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Title of article

Using vignettes to examine preferences for paying for long-term social care in online and interview surveys

This should be no longer than 15 words, and give a good idea of the subject.

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Abstract

A novel approach using 'vignettes' to elicit public attitudes towards paying for long-term social care for older people was administered in two surveys: 1) for people aged 18-75, a web survey using an online volunteer panel; and 2) for older people aged 65+, a face-to-face interview was included within a national random location omnibus survey. Given the different sampling approaches and modes of data collection, we examined whether our key results differed between the two surveys by comparing responses for the 65-75 age group that was included in both. While responses to the vignettes were significantly different in the two surveys, after adjusting for differences in socio-demographic characteristics, the vignette results were comparable. The variations in response between the surveys thus appear to be due to differences in sample profile rather than to measurement differences due to survey mode.

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Introduction
Survey aims
Unlike the NHS in England, which is free at the point of delivery, social care is means-tested, and only people on lower incomes and with no or few capital assets receive funding from the state to cover some or all of the costs of meeting some or all their care needs. In addition, about half of those receiving formal social care in England privately financed at least part of their care costs (Charlesworth et al, 2018). Cuts to public social care funding since 2009 (Phillips et al, 2017), combined with growing demand for social care, have reinforced – indeed amplified – views among the public and policy-makers that changes to social care funding systems are required.

Previous research into the public's views on social care funding has shown that:
- Public understanding of the current system is poor, with many adults believing that social care costs, like health care, are almost entirely funded by the state (Bottery et al, 2018; Ipsos MORI, 2018; Gregory, 2014; IPPR et al, 2011)
- Few adults save over the long-term in order to pay for social care costs, should the need arise (Ipsos Mori, 2016)
- Most adults in England do not think their housing assets should be used to fund social care (as they may be in the current system) (Overton et al, 2017)
- Most people say they do not want to rely on informal (i.e. unpaid) care from family members when they are older (Bottery et al, 2018; Ipsos MORI, 2018)

However, there is limited consensus among the public and policy-makers on a number of key issues, including the balance between individual and state funding responsibilities, the level of income or assets above which individual service users should be expected to contribute to their own care costs, and whether there should be an upper limit on the costs that users should be required to pay. This last is important, as lifetime care costs are £100,000+ for about 10% of adults (Commission on Funding of Care & Support, 2011). Research on future funding options is often hampered both by the lack of public understanding of how the current complex system works and by the implications of proposals for change in the tax and inheritance systems, as well as their distributional consequences (e.g. between different age groups and socio-economic groups) and the consequences for overall public expenditure.

Over the past few years, the Department of Health and Social Care (DHSC) in England has been examining a range of policy options for reforming the current system of paying for social care. To inform the policy process, the DHSC commissioned the Policy Innovation & Evaluation Research Unit (PIRU) to carry out a survey among the general population to secure greater understanding of public attitudes to financing social care for older people. Our study took a novel approach and attempted to simplify the process of eliciting survey respondents' views by starting from a 'blank slate' (i.e. disregarding the current means tests for income and assets) and asking them to focus on only three key personal parameters - income, savings and housing assets - when deciding whether the state, the service user, or a mixture of both, should pay for the social care costs of an older person. After a very brief description of the current system in England, respondents were shown four situations, or vignettes, describing the social care needs of an older person, and in each vignette, one of the parameters was varied while the other two remained the same. The vignettes are described more fully below. A key aim of the research was to look at the factors associated with differing attitudes to paying for care, such as age, partnership status, ethnicity, socio-economic position, health status and experience of informal caring.

Methodological issues
Given time and cost constraints, the research team decided to administer the vignettes using Kantar's online panel. The use of online panels to carry out surveys of the general population has increased significantly over the past 20 years, initially

in the market and social research sectors, and more recently among academic researchers. Despite concerns over possible coverage, sampling and response bias (Zack et al, 2019; MacInnis et al, 2018; AAPOR, 2010; Erens et al, 2014; Nicolaas et al, 2014; Yaeger et al, 2011), the use of online surveys is likely to continue to increase because they allow relatively cheap and quick data collection, which contrasts with the rising costs of traditional face-to-face interview surveys at a time when response rates to such surveys are decreasing.

