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Attitudes Towards Public Health Spending: The Case of the National Health Service in the United Kingdom

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JEL classification: I12, I18, H51

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Abstract

The funding of the NHS in the UK is in perennial crisis. In times of austerity it is difficult to advocate extra health spending from tax revenue. Our central questions are: how much extra do people think should be spent on the NHS; how much extra tax might they be willing to pay; or to what extent would they like to see public money redistributed away from other public services towards the NHS? We answer these questions using a large survey of the UK general public. On average the answers to these questions are £279, £176 and £33 per person, per year, respectively. We examine people's appetite for other measures to increase spending on patients and find that their spending preferences are somewhat related to their own health but strongly related to their age, gender, religious beliefs, political sentiments, and views on the structure of the NHS.

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1. Introduction

Public spending on the National Health Service (NHS) of the United Kingdom (UK) is under scrutiny, due to the steady increase in life expectancy, rising demand from more informed patients, increasing utilization of more sophisticated treatments involving costlier operations and drugs, increasing co-morbidity, staffing shortages, public deficits, prolonged austerity, and a government distracted by Brexit (Dolton, 2017). Policy options include raising more tax to spend on the NHS, running a larger public finance deficit, or even more

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austerity in other public spending areas to facilitate greater spending on health. We report on a large survey on people’s preferences over selected solutions to the funding problems in the NHS.

There is a limited literature on the UK public’s Desired Health Spending (DHS) or the Willingness To Pay (WTP) of patients for the NHS system as a whole. The British Social Attitudes Survey (BAS) (Mulligan and Appleby, 2001, Robertson et al., 2018, Gershlick et al., 2015) asks a small sample of individuals each year about their satisfaction with the NHS and asks whether they would like to see taxes rise to pay for more health provision. Various limited polls have taken place in recent years to try and ascertain peoples preferences for NHS spend (BBC & Ipsos MORI, 2017, ComRes, 2014) poll. The main limitation with these surveys is that there is no attempt to connect preferences for extra spending on the NHS with an understanding of where the money would come from. In this study we seek to make this connection in the minds of respondents by introducing explicit recognition that extra NHS spend could be funded either by extra taxation or redistributing resources from other areas of public spending. Making this connection raises the possibility that political views or affiliations may play some role in the expression of spending preferences. We carefully examine this question.

There is a more extensive literature outside the UK. Tambor et al. (2014) finds that people in Central and Eastern Europe are willing to pay for procedures performed, but has relatively few covariates to explain heterogeneity. Using a cross-section of some 30,000 respondents in 29 formerly Communist countries, Habibov et al. (2017, see also Anderson (2017), Habibov et al. (2018)) find that social trust increases people’s willingness to pay taxes earmarked for public health care; this is confirmed in a larger sample by Habibov and Cheung (2018). Munro and Duckett (2016) finds that satisfaction with public health care in China is more closely associated with the political positions of respondents than with their health. In the USA, people who think that health outcomes are unfair also think that the government should have a greater role in health care (Lynch and Gollust, 2010). Azar et al. (2018), using data for 29 countries, finds that more egalitarian respondents are willing to pay more for improving public health care, confirming earlier findings by Gevers et al. (2000). The more generic literature on the demand for health care tends to focus on the US case where the market is dominated by personal health insurance and private health care market provision. In contrast, our paper focuses on the case where health care is publicly provided and we examine how health care spending preferences can be elicited or not. This is of general relevance outside the UK as many other countries have publicly provided (or partly provided) health care systems.

Unlike the literature, our unique survey has a large number of conditioning covariates, including standard demographics such as age, gender, education and occupation, and less standard ones such as respondents’ attitudes towards risk, time, and other people. Most people do not know when they will need to call on the NHS and for what. They also do not know whether their need will be for themselves, their family, friends or colleagues. An investment in health care has an uncertain pay-off in the future, affecting ourselves and those around us. Respondents who are: more risk averse; have a lower discount rate; and are more altruistic may therefore be expected to be willing to pay more for health care.

One may also expect that the individual attitudes towards funding the NHS may depend on: their own perceived health; whether they have a family; how good their local General Practitioner (GP) is; and their underlying political beliefs. We test these hypotheses by seeking to explain the variation in the money people are prepared to spend on the NHS by means of taxation or redistribution.

The paper continues as follows. Section 2 discusses the methods used to collect and analyze the data. Section 3 presents descriptive statistics. Section 4 show the results of regression analysis. Section 5 concludes.

2. Data

2.1. *The Survey*

In September and October 2015, 17,053 residents of the United Kingdom started an online survey, and 12,028 completed it. Half of the respondents answered questions about health policy, and a third of those environment, pensions, or education. The survey covers a wide range of questions, including demographics, attitudes, and opinions on public policy. See (Dolton and Tol, 2016) for the full details. The exact wording of selected questions relevant to this investigation are included in Appendix A.¹

The survey includes information on: age, gender, number of children and grandchildren, age of children, religion, ethnicity, education, occupation, income, wealth, and date, time and location of the survey respondent. We incorporated some of the political attitude questions of the British Attitudes Survey (see Mulligan and Appleby, 2001, for example) which are designed to locate people's political views on a spectrum without actually asking them for political party affiliations or voting intentions.

A series of questions were included to measure time preferences, asking people to choose between hypothetical payoffs at different times, and another series to elicit risk aversion, asking people to choose between lotteries. The survey also included the ring measure of social-value orientation (Murphy et al., 2011). This consists of six, unincentivised dictator games (Güth et al., 1982), in which the respondent chooses a pay-off for herself and someone else. We also included health-related questions asking respondents about their own: alcohol consumption, smoking behaviour, health perceptions and their height and weight from which we compute their BMI.

Using respondents' location information (or rather, their servers'), we merged our data with exogenously available performance indicators on their nearest GP. The aim here was to control for the quality of their local health care provision.

2.2. *Preferences for Health Care*

Economists have tended to think of health care as a good to be invested in. Both Grossman (1972) and Zweifel et al. (2009) *et al.* consider health to be an investment good, using available resources (e.g. time, income, wealth) to limit the duration, intensity or

¹The survey is still open: <http://www.surveygizmo.co.uk/s3/2156353/attgovpol>.

likelihood of poor health. Unlike Grossman, Zweifel *et al.* add an element of uncertainty. These models are not so readily applicable to state-funded systems like the NHS where there is only very limited private health insurance. Health care in the UK has been free at the point of delivery² since the end of the Second World War. Because it is funded from public expenditure, the NHS can be thought of as a 'publicly provided private good' (Peston, 1972, Cornes and Sandler, 1986). It is certainly not a pure 'public good', because it is partially 'rival'—as health services can be congested and indeed are, with waiting lists *de facto* rationing treatment—and partially 'excludable'—since with the exception of emergency care, access is restricted for non-EU citizens and non-UK residents.

Effective treatment for individual patients has positive externalities on the patient's friends, family and employer. Demand for health care may therefore also vary with social value orientation, a variable that captures how much we care what happens to others. We sought to use a recently proposed measure (Murphy et al., 2011) to capture this aspect of the demand for public health care. Health care is also a contingent or insurance good, which we hope we will never need, but we are happy to contribute towards, on the grounds that we may need it in the future. We will usually need more of it as we age (Alemayehu and Warner, 2004). These factors suggest that an individual's demand for health care should vary with their: age, discount rate and risk aversion. We sought to explain the validity of these patterns of desired health spending by administering our own web-based questionnaire of around 6,000 voters (Dolton and Tol, 2016).³

2.3. Eliciting Preferences

Our main variable of interest is how much respondents would like to see spent on the NHS. We ask this in three different ways. This is a stated preference in all three cases, rather than a revealed one, and initially we do not specify the payment vehicle. Subsequently, we ask how much the NHS budget should increase, financed by an increase in the income tax and then we ask respondents to reallocate government funds between health care and other areas of public spending to calibrate their preference for additional NHS by redistribution. Earmarked taxation for the NHS is not the way public finances have worked up to now.⁴ All tax revenues are pooled and the Chancellor of the Exchequer has discretion over spending between different competing ends. Higher spend on the NHS out of a fixed budget implies less spending on other things, such as education, defence, unemployment benefits, or pensions. We do not ask people how much tax they currently pay, but calculate an estimate of this from their income and occupational status. We do not ask people how much they benefit from social spending other than health care. The answers obtained should therefore be interpreted as revealing a general desire for spending on healthcare—akin to a vote in a single issue referendum—rather than as a willingness to pay.

²Note that some things are actually charged for, like prescriptions, for some age groups. NHS patients can also take out private health insurance and still use the NHS.

³Only half of the total respondents to our public policy survey were asked our health questions.

⁴The case for a hypothecated tax for the NHS has recently been made and criticised. See <https://www.niesr.ac.uk/blog/real-remedies-or-hypothetical-hypothecation-fund-nhs>.

Willingness to pay is typically elicited for goods or services that are not (yet) on the market (Donaldson, 1990, Russell et al., 1995). The technique is normally used for a single new procedure or treatment (Cookson, 2003). The main question here is how much should be spent per person on the NHS overall, and this is quite distinct from standard willingness to pay elicitation. There are many issues with measuring preferences using surveys. We present those discussed by Zweifel et al. (2009, p54-55) and add details of others which may affect our specific research:

1. *Emotional Reaction to Questions.* Getting people to think about their own trade-offs between risk and health is an emotive issue. People may be affected by a recent experience, for example with a loved one.
2. *Hypothetical Responses.* Respondents do not actually have to pay more if they say they want more money spent on the NHS. Are respondents taxpayers or not?
3. *Strategic Behaviour.* Respondents may realize that the average response will be reported, and seek to influence the average by giving a very high or very low answers.
4. *Insufficient Motivation of the Sampled.* It takes some mental energy to respond in an intelligent way with a reasonable amount of thought. Respondents may not be adequately incentivised to treat questions seriously.
5. *Dealing with Small Probabilities or Unlikely Outcomes.* Health and health care may involve large adverse consequences and small probabilities. Decisions are prone to many biases under these circumstances.
6. *Calibration Problems.* People do not know how much is being spent in total or per patient.
7. *Trade-off Issues.* People do not typically take into account that spending more on the NHS may mean spending less on education, defence or some other public good.
8. *Sample Size Issues.* Sample sizes are typically small and insufficient for most kinds of statistical analysis.
9. *No Conditioning Regressors.* Many surveys ask few questions so no conditioning is possible to take account of gender, age, health circumstances of the individual, attitudes to risk, altruism attitudes, discount rates, and the existence of dependents.

2.4. Questions about Health Care Spending

We tackle the above issues in our survey design. We nudge all respondents, half with a picture reminding them of the general love of the British public for the NHS, half with a picture reminding them of the funding crisis in the NHS. See Figure A.1. This controls partly for point 1 above.

Most individuals do not know what money can buy in the NHS or what the overall costs are. We therefore inform them before we seek to measure desired spending. We measure attitudes towards spending on the NHS in three ways:

1. *Desired Health Spending—(DHS)* Asking about preferred spending levels per patient after first being asked what they they think the level of per patient spend is, and then being told what the current level of per patient spend is.
2. *Additional Health Spending from Taxation—(AHST)* Inferring it from preferences about preferred absolute funding levels in the NHS after being told what an increase of 1% in the Income Tax rate would secure in absolute additional spend for the NHS.
3. *Additional Health Spending from Redistribution—(AHSR)* Inferring their preferences from an exercise in which they are asked to allocate government spending between health care and other categories of public expenditure. We again first ask their perceptions of actual spend prior to being told the actual levels.

Arguably the first three problems have been characterised by the concept 'Cheap Talk' in economic theory. This is when information is cost-less to transmit and it is impossible to verify the accuracy of the message content. In this context this relates to the tendency of people to 'big up' what they would like to see spent of the NHS if they may not have to foot the bill. There is clearly a free rider problem in asking people what they would like to see spent if they think that much, or all, of that expenditure will be borne by others. In a modern economy where government wishes to be responsive to the will of the electorate this means that there is an inherent difficulty with establishing what should be spent of the NHS.

We establish what the respondent thinks before telling them the reality of public spending. If the errors induced by Problems 1 to 4 above have a systematic component, in both uninformed and informed responses, then by conditioning on the respondents' perceptions, we can potentially net out this measurement error. The other problems, numbered 5-9 above, are directly addressed in this research by: providing the respondents with information, making the trade-offs explicit, conducting the survey on over 6,000 respondents, collecting a lot of conditioning information about each survey respondent and establishing their income and whether they are paying taxes. The policies and budgets suggested to the respondents were inspired by the manifestos of the 2015 General Election.

Before asking about attitudes to NHS spending, we sought to gauge the general views of our respondents to resource allocation in the NHS and ways of addressing the current funding crisis. We did this by listing possible measures to save money and asked them to say which they agreed with. We based these measures on policies variously proposed in recent General Elections. The aim here is to get the respondent to think about the NHS in general terms and to contextualise the economy measures in the policy environment without explicitly mentioning money or funding, which comes later in our questionnaire.

The starting point of any investigation concerning desired health spending must be to establish what respondents know about NHS funding as the context for scaling their preferences. This is the frame of reference respondents are using to answer spending related questions on the NHS. Before one can try to elicit preferences and opinions on what one thinks *ought* to be spent on the NHS it is important to establish what the respondents actually *know* before they answer. This we do by asking how much respondents think is

spent using a slider scale. This is Q49 in Appendix A. We use three different sliding scales to allow us to measure the importance of the framing bias potentially introduced by having sliding scales of specific lengths. The maxima used are £4000, £5000 and £6000 per person per year—and respondents are allocated at random to these. Since our survey was an on-line survey we were also able to measure how long it took respondents to answer key questions on spending. This enables us to test whether those who reflect longer on such spending questions have different spending responses on average. An additional advantage of our design is that the distinction between what is perceived and what is known is that we can control for upward and downward surprises in terms of large and small differences in these spending amounts.

3. Descriptive Statistics

3.1. Attitudes to NHS Resource Allocation

Before asking about attitudes to NHS spending, we asked questions to gauge the general views of our respondents to various economy and resource allocation issues in the NHS. We did this by listing possible measures to save money and asked them to say which they agreed with. The measures suggested were: save on administration costs; making patients who use A&E services inappropriately to pay; GPs should be open more hours; NHS funding should be found from increases in general taxation; NHS functions should be outsourced to the Private sector; patients should have to pay to see GPs; and prescription charges should be raised. These are all policies which have been suggested in the last few years to help solve the NHS funding crisis. We use respondent's answers to these questions (in the form of a count of the number of economies supported) as a yardstick to judge general reactions to NHS 'resource measures' and suggested economies. We treat this variable as a separate dependent variable as it is potentially endogenous to desired spending. The exact wording of the question is reproduced in Appendix A as Q47.

In a clear way the survey imposes an NHS-funding problem on the respondent. We thus have information on how respondents feel that the NHS should save money and/or increase expenditures. Figure 1 shows that people favour cost-cutting over budget-increasing methods to achieve this goal. A majority of people think money should be saved on administration costs, this is unsurprising. Proposals to limit moral hazard are also popular, e.g., just under 50% are in favor of making A&E more expensive for alcohol-related incidents. Around 31% are in favor of a general tax increase, which is the fourth most popular measure.

3.2. Desired Health Spending (DHS)

The DHS variable asks what the respondent thinks should be spent on the NHS per person per year using a slider scale. The question is reproduced in Q50 in Appendix A. Bear in mind that each respondent was informed, on the same page, that £1950 per person is spent per year. We put the same framing scales on this question as we did for Q49. Figure 2 shows the histogram. Just over 20% of people think that current spending is right, over 50% think more should be spent and under 30% think less should be spent. The average amount of DHS over and above the actual level of per person spending is £279, and £762

Figure 1: How Should the NHS Increase Expenditure?

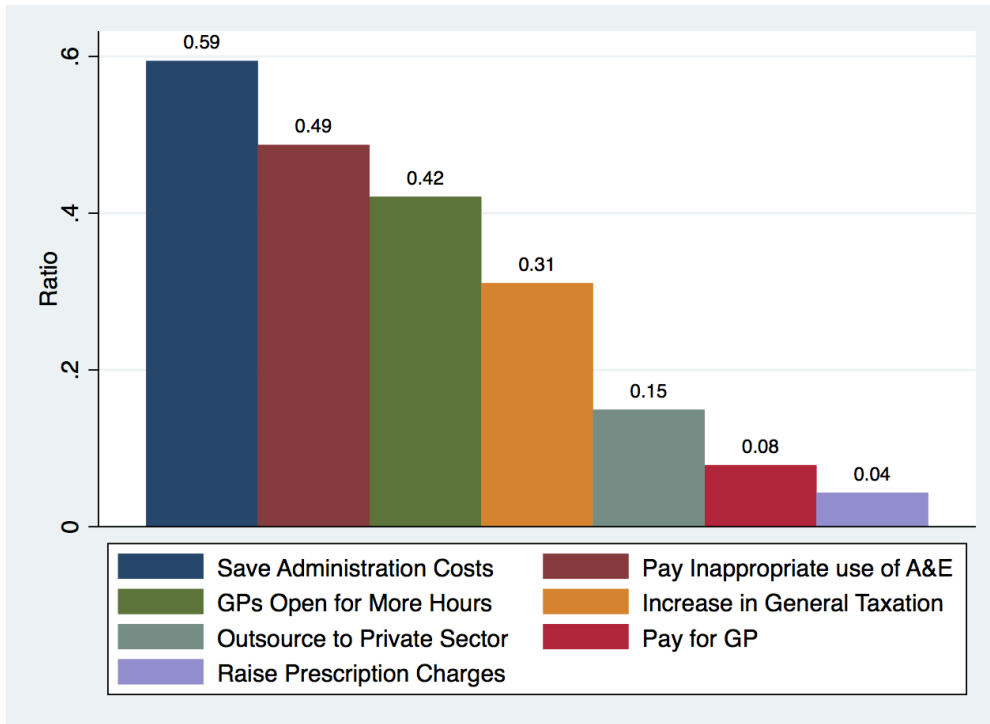
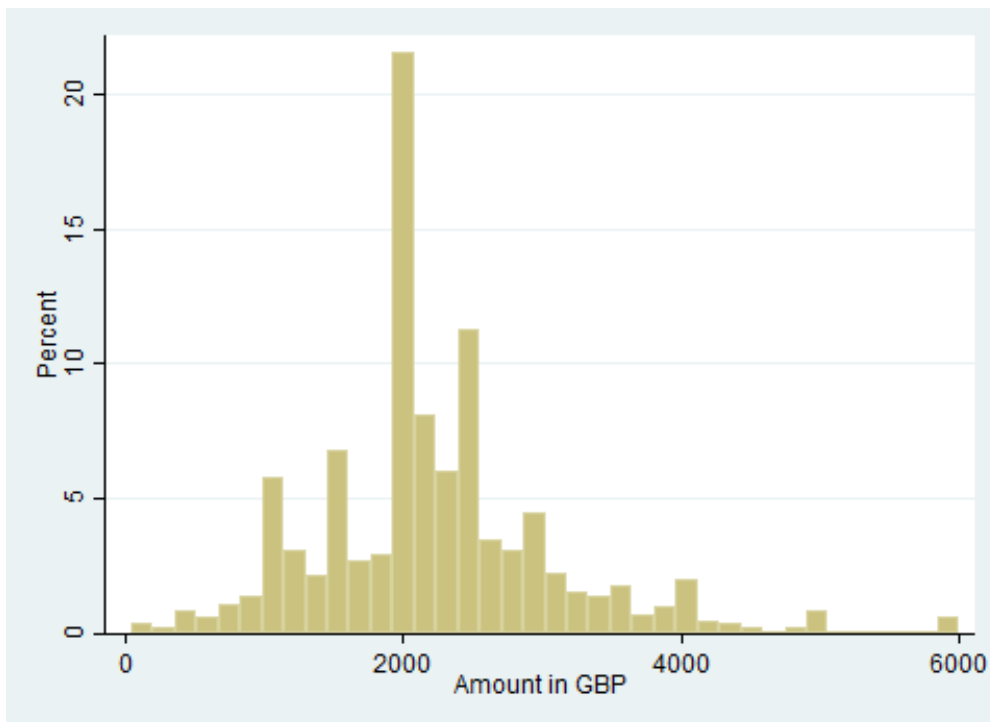


Figure 2: Histogram of Desired Health Spending (DHS)



for those who thought spending should be increased. There is a large spike at £1950 in the histogram, which the respondents are told is the actual spend.

