Landman Economics

The costs of smoking to the social care system and related costs for older people in England: 2021 revision

Written by Howard Reed of Landman Economics for ASH

March 2021

Acknowledgements

This report updates and extends previous versions of the report *The Costs of Smoking to the Social Care System and Society in England*, published in August 2014 (version 1) and March 2017 (version 2), May 2019 (version 3).

The author would like to thank Hazel Cheeseman, Deborah Arnott and Ciaran Osborne of ASH for useful comments on earlier drafts of this report.

The data from the English Longitudinal Study of Ageing (ELSA) used in this report were made available through the UK Data Archive. ELSA was developed by a team of researchers based at the National Centre for Social Research, University College London and the Institute for Fiscal Studies. The data were collected by the National Centre for Social Research. The funding is provided by the National Institute of Aging in the United States, and a consortium of UK government departments coordinated by the Office for National Statistics. The developers and funders of ELSA and the Archive do not bear any responsibility for the analyses or interpretations presented here. See Marmot *et al* (2013) for further details.

Data from the 2018 Health Survey for England were made available through the UK Data Archive. The HSE is sponsored by NHS Digital and the principal investigators are NatCen Social Research and University College London Department of Epidemiology and Public Health. For more details see NatCen and UCL (2018).

This research was funded by the Department for Health and Social Care.

Contents

_Toc63412064

Introduction

Smoking is associated with a range of costs to the economy in general and the public finances, which arise due to the health risks associated with tobacco consumption and the associated increases in mortality and morbidity for the smoking population[1] (Reed 2010; DHSC 2017). Previous work on the costs of smoking in the UK has focused primarily on the costs to the National Health Service (NHS) and the negative effects of smoking on productivity due to higher working-age morbidity and greater employee absenteeism, resulting in lower economic output and lower tax receipts for the Exchequer. This report looks at the costs of smoking to the social care system in England and also at the burdens which smoking imposes in the form of additional needs for **informal care** – which is mainly undertaken by the families of carers - and additional **unmet need** for social care.

This report updates and expands on previous research on the costs of smoking to the social care system published by ASH in 2014, 2017 and 2019. Prior to ASH's 2014 report *The costs of smoking to the social care system in England*, the social care aspect of smoking-related costs had not been estimated in previous empirical research, with the exception of the social care costs of looking after people who have suffered smoking-related strokes (Saka *et al*, 2009). This report considers the costs of smoking to English local authorities, but also estimates the additional costs which smoking imposes on people who pay for their own social care (self-funders), the extent to which there is unmet need for care among smokers compared to non-smokers, the extent of the burden of unpaid care which smoking gives rise to among the families and friends of smokers, and the additional expenditure that would be necessary to meet unmet care needs arising due to smoking. In this framework, the cost of self-funded care, the implicit cost of informal care and the implicit cost of meeting unmet care needs all represent *savings* to local authorities, in the sense that local authority would have to be much higher to meet all the social care needs arising due to smoking which are currently met by a combination of self-funding and informal care, or which are not currently met at all.

This research uses data on smoking propensity and receipt of social care services from two English micro-datasets: the English Longitudinal Study of Ageing (ELSA) and the Health Survey for England (HSE) to estimate the propensity of smokers and ex-smokers aged over 50 in England (in the ELSA data) and over 65 (in the HSE data) to receive domiciliary and residential social care compared with people who have never smoked. This information is combined with data on social care unit costs from the National Audit Office and NHS Digital to estimate a number of results:

[1] there are also certain negative externalities associated with smoking which increase costs, for example passive smoking and fire costs.

- the proportion of public expenditure on social care which is attributable to smoking (using ELSA);
- the additional burden on unpaid carers due to greater care needs for smokers relative to non-smokers (using ELSA);
- the implicit additional costs of greater unmet care needs for smokers compared to non-smokers (using HSE).

The structure of this report is as follows.

Section 1 gives an overview of the methodological approach, while Section 2 gives details of the ELSA data and explains how eligibility for receipt of local authority-funded social care services is modelled. Section 3 gives details of the HSE data and explains how unmet need is modelled. Section 4 introduces the NHS Digital data and analyses social care spending by category, focusing in particular on the split between domiciliary care (care which people receive in their own homes or in locations such as day centres which they attend while still being resident at home) and residential care (care which people receive in a residential care home). Section 5 presents regression results for the relationship between smoking and receipt of (informal and formal) domiciliary care, as well as a regression analysis of smoking and entry into residential care. Section 6 presents estimates for the cost of smoking to the various components of the care system, and also compares the results to other estimates of the cost of smoking (e.g. to the NHS). Section 7 offers conclusions.

1 Overview of methodology

A panel logistic (random effects) regression specification is used with the ELSA data for Waves 7,8 and 9 to model social care use and several other variables relating to social care use, controlling for other factors which might affect social care use (such as age, gender, family composition and health status). For the regression analysis of unmet need in the HSE data, a cross-sectional logistic regression specification is used with several pooled waves of the HSE sample. These methods are essentially extensions of the methodology used to estimate costs of smoking to the NHS in England by Callum, Boyle and Sandford (2010), updated by Public Health England for DHSC's 2017 *Tobacco Control Plan.* The extent of social care needs, use of social care services and unmet need for social care for current and ex-smokers is compared with that of never-smokers and the excess attributed to smoking. The variables used to measure social care needs, service use and unmet need in the ELSA and HSE data are described in Section 2 below. Excess use of local authority-funded care by current and ex-smokers relative to people who have never smoked is measured in the form of a relative risk. Together with exposure to these risks – the proportion of the population who are current or ex-smokers – an estimate of the proportion attributable to smoking can be obtained by the following standard formula:

$$\textit{Attributable proportion} = [p_{cur}(r_{cur} - 1) + p_{ex}(r_{ex} - 1)]/[1 + p_{cur}(r_{cur} - 1) + p_{ex}(r_{ex} - 1)]$$

where p_{cur} = proportion who are current smokers; r_{cur}= relative risk for current smokers compared with never-smokers; p_{ex}= proportion who are ex-smokers; and r_{ex}= relative risk for ex-smokers compared with never-smokers.

We use a number of different specifications because certain variables, such as health status (and perhaps low income) may be endogenous to smoking status rather than being treated as an exogenous control variable. To the extent that smokers impose costs on the social care system because of being in poorer health (conditional on age) than non-smokers, this is arguably something which should be included in the calculation of costs to the social care system rather than being treated as an exogenous control variable. On the other hand, smoking is not the only determinant of health status, so there is a case for including health variables as controls.

The modelling also takes account of the fact that the relative risks of receiving social care for recent ex-smokers (defined in this report as smokers who quit within the last 10 years) are more similar to current smokers than it is for smokers who quit more than 10 years ago. Thus, most of our modelling classifies recent ex-smokers alongside current smokers with the split between p_{cur} and p_{ex} being defined as

(current smokers plus ex-smokers who quit in the last ten years) vs (ex-smokers who quit more than 10 years ago)[2].

The attributable proportions from this model are then applied to data on overall expenditure on various types of social care from the National Audit Office and data on unit costs for social care from NHS Digital to estimate the total cost of smoking to the social care system and NHS services.

The calculation is carried out separately for domiciliary care and for residential care. Section 2 gives details of the variables used in ELSA, while Section 3 covers the HSE variables. Section 4 explains the care and service cost estimates used in the report and the sources they are drawn from.

[2] The choice of 10 years as the cut-off point to distinguish between ex-smokers who quit recently and those who quit longer ago was determined by analysis of the characteristics of the two groups of ex-smokers in the ELSA data, as shown in Chapter 2 of this report.

2 The ELSA data

The analysis of care needs and receipt of domiciliary and residential care services in this report uses data from the English Longitudinal Survey of Ageing (ELSA). This chapter introduces the ELSA data and presents some basic descriptive statistics.

2.1 The scope and sampling frame for ELSA

ELSA is a large-scale longitudinal panel survey of people aged 50 and over and their partners. The survey began in 2002 and nine waves of data have so far been released. Table 2.1 gives details of the number of interviews achieved in each wave and when the fieldwork took place. The sample size increased in waves 3 and 4 as the result of adding additional 'refreshment' samples to increase the size of the dataset and maintain representativeness of the over-50 population (Natcen, 2016).

The original sampling frame for ELSA covered only individuals living in private households, but from wave 3 onwards, follow-up interviews have been conducted with individuals moving into residential care homes (making the ELSA dataset the first survey dataset in the UK to contain a subsample of the care home population).

Table 2.1. ELSA waves 1-9: fieldwork dates, sample size and number of interviews in residential care homes

Wave	Date of fieldwork	Number of successful interviews	Number of residential care interviews
1	March 2002 – March 2003	12,099	n/a
2	June 2004 – July 2005	9,432	n/a
3	May 2006 – August 2007	9,772	48
4	May 2008 – July 2009	11,050	68
5	June 2010 – July 2011	10,274	72
6	May 2012 – June 2013	10,601	75
7	June 2014 – May 2015	9,670	64
8	June 2016 – June 2017	8,445	58
9	June 2017 – June 2019	8,736	54

Source: Natcen (2020)

Table 2.1 shows that care home interviews make up a very small subsample of the total ELSA sample in each Wave from Wave 3 onwards – less than 1 per cent of all respondents in any given wave.

Because the ELSA dataset is a panel, it can be used to model the factors affecting receipt of social care in a more robust fashion than a cross-sectional model. The modelling of domiciliary care in this report uses the ELSA data for Waves 7, 8 and 9 but not the earlier waves. This is because there were substantial changes in the interview questions regarding payment arrangements for formal care between Waves 6 and 7. These made the data more robust but also led to incompatibilities in some of the variables before Wave 7 compared to after Wave 7, so it was easiest to use just Waves 7, 8 and 9 for the domiciliary social care models. For residential social care we use Waves 3 to 9 because of the limited number of residential care interviews in each wave of the dataset.

