

Putting public policy defaults to the test: the case of organ donor registration

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Introduction

In recent years there has been growing interest within public management research on interactions between citizens and governments, including citizens' satisfaction with public services, their online engagement with government and voice to public service providers, and trust in government (Margetts 2011). A developing strand of public management literature on citizen-state interactions focuses on techniques that governments can employ to encourage behaviour change amongst citizens (Dolan *et al.* 2011; Cabinet Office 2012; 2013; John 2013). For 'wicked' policy problems that are difficult to resolve in areas such as health, lifestyle and the environment, and where behaviour shifts at the individual level could make a significant difference to collective social outcomes, a range of new policy tools are being piloted, tested and experimented with using insights from fields such as behavioural economics and social psychology. Such approaches have gained momentum since the publication of Thaler and Sunstein's (2008) *Nudge*.

One policy tool advocated by these authors and other behavioural economists is the manipulation of defaults. The theory of defaults suggests that because of our psychological makeup people are generally inclined to accept the default option that they are presented with. Astute policy makers, it has been argued, can exploit this attribute of human nature and change defaults in order to achieve desired societal outcomes (Dawney and Shah 2005; John 2013). Behavioural tools such as these represent a more recent extension of a broader shift within governance practices, away from sole reliance on conventional public policy levers such as regulations, prohibitions and penalties that are associated with the 'traditional' government toolkit (Hood 1983; Hood and Margetts 2006) towards 'softer' policy tools such as persuasion, framing and steering, which are more in keeping with the 'new' governance (Stoker 2000; Pierre 2000; Salamon 2002; Bell *et al.* 2010). The manipulation of defaults, we suggest, is a form of framing and as such adds to our understanding of governance practices.

Framing in this context involves changing the way choices are presented or structured (without changing the actual choices themselves) in order to steer people towards socially optimal choices.

Default manipulation and behavioural reforms more generally focus attention on the manner in which governments present information and the limited capacities of humans to process information in a complex world. Drawing on the view that we are all cognitive misers who use heuristics and cues to guide our choices (Fiske and Taylor 2001; Kahneman 2011) defaults can potentially be a valuable tool for policy makers; if the default option brings benefits to individuals and to society, then a default which is pro-organ donation, for example, could be seen as a valid policy intervention. Expressed in such neutral terms, default manipulation as a policy tool might appear uncontroversial. Yet as Leggett discusses (2014) behaviour change has become a key political battleground. Some object to the manipulative and paternalistic stance from government it might appear to imply (Hausman and Welch 2010; Goodwin 2012). Others complain that behaviour change techniques do not replace the need for governments to act using more traditional and stronger tools such as regulation or financial incentives (Marteau *et al.* 2011). We suggest that each type of behaviour change intervention should be judged in its own terms. We first need to understand if such an intervention might bring about outcomes of social benefit and then judge its public acceptability, and whether it is likely to create any harms or raise ethical concerns. Hence we start with the question: do defaults work?

Our article puts defaults to the test in the context of organ donor registration, an area where manipulation of defaults has been debated, particularly in countries with ‘opt-in’ or ‘informed consent’ systems such as the UK (BMA 2008; Department of Health 2008) and the USA (Morris 2003; Gill 2004). There is growing academic interest in this subject (Johnson and Goldstein, 2003; Abadie and Gay, 2006; Rithalia *et al.* 2009) but no large scale

experimental research that we are aware of examining outcomes of different organ donation defaults. Thaler and Sunstein (2008) identify organ donation as a case where defaults can be manipulated to achieve a change in behaviour at societal level. They argue for a ‘neutral’ default where people must choose whether or not to sign up for the organ donor register, and speculate that this type of default could achieve the same levels of registration as a ‘presumed consent’ default where people are have to opt out if they do *not* want to be registered.

In order to explore this proposition, we conducted an experiment which randomly allocated research participants residing in Great Britain to different default options and measured their impact, firstly, on visits to the UK’s official organ donation website, and secondly, on organ donor registration levels. The experiment was conducted in the context of a survey exploring attitudes toward organ donation.

We first introduce theory and evidence which suggests that defaults do matter in the context of individual decision making. We next discuss the case of organ donation, and follow this with our methodology and results before ending with a discussion and conclusion.

Theory and evidence on defaults

Previous research in the field of behavioural economics suggests that there is a ‘status quo bias’ inherent in human decision making, with most people exhibiting a psychological tendency to avoid making a choice if they do not have to (Thaler 1980; Samuelson and Zeckhauser 1988; O’Donoghue and Rabin 1999). When confronted with choices which include a status quo option, research indicates that people are most likely to opt for this.

