

NBER WORKING PAPER SERIES

DON'T TAKE 'NO' FOR AN ANSWER:
AN EXPERIMENT WITH ACTUAL ORGAN DONOR REGISTRATIONS

Judd B. Kessler
Alvin E. Roth

Working Paper 20378
<http://www.nber.org/papers/w20378>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
August 2014

The authors thank Frank Delmonico and Sean Fitzpatrick of the New England Organ Bank, Brad Makaiiau of Donate Life California, Greg Segal of Organize; Kristen Grabarz, Alexander Izydorczyk, Julia Peng, and Linda Yao for excellent Research Assistant work; and the staff at the Computer Lab for Experimental Research at Harvard Business School and the Wharton Behavioral Lab at The Wharton School. The authors gratefully acknowledge financial support from the National Science Foundation, Harvard Business School, Stanford University, and the Wharton School. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

NBER working papers are circulated for discussion and comment purposes. They have not been peer-reviewed or been subject to the review by the NBER Board of Directors that accompanies official NBER publications.

© 2014 by Judd B. Kessler and Alvin E. Roth. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Don't Take 'No' For An Answer: An Experiment With Actual Organ Donor Registrations
Judd B. Kessler and Alvin E. Roth
NBER Working Paper No. 20378
August 2014
JEL No. D02,D04,D47

ABSTRACT

Over 10,000 people in the U.S. die each year while waiting for an organ. Attempts to increase organ transplantation have focused on changing the registration question from an opt-in frame to an active choice frame. We analyze this change in California and show it decreased registration rates. Similarly, a "field in the lab" experiment run on actual organ donor registration decisions finds no increase in registrations resulting from an active choice frame. In addition, individuals are more likely to support donating the organs of a deceased who did not opt-in than one who said "no" in an active choice frame.

Judd B. Kessler
Department of Business and Public Policy
The Wharton School
University of Pennsylvania
3620 Locust Walk
Philadelphia, PA 19104
judd.kessler@wharton.upenn.edu

Alvin E. Roth
Department of Economics
Stanford University
579 Serra Mall
Stanford, CA 94305
and NBER
alroth@stanford.edu

I. Introduction

Over 120,000 people in the United States are currently on the waiting list for a life-saving organ transplant, and every year over 10,000 people die while waiting for an organ.¹ The individuals on these lists are waiting for a transplantable organ from a deceased donor: a donor whose organs are transplanted following the donor's death.

Deceased donors provide the large majority of transplanted organs in the United States. In addition to there being more deceased donors than living donors, one deceased donor can provide multiple vital organs, including two kidneys, liver, heart, pancreas, lungs, and intestine, whereas living donors overwhelmingly donate one kidney.² To become a deceased donor, an individual must either have registered as a donor (e.g. on the registry run by a state department of motor vehicles) or have his organs donated by next of kin after his death. Despite the need for deceased donor organs, only 48% of individuals over the age of 18 in the United States are registered as organ donors (Donate Life America 2013). Consequently, even with additional donations made by next of kin, the organ donation rate among eligible donors is well below 100%.³

In the United States and most other countries, attempts to increase deceased donation have focused on altering how the organ donor registration question is asked. A number of U.S. states (including California and New York) as well as the U.K. have recently switched their organ donor registration question from an "opt in" frame to an "active choice" frame. In an "opt-in" frame an individual has to make an explicit positive statement or skip the question. In an "active choice" frame, an individual is asked to respond to a question that has a positive or a negative response.⁴ In fact, the use of the

¹ United Network for Organ Sharing. http://www.unos.org/data/data_resources.asp (6/27/2014).

² A deceased donor can also provide tissues including corneas, skin, heart valves, cartilage, bone, tendons, and ligaments.

³ The New England Organ Bank provides some data: among Medically Suitable Brain Dead potential donors, the recovery rate from registered donors was 98%, 90% and 98% in 2010, 2011, and 2012 respectively, while the recovery rate from unregistered potential donors was 54%, 57% and 55% in those years. The recovery rates were somewhat lower overall among Medically Suitable Donation after Cardiac Death potential donors: from registered potential donors the recovery rates were 78%, 70% and 79%, while the recovery rate from unregistered potential donors was 42%, 38%, and 39%. (Personal communication, Sean Fitzpatrick, NEOB.)