Not everyone thinks the NHS should increase expenditure per person. In Figure 2, just under 30% of respondents reported a reduction in how much they would like to see the NHS spend per person per year. This could be rationalised by two views: First of all, people may not be directly equating more money in the NHS with greater expenditure per patient—they may, for example be fearful that more aggregate expenditure on the NHS might mean more PFI (Public Finance Initiatives) contracts, more administrators or more management consultants. Secondly, they may have opinions about how the NHS can raise more of its own revenue—in terms of charging for certain services (Figure 1), but then have different ideas on whether they should be raising more money at all (Figure 1).

3.3. Additional Health Spending from Taxes (AHST)

Raising taxes is often discussed as a way to facilitate increased NHS funding. Specifically, the option of putting up Income Tax was proposed in the 2015 and 2017 UK General Elections (Liberal Democrats, 2017). The amount of money that this would mean to an individual depends on how much they earn. Our approach was to first find out if they thought taxation should rise to pay for increasing expenditure in the NHS. This is Q47 in Appendix A. Around 30% of respondents said that taxes should go up to pay for more NHS spending. For those who thought that taxation should rise to fund the NHS, a supplementary question was asked about how much money they thought ought to be spent from extra Income Tax. Respondents were informed about how much money a 1% rise in Income Tax would raise (Brewer, M & Browne, J., 2009). See Question Q48 in Appendix A.

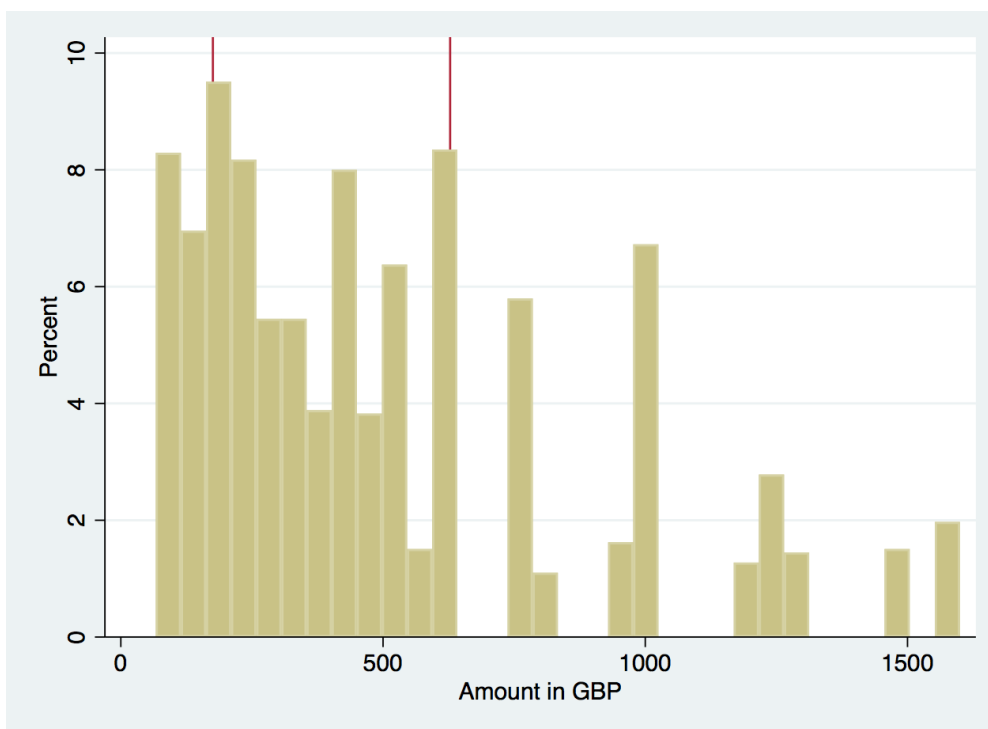
Figure 3 shows the histogram of desired additional spending for those who think more should be spent on the NHS from taxation. Some people may wish to see NHS spending rise by increasing other taxes (e.g., Corporation Tax or VAT) or the public sector deficit. We suggested income taxation but did not preclude other options. The average amount is £176 for all respondents or £628 from those who thought taxes should rise.

A sizeable number of respondents agreed to an increase in general taxation to finance the NHS. Not everyone pays income tax, because their income is too low or because they are not in the labour force. It would make sense for income tax non-payers to express a preference for an increase in taxation, since they will benefit at no additional cost to themselves. Indeed we see that 30% of tax-payers opted for increasing tax. This indicates that respondents to these questions were not only thinking of their own financial position when responding to our questionnaire. This figure is 32% for people who do not pay tax. The difference is statistically significant (χ^2 test, p-value = 0.085) but small.

3.4. Additional Health Spending from Redistribution (AHSR)

We turn our attention to the potential for additional health spending from the redistribution of government expenditure. The questions necessary for us to calculate AHSR were answered by all the respondents who reached the end of the survey. About half answered the

Figure 3: Histogram of Additional Health Spending from Taxes (AHST)



The histogram excludes 0 values, over 70% of responses. The two red lines denote mean DHS for people who opted for more taxes (£627) and everyone else (£175). The difference is statistically significant with p-value below software precision.

Figure 4: Perceived, Actual and Desired Government Budget Allocation

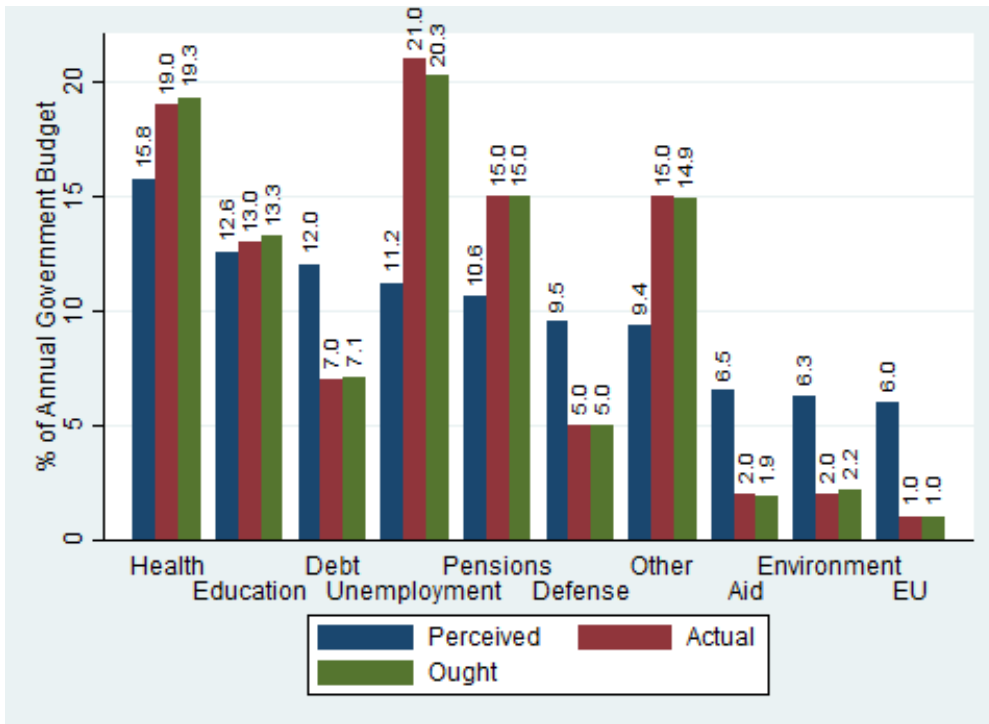


Figure 5: How Much of the Annual Budget Should be Spent Where?

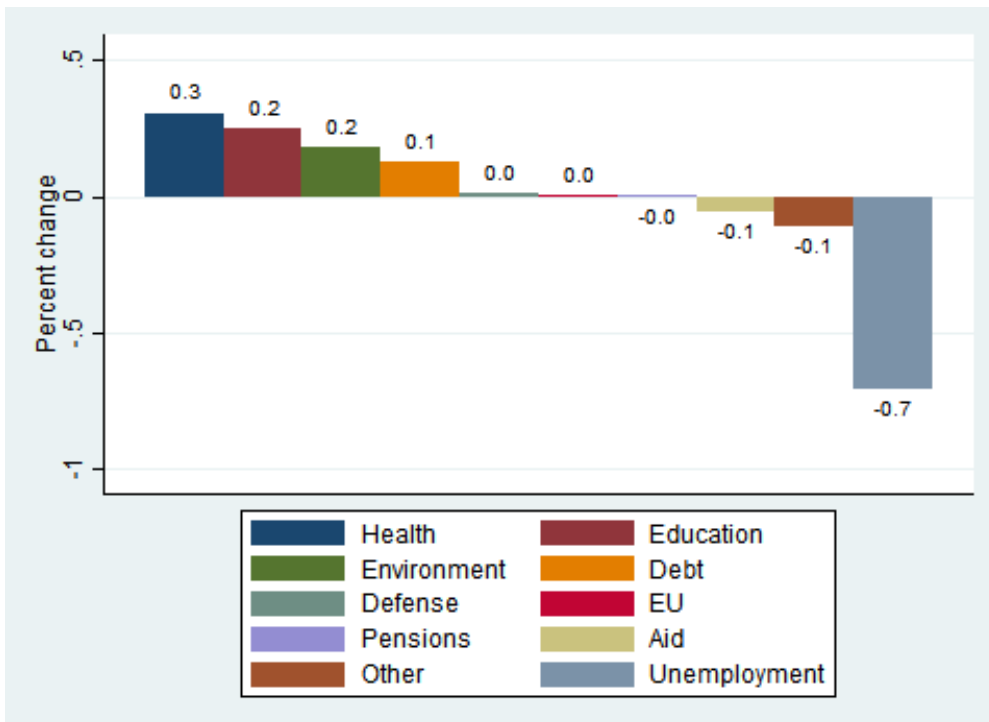
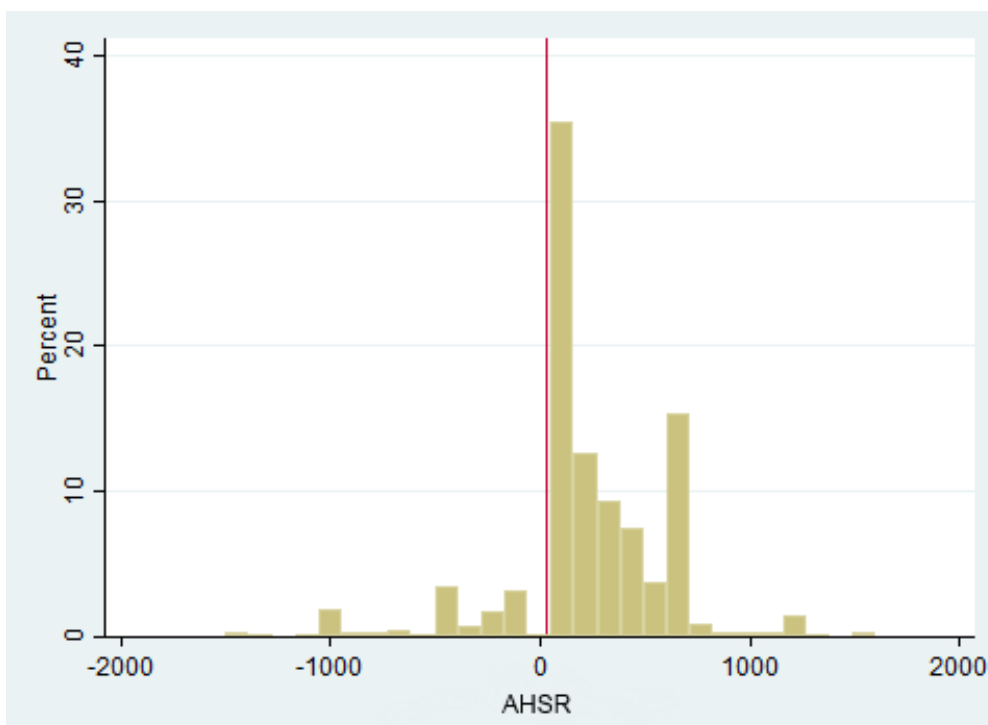


Figure 6: Histogram of Additional Health Spending from Redistribution (AHSR)



The histogram excludes 0 values, over 85% of responses. Respondents from the health domain only. Red line denotes mean AHSR (£33).

health-related section of the survey, and so received information regarding the NHS; others did not.⁵

Spending on the NHS can be increased by redistributing public spending from other areas of public spending. We first asked what respondents thought was the actual proportion of public spending in 10 categories—Debt Interest Payments; National Health Service; Education; Environmental Protection; Pensions; Defence; Unemployment and Social Security; Foreign Aid; EU Transfers; and Other. This was in the form of Q89 in Appendix A. We then told them the actual proportion of expenditure in each category and asked them to tell us what proportion they thought ought to be allocated to each category, keeping overall spending constant. Most people were happy with the distribution of public expenditure across the categories when they learned what it was. Only 18.6% of people thought there was a case for the redistribution of public expenditure. Figure 4 provides the descriptive histogram of the proportion of the government budget to be spent in the ten categories of Actual, Perceived and Desired fractions of public expenditure.

A higher budget for the NHS, without people paying extra taxes, will have to come from other public services. Figure 5 outlines how much in percentage point terms respondents thought should change in annual budget funding across public services. According to respondents, health ought to get around 0.30% more of the annual budget. Similar increases are wanted for education (0.26%), the environment (0.19%) and national debt servicing (0.14%). This is balanced by a willingness to cut unemployment benefits (-0.74%). Note that the collected data does not show from which sectors (to health) the respondents wanted transfers. However, the relatively large cut in unemployment benefits is high enough to suggest that respondents would like to see at least some of these benefits be redirected to health services.

Figures 4, and 5, show that respondents are largely in favor of moving funds from unemployment benefits to other public expenditure categories. One cannot make a case that overall altruism plays any major role in explaining preferences over public health care. What is also less clear in this context is how much of this preference for less spending on unemployment the public really want to see spent on environmental protection and/or public education.

3.5. Comparing Desired Health Spending Concepts

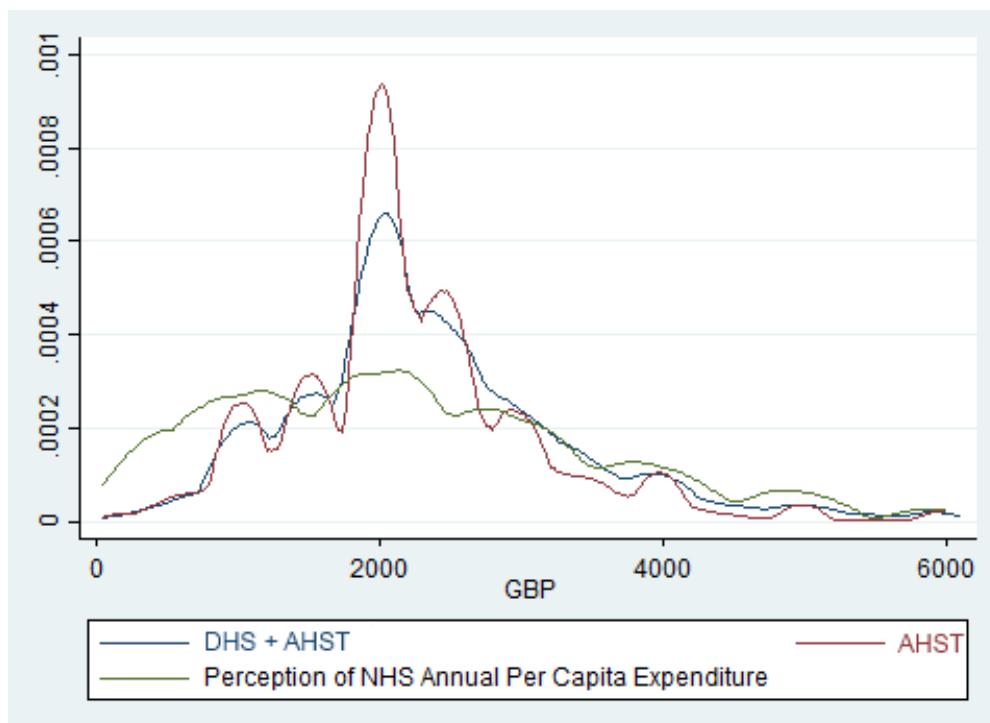
Having introduced different concepts of desired health spending it is important to reconcile and compare them. One can think of these as demands of NHS spending under differing assumptions about trade-offs. DHS simply asks what the respondents would like to see the NHS spend, unconditionally. AHST conditions this on losing income through taxation and expresses our amounts in terms of additional spending over and above the status quo. Likewise, AHSR conditions on having to give up other public expenditures in order to increase healthcare funding, at the margin, over what is presently spent. As trade-offs are made more explicit, respondents increasingly stick to the status quo, and lower the actual amount of additional spending they would wish to see. This is the message from the summary statistics

⁵A respondent to the health-part of the survey was told the amount of money going to the NHS and could, in principle, calculate its share in the annual government budget.

