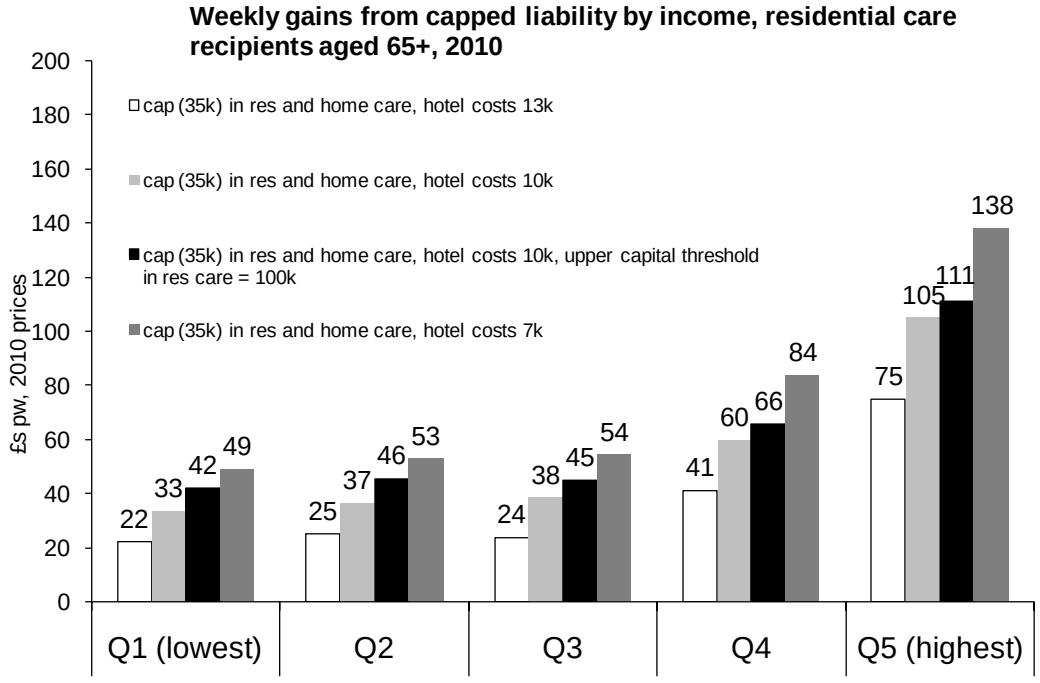


Figure 3



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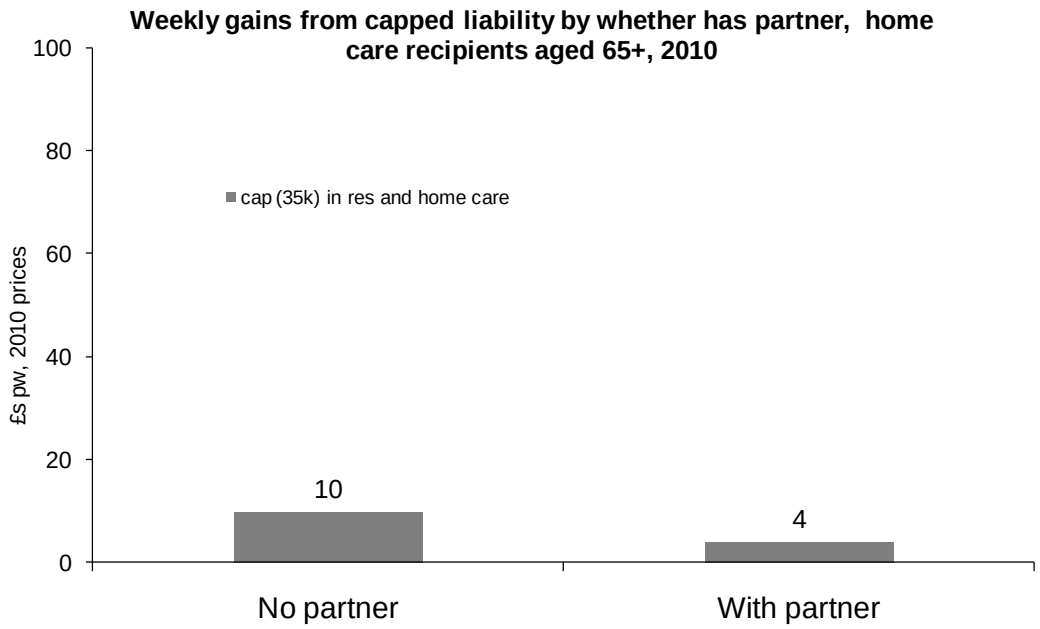