⁴ In both cases, the request to become a donor is presented at the DMV at a time when transaction costs of registering are near zero (checking a box or signing on a line) and so in the terminology

active choice frame for organ donation is widespread in the United States. In 2014, of the 50 U.S. jurisdictions with DMV forms posted online or made available to us for this research, 41 (82%) ask the organ donor registration question with an active choice frame (on paper or on a kiosk screen in 25 states and verbally in 16 states; see Table 1).

Table 1: Organ Donor Registration Questions by State

Active Choice		
<i>Positive Wording</i>	<i>Negative Wording</i>	<i>States</i>
“Yes”	“No”	AK, CT, GA, HI, IA, LA, MA, MS, NE, NV, NJ, NM, ND, OR, PA, RI, TX, UT, VT, WV, WY
“YES, add my name to the donor registry”	“I do not wish to register at this time”	CA
“Yes, add my name”	“No, not at this time”	MD
“Yes”	“Skip this question”	NY
“Yes”	“Not now”	MT
Verbal question: No fixed response		AR, CO, DE, FL, ID, IL, IN, KS, KY, ME, MI, MO, NC, OH, OK, WA
Opt-In		
<i>Positive Wording</i>		<i>States</i>
“Yes”		TN, WI, DC
“I want to be an organ and tissue donor. By checking this box, Donor Network of AZ will add me to the Donate Life AZ Registry”		AZ
“I want my license or ID card to show that I choose to be an organ and tissue donor under the Uniform Anatomical Gift Act”		MN
“Check here to consent to organ & tissue donation”		NH
“YES, I want to be an organ and tissue donor.”		SC
“In the event of my death, I would like to be an organ/tissue donor.”		SD
“Yes, I would like to remain or become an organ, eye and tissue donor.”		VA

Table 1 shows the question framing and responses for 49 states and DC, which either had DMV forms online, shared forms for our research, or answered questions about their organ donation policies when called by our research assistants (all U.S. jurisdictions excluding Alabama).

of choice architecture both are examples of “prompted choice”. There is a debate as to whether the “active choice” frames employed for organ donation should be labeled “mandated choice”. The difference between active choice (a perceived requirement to choose) and mandated choice (a real requirement to choose, sometimes called “forced choice”) is about what happens when an individual refuses to answer the question posed. In a mandated choice, an individual who does not answer the organ donor question cannot achieve the intended outcome of his DMV visit (e.g. receiving a driver’s license). Some states may treat an individual who does not answer the active choice question as a “no” (i.e. not mandated choice) while other states may require the question to be answered (e.g. the NY State license application form reads: “**You must answer the following question:**” before the organ donor question, emphasis in original.) For the 16 states that ask the organ donor question verbally, this distinction amounts to what happens if the individual does not respond to the DMV clerk asking about donation, which may depend on that particular clerk.

Despite its prevalence and the recent changes towards an active choice frame, the efficacy of the frame has not been empirically tested on registration data. Instead, support for the active choice frame has primarily come from hypothetical choice data reported by Johnson and Goldstein (2003, 2004) and theoretical arguments in its favor made in the academic (Thaler and Sunstein 2003) and popular press (Thaler and Sunstein 2008, Thaler 2009). Those authors concluded that switching to an active choice frame would increase the rate at which respondents chose to register as organ donors.

In this paper we provide the first empirical evidence on the efficacy of an active choice frame on actual organ donation registration decisions. We investigate the role of choice architecture on organ donor registration decisions in two ways. First, we provide empirical evidence on organ donor registration rates using a 2011 policy change in California that switched the organ donor registration question at the DMV from an opt-in frame to an active choice frame. We find that the switch did not increase registration rates and likely decreased them given the positive secular trend observed in other states.