Table 1: NHS Spending: Summary Statistics

	Count	Mean	SD	Min	Median	Max
Perceived Actual	6830	2219	1325	50	2000	6000
Desired Health Spending						
DHS	6819	2229	896	50	2100	6000
DHS (>1950)	4163	2712	768	2000	2500	6000
DHS (=1950)	736	1950	0	1950	1950	1950
DHS (< 1950)	1920	1290	394	50	1400	1950
Additional Health Spending from Taxation						
AHST	6557	176	446	0	0	6667
AHST(>0)	1833	628	654	67	409	6667
Additional Health Spending from Redistribution						
AHSR	12624	33	171	-1925	0	3315
AHSR(>0)	1478	337	323	53	214	3315
AHSR(=0)	10950	0	0	0	0	0
AHSR(<0)	196	-429	364	-1925	-428	-32

Figure 7: Kernel Density of DHS and DHS+AHST



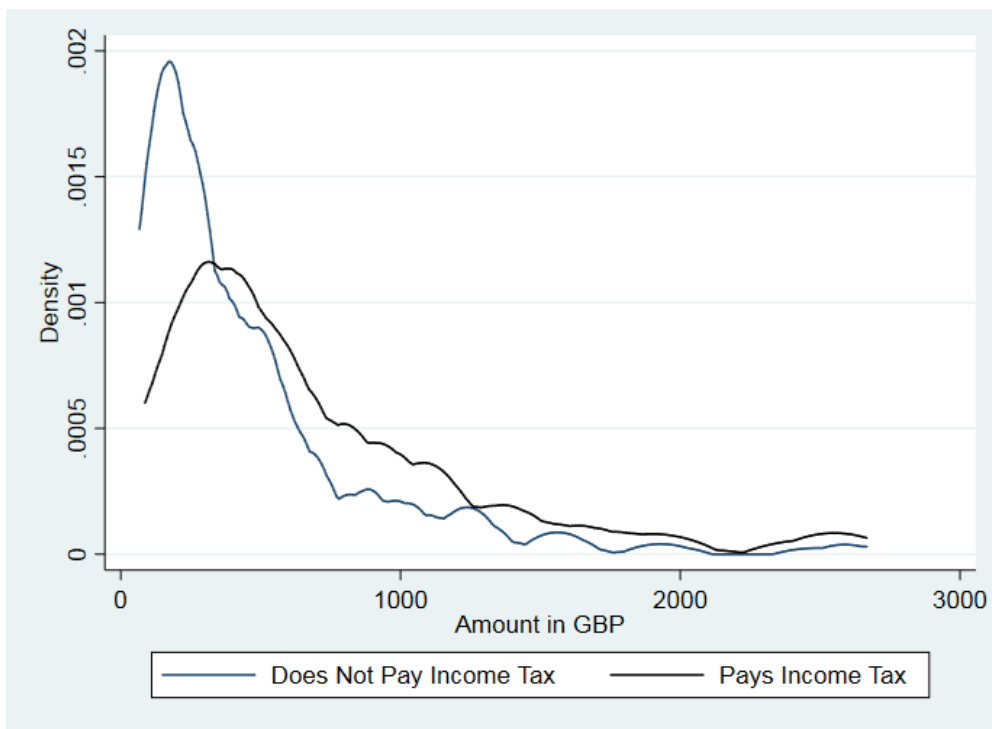
in Table 1. This table makes explicit the levels of spending the public would wish to see, but it is clear that less than 30% of people want to increase spending via taxation. An even smaller fraction wish to see spending rise via a redistribution from other areas. These fact impact on how much variation can be explained in all three variables in our regressions

A context of spending preferences is provided by graphing DHS and AHST to compare it with the prior perceptions of NHS annual spending prior to us asking our questions about desired spending. Figure 7 shows how there is a substantial fraction of the public who believe that spending per head is well below the actual figure of £1950 per annum. In general there is a much higher variance on these perceptions than the desired amount—although the overall mean is quite similar.

Closer inspection of these different spending preferences shows there to be clear differences between tax payers and non-taxpayers. The graph of DHS by taxpayer or is presented in Figure 8. Not surprisingly we find large differences in the mean DHS between tax-payers (£733) and non-payers (£484), given that they have opted in for increasing taxes. The difference is highly statistically significant. This is in line with what the conventional economic theory would predict concerning potential free-riding on the part of non-taxpayers.

An instructive tool in the analysis of data of this kind is an examination of the basic correlation structure of the key variables. Table C.4 presents the underlying unconditional correlation coefficient matrix of our key variables. The first point to note is that the correlations between DHS, AHST and AHSR are all relative low. (The highest is .176 between DHS and AHST.) This indicates that our spending concepts clearly measure different things and this warrants further study. The highest correlation is between DHS and predicted spending (before respondents are informed) (.365) and between Income and AHST indicating that those households who have higher income are prepared to pay more in tax to fund the NHS. Nearly all the other correlations are low. Amongst these low correlations a couple stand out. Specifically our Resources Measure Score is only weakly associated with the Left-Right Index, justifying their joint inclusion in our estimation models below. A final, further interesting finding is the self reported health does not correlate with Exercise Frequency. Clearly those who feel the need to exercise more are less happy with their health as it stands!

Figure 8: Desired Health Spending by Taxpayer Status



4. Estimation Results

Above we report descriptive statistics relating to attitudes to spending on the NHS and resource allocation preferences within the NHS. Below we control for observed heterogeneity amongst the respondents. Do those with potentially greater demand for health care support more spending? First, we examine which often-proposed measures for solving the NHS resourcing problems people support and the intensity of this support by examining a count score on them. Then, we present regression results over the three measurements of additional spending (DHS, AHST and AHSR) controlling for our rich set of personal and other characteristics. Detailed definitions of the variables can be found in Appendix C in Table C.1. Descriptive statistics on attitudes to spending on the NHS and resource allocation preferences within the NHS are reported above, with selected sample splits to discuss primary influences. We report some of our multiple regression results below. Descriptive statistics for all variables used can be found in Tables 1 and C.2. Definitions of the variables can be found in Table C.1.

Other regression results can be found in our Appendices due to space constraints. Our overall goodness of fit (as measured by (pseudo-)R² values) seem small. This is indicative of the considerable heterogeneity in the observed responses in our sample and it is difficult to explain much of the overall variance in people’s responses to spending questions. This is informative of the size of the overall task of explaining spending preferences this does not detract from the significant coefficients on the included regressors.

Different equation specifications have different sample sizes. This is due to the fact that certain questions are not answered by all our respondents—notably their height and weight which facilitates the construction of the BMI variable. Our guiding principle was to use the maximum number of observations for each specification (and each descriptive statistic in Table C.2). The logical alternative was to drop observations which had any missing data—but this would have halved our sample. Our method is vindicated if the coefficients do not change markedly between specifications—which is what we find. In general we find a high degree of robustness of our estimated coefficients to changes in sample size and changes in equation specification. A set of results with the ‘lowest common denominator’ number of observations is presented in Appendix D. The results do not change.

4.1. *Advocating Economy Measures*

One way of capturing what people think about resource allocation in health care is to ask them what economy measures regarding health spending they would support. A variety of such measures have been proposed in recent years in the debate on NHS funding. In this section we examine firstly what characteristics correlate with support for each of these measures individually and then we define a score for support for these various measures and present a Poisson count model of the number of measures people supported explained by the respondents characteristics. Table 2 and Table 3 show results.

Table 2 suggests that household income is positively associated with all the resource allocation measures except for saving on administrative costs, where there is no significant

effect.⁶ Not surprisingly, richer households are better able to pay for A&E, GP services and prescriptions. Older people are in favour of saving on administrative costs, raising taxes to expand the NHS, making people who use A&E pay for it, and increasing GP opening hours. Older people are against outsourcing to the private sector. Retired people are in favour of saving on administrative costs, and funding the expansion of the NHS via more taxation. This is true even allowing for the age effect. These effects are consistent with what we would expect to be in the best self-interests of older people. Men are more likely to agree with taxation for the NHS, private outsourcing, and are happier to pay to see their GP and prescriptions. They would not like to see GPs open more hours and they do not support paying for A&E services. Broadly speaking these results accord with what we know about male usage of the NHS. They are much less likely to see their GP and request prescriptions but, on average are more likely to use the emergency services. So again our results agree with what is broadly rational self interest.

Two other groups who have a clear preference for more to be spent on the NHS coming from taxes are the unemployed and students in higher education. Other effects which are statistically significant in Table 2 are that Asians and other ethnic minorities seeking more private outsourcing for the NHS, and blacks who would not like to pay for A&E. Those who are not religious would like to see A&E services to be paid for, and longer GP opening hours. Most of these results accord with intuition based on what their usage or what self-interest would suggest.

The next stage in our analysis was to aggregate the advocacy of these resource allocation measures into a single score—*Resource Measures*. We define this measure by examining the coefficient on the Left/Right index in each of the separate probit equations in Table 2. If the coefficient is positive we give this score an additional unit value—on the grounds that it correlates with a more traditional view of what a right-wing conservative reaction would be. If the coefficient is negative we give the score one less value on the grounds that it is what a left-wing socialist person is more likely to say. For example, agreeing with the view that taxes should rise more to fund higher NHS spending is more usually associated with the UK Labour Party than the UK Conservative Party. In contrast, paying for prescriptions or A&E or GP services or advocating contracting out in the NHS is more likely to be associated with the Conservatives. A more difficult measure to attribute to political views is saving on administrative costs. Typically both political parties claim they wish to do this. Our approach here is to let the data talk and ascribe the score in a way which is consistent with the sign of the Left/Right variable in the regression in each column of Table 2. All of the results relating to the coefficients on Left/Right are statistically significant in Table 2, which suggests that political sentiments play a major role in preferences for resource allocation measures in the NHS.

Table 3 presents the results for the count of the number of right-wing resource allocation measures advocated. We present the basic model in column (1) and a model which includes the health variables of the individual in column (2). Respondents were reticent to report

⁶In the main text, we report results for self-reported household income. Appendix E has results for imputed personal income. The results are qualitatively similar.

Table 2: Probit Estimation of Support for Different Discrete Resource Measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Save Admin	Tax for NHS	Private	GP Pay	A&E Pay	Prescription	GP Open
Working	-0.0491 (-0.65)	0.238*** (2.79)	0.0932 (0.95)	0.00761 (0.06)	-0.122 (-1.62)	0.128 (0.86)	-0.187*** (-2.47)
Student	0.105 (1.04)	0.553*** (5.05)	-0.0162 (-0.13)	-0.264 (-2.12)	0.0922 (0.92)	0.196 (1.04)	-0.133 (-1.33)
Unemployed	0.000472 (0.00)	0.314*** (2.92)	-0.108 (-0.80)	-0.369** (-2.92)	-0.0618 (-0.63)	0.134 (0.63)	-0.107 (-1.06)
Retired	0.228** (2.31)	0.398*** (3.90)	0.0480 (0.40)	0.0479 (0.32)	0.158* (1.68)	0.0295 (0.16)	-0.101 (-1.06)
Health/Social Care Worker	-0.0796 (-1.12)	0.0723 (0.98)	-0.0182 (-0.21)	-0.108 (-0.99)	0.111 (1.57)	-0.172 (-1.25)	0.0469 (0.65)
Household income (x1000)	0.000731 (0.95)	0.00159** (2.00)	0.00328*** (3.95)	0.00390*** (4.22)	0.00335*** (4.34)	0.00334*** (2.87)	0.00220*** (2.89)
Age in Years	0.0151*** (8.58)	0.00572*** (3.18)	-0.00400* (-1.90)	-0.00100 (-0.38)	0.00410*** (2.42)	0.00375 (1.16)	0.00502*** (2.94)
Male	0.0407 (1.08)	0.235*** (6.01)	0.184*** (4.02)	0.304*** (5.41)	-0.113*** (-3.05)	0.222*** (3.35)	-0.278*** (-7.44)
Graduate	0.0506 (0.86)	0.205*** (3.38)	-0.0167 (-0.23)	0.130 (1.59)	-0.0850 (-0.84)	0.0853 (0.84)	-0.168*** (-2.82)
Has children	-0.0636 (-1.17)	0.0734 (1.30)	0.0823 (1.23)	-0.127 (-1.58)	0.0417 (0.78)	0.0158 (0.16)	-0.0169 (-0.32)
Graduate*Children	0.0491 (0.60)	-0.0223 (-0.27)	0.0606 (0.63)	0.0588 (0.52)	0.0304 (0.22)	0.0304 (0.22)	0.121 (1.50)
At least 1 child under 6	-0.0111 (-0.18)	-0.0374 (-0.59)	-0.00479 (-0.07)	-0.0238 (-0.27)	-0.113* (-1.89)	0.120 (1.19)	-0.00593 (-0.10)
White Other	-0.0832 (-1.02)	0.0188 (0.22)	0.141 (1.46)	0.0686 (0.61)	-0.104 (-1.28)	0.214 (1.63)	-0.177** (-2.12)
Asian	-0.0488 (-0.51)	-0.101 (-0.99)	0.358*** (3.31)	0.0697 (0.51)	-0.128 (-1.35)	-0.101 (-0.61)	-0.0289 (-0.30)
Black	-0.166 (-1.30)	0.00693 (0.05)	0.107 (0.75)	0.0884 (0.53)	-0.330** (-2.55)	0.316* (1.80)	-0.195 (-1.50)
Mixed	-0.0327 (-0.22)	0.0472 (0.31)	-0.123 (-0.66)	0.188 (0.96)	-0.300* (-1.96)	0.476** (2.45)	-0.185 (-1.21)
Other Ethnicity	0.117 (0.81)	-0.175 (-1.17)	0.392*** (2.60)	0.0807 (0.44)	-0.260* (-1.85)	0.00492 (0.02)	0.0911 (0.66)
Other Religion	-0.0262 (-0.35)	0.0689 (0.88)	0.0800 (0.93)	0.303*** (2.96)	0.00274 (0.04)	0.355*** (3.13)	-0.0399 (-0.53)
Not Religious	0.0473 (1.18)	0.0630 (1.52)	-0.128*** (-2.60)	-0.0172 (-0.29)	0.0738* (1.87)	0.0304 (0.42)	0.121*** (3.04)
Recent Immigrant	0.158 (1.36)	-0.0482 (-0.40)	0.122 (0.93)	0.0930 (0.61)	-0.208* (-1.78)	0.00517 (0.03)	-0.178 (-1.47)
Left-Right Index	-0.0630*** (-3.32)	-0.170*** (-8.35)	0.189*** (8.29)	0.180*** (6.68)	0.0260 (0.20)	0.109*** (3.35)	-0.0489*** (-2.60)
Nudge	0.0675 (1.84)	0.00103 (0.03)	-0.0618 (-1.39)	0.0632 (0.52)	-0.0521 (-1.44)	-0.0308 (-0.48)	-0.0269 (-0.74)
Patient Satisfaction	-0.000838 (-0.30)	-0.00177 (-0.62)	-0.00205 (-0.62)	0.00315 (0.78)	0.000504 (0.18)	0.00213 (0.43)	0.00125 (0.46)
GP QOF Score	0.000502 (1.15)	-0.000163 (-0.37)	0.000114 (0.21)	0.0000890 (0.13)	-0.000620 (-1.44)	-0.000621 (-0.75)	0.000125 (0.29)
Constant	-0.493 (-1.45)	-0.641* (-1.84)	-1.500*** (-3.57)	-2.485*** (-4.80)	0.0575 (0.17)	-2.462*** (-3.93)	-0.222 (-0.66)
Observations	4938	4938	4938	4938	4938	4938	4938
A/C	6473.7	5982.8	4115.0	2664.8	6750.4	1771.9	6627.6
Log lik.	-3211.9	-2966.4	-2032.5	-1307.4	-8350.2	-3288.8	-860.9
Log lik. (constant-only)	-3333.9	-3072.3	-2135.8	-1393.5	-3421.5	-902.5	-3366.5
Pseudo R ²	0.0366	0.0345	0.0484	0.0618	0.0208	0.0461	0.0231

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

on some of their health measures and so the number of observations is less. Note that the results in column (1) do not change when these variables are included. We find that those respondents who are students and are older support significantly fewer right wing economy measures. Likewise, those from richer households and men are more likely to support a larger number of right wing economy measures. Clearly those who are more likely to use the NHS and have lower means of paying more would not like to have their personal cost of receiving health care rise. Not surprisingly those who have a higher score on the BAS questions relating to political sentiments (i.e., they have more right-wing attitudes) are more likely to support a larger number of economy measures. The only extra variable which is significant in column (2) when the personal health variables are included is that related to self-reported health. Those with a higher rating on this self-reported health support less economy measures.