Figure 5

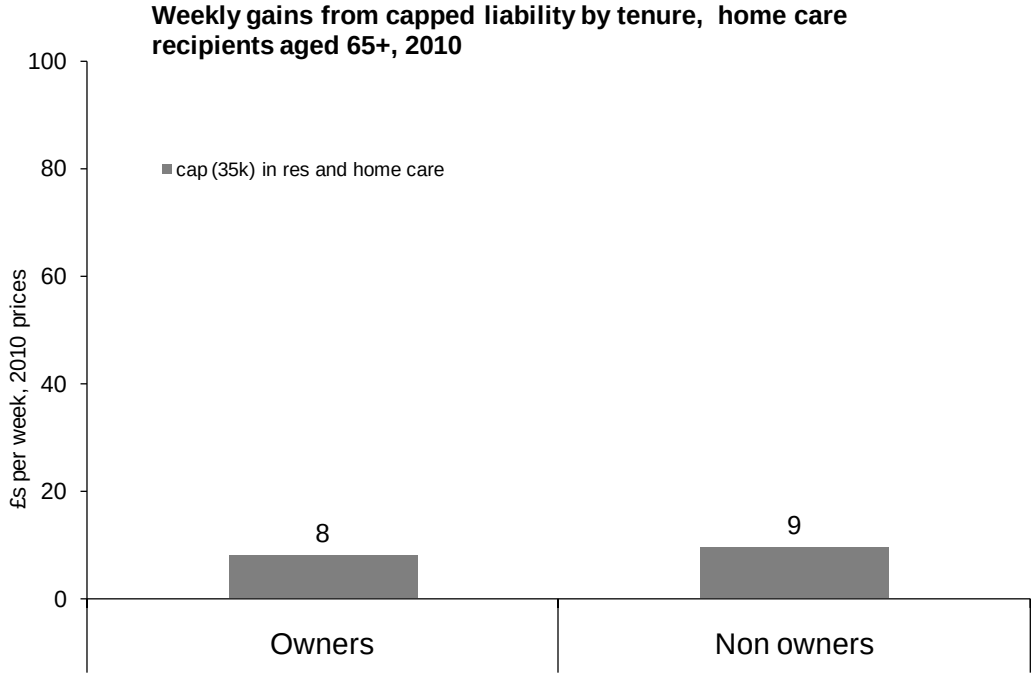


Figure 6

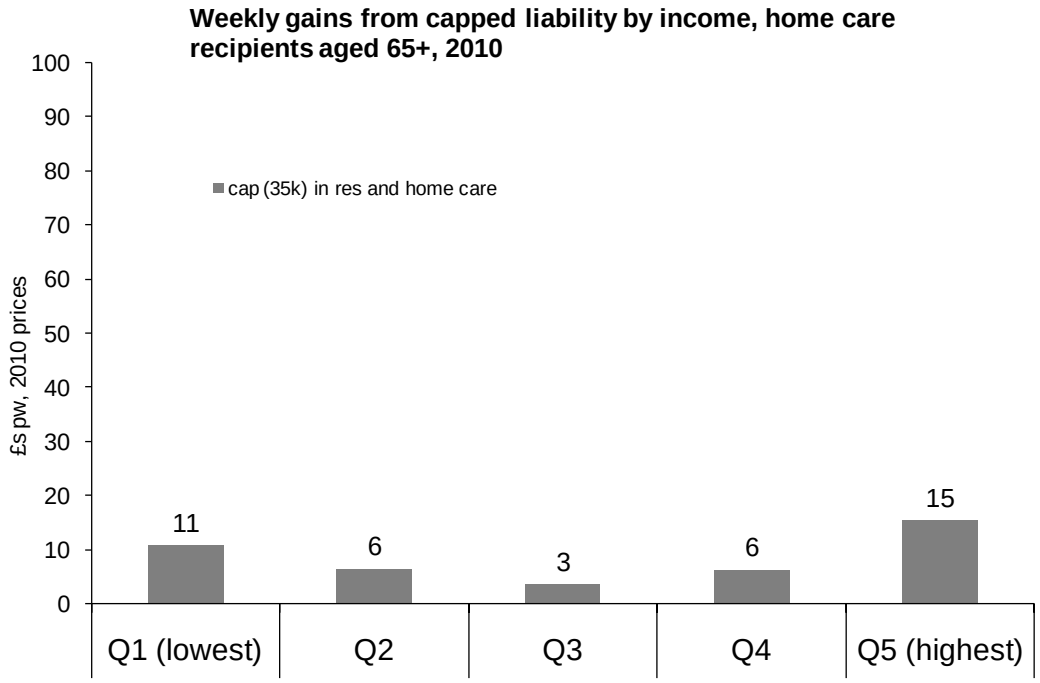