However, online surveys are not appropriate for all groups in the population, especially those without access to the internet, which includes many older people in the UK and other countries (AAPOR, 2010; Duffy et al, 2005, Hirsch et al, 2013; Bethlehem, 2010). Despite the inter-generational gap in internet usage narrowing in the past decade, older adults in the UK are still the least likely to use the internet. According to 2019 figures from ONS, 29% of adults aged 65 and older have never used the internet, down from 58% in 2011 (compared with only a six percentage point reduction to 2% for those aged 16-64) (Office for National Statistics, 2019). Among adults aged 75+, over half (53%) were not *recent* (i.e. in the last 3 months) internet users, compared with 17% of those aged 65-74 and only 1% of individuals aged 16-44. In particular, older women are least likely to use the internet: among adults aged 75+, 46% of men and 59% of women had not used the internet in the past 3 months. Given the poor coverage of older people in online surveys, we set an upper age limit for the online survey at 75 years. In order to obtain the views of the large group of older people who are not internet users, we adopted to carry out a separate survey of older people (65+) using face-to-face interviews. The interviews were administered as part of Kantar's continuous omnibus survey.

Having administered the vignettes in two surveys using different modes of data collection (online and face-to-face) and different sampling approaches, the question arises as to how comparable the results are from these surveys. Existing evidence shows that different survey modes may provide different answers, even when the questionnaire administered is identical, as was the case in our surveys (Burkill et al, 2016; Prah et al, 2015; Heerwegh et al, 2008; Link et al, 2005). Also, there may be differences due to the different sampling approaches used by our two surveys, particularly given the considerable evidence showing that online panels made up of members who have volunteered (in contrast to online panels that have been recruited using probability sampling methods) do not necessarily provide good representation of the population in general, whether on socio-demographic characteristics (some of which can be controlled for in online surveys by the setting of quota controls), or on the variables of interest to the survey (MacInnis et al, 2018; Pennay et al, 2018; Schonlau et al., 2017; Sturgis et al, 2016; Erens et al, 2014; Yaeger et al, 2011; AAPOR, 2010; Chang et al, 2009). Previous studies have shown that, compared with the general population, online panel members over-represent those who are voters, white, active internet users, in better health, have a higher income and more education, among other characteristics (which may vary from country to country) (Couper, 2017; AAPOR, 2010; Callegaro et al, 2014; Pennay et al, 2018; Zack et al, 2019; Duffy et al, 2005).

This paper, therefore, aims to:

- describe the study's methodology including the achieved sample sizes and representativeness of both the online and interview surveys, as well as provide details of the vignettes and the derivation of analysis variables
- describe the differences in the results between the two surveys and explore whether these are due to differences in survey mode and/or sample characteristics

The second objective is achieved by examining vignette responses and socio-demographic characteristics for the 65-75 age group that was included in both the online and interview surveys.

Methods

Study design

In collaboration with Kantar, Public Division, we carried out two surveys of the general population in England. The first used the online panel run by the Kantar Profiles Division which numbers over 150,000 adults. Panel respondents are invited to take part in surveys by email and are incentivised with points which they can later trade for vouchers. The online survey aimed to achieve a sample of 3000 individuals aged 18-75, split equally between men and women, and with quotas set for age in order to be representative of the population of England (18-24, 13%; 25-34, 19%; 35-44, 18%; 45-54, 20%; 55-64, 16%; 65-75, 14%). The online survey was administered from 6th to 19th December 2018.

Given the relatively high percentage of older adults who do not use the internet, we included the same questions on Kantar's continuous face-to-face interview omnibus survey as we felt that would provide a more robust sample than an online survey of an older group. The omnibus survey is carried out weekly among a cross-section of adults aged 16+ living in private households in the UK. Each survey covers a range of topics. The omnibus survey uses a random location sample design (a form of quota sampling). The sample frame consists of the Postcode Address File (PAF), from which clusters of a small set of homogenous streets are selected. Interviewers are given a list of addresses in these streets at which they must call, in order to restrict interviewer discretion in where they carry out interviews. Interviewers are also instructed to work during different days of the week and times of day when completing their assignments. Quotas (on region, gender, age, working status, and whether there are children in the household) are set for each interviewer assignment to help prevent natural variations in response propensity. Our module of questions on funding social care was completed by the 466 respondents aged 65+ years who were interviewed as part of the omnibus survey between 30th November and 4th December 2018.