Camerer *et al.* (2003) suggest three factors which explain why people often accept the default position, namely loss aversion, omission/ commission bias and procrastination. Loss aversion is a psychological tendency for people to negatively weight losses more strongly

than they positively weight equivalent gains. Because departing from the default position involves a degree of uncertainty about the result of shifting from that position (the relative losses and gains), aversion to change kicks in. Omission/ commission bias is the ‘tendency to care much more about errors of commission than errors of omission, even when there is no obvious normative reason to draw a distinction’ (Camerer *et al.* 2003, 1224). This phenomenon can lead people to stick with a default in order to prevent the possibility of making a suboptimal decision, even if the default itself is also suboptimal. Procrastination has been defined as the ‘tendency to repeatedly delay taking beneficial actions based on a mistaken belief that one will take them in the future’ (Camerer *et al.* 2003, 1225). Procrastination partially explains why people often stick with the default, or status quo, since they delay making a decision believing that they will get around to this at some point in the future.

There are also perceived transaction costs in terms of time and mental effort in moving from the default position (Beshears *et al.* 2009). This argument reflects the bounded rationality principle (Simon 1945), which is fundamental to behavioural economics. According to this principle, most people do not have the resources, time or knowledge to weigh up the pros, cons and consequences of different courses of action for every possible decision affecting them and so adopt heuristics, or rules of thumb, as a guide. Acceptance of a default option is one such heuristic, especially when it is seen as representing an accepted or proper way of doing things, for instance when it is endorsed by the State, a company or some other reputable or trustworthy source, the so-called ‘endorsement effect’ (Beshears *et al.* 2009).

In policy areas where people are not inclined to change but where a shift in behaviour is desirable at a societal level, governments may wish to employ a ‘majoritarian default’, that is, a default position which benefits most people and takes the weight of decision from them

(Camerer *et al.* 2003). An example would be automatically enrolling employees into a retirement programme, from which they must opt out if they do *not* wish to be a member. The impending crisis in the pensions system created by an aging population has led many employers and legislators to introduce such schemes (Beshears *et al.* 2009).

Another approach to tackling inertia is for the State to *require* people to make an active decision, that is, a mandated choice. The default position is neutral but people must decide whether to be in or out. As discussed by Stutzer *et al.* (2006), providing people with a prompted choice can induce ‘pro-social’ behaviour because the act of confronting people with a choice makes latent a dormant altruism that many people hold. Preferences are formed in the process of decision making as people are forced to engage in cognitive reasoning and evaluation, and forcing or prompting a decision can therefore induce pro-social behaviour, particularly in people who were not previously aware of the importance of the choice in question.

Empirical testing of the power of defaults and the effect of changing defaults has been conducted in areas such as pension schemes, workplace savings schemes and charitable giving (Madrian and She 2001; Choi *et al.* 2002; Beshears *et al.* 2009; Cabinet Office 2013). The general finding of this research is that when defaults are changed so that people are automatically opted into such schemes, participation rates increase significantly. Both Madrian and She (2001) and Choi *et al.* (2002) find evidence that participation is greater amongst those who are automatically enrolled in savings schemes compared to those who have to actively opt in. In the domain of pensions, in one study of a large chemical firm (cited in Beshears *et al.* 2009), the introduction of automatic enrolment for new employees into a pensions scheme resulted in a 35% better participation rate than the existing scheme with elective enrolment. Research conducted in one of the UK’s largest retail groups showed that changing a default for new staff in a charitable ‘payroll giving’ scheme to one where they

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had to opt out *not* to be in the scheme, increased the proportion of people participating from just 6% to 49% (Cabinet Office 2013).

There is some evidence that mandated choices, or neutral defaults, may achieve similar participation rates to defaults where people are automatically enrolled. For instance Choi *et al.* (2005) found that the introduction of a requirement for employees to make an active choice about contributing to a savings plan led to a substantially higher initial participation rate than that which was achieved under an opt-in enrolment regime. Stutzer *et al.* (2006) in a large scale field experiment of blood donation showed that confronting individuals with a choice about whether or not to donate blood substantially increased stated willingness to donate blood, as well as actual blood donations for those relatively unaware of the issue and the effect that their contribution could make. This article extends this line of research to the case of organ donation.