4.2. Desired Health Spending (DHS)

The merit of having detailed survey data is that we can condition on observable individual characteristics and see if these characteristics influence attitudes to health spending. Table 4 shows the build up to our preferred specification regression model. In column (1), we seek to explain the variation in the desired health spending by only a baseline set of individual covariates. The reference group person’s socio-demographic profile is female, white British, homemaker, never drinks, Christian and does not have children. Column (2) controls for variations in the respondents’ self reported health. Column (3) reports a behavioural specification focusing on our anchoring, nudge and SVO variables. Finally, in column (4) of Table 4 we report a preferred specification, including significant covariates along with the respondents’ inferred political views and position on the NHS. The one exception is the BMI covariates which considerably reduce the sample size. Regression estimates are reported with robust standard errors.

Some coefficients are significant across all specifications. Men wish to spend over £100 per person per year more than women. Having children also has a positive impact, contingent on the respondent having a graduate degree. For non-graduates, the opposite is true—they desire less NHS expenditure.

Out of stated and inferred respondent health status, we find that drinking, BMI and self-reported health status explain some of the variance in attitudes. Obese ($BMI \geq 30$) people desire more NHS spending than normal ($18.5 \leq BMI < 25$) people. This is intuitive, as they are more likely to make use of public health services. Also, the more respondents reported themselves to be healthier, the lower their DHS was. This is also intuitive, as these respondents are less likely (from a subjective perspective) to make use of public health services. On the other hand, the more frequently one drinks alcohol, the less per capita NHS expenditures they desire. This could be related to the survey question regarding alcohol consumption not being designed to capture binge drinking abusive behavior (Q43 in Appendix A). Moreover, (self-reported) limited intake of alcoholic drinks has been shown to be positively correlated with to some health outcomes (Di Castelnuovo et al., 2002, Holst et al., 2017), though there is much debate in the epidemiological literature on the appropriate interpretation of this finding. Smoking is not significant. In Table 4 we also included two

Table 3: Poisson Count Estimation of Resource Measures Score

	(1)		(2)	
	Baseline		Baseline + Health Variables	
Working	-0.00283	(-0.12)	-0.00409	(-0.16)
Student	-0.0638**	(-2.09)	-0.0696**	(-2.14)
Unemployed	-0.0538*	(-1.72)	-0.0537	(-1.60)
Retired	-0.0309	(-1.02)	-0.0440	(-1.35)
Health/Social Care Worker	-0.00885	(-0.38)	0.000382	(0.02)
Household income (x1000)	0.000520**	(2.38)	0.000594**	(2.50)
Age in Years	-0.00363***	(-6.70)	-0.00329***	(-5.53)
Male	0.0243**	(2.06)	0.0284**	(2.22)
Graduate	-0.0130	(-0.70)	-0.0144	(-0.72)
Has children	0.0212	(1.25)	0.00777	(0.42)
Graduate*Children	-0.00239	(-0.09)	-0.00554	(-0.20)
At least 1 child under 6	-0.0219	(-1.19)	-0.00806	(-0.40)
White Other	0.0387	(1.56)	0.0452*	(1.71)
Asian	0.0482*	(1.69)	0.0406	(1.32)
Black	0.0131	(0.34)	0.0352	(0.89)
Mixed	0.00933	(0.20)	0.00590	(0.11)
Other Ethnicity	0.00880	(0.20)	-0.0135	(-0.30)
Other Religion	0.0303	(1.35)	0.0479**	(2.03)
Not Religious	-0.0309**	(-2.45)	-0.0317**	(-2.30)
Recent Immigrant	-0.0159	(-0.46)	-0.00817	(-0.22)
Left-Right Index	0.0783***	(13.42)	0.0767***	(12.26)
Nudge	-0.0143	(-1.26)	-0.0188	(-1.54)
Drinking (prob $\geq 3/14$)			-0.00285	(-0.18)
Drinking (prob $< 3/14$)			0.00652	(0.40)
Self-Reported Health			0.0149**	(2.16)
Patient Satisfaction			0.000250	(0.28)
GP QOF Score			-0.000183	(-1.30)
Constant	0.836***	(21.87)	0.854***	(7.58)
Observations	5870		4926	
AIC	18684.2		15675.6	
Log lik.	-9319.1		-7809.8	
Log lik. (constant-only)	-9400.6		-7884.5	
Pseudo R^2	0.00867		0.00947	

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Ordinary Least Squares Regression of Desired Health Spending

	(1)		(2)		(3)		(4)	
	Baseline		Control for Health		Behavioural		Preferred Specification	
Working	-28.19	(-0.57)	-37.40	(-0.53)	-24.04	(-0.49)	-2.208	(-0.04)
Student	-1.964	(-0.03)	18.97	(0.20)	-14.08	(-0.21)	-0.538	(-0.01)
Unemployed	-37.02	(-0.58)	-99.54	(-1.05)	-40.15	(-0.63)	-126.5*	(-1.75)
Retired	-18.20	(-0.32)	-32.39	(-0.41)	-14.73	(-0.26)	0.362	(0.01)
Health/Social Care Worker	17.32	(0.39)	9.015	(0.15)	15.28	(0.34)	-49.05	(-0.96)
Household income (x1000)	0.133	(0.25)	-0.00728	(-0.01)	0.0253	(0.05)	0.0187	(0.03)
Age in Years	-1.245	(-1.12)	-1.580	(-1.01)	-1.252	(-1.14)	-2.548**	(-2.07)
Male	129.8***	(5.44)	103.3***	(3.10)	134.7***	(5.65)	106.1***	(3.95)
Graduate	-26.94	(-0.72)	-26.83	(-0.53)	-26.20	(-0.70)	-41.98	(-0.99)
Has children	-55.52	(-1.64)	-96.52**	(-2.04)	-59.13*	(-1.75)	-57.55	(-1.56)
Graduate*Children	134.8***	(2.67)	123.8*	(1.80)	138.4***	(2.76)	142.9**	(2.54)
At least 1 child under 6	3.362	(0.09)	-22.28	(-0.41)	4.009	(0.10)	-25.74	(-0.60)
White Other	29.55	(0.53)	33.77	(0.44)	34.03	(0.62)	49.75	(0.82)
Asian	-131.4*	(-1.88)	-106.6	(-1.25)	-135.0*	(-1.95)	-89.89	(-1.19)
Black	214.4**	(2.46)	89.05	(0.79)	203.4**	(2.36)	160.4*	(1.79)
Mixed	43.16	(0.43)	80.36	(0.65)	42.59	(0.44)	45.26	(0.46)
Other Ethnicity	48.14	(0.46)	-47.54	(-0.34)	44.07	(0.42)	95.15	(0.78)
Other Religion	197.2***	(3.58)	110.2	(1.52)	201.6***	(3.71)	111.1*	(1.84)
Not Religious	-50.83**	(-2.09)	-44.55	(-1.32)	-47.54**	(-1.96)	-53.89**	(-1.98)
Recent Immigrant	-101.5	(-1.42)	-76.39	(-0.82)	-116.3	(-1.62)	-81.69	(-1.09)
Smoker nowadays			-17.72	(-0.43)				
Thin (BMI < 18.5)			87.41	(1.11)				
Overweight (25 <= BMI < 30)			25.09	(0.63)				
Obese (BMI >= 30)			111.6***	(2.76)				
Exercise Frequency			42.37	(0.67)				
Drinking (prob >= 3/14)			-147.6***	(-3.18)			-121.8***	(-3.39)
Drinking (prob < 3/14)			-210.2***	(-4.39)			-162.6***	(-4.33)
Self-Reported Health			-67.23***	(-3.38)			-47.57***	(-3.13)
Patient Satisfaction			-5.613**	(-2.29)			-3.305	(-1.62)
GP QOF Score			0.724**	(2.20)			0.0987	(0.38)
DHS Anchoring (5000)					106.6***	(4.20)	122.5***	(4.31)
DHS Anchoring (6000)					297.6***	(10.62)	293.4***	(9.40)
Nudge					-8.018	(-0.35)		
Social Value Orientation					0.635	(0.91)		
Risk Aversion					-163.1	(-1.25)		
Time spent on perceived NHS budget					-15.33	(-1.43)		
Time spent on desired NHS budget					-1.790***	(-2.71)	-1.775***	(-4.04)
Left-Right Index							-33.53**	(-2.34)
Resource Measures Score							-93.86***	(-7.83)
Upward Surprise							-300.3***	(-9.77)
Downward Surprise							332.0***	(10.10)
Constant	2250.1***	(32.01)	2735.7***	(9.06)	2250.9***	(16.64)	2974.5***	(12.08)
Observations	5860		2998		5828		4109	
Adjusted R ²	0.012		0.023		0.032		0.156	

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

variables which relate to the performance on a person’s local GP. The results suggest that patients whose nearest local GP has a higher patient satisfaction score in terms of the last Care Quality Commission (CQC) inspection desire less spending on health but those whose Overall GP Achievement Score is higher desire more spending.

Somewhat surprising, and disturbing for the standard human capital model of the demand for health, we find no statistically significant effects of attitudes to risk, income, and others. These variables appear to play no role in attitudes towards NHS spending. The anchoring in Q50 had the expected effect. Over-estimating NHS per capita annual expenditure has a positive impact on DHS.

The highest fraction of the variance in desired health care spending is explained with political tendencies as captured by the standard British Attitudes Survey questions and our Resource Measures Score, which summarizes the answers to the question relating to resources allocation views in the NHS in Q47 in the survey (see Appendix A). The adjusted R^2 increases by tenfold when going from model (2) to (3) in Table E.2.

4.3. Additional Health Spending through Taxation

A central concern of this study was to find out what people thought about spending extra money on the NHS and the degree to which this additional revenue should come from taxation or through a re-distribution of public services away from education, welfare, unemployment benefits and other categories of public spending towards the provision of more health care. In the interest of brevity, we describe our results here while the detailed results are in the appendices.

Table D.4 shows the build up to our preferred regression specification in explaining variation in AHST. A Tobit regression was used, since AHST is censored at the value of 0. This is the spending valuation figure that seems to be the most sensitive to socio-demographic variables. We estimated various models based on the: socio-demographic variables; then include the health variables; and then the behavioural variables; and then finally the political/NHS resource measures variables.

Students, retired and people in the healthcare sector have higher AHST than homemakers. This is regardless of whether or not they are taxpayers. Household income also has a positive impact. Having a degree, being male, being older and not religious also have positive impacts on AHST. We find that the retired, who mostly do not pay income taxes, are more willing to see an increase in income taxes than those who are working (who pay income taxes). This is tentative evidence of the propensity for free-riding as the retired are also more likely to benefit more from public health care.

Unlike in the explanation of DHS, we find robust impacts of religious beliefs on AHST. In two specifications, Asians are willing to pay less income tax directed at the NHS than white British people. This could reflect minority groups being concerned by issues other than public healthcare, but this would not explain the non-significance of other ethnicity covariates. On the other hand, non-Christians have higher AHST than Christians.

As before, the more a respondent reports feeling better about their own health the less they want to pay for NHS funding. Drinking alcohol is also negatively related to AHST. Potentially these respondents care less about NHS spending or are deluded as to the long

run consequences of high alcohol consumption and the likelihood of needing more medical attention. This latter effect persists when we take into account political preferences.

As in Table 4, the inclusion of policy preference and personal political variables increases explained variation. The pseudo R^2 more than trebles from the baseline model to the one which controls for all political attitudinal variables. Going towards the right of the political spectrum is associated with a drop in AHST, which can reflect right-wing attitudes towards income taxation in general. In addition our Resource Measures Score clearly impacts AHST negatively. If respondents think that the NHS funding crisis could be solved in ways without affecting their income, then they are less inclined to accept a tax raise.

These findings indicate that increasing taxation for NHS funding is positively viewed by those who have a direct stake in the NHS (healthcare workers, retired people etc.) or are more likely to be recipients of free health care (retirees, students, unemployed) or are more likely to be opposed to spending for elements of the NHS if they were charged for it. All of these groups are more likely to be in favor of raising taxes for redistribution (e.g. left-wing supporters).

4.4. Additional Health Spending through Redistribution

The second possible way of generating more NHS funding is to redistribute money away from other publicly provided services. At the outset it should be stressed that over 80% of respondents did not record any redistribution preferences, perhaps because this was one of the last questions asked. So in our data the AHSR variable is equal to 0 for 4 out of 5 respondents. This may indicate that respondents were either happy about the current level of NHS expenditures or were reluctant to reduce expenditures in other government areas. Given the high levels of DHS, the latter explanation is better supported. Regardless, the AHSR variable has low dispersion, which makes it difficult to identify correlated covariates and explains the low skill of our econometric model to explain the overall variance of the dependent variable. Table D.5 presents the outputs for the AHSR regressions. The OLS regressions are reported with robust standard errors. Unlike the previous regressions, we better see the impact of having to let go of other public expenditures in order to increase the health budget.

Contrary to the results in Tables 4 and D.5, when controlling for political and behavioural variables, we see relatively less impact of socio-demographic variables. The only covariates that are consistently statistically significant are being Asian or white-Other, compared to being white British. These groups exhibit a preference for more expenditure on other public services, at the expense of health. We also see some small impact of having children and being educated. As discussed before, it seems that people who have children, but do not hold university degrees, have lower AHSR than their graduate counterparts. Being a smoker also has a negative impact on AHSR. However, other socio-demographic and health variables are not significant.

As with DHS and AHST, more variation is explained when the Left-Right variable is included. The pseudo R^2 rises appreciably (0.007 to 0.017). When respondents over-estimate the percentage of government budget allocated to the health-care, they tend to have a

preference for higher AHSR. This gives evidence that people are anchoring towards their initial estimate of the actual allocation of spending.

5. Discussion and Conclusion

Our survey on attitudes to public spending on the NHS is illuminating. Someone's attitudes to risk and time, income, social value orientation, and aspects of their own health behaviour, like smoking, played virtually *no* role in their attitudes towards NHS spending. In contrast we found that ethnicity, self-reported health and the presence of a better local GP could reduce their preference for NHS spending. However, most marked in the determination of seeking higher spending on the NHS was their propensity to be left-wing and their political attitudes towards resource allocation in the NHS. The driving force of the public's preferences are motivated by political orientation with those on the left expressing a preference for more spending than those on the right. It is also clear that people's political attitudes regarding resource NHS resource measures play a large part in the determination of their views on financial spending in the NHS. If repeated in other countries, these results could have implications for the applicability of the standard Grossman (1972) model of the demand for health care as this model puts an emphasis on human health capital considerations of the individual rather than political factors shown to be important in our data. Our results suggest that health characteristics, discount rates, risk aversion and social value orientation play only a modest role in the determination of desired spending. Accordingly this finding potentially suggests that more emphasis should be given to political attitudes in the modelling of health care provision in publicly funded systems. Slightly more re-assuring for the standard model are the results on the support for economy measures which suggest that respondents do exhibit preferences which are consistent with their own best interests.

We also investigated the public's attitudes towards how additional spending on the NHS could be secured. We explored three different measures: DHS, AHST and AHSR. The three measures differ in terms of the explicit trade-offs made in increasing them. For DHS, respondents are led to believe there are none. AHST requires forgoing some income, which may not be to the liking of all respondents. AHSR requires decreasing at least one other public expenditure in order to fund the NHS. We found that over two-thirds of people were not prepared to fund additional NHS spending from increasing income taxes. The remaining third would only be willing to pay an extra £628 per person at the median—which would be an increase of around 20% added spending at current levels. We also found that around 80% of respondents would not want to fund additional NHS spend by redistributing money away from other public services to put extra into the NHS. When respondents expressed a strong desire to increase NHS expenditure, but had to face trade-offs, they tended to limit the amount of loss they themselves would have to incur. Students, the unemployed and retired chose to increase income taxes (which they do not pay) and the general sample expressed a preference to increase AHSR at the cost of the unemployed.

The following caveats apply. Our survey is a cross-section. Our regression results are associations rather than causal effects. A longitudinal study would have been better, but was not feasible given our budget. We were surprised to find that respondents see the NHS as a

political rather than an economic issue, and in retrospect should have asked more questions about political attitudes and voting. We infer self-interest from general health status and behaviour, but perhaps should have asked explicitly about current and expected NHS use of respondents, their family, and their friends.

Further research should address these caveats. A follow-up study would also reveal whether our results are stable or shift with the political and social discussion on health and the provision of health care. Similar surveys in other countries, and particularly in countries with different system of public health care, would show whether our results are particular to the UK. We find that public health care is viewed as a political issue, rather than an economic one. People in countries where health care is primarily a private matter may view this differently.

So what do our results say of interest to politicians and policy makers? They could potentially suggest a difference between the results of opinion polls on NHS funding and real voting behaviour. Specifically, advocating more spending via additional taxation may not actually win a majority of votes. Secondly, popularity may not be assured for policies which advocate the redistribution of resources towards the NHS, away from other public services. Ultimately, the public's preference for health spending seems to have much more to do with basic underlying political beliefs.

Our results also suggest that the majority view is that the NHS should be managed within existing resources and this will mean hard decisions within the NHS. This also means revisiting how money can be saved through the use of new technology and increasing the productivity of the existing workforce. All spending on health is about trade-offs and ultimately—when asked—the public is not necessarily in support of the NHS being preserved at all costs—especially if that means extra taxation. Naturally all voters and taxpayers when asked (in an unstructured way with no information) think more freely provided health care is a good idea. But our survey shows that if we ask them to reflect on the extra taxes involved or what would have to be foregone then we do not get the same answer. The logical conclusion of our evidence is that it suggests that a sizeable fraction of the stated support for more state spending on the NHS in the UK could be 'cheap talk' and accordingly much more care needs to be exercised in trying to ascertain the public's preferences for NHS spending through either additional taxation or redistribution.

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Appendix A. The Survey and Data

Appendix A.1. Discount rate and risk aversion

Respondents were asked to choose between four pairs of pay-offs at different times. The near pay-off varied between 5 and 990, and was either now or in a year from now. The far pay-off was always 1,000 and either a year or five years after the near pay-off. Answers to these questions imply four discount rates, and thus reveal present-bias and discern between exponential and hyperbolic discounting.

Respondents were asked to choose between two lotteries. In one lottery, there was one-in-two chance of winning 1,000 and 2,000. In the other lottery, there was a five-in-six chance of winning 600 and a one-in-six-chance of winning a larger amount, which increased in steps of 600 from 6,000 to 12,000. The pay-offs were halved for those who stated income fell in the bottom 30% of the Great Britain income distribution, and doubled for the top 30%. Answers to these questions imply risk aversion.

