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Brexit and the NHS: Voting Behaviour and Views on the Impact of Leaving the EU

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Brexit and the NHS: Voting Behaviour and Views on the Impact of Leaving the EU

Abstract

This paper examines three aspects of Brexit with regards to the NHS. Firstly, we consider the influence of views regarding one the most contentious issues in the referendum campaign: *Vote Leave*'s claim that the 'savings' from EU membership could alternatively be used to provide additional funding for the NHS. We find that views about NHS underfunding had a relatively small, but statistically significant, effect on leave voting even after controlling for a range of socio-demographic and economic variables. However, the magnitude of this effect is reduced and becomes insignificant when health-related and cultural controls are added. Secondly, we examine how NHS workers voted relative to others in employment, and find that a relatively high proportion were actually leave voters. Finally, we analyse whether individuals thought that Brexit would have a positive or negative impact on the NHS, as well as the reason/reasons for their view. We find that supporters of the Conservative party were by far the most likely to think that Brexit would be good for the NHS.

Keywords: Brexit; National Health Service; Voting.

Introduction

The decision that the UK made to leave the European Union (EU) following the June 2016 referendum was expected to impact on the National Health Service (NHS) in several ways. These include consequences from a reduction in the size of the economy, which would likely result in less money being spent on public services such as health-care. Therefore, as Sir Simon Stevens - the then CEO of the NHS - comments, “when the economy sneezes, the NHS catches a cold” (Simpkin and Mossialos, 2017). More specifically in relation to GDP, Brexit had a short-term negative impact on UK output in the aftermath of the vote (Born *et al.*, 2019) and is also predicted to bring about a fall in living standards by reducing GDP per capita by at least 2% (Hantzsche *et al.*, 2019). Even though the eventual withdrawal agreement made with the EU at the end of December 2020 allowed for tariff free trade, thereby avoiding a ‘no-deal’ Brexit (Igwe, 2022), leaving the EU is likely to have a detrimental effect on the overall UK economy. This is mainly because of disruptions to trade flows caused by an increase in regulations (De Lyon and Dhingra, 2021). In terms of other Brexit outcomes, future EU migrants will need residence permits, although EU citizens already resident in the UK have the right to remain and retain existing rights (Igwe, 2022).

The issue of funding for the NHS more generally also played a big role in the lead-up to the referendum. This was because possibly the most controversial claim related to the alternative uses for the expenditure required for EU membership. More specifically, the Leave Campaign argued that this could be redirected to fund the NHS. Our paper considers various issues relating to the NHS and Brexit including how NHS workers voted in the referendum and public views on the impact that Brexit will have on the NHS.

Simpkin and Mossialos (2017) examine the challenges and opportunities of Brexit for the NHS in four key areas: workforce, regulations, cross-border cooperation and research & innovation. They conclude that international co-operation is vital for enhancing medical

research and remaining at the cutting-edge of science but also is central to the UK Government's Industrial Strategy for growth and prosperity. They argue that UK scientists should be allowed to access clinical trials networks and there should continue to be co-ordinated responses to cross-border health threats. In an article published just before the EU Referendum, McKee and Martin (2016) provide arguments for and against EU membership for the NHS, science and research. It is argued that membership of the EU made it far easier for the NHS to recruit highly skilled workers to fill vacancies that had emerged due to the UK's under-investment in the training of health workers. Therefore, more restrictive immigration rules are likely to have a detrimental impact on staffing levels in the NHS. Cross-border mobility within the EU has also produced benefits in terms of the large number of life science researchers from Europe that are employed in UK universities, which has led to innovations in relation to drug discoveries and health services research. It is also noted that the European Medicines Agency, which used to be located in London, has enabled a single process for authorising medicines across the EU to be established, thereby reducing the costs of new products as well the time needed to bring them to market. In contrast, McKee and Martin (2016) note that Vote Leave had indicated that the NHS would see increased funding if the UK were to leave the EU, and that there would be more supportive immigration and regulation frameworks. It is also suggested that continued EU membership could harm the UK's ability to recruit staff from outside of the EU and confer risks on the NHS with regards to being subjected to the whims of EU regulations and worsening institutions.

Fahy *et al.* (2019) argue that all forms of Brexit are bad for the UK's health system but that some are worse than others. In particular, they find that a 'No Deal' Brexit would be significantly worse than the 'Withdrawal Agreement'. They also note, however, that all forms of Brexit would have negative implications for the UK's leadership and governance of health, both at the European and global levels. They further suggest that Brexit would also have a

detrimental impact on Parliament's and other stakeholders' ability to oversee and scrutinise government actions.

van Schalkwyk *et al.* (2020) identify several risks to the NHS in a post-Brexit era. These are: undermining the National Institute for Clinical Excellence, extending intellectual property protection, a weakening of regulatory protection, a reduction in scrutiny pertaining to trade, the increased possibility of decisions being made behind closed doors and increased hazards with regards to trade. Godlee *et al.* (2018) along with van Schalkwyk *et al.* (2019) argue that a 'No Deal' Brexit would disrupt complex supply chains and result in shortages of medicines and devices. Dayan *et al.* (2020) examine the impact on health in the UK more generally by considering uncertainties surrounding the short-term supply of medicines and medical devices to the UK after the end of the transitional period and the effects of government regulation of the causes of ill-health including poor air quality, tobacco and unhealthy and unsafe food. They also note that lower economic growth and limitations to government spending following Brexit could have a negative impact on the determinants of health, such as unemployment and access to health services. Burdett and Fenge (2018) explore the impact of Brexit on community and practice nurses specifically and conclude that the uncertainties surrounding Brexit are likely to have slowed down the move towards the integration of health and social care provision. Hervey *et al.* (2021) identify a number of areas in which Brexit can produce externalities for other countries. They categorise these into three types of health "Brexternalities": those affecting part of the EU, those affecting all of the EU and those that have global effects. They suggest that all of these are negative and therefore identify them as costs of the UK exiting the EU.