Defaults in organ donor registration

There is considerable variation in organ donor registration defaults cross-nationally and much debate over the best system, both on moral grounds and grounds of effectiveness. ‘Presumed consent’ laws were introduced in most of Continental Europe throughout the 1970s and 80s and consequently the ‘everyone is a donor’ default is common in Europe³ and is also used in countries such as Israel and Singapore. In these countries people must actively opt out if they do *not* want to be organ donors. The contrasting informed consent system with a ‘no one is a donor’ default is found in several countries including Australia, New Zealand, Japan, Canada, some parts of Europe (Netherlands, Germany, Denmark, the UK) and the majority of US states (Abadie and Gay, 2006). In these countries people must opt *in* to be an organ donor.

³ European countries operating presumed consent systems include the Czech Republic, Poland, Bulgaria, Estonia, Hungary, Latvia and Slovenia, France, Belgium, Austria, Italy, Spain, Portugal, Greece and Cyprus, Norway, Finland and Sweden. Wales (UK) introduces a presumed consent system in December 2015.

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The use of mandated choice with a neutral default is not widespread (Spital 1995; 1996) although has been tried in some of States of the USA including Illinois, Texas and Virginia with mixed results (CEJA 2005), and has recently been piloted in the UK specifically for those applying for a new driving license.

Countries such as the UK and USA with opt-in systems have debated a change of registration system due to organ shortages in these countries. Despite broad public support for organ donation in both countries (Gallup 1993; New *et al.* 2004), less than half of their adult populations are registered as donors, with around 43% registered in the USA (Donate Life America 2012) and just 31% in the UK (NHSBT 2013). Shortages of organ donors are linked to a number of factors including transplantation infrastructure and a lack of willingness of families to consent to donate organs of deceased relatives, but having a large pool of potential registered donors is nevertheless an important precondition for meeting the demand for organs.

So what levels of support exist for different types of registration system? UK-based surveys suggest growing public support for a change of registration system with around two thirds of those surveyed supporting change to presumed consent (Department of Health 2008; Rithalia *et al.* 2009). Despite this, the UK Organ Donation Taskforce advised against such a move. Problems were considered to include the risk of reducing public trust in health professionals, undermining the principle of organ donation as a gift, and potential legal challenges from families not consulted on the wishes of deceased relatives. The American Medical Association's Council on Ethical and Judicial Affairs (CEJA 2005) rejected a change to presumed consent for similar reasons. They also argued that it would erode the individual's right to self-determination and that people might not actively consider their choices under such a system.

To date there are few large scale studies investigating levels of support for mandated choice in the UK, although a focus group study involving 350 participants found that it was a

favoured approach (Department of Health 2008). In one US survey 63% of respondents stated that they would sign up to donate their organs under a mandated choice system, with over 90% of younger respondents stating that they would support such a system (Spital 1996). Proponents of mandated choice argue that it can help overcome the problem which occurs in many informed consent countries where relatives of the deceased object to organ donation because the deceased person never actively expressed a choice during their lifetime (Chouhan and Draper 2003). However sceptics point to the practical challenge of requiring people to make a choice, and the ethical implications of doing so. When mandated choice was trialled in the State of Virginia, for instance, 24% of the population refused to make a choice (Klassen and Klassen 1996). If individuals refuse to make a choice, the question remains of whether the default for these people should be an opted-in or an opted-out default (CEJA 2005).

Turning to evidence of the relative effectiveness of different systems, comparative data suggest that countries operating presumed consent systems achieve higher organ donor registration rates than those with informed consent systems. Johnson and Goldstein (2003) report that informed consent systems have registration rates ranging from 4% to 28% as compared to presumed consent systems with registration rates of between 86% and 100%. Both Spain and Belgium when moving from an informed to a presumed consent default experienced increases in organ donation registration. A recent cross-country regression analysis of 22 countries operating informed consent and presumed systems indicates that the latter are associated with higher levels organ donation (Abadie and Gay 2006). This finding is echoed in a systematic review of the impact of presumed consent legislation on organ donation rates (Rithalia *et al.* 2009) which suggests that the introduction of such legislation is associated with increased organ donation.

Despite the strength of these findings observational data have limitations when it comes to establishing causality and can fall prey to endogeneity problems. Unknown factors which

influence the type of organ donation default or registration system used in a country might also explain organ donation rates, for example cultural beliefs about organ donation, individual choice or the role of the state. Experimental approaches focused in single countries hold the cultural context constant and randomize participants to different defaults thus ensuring that the only difference between participants is the type of default they receive, thus permitting causal inference about the effects of those defaults. Any unobserved variables that may influence organ donor registration are evenly distributed across the treatment groups due to the randomization process.