Second, we report results from a controlled “field in the lab” experiment to test whether changing the choice frame affects real organ donor registration decisions. In our experiment, we provided individuals who have previously been asked to register as organ donors by the Massachusetts Department of Transportation the opportunity to change their organ donor registration status. Registration in our experiment *is* registration on the Massachusetts Donor Registry, so subjects who register to be donors in our study leave the laboratory as registered donors. The experiment is a “field in the lab” design in that we invite subjects into the laboratory, where we have experimental control, but each subject makes a real-world decision about their actual organ donation status. As will be described in Section III, significant technical requirements were met in order to connect our laboratory computers to the Massachusetts Registry of Motor Vehicles online database and record each participant’s interaction. This connection allowed us to observe each subject’s previous donor status and to make any changes to a subject’s registration status in real time. We again find that the active choice frame does not increase, and may decrease, organ donor registration rates.

One of the reasons why failure to observe an increase in organ donor registration under the active choice frame is particularly concerning for deceased organ donations is

that that the frame of the organ donor registration question might affect the decisions of next-of-kin. In a second experiment, we asked a separate group of experimental subjects to report what next of kin should do when deciding whether to donate the organs of a deceased. Subjects made hypothetical choices indicating next of kin would be more likely to donate the organs of a non-registered deceased who had simply failed to opt-in rather than explicitly chosen not to donate in an active choice frame. Consequently, we suspect that as individuals in a state repeatedly see the organ donation question posed as an active choice (e.g. every time they renew their driver's license), they will become less inclined to donate the organs of an unregistered deceased. Notice that here we focus not just on registration but on transplantation, which is the ultimate goal of having people register to be organ donors. Our results suggest that not only does active choice not increase the registration rate, it may decrease the transplantation rate through suggesting to next of kin that *un*registered donors had actively chosen not to donate.

While our results suggest that changing the organ donor registration question from an opt-in frame to an active choice frame is unlikely to increase organ donor registration rates and may have a negative effect on the donation decisions of next-of-kin, our experimental results suggest other ways to increase the rates of organ donor registration. We find that subjects are 22 times more likely to add themselves to the registry than remove themselves from the registry, even though all subjects had been asked previously about organ donor registration. This suggests the effectiveness of making a repeated appeal for organ donor registration. In addition, we find that providing more information about organ donation increases registration rates.

Note that many steps can be taken in parallel to relieve the shortage of transplantable organs (Kessler and Roth 2012, 2014b), but that some steps may be potentially counterproductive (Kessler and Roth 2014a). One approach to increasing the number of registered donors is to provide priority on organ donor waiting lists for those who had previously registered as donors. This policy has been implemented in Singapore and in Israel and been studied theoretically and experimentally by Kessler and Roth (2012, 2014a). Results from Israel suggest that the introduction of the new priority policy has been accompanied by a significant increase in the number of registered donors (Lavee et al. 2013).

Increasing the number of individuals who register as deceased donors is just one way of addressing the need for transplantable organs. Kidney exchange, in which incompatible patient-donor pairs are matched, has facilitated transplantation of kidneys from living donors (Roth, Sonmez and Unver 2004, 2005a,b, 2007; Roth et al. 2006; Saidman et al. 2006). This research has resulted in new institutions, which identify incompatible patient-donor pairs who are compatible with one another, allowing for an exchange of kidneys. In addition, these organizations can create chains of donation that start with an undirected donor.⁵ While kidney exchange has facilitated a growing number of transplants, kidney waiting lists continue to grow without a sign of slowing down.⁶ In addition, while donor chains and exchanges can increase the number of transplanted kidneys, live donation of other solid organs (including the heart, pancreas, and intestine) is not possible and there is very little transplantation of live donor lungs or livers.⁷ So deceased donation will remain of critical importance.

This paper proceeds as follows. Section II describes the change from opt-in to active choice in California and presents an empirical analysis of its effect on organ donor registration rates. Section III describes the experimental design of our field-in-the-lab experiment on organ donor registration rates and presents its results. Section IV describes

⁵ Roth et al. (2006) proposed that chains initiated by a non-directed donor could be performed non-simultaneously, since the patient in an incompatible patient-donor pair would always have received a kidney before the donor was asked to donate. The first non-simultaneous chain that began with an undirected donor started in 2007 and resulted in ten transplants over a period of eight months (Rees et al. 2009). Donor chains beginning with an undirected donor are becoming more common (see Ashlagi et al. 2011 and <http://marketdesigner.blogspot.com/search/label/chains>). There are now a number of kidney exchange networks, including an attempt to start a Federally sanctioned national program under the auspices of UNOS, the Federal contractor that oversees deceased organ allocation.