Representativeness

Comparing the achieved samples with independent population data suggests that both the online (general population) and interview (older people) surveys provide reasonable representation of the target populations, at least for the socio-demographic variables for which reliable external data are available. Tables 1 and 2 show how the samples compare (although the comparisons may not be exact due to differences in the questions between the online and interview surveys and those

used for the external comparisons). The online survey sample (Table 1) shows under-representation of young men (especially ages 18-34) and older women (ages 45-75), residents in London, non-white adults, adults who were married/cohabiting, adults who own their property with a mortgage, adults with no formal educational qualifications and adults in full-time work. By contrast, the groups who are over-represented in the online survey include older men (ages 45-64), younger women (especially ages 18-34), residents in northern England, white adults, adults who are not married/cohabiting, and adults who are unemployed. However, the differences between the online survey and external population data for these socio-demographic variables are generally quite small.

Table 1: Socio-demographic comparison of achieved online survey sample with independent population data

	Online survey achieved sample[3]	Population data	Difference (survey – population)
	n=3000		
Gender[1]	%	%	%
Men	50.0	49.6	0.4
Women	50.0	50.4	-0.4
Age within gender[1]			
All			
18-24	13.0	12.0	1.0
25-34	19.0	19.1	-0.1
35-44	18.0	17.8	0.2
45-54	20.0	19.4	0.6
55-64	16.0	16.6	-0.6
65-75	14.0	15.0	-1.0
Men			
18-24	8.0	12.5	-4.5
25-34	15.3	19.4	-4.1
35-44	17.1	17.9	-0.8
45-54	22.6	19.3	3.3
55-64	22.6	16.4	6.2
65-75	14.3	14.6	-0.3
Women			
18-24	18.0	11.6	6.4
25-34	22.7	18.8	3.9
35-44	18.9	17.8	1.1
45-54	17.4	19.5	-2.1
55-64	9.4	16.8	-7.4
65-75	13.7	15.5	-1.8
Region[1]			
North East	5.6	4.8	0.8
North West	13.6	13.0	0.6
Yorkshire & Humberside	10.0	9.8	0.2

East Midlands	10.1	8.6	1.5
West Midlands	10.1	10.4	-0.3
East of England	10.9	10.9	0.0
London	13.0	16.2	-3.2
South East	16.0	16.2	-0.2
South West	10.7	10.0	0.7
Ethnic group[2]			
White	90.9	85.6	5.3
Mixed	2.2	1.2	1.0
Asian/Asian British	3.8	7.2	-3.4
Chinese	0.7	0.6	0.1
Black/African/Caribbean/Black British	1.8	3.4	-1.6
Other	0.6	1.9	-1.3
Marital status[2]			
Married/ civil partnership/ cohabiting	60.8	64.9	-4.1
Single/separated/widowed/divorced	39.2	35.1	4.1
Tenure[2]			
Own outright	34.1	29.6	4.5
Mortgage/loan	26.6	36.4	-9.8
Part rent	1.8	0.7	1.1
Rent	35.1	32.6	2.5
Other	2.3	0.8	1.5
Highest educational qualification[2]			
Degree or higher (or equivalent)	42.1	40.3	1.8
Other	53.0	51.6	1.4
No formal qualifications	4.9	8.1	-3.2
Employment status[2]			
Working full time	44.7	50.6	-5.9
Working part time	18.5	17.2	1.3
Unemployed	9.4	2.8	6.6
Inactive	27.4	29.5	-2.1

[1] Population data based on ONS mid-term population estimates for 2018 for ages 18-75.
[2] Population data based on Annual Population (APS) 2018 for ages 18-75.
[3] The survey data are unweighted.

Table 2 shows the same comparisons with population data for the achieved interview sample of older people aged 65+. The interview sample of older adults shows the following groups to be under-represented: women; men aged 75-84; women aged 85+; older adults who are married/cohabiting; older adults who are home owners; older adults with any educational qualifications; and older adults in work. By contrast, the groups who are over-represented include: men; women aged 75-84; older adults in the northern parts of England (aside from the North East); older adults who are not married/cohabiting; older adults who live in rented accommodation; those with no formal educational qualifications; and older adults who are inactive/retired. As for the

online survey, the differences between our older adult sample and older adults in the general population are generally quite small.