Our study uses an experimental approach, following in the footsteps of Johnson and Goldstein (2003). In their study 161 US participants were placed into either an opt-in, opt-out or a neutral yes/ no treatment group and asked whether they would give their consent to become a donor if presented with this choice when moving to a new State. 82% in the opt-out group reported that they would consent, compared to 79% in the neutral treatment group and 43% in the opt-in group. We scale up their experiment using a much larger sample and in a different national context, and use the behavioural outcome measures of visits to the organ donor registration page and actual registrations rather than hypothetical willingness to donate organs. As far as we are aware ours is the first study to test different default positions experimentally in the context of organ donation using behavioural outcome measures.

Research aims and hypotheses

The main aim of the research was to explore the effect of different defaults (opt-in, opt-out and a neutral default) on the number of visits to the organ donor website and on subsequent levels of actual organ donor registration. Our guiding question overall was ‘would shifting the choice architecture encourage people to agree to donate their organs after their death’? Our first hypothesis was that a default whereby people are automatically assumed to be

donors but allowed to opt-out (the ‘opt-out condition’), would lead to greater numbers of website visits and registrations than a default where people were not assumed to be donors but allowed to opt in (the ‘opt-in condition’). Our second hypothesis was that a neutral default whereby people have to answer yes or no (the ‘mandated choice condition’) would lead to more website visits and organ donor registrations than the opt-in condition but fewer website visits and registrations than the opt-out condition.

Research Design

Our experiment was conducted as part of an online survey with British adults who were not already on the organ donor register, in May 2010. Respondents were drawn from an Ipsos MORI online panel⁴ and were representative of the British population as shown in UK Census data in terms of age, gender and region of residence. In order to avoid attracting those with strong opinions on organ donation, the initial invitation to potential participants was to take part in a survey of various health issues.

Sampling involved an iterative process where panellists were targeted in waves until a representative sample was reached. Respondents were 51% female, 49% male; were drawn from England (86%), Scotland (9%) and Wales (5%); and the age range included 23% aged 65 and the rest (77%) of working age (18-64). Participants were randomly allocated to one of three versions of the survey, each corresponding to a different treatment condition (opt-in, opt-out or mandated choice), with a third of the sample in each condition. For analytical purposes, we treat the opt-in group as a control group since this represents the current, default

⁴ These panels consist of pre-recruited members of the public who take part in surveys on a regular basis. Panels are regularly refreshed with new members and are targeted to ensure representativeness on key demographics and other variables such as extent of internet use. Members are not paid but are incentivised to take part through a points system earning them vouchers for high street shops and entry into prize draws.

position in the British system. Power sampling was used to estimate sample size requirements based on an expected difference of 5% between the two treatment groups at an 80% level of statistical power. This estimate was based on a comparison of the results of previous studies investigating hypothetical willingness to donate under systems of presumed and mandated choice, and levels of organ donation under different registration systems in different countries (Gallup, 1993; Johnston and Goldstein 2003; Rithalia *et al.* 2009).

Block randomisation was employed to achieve balance across the treatment conditions in terms of age, gender and region of residence, with booster random samples produced until the required sample size was achieved for each group. Where there are clear theoretical expectations about the effect of specific covariates on a dependent variable, blocking on these covariates is a means of reducing chance imbalances between treatment and control groups thereby reducing noise and so improving the precision with which a treatment effect is predicted (Mutz 2011; Gerber and Green 2012). However in our case, the blocking variables were chosen as a standard set of demographic variables to ensure broad balance across the groups, not because of a hypothesised effect of these variables on organ donor registration. There is a paucity of research on predictors of organ donor registration itself (with most previous research examining transplantation rates) so we did not have a clear indication about what the predictors of this dependent variable were likely to be (other than registration system itself which we test experimentally in this design)⁵.

The sample size in terms of number of completed surveys was in excess of the required target of 1251 in each group. Table 1 indicates that the randomisation process generated approximately equal groups on key demographic variables (age, gender, region of

⁵ There is, however, an emerging body of research which suggests that emotional factors and non-cognitive affective attitudes toward organ donation may be important predictors of registration (Morgan *et al.* 2008; O'Carroll *et al.* 2011; O'Carroll 2012). These characteristics would serve as relevant blocking covariates in future studies of this nature.

residence), and other variables that we intuitively felt could potentially influence organ donor registration or visits to the organ donation website (use of a motorcycle, attitudes towards organ donation, internet use). The only significant differences were some imbalances in the proportion of respondents in specific middle to older age brackets (55-64 and 65+). However these imbalances cancel each other out since the treatment groups with a lower proportion of 55-64s had a higher proportion in the 65+ age bracket and vice versa, suggesting that the age group 55+ overall is almost exactly balanced across the groups (35% in this category for the opt-in and the opt-out group; 36% for the mandated choice group)⁶. In any case, we did not have reason to believe that these particular age categories are predictors of our dependent variable.