2.2 Smoking prevalence

Table 2.2 shows smoking prevalence in waves 7, 8 and 9 of ELSA for the sample of respondents aged 50 and over and also for the subsample aged 65 and over (the latter statistics being primarily for comparability with the HSE statistics presented in Table 3.2 below). The table shows the proportions of **current** smokers, **ex-**smokers and people who have **never** smoked. The ex-smokers are further subdivided into ex-smokers who quit less than 10 years ago and ex-smokers who quit 10 or more years ago. Table 2.2 shows a decline in the proportion of current smokers in the full ELSA sample aged 50 and over from around 13% to just over 11% between Waves 7 and 8. Meanwhile the proportion of current smokers aged over 65 also declined, from just over 9% to just under 8%. Between Waves 8 and 9 the proportion of current smokers was relatively stable in both age groups. In Waves 7 and 8 under 39% of the full ELSA sample had never smoked; this proportion increased to 41.5% in Wave 9. Around one-third of the over-65 sample had never smoked in Waves 7 and 8; this proportion increased to just over 34% in Wave 9.

Table 2.2. ELSA, Waves 7, 8 and 9: smoking prevalence, respondents aged 50 and over and subsample aged 65 and over

	Aged 50 and over			Aged 65 and over		
Year	**Wave 7**	**Wave 8**	**Wave 9**	**Wave 7**	**Wave 8**	**Wave 9**
Never smoked	38.8%	38.5%	41.5%	33.2%	33.3%	34.4%
Ex smoker	48.1%	50.2%	47.0%	57.6%	58.8%	57.9%
Of which:						
Quit <10 years ago	*5.9%*	*6.5%*	*4.9%*	*6.8%*	*6.6%*	*6.1%*
Quit 10+ years ago	*42.2%*	*43.7%*	*42.1%*	*50.8%*	*52.2%*	*51.8%*
Current smoker	13.1%	11.3%	11.5%	9.2%	7.9%	7.7%

Source: Landman Economics analysis of ELSA data

Table 2.3 shows a breakdown of the ELSA Wave 9 sample by age group detailing the proportion of current smokers, ex-smokers and people who have never smoked. Ex-smokers are broken down into two groups: those who quit within the last 10 years and those who quit more than 10 years ago. The table shows that the proportion of current smokers is highest in the youngest age groups (50-54, 55-59 and 60-64) and lowest in the oldest age groups (85-89 and over 90). Younger groups (except for the group aged 90 and over) are more likely to have a larger number of people who have never smoked; this statistic reflects falling smoking prevalence over time, with younger cohorts less likely to have ever smoked. Conversely, older age groups (below age 90) have a higher percentage of quits than younger groups. However, ELSA survey members aged between 70 and 89 are more likely than other age groups to have quit smoking within the last 10 years.

Table 2.3. ELSA Wave 9: proportion of current smokers, ex-smokers (split by smokers who quit within last 10 years and those who quit more than 10 years ago) and those who have never smoked, by age group

	Percentage of:			
		Ex-smokers		
Age group	**Current smokers**	**Quit within last 10 years**	**Quit more than 10 years ago**	**Never smoked**
50-54	17.5%	0.2%	30.9%	51.4%
55-59	13.6%	5.4%	29.0%	52.0%
60-64	13.5%	7.3%	37.9%	41.3%
65-69	11.8%	7.2%	45.9%	35.1%
70-74	8.5%	7.7%	50.2%	33.6%
75-79	5.5%	6.1%	55.2%	33.2%
80-84	5.0%	4.0%	54.0%	37.0%
85-89	3.9%	3.6%	59.4%	33.1%
90+	1.5%	1.8%	32.5%	64.2%
Whole sample	11.5%	4.9%	42.1%	41.5%

Source: Landman Economics analysis of ELSA data

2.3 Data on care needs: requiring help with activities

For domiciliary care, the ELSA interview collects data from each respondent aged 65 or over on whether they receive help with the following everyday activities:

1. Dressing, including putting on shoes and socks;
2. Walking across a room;
3. Having a bath or shower (including getting into/out of the bath or shower);
4. Eating (including cutting up food);
5. Getting in and out of bed;

6. Using the toilet;
7. Using a map to figure out how to get around a strange place;
8. Recognising when in physical danger;
9. Preparing a hot meal;
10. Shopping for groceries;
11. Making telephone calls;
12. Communication (speech, hearing or eyesight);
13. Taking medications;
14. Doing work around the house and garden;
15. Managing money, e.g. paying bills, keeping track of expenses.

Activities 1 to 6 on this list are known as **Activities of Daily Living (ADLs)** – basic activities performed by individuals on a daily basis that are necessary for independent living at home or in the community. The other activities (7 through 15) are **Instrumental Activities of Daily Living (IADLs)** – actions that are important to being able to live independently, but are not necessarily required activities on a daily basis.

For each of these activities, data is recorded on whether help is received from the following sources:

- the interviewee's spouse or partner;
- other relatives;
- friends or neighbours;
- home care worker, home help or personal assistant;
- other formal help.

Table 2.4 shows the proportion of never-smokers, ex-smokers (who quit more than 10 years ago), ex-smokers who quit less than 10 years ago, and current smokers who experience difficulties with the 15 ADLs and IADLs listed above in the Wave 9 ELSA sample. For all the IADLs and 5 out of the 6 IADLs, a higher proportion of current smokers require help with the tasks those who have never smoked; the only exception is “using the toilet”, where the proportion of current smokers and the proportion of those who have never smoked who have difficulties is equal at 3.5%.

Looking across all the ADLs, the proportion of current smokers who need help with at least one of them (19.7%) is higher than for people who have never smoked (13.4%) and higher than for ex-smokers who quit more than 10 years ago (18.3%), but lower than for ex-smokers who quit less than 10 years ago (28.7%). A similar pattern holds for IADLs, with current smokers are more likely to require help with at least one IADL than never-smokers and ex-smokers who quit more than 10 years ago, but *less* likely to require help than ex-smokers who quit more recently. Looking across all the indicators, 28.6% of current smokers need help with at least one task, compared to 36 per cent of ex-smokers who quit less than 10 years ago, 26.8% of

ex-smokers who quit more than 10 years ago, and 19.1% of those who have never smoked.

Table 2.4. Proportion of respondents in the Wave 8 ELSA sample experiencing difficulties with ADLs/IADLs, by smoker status

Task	Never-smokers	Ex-smokers:		Current smokers
ADLs:		**10+ years**	**<10 years**	
Dressing and undressing	9.4%	14.1%	20.4%	13.6%
Walking across a room	2.9%	410%	6.0%	3.8%
Having bath/shower	6.7%	9.5%	14.2%	11.3%
Eating	2.2%	2.7%	5.2%	3.3%
Getting in and out of bed	5.1%	6.4%	10.6%	7.6%
Using the toilet	3.5%	4.2%	7.4%	3.5%
Any difficulty with ADLs	**13.4%**	**18.3%**	**28.7%**	**19.7%**
IADLs:				
Using map to get around	3.2%	6.2%	6.5%	4.4%
Recognising when in danger	1.3%	1.4%	4.4%	1.8%
Preparing hot meal	4.2%	5.9%	9.8%	5.6%
Shopping for groceries	7.2%	9.4%	14.9%	12.2%
Making telephone calls	2.2%	3.1%	3.5%	3.0%
Communication (e.g. speech/hearing)	2.6%	4.4%	5.1%	4.1%
Taking medications	2.4%	3.7%	5.6%	2.6%
Doing work around house/garden	11.5%	15.8%	21.0%	18.1%
Managing money	3.0%	4.6%	5.7%	5.4%
Any difficulty with IADLs	**15.4%**	**21.7%**	**28.2%**	**24.5%**
Any difficulty with any task	**19.1%**	**26.8%**	**36.0%**	**28.6%**

Source: Landman Economics analysis of ELSA data

2.4 Requiring help with tasks and smoking prevalence by age

Table 2.4 shows the pattern of care needs according to smoking status, but there is also a big difference in the age distribution of those requiring help with tasks for smokers compared to ex-smokers who quit more than 10 years ago and those who have never smoked. Table 2.5 shows the proportion of adults in the Wave 9 ELSA sample who require help with tasks, by smoking status and age group (in 5-year age bands from 50-54 year olds up to 85-89 year olds and then those aged 90 and over). First we analyse the age profile of those requiring help with tasks for smokers compared to ex-smokers who quit more than 10 years ago and those who have never smoked. Table 2.5 shows the proportion of adults in the Wave 9 ELSA sample who require help with any task, by smoking status and age group (in 5-year age bands from 50-54 year olds up to 85-89 year olds and then those aged 90 and over).

In every age group up to and including those aged 75 to 79, except for those aged 90 and over, current smokers and ex-smokers who quit less than 10 years ago are more likely to require help with tasks than ex-smokers who quit more than 10 years ago, who are in turn more likely to require help with tasks than those who have never smoked. For 75-79 year olds and 85 to 89 year olds, current smokers are less likely to require help than ex-smokers who quit less than 10 years ago but more likely than those who have never smoked. Ex-smokers who quit less than 10 years ago are more likely to require help than any other group in the 80-84, 85-89 and 90+ age groups, as well as the 75-79 and the 50-54 age group. For adults aged 90 and over, current smokers are less likely to require help than never-smokers or ex-smokers who quit more than 10 years ago. This may be due to the fact that the less healthy smokers have quit by age 90, leaving only those smokers who are atypically healthy and hence requiring less help with tasks.

Table 2.5: Proportion of adults aged 50 and over in ELSA Wave 9 sample who require help with tasks, by age band and smoking status

	Never smokers	Ex-smokers:		Current smokers
Age (5 year banded)		**10+ years**	**<10 years**	
50-54	10.7%	12.1%	100.0%	16.3%
55-59	11.0%	15.2%	19.6%	28.4%
60-64	19.0%	17.7%	34.8%	36.3%
65-69	13.3%	17.6%	29.2%	33.5%
70-74	21.3%	27.0%	31.9%	36.5%
75-79	30.2%	33.6%	51.1%	41.6%
80-84	37.1%	44.7%	64.2%	29.2%
85-89	52.0%	55.1%	63.8%	60.3%
90+	76.9%	83.0%	100.0%	41.2%
All aged 50 and over	19.1%	26.8%	36.0%	28.6%

Source: Landman Economics analysis of ELSA data.

Further analysis of the ELSA data shows that the median age for current smokers who experience any difficulty with tasks is 63. This is significantly younger than the median never-smokers who report difficulties (70) as well as the median age for ex-smokers who quit less than 10 years ago (70) and ex-smokers who quit more than 10 years ago (75).

