

Applying Behavioural Insights to Organ Donation: preliminary results from a randomised controlled trial



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Introduction

Last year over one million people registered to join the NHS Organ Donor Register, bringing the total to 19,532,806.¹

Although this may seem like a lot of people, more needs to be done to ensure organs are available for those who need them. On average, three people die every day because there are not enough organs available.

We know that many people who express a desire to join the Organ Donor Register fail to do so. Current opinion polls suggest that 9 out of 10 people support organ donation, but fewer than 1 in 3 people are registered.¹

New interventions could close this gap between intention and action. This paper sets out the results from one such intervention, which forms part of a larger programme that included work on prompting choice. This programme will continue in the future.

The Behavioural Insights Team conducted one of the largest Randomised Controlled Trials (RCTs) ever run in the UK, in partnership with NHS Blood and Transplant (NHSBT), the Government Digital Service (GDS, who run GOV.UK), the Department for Health (DH), and the Driving & Vehicle Licensing Agency (DVLA). RCTs enable policymakers to compare the effectiveness of new interventions against the status quo.

In this instance, the trial tested the effect of including different messages on a high traffic webpage on GOV.UK that encourages people to join the NHS Organ Donor Register.

The results are impressive: if the best-performing message were to be used over the whole year, it would lead to approximately 96,000 extra registrations completed, compared with the control condition.

The best-performing message drew on ideas of reciprocity and fairness by asking people “If you needed an organ transplant, would you have one? If so please help others.”

The results are already informing how NHSBT communicates with members of the UK public. They also provide new insights that could improve the way we make policy.

They show, first, how well-targeted RCTs can be used to understand the relative effectiveness of different interventions. But they also show how some interventions can lead to counter-intuitive results. As the results show, one message resulted in a *decrease* in sign-up rates, something that would never have otherwise been identified.

Therefore, we hope that this paper not only results in large numbers of new organ donor registrations, but also shows the benefits of testing interventions before they are scaled up.

Testing Organ Donation Messages

Organ Donation in England

The NHS Organ Donor Register is a UK-wide, confidential list of people who are willing to become organ donors after their death.

In England we have an opt-in system, in which individual's explicit consent is sought before an individual is placed upon the NHS Organ Donor Register. Under this system, a key question is how and when to prompt individuals to join.

One moment at which individuals can be prompted to join the Register is when applying for a driving licence or renewing their vehicle tax. Millions of people use the DVLA/GDS websites for this purpose every year.

The high levels of traffic on these sites mean that even a small relative increase in registrations could represent a large absolute number overall. Therefore, there is a good case for improving how these sites prompt individuals to join the Register.

There are a number of issues that affect organ donation and transplantation in the UK. A new strategy - [Taking Organ Transplantation to 2020](#) - was published this summer. This new strategy contains a series of recommendations to enable the UK to match world-class performance in organ donation and transplantation.

Trial Design

The prompt to join the NHS Organ Donor Register takes the form of a separate page that appears once individuals have completed either renewing their vehicle tax or registering for a driving licence online. This page was created by GDS.

The page prompts people to join the Register and, in most cases, includes an additional message about organ donation. Drawing on insights from the behavioural sciences (explained in more detail below), we tested different messages and pictures to work out which increased registration rates the most.

We were able to trial eight different webpage variants. Once an individual completed their transaction they were randomly assigned to see one of the eight variants. This was a Randomised Controlled Trial (RCT) design. RCTs enable policymakers to compare the effectiveness of new interventions against what would have happened if nothing had been changed.

The trial ran for five weeks, during which time over one million people saw one of the eight variants (over 135,000 for each). This makes the trial one of the largest that has ever been conducted within the UK public sector. Its size gave us the ability to detect small differences in the proportion of people signing up for the Register. The eight

Variants are described below and shown on page six. Some of the variations—for example, adding a picture to an otherwise identical message—represent relatively small changes.

These small changes enable us to better understand which aspect of the variant is having the effect—for example, is it the picture or the message?