Wildman *et al.* (2016) surveyed 100 senior health economists in October 2016 to elicit responses on a range of issues connected to Brexit including the positive and negative outcomes that could arise for health and health services in the UK. The responses highlighted the link between health spending and GDP, with a negative impact of Brexit on the economy resulting

in NHS expenditure suffering. Alternatively, if Brexit benefitted the UK economy, then higher growth would lead to increased resources for the NHS. The labour market was identified as a major concern by respondents given the reliance of the NHS and the social care sector on workers who were born outside the UK. Restrictions on immigration would produce challenges for the health workforce, especially with regards to middle and low skilled workers. However, in response to these labour market problems, there may be an increase in the training of UK-born health professionals. Respondents also expressed concerns about the funding of medical research, health service research and socio-economic research following Brexit. They conclude by stating that Brexit is likely to bring about many challenges for health in the UK and that many respondents indicated that there were no positives.

Given the potential implications that Brexit had for the NHS, it is surprising that there appears to be little evidence on how the healthcare workforce voted in the EU Referendum. One exception is McCrae and Portes (2019), who report the results of a survey of 162 nursing and midwifery students at Kings College London on a range of issues connected to Brexit including on how they voted. They find that only 20% of the 123 respondents who answered the question about voting in the EU Referendum indicated that they had voted leave, which they compare with the overall leave vote of around 52%. However, this is virtually identical to the percentage of students who voted to leave the EU, according to data from the *British Social Attitudes Survey (BSAS)*.

Using data from various years of the *BSAS*, the specific research questions that we focus on in this paper are as follows: How did workers in Health and Social Care vote in the EU Referendum relative to those employed in other industries and sectors – given that we would expect those who work in the NHS to be best placed to understand the potential consequences of Brexit on health services? What impact do British people think that Brexit will have on the

NHS? What influence did views towards the degree to which the NHS was underfunded (or not) have on the leave vote?

We combine data from the 2016-2019 *BSAS* surveys - each of which asked questions (to at least part of the sample) on whether the respondent voted and how they voted in the EU Referendum – pooling across all years to provide as large a sample of public sector workers in Health and Social Care as possible to address the first research question. Only single years of data are analysed to answer the other two questions, as the relevant questions were only asked in specific years. In particular, the question on views about the funding of the NHS and whether the individual voted in the EU Referendum were only asked to some individuals in 2016, whilst questions about how the NHS will be affected by Brexit were only asked of a subset of the respondents included in the 2018 survey. With regards to the latter questions, respondents were also asked about the reasons *why* they thought Brexit would be good or bad for the NHS. As a result, an individual's opinion on the issue could be based on several factors – in keeping with the arguments for and against presented in McKee and Martin (2016) and giving further depth to our understanding of motivations.

The Impact of Views on the (Under) Funding of the NHS on the Leave Vote

The 'Boris Bus' may well be the most abiding image of the *Vote Leave's* EU Referendum campaign, where the prominent leave campaigner Boris Johnson - subsequently the UK Prime Minister - travelled around the country in a bus emblazoned with the slogan: "We send the EU £350m a week, let's fund our **NHS** instead"¹ It was highlighted that this sum was equivalent to being able to build a brand new and fully staffed hospital every week. The claim was refuted by senior statisticians at the time and a crowdfunding campaign was subsequently launched to prosecute Boris Johnson two years after the vote took place.²

More generally, from a political perspective, the Leave Campaign adopted a strategy of focusing on simple messages, especially in relation to immigration and EU threats to national sovereignty.³ This contrasted with the approach taken by the government backed and official pro-Remain Campaign who emphasized the economic consequences of leaving the EU, dubbed by leave campaigners as “Project Fear”. The economic costs included the Treasury’s estimate that households would be £4,400 worse off by 2030 if the UK voted to leave the EU. Business leaders also drew attention to the economic damage that Brexit could do, especially in terms of job losses.

Our analysis on this aspect can be related to the literature on uninformed voting. Benz and Stutzer (2004) argue that voters’ political awareness is dependent on the political system under consideration. In particular, they find that voters in countries that have referenda are better informed. Whilst in relation to the characteristics of voters, Wegenast (2010) argues that educated individuals face less transaction and information costs. We use the *BSAS* from 2016 to provide a representative sample of individuals who voted in the EU referendum.⁴ The percentage of all respondents voting to leave the EU was 50.5%, which is close to the official leave vote for Britain (52.1%). Moreover, given the unexpected nature of the result, this percentage is closer to the official leave vote than that recorded in surveys such as Understanding Society, used by other studies including Liberini *et al.* (2019), where only 42% of respondents thought that the UK should leave the EU. Given that the key question on NHS funding was only asked to a third of respondents and that around three-quarters of eligible voters turned out at the referendum, this leaves around 750 useable observations.⁵

The following question was used to construct the explanatory variable of interest: “Is the NHS facing a funding problem?”. Respondents were asked to indicate whether they thought there was (1) No (2) A minor (3) A major or (4) A severe funding problem. Table 1 reports the responses alongside how respondents voted in the referendum. Only a small percentage (under

1%) of respondents indicated that they did not know if the NHS was underfunded. This view was slightly higher amongst leave voters and we exclude these cases from the subsequent analysis. In contrast, the vast majority of respondents (over 85%) thought that the NHS either had a major or severe funding problem. This percentage was higher amongst leave voters, with a differential of just under 10 percentage points compared to remain voters. The difference is statistically significant at the 10% level and it is this dummy variable that we focus upon. We estimate a series of probit regression models to examine whether indicating that the NHS had a major or severe funding problem affected the probability of voting leave. This involves including additional variables in each specification to establish the robustness of the estimates (in relation to the raw differences).