Table 2.6 presents results from regression analysis of the relative probabilities of requiring help with various tasks in the ELSA Wave 9 data, controlling for gender and age. The coefficients show the relative risks of requiring help with each of the tasks for current smokers combined with ex-smokers who quit less than 10 years ago (in the left hand columns) and ex-smokers who quit more than 10 years ago (in the right hand columns) compared to never-smokers. A coefficient of greater than 1 means that current smokers (or ex-smokers) are more likely to require help with each task compared to never-smokers, whereas a coefficient of less than 1 means that they are less likely to require help. Statistically significant results at the 5% level are shaded in grey.

The results show that for all the tasks, the relative probabilities of requiring help with the task, conditional on age and gender, are significantly higher for current smokers and ex-smokers who quit less than 10 years ago compared to people who have never smoked. The probabilities of requiring help for ex-smokers who quit more than 10 years ago are significantly more likely than those who have never smoked for four out of the six ADLs, and 5 out of the 9 IADLs. Both current and ex-smokers are significantly more likely to require help with at least one of the ADLs and with at least one of the IADLs (and with at least one task across the whole set of tasks) than people who have never smoked. For current smokers and ex-smokers who quit less

than 10 years ago, the coefficients on ‘at least one ADL’, ‘at least one IADL’, and ‘at least one ADL or IADL’ are all above two, meaning that this group are more than twice as likely to receive help with at least one task than people who have never smoked. Meanwhile, ex-smokers who quit more than 10 years ago are just over 30% more likely to receive help with at least one task as people who have never smoked – a smaller difference than for current smokers and ex-smokers who quit less than 10 years ago, but still statistically significant.

Table 2.6. Relative probabilities of requiring help with various tasks controlling for gender and age, by smoker status: ELSA Wave 9

	Relative risk coefficients			
Task	**current smoker/ ex-smoker <10 yrs**	**|z|**	**ex smoker >10 yrs**	**|z|**
Dressing and undressing	2.009	12.49	1.376	7.04
Walking across a room	2.271	8.50	1.265	2.91
Having bath/shower	2.373	13.46	1.318	5.13
Eating	1.878	5.45	1.101	1.00
Getting in and out of bed	2.164	10.52	1.208	2.98
Using the toilet	1.522	4.47	1.110	1.39
At least one ADL	**2.159**	**15.74**	**1.344**	**7.48**
Using map to get around	1.827	6.61	1.364	4.37
Recognising when in danger	2.156	4.97	1.157	1.13
Preparing hot meal	2.102	9.06	1.149	2.03
Shopping for groceries	2.387	13.45	1.268	4.40
Making telephone calls	1.502	3.43	0.971	0.32
Communication (e.g. speech/hearing)	1.718	5.35	1.151	1.78
Taking medications	1.962	5.95	1.135	1.36
Doing work around house/garden	2.214	15.22	1.320	6.53
Managing money	2.244	7.86	1.277	2.91
At least one IADL	**2.136**	**16.11**	**1.294**	**6.83**
At least one ADL or IADL	**2.122**	**17.21**	**1.320**	**8.03**

Source: Landman Economics analysis of ELSA data

Notes: grey shaded cells indicate that coefficient of relative risk is statistically significant at the 5% level

2.5 Receipt of help from various sources

Table 2.7 shows the proportions of respondents in the ELSA Wave 9 sample who receive help with one or more tasks from various sources, again broken down by smoking status. The first three rows show the proportion of respondents receiving help from three different informal sources – their spouse or partner, other relatives, and friends or neighbours. Ex-smokers are more likely to receive help from their spouse or partner than current smokers if they quit less than ten years before the survey; current smokers and ex-smokers are substantially more likely to receive help from their spouse or partner than those who have never smoked. Current smokers are more likely to receive help from friends or neighbours, than either group of ex-smokers or those who have never smoked. The proportions of ELSA respondents who receive help from friends or neighbours are much smaller in each smoking status group than for those receiving help from spouse or partner, or other relatives. The fourth row shows the proportions receiving *any* informal help – 17.9% of current smokers do, compared to 22.6% of ex-smokers who quit less than 10 years ago, 17.6% of smokers who quit more than 10 years ago and 12% of those who have never smoked.

The fact that current (and ex-) smokers are substantially more likely to receive care from relatives implies that smoking has an additional cost in terms of reducing activity in the (paid) labour market. Some of these relatives will be of working age – particularly the sons and daughters of care recipients, but in some cases their partners too. In Chapter 6 I estimate the implicit costs of the additional informal care that is provided for smokers compared to non-smokers, using the cost of formal care as a proxy for the cost of informal care.

The next three rows of Table 2.7 show the proportions receiving help from formal sources. Current smokers are *less* likely than ex-smokers or those who have never smoked to have received help from a home care worker. For other sources of formal help, current smokers are slightly more likely to have received help than ex-smokers who quit less than 10 years ago, but less likely to have received help than the other groups. Summing across all formal sources of help, current smokers are slightly less likely to receive formal help (4.1%) than those who have never smoked (4.2%) and markedly less likely than ex-smokers (5.9% for ex-smokers who quit more than 10 years ago, and 6.1% for ex-smokers who quit less than 10 years ago).

The bottom row of Table 2.7 shows the proportion of respondents aged 50 or over receiving help from any source at all – this is approximately the same for current smokers (19.4%) and ex-smokers who quit more than 10 years ago (19.5%). Ex-smokers who quit less than 10 years ago are more likely to receive help (23.8%). All three groups are much more likely to receive help from at least one source than people who have never smoked (13.4%).

Table 2.7. Proportion of respondents aged 50 or over receiving help with at least one care need from different sources, ELSA Wave 9

Source	Never smokers	Ex-smokers:		Current smokers
Informal sources:		**10+ years**	**<10 years**	
Spouse/partner	5.9%	9.9%	12.8%	8.3%
Other relatives	6.7%	9.3%	14.3%	9.0%
Friends/neighbours	1.9%	2.2%	1.9%	4.6%
Any informal help	**12.0%**	17.6%	22.6%	**17.9%**
Formal sources:				
Home care worker	1.7%	2.2%	3.6%	1.2%
Other formal sources	3.2%	4.5%	2.9%	3.0%
Any formal help	**4.2%**	6.1%	5.9%	**4.1%**
Any help (formal or informal)	**13.4%**	19.5%	23.8%	**19.4%**

Source: Landman Economics analysis of ELSA data

Table 2.8 shows the proportion of people in the ELSA Wave 9 sample receiving any formal or informal help, by age band and smoking status. For most of the age bands, current smokers are more likely to receive help than ex-smokers who quit less than 10 years ago, who are in turn more likely to receive help than ex-smokers who quit more than 10 years ago, with those who have never smoked least likely to receive help. The exceptions are the 80-84 age band (where both categories of ex-smoker are more likely to receive help than current smokers) and the 50-54, 75-79 and 80-84 age bands (where ex-smokers who quit less than 10 years ago are more likely to receive help than current smokers). The result for these age bands could be because people who smoke and then start receiving care are more likely to give up smoking.

Table 2.8: Proportion of people in ELSA Wave 9 sample receiving any help with tasks, by age band and smoking status

		Ex-smokers:		
Age (5 year banded)	**Never smokers**	**10+ years**	**<10 years**	**Current smokers**
50-54	6.2%	8.8%	100.0%	9.1%
55-59	7.4%	8.2%	4.5%	23.6%
60-64	10.6%	14.0%	16.6%	22.7%
65-69	8.3%	10.4%	19.7%	20.0%
70-74	15.3%	15.7%	20.0%	22.3%
75-79	17.0%	22.9%	47.9%	34.7%
80-84	31.7%	35.6%	52.8%	27.4%
85-89	48.0%	48.1%	49.0%	52.7%
90+	73.8%	76.9%	100.0%	100.0%

Source: Landman Economics analysis of ELSA data

Further analysis of the ELSA data shows that for current smokers in the ELSA sample who receive any help with tasks, their median age is 63. This compares with a median age of 72 for ex-smokers receiving help who quit less than 10 years ago, 77 for ex-smokers who quit more than 10 years ago and 73 for people receiving help who have never smoked.

2.6 Intensity of care received

Table 2.9 shows the average (mean) number of hours of care received for care recipients in ELSA who receive at least one hour of care (on average) per week, broken down by smoker status. The results are presented separately for formal and informal care. Table 2.9 shows that for formal care, current smokers (and ex-smokers who quit less than 10 years ago) who receive any formal care receive an average of 18 hours of care per week compared to only 5 hours per week for never-smokers and 4 hours per week for ex-smokers who quit more than 10 years ago. For informal care the difference between current smokers (plus recent ex-smokers) and never-smokers was much smaller (27 hours per week compared to 24). Thus, particularly for formal care there is a very large difference in the intensity of care received for current (and recent ex-) smokers in receipt of care, compared to ex-smokers. Other things being equal, this will increase the costs of smoking to the social care system, relative to a situation in which the average intensity of care does not differ by smoker status.

Table 2.9. Mean weekly hours of care received for ELSA sample members who receive at least one hour of care per week, by smoker status, ELSA Wave 9

Mean hours of care for sample members who receive at least one hour of care per week	**Never smokers**	Ex-smokers (quit more than 10 years ago)	Current smokers plus ex-smokers who quit less than 10 years ago
Formal care	5	4	18
Informal care	24	23	27

2.7 Payment arrangements for care

Beginning in Wave 7, the ELSA has asked respondents what the payment arrangements for their care package were. Based on the responses to the relevant questions in the ELSA data, we identify two groups:

(a) the group of people who receive care paid for partially or wholly by their local authority;
(b) the group of people who receive care that they pay for themselves (self-funders).

Appendix A gives details of the survey questions used to construct these groups.

It should be noted that these groups overlap; there are people in the dataset who receive care paid for by the local authority, *as well as* care that they pay for themselves.

Table 2.10 shows the proportions of the people receiving formal care whose care is funded by the local authority, the proportion of self-funders and the proportion in both categories, by smoking group.