⁶ There have been over 2000 transplants due to kidney exchange since 2004, the year NEPKE was founded, according to data reported to the Organ Procurement and Transplantation Network (see <http://optn.transplant.hrsa.gov/latestData/rptData.asp>, as described in <http://marketdesigner.blogspot.com/2010/05/kidney-exchange-time-series.html>).

⁷ There is an ongoing literature on donation of blood and bone marrow. Recent work on blood donation has investigated whether providing incentives for donations of blood causes a “crowding out” that might lead to less donation overall and has found that incentives increase donations without leading to a decrease in blood quality (see Mellstrom and Johannesson 2008; Lacetera and Macis 2010a,b; Lacetera, Macis and Slonim 2012). Recent work on bone marrow donations suggests that fewer individuals are on the bone marrow registry than is optimal (see Feve and Florens 2005; Feve et al. 2007; Bergstrom et al. 2009, 2011) and that legislation giving donors a leave-of-absence from work encourages bone marrow donation (Lacetera, Macis and Stith 2012).

the second experiment about the decisions of next-of-kin and presents its results. Section V discusses the implications of our results and concludes.

II. Opt-in to Active Choice in California

The policy change in California provides an opportunity to analyze the effect of the organ donor registration question frame on registration rates. Starting on July 1, 2011, the California DMV changed the way in which the organ donation question is asked on its forms, switching from an opt-in framed choice (in which individuals checked a box to register and left it blank not to register) to an active choice frame (in which individuals were required to check either a yes or no option for the question to be complete). After July 1 2011, those who left the question blank were asked by DMV staff to complete it. See Figure 1 for the old and new CA questions.

7 DO YOU WISH TO REGISTER TO BE AN ORGAN AND TISSUE DONOR?		
<p>DO YOU WISH TO REGISTER TO BE AN ORGAN AND TISSUE DONOR?</p>	<p><input type="checkbox"/> YES! I want to be an organ and tissue donor.</p> <p><input type="checkbox"/> \$2 voluntary contribution to support and promote organ and tissue donation.</p>	<p>If you mark "YES!" you will be added to the Donate Life California organ and tissue donor registry and a pink donor dot will be printed on the front of your driver license or identification card. If you are currently registered, you must check "YES!" to have the pink donor dot printed on your license or identification card. If you wish to remove your name from the donor registry, you must contact Donate Life California (see back). The Department of Motor Vehicles can only remove the pink donor dot from your license or identification card.</p>

Panel 1A: Old CA Organ Donation Question (until June 30, 2011)

7 DO YOU WISH TO REGISTER TO BE AN ORGAN AND TISSUE DONOR?		
<p>DO YOU WISH TO REGISTER TO BE AN ORGAN AND TISSUE DONOR?</p>	<p><input type="checkbox"/> YES, add my name to the donor registry</p> <p><input type="checkbox"/> I do not wish to register at this time</p> <p><input type="checkbox"/> \$2 voluntary contribution to support organ and tissue donation</p>	<p>Marking 'Yes' adds your name to the Donate Life California Organ and Tissue Donor Registry and a pink 'Donor' dot will appear on your license. If you registered through the DMV previously, check 'Yes' to have the pink 'Donor' dot printed on your license or ID card. If you wish to remove your name from the registry, you must contact Donate Life California (see back); DMV can remove the pink dot from your license but cannot remove your name from the registry.</p>

Panel 1B: New CA Organ Donation Question (as of July 1, 2011)

Figure 1. The new organ donor registration question (Panel 1B) offers an active choice frame with a yes and no option in place of the old opt-in frame (Panel 1A) that only offered the yes option. The legislation that proposed this change simultaneously legislated that DMV staff ask whether someone wants to be an organ donor if the question is left blank.