This methodology is an example of the Behavioural Insights Team’s “**Test, Learn, Adapt**” approach.²

Message Design

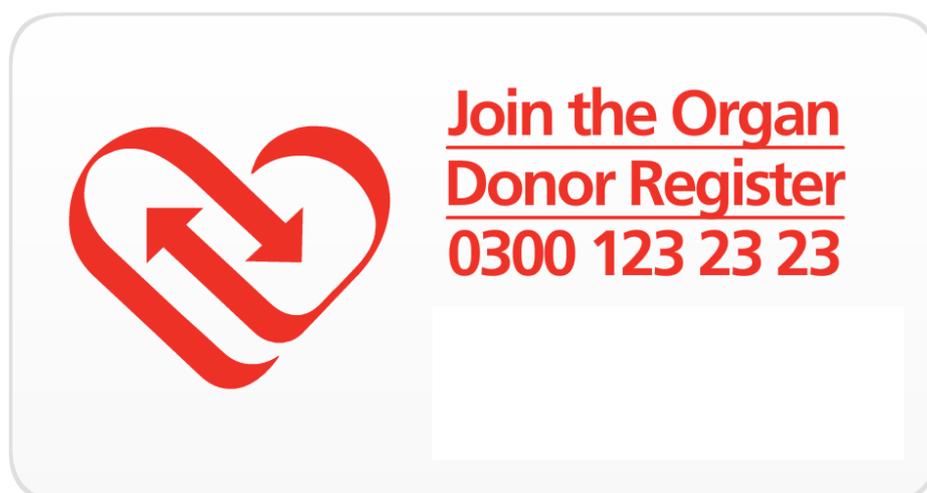
The first Variant, labelled 1 on page six, was the control page. The control page thanks the website user and asks them to “Please join the NHS Organ Donor Register.” This basic request appears in every variant. However, the control has no additional information, and acts as the benchmark against which the other messages are compared.

Variant 2 provides information on the large number of people who have joined the Organ Donor Register. In addition to the basic request, it states that “Every day thousands of people who see this page decide to register.”

This message states the social norm—what other people do in the same situation. Social norms have proven to be persuasive in lots of different areas, from energy efficiency to tax compliance, so there were good grounds to believe that this message would be effective.^{3,4}

The written messages in Variants 3 and 4 were exactly the same as in Variant 2 (“Every day thousands of people...”). But in addition to the written message, these variants contained a picture.

Variant 3 contained a picture of a group of people, while Variant 4 contained the NHSBT logo. We included these images to see whether we could increase the salience of



the message using visual cues alongside written text. In previous work photographs have increased the effectiveness of testimonials in encouraging charitable giving.⁵

Variant 5 sought to test the effectiveness of a “loss frame”, in other words informing people of the negative consequences of inaction. It stated that “Three people die every day because there are not enough organ donors”. We know that people are sometimes loss-averse—they feel the loss of something more than they might value an equivalent gain—so there were grounds to believe that this might be effective.^{6,7}

However, there is also evidence to suggest that, in some contexts, people seek to avoid negative messages that do not apply directly to themselves.⁸ So Variant 6 promotes the positive impact of registering: “You could save or transform up to 9 lives as an organ donor”. We term this the “gain frame”.

Variant 7 seeks to draw on people’s inherent desire for fairness and to reciprocate—in other words, to give back when they receive something. This message stated: “If you needed an organ transplant, would you have one? If so, please help others.” Reciprocity is an important concept for wider donation work, and has previously been used to increase charitable donations.^{5,9}

Finally Variant 8 attempts to motivate people to bring their actions in line with their intentions. We know that lots of people who express a desire to join the NHS Organ Donor

Register do not get around to it. Highlighting differences between intentions and actions has been shown to change behaviours related to exercise, sexual health and smoking.¹⁰

NHSBT uses a variety of these sorts of messages in its communications to donors, which have been refined over a period of years. There are good reasons to believe that any one of them would be most effective in this context.

This is exactly why it is important to test these messages against actual behaviour in a real-world setting, and see exactly what effects they produce. All the variants tested are shown in full on the next page.

GOV.UK

Home

Service

Thank you.
Please join the NHS Organ Donor Register.

[Join >](#) or [find out more.](#)

1

GOV.UK

Home

Service

Thank you.
Please join the NHS Organ Donor Register.

Every day thousands of people who see this page decide to register.

[Join >](#) or [find out more.](#)

2

GOV.UK

Home

Service

Thank you.
Please join the NHS Organ Donor Register.

Every day thousands of people who see this page decide to register.



[Join >](#) or [find out more.](#)

3

GOV.UK

Home

Service

Thank you.
Please join the NHS Organ Donor Register.

Every day thousands of people who see this page decide to register.



organdonation.nhs.uk

[Join >](#) or [find out more.](#)

4

GOV.UK

Home

Service

Thank you.
Please join the NHS Organ Donor Register.

Three people die every day because there are not enough organ donors.