Table 2.10 shows that around 18 per cent of current smokers in ELSA receive any local authority funding. This is a lower proportion than for ex-smokers who quit less than 10 years ago (around 41 per cent), or those who have never smoked (17 per cent). The proportion of ex-smokers who quit more than 10 years ago receiving LA funding is approximately the same as for current smokers. Overall, around 28 per cent of the ELSA sample of adults receiving formal care receive some local authority funding, while 80 per cent are wholly or partially self-funded.

Table 2.10. Proportion of people receiving formal care who are local authority funded, self-funders or both by smoker status, ELSA Wave 9

		Ex-smokers			
Care arrangements	**Never smokers**	**10+ years**	**<10 years**	**Current smokers**	**Whole sample**
local authority pays for care	17.2%	17.8%	40.8%	18.2%	19.7%
self-funder	76.1%	73.9%	56.1%	76.2%	72.0%
Both	6.7%	8.3%	3.1%	5.6%	8.2%
Any local authority funding	23.9%	26.1%	43.9%	23.8%	27.9%

Source: Landman Economics analysis of ELSA data

Analysis of the proportion of the sample who are local authority funded across waves 7,8 and 9 of ELSA shows that the proportion of sample members whose care was entirely local authority funded was relatively stable at just under 20% in all three waves. The proportion of sample members who were entirely self-funded was also stable at 72% in all three waves.

2.8 Modelling receipt of local authority-funded residential social care in ELSA

ELSA does not ask sample members in residential care whether their care is funded by the local authority or self-funded. To model eligibility for local authority-funded residential care I simulate the asset-based means-test for residential care in England. Currently, people in England with assets over £23,250 – including, for people not living with a partner, the value of their home[3] – are not eligible for local authority funding for residential care (Age UK, 2018). In practice this means that almost all single homeowners are required to sell their home to meet residential care costs rather than being state-funded. A combined ELSA panel of Waves 1 to 9 is used; the asset information for the means-test is taken from the wave immediately preceding the wave in which the sample member moves into residential care.

The original sampling frame for ELSA covered only individuals living in private households, but from wave 3 onwards, follow-up interviews have been conducted with individuals moving into residential care homes (making the ELSA dataset the first survey dataset in the UK to contain a subsample of the care home population). Table 2.1 above shows that care home interviews make up a very small subsample

[3] Note that for people whose partner also lives in their home, the value of the home is normally exempted from the means-test.

of the total ELSA sample in each Wave from Wave 3 onwards – less than 1 per cent of all respondents in any given wave.

We use a panel regression model for the probability of moving into residential care to maximise the usefulness of the dataset, which is particularly important given the limited number of interviews in residential care.

3 Smoking and unmet need for care in the Health Survey for England data

3.1 Introduction

The Health Survey for England (HSE) is a repeated cross-sectional survey of adults and children in England which has been running on a consistent basis since 1993. Detailed questions regarding care needs and receipt of informal and formal social care from various sources, and whether formal care is paid for by the local authority or self-funded, have been included in the annual dataset since 2011. In this report we use data for eight annual waves of the HSE – 2011 through 2018 inclusive. The questions on care needs are only asked for survey respondents aged 65 and over, so this report uses only the adults aged 65 and over in the HSE. This makes it a less preferred source of data than the ELSA for our purposes because ELSA contains data on social care for respondents aged 50-64 as well as those aged 65 and over. However, the HSE has better data on unmet needs for care than the ELSA data[4], and so we use the HSE data for our estimates of unmet need for social care. Table 3.1 shows the sample size for respondents aged 65 and over in the eight waves of HSE used in this report.

Table 3.1. HSE, 2011-2018 waves: number of respondents aged 65 or over

Wave	Number of respondents aged 65 or over
2011	2,062
2012	2,152
2013	2,223
2014	2,064
2015	2,177
2016	2,111
2017	2,230
2018	2,254

Source: Landman Economics analysis of HSE data

[4] While the ELSA data also contains a variable for unmet care needs, there is a crucial difference between the HSE variable and the ELSA variable; whereas HSE asks about unmet needs for care for everyone aged 65 or over in the sample, ELSA only asks about unmet needs for people receiving formal care from at least one source. This means that the proportion of people in the ELSA sample reporting unmet need is only around 1.5% of the whole sample compared to around 27% for the HSE sample, meaning that the HSE sample is much more useful for estimating the overall costs of meeting unmet care needs – including the unmet needs of people receiving no formal care at present.

The HSE data are used for (logistic) regression-based estimates of the relationship between smoking status and the amount of unmet need for social care. The analysis controls for other factors which might affect the dependent variables being modelled.

3.2 Smoking prevalence in the HSE

Table 3.2 shows smoking prevalence in the 2011-18 waves of the HSE for the sample of respondents aged 65 and over. The table shows the proportions of current smokers, ex-smokers (with a further breakdown into smokers who quit 10 or more years prior to the survey and smokers who quit less than 10 years prior to the survey), and people who have never smoked. Table 2.2 shows a decline in the proportion of respondents aged 65 and over who smoke in the HSE, from 9.1% in 2011 to 7.5% in 2018. The decline only occurs after 2014. At the same time the proportion of ex-smokers in the data has varied between 38% and 44%, with no consistent trend of increase or decrease. The proportion of people in the data who have never smoked has varied between 47.2% and 52.5%.

Table 3.2. HSE, 2011-18 waves: smoking prevalence, respondents aged 65 and over

Year	2011	2012	2013	2014	2015	2016	2017	2018
Never smoked	47.2%	52.2%	49.6%	52.5%	49.6%	52.4%	51.7%	51.4%
Ex smoker	43.7%	38.8%	41.4%	38.2%	42.2%	39.1%	40.0%	41.1%
Of which:								
Quit 10+ years ago	37.4%	34.2%	35.9%	33.6%	35.7%	33.2%	34.8%	35.0%
Quit <10 years ago	6.2%	4.6%	5.5%	4.5%	6.5%	5.8%	5.1%	6.1%
Current smoker	9.1%	9.0%	9.0%	9.3%	8.3%	8.5%	8.4%	7.5%

Source: Landman Economics analysis of HSE data

3.3 Unmet needs in HSE

As with the ELSA data, the HSE data asks questions on whether each respondent requires help with a set of ADLs and IADLs (for respondents aged 65 and over). The set of ADLs and IADLs is similar but not identical to the ADLs and IADLs in ELSA. HSE respondents are asked whether they require help with any of the following:

1. Getting in and out of bed;
2. Washing own face and hands;
3. Having a bath or shower (including getting into/out of the bath or shower);
4. Dressing and undressing (including putting on shoes and socks);
5. Using the toilet;
6. Eating (including cutting up food);
7. Taking the right amount of medicine at the right times;
8. Getting around indoors;
9. Getting up and down stairs;
10. Getting out of the house;
11. Shopping for food;
12. Doing routine housework or laundry;
13. Doing paperwork or paying bills.

Appendix B of this paper contains detailed information on the proportion of HSE respondents who require help with these activities, for the purposes of comparison with ELSA. Most importantly for our current purposes, for each of the tasks listed above the HSE data contains a variable for whether each respondent aged 65 or over has an *unmet need* for that task – i.e. whether they require help with that task, but are not receiving help from any source (either formal or informal) to meet that need. Table 3.3 below shows the proportion of respondents aged 65 of over with unmet needs for each task (and across all ADLs and all ADLs, and all tasks), broken down by smoking status. For most tasks, current smokers are more likely to have unmet needs than people who have never smoked, ex-smokers who quit less than 10 years before the survey, or ex-smokers who quit more than 10 years before the survey. Across all tasks, almost 39% of current smokers aged 65 or over have unmet care needs, compared to just under 32% of ex-smokers who quit less than 10 years ago, around 28% of ex-smokers who quit more than 10 years ago, and around 24% of adults who have never smoked.

Table 3.3. Proportion of respondents aged 65 and over with unmet care needs by task, HSE 2018

		Ex-smokers:		
Unmet need by task	**Never smokers**	**10+ yrs**	**<10 yrs**	**Current smokers**
Getting in and out of bed	5.4%	6.8%	8.8%	10.6%
Washing face and hands	1.7%	2.2%	2.3%	2.6%
Having bath/shower	6.5%	7.3%	14.2%	8.2%
Dressing and undressing	5.3%	5.9%	9.2%	9.0%
Using the toilet	2.4%	2.4%	4.1%	3.3%
Eating	2.2%	2.9%	2.1%	5.5%
Taking medication	1.5%	2.3%	2.0%	2.9%
Getting around indoors	6.2%	6.0%	6.7%	13.1%
Getting up and down stairs	15.8%	19.9%	20.7%	27.4%
Getting out of the house	5.3%	5.5%	8.5%	8.1%
Shopping for food	5.0%	5.9%	9.7%	10.0%
Routine housework or laundry	6.1%	6.7%	9.1%	13.3%
Paperwork or paying bills	3.7%	3.4%	2.9%	6.8%
Unmet needs - overall				
Any ADL	20.9%	25.6%	27.7%	32.4%
Any IADL	12.7%	12.6%	13.9%	21.8%
Any need	24.2%	27.7%	31.6%	38.8%

Source: Landman Economics analysis of HSE data

Table 3.4 shows the results from logistic regressions on the 2018 HSE for unmet need for each tasks and for any ADL, any IADL and any task at all, controlling for gender and age. Statistically significant results are shaded in grey. The results show that current smokers and ex-smokers who quit less than 10 years before are significantly more likely to have unmet care needs than people who have never smoked for nine tasks (getting in and out of bed, having a bath or shower, dressing and undressing, eating, getting around indoors, getting up and down the stairs, getting out of the house, shopping for food and routine housework or laundry), while other ex-smokers are significantly more likely to have unmet care needs than never-smokers for just one task (getting up and down stairs). Overall, current smokers and ex-smokers who quit less than 10 years ago are over two-and-a-half times as likely to experience unmet need for one or more tasks than people who have never smoked. Ex-smokers who quit more than 10 years ago are just under 40% more likely to experience unmet need for one or more tasks than people who have never smoked.