Table 2: Socio-demographic comparison of achieved interview survey sample for older people aged 65+ with independent population data

	Interview survey achieved sample[3]	Population data	Difference (survey – population)
	n=466		
Gender[1]	%	%	%
Men	50.2	45.7	4.5
Women	49.8	54.3	-4.5
Age within gender[1]			
All			
65-74	55.6	54.5	1.1
75-84	31.8	32.1	-0.3
85+	12.7	13.4	-0.7
Men			
65-74	59.4	57.5	1.9
75-84	27.4	31.8	-4.4
85+	13.2	10.7	2.5
Women			
65-74	51.7	52.0	-0.3
75-84	36.2	32.3	3.9
85+	12.1	15.7	-3.6
Region[1]			
North East	2.8	5.1	-2.3
North West	16.1	13.3	2.8
Yorkshire & Humberside	11.8	10.0	1.8
East Midlands	11.2	9.1	2.1
West Midlands	9.7	10.7	-1.0
East of England	12.2	12.0	0.2
London	9.9	10.4	-0.5
South East	14.8	17.3	-2.5
South West	11.6	12.1	-0.5
Ethnic group[2]			
White	94.6	95.2	-0.6
Mixed	0.4	0.2	0.2
Asian/Asian British	2.4	2.5	-0.1
Chinese	0.2	0.2	0
Black/African/Caribbean/Black British	2.2	1.3	0.9
Other	0.2	0.5	-0.3
Marital status[2]			
Married/ civil partnership/ cohabiting	55.2	62.9	-7.7

Single/separated/widowed/divorced	44.8	37.1	7.7
Tenure[2]			
Own outright	73.4	76.2	-2.8
Mortgage/loan	2.4	5.0	-2.6
Part rent	0.2	0.3	-0.1
Rent	24.0	17.4	6.6
Other	0.0	1.0	-1.0
Highest educational qualification[2]			
Degree or higher (or equivalent)	22.8	32.3	-9.5
Other	38.4	48.6	-10.2
No formal qualifications	38.7	19.1	19.6
Employment status[2]			
Working full time	1.7	3.4	-1.7
Working part time	4.3	6.9	-2.6
Unemployed	0.0	0.2	-0.2
Inactive/retired	94.0	89.5	4.5

[1] Population data based on ONS mid-term population estimates for 2018 for ages 65+.
[2] Population data based on Annual Population Survey (APS) 2018 for ages 65+.
[3] The survey data are unweighted.

Survey questionnaire
The same questionnaire was used for both the online and interview surveys. For the latter, respondents were shown the tablet computer used by interviewers and asked to read the vignettes themselves. Thus, visual presentation of the vignettes and the response (including 'don't know') categories was identical in both the online and interview surveys; for the face-to-face survey, however, the interviewer read the question and keyed in the respondent's answer.

The questionnaire was developed by the research team following initial qualitative research involving eight focus groups which examined people's perceptions and behaviours with respect to planning for future social care needs as well as their priorities for how social care provision should be funded (Dixon et al, 2019). The survey questionnaire began with a short introduction to social care in England, which provided very brief descriptions of what social care involves, who receives social care and how it is paid for. This was then followed by four vignettes - two involving home care and two concerning care homes – which asked how respondents thought the care should be paid for (described in more detail below). There were also questions on whether respondents thought there should be a 'ceiling' on care costs within each vignette (asked only of those who said the user should pay some or all of the costs). At the end of the questionnaire, there were a few questions on general attitudes to public spending and concerns about the respondent needing care themselves when older, plus the usual socio-demographic questions. The questionnaire was further refined after cognitive testing by Kantar researchers among ten respondents.

Vignettes

Each respondent was asked how care should be paid for by presenting them with four different vignettes: two involved care provided in the person's own home (vignettes 1 and 2) and two involved the person moving to a care home (vignettes 3 and 4). Each vignette related to an older woman (Grace) or man (Alan), with gender randomly assigned to vignettes 1 and 2, with vignettes 3 and 4 being the opposite gender for that respondent: i.e. when vignettes 1 and 2 were assigned to Grace, then vignettes 3 and 4 would relate to Alan, and vice versa. While gender was randomly assigned, the vignettes were always asked in the same order.

Each vignette showed three parameters for the individual's level of:
- Income
- Savings
- Housing assets

One parameter was varied in each vignette, and had three levels; for example, in vignette 1, savings was varied and could be £100,000, £20,000 or £5000. Respondents were then asked how care should be paid for, and given three options (plus 'don't know'):
- The state pays all
- The user pays all
- A mixture (the state pays some and the user pays some)

The wording for the four vignettes is shown in Box 1. For each vignette, the middle level of the varying parameter was asked first, and the response determined the next question asked: if the response was for the state to pay all the care costs, the respondent was filtered to the higher level of the parameter; if the response was for the user to pay some or all of the costs, the person was filtered to the lower level. The vignettes were laid out in a table, with the changed parameter highlighted on screen. An example of how the vignettes looked on screen is shown below for vignette 4:

Income	£200 per week
Living arrangement	Rents
Total savings	£30,000

Box 1: The four vignettes

Vignettes 1 and 2 relate to receiving care at home

> 'Grace/Alan is 80 years old and lives on their own. They had a fall and now need help getting up, going to bed, washing and dressing. They want to stay in their own home and will continue to need this help for the rest of the time they live in their home. The cost of social care to allow them to stay in their own home is currently £220 per week (around £11,500 per year).'