< Table 1 around here >

The initial probit model (1) contains a dummy variable indicating whether respondents thought the NHS had either a major or severe funding problem and a set of educational controls based on highest qualification obtained. A second model (2) adds controls for the respondent's interest in politics, using four dummy variables which measure the extent of views relative to the reference category of very interested in politics. A final set of models (3, 4, 5, 6), add explanatory variables cumulatively. The set of covariates initially consists of demographic and socio-economic characteristics such as those included in Liberini *et al.* (2019). These models are then augmented by a wider set of controls - including national identity and attitudes towards immigration - which have found to be important in explaining the leave vote (Clarke *et al.*, 2017; Goodwin and Milazzo, 2017; Fox, 2021).⁶

Table 2 contains the results from estimating the probit models.⁷ In the first model, which controls for differences in educational attainment, the variable of interest (the NHS has a major or severe funding problem) becomes more important in comparison to the raw data. In particular, the difference in the probability of voting leave between individuals who believed

that the NHS had a major or severe funding problem and those who didn't was 13 percentage points, with this effect being significant at the 5% level. In common with other empirical studies on Brexit, including Clarke *et al.* (2017), we find that education is a very important predictor of how an individual voted in the referendum, with graduates far more likely to be remain voters.

< Table 2 around here >

Adding controls for an interest in politics, socio-demographic and economic influences does not affect the marginal effect on the variable of interest greatly since it remains around 0.13 in each specification and is significant at the 5% level. The only significant effect with regards to the interest in politics variable relates to those with no interest in politics being far more likely to be leave voters compared to individuals expressing a great deal of interest in politics. As further variables are added in specifications (5) and (6), the magnitude of the estimated value of the coefficient is reduced, with the marginal effect falling to 0.115 and significance at only the 10% level after the inclusion of health-related variables. The impact of the variable is further reduced after cultural controls have been added as the marginal effect falls to 0.103 and is not significantly different from zero.

Brexit Voting By Public Sector Workers in Health and Social Care

It was unclear how NHS workers would vote ahead of the referendum. On the one hand, a high proportion of staff working in the NHS are highly educated professionals – with degree level qualifications, who have been found to have been far more likely to vote remain (Liberini *et al.*, 2019), but this may be set against the extra funding for the health service that was 'promised' by Leave Campaign. Table 3 shows the proportion of leave voters amongst public sector workers in Health and Social Care compared to employees in other industries and sectors.⁸ It is noticeable from the table that there is a higher percentage of leave voters amongst

Health and Social Care workers relative to the other two main public sector employers: Education and Public Administration & Defence. This is despite there being a lower proportion of graduates amongst the latter group of employees in comparison to those employed in health and social care.

< Table 3 around here >

High proportions of remain voters are also to be found in (industrial) sectors with workforces with a high concentration of graduates - such as Information & Communications, Financial & Insurance Services and Professional, Scientific and Technical Services, as well as private sector workers employed in Education and those employed in the Charitable sector. More than a half of the workers in each of these sectors were graduates and less than 30% voted to leave. Well over a half of private sector workers in Health and Social Care (57%) voted leave in the EU Referendum. However, less than 17% of this group of workers were graduates. A similar proportion of people employed in Agriculture, Forestry and Mining were graduates and an even higher percentage (65%) voted to leave the EU. This was slightly below the percentage of leave voters amongst Construction workers (67%).

Table 4 reports the marginal effects from probit models in other industries and sectors relative to public sector workers in Health and Social Care. Despite controlling for education and other factors (including gender, age and region - as noted below Table 2), significant differences remain. Construction was the only industry which had a significantly higher proportion of leave voters after controlling for other influences. In contrast, in the first specification (which excludes occupational controls), the probability of voting leave was significantly lower at the 5% level in four industries/sectors. Controlling for occupation in the second specification has some impact on these findings, with a reduced level of significance observed in Financial & Insurance Services and Professional, Scientific & Technical Activities.⁹ The probability of voting leave also becomes significant in Private Education at the

10% level in the second specification. The relatively high level of public sector workers in Health and Social Care who supported Brexit may be related to high levels of job dissatisfaction in the NHS due to staff shortages (Iliffe and Manthorpe, 2019).

< Table 4 around here>

Table 5 presents estimates for public sector workers employed in Health and Social Care, as well as those employed in Education, for the probability of voting leave. For both groups of workers, lower levels of education have a positive and significant effect on the probability of being a leave voter. This is particularly noticeable for public sector workers employed in Health and Social Work, where individuals possessing a post-graduate degree are significantly less likely to vote leave in comparison to all other educational categories. In contrast, only two of the positive effects associated with the educational categories are significant at the 5% level relative to employees with post-graduate degrees in (public sector) Education. The majority of the other explanatory variables are not significant for each group of workers. The exceptions being public sector workers in Health and Social Care living in London (relative to those living in Scotland) and Other Christians employed in Education (relative to those with no religion), who are significantly more likely to vote leave at the 10% and 5% levels respectively. The lack of significance of the other variables may be partly due to the relatively small sample sizes. However, given the strong influence of education, especially for those employed in Health and Social Care, the more muted impact of other factors such as gender, age, marital status and ethnicity is interesting and points to a relatively homogeneous impact of these characteristics on voting leave, once educational differences have been accounted for. It is also interesting that there are no significant occupational effects after controlling for other influences, including educational qualifications.¹⁰