Table 3.4. Relative risks of unmet need for various tasks by smoking status, HSE 2018

	Relative risk coefficients			
Unmet need for:	**current smoker/ ex-smoker quit less than 10 yrs ago**	**|z|**	**ex smoker, quit more than 10 yrs ago**	**|z|**
Getting in and out of bed	2.259	3.45	1.232	1.01
Washing face and hands	1.490	0.91	1.209	0.56
Having bath/shower	2.286	3.58	1.278	1.24
Dressing and undressing	2.122	3.06	1.207	0.90
Using the toilet	1.759	1.56	1.043	0.13
Eating	2.080	2.10	1.319	0.90
Taking medication	1.829	1.45	1.648	1.44
Getting around indoors	2.187	3.34	1.088	0.42
Getting up and down stairs	2.612	5.58	1.585	3.49
Getting out of the house	2.126	2.97	1.122	0.53
Shopping for food	2.644	4.03	1.319	1.27
Routine housework or laundry	2.375	3.83	1.116	0.54
Paperwork or paying bills	1.768	1.85	0.971	0.11
Unmet need for ADL(s)	**2.470**	**5.64**	**1.531**	**3.57**
Unmet need for IADL(s)	**2.114**	**4.05**	**1.062**	**0.40**
Any unmet need	**2.666**	**6.38**	**1.382**	**2.80**

Source: Landman Economics analysis of HSE data

Notes: grey shading indicate that coefficient of relative risk is statistically significant at the 5% level

4 Data on the costs of social care

In order to calculate the cost of smoking to the social care system it is necessary to have data on the costs of social care services. The social care costs data are also important as they provide a means of estimating the implicit costs of unpaid care by family and friends, and also the implicit costs of unmet need. In each of these cases our approach is to estimate the replacement cost to the Government if unpaid care were replaced with formal care, and if unmet need was met through the formal care system. Effectively the costs of unpaid care and the costs of unmet need represent *savings* to local authorities because these (implicit) costs arise because the local authority is not fully meeting the care needs which arise due to smoking.

There are two types of cost data used in this report:

a) Data on the **overall** costs of part of the system (e.g. the overall costs of domiciliary social care);
b) Data on the **unit** costs of social care services (e.g. cost per domiciliary care package).

Each of these sources of data can be used in particular ways to estimate the costs of smoking to local authorities and to people in need of care and their families and other unpaid carers when combined with results from the regressions on the relationship between smoker status and care needs, propensity to receive local authority and privately provided care and unmet need, as shown in Chapter 5 below.

4.1 Overall cost data

Table 4.1 presents recent estimates on the costs of various parts of the social care system from two sources sources:

- Local authority spending figures for 2018-19 are taken from NHS Digital's *Adult Social Care Activity Finance Return* (ASC-FR) and *Short and Long Term Support* (SALT) statistics for 2018-19 (NHS Digital, 2020)
- Spending estimates for other parts of the care sector (replacement cost of informal care, spending by self-funders and voluntary sector care services) are taken from National Audit Office, *Adult social care at a glance* (NAO, 2018). The latest available data for these costs is from 2016-17.

Table 4.1. Estimated costs of various parts of the social care system in England

Category of care	**Spending (£bn), 2018-19 or latest available**
Local authority arranged care:	22.2
Of which:	
Local authority net spending:	16.0
User contributions:	2.9
Income from NHS and joint arrangements	2.8
Other income	0.5
Informal care (replacement cost of all informal care):	100.0*
Replacement cost of care to state if not provided informally:	58.6*
Spending by self-funders:	10.9*
Voluntary sector care services:	3.2*
Breakdown of local authority spending by type of support:	
Care homes:	7.2
Of which:	
Residential care	5.4
Nursing care	1.8
Supported accommodation	0.5
Support in own home:	7.5
Of which:	
Home care	2.3
direct payments	1.7
Supported living	1.8
Other long-term care	1.1

Source: NHS Digital (2019), NAO (2018)

Notes: * estimates for 2016-17. Other estimates are for 2018-19

Table 4.2 shows a breakdown of the figures on local authority spending for the adult population aged 65 or over, and the adult population aged 18-64. We also make an estimate of the total cost of spending for the adult population aged 50 to 64 by using statistics from the ONS on the number of 50-64 year olds as a proportion of the population aged 18-64 in England.

Table 4.2. Breakdown of local authority spending on adult social care by age group

	Spending (£bn, 2018-19)		
Spending category	**Aged 65 and over**	**Aged 18-64**	**Aged 50-64 (estimated)**
Short-term support	0.39	0.16	0.05
Domiciliary care	2.73	4.74	1.49
Residential care	3.14	2.23	0.70
Total	6.26	7.13	2.25

Source: NAO (2018) and Landman Economics calculations based on NHS Digital (2020).

Crucial figures for our purposes are the £2.73bn spend on domiciliary care and the £3.14bn spend on residential care for people aged 65 and over, and the estimated £1.49bn spend on domiciliary care and the £0.70bn spend on residential care for people aged 50-64. These are the figures which we are looking to combine with results from the regressions in Chapter 5 to estimate the social care costs of smoking.

4.2 Unit cost data

Table 4.3 shows data on unit costs for relevant parts of the social care system. The estimates are taken from NHS Digital's Adult Social Care Activity and Finance Report for England, 2017-18 (NHS Digital, 2018). These costs are presented at 2018/19 price levels.

Table 4.3: Social care unit cost estimates, 2018-19

Variable	**Value**
Weekly cost of residential care (residents aged 65 and over)	£620
Hourly cost of domiciliary care services	£16.86

Source: NHS Digital (2020). Costs are for externally provided rather than in-house care services.

4.3 Estimating the social care and NHS costs of smoking using the cost data

The costs of smoking to various aspects of the social care and NHS systems are estimated using the attributable proportions of the overall cost of each element of the system. The estimates use various methodologies depending on the format of the cost data used, as explained below.

For the estimation of social care costs we start with estimates of each part of the system as explained in Table 4.4 below. Appendix C gives more details of how the cost estimates for replacement value of informal domiciliary care and the cost of meeting unmet need for domiciliary care are arrived at.

Table 4.4. Estimates of overall costs of the components of the social care system in England

System element	Estimate (£bn)	Source
Domiciliary care		
Local authority funded care (aged 65 and over)	2.73	NHS Digital (2020)
Local authority funded care (aged 50-64)	1.49	Estimate based on NHS Digital (2020)
Self-funded care (aged 65 and over)	3.65	Estimate based on NAO (2018)
Self-funded care (aged 50-64)	2.14	Estimate based on NAO (2018)
Replacement value of informal care (aged 50 and over)	24.48	Estimate based on unit cost of home care and number of people aged 50 and over in ELSA Wave 8 receiving informal care
Cost of meeting unmet need (aged 65 and over)	36.07	Estimate based on unit cost of home care and number of people aged 65 and over in 2018 HSE with unmet care needs
Residential care		
Local authority funded care (65 and over)	3.14	NHS Digital (2020)
Self-funded care (65 and over)	3.11	Estimate based on NHS Digital (2020)

The estimates of the costs of different aspects of the social care system are combined with the attributable proportions formula shown below to estimate the costs of smoking:

$$\textit{Attributable proportion} = [p_{cur}(r_{cur} - 1) + p_{ex}(r_{ex} - 1)]/[1 + p_{cur}(r_{cur} - 1) + p_{ex}(r_{ex} - 1)]$$

where p_{cur} = proportion who are current smokers; r_{cur}= relative risk for current smokers compared with never-smokers; p_{ex}= proportion who are ex-smokers; and r_{ex}= relative risk for ex-smokers compared with never-smokers.

5 Results

This chapter presents the results for the relative risks of receiving informal and formal social care for current smokers and ex-smokers who quit less than 10 years before the survey, and ex-smokers who quit more than 10 years before the survey, compared with non-smokers. These risk coefficients are used to estimate the various aspects of the cost of smoking to the social care system. The analysis is performed separately for domiciliary care and for residential care. The domiciliary care regressions consider four separate components of the costs of smoking to the care system:

1. The cost of formal care to local authorities.
2. The cost of self-funded care to individuals with care needs who are paying for their own care.
3. The implicit cost of care to informal carers.
4. The implicit cost of additional unmet care needs which arise due to smoking.

Element 1 of these costs is the actual cost to local authorities, whereas elements 2, 3 and 4 are savings to local authorities, but costs to carers and their families and other informal carers such as friends.

The residential care regressions consider elements 1 and 2 (costs of formal and self-funded residential care) only.

The unmet need regressions use HSE data while all the other regressions use ELSA data.

The regressions use two sets of specifications. Specification 1 uses a ‘narrow’ set of control variables (age and gender variables only), while Specification 2 uses a wider set of controls including age, gender, ethnicity, health status and health conditions, household composition, household net income and housing tenure. Because some of these wider variables are potentially endogenous to smoker status (income and health status in particular), we present results from both sets of specifications.

The ELSA regressions use a panel logit (random effects) specification whereas the HSE regressions use a logistic specification. We have transformed the coefficients from the ELSA regressions by taking the exponent so that the coefficients are comparable with the HSE regressions and they can be treated like odds ratios from logistic regressions.

To increase the sample size, the ELSA domiciliary regressions use a sample of Waves 7, 8 and 9 combined.

5.1 Receiving help in the home (ELSA Waves 7, 8 & 9)

Table 5.1 shows the results from a logistic regression where the dependent variable is whether the person receives help of any kind in their home with ADLs or IADLs, from formal or informal sources[5]. Only the coefficients from the smoker variables are shown in the main text; the full set of results, including other explanatory variables, is available from the author on request. The results show that in specification 1, current smokers (plus ex-smokers who quit less than 10 years ago) are around 4.5 times more likely to receive help of any kind, controlling for age and gender and household composition, than people who have never smoked, while ex-smokers (who quit more than 10 years ago) are just under twice as likely to receive help than those who have never smoked. In specification 2 (which also controls for ethnicity, income, housing tenure and health status), current smokers are just over 2.5 times more likely to receive help than never-smokers, while ex-smokers are just over 1.5 times more likely to receive help). All these coefficients are statistically significant at the 5% level.