Appendix A.2. Concern for inequality and others

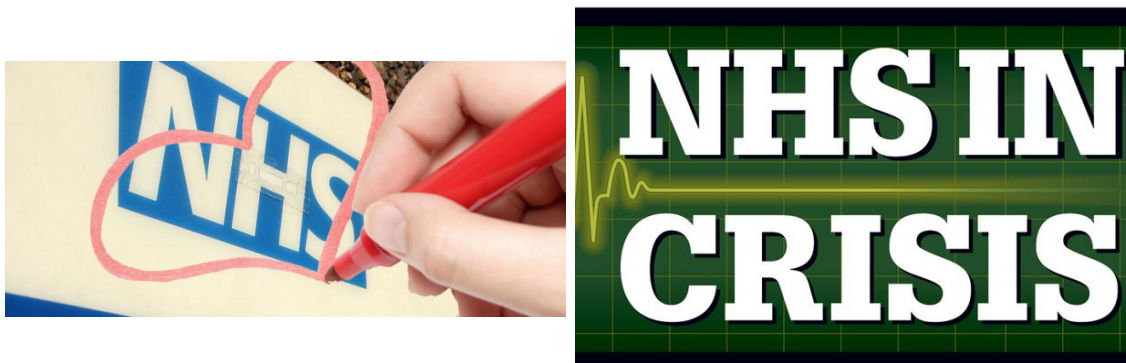
All respondents were asked to choose between five income distributions between three hypothetical people. Half of the respondent were asked the question for male names, the other for female names. In the richest, most unequal distribution the top income is 60,000 per year, the middle income 44,000/yr and the bottom income 33,000/yr. The top income falls in steps of 2,000/yr, the bottom income rises in steps of 1,000/yr, and the middle income is unchanged between the five scenarios. This question was repeated at lower incomes, with the richest, most unequal distribution at 33,000, 23,000, and 16,000 per year. The first question was centred on the 70th percentile of the UK income distribution, the second question on the 40th percentile. This design was inspired by Fehr et al. (2006) and features the leaky bucket of Okun (1975). Answers to these questions imply inequity aversion.

We used the ring measure of social-value orientation (Murphy et al., 2011). This consists of six, unincentivised dictator games (Güth et al., 1982), in which the respondent chooses a pay-off for herself and someone else. A higher reward for the self comes at the expense of the other. These trade-offs have different slopes so that we can discern whether someone is maximizing their own pay-off, maximizing total pay-off, maximizing the difference in pay-off, or so on. The ring measure is the arctangent of the pay-off to other over pay-off to self. Pay-offs are centred so that an angle of 0° corresponds to someone who maximizes her own pay-off and an angle of 45° someone who maximizes total pay-off. Observations outside this range are rare.

Appendix A.3. Political attitudes

Respondents were placed from left to right on the political spectrum according to their agreement, on a five-point scale, with two statements, viz. "government should redistribute income from the better off to those who are less well off" and "ordinary working people do not get their fair share of the nation's wealth". Respondents could answer as: Strongly disagree; Disagree; Neutral; Agree; and Strongly Agree. These responses were accorded the score 5, 4, 3, 2, and 1 respectively. Our Political Orientation score was derived by adding

Figure A.1: At the start of the health section of the survey, half of respondents were shown the picture on the left, and the other half the picture on the right.



these two responses, in their numerical form together and dividing by 2. Hence the score goes from 0-5 in half point intervals. The higher our score the more traditionally right wing a person is. Correspondingly the lower the score the more left wing or socialist. These questions were copied from the British Attitudes Survey.

Appendix A.4. National Health Survey

Q43. *How often have you had an alcoholic drink of any kind during the last 12 months?*

- Not at all in the last 12 months
- Once or twice a year
- Once every couple of months
- Once or twice a month
- Once or twice a week
- Three or four days a week
- Almost every day

Q44. *How often have you had physical exercise of any kind during the last 12 months?*

- almost every day
- three or four days a week
- once or twice a week
- once or twice a month
- once every couple of months
- once or twice a year

- not at all in the last 12 months
- prefer not to say

Q47. *The demands on the National Health Service are increasing as the population grows and ages. How should this be paid for?*

Click all that apply

- The NHS should save money on administrative costs to increase spending on patients. (*Left=1, contributes 0 to the Resource Measure Score*)
- An increase in spending on the NHS should be financed from an increase in general taxation. (*Left=1, contributes 0 to the Resource Measure Score*)
- The NHS should save money by outsourcing more services to the private sector. (*Right=1, contributes 1 to the Resource Measure Score*)
- Patients should pay when they go see their GP. (*Right=1, contributes 1 to the Resource Measure Score*)
- Patients should pay for inappropriate use of A&E (e.g., alcohol-related accidents). (*Right=1, contributes 1 to the Resource Measure Score*)
- Prescription charges should be raised. (*Right=1, contributes 1 to the Resource Measure Score*)
- GPs should open more hours to save money on A&E. (*Left=1, contributes 0 to the Resource Measure Score*)

Q48. *How much would you want to see spend extra on the NHS?*

The NHS is paid from general taxation. A 1% increase of the basic rate of income tax would raise £4.5 billion per year.

- £3 billion per year
- £8 billion per year
- £12 billion per year
- £20 billion per year

Q49 *How much do you think the National Health Service spends per person per year?*

0 _____ 4000

Q50. *In fact, the National Health Service spends £1950 per person per year. How much do you think the NHS should spend?*

0 _____ 4000

Q89. *The government spends about £686 billion per year. How do you think this is spent?*

Please answer in percent—that is, pence in the pound—of total government spending.

1. ___ Debt interest payments
2. ___ National Health Service
3. ___ Education
4. ___ Environmental protection (e. g., waste, nature)
5. ___ Pensions
6. ___ Defence
7. ___ Unemployment and social security (e.g., disability, family benefits)
8. ___ Foreign aid
9. ___ EU transfers (net)
10. ___ Other (e.g., transport, police, housing)

Q90. *In fact, current government spending is as shown below. How much do you think we should spend?*

Please answer in percent—that is, pence in the pound—of total government spending.

Note that if you spend more than 7% on interest payments and debt reduction, the national debt will fall; and if you spend less than 7%, the national debt will rise.

1. ___ Unemployment and social security (e.g., disability, family benefits)
2. ___ National Health Service
3. ___ Pensions
4. ___ Other (e.g., transport, police, housing)
5. ___ Education
6. ___ Debt interest payments and debt reduction
7. ___ Defence
8. ___ Environmental protection (e.g., waste, nature)
9. ___ Foreign aid
10. ___ EU transfers

Appendix B. Other Data

Appendix B.1. General Practitioners

We retrieved data on each General Practitioner (GP, the English term for the medical doctor who provides primary health care) relating to their quality of delivery. We use data on the Quality Outcomes Framework (QOF) from <http://qof.digital.gov.uk>. This consists of three scores:

- Clinical Domain Achievement Score (Max 435) 65 indicators across 19 clinical areas, mostly chronic diseases
- Public Health Domain Achievement Score (Max 97) 7 indicators across 4 clinical areas, mostly acute and preventable conditions
- Public Health Service Achievement Score (Max 27) 5 indicators across 2 services - cervical screening and contraception

When aggregated this data provides an Overall Score:

- Overall Achievement Score (Max 559) & Overall QOF score of GP

We also used the Overall Patient Satisfaction Score. Specifically, we used the Overall Patient Satisfaction score which is measured by the percentage of patients who report their GP as Good/Very Good or Excellent. This data is available from <http://gp-patient.co.uk>

We merged this data to ours using the precise GPS location of each respondent's server, using the assumption that patients are registered with their nearest GP. This is a potential limitation of our study as it may introduce limited measurement error.

Appendix B.2. Predicted Individual Income

The income data used in the main text relates to self-reported household income. Arguably this information could be endogenous to stated desired money to be spent on the NHS. Therefore, we impute personal income using: Age, gender, occupation, sector of industry, education. We did this by first running an equation using the Annual Survey of Hours and Earnings in gross annual earnings and then using the estimated equation to get predicted earnings in our own data using the same characteristics.

Dependent Variable:

1. Annual Gross earnings, Using all workers who work above 35 hours a week.

Explanatory variables:

1. Age, in 5 groups: 24 and under, 25-34, 35-44, 45-54, 55 and over
2. Gender, in 2 groups: Male and Female
3. Occupation, in 3 groups:

- (a) SOC 1 & 2
 - (b) SOC 3 & 4
 - (c) SOC Others
4. Sector, in 2 groups: Public and Private
5. Government Office Region, in 2 groups: London & South East and Other
6. Education, using the LFS to ASHE code of (Dolton et al., 2014), in 3 groups:
- (a) Degree and above
 - (b) 5 or more GCSEs
 - (c) Other

The reference group was: Male, 24 and under, SOC 1&2, Public, BASIC GOR London SE, Degree and above as base case.

Appendix C. Summary Statistics

Table C.1: Definition of Variables

Variable	Definition
Respondent Socio-Demographics:	
Graduate	Respondent graduated from university
Age in Years	Respondent's age
Male	Gender
Household income (x1000)	Household income from survey
Predicted Income (x1000)	Predicted individual income (ASHE)
Has children	Respondent has children
At least 1 child under 6	Respondent has at least one under-6 child
Working	Respondent is employed
Student	Respondent is a student
Unemployed	Respondent is unemployed
Retired	Respondent is retired
Homemaker	Respondent is a homemaker
Health/Social Care Worker	Respondent works in health/social care sector
Pays income tax	Respondent is student or employed and earns above £10000
Left(=1) - Right(=5) Index	Respondent's inferred political orientation
Recent Immigrant (< 5 Years)	Respondent is a recent immigrant
Other Religion	Respondent is Muslim, Hindu, Buddhist, Jewish, Jedi, Sikh or Other
No Religion	Respondent declares No religion or Agnostic
White British	Respondent is white and British
White Other	Respondent is white and not British
Asian	Respondent is Asian
Black	Respondent is black
Mixed	Respondent is of mixed ethnicity
Other Ethnicity	Respondent is of another ethnicity
Respondent Health:	
Imputed weekly ratio (days/week) of drinking	Likelihood of drinking on a given day
Self-Reported Health (1 - 5)	Self reported health index, very bad (=1) to very good (=5)
Exercise Frequency	The fraction of days physical exercise is taken. (Q44)
Drinking Behaviour	The fraction of days alcohol is taken. (Q43)
BMI (between 15 and 65, centered around 22)	BMI (0 = BMI of 22)
Smoker Nowadays	Respondent is a Smoker =1, otherwise 0
Respondent Behavioral Variables:	
Social Value Orientation	Ring measure of social value orientation
Risk aversion	Estimated mean individual Arrow-Pratt risk aversion
Nudge: 1 = love NHS, 0 = NHS in crisis	
Resource Allocation NHS Questions:	
NHS save on administrative costs	"NHS should save on administrative costs"
NHS increase tax	"Finance NHS through increase in general taxation"
NHS outsource to private sector	"Outsource some NHS services to the private sector"
Patients pay GP	"Patients should pay for the GP"
Patients pay for A&E	"Patients should pay for inappropriate use of A&E"
Prescription charges raised	"Raise prescription charges"
GPs open more hours	"GPs should stay open for more hours"
Resource Allocation Score	See Table A3 and text.
NHS Spending Variables:	
DHS	How much extra NHS should spend annually per person
AHST	How much extra respondent is willing to pay tax for NHS (annual)
AHSR	How much extra the NHS should get in government budget (£annual per person)
Perceived - Actual NHS budget	Difference between perceived and actual NHS expenditure per person per year
Downward Surprise	$P > A + £200$ for NHS expenditure per person per year
Upward Surprise	$P < A + £200$ for NHS expenditure per person per year
AHSR Upward Surprise	$P < A + 2\%$ for NHS portion of annual government budget
AHSR Downward Surprise	$P > A + 2\%$ for NHS portion of annual government budget
Local GP Exogenous Data:	
GP Overall QOF Score (Max 559)	Overall QOF score of GP - http://qof.digital.nhs.uk/#understanding
Patient Satisfaction with GP	Percentage of patients stating the GP is "Good/Very Good/Excellent"
Survey Data:	
Selection for health questions	Respondent got the health questions
Nudge	Respondents saw either a positive or a negative image of the NHS; 1=Love NHS, 0=NHS in Crisis
DHS Anchoring (4000)	Upper bound was £4000 for WTP question
DHS Anchoring (5000)	Upper bound was £5000 for WTP question
DHS Anchoring (6000)	Upper bound was £6000 for WTP question
Time spent on perceived NHS budget	Time spent on perceived NHS expenditure per person per year (minutes)
Time spent on desired NHS budget	Time spent on what NHS expenditure per person per year ought to be (minutes)
Time spent on actual govt spending	Time spent on perceived government annual budget allocation (minutes)
Time spent on desired govt spending	Time spent on what government annual budget allocation ought to be (minutes)

Table C.2: Summary Statistics

	N	mean	sd	min	p50	max
Respondent Socio-Demographics:						
Graduate	8562	.2629	.4402	0	0	1
Age in Years	8547	42.32	16.58	20	40	80
Male	8562	.4744	.4994	0	0	1
Household income (x1000)	5870	33.25	25.45	10	29	150
Predicted Income (x1000)	8562	25.81	12.09	3.61	24.02	58.33
Has children	8562	.5397	.4984	0	1	1
At least 1 child under 6	8562	.1442	.3514	0	0	1
Working	8562	.6160	.4864	0	1	1
Student	8562	.1011	.3015	0	0	1
Unemployed	8562	.0813	.2733	0	0	1
Retired	8562	.1300	.3363	0	0	1
Homemaker	8562	.0716	.2578	0	0	1
Health/Social Care Worker	8562	.0661	.2485	0	0	1
Pays income tax	8562	.6623	.4730	0	1	1
Left-Right Index	7097	2.493	.990	1	2.5	5
Recent Immigrant	8562	.0321	.1763	0	0	1
Other Religion	8562	.084	.276	0	0	1
No Religion	8562	.403	.490	0	0	1
White British	8562	.8232	.3815	0	1	1
White Other	8562	.0627	.2425	0	0	1
Asian	8562	.0492	.2162	0	0	1
Black	8562	.0229	.1496	0	0	1
Mixed	8562	.0160	.1255	0	0	1
Other Ethnicity	8562	.0260	.1593	0	0	1
Respondent Health:						
Drinking (prob \geq 3/14)	6952	.4485	.4974	0	0	1
Drinking (prob $<$ 3/14)	6952	.3006	.4586	0	0	1
Self-Reported Health (1 - 5)	6921	3.653	.932	1	4	5
Exercise Frequency	5474	0.1088	.2668	0	0.16	1
BMI (between 15 and 65)	4808	28.19	8.89	15.12	25.73	64.78
Smoker Nowadays	6953	.248	.432	0	0	1
Respondent Behavioral Variables:						
Social Value Orientation	7221	26.56	17.28	-16.26	33.82	83.92754
Risk Aversion	6375	.8857	.0883	.7340	.8841	1.0608
Survey NHS Questions:						
NHS save on administrative costs	6854	.5943	.4911	0	1	1
NHS increase tax	6854	.3108	.4628	0	0	1
NHS outsource to private sector	6854	.1493	.3564	0	0	1
Patients pay GP	6854	.0785	.2690	0	0	1
Patients pay for A&E	6854	.4872	.4500	0	0	1
Prescription charges raised	6854	.0435	.2039	0	0	1
GPs open more hours	6854	.4211	.4938	0	0	1
Resource Measures Score	See Table A3			0		
NHS Spending Variables:						
DHS	6819	2229	896	50	2100	6000
AHST	6557	175.6	446.2	0	0	6666.7
AHSR	6379	31.43	171.42	-1497.12	0	3315.04
Perceived - Actual NHS budget	6830	269.4	1325.2	-1900	50	4050
Downward Surprise	8562	.5626	.4961	0	1	1
Upward Surprise	8562	.3084	.4618	0	0	1
AHSR Upward Surprise	5797	.5896	.4919	0	1	1
AHSR Downward Surprise	5797	.1537	.3607	0	0	1
Local GP Variables:						
GP QOF Score	7876	503.3	108.5	172.3	544.4	559.0
Patient Satisfaction	7331	89.59	6.79	49	91	100
Survey Data:						
Nudge	8562	.4881	.4999	0	0	1
DHS Anchoring (4000)	6819	.3373	.4728	0	0	1
DHS Anchoring (5000)	6819	.3286	.4698	0	0	1
DHS Anchoring (6000)	6819	.3341	.4717	0	0	1
Time spent on perceived NHS budget	6843	.2968	.9769	.0333	.1833	62.3667
Time spent on NHS budget ought	6835	.3117	5.7144	.0167	.1833	471.1333
Time spent on actual govt spending	6562	3.223	24.300	.033	1.600	1275.783
Time spent on desired govt spending	6384	.6374	3.1211	.0167	.2500	205.35

Table C.3: Resource Measures Score

Resource Measure Score	Count	Percent	Cumulative Percent
0	173	2.52	2.52
1	892	13.01	15.54
2	3,046	44.44	59.98
3	1,489	21.72	81.70
4	1,073	15.66	97.3
5	159	2.32	99.68
6	21	0.31	99.99
7	1	0.01	100.00
Total	6,854		100.00