The timing of the policy change in CA is plausibly exogenous to organ donation rates. California's registration rates have historically been lower than the rates in other states, but the policy change only occurred early in this decade — according to former

CA Governor Arnold Schwarzenegger — due to lobbying by Steve Jobs to change the organ donation choice frame in California lobbying that presumably began as a result of his own medical need for an organ.⁸ On a more granular level, the change was the result of legislation introduced in early 2010 but not implemented for almost a year and a half.⁹

What is the effect of changing the choice frame from opt-in to active choice? To answer this question, we collected data from on registration rates in California and other states in the quarters surrounding the 2011 change. Figure 2 displays quarterly registration rate data from California and from the 26 other jurisdictions (25 states and Washington DC) that made their quarterly data available to Donate Life America for all six quarters between Q4 2010 and Q1 2012, three quarters before and three quarters after the policy change.¹⁰ The data shows the registration rate as a percentage of the rate in Q2 2011, which was 27.43% for CA and 39.83% for the other states). Starting in Q3 2011, the organ donor registration question in CA was changed from opt-in to active choice.

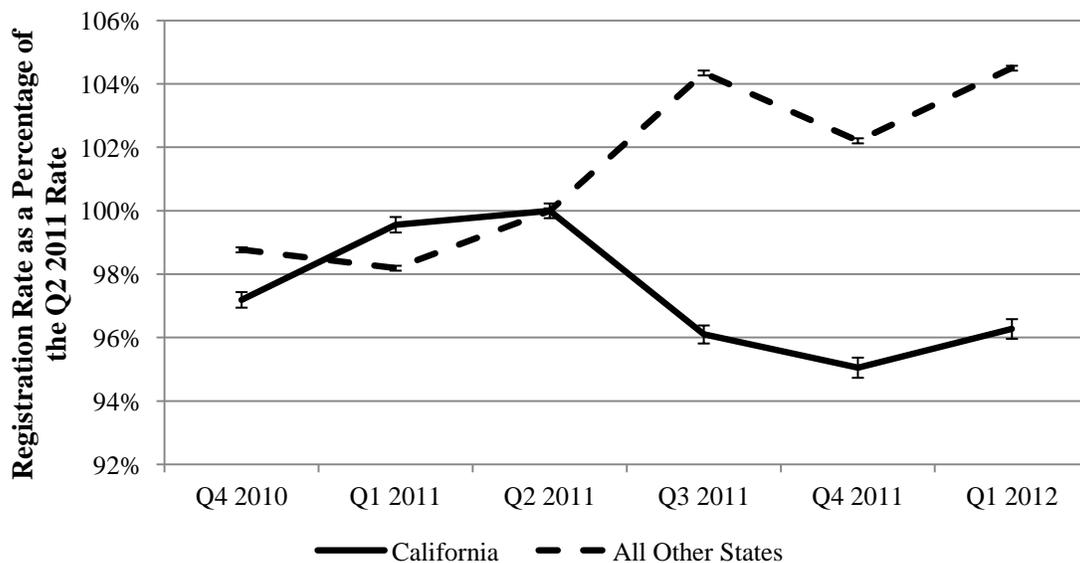


Figure 2. Chart displays quarterly registration rate data from California, and 25 other states and DC, from Q4 2010 to Q1 2012. For comparability, data is presented as a percentage of Q2 2011 rates (27.43% for CA; 39.83% for others). 95% confidence intervals are around each mean.

⁸ The text of Governor Arnold Schwarzenegger’s speech on this issue can be found at: <http://gov.ca.gov/news.php?id=16126> (6/27/2014).

⁹ For legislation and timing, see the bill at http://leginfo.ca.gov/pub/09-10/bill/sen/sb_1351-1400/sb_1395_bill_20100902_chaptered.html (6/27/2014).

¹⁰ Data provided by Donate Life California and Organize, an organ donation non-profit that received data from Donate Life America. Table A1 in the appendix presents the data.

While the other states show a gradual increase in registration rates over the six quarters, California shows a dip in registration rates between the second and third quarters of 2011 when the policy change was enacted.