⁶ One reason for including a balance check was because we were reliant on a survey company to implement the randomisation process, and this check allowed us to verify that this procedure is likely to have been executed correctly (Senn 1994).

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Table 1 Balance checks for the three treatment groups ~

	Opt in group (control)	Opt out group	Mandated choice group
Gender			
Female	51%	51%	51%
Male	49%	49%	49%
Age group			
18-24	12%	12%	12%
25-34	17%	17%	17%
34-44	20%	20%	20%
45-54	16%	16%	16%
55-64*	11%	6%	20%
65 or over*	24%	29%	16%
Rides a motorbike or moped			
	2%	2%	2%
Internet use			
Several times a day	66%	68%	68%
Once a day	22%	22%	19%
2-5 times a week	8%	7%	9%
Once a week	2%	2%	2%
Less than once a week	2%	1%	2%
Support for organ donation[^]			
	2.94	2.92	2.84

*p<0.05 **p<0.01 ***p<0.001

+Region of residence is not reported here for reasons of space but the figures indicate an equal balance across groups

[^] Respondents were asked ‘how do you feel about the idea of organ donation in general?’ on a scale with responses ranging from 1 (strongly agree) to 7 (strongly disagree)

~ Z tests were used to compare percentages (p values are adjusted using the Bonferroni method); independent samples t tests were used to compare means on the attitudinal question, comparing the opt in group (control) to each of the treatment groups (opt out and mandated choice).

The three versions of the survey explored attitudes to organisation and were identical apart from the final question which offered participants the chance to visit the UK's official organ donation registration page in three different ways. All versions of the final question contained the statement: "Please take me to the NHS Organ Donation Website to join the National Organ Donor Register". However in the first condition (our 'control') the default was that *no one was assumed to want to become a donor* unless they *ticked* an empty box to be taken to the organ donor registration page where they could opt-in to the register. This default represents the current informed consent registration system. In the first treatment condition the default was that *everyone was assumed to want to become a donor* and would be taken to the organ donor registration page unless they *unticked* the box which already contained a tick, to opt-out. This default represents a presumed consent system. The second treatment group was provided with a neutral default, with no assumption made about peoples' preferences, and participants having to tick one of two boxes, either a 'yes' or a 'no' box. The neutral default represents a mandated or forced choice system. Participants in the neutral default group could not submit their survey unless they ticked one of these two boxes. Respondents in all three groups were automatically taken to the website when they clicked to submit their survey *if* there was a tick in the box (in the case of mandated choice, if there was a tick in the 'yes' box).

Our first outcome measure was a binary measure (0/1) of whether survey respondents had a tick in their box and were therefore automatically taken to the official organ donation website, with data on this coming from the survey itself; the second was whether they actually registered on the organ donor register (1/0), with data on this measure provided to us

by National Health Service Blood and Transplant (NHSBT), the official organisation responsible for the UK Organ Donor Register⁷.

For ethical reasons, participants were told at the outset, via a link to a web-based information sheet, that they would be able to visit the organ donor register at the end of the survey. However participants were unaware that the survey used an experimental research design, and were thus 'blind' to treatment group allocation. Respondents were told that participation was voluntary and that they could exit or abandon the survey at any time if they wished. Those already on the organ donor register were filtered at the start of the survey before the attitudinal questions were asked and were not included in the experiment.