> *Vignette 1*
> Income: £200 per week
> Housing assets: Owns home worth £150,000
> Savings (varies): £100,000/£20,000/£5,000

> *Vignette 2*
> Income (varies): £500/£200/£165 per week
> Housing assets: Rents from council
> Savings: £5,000

Vignettes 3 and 4 relate to moving into a care home

> 'Grace/Alan is 80 years old and lives alone. They have dementia and now need 24 hour care. They can no longer live at home and will need to move to a care home. The care home costs £750 per week, which is around £40,000 per year. These costs include all of their living costs.'

> *Vignette 3*
> Income: £200 per week
> Housing assets: Owns home worth £500,000/£150,000/rents
> Savings: £20,000

> *Vignette 4*
> Income: £800/£200/£165 per week
> Housing assets: Rents
> Savings: £30,000

The full questionnaire including the vignettes can be viewed on PIRU's website (http://piru.lshtm.ac.uk/projects/current-projects/preferences-for-paying-for-long-term-care-for-older-people.html#t3).

Analysis variables

A variable was derived for each vignette combining responses for the three levels, and consisted of seven categories:

Category	Description
State pays all (1)	State pays all costs at all levels of savings/income/assets; no user contributions
Mixture of state and user payments: - **At highest level (2)**	User pays some or all costs at highest level of savings/income/assets
- **At middle level (3)**	User pays some or all costs at middle level of savings/income/assets
- **At lowest level (4)**	User pays some costs even at lowest level of savings/income/assets
User pays all (5)	User pays all costs even at lowest level of savings/income/assets
Don't know – part (6)	At least one level answered and one 'don't know'
Don't know – all (7)	All 3 levels 'don't know'

Ethics

The survey was approved by the LSHTM Observational Research Ethics Committee (Ref 16186).

Comparison of the 65-75 years age group in the online and interview surveys

In order to examine the differences that might arise between the two surveys as a consequence of their using different modes of data collection and sampling approaches, this section compares results between the online panel survey and the interview survey for respondents who were eligible to be included in both surveys, i.e. adults in the 65-75 age group. The overall sample sizes for this comparison are 420 for the online panel and 277 for the interview survey. Similar to Tables 1 and 2 but restricted to respondents aged 65-75, Table 3 compares the two samples on a number of socio-demographic variables with each other and with population data where independent external data are available for this age group. Survey respondents with missing data have been excluded from the base where these were few in number (which applied to most variables),[1] but the percentages of missing responses (whether not answered, refused or don't know) are shown for two socio-demographic variables where they are significant in number and of potential methodological interest.

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[1]Most socio-demographic variables had no missing values; aside from the two variables where missings are shown in Table 3, the maximum number of missings was 6 (for the question on general health).

Table 3: Comparison of socio-demographic variables for respondents aged 65-75 in online survey with those in interview survey, and with independent population data (where available)

	Online survey[4]	Interview survey[4]	Population data
	n=420	n=277	
Gender[1]	%	%	%
Male	51.2	54.2	48.1
Female	48.8	45.8	51.9
Marital status[2]			
Married/cohabiting	67.5	67.5	70.2
Single/separated/widowed/ divorced	32.5	32.5	29.8
Tenure[2]			
Own outright	74.5	73.3	76.1
Own with mortgage	5.5	2.9	5.8
Shared ownership	1.0	0.4	0.3
Rent/rent free	19.1	23.5	17.7
Ethnicity[2]			
White	98.3	94.2	95.4
Non-white	1.7	5.8	4.6
Region[1]			
North East	4.8	2.9	5.2
North West	12.9	18.1	13.5
Yorkshire & Humberside	9.8	13.0	10.1
East Midlands	11.0	11.2	9.3
West Midlands	9.5	8.7	10.6
East of England	10.5	11.2	11.9
London	6.0	10.1	10.3
South East	22.4	14.8	17.1
South West	13.3	10.1	12.0
Economic status[2]			
In work	16.0	9.0	14.4
Retired/other	84.0	91.0	85.6
Education level[2]			
Degree +	35.8	25.1	32.2
A level	17.9	12.7	19.6
GCSE	30.8	26.2	17.2
Other	1.0	3.7	11.5
None	14.6	32.2	19.4
Self-reported general health[3]			
Very good	9.8	19.0	23.0
Good	41.6	47.4	41.5
Fair	40.9	24.8	23.6
Bad	6.2	6.9	8.4