< Table 5 around here>

Therefore, our results indicate that controlling for socio-demographic characteristics does little to account for the differences in leave voting for public sector workers in Health and Social Care compared to other industries, particularly Education, which we believe provides a suitable comparison group. There may, however, be other variables that could explain these differences, including national identity and attitudes towards immigration (Goodwin and Milazzo, 2017). Adding measures of national identity in the above regressions only has a small effect on the estimates reported in Tables 4 and 5. This is because the distribution of responses to the national identity questions for those employed in Health and Social Care is very similar to other public sector workers, especially in Education. No consistent questions on attitudes towards immigration were asked between 2017 and 2019 but the responses to a question regarding concerns about immigration provide a possible explanation for the observed differences in voting patterns in the EU Referendum. In particular, amongst public sector workers who voted, 32% of those employed in Health and Social Care expressed a concern about immigration. This was slightly higher than the percentage indicated by Public Administration and Defence but almost double that of public sector workers in Education (17%). Our findings with regards to this group of workers may also be related to the arguments made by Curtice (2018) that voters are now less likely to identify with a political party and are more inclined to be influenced by particular policies.

Public Opinion on the Impact of Brexit on the NHS

Given the virtually unanimous view amongst health economists that Brexit will adversely affect the NHS (Wildman *et al.*, 2016), then it is interesting to see the extent to which this view is held amongst the public. Table 6 reports how respondents thought Brexit would impact on the NHS. It shows that around 6% of respondents answering the question posed in 2018 thought that Brexit would be a very good thing for the NHS and around 22% that it would be a good

thing. Slightly higher percentages of the sample answering this question thought that Brexit would be very bad (11%) or bad (24%). Quite a high percentage (around 7%) said that they did not know and the remaining 31% thought that Brexit would neither have a positive or negative effect on the NHS. The distribution of responses to this question was somewhat different to that found in the British Election Survey Internet Panel Wave 8, as reported in Curtice (2017). He analysed responses to a question on the consequences of leaving the EU that was asked in May/June 2016 and reported that 33% thought that Brexit would result in a better NHS, 21% that the NHS would be worse following Brexit and 36% that the NHS would be about the same. Reasons for this discrepancy could be that (or at least partly due to) the *BSAS* responses relate to 2018 when the claims of the Leave vote had been discredited (and disowned) by their supporters (Simpkins and Mossialos, 2017). The table also reveals differences by political party supported, with a far higher percentage of supporters of the Conservative party reporting that they thought that Brexit would be good or very good for the NHS in comparison to supporters of other parties, as well as in comparison to those individuals without any political affiliation, but to a lesser extent.

< Table 6 around here >

Table 7 explores the connection between individual characteristics and perceptions on the impact of Brexit on the NHS. The first set (1) are ordered probit estimates for the respondent's view of the implications of Brexit for the NHS. The dependent variable has been constructed such that a higher value corresponds with a more positive view of Brexit on the NHS. The table also includes marginal effects from three (binary) probit models: the probability of indicating that leaving the EU would either be good (including very good) or bad (including very bad) for the NHS (2) and (3) and for leave voting (4) – the latter has been included for comparative purposes. The signs attached to the explanatory in the first, third and fourth sets of estimates tend to be very similar, whereas they typically have the opposite signs

in the second set of estimates, relating to those individuals who indicated that they thought Brexit would be bad for the NHS. For example, the signs attached to the coefficients/marginal effects for the regional and highest educational qualification dummies are positive in the first, third and fourth set of estimates (in comparison to the reference categories of Scotland and degree), whereas they are negative in the second. A similar pattern of signs is also observed for the age dummies (in comparison to the youngest: 18-29 age group).

< Table 7 around here>

Many of the regional and educational dummies are significant at either the 10%, 5% or 1% levels, although the differences are insignificant for some. Political party supported also has a significant influence, with those supporting the Conservative party significantly more likely to report that they thought that Brexit would be good for the NHS in comparison to supporters of Labour, the Liberal Democrats and other parties, as well as those not supporting any party, even after controlling for other influences. This appears to accord with the view of Donoghue and Kuisma (2022) that the Brexit result is associated with a redrawing of the boundaries of social citizenship in the longer term. Moreover, the close correspondence between the estimates for the probability of being a leave voter and for indicating that Brexit would be bad for the NHS are consistent with the results reported by Curtice (2017). He finds that respondents who thought that Brexit would make the NHS worse or about the same were significantly less likely to be leave voters in comparison to the base category of 'better'. The estimates for gender, marital status, ethnicity, religion and economic activity are generally insignificant. The main exceptions are significant effects (at the 5%) levels for females who are significantly more likely to be leave voters and Other Christians who thought that Brexit would be good for the NHS.¹¹

Table 8 contains the reasons that respondents gave for their views. A higher proportion of those individuals who thought that Brexit would be good or very good for the NHS only

gave one reason (40%) compared to those who thought that Brexit would have a bad or very bad effect on the NHS (27%). The mean number of reasons given for their choice was 2.63 for individuals who thought Brexit would be bad or very bad for the NHS and 2.09 for those who thought it would be good or very good. 42% of the 107 respondents who gave only one reason why Brexit would be a good or very good thing for the NHS indicated that this was because more money would be available to spend on it, which might provide some tentative evidence in favour of impact of Leave's campaign's focus on spending (additional) money on the NHS. 36% of those giving a single for reason why Brexit would be good/very good for the NHS indicated that it would be as a result of fewer migrants using the NHS.¹² The most common reasons given for why Brexit would be bad or very bad for the NHS were that it would be more difficult to recruit staff from the EU, cited by 76% of all respondents holding such a view and 47% giving a single reason, medicines and equipment would cost more (indicated by 55% with this view and 12% giving one reason), less funding for medical research (48%; 4%) and less money available for the government to spend on the NHS (43%; 21%).