Table 5.1. Results from panel logistic regressions for 'receiving help of any kind', ELSA sample Waves 7, 8 & 9

Dependent variable	**Receiving help of any kind**			
Specification	**1**		**2**	
Explanatory variables	**Coeff**	**|z|**	**Coeff**	**|z|**
Current smokers plus ex-smokers who quit less than 10 years ago	4.5105	11.84	2.6770	8.00
Ex-smokers who quit more than 10 years ago	1.8013	5.91	1.5830	4.86
Number of observations (N x T)	26,227		26,227	
Number of individuals (N)	11,045		11,045	

Source: Landman Economics analysis of ELSA data

Table 5.2 shows the results from logistic regressions where the dependent variable is 'receiving any **informal** help' (i.e. from spouse, other relatives, friends or

[5] Because of the differences in the intensity of formal care received for current (and recent ex-) smokers compared to ex-smokers (measured by average number of hours of care received per week) as shown in Table 2.9 above, regressions with a binary dependent variable (such as the logistic and logit regressions used in this chapter) are likely to underestimate the costs of smoking to the social care system. This is because binary regressions implicitly assume that people either get formal care or they don't – i.e. it's a binary (dummy) variable – whereas if we were to model the number of hours of care received instead, we would take into account the fact that current smokers receive more hours of care per week (conditional on receiving any care at all) than non-smokers. However, modelling care intensity requires a more sophisticated approach to estimating attributable proportions of care costs than the formula shown in Section 4.3. Landman Economics plans to develop a model which wil take care intensity into account for future versions of this research report.

neighbours). The point estimates for current and ex-smokers in 2016 show that in specification 1, current smokers (plus recent ex-smokers) are just over 4.5 times more likely to require informal help compared to those who have never smoked, while ex-smokers (who quit more than 10 years ago) are around 1.8 times more likely to require help than never-smokers. The equivalent coefficients from specification 2 are approximately 2.7 times more likely (for current smokers) and 1.5 times more likely (for ex-smokers). In all cases, the results are statistically significant at the 5% level.

Table 5.2. Results from panel logistic regressions for 'receiving informal help', ELSA Waves 7, 8 & 9

Dependent variable	**Receiving informal help**			
Specification	**1**		**2**	
Explanatory variables	**Coeff**	**|z|**	**Coeff**	**|z|**
Current smokers plus ex-smokers who quit less than 10 years ago	4.6585	11.93	2.6824	7.95
Ex-smokers who quit more than 10 years ago	1.7624	5.61	1.5328	4.47
Number of observations (N x T)	26,227		26,227	
Number of individuals (N)	11,045		11,045	

Source: Landman Economics analysis of ELSA data

Table 5.3 shows the results from logistic regressions where the dependent variable is receiving any **formal** help (e.g. from care workers). The point estimates from this formal help regression are lower than for the informal help regression above, implying that there is less of a relationship between smoker status and receipt of formal care (controlling for other factors) than between smoker status and receipt of informal care. In specification 1, current smokers (plus recent ex-smoker) are just under twice as likely to receive formal care compared to never-smokers, whereas in specification 2 they are just over 1.5 times more likely. The coefficient on ex-smoking (for those who quit more than 10 years ago) is more than 1 in both specifications, but is not significant at the 5% or the 10% level.

Table 5.3. Results from panel logistic regressions for 'receiving formal help', ELSA Waves 7, 8 & 9

Dependent variable	Receiving formal help			
Specification	1		2	
Explanatory variables	Coeff	|z|	Coeff	|z|
Current smokers plus ex-smokers who quit less than 10 years ago	1.9190	3.91	1.5420	2.59
Ex-smokers who quit more than 10 years ago	1.2522	1.78	1.1871	1.38
Number of observations (N x T)	26,227		26,227	
Number of individuals (N)	11,045		11,045	

Source: Landman Economics analysis of ELSA data

5.2 Receipt of local-authority funded and self-paid domiciliary care (ELSA Waves 7, 8 & 9)

Tables 5.4 and 5.5 show the results from regressions for receipt of local authority-funded domiciliary care (in Table 5.4) and self-funded care (in Table 5.5), using the ELSA data for Waves 7,8 and 9. Current smokers (plus ex-smokers who quit less than 10 years ago) are just over 4 times more likely to receive local authority funded care than people who have never smoked in Specification 1, and just over twice as likely in Specification 2. In both specifications, the coefficient on the 'current plus recent ex-smoker' variable is significant at the 5% level (although the Z statistic in Specification 2 is 2.00 which is only just above the 5% cut-off point of 1.96). For ex-smokers who quit more than 10 years ago, the coefficients are more than 1 but are not significant at the 5% level.

Table 5.4. Results from panel logistic regressions for receiving local authority funded domiciliary care, ELSA sample Waves 7, 8 & 9

Dependent variable	Receiving LA funded domiciliary care			
Specification	1		2	
Explanatory variables	Coeff	|z|	Coeff	|z|
Current smokers plus ex-smokers who quit less than 10 years ago	4.2055	3.71	2.0585	2.00
Ex-smokers who quit more than 10 years ago	1.5819	1.41	1.3192	0.96
Number of observations (N x T)	26,227		26,227	
Number of individuals (N)	11,045		11,045	

Source: Landman Economics analysis of ELSA data

The relationship between smoking status and receipt of self-funded care is weaker than for LA-funded care. In Specifications 1 and 2 in Table 5.5, neither the current smoker (plus recent quitters) variable nor the ex-smoker (more than 10 years ago) variables are significant at the 5% or 10% level.

Table 5.5. Results from panel logistic regressions for self-paid domiciliary care, ELSA sample Waves 7, 8 & 9

Dependent variable	**Receiving LA funded domiciliary care**			
Specification	**1**		**2**	
Explanatory variables	**Coeff**	**|z|**	**Coeff**	**|z|**
Current smokers plus ex-smokers who quit less than 10 years ago	1.2783	1.33	1.3196	1.49
Ex-smokers who quit more than 10 years ago	1.1714	1.21	1.1564	1.12
Number of observations (N x T)	26,227		26,227	
Number of individuals (N)	11,045		11,045	

Source: Landman Economics analysis of ELSA data

Note: none of the coefficients in this table are statistically significant at the 5% level.

5.3 Unmet need for domiciliary care (HSE 2013-2018)

The regression for unmet need in this subsection uses the HSE data rather than the ELSA data. Because the HSE data are a repeated cross-sectional dataset rather than a panel we have used a cross-sectional logistic specification rather than a panel specification. To increase the sample size and provide more accurate results we have used all six waves of HSE data where unmet need data were collected (the 2013 through 2018 surveys) and estimated the results using a trend variable interacted with the current and ex-smoker dummy variables. These coefficients are combined to provide a point estimate of the relative risks in 2018 (the most recent year of the HSE data): these rows are listed in bold in Table 5.6 below.

Table 5.6 shows the results from regressions where the dependent variable is unmet need for care (for any task). The results from specification 1 show that the 2018 point estimate for relative risk of unmet need for current smokers plus ex-smokers who quit less than 10 years ago is 1.551, while for ex-smokers who quit more than 10 years ago it is 1.346. This means that in 2018, current smokers and recent ex-smokers were just over 1.55 times more likely than people who have never smoked to experience unmet need for care, controlling for age and gender. The equivalent figure for ex-smokers who quit more than 10 years ago was just under 1.35. The

equivalent point estimates for specification 2 are 1.147 for current smokers and recent ex-smokers, and 1.328 for ex-smokers who quit more than 10 years ago; smaller than in specification 1, but still significantly different than the baseline risk for never-smokers.

Table 5.6. Results from logistic regressions for unmet care need, HSE sample 2013-2018

Dependent variable	**Unmet need for care**			
Specification	**1**		**2**	
Explanatory variables	**Coeff**	**|z|**	**Coeff**	**|z|**
Current smokers plus ex-smokers who quit less than 10 years ago	1.4290	2.07	1.0250	0.14
Current smokers plus ex-smokers who quit less than 10 years ago * trend	0.9554	1.08	0.9635	0.84
ex-smokers who quit more than 10 years ago	1.3031	2.60	1.2960	2.62
ex-smokers who quit more than 10 years ago * trend	0.9092	4.60	0.8828	4.99
never-smoker * trend	0.8803	6.36	0.8613	6.06
Point estimates of relative risks (2018):				
Current smoker or ex-smoker who quit less than 10 years ago, 2018	**1.551**		**1.147**	
Ex-smoker who quit more than 10 years ago, 2018	**1.346**		**1.328**	
	Chi2	**P>chi2**	**Chi2**	**P>chi2**
Chi-sq test (smoker and trend variables)	159.62	0.0000	111.26	0.0000
Number of observations	13,049		13,049	

Source: Landman Economics analysis of HSE data

5.5 Moving into residential care (ELSA Waves 1-9)

Table 5.7 below shows the results from panel logistic regressions where the dependent variable is moving into local authority or self-funded residential care between Wave 1 and Wave 9 of the ELSA survey. In previous versions of this report, the coefficients on the current and ex-smoker variables are not statistically significant at the 5% or 10% level in either the local authority funded or the self-funded care regressions. However, the inclusion of the Wave 9 data results in a positive and statistically significant relationship between current and recent ex-smoker status and the probability of moving into local authority funded residential care. This is probably because although smokers are more likely to require social care than non-smokers (as shown earlier in the report), they are also more likely to die before reaching the age at which people in the ELSA sample are likely to enter residential care.

Furthermore, the relatively small number of people entering care homes in the ELSA data means that it is much harder to find statistically significant correlations between entry into residential care and explanatory variables than it is with the regressions for receipt of domiciliary care. The coefficient is around 2.3, which is a similar magnitude to the coefficient for current and recent ex-smokers in specification 2 of the domiciliary care regression in Table 5.4 above. The coefficient for entry into self-funded residential care is just below 1 and is not statistically significant. Neither of the coefficients for ex-smokers who quit more than 10 years ago are significant in this regression.

Table 5.7. Results from panel logistic regressions for entry into local authority and privately funded residential care, ELSA sample Waves 1-9

Dependent variable	**Moving into residential care funded by:**			
Specification	**Local authority**		**Self-funded**	
Explanatory variables	**Coeff**	**|z|**	**Coeff**	**|z|**
Current smokers plus recent ex-smokers	2.3392	2.79	0.9560	0.07
Ex-smokers (except for recent quits)	0.5573	0.58	0.3280	1.05
Number of observations (N x T)	58,147		58,147	
Number of individuals (N)	13,611		13,611	

Source: Landman Economics analysis of ELSA data

6 The costs of smoking to local authorities, care recipients and their families and the number of cared-for people and carers affected

6.1 Cost estimates

Table 6.1 below shows estimates of the costs of various aspects of smoking to the social care system in England. The top section of the table shows the costs to local authorities in terms of increased spending on social care. For domiciliary care for individuals aged 50 and over, this is now estimated at £625m compared to £720m in 2019 and £760m in 2017. Given that local authority funding for social care has been cut in real terms since 2017, while smoking prevalence for the over-50 group has fallen slightly, it is not surprising that the new estimate for the cost of smoking to local authorities has fallen. The cost to local authorities of increased residential care for individuals aged 65 and over is estimated at £565m – the first time that a statistically significant impact of smoking on this part of the social care system has been identified.