Very bad	1.2	1.8	3.5
Limiting long-standing illness[2]			
Has LLSI	30.3	27.2	36.8
No LLSI	69.7	72.8	63.2
Whether cares for someone[3]			
A carer	17.2	20.8	22.6
Not a carer	82.8	79.2	77.4
Whether being cared for			
Not cared for	89.0	87.7	NA
Cared for	11.0	12.3	
Social grade			
A	5.7	6.1	NA
B	35.0	18.8	
C1	30.5	19.5	
C2	13.6	21.7	
D	10.0	10.8	
E	5.2	23.1	
Value of home (for home owners)			
Home <150K	17.0	12.4	NA
150-299K	40.0	30.5	
300-499K	24.5	20.5	
500k	8.4	7.1	
1m+	0.9	1.0	
DK/Refused	9.3	28.6	
Index of Multiple Deprivation quintile			
1	12.1	29.6	NA
2	8.3	15.9	
3	11.4	17.0	
4	14.0	10.8	
5	6.2	9.4	
Missing	47.9	17.3	

NA = not available

[1] Population data based on ONS mid-term population estimates for 2018 for ages 65-75.

[2] Population data based on Annual Population Survey (APS) 2018 for ages 65-75.

[3] Population data based on Health Survey for England 2017 for ages 65-74.

[4] The survey data are unweighted.

Table 3 shows that the differences between the online and interview surveys are not large for several socio-demographic variables, including gender, marital status, whether respondents have a limiting long-standing illness, care for someone else and are being cared for. Compared with independent population data, the online survey distributions are closer than those from the interview survey for gender, tenure, economic status, education level, and whether respondents have a limiting long-standing illness. For ethnicity, self-assessed general health and whether

respondents provide informal care for someone else, the interview survey distributions are closer to the external population data. For region, the picture is mixed with the online survey better representing older adults in the northern areas of the country, while the interview survey is better for the east and southern areas (except for the South West).

There are three large differences between older adults in the two surveys:
- In terms of social grade, online respondents are of higher social grade, with 71.2% classed as ABC1 compared with just 44.4% in the interview survey
- In terms of education, online respondents are much more likely to have a degree, A level or GCSE (84.5% compared with 64.0% in the interview survey), while interview respondents are more than twice as likely to have no formal qualifications (32.2% compared with 14.6% in the online survey)
- Interview respondents were more likely to describe their health as very good/good than were those in the online survey (66.4% and 51.4% respectively)

There were also large differences with respect to missing data for two variables:
- Interview respondents who were home owners were much more likely *not* to provide an estimate of the value of their home (28.6% compared with 9.3% for online respondents)
- IMD was much more likely to be missing for online than for interview survey respondents (47.9% and 17.3% respectively), which indicates that reliable postcodes were not available for nearly half of online respondents in this age group

Table 4 compares online and interview survey responses among the 65-75 age group for the four vignettes. The columns on the left side - columns a) and b) - show the raw (unweighted) distributions for each survey. There are some notable differences between responses given by respondents in the online survey with those in the interview survey:
- The distributions for all four vignettes were significantly different between the online and interview surveys (column c)
- Interview respondents were more likely to say the state should pay all
- Online respondents were more likely to say the user should pay all or pay at the lowest level
- The proportions of 'don't know' answers were significantly different for all four vignettes, with interview respondents being much more likely to say they 'don't know' (column c)