Table C.4: Correlation Matrix

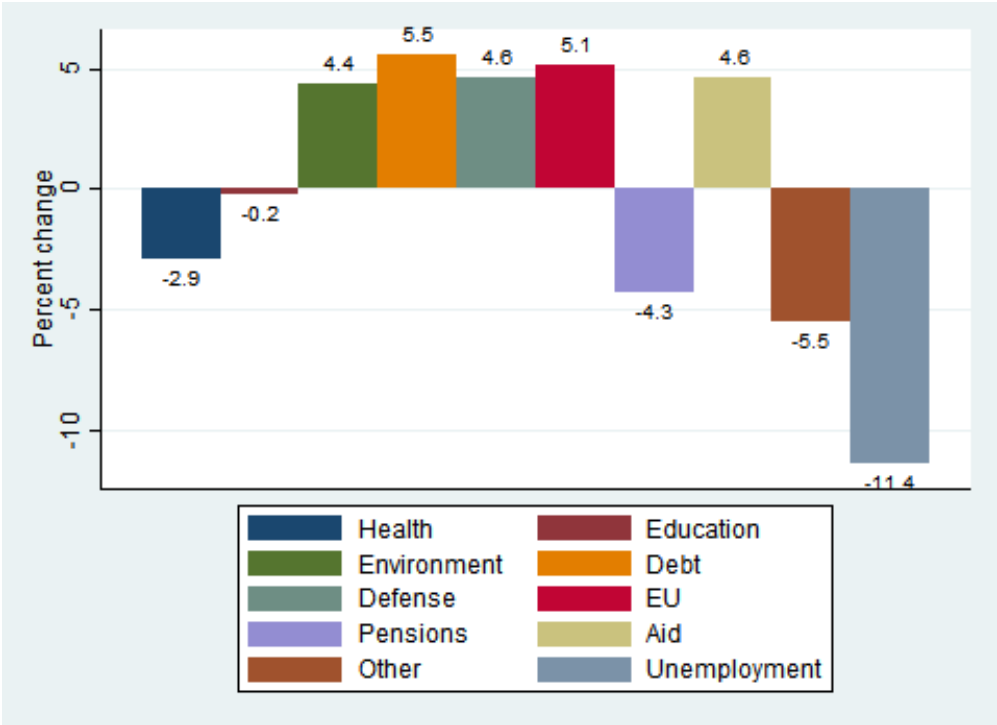
	Predicted	DHS	AHST	AHSR	Res Meas	L-R Index	Income	Ex Freq	SR Health	Age
Predicted	1.0000									
DHS	0.3652	1.0000								
AHST	0.0392	0.1796	1.0000							
AHSR	-0.0252	0.0029	0.0470	1.0000						
Resource Measures	0.0303	-0.1205	-0.2288	-0.0439	1.0000					
Left-Right Index	0.0358	-0.0459	-0.0761	-0.0268	0.1889	1.0000				
Income	0.0328	0.0183	0.3179	0.0068	0.0576	0.1144	1.0000			
Exercise Frequency	0.0070	0.0071	-0.0151	0.0087	-0.0509	-0.0875	-0.0802	1.0000		
Self-reported Health	-0.0125	-0.0517	0.0009	0.0092	0.0833	0.1306	0.1644	-0.2251	1.0000	
Age	-0.0483	-0.0321	0.0712	0.0113	-0.1194	-0.0707	-0.0254	0.1655	-0.1747	1.0000

Appendix D. Additional Results

Appendix D.1. Additional Health Spending from Redistribution

Respondents were asked how much of the annual budget was spent by the government across 10 sectors. They were then given the actual expenditure and asked what they thought the expenditures should be across the sectors. Figure D.1 shows in what sectors the respondents were wrong.

Figure D.1: How Much of the Annual Budget Is Spent Where?—Misconceptions



Appendix D.2. Desired Health Spending and Prior Knowledge

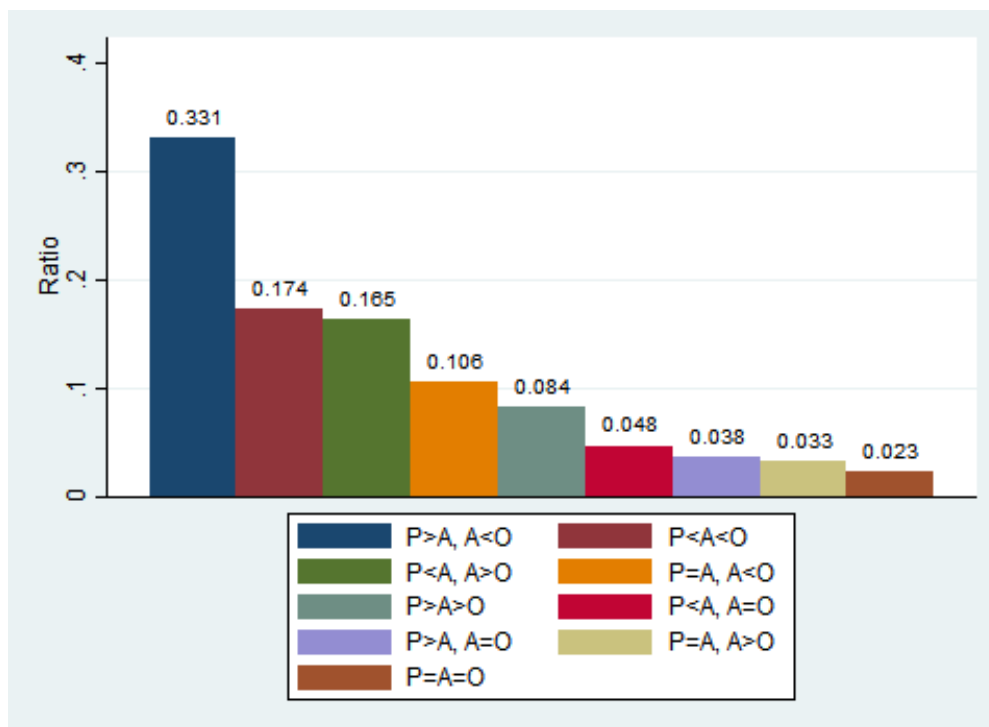
One of the most important limitations in judging the public reaction to questions relating to the NHS spending preferences relates to how much they know about existing spending. This also raises the question of how their spending preferences may change when they are given the information about actual spending levels. The surveys conducted annually by the British Attitudes Survey (Mulligan and Appleby, 2001, Robertson et al., 2018, Gershlick et al., 2015) and the one-off surveys by Ipsos MORI and ComRes (BBC & Ipsos MORI, 2017, ComRes, 2014) do not establish what people know about health spending and do not seek to understand the relationship between stated spending preferences and perceived spending. Our survey was constructed to elicit unconditional beliefs about actual NHS spending preferences and then present respondents with the real actual information about what is spent and ask them the question about preferred level of spending. In this way we can gauge the role that baseline information plays in reshaping preferences.

We create categories on people's perception error and reaction, with regard to DHS. There are three variables of interest: perceived (P) annual NHS expenditure per person, actual (A) annual NHS expenditure per person and what this expenditure ought (O) to be. We allow a £200 (about 10% error, true expenditure is £1950) gap when people are trying to estimate the correct figure. The categories are essentially the relationships between these variables. They are:

- Upward Surprise ($P < A - £200$)
 - Demand more NHS expenditure ($A < O$)
 - Demand same NHS expenditure ($A = O$)
 - Demand less NHS expenditure ($A > O$)
- No Surprise ($P = A \pm £200$)
 - Demand more NHS expenditure ($A < O$)
 - Demand same NHS expenditure ($A = O$)
 - Demand less NHS expenditure ($A > O$)
- Downward Surprise ($P > A + £200$)
 - Demand more NHS expenditure ($A < O$)
 - Demand same NHS expenditure ($A = O$)
 - Demand less NHS expenditure ($A > O$)

Figure D.2 and Table D.1 give summary statistics of all nine categories. Around a third of the respondents over-estimated how much the NHS spends and then subsequently believed more should be spent. Another third under-estimated and half wanted more expenditure while the other half wanted less. This shows a lot of heterogeneity, at first glance, regarding the reaction that people had to the information being given to them. Overall though, around half of our sample, after they have learnt the actual level of spending (whether they were surprised or not) would wish to see more spending on the NHS.

Figure D.2: Impact of Surprises on Desired Health Spending (DHS)



P: **Perceived** annual NHS expenditure per person
A: **Actual** annual NHS expenditure per person
O: What annual NHS expenditure **ought** to be per person

Table D.1: Impact of Surprises on Desired Health Spending (DHS)

	mean	sd
Upward Surprise, Demand More NHS ($P < A < O$)	.1738	.3789
Upward Surprise, Demand Same NHS ($P < A=O$)	.0475	.2128
Upward Surprise, Demand Less NHS ($P < A, A > O$)	.1645	.3708
No Surprise, Demand More NHS ($P=A < O$)	.1057	.3075
No Surprise, Demand Same NHS ($P=A=O$)	.0228	.1491
No Surprise, Demand Less NHS ($P=A > O$)	.0334	.1798
Downward Surprise, Demand More NHS ($P > A, A < O$)	.3310	.4706
Downward Surprise, Demand Same NHS ($P > A=O$)	.0377	.1905
Downward Surprise, Demand Less NHS ($P > A > O$)	.0836	.2768
Observations	6819	

Appendix E. Results Using Predicted Income

Table D.2: Probit Estimation of Support for Different Discrete Resource Measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Save Admin	Tax for NHS	Private	GP Pay	A&E Pay	Prescription	GP Open
Working	-0.0243 (-0.34)	0.198*** (2.51)	0.0774 (0.81)	-0.0110 (-1.10)	-0.126* (-1.79)	0.172 (1.25)	-0.165*** (-2.33)
Student	0.152* (1.67)	0.465*** (4.69)	0.0506 (0.44)	-0.176 (-1.24)	0.137 (1.52)	0.143 (0.84)	-0.0858 (-0.94)
Unemployed	0.0154 (0.17)	0.254*** (2.62)	-0.0763 (-0.63)	-0.299** (-1.96)	-0.102 (-1.15)	-0.0843 (-0.46)	-0.0309 (-0.35)
Retired	0.253*** (2.75)	0.374*** (3.94)	0.0686 (0.61)	0.0784 (0.56)	0.140 (1.59)	0.00574 (0.03)	-0.0343 (-0.39)
Health/Social Care Worker	-0.0589 (-0.89)	0.0768 (1.10)	-0.00755 (-0.09)	-0.0822 (-0.80)	0.104 (1.04)	-0.192 (-1.47)	0.0814 (1.21)
Predicted Income (x1000)	0.00122 (0.57)	0.00120 (0.54)	0.00564** (2.20)	0.00524* (1.70)	0.00294 (1.40)	-0.00448 (-1.21)	0.00300 (1.41)
Age in Years	0.0150*** (8.98)	0.00502*** (2.96)	-0.00560*** (-2.78)	-0.00236 (-0.94)	0.00411*** (2.58)	0.00331 (1.11)	0.00392** (2.44)
Male	0.0500 (1.27)	0.206*** (5.07)	0.145*** (3.07)	0.258*** (4.47)	-0.139*** (-3.61)	0.243*** (3.56)	0.00392** (2.44)
Graduate	0.0417 (0.72)	0.183*** (3.07)	-0.0424 (-0.60)	0.102 (1.27)	-0.0313 (-0.55)	0.0910 (0.93)	-0.312*** (-8.02)
Has children	-0.0541 (-1.07)	0.0529 (1.01)	-0.0424 (-0.60)	-0.0845 (-1.13)	-0.0313 (-0.55)	0.0910 (0.93)	-0.151*** (-2.39)
Graduate*Children	0.0452 (0.59)	0.00358 (0.05)	0.0717 (0.83)	0.0660 (0.62)	0.0475 (0.96)	-0.0120 (-0.14)	-0.0111 (-0.22)
At least 1 child under 6	-0.0188 (-0.33)	-0.0600 (-1.00)	0.00920 (0.13)	-0.0533 (-0.64)	-0.103* (-1.19)	0.142 (1.13)	0.0955 (1.26)
White Other	-0.0726 (-0.96)	0.0481 (0.60)	0.139 (1.56)	0.125 (1.21)	-0.171** (-2.26)	0.0797 (0.84)	-0.0116 (-0.20)
Asian	-0.0527 (-0.60)	-0.0930 (-0.99)	0.368*** (3.70)	0.156 (1.28)	-0.151* (-1.73)	0.192 (1.61)	-0.241*** (-3.11)
Black	-0.242** (-2.12)	0.0127 (0.10)	0.160 (1.24)	0.103 (1.00)	-0.309*** (-2.67)	-0.0389 (-0.25)	-0.0362 (-0.40)
Mixed	-0.0875 (-0.66)	0.104 (0.76)	-0.0547 (-0.32)	0.181 (1.00)	-0.134 (-1.00)	0.199 (1.19)	-0.184 (-1.38)
Other Ethnicity	0.00800 (0.07)	-0.0984 (-0.86)	0.307** (2.52)	0.0248 (0.16)	-0.357*** (-3.26)	0.386** (2.09)	-0.134 (-0.99)
Other Religion	-0.0157 (-0.23)	0.0700 (0.97)	0.0679 (0.85)	0.251*** (2.60)	-0.00540 (-0.08)	0.265** (2.44)	-0.0357 (-0.51)
Not Religious	0.0301 (0.81)	0.0795** (2.08)	-0.116** (-2.54)	-0.0109 (-0.20)	0.0548 (1.50)	-0.00492 (-0.07)	0.0933** (2.53)
Recent Immigrant	0.143 (1.36)	-0.00474 (-0.43)	0.134 (1.14)	0.0359 (0.26)	-0.147 (-1.40)	-0.0152 (-0.09)	-0.127 (-1.17)
Left-Right Index	-0.0481*** (-2.77)	-0.149*** (-8.06)	0.197*** (9.45)	0.186*** (7.62)	0.0234 (1.38)	0.119*** (4.04)	-0.0540*** (-3.14)
Nudge	0.0565* (1.67)	-0.0104 (-0.30)	-0.0569 (-0.38)	0.0438 (0.89)	-0.0377 (-1.13)	-0.0115 (-0.20)	-0.0196 (-0.58)
Parent Satisfaction	-0.00108 (-0.43)	0.000261 (0.10)	-0.00278 (-0.92)	0.00161 (0.45)	0.00111 (0.45)	0.000207 (0.05)	0.00139 (0.55)
GP OOF Score	0.000523 (1.28)	0.000122 (0.29)	0.0000610 (0.12)	0.000290 (0.45)	-0.000349 (-0.87)	-0.000142 (-0.17)	0.000385 (0.95)
Constant	-0.534* (-1.70)	-0.914*** (-2.83)	-1.396*** (-3.57)	-2.405*** (-5.04)	-0.0943 (-0.31)	-2.311*** (-3.89)	-0.344 (-1.10)
Observations	5785	5785	5785	5785	5785	5785	5785
A/C	7571.2	7008.3	4763.5	3104.3	7929.5	2091.8	7753.3
Log lik.	-3760.6	-3479.2	-2356.7	-1527.2	-3939.7	-1020.9	-3852.7
Log lik. (constant-only)	-3903.7	-3582.8	-2471.7	-1610.7	-4008.9	-1054.6	-3940.3
Pseudo R ²	0.0367	0.0289	0.0465	0.0519	0.0173	0.0319	0.0223

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table D.3: Additional Health Spending from Redistribution (AHSR)

	(1)	(2)	(3)	(4)	(5)
	Full Sample	Baseline	Control for Health	Behavioural	Preferred Specification
Selection for health questions	-3.488	-2.591	(-0.81)		
Working	14.08**	12.25*	(1.95)	13.29	11.33
Student	19.83**	19.41**	(2.39)	17.53	10.90
Unemployed	10.99	11.73	(1.38)	4.762	0.74
Retired	20.70**	19.19**	(2.34)	15.50	1.38
Health/Social Care Worker	9.216	8.366	(1.06)	12.70	0.02
Household income (x1000)	0.267***	0.255***	(2.77)	0.0949	0.156
Age in Years	0.381**	0.350**	(2.44)	0.383*	0.179
Male	-11.07***	-10.11***	(-3.01)	-11.59**	-10.15*
Graduate	12.04**	11.49**	(2.17)	10.22	7.430
Has children	-13.06***	-11.85***	(-2.61)	-11.48*	-6.210
Graduate*Children	9.563	10.05	(1.37)	10.65	1.06
At least 1 child under 6	9.366*	7.580	(1.44)	18.22**	15.86*
White Other	-8.303	-9.922	(-1.54)	-9.231	-15.00
Asian	-29.45***	-28.98***	(-4.10)	-46.32***	-40.51***
Black	-35.31***	-33.45***	(-3.13)	-42.75**	-37.49*
Mixed	-15.39*	-15.93**	(-2.10)	-22.15	-5.697
Other Ethnicity	-18.02	-22.49	(-1.44)	-15.44	-8.713
Other Religion	5.041	7.791	(1.31)	12.46	15.15
Not Religious	11.71***	12.57***	(3.55)	4.187	0.0895
Recent Immigrant	-4.675	-7.836	(-0.83)	5.277	(0.59)
Time spent on actual govt spending	0.146	(0.97)			
Time spent on desired govt spending	3.015**	(2.01)			
Smoker nowadays			-13.97**		
Thin (BMI < 18.5)			-18.13**		
Overweight (25 <= BMI < 30)			6.974		
Obese (BMI >= 30)			-8.029		
Exercise Frequency			10.71		5.883
Drinking (prob >= 3/14)			5.743		13.28*
Drinking (prob < 3/14)			6.642		3.923
Self-Reported Health			3.115		0.450
Patient Satisfaction			0.331		0.0107
GP QOF Score			0.0125		3.178
DHS Anchoring (5000)				3.757	0.51
DHS Anchoring (6000)				1.123	(0.22)
Nudge				-4.090	(0.22)
Social Value Orientation				-0.0653	(0.22)
Risk Aversion				35.68	(0.59)
Time spent on perceived NHS budget				0.457	(0.50)
Time spent on NHS budget ought				-0.0136	(-0.38)
AHSR Upward Surprise				-5.404	-10.18*
AHSR Downward Surprise				36.07***	35.29***
Left-Right Index					-6.871**
Resource Measures Score					-4.577
Constant	-1.602	1.384	(0.16)	-25.78	(-1.51)
Observations	10585	11616		5289	4445
Adjusted R ²	0.012	0.008	0.009	0.012	0.015

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table D.4: Tobit Estimation for Additional Health Spending from Taxation (AHST)