We can conduct statistical tests on the data presented in Figure 2. Table 2 reports results from regressions that uses the other states as the control group for California to conduct difference-in-differences estimates. Regressions (1) and (2) treat the registration rates in each state-year as an observation while regressions (3) and (4) use individual registration decisions of people who visit the DMV as the unit of observation — essentially weighting each state by the number of people who make the organ donation decision each quarter. Regressions (2) and (4) include state fixed effects so that we are looking only at changes within states.

Table 2: Change from Opt-in to Active Choice on CA Registration Decisions
Organ Donor Registration Rates

	Quarterly Rates by State		Registration Decisions	
	(1)	(2)	(3)	(4)
Post*California	-0.022 (0.006)***	-0.022 (0.007)***	-0.027 (0.007)***	-0.024 (0.007)***
Post	0.014 (0.006)**	0.014 (0.007)**	0.019 (0.007)**	0.015 (0.007)***
California	-0.174 (0.031)***		-0.123 (0.042)***	
Constant	0.445 (0.031)***	0.439 (0.003)***	0.394 (0.042)***	0.380 (0.003)***
State FE	No	Yes	No	Yes
Observations	162	162	65,856,108	65,856,108
Clusters	27	27	29	29
R-squared	0.05	0.98	0.10	0.98

The coefficient *Post* represents the average difference in registration rates between the 3 quarters after the policy change (Q3 2011 through Q1 2012) and the three quarters before the policy change (Q4 2010 through Q2 2011). The coefficient *California* shows the registration rate in California compared to other states in the three quarters before the policy change (Q4 2010 through Q2 2011). The interaction of *Post*California* represents the difference-in-differences estimate of interest. Regressions (1) and (2) use state-quarters as observations while regressions (3) and (4) use binary choices of each individual who visits the DMVs as the unit of observation. Robust standard errors clustered by state are in parentheses: * significant at 10%, ** significant at 5%, *** significant at 1%.

The coefficient *Post* of 0.014 to 0.019 represents the average difference in registration rates between the three quarters before the policy change and the three quarters after. This suggests that states' registration rates increased by between 1.4 and 1.9 percentage points from the pre-period to the post-period. The coefficient *California* shows that the registration rate in California were lower than the average registration rate in other states in the pre-period. Finally, the interaction of *Post*California* represents the differences-in-differences estimate of interest. The negative and statistically significant coefficient suggests that by switching from an opt-in frame to an active choice frame, California's registration rate was between 2.2 and 2.7 percentage points lower than it would have been otherwise.

To ensure that changes in other states do not drive the result in CA, we had conversations with DMV staff in each state and searched state news sources to identify any other policy changes. Results are similar if we drop the one state that changed their organ donor registration policy at some point during the six quarters we examine. (Michigan began requiring DMV staff to verbally ask about organ donation in addition to the written question on the form in Q1 2012). A variety of other specifications are shown as robustness checks in Table A2 in the Appendix, and all find consistent results.

While the analysis of the change in the frame of the organ donation question in California suggests that the active choice frame decreases registration rates relative to what the rates would have been with an opt-in frame, we cannot rule out that others things may have changed in California between Q2 2011 and Q3 2011 that could drive the observed difference-in-differences in registration rates. In addition, while the pattern of data in Figure 2 is consistent with the parallel trends assumptions, data limitations mean we are underpowered to detect a difference in trends between CA and the states we are using as a control group, even if such a difference were there. To more completely answer the question about the effect of the choice frame on registration decisions, and to answer additional questions about what influences organ donor registrations, we turn to a controlled laboratory environment in the next section.

III. Experiment with actual organ donor registrations

In our main experiment, 368 participants were recruited to the Computer Lab for Experimental Research at Harvard University to participate in one of 66 sessions on one of 25 dates between August 2010 and April 2012.¹¹ Recruitment information informed potential participants that they needed a Massachusetts driver's license, learner's permit, or state identification card and the last four digits of their social security number to participate in the study, but participants were not informed in advance that the study concerned organ donation.¹² Participants received \$15 for showing up and participating in the study. Everyone who arrived at the behavioral laboratory and had the required Massachusetts credentials was allowed to participate.