Looking at the raw figures, therefore, it appears that the different survey designs lead to quite different results among this older age group. In order to further explore whether these differences are largely explained by divergences due to sample profile or to data collection mode, we used propensity score matching (Leuven et al, 2003) to analyse the differences in responses to the vignettes between the online and interview surveys. Propensity score matching is useful when participants' characteristics may be associated with both the likelihood of participating in the study (e.g. of completing the online survey) and the study outcomes (e.g. preferences for

how the social care should be paid for). Propensity scoring creates pairs of individuals matched on their background (and potentially other) characteristics, in this case, pairs of similar respondents in the online and interview surveys. The outcomes in the matched group using propensity score weights can be compared with those of the unmatched samples to detect the role of sample characteristics in shaping survey responses (columns c and f in Table 4). We matched on variables for socio-economic position (SEP), namely educational level and social grade, along with gender and self-reported general health (background characteristics that differed between the online and interview surveys, as shown in Table 3). All covariates were treated as categorical. The outcomes were the responses to the four vignettes, so that the first five categories, 'state pays all' to 'user pays all', were analysed with ordinal regression, and the 'don't know' category was separately analysed using logistic regression.[2]

The weighted distributions for the online and interview surveys are shown in Table 4 in columns d) and e). The results of the propensity weighting show:
- After weighting by gender, SEP and general health, the differences between the online and interview surveys were no longer statistically significant for the four vignettes (column f)
- The differences in the proportion of respondents responding 'don't know' to the vignettes were eliminated by the propensity weighting for vignette 1 only, but were still statistically significant for the other three vignettes (column f)

Table 4: Comparison of vignette responses for respondents aged 65-75 in the online and interview surveys, unweighted (columns a, b, c), and weighted using propensity score matching for gender, SEP and general health (columns d, e, f) using propensity weights

	Unweighted			Weighted: gender, SEP, general health		
	a) Online survey	b) Interview survey	c) Difference a vs b[1]	d) Online survey	e) Interview survey	f) Difference d vs e[2]
Vignette 1						
N	*391*	*219*	*610*	*214*	*213*	*427*
State pays all	15.1	27.4	-0.51**	20.6	25.9	-0.30
Highest level	15.4	18.3		14.4	16.1	
Middle level	29.7	22.8		27.5	27.1	
Lowest level	27.9	20.1		22.8	19.5	
User pays all	12.0	11.4		14.8	11.4	

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[2] For the propensity score models, we used 1-to-5 matching with a calliper of 0.03 (i.e. the propensity score distance which indicates how far the matched pairs are allowed to be from each other; 1-to-5 matching allows each interview case to have up to five matches in the online sample if they are within the distance of 0.03). The value 0.03 was selected because it was approximately 20% of the standard deviation of the logit of the propensity score, as has been previously recommended (Austin, 2011). We carried out sensitivity analyses to compare this approach with 1-to-1 matching without a calliper, 1-to-1 matching with a calliper of 0.03, and 1-to-1 matching with a calliper of 0.03 with no replacement (i.e. each case in the online sample can only be used once). In these models, the numbers of matched cases in the online sample were small and the bias on the covariates was larger than using 1-to-5 matching.

N	420	259	679	249	247	496
Don't know	6.9	15.4	0.90***	8.6	13.2	0.50
Vignette 2						
N	393	206	599	230	197	427
State pays all	21.4	32.5	-0.29*	29.7	31.0	-0.06
Highest level	38.9	30.1		32.1	32.2	
Middle level	20.6	19.4		18.7	18.2	
Lowest level	13.5	14.1		15.0	14.3	
User pays all	5.6	3.9		4.5	4.2	
N	420	259	679	249	247	496
Don't know	6.4	20.5	1.32***	5.4	18.5	1.39***
Vignette 3						
N	386	204	590	231	200	431
State pays all	17.6	25.5	-0.35*	20.8	23.4	-0.15
Highest level	8.0	9.3		10.2	10.9	
Middle level	24.9	22.1		24.5	24.9	
Lowest level	42.5	38.7		38.4	35.5	
User pays all	7.0	4.4		6.1	5.3	
N	420	259	678	249	247	496
Don't know	8.1	21.1	1.15***	8.4	18.4	0.94**
Vignette 4						
N	388	190	578	217	187	399
State pays all	16.5	26.3	-0.43*	18.8	25.6	-0.40
Highest level	10.1	12.6		10.1	12.1	
Middle level	17.8	14.2		16.2	17.3	
Lowest level	43.0	36.8		42.4	36.4	
User pays all	12.6	10.0		12.4	8.7	
N	420	259	679	249	247	496
Don't know	7.6	26.6	1.48***	9.0	23.9	1.20***

Note. All propensity score models used 1-to-5 matching with a calliper of 0.03.