< Table 8 around here >

Conclusions

Despite research that indicates that Brexit will have “overwhelmingly negative consequences for health care and health within the UK” (Hervey *et al.* 2021, p. 177), a relatively high proportion - over 40% - of public sector workers employed in Health and Social Care voted leave in the EU Referendum. This was around the same percentage as all those in employment and considerably higher than workers in several other sectors and industries, most notably Education, even after controlling for a range of personal characteristics. We also find that a relatively high percentage of the British electorate thought that Brexit would be beneficial for the NHS, with 6% of the sample of respondents interviewed in 2018 indicating that Brexit

would be a very good thing for the NHS and 22% that it would be a good thing. Interestingly, we also find that individuals who held these positive views were far more likely to give only one or two reasons for their choice in comparison to those who thought that Brexit would be bad or very bad for the NHS. Almost 80% of those giving one reason why Brexit would be a good/very good thing for the NHS indicated they thought it would be because more money would be available or there would be fewer migrants using the service. Whilst almost a half of those giving one reason why Brexit would be bad or very bad for the NHS indicated that it was because it would be more difficult to recruit staff from the EU.

We also investigate the potential impact of Vote Leave's campaign message in relation to extra funding for the NHS. The significant finding regarding views about the degree to which the NHS was underfunded had on the leave vote – which persists even after controls for education, interest in politics, socio-demographic and economic influences have been included – is reduced and becomes insignificant as a wider range of influences, especially national identity and attitudes towards immigration, are added. This suggests that the probability that an individual voted leave was not greatly affected by them being uninformed on this issue. Rather, other covariates such as those related to health and culture reduced the influence of voters' views on whether the NHS was underfunded. Therefore, although this campaign message appears to have had a positive impact on the leave vote, other issues such as those that preyed on voters' fears – especially in relation to attitudes towards immigration for individuals with an English national identity – had a far larger influence on the final outcome. Thus, in common with other economic factors, this slogan undoubtedly influenced perceptions surrounding the costs and benefits surrounding the decision to remain or leave the EU but was not the key driver of the leave vote. As such, the “Boris Bus” slogan appears to have embodied a bundle of attitudes and beliefs rather than represent a cast iron pledge that was ever believed by the British electorate.

Our findings suggest a number of possible avenues for future research. These include establishing the extent to which different groups of voters were influenced by Vote Leave's pledge to increase funding in the NHS. In particular, it would be interesting to ascertain exactly what impact such claims had on the way in which public sector workers in Health and Social Care voted, given that a relatively high proportion of this group appeared to be in favour of the UK leaving the EU at the time of the Brexit referendum. It should therefore be possible for qualitative researchers to obtain further insights on why sections of the electorate voted in this way. Furthermore, the Covid-19 pandemic has seen increased public support for the NHS and its workers, as well as putting increased pressure on its operations. Therefore, it will be fascinating to see whether the pandemic has brought about a change in public opinion with regards to the impact of Brexit on the NHS.

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Table 1**Descriptive Statistics on Respondent's View of Funding Problem in NHS and How Voted in the EU Referendum**

	% of Remain Voters	% of Leave Voters	Proportion Voting Leave	Difference in mean	p- value
No funding problem in NHS	2.3	2.1	0.471	-0.054	0.669
A minor funding problem in NHS	13.0	8.7	0.398	-0.127**	0.042
A major funding problem in NHS	48.5	47.6	0.490	-0.034	0.392
A severe funding problem in NHS	35.8	40.2	0.524	—	—
Don't Know	0.5	1.3	—	—	—
Number of Observations	386	378		757	
No/minor funding problem in NHS	15.4	11.0	0.410	-0.095*	0.076
Major/Severe funding problem in NHS	84.6	89.0	0.505		

Notes: ** and * indicate significance at the 5% and 10% levels respectively using two-tailed tests. Respondents providing a “Don’t Know” have been excluded from the major/severe dummy variable.

Table 2

Marginal Effects for the Probability of Voting Leave in the EU Referendum

	(1)	(2)	(3)	(4)	(5)	(6)
Major/Severe funding problem in NHS	0.130** (0.055)	0.123** (0.057)	0.132** (0.060)	0.130** (0.064)	0.115* (0.065)	0.103 (0.068)
First Degree	0.111 0.090	0.094 0.091	0.055 0.094	0.016 0.095	0.033 0.098	0.059 0.103
Higher Education below degree	0.388*** (0.066)	0.377*** (0.068)	0.343*** (0.075)	0.315*** (0.083)	0.327*** (0.085)	0.324*** (0.087)
A level or equivalent	0.373*** (0.069)	0.363*** (0.071)	0.355*** (0.072)	0.344*** (0.079)	0.356*** (0.081)	0.324*** (0.087)
O level or equivalent	0.507*** (0.053)	0.499*** (0.054)	0.467*** (0.060)	0.435*** (0.071)	0.449*** (0.071)	0.389*** (0.083)
CSE or equivalent	0.513*** (0.039)	0.505*** (0.041)	0.479*** (0.050)	0.452*** (0.061)	0.463*** (0.060)	0.435*** (0.070)
Foreign or other qualification	0.275** (0.123)	0.252* (0.132)	0.195 (0.140)	0.148 (0.157)	0.171 (0.159)	0.149 (0.166)
No qualifications	0.530*** (0.048)	0.504*** (0.048)	0.451*** (0.065)	0.358*** (0.083)	0.360*** (0.090)	0.334*** (0.098)
Quite a lot of interest in politics	—	-0.041 (0.060)	-0.036 (0.064)	-0.064 (0.064)	-0.065 (0.065)	-0.041 (0.060)
Some interest in politics	—	0.029 (0.572)	0.060 (0.066)	0.037 (0.068)	0.029 (0.068)	0.004 (0.072)
Not very much interest in politics	—	0.046 (0.471)	0.052 (0.079)	-0.019 (0.082)	-0.023 (0.083)	-0.005 (0.088)
No interest in politics	—	0.300*** (0.087)	0.372*** (0.077)	0.387*** (0.083)	0.390*** (0.082)	0.385*** (0.088)
Demographic controls	—	—	X	X	X	X
Economic controls	—	—	—	X	X	X
Health-related controls	—	—	—	—	X	X
Cultural controls	—	—	—	—	—	X
N	756	756	746	729	727	727
Pseudo R-squared	0.138	0.150	0.199	0.249	0.253	0.315