The lower section of the table shows various aspects of the cost of smoking to care recipients and their families. The regressions in Section 5 found no statistically significant relationship between smoking status and receipt of self-funded residential or domiciliary care and so we are unable to provide estimates of the cost of smoking to this aspect of the care system.

The third row of the lower section of Table 6.1 shows the estimated cost of replacing the proportion of informal social care costs which is due to smoking with formal care purchased at market rates. This is estimated at just over £8bn, a much larger figure than for the cost of smoking to local authorities. This reflects the fact that the correlation between smoking status and receipt of informal care (controlling for other factors) is larger than for formal care, and also the high overall estimated cost of replacing informal care with formal care. The estimate has fallen somewhat compared to the previous version of this report in 2019 when it was estimated at around £10bn; this partly reflects smaller coefficients for the relationship between informal care and smoker status (for current and ex-smokers) when the ELSA Wave 9 data are included in the calculations. Also, the estimated cost of replacing informal care with formal care per care recipient has been revised downwards based on analysis of the average number of hours of care received by informal care recipients in the ELSA data.

The cost of meeting additional unmet needs due to smoking with formal care is also large, at around £6bn. This is a decrease from the previous set of estimates in 2019, largely due to new analysis of the average number of hours of care received by current formal care recipients in the ELSA data. – an increase from the 2019

estimates. Overall, these figures mean that local authorities are saving just over £14bn per year through not fully funding the increased social care burden on informal carers and the increased unmet care needs that arise due to smoking.

Table 6.1 Estimated costs of smoking to various parts of the social care system in England

	Age group	Cost (£m)
Costs to local authorities		
Domiciliary social care	50+	625
Residential social care	65+	565
Cost to individuals and their families		
Self-funded domiciliary care	50+	No significant impact
Self-funded residential care	65+	No significant impact
Implicit cost of informal domiciliary care (if purchased as formal care)	50+	8,160
Implicit cost of unmet domiciliary care needs (if met through formal care system)	65+	5,910

Source: author's calculations

The total cost of smoking to the local authority funded social care system, at just under £1.2bn, is just under half the size of the latest estimates from DHSC's Tobacco Control Plan for the cost of smoking to the NHS (DH, 2017). However, whereas the cost of smoking to the NHS is about 2% of total NHS spending, the cost of the cost of smoking to the local authority funded domiciliary and residential care systems is significantly higher as a proportion of total spending. Figures from NHS Digital (2019) reproduced in Table 4.1 above show that total local authority spending on domiciliary care is £7.5 billion per year. Our estimate of the cost of smoking in higher domiciliary care costs to local authorities is £625 million which is just over 8% of this figure. It should also be noted that the £625 million estimate relates to people aged 50 and over only, whereas the £7.5 billion is a figure for local authority domiciliary spending on *all* age groups. Hence, as a proportion of local authority domiciliary spending on just those aged 50 and over, the proportion of spending will be higher. Similarly, our estimate of £565 million for the costs of smoking to local authority residential care is around 8% of total local authority residential care spending, but our estimate relates only to individuals aged 65 and over, whereas the £7.2 billion total spending estimate from Table 4.1 is for all age groups.

6.2 Number of people affected

Table 6.2 presents figures for the number of additional people receiving local authority funded domiciliary and residential social care as a result of smoking, as well as the number of people receiving informal care as a result of smoking, and the number of people with unmet care needs as a result of smoking. The figure for local authority-funded domiciliary care is much higher than for local authority funded residential care because on average, residential care is significantly more expensive per recipient than domiciliary care[6]. The figure of almost 1.1 million for the number of additional people receiving unpaid informal care as a result of smoking, and the figure of 450,000 for the number of additional people with unmet care needs due to smoking, are particularly striking.

Table 6.2 Number of additional people in England with care needs or unmet care needs as a result of smoking

Statistic	Number of people
Number of additional people receiving local authority funded domiciliary care	85,000
Number of additional people receiving local authority funded residential care	17,500
Number of additional people receiving informal care	1,095,000
Number of additional people with unmet care needs	450,000

Source: author's calculations

Notes: estimates for local authority funded domiciliary care and residential care, and informal care, refe to adults aged 50 and over. Estimate of number of additional people with unmet care needs refers to adults aged 65 and over.

[6] In this new version of the report we have assumed that people receiving local authority funded domiciliary care receive an average of 8 hours of care per week – this is the average number of hours of care for local authority-funded domiciliary care recipients in ELSA Wave 9. In previous versions of this report we assumed a higher number of average hours of care for domiciliary care recipients, meaning that our estimate of the number of additional people receiving local authority funded domiciliary care was lower. In the 2019 version of this report our estimate was 25,000 additional domiciliary care recipients, but based on the methodology used in this new version of the report the estimate would have been much higher, at 95,000.

7 Conclusions

This report has used data from the English Longitudinal Survey of Ageing to present updated and improved estimates of the cost of smoking to local authority-funded domiciliary and residential care for adults aged 50 and over, with a headline cost to local authorities of around £625 million for domiciliary care and £565 million for residential care. In addition, this report has presented estimates of the implicit costs of smoking to informal carers for adults aged 50 and over, as well as the implicit costs of smoking in terms of increased unmet care needs for adults aged 65 and over. By 'implicit costs' we mean the cost of replacing informal care with formal care, and the costs of meeting unmet care needs using formal care. The implicit costs of smoking to informal carers and the costs of meeting unmet need are both very high, at £8.2bn and £5.9bn respectively. The report also provides updated estimates of the number of additional people in England receiving domiciliary care, the number of additional people receiving informal care and the number of additional people with unmet needs as a result of smoking.

References

Age UK (2014), *Factsheet 46: Paying for care and support at home*, April 2014. http://www.ageuk.org.uk/Documents/EN-GB/Factsheets/FS46_Paying_for_care_and_support_at_home_fcs.pdf

Callum C, S Boyle and A Sandford (2011), "Estimating the cost of smoking to the NHS in England and the impact of declining prevalence", *Health Economics, Policy and Law*, Vol 6 pp 489-508.

Curtis L and A Burns, *Unit Costs of Health and Social Care 2016*, Personal Social Services Research Unit, University of Kent. http://www.pssru.ac.uk/project-pages/unit-costs/2016/index.php

Doll R *et al* (2004), "Mortality in relation to smoking: 50 years' observations on male British doctors", *British Medical Journal*, Vol 328, pp 1519-1550.

Health and Social Care Information Centre (2013), *Community Care Statistics: Social Services Activity, England*, *2009-10 to 2012-13*. http://www.hscic.gov.uk/catalogue/PUB13148/comm-care-stat-act-eng-2012-13-fin-rep.pdf

House of Commons Committee of Public Accounts (2016), *Personal Budgets in Social Care: Second Report of Session 2016-17*. http://www.publications.parliament.uk/pa/cm201617/cmselect/cmpubacc/74/74.pdf

Marmot, M et al (2013), *English Longitudinal Study of Ageing: Waves 0-5, 1998-2011* [computer file]. *20th edition*. Colchester, Essex: UK Data Archive [distributor], October 2013. SN: 5050.

Nash R and H Featherstone (2010), *Cough Up: Balancing Tobacco Income and Costs in Society*. London: Policy Exchange. http://www.policyexchange.org.uk/images/publications/cough%20up%20-%20march%2010.pdf

Natcen Social Research (2016), English Longitudinal Study of Ageing (ELSA), Wave 1 to Wave 7: User Guide to the core datasets. London: National Centre for Social Research.

NatCen Social Research, University College London. Department of Epidemiology and Public Health. (2018). *Health Survey for England, 2016*. [data collection]. UK Data Service. SN: 8334, http://doi.org/10.5255/UKDA-SN-8334-1

National Audit Office (2014), *Adult social care in England: Overview*, London: National Audit Office. http://www.nao.org.uk/wp-content/uploads/2015/03/Adult-social-care-in-England-overview.pdf

National Social Care Intelligence Service [NASCIS] (2014), *Personal Social Services: Expenditure and Unit Costs, England*. *2012-13 Final Release: Unit Costs by CASSR*

National Social Care Intelligence Service [NASCIS] (2016), *Personal Social Services: Expenditure and Unit Costs, England 2015-16. Reference Tables.* NHS Digital.

NHS Digital (2020), *Adult Social Care Activity and Finance Report: England 2018-19*. https://digital.nhs.uk/data-and-information/publications/statistical/adult-social-care-activity-and-finance-report

Office for National Statistics [ONS] (2017), "2016-based National Population Projection for England", https://www.ons.gov.uk/releases/nationalpopulationprojections2016basedstatisticalbulletin

Pokhrel, S., Owen, L., Lester-George, A., Coyle, K., Coyle D., West R., Trapero-Bertran M., Meads C. (2014). *Tobacco Control Return on Investment Tool*. London: National Institute for Health and Care Excellence.

Reed H (2010), *The Effects of Increasing Tobacco Taxation: A Cost Benefit and Public Finances Analysis*. London, ASH. http://www.ash.org.uk/tax/analysis

Saka O, McGuire A, Wolfe C. (2009) "Cost of stroke in the United Kingdom". *Age and Ageing* vol 38: pp27–32

Weng S, S Ali and J Leonardi-Bee (2011), "Smoking and absence from work: systematic review and meta-analysis of occupational studies". *Addiction*, Vol 108(2), pp 307-319.

Appendix A. ELSA questions used to construct care

For the purposes of the regressions in Section 5.2 we identify two groups:

(a) the group of people who receive care paid for partially or wholly by their local authority (local authority funded);
(b) the group of people who receive care that they pay for themselves (self-funders).