	(1)		(2)		(3)		(4)	
	Baseline		Control for Health		Behavioural		Preferred Specification	
Working	148.6**	(2.04)	172.3	(1.62)	150.1**	(2.06)	266.3***	(3.11)
Student	509.4***	(5.40)	477.1***	(3.54)	471.4***	(4.94)	516.6***	(4.75)
Unemployed	253.1***	(2.74)	202.3	(1.48)	252.4***	(2.73)	230.5**	(2.10)
Retired	239.9***	(2.75)	333.3***	(2.70)	241.2***	(2.77)	316.6***	(3.11)
Health/Social Care Worker	132.1**	(2.11)	166.4*	(1.89)	130.8**	(2.09)	102.9	(1.41)
Household income (x1000)	8.819***	(14.06)	9.383***	(10.31)	8.871***	(13.93)	11.50***	(15.76)
Age in Years	8.316***	(5.44)	6.816***	(3.16)	8.242***	(5.38)	3.672**	(2.08)
Male	180.2***	(5.40)	143.8***	(3.04)	180.5***	(5.38)	190.3***	(4.96)
Graduate	209.9***	(4.06)	131.7*	(1.82)	206.1***	(3.95)	124.0**	(2.07)
Has children	73.42	(1.53)	55.28	(0.81)	72.38	(1.50)	73.04	(1.32)
Graduate*Children	-61.94	(-0.88)	-38.54	(-0.39)	-60.67	(-0.86)	-51.08	(-0.64)
At least 1 child under 6	-16.50	(-0.31)	-50.86	(-0.66)	-17.17	(-0.32)	-9.900	(-0.16)
White Other	-35.85	(-0.48)	-39.27	(-0.38)	-15.87	(-0.21)	32.56	(0.38)
Asian	-160.8*	(-1.84)	-81.93	(-0.71)	-162.2*	(-1.84)	-75.71	(-0.78)
Black	-4.043	(-0.04)	76.33	(0.50)	-34.68	(-0.30)	67.99	(0.54)
Mixed	64.47	(0.51)	163.3	(0.90)	79.77	(0.63)	80.44	(0.54)
Other Ethnicity	-8.606	(-0.07)	-183.4	(-1.03)	-1.672	(-0.01)	101.2	(0.72)
Other Religion	171.6**	(2.58)	59.39	(0.64)	180.0***	(2.69)	225.4***	(3.00)
Not Religious	89.55**	(2.54)	88.17*	(1.78)	91.07**	(2.58)	33.08	(0.81)
Recent Immigrant	-80.67	(-0.75)	-86.44	(-0.63)	-129.0	(-1.16)	-128.8	(-1.08)
Smoker nowadays			19.77	(0.36)				
Thin (BMI < 18.5)			52.37	(0.53)				
Overweight (25 <= BMI < 30)			25.69	(0.44)				
Obese (BMI >= 30)			1.689	(0.03)				
Exercise Frequency			-143.1	(-1.59)				
Drinking (prob >= 3/14)			-73.03	(-1.20)			-61.19	(-1.27)
Drinking (prob < 3/14)			-150.0**	(-2.33)			-126.2**	(-2.41)
Self-Reported Health			-73.18***	(-2.77)			-11.36	(-0.55)
Patient Satisfaction			-1.143	(-0.33)			-1.284	(-0.45)
GP QOF Score			-0.239	(-0.47)			-0.433	(-1.07)
DHS Anchoring (5000)					-10.32	(-0.26)	-18.01	(-0.40)
DHS Anchoring (6000)					-0.741	(-0.02)	6.988	(0.16)
Nudge					-11.32	(-0.35)		
Social Value Orientation					1.002	(1.04)		
Risk Aversion					-14.74	(-0.08)		
Time spent on perceived NHS budget					-6.046	(-0.33)		
Time spent on desired NHS budget					-3.356	(-0.45)	-2.039	(-0.24)
Left-Right Index							-87.87***	(-4.48)
Resource Measures Score							-456.1***	(-21.71)
Upward Surprise							-72.12	(-1.34)
Downward Surprise							-5.177	(-0.10)
Constant	-1579.1***	(-15.05)	-923.0**	(-2.17)	-1576.9***	(-7.92)	246.2	(0.71)
Observations	5857		2999		5816		4101	
Log lik.	-17198.8		-8929.5		-17031.6		-11878.0	
Log lik. (constant-only)	-17379.5		-9025.5		-17210.3		-12358.7	
Pseudo R ²	0.0104		0.0106		0.0104		0.0389	

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table D.5: Tobit Estimation for Additional Health Spending from Redistribution (AHSR)

	(1)		(2)		(3)		(4)	
	Baseline		Control for Health		Behavioural		Preferred Specification	
Working	30.17	(0.67)	-57.05	(-0.65)	9.014	(0.14)	-89.35	(-1.25)
Student	124.3**	(2.08)	42.64	(0.37)	104.9	(1.21)	-3.726	(-0.04)
Unemployed	28.10	(0.48)	23.04	(0.20)	-23.09	(-0.27)	-39.79	(-0.41)
Retired	73.04	(1.33)	14.67	(0.14)	12.19	(0.16)	-11.19	(-0.13)
Health/Social Care Worker	46.18	(1.11)	-9.910	(-0.12)	49.57	(0.85)	-8.920	(-0.12)
Household income (x1000)	1.447***	(3.46)	0.638	(0.74)	1.202*	(1.95)	2.197***	(3.04)
Age in Years	4.735***	(4.72)	1.437	(0.72)	4.591***	(3.16)	2.836	(1.64)
Male	-47.68**	(-2.20)	-38.03	(-0.89)	-51.46	(-1.64)	-40.79	(-1.11)
Graduate	129.3***	(3.97)	67.42	(1.03)	85.85*	(1.80)	54.14	(0.95)
Has children	-102.0***	(-3.22)	-30.75	(-0.49)	-118.8***	(-2.59)	-84.25	(-1.57)
Graduate*Children	51.89	(1.16)	143.3	(1.64)	102.8	(1.57)	112.2	(1.46)
At least 1 child under 6	19.22	(0.53)	-12.58	(-0.18)	22.98	(0.44)	26.44	(0.44)
White Other	-116.4**	(-2.23)	-232.7**	(-2.20)	-148.8*	(-1.93)	-207.8**	(-2.23)
Asian	-316.0***	(-4.66)	-361.4***	(-2.93)	-427.2***	(-4.12)	-326.8***	(-2.95)
Black	-271.7***	(-3.03)	-259.3	(-1.60)	-354.2**	(-2.56)	-295.2*	(-1.94)
Mixed	-160.2*	(-1.82)	-268.3	(-1.35)	-165.7	(-1.24)	-204.2	(-1.22)
Other Ethnicity	-192.7**	(-2.11)	-333.4*	(-1.74)	-209.8	(-1.55)	-93.43	(-0.65)
Other Religion	25.45	(0.55)	27.05	(0.31)	48.03	(0.72)	53.13	(0.70)
Not Religious	115.6***	(5.07)	39.53	(0.88)	87.83***	(2.65)	35.77	(0.92)
Recent Immigrant	70.33	(0.95)	2.181	(0.02)	64.08	(0.57)	11.29	(0.09)
Smoker nowadays			-169.5***	(-3.14)				
Thin (BMI < 18.5)			-132.9	(-1.38)				
Overweight (25 <= BMI < 30)			75.30	(1.47)				
Obese (BMI >= 30)			-117.4**	(-2.16)				
Exercise Frequency			73.37	(0.92)				
Drinking (prob >= 3/14)			90.37	(1.57)			74.89	(1.54)
Drinking (prob < 3/14)			86.40	(1.44)			88.80*	(1.74)
Self-Reported Health			28.93	(1.17)			35.76*	(1.75)
Patient Satisfaction			3.285	(1.03)			2.408	(0.87)
GP QOF Score			0.207	(0.44)			0.182	(0.45)
DHS Anchoring (5000)					-17.85	(-0.48)	14.94	(0.34)
DHS Anchoring (6000)					2.961	(0.08)	15.70	(0.36)
Nudge					-15.08	(-0.50)		
Social Value Orientation					0.125	(0.14)		
Risk Aversion					528.6***	(3.05)		
Time spent on perceived NHS budget					16.09	(1.38)		
Time spent on desired NHS budget					-0.206	(-0.05)	-0.264	(-0.06)
Left-Right Index							-47.57**	(-2.51)
Resource Measures Score							-68.01***	(-3.91)
Upward Surprise							42.13	(0.83)
Downward Surprise							-59.68	(-1.17)
Constant	-1135.6***	(-16.15)	-1388.2***	(-3.50)	-1553.9***	(-8.11)	-1159.0***	(-3.38)
Observations	11616		3001		5824		4105	
Log lik.	-13524.1		-3654.7		-6637.8		-4768.9	
Log lik. (constant-only)	-13615.7		-3694.2		-6687.1		-4821.1	
Pseudo R-Squared	0.00672		0.0107		0.00738		0.0108	

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table D.6: Lowest Common Denominator OLS Regression of Desired Health Spending

	(1)		(2)		(3)		(4)	
	Baseline		Control for Health		Behavioural		Preferred Specification	
Working	-65.87	(-0.91)	-38.89	(-0.56)	-45.80	(-0.64)	-37.75	(-0.56)
Student	-31.60	(-0.32)	10.02	(0.10)	-49.31	(-0.51)	-24.09	(-0.26)
Unemployed	-75.86	(-0.79)	-101.6	(-1.07)	-69.46	(-0.74)	-140.5	(-1.59)
Retired	-49.60	(-0.61)	-32.33	(-0.41)	-40.08	(-0.50)	-52.12	(-0.69)
Health/Social Care Worker	6.172	(0.10)	9.534	(0.16)	-2.651	(-0.04)	-43.50	(-0.77)
Household income (x1000)	-0.421	(-0.60)	-0.0316	(-0.05)	-0.481	(-0.68)	-0.245	(-0.37)
Age in Years	-0.737	(-0.47)	-1.681	(-1.07)	-0.834	(-0.53)	-1.461	(-1.00)
Male	106.7***	(3.25)	106.1***	(3.16)	106.3***	(3.25)	92.33***	(3.00)
Graduate	-37.32	(-0.73)	-26.05	(-0.51)	-24.43	(-0.48)	-34.51	(-0.73)
Has children	-92.80*	(-1.96)	-95.34**	(-2.01)	-97.33**	(-2.06)	-91.72**	(-2.11)
Graduate*Children	129.9*	(1.87)	122.0*	(1.76)	116.7*	(1.68)	132.0**	(2.07)
At least 1 child under 6	-20.07	(-0.37)	-23.88	(-0.44)	-8.944	(-0.17)	-23.16	(-0.46)
White Other	37.10	(0.48)	33.06	(0.42)	45.50	(0.59)	24.93	(0.35)
Asian	-97.10	(-1.15)	-117.7	(-1.38)	-95.64	(-1.16)	-101.2	(-1.24)
Black	148.2	(1.28)	102.6	(0.90)	148.0	(1.29)	69.11	(0.66)
Mixed	93.44	(0.72)	92.04	(0.72)	83.11	(0.67)	107.2	(0.88)
Other Ethnicity	-18.99	(-0.13)	-46.31	(-0.33)	-14.47	(-0.10)	0.407	(0.00)
Other Religion	168.7**	(2.29)	115.7	(1.58)	159.0**	(2.22)	128.4*	(1.87)
Not Religious	-54.65	(-1.61)	-46.43	(-1.37)	-55.78*	(-1.65)	-51.10	(-1.61)
Recent Immigrant	-104.1	(-1.11)	-73.84	(-0.78)	-129.7	(-1.39)	-31.85	(-0.37)
Smoker nowadays			-15.67	(-0.38)				
Thin (BMI < 18.5)			83.88	(1.06)				
Overweight (25 <= BMI < 30)			24.85	(0.62)				
Obese (BMI >= 30)			113.0***	(2.79)				
Exercise Frequency			36.16	(0.57)				
Drinking (prob >= 3/14)			-147.1***	(-3.16)			-148.7***	(-3.42)
Drinking (prob < 3/14)			-215.2***	(-4.48)			-210.0***	(-4.70)
Self-Reported Health			-68.45***	(-3.43)			-61.06***	(-3.42)
Patient Satisfaction			-5.610**	(-2.28)			-3.297	(-1.39)
GP QOF Score			0.713**	(2.16)			0.544*	(1.80)
DHS Anchoring (5000)					103.4***	(2.91)	105.7***	(3.20)
DHS Anchoring (6000)					305.0***	(7.92)	292.5***	(8.17)
Nudge					14.10	(0.44)		
Social Value Orientation					1.874*	(1.89)		
Risk Aversion					-157.3	(-0.86)		
Time spent on perceived NHS budget					16.83	(0.56)		
Time spent on desired NHS budget					-1.369***	(-3.77)	-1.324***	(-3.86)
Left-Right Index							-41.76**	(-2.45)
Resource Measures Score							-106.6***	(-7.74)
Upward Surprise							-276.9***	(-7.81)
Downward Surprise							309.4***	(8.12)
Constant	2284.8***	(22.31)	2752.5***	(9.09)	2220.2***	(11.55)	2879.9***	(9.78)
Observations	2972		2972		2972		2972	
Adjusted R ²	0.006		0.024		0.027		0.157	

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table E.1: Poisson Count Estimation of Resource Measures Score

	(1)		(2)	
	Baseline		Baseline + Health Variables	
Working	-0.00158	(-0.07)	-0.00939	(-0.41)
Student	-0.0482*	(-1.79)	-0.0594**	(-2.06)
Unemployed	-0.0578**	(-2.08)	-0.0652**	(-2.18)
Retired	-0.0361	(-1.28)	-0.0563*	(-1.87)
Health/Social Care Worker	-0.0155	(-0.72)	-0.00911	(-0.39)
Predicted Income (x1000)	0.000236	(0.36)	0.000293	(0.41)
Age in Years	-0.00353***	(-6.98)	-0.00326***	(-5.84)
Male	0.0219*	(1.81)	0.0276**	(2.11)
Graduate	-0.0111	(-0.62)	-0.00748	(-0.39)
Has children	0.0175	(1.12)	0.0107	(0.63)
Graduate*Children	0.00394	(0.17)	-0.00401	(-0.16)
At least 1 child under 6	-0.0126	(-0.73)	-0.00476	(-0.25)
White Other	0.0309	(1.37)	0.0379	(1.57)
Asian	0.0534**	(2.03)	0.0477*	(1.67)
Black	0.0360	(1.07)	0.0466	(1.32)
Mixed	0.0175	(0.44)	0.0197	(0.42)
Other Ethnicity	-0.0164	(-0.48)	-0.0342	(-0.90)
Other Religion	0.0284	(1.39)	0.0338	(1.54)
Not Religious	-0.0270**	(-2.33)	-0.0295**	(-2.34)
Recent Immigrant	-0.00967	(-0.31)	-0.00658	(-0.20)
Left-Right Index	0.0753***	(14.17)	0.0733***	(12.82)
Nudge	-0.0106	(-1.02)	-0.0136	(-1.21)
Drinking (prob $\geq 3/14$)			-0.00491	(-0.34)
Drinking (prob $< 3/14$)			0.00293	(0.19)
Self-Reported Health			0.0178***	(2.80)
Patient Satisfaction			-0.000138	(-0.17)
GP QOF Score			-0.000198	(-1.53)
Constant	0.847***	(24.13)	0.907***	(8.82)
Observations	6854		5757	
AIC	21769.4		18283.3	
Log lik.	-10861.7		-9113.7	
Log lik. (constant-only)	-10950.4		-9194.8	
Pseudo R^2	0.00810		0.00882	

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table E.2: Ordinary Least Squares Regression of Desired Health Spending

	(1)		(2)		(3)		(4)	
	Baseline		Control for Health		Behavioural		Preferred Specification	
Working	-40.88	(-0.87)	-12.08	(-0.18)	-23.16	(-0.49)	-6.412	(-0.12)
Student	-69.91	(-1.14)	-27.64	(-0.32)	-40.01	(-0.63)	-21.84	(-0.31)
Unemployed	-53.48	(-0.90)	-112.1	(-1.26)	-54.34	(-0.90)	-113.9*	(-1.68)
Retired	-37.86	(-0.69)	-25.53	(-0.34)	-24.34	(-0.44)	-17.47	(-0.28)
Health/Social Care Worker	40.15	(0.93)	25.18	(0.41)	19.15	(0.44)	-40.21	(-0.79)
Predicted Income (x1000)	-1.463	(-1.09)	-2.573	(-1.37)	-1.408	(-1.04)	-1.258	(-0.82)
Age in Years	-1.089	(-1.00)	-1.782	(-1.16)	-0.760	(-0.69)	-1.969	(-1.62)
Male	156.1***	(6.19)	126.9***	(3.60)	146.6***	(5.69)	118.3***	(4.18)
Graduate	-39.27	(-1.07)	-7.627	(-0.15)	-25.16	(-0.67)	-34.17	(-0.82)
Has children	-66.11**	(-2.05)	-83.39*	(-1.87)	-67.51**	(-2.06)	-64.45*	(-1.82)
Graduate*Children	152.5***	(3.17)	135.7**	(2.05)	143.0***	(2.93)	147.7***	(2.76)
At least 1 child under 6	-7.299	(-0.19)	-24.65	(-0.46)	-0.310	(-0.01)	-28.43	(-0.67)
White Other	47.20	(0.89)	66.17	(0.86)	60.39	(1.14)	75.49	(1.25)
Asian	-103.6	(-1.56)	-38.61	(-0.46)	-102.0	(-1.54)	-62.51	(-0.86)
Black	190.3**	(2.37)	123.8	(1.14)	181.4**	(2.20)	150.3*	(1.80)
Mixed	29.88	(0.32)	104.5	(0.82)	69.96	(0.72)	49.68	(0.50)
Other Ethnicity	123.9	(1.39)	50.60	(0.44)	135.0	(1.40)	135.9	(1.34)
Other Religion	207.0***	(4.04)	99.44	(1.43)	206.7***	(3.96)	130.4**	(2.30)
Not Religious	-40.18*	(-1.74)	-36.11	(-1.14)	-41.08*	(-1.75)	-43.92*	(-1.70)
Recent Immigrant	-122.0*	(-1.84)	-121.8	(-1.40)	-141.3**	(-2.10)	-73.66	(-1.06)
Smoker nowadays			-13.56	(-0.35)				
Thin (BMI < 18.5)			109.8	(1.54)				
Overweight (25 <= BMI < 30)			33.13	(0.89)				
Obese (BMI >= 30)			127.4***	(3.25)				
Exercise Frequency			67.66	(1.15)				
Drinking (prob >= 3/14)			-148.0***	(-3.39)			-120.5***	(-3.54)
Drinking (prob < 3/14)			-195.0***	(-4.38)			-141.3***	(-4.01)
Self-Reported Health			-54.60***	(-2.91)			-44.07***	(-3.04)
Patient Satisfaction			-3.702	(-1.64)			-2.735	(-1.45)
GP QOF Score			0.444	(1.34)			-0.0494	(-0.19)
DHS Anchoring (5000)					115.1***	(4.72)	132.5***	(5.00)
DHS Anchoring (6000)					304.3***	(11.21)	305.2***	(10.19)
Nudge					-11.94	(-0.54)		
Social Value Orientation					0.539	(0.80)		
Risk Aversion					-59.37	(-0.47)		
Time spent on perceived NHS budget					-18.33*	(-1.67)		
Time spent on desired NHS budget					-1.685***	(-2.99)	-1.759***	(-4.26)
Left-Right Index							-26.06*	(-1.91)
Resource Measures Score							-99.36***	(-8.75)
Upward Surprise							-270.2***	(-9.33)
Downward Surprise							356.6***	(11.60)
Constant	2300.1***	(33.66)	2683.4***	(9.47)	2176.0***	(16.34)	2956.3***	(12.74)
Observations	6819		3457		6321		4788	
Adjusted R ²	0.014		0.021		0.033		0.151	