Results

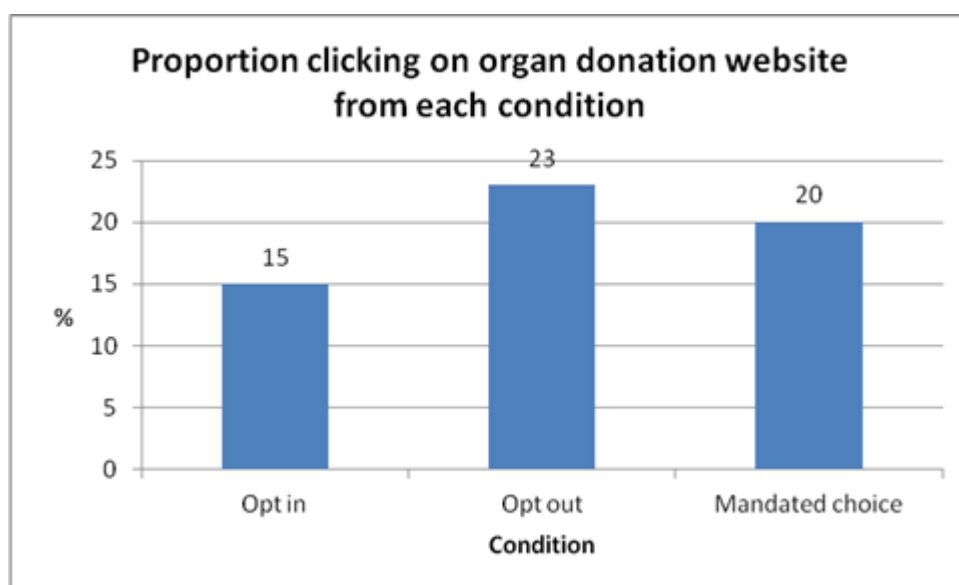
We first analysed the number and percentage of participants from each group visiting the organ donation website. We do not include covariates in our estimator of treatment effect since, as discussed above, we do not have strong predictions about additional factors that are likely to influence organ donor registration. As such we follow the advice of Mutz (2011, 123-126) who cautions against the use of covariates as controls within the analysis of survey experiments unless one has a strong reason for believing they will predict the dependent variable. Furthermore, our balance tests show that the groups are evenly balanced on factors that might intuitively seem important in influencing online registration (extent of internet use, use of a motorcycle, attitude towards organ donation). Controlling on covariates, as Gerber and Green (2012, 109) note, is valuable when random imbalance turns up on covariates that

⁷ NHSBT's website is designed to allow the organisation to detect whether registration forms have come via another specific web link and if so which one, in order to track the effectiveness of their campaigns. NHSBT provided us with data on the number of registrations that came from each version of the online survey for a two month period after the survey was sent out.

are thought to predict outcomes⁸. Our randomisation process did not result in any such chance imbalances.

As hypothesised, we found that both opt-out and mandated choice questions generated significantly more visits to the national organ donation website than the opt-in group (see figure 1). Fifteen per cent (196/1334) of the ‘opt-in’ group visited the website. The rate was 23 per cent (300/1336) for those in the opt-out group (an increase compared to the control group of 53 per cent) and 20 per cent (265/1335) for the neutral default group (an increase compared to the control group of 33 per cent).

Figure 1 Effect of different defaults on visits to the organ donor register



Chi square tests were conducted to determine whether the null hypothesis of no relationship between treatment group and the outcome variable of visits to the organ donor website should be rejected. The results indicate that the relationship between treatment group and visiting the website was not independent ($\chi^2 = 27.07$, $df = 2$, $p < 0.0001$). Z-tests for comparing proportions were performed to compare the difference in proportions of people

⁸ Although see Senn 1994 and Mutz 2011 for alternative perspectives on controlling for randomly generated baseline imbalances within experimental designs.

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participating in each of the two treatment groups and the control group (see table 2). The difference in the proportion of those visiting the website from the opt-out group of 0.225 as compared to 0.147 for the opt-in (control) group was statistically significant ($z=5.2$, $p<0.001$). The difference in the proportion of those visiting the website in the mandated choice group of 0.199 as compared to the opt-in (control) group of 0.147 was also statistically significant ($z=3.6$, $p=0.0002$). The difference in proportions between the two treatment groups was not statistically significant ($z=1.9$, $p=0.0592$)⁹.

Table 2 Descriptive statistics for treatment group differences: clicks on organ donation website*

Opt in group	Opt out group	Mandated choice group	Difference in proportion tests
15% (N=196)	23% (N=300)		$Z=5.2$, $p<0.001$ ***
15% (N=196)		20% (N=265)	$Z=3.6$, $p<0.002$ **
	23% (N=300)	20% (N=265)	$z=1.9$, $p<0.1$

Figures are rounded up to the nearest percent

In the second part of the analysis we examined the number from each group actually registering as organ donors. This involved the extra step beyond the initial website visit and measured actual completions of an online registration form as it appears in the organ donor website. As before, both treatment groups had higher rates than the control (opt-in) condition, although this time the forced choice condition yielded a higher proportion of registrations than the opt-out condition. However, the overall response to this second behavioural measure was too low and hence too underpowered to conduct any meaningful

⁹ The 5% expected difference between the two treatment groups which was used to calculate our sample size was not borne out, with only a 3% difference. A larger sample may therefore have been required to detect a significant difference between these groups.

statistical analysis. The number of people actually registering on the National Organ Donor Register website was less than 1 per cent of the total sample, with 0.52 per cent (n=7) respondents from the opt-out group, 0.67 per cent (N=9) from the neutral default group, and 0.3 per cent (N=4) from the opt-in group signing up.