[Join >](#) or [find out more.](#)

5

GOV.UK

Home

Service

Thank you.
Please join the NHS Organ Donor Register.

You could save or transform up to 9 lives as an organ donor.

[Join >](#) or [find out more.](#)

6

GOV.UK

Home

Service

Thank you.
Please join the NHS Organ Donor Register.

If you needed an organ transplant would you have one? If so please help others.

[Join >](#) or [find out more.](#)

7

GOV.UK

Home

Service

Thank you.
Please join the NHS Organ Donor Register.

If you support organ donation please turn your support into action.

[Join >](#) or [find out more.](#)

8

Preliminary Results

Results

The results of our trial can be seen in the figure below, with confidence intervals shown. Almost all of the variants significantly increased registration rates compared to the control group. There is one exception: the social norms message “Every day thousands...” paired with the picture of a group of people (Variant 3, labelled People Photo below) actually significantly reduced the number of people signing up.

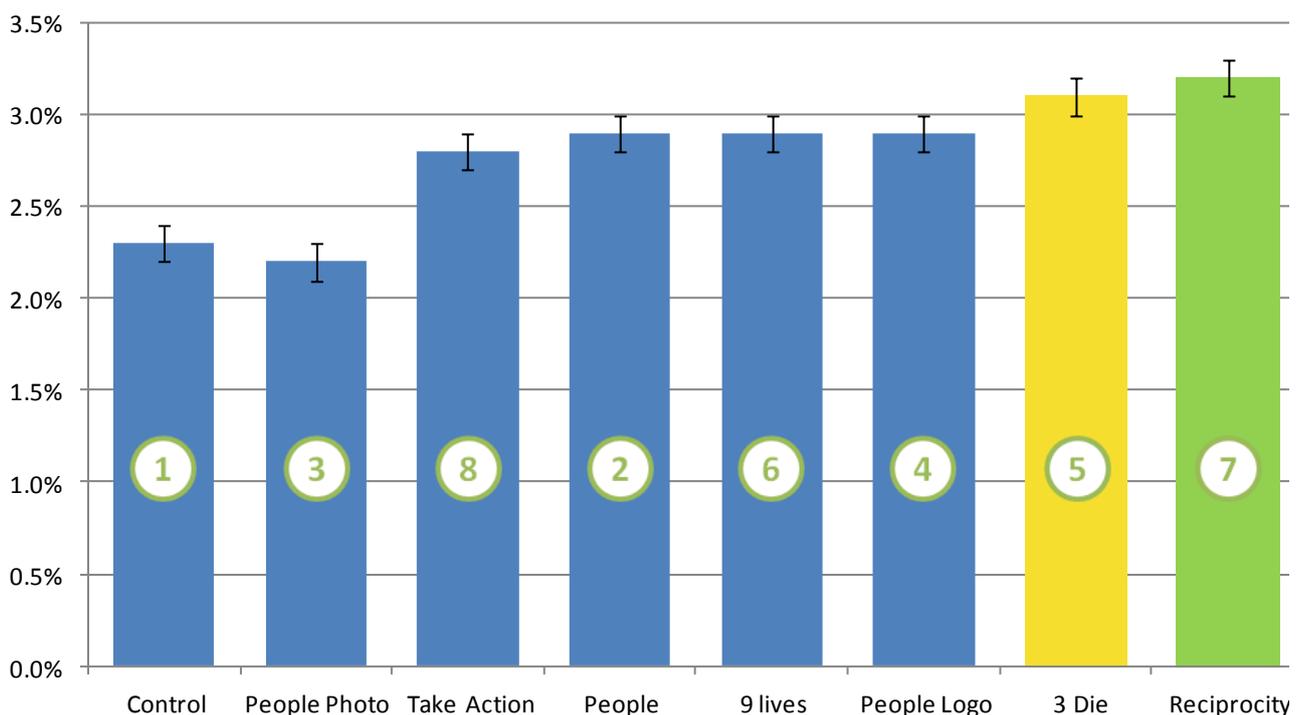
The most successful variant, highlighted in green on the graph, is Variant 7—the message that draws on reciprocity by asking: “If you needed an organ transplant would you have one? If so please help others.” This per-

forms significantly better than all other variants except for the loss –framed “Three people die every day...” message (in yellow). These top two results are not statistically significantly different from one another.

Aside from the main result that most test messages increased registrations, there are two other particularly interesting findings.