Figure 7

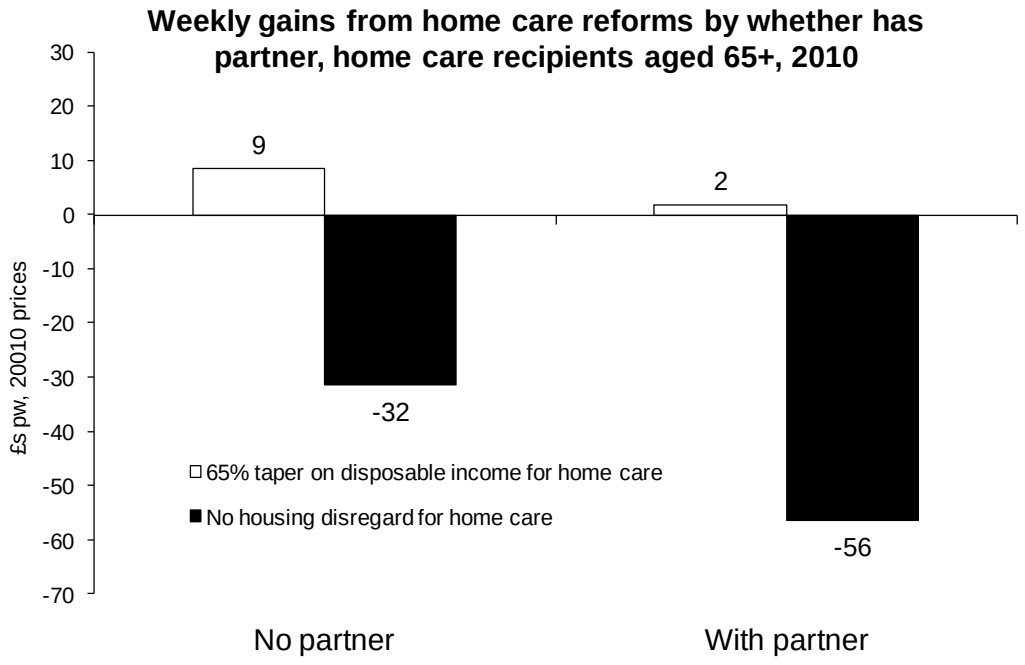


Figure 8