Notes: Robust standard errors in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively using two-tailed tests. Reference categories are Post-Graduate degree for education and a great deal of interest in politics. Demographic controls are gender, age, region, ethnicity, whether born in the UK, marital status, children in household and religion. Economic controls are economic activity, housing tenure, Index of Multiple Deprivation quintile and view of current financial position. Health-related controls are view of own health status and satisfaction with the NHS. Cultural controls are national identity and whether concerned about immigration.

Table 3**Proportion of Leave Voters and Graduates by Industrial Sector**

	Prop. Leave Voters (Spec. 2 sample)	N	Proportion Graduates
Health & Social Work: Public Sector	0.405	257	0.479
Education: Public Sector	0.238	298	0.664
Public Administration & Defence	0.368	136	0.390
Other Public Sector	0.457	92	0.380
Agriculture/Forestry/Mining	0.652	23	0.174
Manufacturing	0.515	237	0.283
Public Utilities	0.529	34	0.471
Construction	0.671	85	0.235
Distribution	0.504	278	0.147
Transport & Storage	0.578	102	0.157
Accommodation & Food Services	0.471	68	0.132
Information & Communications	0.260	96	0.531
Financial & Insurance Services	0.250	112	0.500
Prof., Scientific & Technical Activities	0.266	158	0.557
Admin. & Support Services	0.506	87	0.241
Education: Private	0.232	56	0.625
Health & Social Work: Private	0.573	96	0.167
Other Private Sector	0.538	52	0.173
Nationalised Industry	0.472	36	0.250
Charity	0.279	111	0.486
Other Sector	0.450	20	0.350
Total	0.412	2434	0.381

Notes: Data relate to respondents answering questions on whether and how voted in the EU Referendum that were included in the BSA surveys carried out between 2016 and 2019. Self-employed workers have been excluded. The correlation coefficient between the proportions of leave voters and graduates in the 21 industrial sectors in the table is -0.85.

Table 4

Marginal Effects for Industry and Sectoral Dummies (relative to Public Sector Workers in Health and Social Care) for the Probability of Voting Leave

	(1)		(2)	
	M.E.	S.E.	M.E.	S.E.
Education: Public	-0.145***	0.040	-0.174***	0.040
Pub Admin: Public	-0.069	0.051	-0.060	0.053
Other Public Sector	0.027	0.065	0.018	0.066
Agriculture/Forestry/Mining	0.190	0.118	0.197	0.118
Manufacturing	0.019	0.048	0.021	0.050
Public Utilities	0.105	0.097	0.121	0.101
Construction	0.202***	0.069	0.205***	0.071
Retail/Distribution	-0.022	0.045	0.005	0.048
Transport & Storage	0.035	0.064	0.005	0.065
Accommodation & Food Services	-0.023	0.068	-0.048	0.069
Information & Communications	-0.101	0.061	-0.088	0.062
Financial & Insurance Services	-0.139**	0.053	-0.109*	0.056
Prof., Scientific & Technical Activities	-0.145***	0.047	-0.111**	0.051
Admin & Support Services	0.039	0.066	0.022	0.069
Education: Private	-0.108	0.071	-0.139*	0.069
Health & Soc. Work: Private	0.098	0.063	0.055	0.065
Other Private Sector	0.005	0.077	0.009	0.076
Nationalised Industry	-0.018	0.089	-0.012	0.092
Charity	-0.142**	0.051	-0.143**	0.052
Other Sector	-0.004	0.115	-0.018	0.117
Pseudo R-Squared	0.154		0.170	
N	2464		2434	

Notes: Marginal effects are calculated at sample means. *** , ** and * indicate significance at the 1%, 5% and 10% levels respectively using robust standard errors and two-tailed tests. Specification 1 controls for gender, age, highest educational qualifications, region, ethnicity, marital status, children in household, religion and year of interview. Specification 2 also includes 1-digit occupational controls.