The questions in ELSA Wave 8 which are used to construct the dummy variables for these two groups are as follows [with the definition of the variable in square brackets in each case]:

Local authority funded = “yes” if any of the following are true, = “no” otherwise:

- capadla [1st care package: whether local authority pays for the care] = 1
- capadla2 [2nd care package: whether local authority pays for the care] = 1
- capadla3 [3rd care package: whether local authority pays for the care] = 1
- caphwdp [1st care package: whether respondent or partner pays for care via local authority personal budget] = 1
- caphwdp2 [2nd care package: whether respondent or partner pays for care via local authority personal budget] = 1
- caphwdp3 [3rd care package: whether respondent or partner pays for care via local authority personal budget] = 1

Self-funded = “yes” if any of the following are true, = “no” otherwise:

- caphwoi [1st care package: respondent or partner pays for care from own income, savings or benefits] = 1
- caphwoi2 [2nd care package: respondent or partner pays for care from own income, savings or benefits] = 1
- caphwoi3 [3rd care package: respondent or partner pays for care from own income, savings or benefits] = 1
- capadfm1 [1st care package: family member pays for care] = 1
- capadfm2 [2nd care package: family member pays for care] = 1
- capadfm3 [3rd care package: family member pays for care] = 1
- capadot1 [1st care package: other person (e.g. friend) pays for care] = 1
- capadot2 [2nd care package: other person (e.g. friend) pays for care] = 1
- capadot3 [3rd care package: other person (e.g. friend) pays for care] = 1

Note that the questions about who funds care are asked for up to three care packages which ELSA survey respondents might be receiving at the time of interview.

Appendix B: Detailed HSE statistics and comparisons with ELSA

This appendix presents the data for the 2018 Health Survey for England on the proportion of survey respondents experiencing difficulties with various activities (Section B.1) and the proportion of respondents receiving help with at least one activity from various sources (Section B.2). These statistics are presented to assess their comparability with the ELSA data used for most of the regression modelling in Section 5 (except for modelling unmet need, which is contained in HSE but not ELSA).

B.1 Data on experiencing difficulties with activities in HSE

For domiciliary care, the HSE interview collects data from each respondent aged 65 or over on whether they receive help with the following everyday activities:

1. Getting in and out of bed;
2. Washing own face and hands;
3. Having a bath or shower (including getting into/out of the bath or shower);
4. Dressing and undressing (including putting on shoes and socks);
5. Using the toilet;
6. Eating (including cutting up food);
7. Taking the right amount of medicine at the right times;
8. Getting around indoors;
9. Getting up and down stairs;
10. Getting out of the house;
11. Shopping for food;
12. Doing routine housework or laundry;
13. Doing paperwork or paying bills.

Activities 1-6 are ADLs while 7-13 are IADLs. The list of activities is similar, but not identical to, the activities featured in the ELSA data as shown in Table 2.4 of this report.

Table B.1 shows the proportion of never-smokers, ex-smokers and current smokers who experience difficulties with the 13 ADLs and IADLs listed above in the 2016 HSE sample. For every activity featured in the table, a higher proportion of current smokers have difficulties with the tasks those who have never smoked or ex-smokers. For some of the activities, a higher proportion of ex-smokers have difficulties with. Looking across all the ADLs, the proportion of current smokers who need help with at least one of them (40%) is higher than for people who have never smoked (23.8%) or for ex-smokers (29.3%). For the IADLs, the proportion of current smokers who needed help with at least one is higher than either the ex-smokers or

those who have never smoked, at 42.3% for current smokers compared to 25.9% for ex-smokers and 24.2% of never-smokers. Looking across all the indicators, 46% of current smokers need help with at least one task compared to just under 34% of ex-smokers and just under 29% of those who have never smoked.

Comparing the general pattern of results for the HSE in Table B.2 with the ELSA data in Table 2.4 shows that HSE respondents are more likely to experience difficulties with ADLs or IADLs, conditional on smoker status, than ELSA respondents. This is partly a reflection of the fact that the ELSA data contain men and women aged 50-64 who have fewer difficulties with ADLs and IADLs on average than people aged 65 and over. However, current smokers are significantly more likely than either ex-smokers or never-smokers to have experienced difficulty with at least one task in the HSE. This is a similar pattern to the ELSA data (at least when both categories of ex-smoker are combined in the ELSA data).

Table B.1. Proportion of respondents aged 65 or over experiencing difficulties with ADLs/IADLs, by smoker status, HSE 2018

Task	Never-smokers	Ex-smokers	Current smokers
ADLs:			
Getting in and out of bed	8.3%	9.8%	15.6%
Washing face and hands	3.4%	3.4%	6.3%
Having bath/shower	13.0%	13.1%	21.5%
Dressing and undressing	11.1%	12.4%	17.7%
Using the toilet	4.3%	3.8%	4.5%
Eating	4.6%	4.1%	10.4%
Any difficulty with ADLs	**23.8%**	**29.3%**	**40.0%**
IADLs:			
Taking medication	5.6%	6.4%	8.1%
Getting around indoors	8.4%	8.8%	13.2%
Getting up and down stairs	19.7%	23.8%	36.1%
Getting out of the house	15.4%	16.0%	30.1%
Shopping for food	18.7%	21.1%	39.4%
Routine housework or laundry	19.5%	19.1%	31.2%
Paperwork or paying bills	10.7%	10.3%	16.6%
Any difficulty with IADLs	**24.2%**	**25.9%**	**42.3%**
Any difficulty with any task	**28.7%**	**33.7%**	**46.0%**

Source: Landman Economics analysis of HSE data

B.2 Receipt of help from various sources

For each of the activities shown in Table B.1, the HSE records whether survey respondents receive help with the activity from the following sources:

- the interviewee's spouse or partner;
- other relatives;
- friends or neighbours;
- home care worker, home help or personal assistant;
- other formal help.

Table B.2 shows the proportions of respondents aged 65 or over in the 2016 HSE who receive help with one or more tasks from various sources, again broken down by smoking status. The first three rows show the proportion of respondents receiving help from three different informal sources – their spouse or partner, other relatives, and friends or neighbours. Current smokers and ex-smokers are more likely to receive help from their spouse or partner than those who have never smoked, while current smokers are more likely to receive help from other relatives than ex-smokers or never-smokers are. The proportions of HSE respondents who receive help from friends or neighbours are much smaller in each smoking status group than for those receiving help from spouse or partner, or other relatives. The fourth row shows the proportions receiving *any* informal help – 30.6% of current smokers do, compared to 18.6% of ex-smokers and 16.5% of those who have never smoked.

The next four rows of Table B.2 show the proportions receiving help from formal sources. The single most common source of formal help is from a home care worker. Current smokers are *less* likely than ex-smokers or those who have never smoked to have received help from a home care worker. Looking across other formal sources, current smokers are more likely to have received help than either ex-smokers or never smokers.

The bottom row of Table B.2 shows the proportion of respondents aged 65 or over receiving help from any source at all – this is substantially higher for current smokers, at almost 31%, than it is for ex-smokers (19%) or people who have never smoked (16.5%).

Compared with the statistics for receipt of help with at least one care need from different sources in the ELSA data in Table 2.7, the HSE data show a bigger difference between current smokers and ex-smokers. In the ELSA data the probability of receiving help with care needs for ex-smokers was roughly the same as for current smokers (while for ex-smokers who had quit less than 10 years before the survey, the probability of receiving help was actually greater than for current smokers). In the HSE data there is a clearer gradient whereby current smokers are

more likely to receive help than ex-smokers, who are in turn more likely to receive help than those who have never smoked.

Table B.2. Proportion of respondents aged 65 or over receiving help with at least one care need from different sources, HSE 2018

Source	Never smoker	Ex-smoker	Current smoker
Informal sources:			
Spouse/partner	6.6%	8.7%	7.4%
Other relatives	10.0%	10.6%	22.9%
Friends/neighbours	2.9%	2.5%	7.3%
Any informal help	**16.5%**	**18.6%**	**30.6%**
Formal sources:			
Home care worker	3.0%	2.9%	2.8%
Other formal sources	3.1%	3.7%	4.6%
Any formal help	**5.8%**	**5.9%**	**7.4%**
Any help (formal or informal)	**16.5%**	**18.6%**	**30.6%**

Source: Landman Economics analysis of HSE data

Appendix C. Cost calculations for unmet need and cost of domiciliary care

This appendix gives details of how the estimates for the costs the replacement value of informal domiciliary care and the cost of meeting unmet need for domiciliary care, presented in Table 4.4 of this report, are arrived at. The other cost estimates presented in Table 4.4 are calculated as shown in Table 4.2 based on statistics from NAO (2018).

C.1 Replacement value of informal domiciliary care for adults aged 50 and over

The cost of replacing informal domiciliary care for adults aged 50 and over in England is based on multiplying three numbers:

1) the average annual unit cost of domiciliary care. Using the hourly figure of £16.86 for the cost of domiciliary care (from Table 4.3) and assuming 8.5 hours per week of domiciliary care per recipient (based on an analysis of the number of hours of informal care received by people who receive informal care in ELSA), we assume an annual unit cost of £7,452 per year.
2) The estimate from ONS (2017) of the total number of adults aged 50 and over in England in 2019 (21.058 million)
3) The (weighted) proportion of adults aged 50 and over in the ELSA sample requiring informal care (15.6%).

This gives a total figure of £24.5bn.

C.2 Cost of meeting unmet need for adults aged 65 and over

The cost of meeting unmet social care needs for adults aged 65 and over in England is based on multiplying three numbers:

1) The average annual unit cost of home care. Using the hourly figure of £16.86 for the cost of domiciliary care (from Table 4.3) and assuming 15 hours per week of domiciliary care per recipient (based on an analysis of the number of hours of informal care received by people who receive informal care in ELSA), we assume an annual unit cost of £13,150 per year.
2) The estimate from ONS (2017) of the total number of adults aged 65 and over in England in 2019 (10.197 million)
3) The (weighted) proportion of adults aged 65 and over in the HSE sample with unmet need (26.9%).

This gives a total figure of £36.1bn.

The costs of smoking in terms of additional informal care needs and unmet needs presented in Table 6.1 are then calculated by multiplying these total costs by the attributable proportions formula (as shown in Section 4.3) using the regression results in Section 5.2 (for informal care) and Section 5.3 (for unmet need).