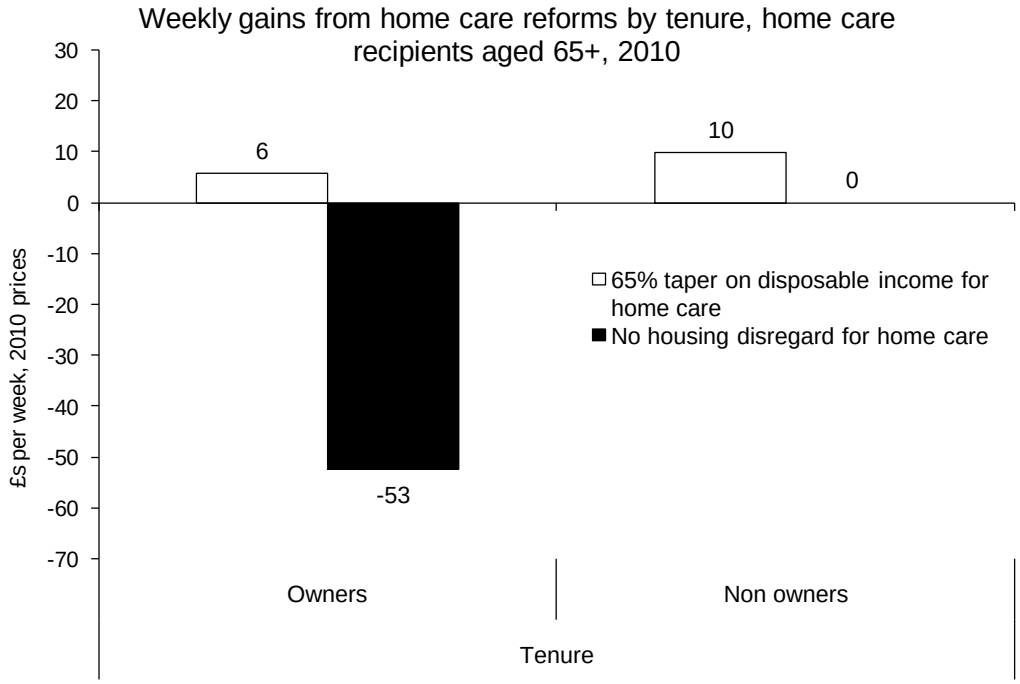
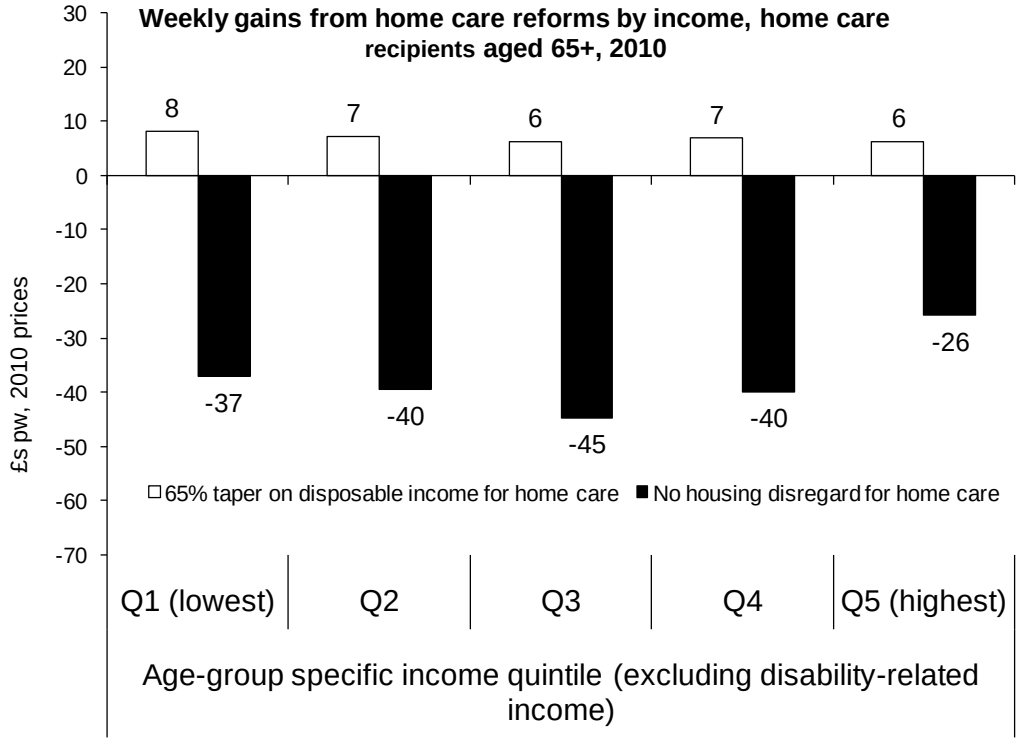