Table 5

Marginal Effects for the Probability of Voting Leave in Selected Public Sector Industries

	Health and Social Care			Education		
	M.E.	S.E.	Mean	M.E.	S.E.	Mean
Female	0.099	0.093	0.802	-0.017	0.061	0.735
Aged 30-39	0.137	0.133	0.241	-0.119	0.087	0.255
Aged 40-49	0.107	0.132	0.249	-0.073	0.096	0.302
Aged 50-59	0.174	0.127	0.241	-0.031	0.096	0.242
Aged 60 and over	0.149	0.149	0.121	-0.111	0.082	0.117
Under-Graduate degree	0.213**	0.105	0.272	0.111	0.072	0.416
Higher Ed. below degree	0.467***	0.096	0.202	0.112	0.118	0.097
A level or equivalent	0.336***	0.113	0.144	0.275**	0.120	0.104
O level or equivalent	0.629***	0.069	0.125	0.126	0.130	0.084
Other or no qualification	0.598***	0.062	0.051	0.410**	0.170	0.050
Wales	-0.008	0.128	0.074	0.123	0.096	0.044
London	0.339*	0.180	0.066	-0.056	0.125	0.107
Rest of England	0.128	0.189	0.763	0.067	0.210	0.779
Interviewed in 2017	-0.030	0.079	0.370	-0.034	0.053	0.393
Interviewed in 2018	-0.190	0.111	0.093	-0.052	0.077	0.111
Interviewed in 2019	0.066	0.101	0.144	-0.075	0.072	0.117
Married	0.111	0.073	0.549	-0.030	0.053	0.581
Children in Household	-0.112	0.083	0.549	-0.042	0.057	0.480
Ethnic Minority	-0.001	0.119	0.132	-0.077	0.108	0.084
Roman Catholic	0.079	0.123	0.097	0.144	0.107	0.101
Church of England/Anglican	-0.078	0.098	0.156	0.070	0.087	0.131
Other Christian	0.031	0.093	0.206	0.167**	0.077	0.174
Non-Christian Religion	0.063	0.216	0.035	-0.014	0.160	0.054
Intermediate Non-Manual	-0.066	0.101	0.580	0.047	0.091	0.517
Junior Non-Manual	-0.114	0.138	0.101	0.237	0.167	0.064
Other Occupation	0.048	0.138	0.140	0.123	0.115	0.299
Pseudo R-Squared	0.210			0.124		
N	257			298		

Notes: Marginal effects are calculated at sample means. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively using robust standard errors and two-tailed tests. Reference categories are aged 18-29, post-graduate degree, Scotland, interviewed in 2016, no religion and professional/manager.

Table 6

Respondent's View of the Impact of Brexit on the NHS by Political Party (2018)

	Political Party Supported					
	Conservative	Labour	Lib-Dems	Other	None	All
1. Very good thing (%)	8.0	3.2	3.3	6.2	7.4	5.7
2. Good thing (%)	34.4	16.9	3.3	17.9	20.6	21.9
3. Neither good nor bad thing (%)	30.6	27.4	31.7	26.2	42.7	30.6
4. Bad thing (%)	17.0	31.8	26.7	26.2	15.4	24.0
5. Very bad thing (%)	3.8	15.7	31.7	14.5	3.7	11.3
Don't know (%)	6.3	5.0	3.3	9.0	10.3	6.6
N	288	343	60	145	136	972
Mean: 1-5	2.73	3.42	3.83	3.27	2.86	3.14

Table 7

Regression Estimates for Views of Effect of Brexit on the NHS

	Effect of Brexit on NHS		Brexit Bad for NHS		Brexit Good for NHS		Leave Voter	
	Coef.	S.E.	M.E.	S.E.	M.E.	S.E.	M.E.	S.E.
Female	0.014	0.077	-0.018	0.037	-0.008	0.033	-0.093**	0.044
Married	-0.092	0.079	0.070*	0.038	0.017	0.034	-0.065	0.046
Children in household	-0.133	0.096	0.066	0.044	-0.061	0.044	0.023	0.057
Ethnic Minority	0.148	0.162	-0.118*	0.066	0.067	0.075	-0.088	0.095
Roman Catholic	-0.123	0.147	0.059	0.065	-0.022	0.056	-0.017	0.092
Church of England/Anglican	0.070	0.110	-0.008	0.054	0.044	0.048	-0.045	0.058
Other Christian	0.182*	0.099	-0.078	0.047	0.039	0.045	0.047	0.062
Non-Christian Religion	0.089	0.183	-0.068	0.083	-0.137*	0.061	0.047	0.117
North East	0.406*	0.212	-0.157*	0.079	0.214**	0.111	0.172	0.112
North West	0.258	0.166	-0.106	0.071	0.139*	0.086	0.265***	0.088
Yorkshire & the Humber	0.401**	0.161	-0.113	0.069	0.204**	0.085	0.278***	0.089
East Midlands	0.318*	0.169	-0.074	0.074	0.178**	0.088	0.313***	0.082
West Midlands	0.329*	0.183	-0.105	0.074	0.243***	0.093	0.199*	0.101
South West	0.213	0.174	-0.050	0.080	0.080	0.089	0.182*	0.098
East of England	0.130	0.158	-0.025	0.074	0.054	0.077	0.171*	0.096
London	0.238	0.161	-0.131*	0.068	0.129	0.088	-0.024	0.109
South East	0.200	0.155	-0.114	0.067	0.146**	0.082	0.254***	0.085
Wales	0.083	0.245	-0.075	0.093	0.115	0.115	0.310***	0.093
Aged 30-39	0.003	0.148	-0.054	0.070	-0.026	0.071	0.056	0.106
Aged 40-49	0.122	0.154	-0.058	0.070	0.080	0.079	0.180*	0.099
Aged 50-59	0.254	0.157	-0.109	0.067	0.102	0.080	0.143	0.100