As noted above, the experimental treatment was the final question of a survey exploring attitudes toward different organ donor registration systems and to the principle of organ donation itself. We now turn to the results of the attitudinal questions.

Participants were asked to respond to three statements designed to illuminate preferences concerning organ donation registration systems. First, respondents were asked to rank their level of agreement with the following statement, which reflects on opt-in or informed consent system: *'It should be assumed that people are not organ donors unless they actively sign up to the organ donor register'*. On a scale of 1-7 where 1 indicated strong agreement and 7 strong disagreement with the statement, the mean score was 3.56 (SE = 0.037; SD = 2.328). Respondents were next asked to respond to the following statement, which represents an opt-out or presumed consent system of registration: *'Everyone should be automatically added to the organ donor register, but should be able to de-register if they wish'*. On the same scale, respondents demonstrated a less positive response to this statement, the mean score being 4.27 (SE = 0.039; SD = 2.440). People were also asked to rate their preference for a mandated choice/ neutral default system by responding to the following statement: *'People should be asked to choose whether or not they wish to become an organ donor and required to answer either yes or no'*. The mean score was 3.04 (SE = 0.034, SD = 2.178), suggesting strongest support for this system.

Table 3 illustrates the balance of responses to each statement by grouping them into positive, negative and neutral categories. It indicates that the opt-out system generated the

most polarised views, with views on mandated choice being most decisive (in a positive direction).

Table 3 Views on alternative registration systems

	Positive response	Neutral/ unsure	Negative response	Total
Opt in system	53%	20%	27%	100%
Opt out system	42%	17%	41%	100%
Mandated choice system	63%	23%	14%	100%

In order to explore views on incentivising registration, participants were asked their views on paying organ donors and prioritising for transplants those who were registered as donors. When asked whether people should be provided with a financial incentive for organ donation, the mean ranking on the same likert scale was 5.59, indicating general disagreement with this idea. The idea of prioritising those who are already organ donors was overall not supported, with a mean ranking of 4.76 for this question, indicating neutral to slightly negative views on this.

Discussion

Manipulating defaults is a tool of public policy which can be used in a variety of contexts to change behaviour. Changing defaults simply means changing the way choices are

structured, and as such is a low cost policy tool. The literature discussed in our opening section suggests that changing a default to automatically enrol people in pension or workplace saving schemes can significantly increase contributions. Our results reinforce these findings and suggest that defaults do matter. Our research indicates that in a demographically representative group of people not already on the organ donor register, a default where they have to opt out *not* to visit the organ donor register website generates significantly more website hits than one where people have to opt in to do this. Mandated choice, we find, generates levels not significantly different to the opt-out default. The magnitude of difference between opt-in and opt-out defaults, was in our study, not as great as that found in some other research. The reflection that took place as participants answered the attitudinal questions in our survey may well have weakened the effect of the different defaults presented at the end of the survey.

In relation to previous research on organ donation defaults specifically, our study yields the same overall pattern of results as that observed by Johnston and Goldstein (2003). Like them we find that an opt-out default generates a 3% higher rate of organ donors than a neutral default, with an opt-in default trailing behind both of these. Johnston and Goldstein's findings are however on a higher scale, with both opt-out and neutral defaults respectively resulting in an 82% and a 79% stated willingness to donate, compared to 43% for an opt-in default. This difference in scale compared to our own results is likely to be a reflection of differences in study design. Participants in our study knew that visiting the organ donation website was a step towards actually registering whereas in Johnston and Goldstein's experiment participants were stating a hypothetical willingness to donate and were not actually directed to an organ donor register. This may have led our participants to be more reluctant to make an affirmative choice.

Our survey had limitations in that when participants accepted the default that was presented, the survey took them to the organ donation website but did not register them directly. Our relatively low levels of actual registrations achieved in the experiment are likely to be a reflection of the extra step of completing an online form that participants had to take to fully register. Had it been possible to link our defaults directly to registration then we can speculate that a much higher registration rate may have been achieved.