Figure 9



6. Conclusions

The models produce projections of future public expenditure on long-term care for older people and disability benefits based on a specified set of base case assumptions. This set of assumptions seems plausible but is clearly not the only possible set. This means that the projections should not be regarded as forecasts of the future.

Public expenditure on social services for older people is projected to rise under the current funding system from around £7.7 billion (0.6% of GDP) in 2010 to £15.4 billion (0.8% of GDP) in 2030 in constant 2010 prices and under a set of base case assumptions about trends in the drivers of long-term care demand and in the unit costs of care services. Total expenditure on long-term care for older people, covering public and private expenditure on social services and long-term health services and disability benefits used to fund care, is projected to rise from £20.6 billion (1.63% of GDP) in 2010 to £44.8 billion (2.31% of GDP) in 2030, under base case assumptions and the current funding system.

The sensitivity analysis shows that projected future demand for social services and disability benefits for older people is sensitive to assumptions about future prevalence rates of disability. Work in collaboration with epidemiologists carried out as part of the MAP 2030 project suggests that the assumption of unchanged age-specific prevalence of disability in the context of substantial decreases in mortality rates is not a pessimistic assumption but may be optimistic.

The analysis shows that the numbers of disabled older people receiving informal care are projected to approximately double over the next 20 years if the probability of receiving remained constant. It is not clear however that the supply of informal care will rise to meet this demand (Pickard *et al* 2007). Informal care, particularly by the adult children of disabled older people, may decline in future, as a result of such factors as women's rising participation in the labour market. If supply of informal care did not increase to meet demand, the need for formal services would rise faster than under the base case set of assumptions.

The Commission's recommendation for a cap on life-time care costs of £35,000 and an increase in the upper capital limit for residential care to £100,000 would involve increased net public expenditure on social care of around £1.5 billion in 2010 rising to around £3.7 billion in 2030, at constant 2010 prices; assuming that as now disability benefits would cease to be paid to care home residents receiving LA support, there would be an offsetting saving on disability benefits of around £200 million in 2010 and £400 in 2030. This reform would reduce the number of privately funded care home residents at a point in time by around 60%. There would be little impact on the numbers of privately funded care home admissions but many of those admitted as self-funders would reach the cap and become publicly funded (and as now some would reach the upper capital limit and become publicly funded).

The direct financial gains from this reform would be concentrated on home-owners, people in the higher income quintiles and people with a partner, although the cap could benefit a wider group of people as everyone would know the maximum life time costs that they face.

These findings need to be treated with some caution. They are based on a set of assumptions about future socio-economic and demographic trends and do not allow for the potential impact of rising expectations or behavioural changes in response to the reform.

These expenditure projections do not constitute the total costs to society of long-term care for older people. That would require inclusion of the costs of a wider range of services to a wider range of public agencies and service users and the opportunity costs of informal care. It should also be stressed that no allowance has been made here for changes in public expectations about the quality, range or level of care.