[1]Unadjusted differences for the categories 'state pays all' to 'user pays all' using ordinal logistic regression, differences for the category 'Don't know' using logistic regression

2Differences for the categories 'state pays all' to 'user pays all' using ordinal regression, differences for the category 'Don't know' using logistic regression, and all adjusted for gender, social grade, educational level and self-reported general health

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Discussion

Our study examined public attitudes to financing long-term care for older people. We developed a novel approach to collecting these data – showing respondents a sequence of vignettes with varied levels of income, savings or housing assets – and asking whether care costs should be paid by the state, the user or a mixture of both.

We carried out two surveys. The first used a volunteer online panel among adults aged 18-75; the upper age limit was imposed because of existing evidence on the poor coverage of older people in online surveys. In order to include all older people in our study, we administered the same questionnaire using face-to-face interviews among a nationally representative quota sample of respondents aged 65 and over.

In order to examine the extent to which results from our two surveys might differ as a consequence of their different modes of data collection and sampling approaches, for the age group that was included in both the online and interview surveys (i.e. adults aged 65-75), we compared their socio-demographic characteristics and their responses on the key measures of interest (i.e. whether the state or the user should pay for social care given an individual's particular circumstances).

We showed that, while some socio-demographic characteristics for respondents aged 65-75 were similar between the online and interview surveys (e.g. marital status, tenure, long-standing illness), there were very large differences in social grade and level of education, with online respondents much more likely than interview respondents to be of higher social grade and to have higher levels of educational qualifications, findings which are consistent with other research comparing online and interview surveys for the population in general (Couper, 2017; Callegaro et al, 2014; AAPOR, 2010).

Turning to a comparison of the results on key measures, we showed that all four vignettes gave significantly different results in the online and interview surveys for this older age group. We used propensity score matching to examine whether controlling for differences in background characteristics between the online and interview surveys might reduce the differences found in the vignette results. After adjusting for gender, SEP (i.e. social grade and education) and self-reported general health, the differences in the distributions for all four vignettes between the online and interview surveys were no longer statistically significant, suggesting that these (sample) characteristics were a more significant factor in explaining the differing results than was survey mode. Of course, an important limitation of our study is that we only looked at the 65-75 age group, and we cannot say if these findings would apply to adults outside this narrow age range.

Contrary to findings from previous studies which show that respondents using a self-completion format are more likely to use neutral points (such as 'don't know' or 'neither agree nor disagree') than those taking part in an interview (Chang et al, 2010; Heerwegh et al, 2008; Duffy et al, 2005; AAPOR, 2010), we found the opposite, with interview respondents much more likely to give 'don't know' responses to the vignettes. Previous studies have shown that individuals in lower social grades and with low levels of education (characteristics which were much more likely among interview respondents) are more likely to 'satisfice', i.e. select response options which require the least cognitive effort, such as 'don't know' (Roberts, 2010, Krosnick, 2000). In our study, while the differences in 'don't know' responses between the surveys were reduced, they still remained significant (for all but one vignette) after adjusting for social grade and level of education (with the possibility that there may be further (unobserved) sample differences between the two surveys related to the use of 'don't know').

In conclusion, we have shown, firstly, that a novel approach to investigating the complex topic of the public's attitudes to funding long-term social care can be successfully carried out using an online survey.

Secondly, our findings suggest that concerns over data quality in online surveys may be misplaced, at least for surveys of older people, as our online survey achieved 'better' data quality (that is, fewer 'don't know' responses) than the equivalent interview survey. It could be that older adults who volunteer for online panels are more likely to complete the questionnaire diligently than younger panel members who may be more prone, for example, to speed through online questionnaires (Greszki et al, 2014). This interpretation is supported by data from our online survey which showed that median completion time increased with age from 7.6 minutes for the 18-24 age group to 10.2 minutes for those aged 65-74. Moreover, the topic of our study may have been of particular interest to older adults, encouraging higher quality responses.

Lastly, our study sheds light on earlier predictions (Nicolaas et al, 2014) that, as the computer-literate population ages, it will become increasingly feasible to extend the use of online surveys to include older age groups. Online surveys among volunteer panels are often the only affordable option for large surveys in academic and social research, although concerns have been raised over the quality and representativeness of online panel surveys. Despite lower levels of internet use, our comparison showed that older people joining volunteer online panels appear to be subject to similar biases to those found among younger panel members (e.g. they are more highly educated than people who do not join online panels) and that such biases are likely to be reflected in the survey estimates. As AAPOR (2010) points out, however, while online panel surveys should not be relied on to provide precise population estimates, they can be useful in other settings, such as when looking at how socio-demographic characteristics relate with other survey variables.

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Article text ends

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