Aged 60-69	0.118	0.183	-0.142*	0.074	0.036	0.087	0.169	0.107
Aged 70 and over	0.147	0.205	-0.128	0.091	0.087	0.099	0.179	0.119
Higher Ed. below degree	0.443***	0.126	-0.171***	0.048	0.062	0.063	0.180**	0.069
A level or equivalent	0.470***	0.129	-0.184***	0.045	0.147**	0.063	0.155**	0.068
O level or equivalent	0.562***	0.117	-0.204***	0.043	0.159***	0.058	0.282***	0.058
CSE or Equivalent	0.817***	0.160	-0.243***	0.049	0.149**	0.080	0.372***	0.065
Foreign or other qualification	0.353	0.279	-0.214	0.121	-0.083	0.156	0.198	0.123
No qualification	0.862***	0.117	-0.301***	0.039	0.269***	0.058	0.292***	0.064
Unemployed	0.275	0.200	-0.020	0.086	0.163**	0.089	0.246**	0.096
Student	-0.245	0.206	0.220*	0.120	-0.113	0.098	0.135	0.170
Permanently Sick	0.251	0.201	-0.076	0.086	0.242***	0.090	-0.029	0.160
Retired	0.332**	0.147	-0.110	0.066	0.115*	0.067	0.009	0.079
Looking after home	-0.030	0.210	0.076	0.094	0.048	0.090	0.006	0.111
Other activity	0.201	0.347	-0.051	0.122	0.010	0.131	0.361	0.176
Labour supporter	-0.638***	0.101	0.285***	0.047	-0.180***	0.036	-0.328***	0.048
Liberal Democrat supporter	-0.963***	0.170	0.339***	0.072	-0.252***	0.027	-0.292***	0.067
Other party supporter	-0.396***	0.135	0.188***	0.064	-0.092*	0.044	-0.130**	0.064
Supports no party	-0.066	0.119	-0.058	0.062	-0.099**	0.043	-0.129	0.076
Pseudo R-Squared	0.089		0.171		0.148		0.172	
N	897		897		897		689	

Notes: Marginal effects are calculated at sample means. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively using robust standard errors and two-tailed tests. Reference categories are aged 18-29, graduate, Scotland, no religion and supports the Conservative party. Results in model (4) just relate to individuals interviewed in 2018.

Table 8

Reasons for Views on the Impact of Brexit for the NHS (2018)

	View of Brexit on the NHS	
	Good/Very Good	Bad/Very Bad
More/less money available for the government to spend on the NHS (%)	59.9 (42.1)	42.6 (20.7)
More NHS jobs for British people (%)	22.5 (5.6)	—
Medicines and equipment will cost less/more (%)	15.4 (1.9)	55.4 (12.0)
Fewer EU rules and regulations (%)	38.2 (8.4)	15.5 (2.2)
Fewer migrants using the NHS (%)	49.1 (35.6)	—
More/less funding for medical research (%)	19.5 (2.8)	48.4 (4.3)
Restrictions on non-British using the NHS (%)	—	21.0 (7.6)
More difficult to recruit staff from the EU (%)	—	75.8 (46.7)
Other reason (%)	4.5 (3.8)	4.1 (6.5)
% giving 1 reason	40.1	26.8
% giving 2 reasons	27.0	23.6
% giving 3 reasons	23.2	26.5
% giving 4 reasons	6.0	11.7
% giving 5 reasons	1.1	6.1
% giving 6 reasons	2.6	5.0
% giving 7 reasons	0.0	0.3
Mean number of reasons	2.09	2.63
N (unweighted)	267	343

Note: The numbers in parentheses are the percentages of the total who stated only one reason for why they thought that leaving the EU would be good or bad for the UK.

Endnotes

¹ Digby (1998) argues that the NHS is a much-loved British institution and was unique when established in 1948 by being funded through general taxation rather than through private or public insurance. Whilst Smith (2018) refers to the NHS as the ‘sacred cow in British politics’.

² This included a rebuttal by the UK Statistical Authority in that the figure being quoted related to the gross rather than net cost of membership. The legal case against Johnson was unsuccessful after being thrown out by two high court judges in June 2019. The claim about NHS funding was also watered down after the referendum (Wildman *et al.*, 2017).

³ The focus on immigration was most notably exemplified by a poster showing an influx of refugees indicating that the UK was at breaking point. Another well known example was the suggestion made by another leading leave campaigner, Michael Gove, that ‘people in this country have had enough of experts’.

⁴ See Blackaby *et al.* (2020) for further details of the 2016 survey, especially in terms of its comparability to other sources.

⁵ The proportion voting leave in this smaller sample is slightly lower than in the full sample as just under a half of the individuals answering the question on NHS funding (49.3%) indicated that they had voted leave.

⁶ The notes below Table 8 provide details of the variables included in each of the specifications.

⁷ Table A1 in the Appendix contains the full results from the fourth and sixth specifications.

⁸ We use this group to approximate those who work in the NHS. The NHS workforce accounts for around 80% of the number of public sector workers in Health and Social Care, based on estimates from the Annual Population Survey.

⁹ Two specifications of the model have been estimated because of the potential impact of occupation over and above education and other variables, given that there are occupational differences between NHS workers.

¹⁰ Some of the occupational dummies become significant if the educational controls are excluded. Specifically, the positive effects for Junior Non-Manual and Other occupations are significant at the 10% and 1% levels for NHS workers and at the 5% level for public sector workers employed in education. The significance levels attached to the other explanatory variables are not greatly affected if the educational dummies are excluded.

¹¹ The marginal effect for this latter variable is negative and significant at the 10% level in relation to Brexit being bad for the NHS. The marginal effect is positive but insignificant when the dependent variable is Brexit is good for the NHS.

¹² Fitzgerald *et al.* (2020) provide examples of how the right-wing Brexit supporting press regularly published articles before the referendum on the demands that immigrants made on health resources.