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Description of the PSSRU long-term care projections model

The PSSRU long-term care projections model aims to make projections of four key variables: the future numbers of disabled older people, the likely level of demand for long-term care services and disability benefits for older people, the costs associated with meeting this demand and the social care workforce required.

The model does not make forecasts about the future. It makes projections on the basis of specific assumptions about future trends. The approach involves simulating the impact on demand of specified changes in demand drivers, such as demographic pressures, or specified changes in policy, such as the introduction of free personal care. It does not involve forecasting future policies or future patterns of care.

The model is cell-based (a macro-simulation model) and takes the form of an Excel spread-sheet. It consists of five main parts. The first part estimates the numbers of older people with different levels of disability by age group, gender, household type and housing tenure. The second part estimates the levels of long-term care services required, by attaching a probability of receiving health and social care services to each cell, and disability benefits. The third part of the model estimates total health and social services expenditure, and, in the fourth part, total expenditure is allocated to the various sources of funding. Finally, a fifth part relates to the social care workforce.

The first part of the model divides the older population according to a number of characteristics relevant to the use of services, such as the level of functional disability (measured in terms of activities of daily living), marital status, whether living alone, with a partner or children, housing tenure, and receipt of informal care by spouses, children or others. The model uses the Government Actuary's Department (GAD, 2009) 2008-based population projections as the basis for the numbers of people by age band and gender in each year under consideration until 2040.

The projected older population by age band and gender are separated into disability groups. Disability is a crucial factor in considering need for long-term care, as it is disability rather than age which influences need for care. The model uses as a measure of disability the ability to perform activities of daily living (ADLs) and instrumental activities of daily living (IADLs). The section on disability in the model uses data from the 2001/2 General Household Survey (GHS). It includes six categories of functional disability, ranging from no disability to inability to perform two or more activities of daily living (ADL) without help.

The projections of household composition/informal care in the model are driven by the 2008-based ONS marital status and cohabitation projections (ONS, 2010). The household type/informal care classification in the model is based, in the first instance, on *de facto* marital status. Older people who are married or cohabiting are distinguished from those who are single, separated, divorced or widowed. The two marital status groups, those who are *de facto* married and those who are *de facto* single, are broken down into five household types using official national statistics and the 2001/2 GHS.

The five household type groups are then further broken down by receipt of informal care to produce an eight-fold classification by household type and informal care. Informal care in the model is based

on analyses of receipt of unpaid help with domestic tasks by disabled older people using the 2001/2 GHS. Three principal sources of informal care are identified: care from children, from spouses and from others. The projections assume a steady state regarding the propensity, within household type/informal care groups, to receive care from a spouse, child, spouse and child, or others.

The model includes, for those living in private households, a simple breakdown by housing tenure, between those living in owner-occupied tenure and those living in rented accommodation. One reason for the inclusion of housing tenure is that it can be regarded as a simple proxy for socio-economic group. Another is that it is relevant, in the case of older people living alone, to the division between those who fund their own residential or nursing home care and those who are funded by their local authority. The current means test for public support in care homes generally takes account of the value of the person's home (unless it is occupied by their spouse or an older or disabled relative). This means that older home-owners who live alone generally need to fund their residential care privately, while older tenants and older home-owners living with their spouse are often eligible for public funding. The rates of home ownership, by age, gender and marital status, are from the Family Resources Survey with projected rates for future years produced by the Caresim model.

The second part of the model projects the volumes of services demanded by combining the output of the first part of the model (the projected numbers of older people by disability, informal care/household type and other characteristics) with functions that assign receipt of services to each sub-group of the older population. The services covered include a range of health and social services relevant to meeting long-term care needs. Disability benefits are also included.