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure E.1: Kernel Densities of Household and Predicted Income

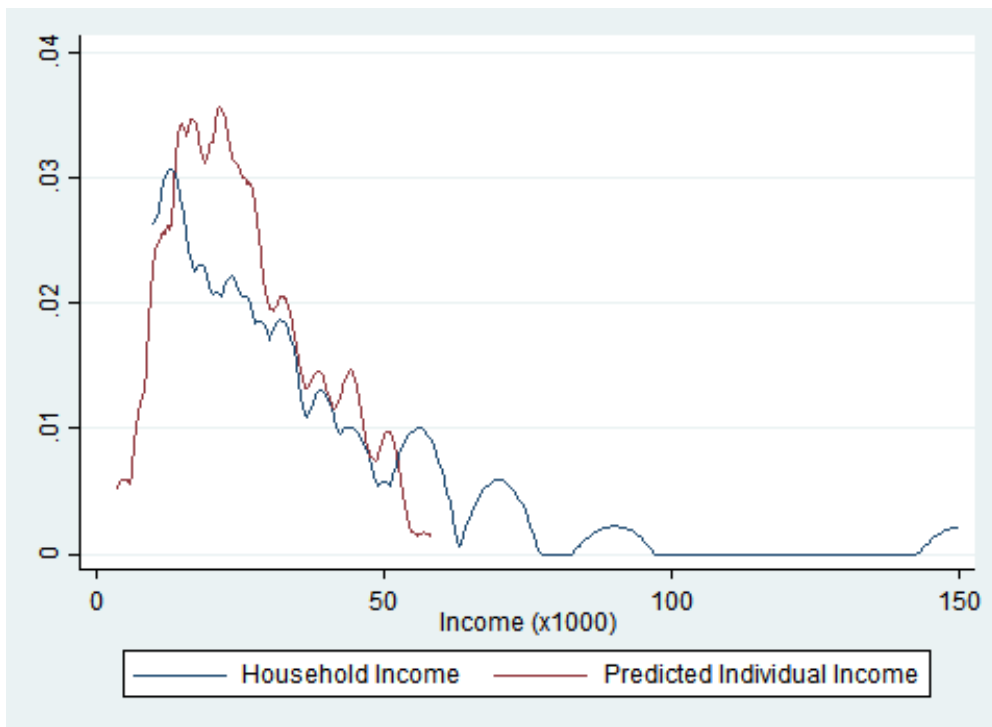


Table E.3: Ordinary Least Squares Regression of Additional Health Spending from Redistribution (AHSR)

	(1)	(2)	(3)	(4)	(5)
	Full Sample	Baseline	Control for Health	Behavioural	Preferred Specification
Selection for health questions	-3.900 (-1.21)	-2.979 (-0.98)			
Working	9.047 (1.39)	7.716 (1.27)	11.18 (0.94)	8.470 (0.93)	3.437 (0.35)
Student	19.08** (2.35)	19.47** (2.57)	14.02 (0.94)	19.04 (1.58)	14.04 (1.06)
Unemployed	6.075 (0.73)	6.595 (0.84)	22.65 (1.39)	4.735 (0.40)	8.992 (0.70)
Retired	24.76*** (2.93)	22.81*** (2.87)	30.82** (1.89)	22.83* (1.85)	29.63*** (2.16)
Health/Social Care Worker	9.551 (1.15)	7.282 (0.93)	3.520 (0.40)	13.88 (1.30)	2.239 (0.28)
Predicted Income (x1000)	0.615*** (2.92)	0.591*** (2.96)	0.645* (1.72)	0.607*** (2.02)	1.031*** (3.11)
Age in Years	0.291* (1.96)	0.237* (1.69)	-0.359 (-1.36)	0.270 (0.27)	0.0196 (0.09)
Male	-16.73*** (-4.50)	-14.67*** (-4.16)	-8.816 (-1.45)	-15.80*** (-3.16)	-17.70*** (-3.22)
Graduate	8.968 (1.59)	7.958 (1.49)	5.012 (0.52)	5.513 (0.69)	-0.735 (-0.08)
Has children	-12.63*** (-2.78)	-11.26*** (-2.58)	1.961 (0.25)	-10.90* (-1.80)	-6.686 (-1.04)
Graduate*Children	8.650 (1.18)	8.757 (1.25)	23.57* (1.70)	8.826 (0.82)	11.68 (0.98)
At least 1 child under 6	10.10* (1.83)	7.495 (1.45)	5.244 (0.50)	18.47*** (2.15)	16.46* (1.84)
White Other	-3.536 (-0.52)	-5.494 (-0.88)	-19.95* (-1.79)	-6.593 (-0.70)	-10.88 (-1.13)
Asian	-26.65*** (-4.05)	-23.14*** (-3.25)	-47.07*** (-4.50)	-44.20*** (-4.98)	-39.31*** (-3.81)
Black	-32.65*** (-2.90)	-31.16*** (-3.13)	-51.52*** (-2.08)	-39.97*** (-2.27)	-33.08 (-0.64)
Mixed	-13.42* (-1.82)	-20.62** (-2.17)	-17.36 (-1.16)	-9.726 (-0.85)	-3.296 (-0.25)
Other Ethnicity	-22.48* (-1.68)	-24.65** (-1.93)	-49.91*** (-1.98)	-23.86 (-1.00)	-17.06 (-0.61)
Other Religion	3.690 (0.65)	3.987 (0.67)	12.66 (1.22)	10.43 (1.21)	12.26 (1.21)
Not Religions	9.912*** (2.78)	10.85*** (3.23)	2.472 (0.42)	3.682 (0.77)	-0.243 (-0.05)
Recent Immigrant	-12.31 (0.95)		-10.39 (-0.86)	0.316 (0.02)	-2.662 (-0.20)
Time spent on actual govt spending	1.018 (1.38)				
Time spent on desired govt spending					
Smoker nowadays			-13.43*** (-2.37)		
Thin (BMI < 18.5)			-16.91*** (-2.31)		
Overweight (25 <= BMI < 30)			5.872 (0.82)		6.797 (1.05)
Obese (BMI >= 30)			-9.505 (-1.28)		15.55** (2.15)
Exercise Frequency			10.80 (1.28)		3.938 (1.38)
Drinking (prob >= 3/14)			6.703 (0.85)		0.478 (1.51)
Drinking (prob < 3/14)			10.14 (1.27)		0.00156 (0.03)
Self-Reported Health			2.229 (0.65)		4.299 (0.72)
Patient Satisfaction			0.371 (1.00)		2.975 (0.54)
GP QOF Score				4.283 (0.76)	
DHS Anchoring (5000)				2.180 (0.44)	
DHS Anchoring (6000)				-3.746 (-0.84)	
Nudge				-0.00696 (-0.52)	
Social Value Orientation				26.42 (1.02)	
Risk Aversion				0.545 (0.58)	
Time spent on perceived NHS budget				-0.000576 (-0.16)	-0.0113 (-0.27)
Time spent on desired NHS budget				-3.791 (-0.79)	-7.716 (-1.47)
AHSR Upward Surprise				32.53*** (3.84)	31.14*** (3.33)
AHSR Downward Surprise					-6.329* (-2.31)
Left-Right Index					-4.472 (-1.57)
Resource Measures Score					-36.24 (-0.95)
Constant	2.207 (0.25)	4.538 (0.55)	-24.76 (-0.56)	-22.47 (-0.84)	4841 (0.16)
Observations	11518	12624	3884	5741	
Adjusted R ²	0.009	0.007	0.011	0.012	

t statistics in parentheses
 * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table E.4: Tobit Estimation of Additional Health Spending from Taxation (AHST)

	(1)		(2)		(3)		(4)	
	Baseline		Control for Health		Behavioural		Preferred Specification	
Working	186.7**	(2.37)	190.3*	(1.66)	186.6**	(2.37)	290.8***	(3.07)
Student	530.5***	(5.35)	442.9***	(3.11)	490.5***	(4.89)	514.8***	(4.36)
Unemployed	152.8	(1.57)	95.49	(0.66)	161.5*	(1.66)	79.84	(0.67)
Retired	287.5***	(3.07)	314.5**	(2.38)	285.2***	(3.05)	304.6***	(2.71)
Health/Social Care Worker	141.7**	(2.12)	172.9*	(1.85)	142.4**	(2.14)	95.60	(1.20)
Predicted Income (x1000)	6.779***	(3.16)	4.019	(1.35)	6.268***	(2.92)	5.105**	(2.03)
Age in Years	7.223***	(4.40)	6.845***	(2.95)	7.358***	(4.49)	2.779	(1.43)
Male	168.5***	(4.25)	155.9***	(2.79)	163.0***	(4.11)	194.7***	(4.18)
Graduate	243.6***	(4.19)	194.6**	(2.42)	221.9***	(3.80)	208.1***	(3.01)
Has children	100.5**	(1.98)	73.31	(1.02)	96.60*	(1.90)	125.1**	(2.08)
Graduate*Children	-17.75	(-0.24)	-8.584	(-0.08)	-9.908	(-0.13)	-13.79	(-0.16)
At least 1 child under 6	-15.02	(-0.26)	-37.70	(-0.46)	-13.41	(-0.23)	-14.81	(-0.22)
White Other	-52.42	(-0.67)	-33.11	(-0.30)	-22.18	(-0.28)	17.73	(0.19)
Asian	-209.8**	(-2.27)	-105.9	(-0.86)	-202.5**	(-2.17)	-122.5	(-1.16)
Black	-77.87	(-0.65)	32.75	(0.21)	-100.7	(-0.82)	14.20	(0.10)
Mixed	43.41	(0.32)	110.8	(0.59)	88.99	(0.66)	78.69	(0.48)
Other Ethnicity	-237.8*	(-1.88)	-332.6*	(-1.83)	-162.0	(-1.25)	-76.41	(-0.53)
Other Religion	188.6***	(2.68)	97.66	(0.99)	205.1***	(2.91)	284.3***	(3.48)
Not Religious	87.01**	(2.33)	83.93	(1.60)	76.67**	(2.05)	24.59	(0.55)
Recent Immigrant	-102.8	(-0.91)	-130.0	(-0.91)	-167.0	(-1.44)	-166.3	(-1.30)
Smoker nowadays			-4.681	(-0.08)				
Thin (BMI < 18.5)			52.27	(0.51)				
Overweight (25 <= BMI < 30)			36.00	(0.58)				
Obese (BMI >= 30)			5.450	(0.09)				
Exercise Frequency			-183.3*	(-1.93)				
Drinking (prob >= 3/14)			-27.43	(-0.43)			4.126	(0.08)
Drinking (prob < 3/14)			-150.5**	(-2.21)			-101.2*	(-1.78)
Self-Reported Health			-50.89*	(-1.84)			14.01	(0.63)
Patient Satisfaction			-1.631	(-0.45)			-1.261	(-0.41)
GP QOF Score			0.0352	(0.07)			-0.237	(-0.53)
DHS Anchoring (5000)					16.64	(0.40)	15.17	(0.31)
DHS Anchoring (6000)					18.47	(0.44)	25.69	(0.52)
Nudge					-2.351	(-0.07)		
Social Value Orientation					0.807	(0.79)		
Risk Aversion					228.3	(1.18)		
Time spent on perceived NHS budget					2.139	(0.12)		
Time spent on desired NHS budget					-4.707	(-0.31)	-2.740	(-0.19)
Left-Right Index							-65.51***	(-3.10)
Resource Measures Score							-494.1***	(-21.26)
Upward Surprise							-91.27	(-1.56)
Downward Surprise							-4.667	(-0.08)
Constant	-1619.2***	(-14.37)	-1097.0**	(-2.44)	-1777.0***	(-8.37)	104.0	(0.27)
Observations	6557		3335		6171		4592	
Log lik.	-17508.8		-9088.2		-17232.3		-12124.4	
Log lik. (constant-only)	-17615.4		-9141.9		-17333.4		-12526.9	
Pseudo R ²	0.00605		0.00587		0.00584		0.0321	

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table E.5: Tobit Estimation of Additional Health Spending from Redistribution (AHSR)

	(1)		(2)		(3)		(4)	
	Baseline		Control for Health		Behavioural		Preferred Specification	
Working	10.80	(0.25)	-95.58	(-1.11)	-8.123	(-0.13)	-125.8*	(-1.78)
Student	159.8***	(2.85)	58.05	(0.53)	137.3*	(1.68)	53.82	(0.59)
Unemployed	6.301	(0.11)	22.87	(0.21)	-39.99	(-0.50)	-52.02	(-0.56)
Retired	114.0**	(2.16)	88.17	(0.87)	83.15	(1.10)	87.52	(1.02)
Health/Social Care Worker	51.42	(1.27)	-4.389	(-0.05)	57.74	(1.03)	-4.137	(-0.06)
Predicted Income (x1000)	3.892***	(3.07)	4.974**	(2.01)	4.272**	(2.35)	7.451***	(3.47)
Age in Years	3.840***	(3.91)	0.279	(0.14)	3.505**	(2.48)	1.334	(0.79)
Male	-81.91***	(-3.51)	-75.43	(-1.64)	-84.43**	(-2.50)	-95.95**	(-2.42)
Graduate	108.5***	(3.29)	46.28	(0.71)	64.27	(1.33)	10.98	(0.19)
Has children	-91.56***	(-3.01)	-23.31	(-0.39)	-101.5**	(-2.32)	-63.88	(-1.25)
Graduate*Children	44.44	(1.04)	115.0	(1.38)	83.34	(1.33)	90.52	(1.23)
At least 1 child under 6	18.15	(0.52)	-17.76	(-0.26)	16.19	(0.32)	17.15	(0.29)
White Other	-83.83*	(-1.74)	-203.9**	(-2.08)	-138.5*	(-1.94)	-185.0**	(-2.14)
Asian	-281.9***	(-4.50)	-364.9***	(-3.09)	-437.5***	(-4.42)	-341.5***	(-3.21)
Black	-271.3***	(-3.13)	-225.7	(-1.51)	-338.9***	(-2.64)	-270.9*	(-1.93)
Mixed	-128.1	(-1.57)	-167.1	(-0.99)	-89.94	(-0.76)	-136.7	(-0.92)
Other Ethnicity	-211.6***	(-2.72)	-312.1*	(-1.89)	-236.9**	(-2.03)	-136.7	(-1.06)
Other Religion	15.90	(0.36)	19.39	(0.23)	57.50	(0.92)	49.32	(0.68)
Not Religious	105.5***	(4.83)	28.07	(0.66)	76.64**	(2.43)	18.87	(0.51)
Recent Immigrant	19.20	(0.28)	-26.83	(-0.21)	49.96	(0.49)	-3.314	(-0.03)
Respondent is smoking nowadays			-164.9***	(-3.19)				
Thin (BMI < 18.5)			-137.2	(-1.50)				
Overweight (25 <= BMI < 30)			76.37	(1.57)				
Obese (BMI >= 30)			-118.5**	(-2.28)				
Exercise Frequency			69.01	(0.90)				
Drinking (prob >= 3/14)			92.78*	(1.69)			83.08*	(1.79)
Drinking (prob < 3/14)			112.2**	(1.97)			115.6**	(2.37)
Self-Reported Health			31.95	(1.37)			47.11**	(2.42)
Patient Satisfaction			3.795	(1.25)			3.262	(1.24)
GP QOF Score			0.164	(0.37)			0.142	(0.37)
DHS Anchoring (5000)					-26.17	(-0.73)	4.970	(0.12)
DHS Anchoring (6000)					-1.917	(-0.05)	13.60	(0.33)
Nudge					-18.67	(-0.64)		
Social Value Orientation					0.176	(0.20)		
Risk Aversion					464.1***	(2.82)		
Time spent on perceived NHS budget					17.08	(1.51)		
Time spent on desired NHS budget					-0.0423	(-0.01)	-0.0622	(-0.02)
Left-Right Index							-41.17**	(-2.30)
Resource Measures Score							-72.03***	(-4.31)
Upward Surprise							41.24	(0.85)
Downward Surprise							-47.25	(-0.96)
Constant	-1128.2***	(-16.60)	-1450.1***	(-3.83)	-1495.9***	(-8.18)	-1291.4***	(-3.92)
Observations	12624		3257		6317		4472	
Log lik.	-14553.8		-3914.8		-7101.1		-5120.1	
Log lik. (constant-only)	-14648.4		-3960.4		-7153.5		-5180.2	
Pseudo R ²	0.00646		0.0115		0.00733		0.0116	

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$