The study could be replicated in a field experiment which builds opt-in, opt-out and mandated choice questions into an existing registration process where participants are providing their personal information for another purpose. An example of this which could be implemented would be to build an experiment into driving license application processes. Driving license issuing authorities would develop three versions of an application form, one including a mandated choice question about organ donation, another including an opt-in question and another including an opt-out question. With prior agreement from the organ donation authority and consent statements being built into the forms, the form would act as a formal mechanism for recruiting organ donors, with responses on the driving license form directly enrolling people for the organ donor register. All those who apply for a new driving license over a fixed time period (say 6 months) would be randomly allocated to one of the three versions of the form, and at the end of the period, sign up rates across the three forms compared. Similar approaches could be taken for those applying for passports or identity cards. Randomly allocating applicants to different versions of a form with different defaults in contexts such as these would build on our existing study in more realistic field settings. This type of approach if pursued online would also be consistent with ‘digital era governance’ efforts to join up disparate and duplicative organisational processes, thus creating efficiencies (Margetts and Dunleavy 2013).

In terms of external validity, like all experiments using internet panels, our population is self-selected. While every effort is made by internet panel companies to ensure a representative sample in demographic terms, we cannot discount the possibility that those who take part in online panels are atypical in other respects. In order to avoid attracting those with strong opinions on organ donation, our initial invite did not specify the topic of the survey. After people volunteered to take the survey, an initial screening question removed those already on the organ donor register, since we were primarily interested in the effect of our treatments on those *not* already on the organ donor register. The findings therefore relate to a more sceptical group than the general population which includes registered donors.

In this paper we do not test for heterogeneous effects of the treatments on different subgroups of respondents. As Gerber and Green (2012) discuss, it can be useful to have information about which groups are most likely to be responsive to particular treatments and under which conditions. We did not specify potential moderators of the treatment effect in our analysis plan when the experiment was designed because of a lack of clear theoretical expectations about this, and did not wish to engage in posthoc analysis. Nevertheless, subgroup analysis, or treatment-by-covariate interactions, can be used in an exploratory way, for further testing in future theory-guided research (Gerber and Green 2012). As Mutz (2011, 98) notes, subgroup analysis is useful because ‘finding the boundaries of a given theory – the kind of people for whom it is true, as well as the people for whom it is not – is an extremely valuable contribution’. Although this was outside the original aims of this paper, it would be a fruitful avenue for future investigation.

Conclusion and Implications

Our results indicate that a change in the default option for organ donation could potentially increase registrations, although our survey experiment would need replicating in a field setting to truly determine this. While changing choice architecture may be effective, is it a socially and politically acceptable solution to increasing organ donor registration? Based on our attitudinal data, changing defaults appears more popular than alternative incentive-based approaches such financial incentives or prioritising those on the organ register for transplants. Within the range of three types of choice architecture offered, respondents prefer to be asked whether or not they would like to join the organ donor register rather than a priori assumptions being made about their preference. The level of support we find for mandated choice is similar to that found in previous research in the UK (DH 2008) and USA (Spital 1996). The most effective default in our experiment, i.e. presumed consent, was the least popular with those surveyed. Our findings therefore support Thaler and Sunstein's (2008) proposition that mandated choice may be both effective in generating increased levels of organ donor registration, and more palatable to some than a system based on presuming consent.

As discussed in our introduction, one criticism of 'Nudge' and behaviour change interventions is a perception that they are overly paternalistic and manipulative. Mandated choice - requiring someone to choose but not assuming the nature of that choice or controlling it in any way – opens up this particular choice to individuals, but does place on them a responsibility to decide. This option, we suggest, could work for policy makers by increasing the prospects for organ donor registration while encouraging citizens to reflect on the issue and leaving them free to follow their preferences. The sweeping critique that is sometimes made of behaviour change techniques is, we suggest, overly simplistic, and each technique should be judged on its own merits, both in terms of effectiveness and ethics.

The main policy implication of our survey experiment would be that introducing a mandated choice could represent the best and most socially and politically acceptable method of improving organ donor registrations. However translating the results of research into viable policies is always a challenge, and rolling out a mandated choice system would not be straightforward. In practice it would be a challenge to require *every* citizen to make a choice, and thought would need to be given to offering the choice in a variety of contexts.

Options could include incorporating a required choice into driving license and passport applications and renewals, and into tax returns and state benefit claims, so that people cannot drive, travel abroad, submit their tax return or claim benefits until they make a choice about organ donation (Chouhan and Draper 2003). A mandated choice could also be included in national census surveys, and in countries that enforce compulsory voting laws, a required question about organ donation could be included alongside ballot papers. In countries with shortages of donors which currently use opt-in systems, a change to a mandated choice system, in comparison to a presumed consent system, though more difficult to implement, is, we suggest, likely to encounter far less political resistance whilst generating similar levels of registrations, therefore potentially helping redress shortages of organ donors.

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