Use of official data on supported residents, 2001 Census data and data from PSSRU surveys of care homes enabled the proportion of disabled older people in residential home care, nursing home care and long-stay hospital care to be estimated for the model base year. The number of older people in these care settings was expressed as a proportion of the overall number of highly disabled older people (those unable to perform two or more ADLs without help or in care homes), for each subgroup by age band, gender, previous household type and previous housing tenure. These proportions were then used in making projections for future years.

The probability of receipt of each non-residential service was estimated through multivariate (logit) analysis of the 2001/2 GHS data. Logistic regression analyses were run to determine the factors associated with receipt of each of the services: local authority home help, private help, district nursing services, meals, day centre services, chiropody, and any one or more of these services (other than chiropody). In each analysis, the dependent variable was receipt of the service. The intensity of service use was not accounted for at this stage. Separate analyses were undertaken for disabled and non-disabled older people, as few non-disabled older people received services other than chiropody and private domestic help. The independent variables were age, gender, household type/informal care, housing tenure and, for the disabled sub-sample, level of disability.

Demand for non-residential services was calculated by using the fitted values from the logistic regression models as the estimated probabilities of receipt of each service by age band, disability and the other factors described above. These fitted values were then multiplied by the projected numbers of older people within each cell by age band and other needs-related circumstances to

produce estimates of the numbers of service recipients. The estimated numbers of recipients of local authority home care, day care and meals were grossed to match official data.

Finally, these estimates of numbers of service recipients were multiplied by estimates of the average intensity of service receipt, i.e. the average number of home help hours or district nursing visits per recipient week. Information on intensity of service receipt by disability was also obtained from the 2001/2 GHS. For local authority home care, day care and meals, the GHS data was grossed up to match the Department of Health data on average hours, sessions or meals per client week.

The third part of the model projects total expenditure on the formal services demanded, applying unit costs of formal care to the volume of services projected in the second part of the model. The fourth part of the model breaks down projected aggregate expenditure on services by source of funding: NHS, social services and service users. The costs of the health services included are assigned to the NHS. The costs of social services are divided between personal social services and service users. As there are no national data on the quantities of privately funded care, the projections for privately funded care, especially on non-residential care, need to be treated with caution as it is not possible to verify that all privately funded care is captured by the model.

Residents of residential care and nursing homes and home care users are divided into privately and publicly funded residents through analyses using the Caresim model. The breakdown for 2009 is based on official data. Privately funded residents are assumed to meet their care home fees from their own funds (including disability benefits), except that the NHS meets nursing costs in nursing homes. Expenditure on local authority funded residential care and home care is divided between local authority social services and users on the basis of Caresim modelling. The full costs of privately funded residential and nursing home care and private domestic care and a proportion of the costs of all other social services are thus assigned to users.

Estimated net and gross expenditure on local authority funded services plus expenditure on assessment and care management is grossed to match local authority PSS EX1 expenditure data for 2009/0. The grossing factors estimated for 2009/0 are applied to all projection years.

Expenditure on disability benefits is estimated separately, by multiplying the numbers of recipients by the weekly average amounts. This expenditure is split between sums used to fund care and sums not so used through CARESIM modelling.

A fifth part of the model makes projections of the numbers of social care (but not NHS) staff required to provide the projected volume of social services, for different groups of social care staff. For care staff, it is assumed that the ratio of staff to volumes of care such as home care hours remains constant over time. For administrative and managerial staff, it is assumed that the ratio of such staff to care staff remains constant over the projection years.

Description of the CARESIM microsimulation model

CARESIM is a microsimulation model which uses a pooled sample of 25,747 people aged 65+ living in England from the 2002/3, 2003/4 and 2004/5 UK Family Resources Survey (FRS). Details of the model can be found in Hancock et al. (2007). Information on sample members' incomes, assets (including estimates we make of their housing wealth) and other relevant characteristics are used to

simulate their liability to pay for care, should care be needed, under the current and alternative means tests. The simulations are performed for a base year and for future years. Money values from the FRS are uprated to the prices of the base year. For future years the sample is 'aged'. Death of sample members is simulated using Monte Carlo techniques in which the probability of death follows official 2008-based projections of age and gender specific mortality rates (ONS, 2010)[4]. The evolution of gross incomes and capital is modelled under certain assumptions and taking account of the inheritance of pension rights and assets when a partner is simulated to die.