First, the impact of the loss frame (Variant 5—“Three people die every day...”) is significantly greater than the gain frame (Variant 6—“You could save or transform up to 9 lives...”). Although these messages are not exactly equivalent, this result suggests that some kind of third party loss aversion is taking place.

Percentage of People Registering as Organ Donors, by Variant



Second, the social norms message “Every day thousands...” has a positive effect on registrations, but when paired with the picture of a group of people it had a negative effect, compared to the control. This is the opposite of what we expected. One hypothesis is that the use of a stock photo discouraged individuals, who saw it as a marketing gimmick.

This unexpected result shows why it is important to test variations of messages, so long as they are sent to enough recipients to be able to tease out differences in responses. There were good reasons for believing that the group image would help. If we had not explicitly tested this idea, we may have done more harm than good.

Impact of Trial on Registrations

During the trial, 1,203 more people registered under our best-performing variant, compared to the control group.

Over the course of a year, this difference would lead to approximately 96,000 additional completed registrations compared with the control (assuming all other factors are equal).

The best performing variant has now been put in place, but we do not see this as the end of the process. We hope to build on this improvement in the future.

It is important to note that getting people to join the NHS Organ Donor Register is one of the many issues around increasing availability for organs for transplantation. It is par-

ticularly important that registrants on the NHS Organ Donor Register discuss their wishes with their family so that, should the time come when they could be an organ donor, their families are not taken by surprise and are willing to honour their loved one’s wishes.

Conclusion

This programme of work was focused on a very specific area: encouraging people to sign up to the Organ Donor Register after registering for a driving licence or renewing their vehicle tax.

But the findings show how small changes in specific public service contexts can have big impacts. They also show how testing and trialling interventions can help policy makers to determine which intervention is going to have the biggest impact.

These findings are therefore not just important for understanding what motivates people to join the Register. They tell us how test insights from behavioural science to improve policies in other areas (for a brief overview see the Behavioural Insights Team’s [Test, Learn, Adapt](#)).

So in the future, the Behavioural Insights Team will continue to work with NHSBT, the DVLA, DH, and GDS to further improve the sign-up rates, and to learn more about what motivates different people in different contexts to join the NHS Organ Donor Register.

Technical Annex

This annex summarises the empirical element of this trial. It first provides more detail on the process through which data was gathered, and it shows the analytical strategy by which we arrived at our results.

Data

Data from this trial was gathered by both the Government Digital Service (GDS), which runs GOV.UK, and NHSBT, which administers the organ donation registration site, with each organisation gathering the number of visitors to their site.

Data from GDS shows, by hour, how many individuals are allocated to each variant.

Data from NHSBT shows both how many people seeing each variant arrive at the organ registry site and how many of those go on to register as organ donors.

These two datasets were merged and expanded to provide individual level data. Over the course of our trial, we observe 1,085,322 individuals across all eight variants.

Analysis

Our data is analysed by simple Ordinary Least Squares regression, where whether or not an individual registers for organ donation is our dependent variable, and message assignment is the independent. Hence, we estimate a specification of the form:

$$Y_i = \alpha + \beta_1 X_i + u_i$$

Where Y is a binary variable set to one if an individual registers for organ donation and zero if not; alpha is a constant capturing our control condition; X is a vector of binary treatment variables for the remaining seven treatments; u is an error term.

Our results are displayed in the table below. In the first column, our control is taken as the constant. In the second columns we are interested in determining whether or not differences between our best and second best variants are significant, and so the best performing variant, "If you needed an organ transplant..." is taken as the omitted category.

Effects of Treatments on the Likelihood of Registering for Organ Donation (OLS)		
	(1)	(2)
Constant Condition:	Control	Would You
Thousands of people	0.006 ^{***} (0.001)	-0.003 ^{***} (0.001)
People Picture	-0.001 [*] (0.001)	-0.010 ^{***} (0.001)
Heart Picture	0.006 ^{***} (0.001)	-0.002 ^{***} (0.001)
3 People Die	0.008 ^{***} (0.001)	-0.001 (0.001)
Transform 9	0.006 ^{***} (0.001)	-0.003 ^{***} (0.001)
Would You	0.009 ^{***} (0.001)	
Action	0.005 ^{***} (0.001)	-0.003 ^{***} (0.001)
Control		-0.009 ^{***} (0.001)
Constant	0.023 ^{***} (0.000)	0.032 ^{***} (0.000)
Observations	1085322	1085322

Note: Standard Errors in parentheses

* Indicates significant at the 5% level, ** indicates significant at the 1% level, *** indicates significant at the 0.1% level.

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