As explained in the main text, each sample member is used in simulations of their liability to pay towards care in each of three types of care homes and four levels of home care. Results are combined using as weights the PSSRU model projections of the number of older people receiving each type of care, according to age group, gender, marital status and housing tenure. When simulating liability to pay towards care in a care home, each sample member is allocated an uncompleted duration (in weeks). The durations are based on analysis of the 2000 Health Survey for England (HSE) which included a sample of care homes and for each resident recorded how long he/she had been in the home within certain bands. Predictions of exact (in weeks) lengths of stay for HSE care home residents were formed from an interval regression to estimate the underlying distributions of uncompleted lengths of stay, distinguishing nursing and residential homes. These distributions were used to assign randomly e a length of stay, conditional on type of care home. As used in this paper no other characteristics of the individual are taken into account in this assignment which is a potential limitation[5]. Liability to contribute to care home fees is calculated allowing for asset depletion to have taken place during the assigned time in a care home. In effect for each projection year, this mimics the observation of a cross-section of care home residents, producing results which can be used with the PSSRU model.

For home care, information on length of time in receipt of services taken from the 2006 Information Centre's User Experience Survey is used to determine time in receipt of home care. As for residential care, the approach mimics a cross-section of home care recipients. Liability to pay towards home care is assessed at that point, allowing for capital depletion to have occurred.

Underlying entitlements to AA/DLA are also assigned for each type of care home place using Monte Carlo techniques. In the absence of up-to-date data on receipt of AA/DLA in care homes we assume that in nursing homes 50% of residents are entitled to the high rate of AA and a further 25% to the lower rate of AA/middle rate of DLA, with the corresponding percentages for residential homes being 40% and 30%.

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[4] For each future year of the simulation, the probability that a sample member is no longer alive is taken from these projections based on the sample member's gender and age in the base year. A uniform random number is generated and compared to this probability. If the random number is less than the appropriate probability, the sample member is assumed to have died by the simulation year.

[5] Note that the application of weights from the PSSRU model means that the association between socio-economic characteristics and receipt of different types of care is taken into account. It is only any association between such characteristics and duration of care in a given type of care home, conditional on being in that type of care home, that is not allowed for.

Income tax liability and entitlement to means tested social security benefits are then simulated to arrive at net income on which liability to pay for care home fees and home care is assessed. In determining care home residents' contributions to their care home fees we assume that they first allocate income apart from the personal expenses allowance, to these costs and draw on capital (financial assets followed by housing wealth) only if income is insufficient. For self-funders in receipt of AA or DLA, our assumption is that they use that income before other income. For home care we also assume that AA/DLA in excess of assumed disability-related expenditure is used to meet home care charges before other income which in turn is used before capital is drawn upon.

Because it is more difficult to predict the future incomes of people who are not yet retired than it is for those who are already drawing pensions, the sample is not refreshed. By 20 years from the base year, the simulations are representative only of people aged 85 and over. The estimates from CARESIM that are passed to the PSSRU model are therefore used as follows. For each projection year up to 2020, a weighted average across the three oldest age groups (75-79,80-84, 85+) of the proportion of care recipients entitled to LA support was derived using as weights the proportions of care recipients which the PSSRU model projects would be accounted for by each age group. For 2025, data for the oldest two age groups were used and for 2030, data for the oldest group. The trend over time in the resulting average is then applied to the base year proportion entitled to LA funding assumed in the PSSRU model. Weighted averages for the shares of costs met by LA-supported residents are derived in a similar manner.