After arriving at the laboratory, each subject was seated at an isolated computer terminal and signed a consent form. In addition, the experimenter read aloud a paragraph from the consent form explaining that participants would log into the Massachusetts Organ and Tissue Donor Registry and have the opportunity to change their donor registration status.¹³ Subjects initiated the study by logging into the Massachusetts Organ and Tissue Donor Registry maintained by the Department of Transportation (DOT) accessible through the website of the Registry of Motor Vehicles. Subjects logged into the registry through a web interface designed specifically for the experiment as shown in Figure 3. The software was designed so that subjects logged into and interacted with the real Massachusetts Organ and Tissue Donor Registry through a front end that could be manipulated experimentally.^{14,15}

¹¹ The experiment was run over a period of roughly 20 months since our requirement that subjects have a Massachusetts State ID card (either a license, permit or state ID) generated a much smaller potential subject pool than usual. When we designed the experiment, the CLER recruitment software did not keep track of whether potential subjects had a Massachusetts ID and we overestimated the percentage of the CLER subject pool that would be eligible to participate in our study. Our goal of getting 200 subjects who were not already donors was only met during our last wave of sessions in April 2012.

¹² See Appendix A for the full recruitment information.

¹³ See Appendix B for the full consent form.

¹⁴ Given the sensitive information that was required for logging into the Massachusetts RMV organ donor registry (MA State ID number, last four digits of the social security number, name, and date of birth) protecting subject privacy was important. The experimental software was built as an add-on to the Firefox browser so that it could run locally on each computer terminal in the

After logging into the registry, all subjects — those who were previously donors and those who were previously not donors — were asked whether they wanted to change their organ and tissue donor registration status. After subjects made their organ donor registration decision, they completed a 40-question survey.

The design of the study software allowed for experimental manipulation of: (1) how a subject was asked about becoming a donor (i.e. the choice frame) and (2) the information a subject received about organ donation (i.e. content). Since the software interacted with the Massachusetts registry, we were able to see the subject’s current donor status, allowing us to investigate changes in registration status in both directions (from non-donor to donor and vice versa). Participants were in one of four treatments in a two-by-two factorial design shown in Table 3. See Figure 4 for the registration question screens associated with each cell.

Table 3: Four Treatments (2x2 Design)

2 x 2 Design		Choice Frame	
		Opt-In	Active Choice
Information Provided	Control	93 subjects (55 non-donors and 37 donors)	82 subjects (51 non-donors and 31 donors)
	List of Organs	95 subjects (55 non-donors and 40 donors)	99 subjects (51 non-donors and 48 donors)

The number of subjects, including initial donors and non-donors, in each of the four treatments in the 2x2 design.

lab. The software communicated with the Massachusetts RMV site in the background while displaying the experimental front end to the subject. When the sensitive data was transmitted from the computer, it was transmitted through the actual Massachusetts RMV online form (i.e. it was as secure as if the subject had directly entered the information on that form). The software erased the login information from the computer hard drive and only retained the variables associated with previous donor status and donor status after the registration decision.

¹⁵ The experimental interface hid the Massachusetts RMV logos to prevent subjects from generating associations of the registry of motor vehicles, including the violent deaths associated with car and motorcycle accidents that might lead to donation.

PLEASE FILL IN THE FOLLOWING INFORMATION. ALL FIELDS ARE REQUIRED.

FIRST NAME:

LAST NAME:

DATE OF BIRTH(MM/DD/YYYY):

MA STATE LICENSE NUMBER:

SOCIAL SECURITY NUMBER(LAST FOUR DIGITS):

E-MAIL:

RE-TYPE E-MAIL:

SUBMIT INFORMATION

THIS INFORMATION WILL BE USED TO LOG INTO A SYSTEM THAT WILL RECORD YOUR DECISION OF WHETHER TO REGISTER AS AN ORGAN AND TISSUE DONOR. WE WILL NOT STORE ANY OF THE INFORMATION YOU PROVIDE ON THIS PAGE OR SHARE THIS INFORMATION WITH ANYONE EXCEPT THE SYSTEM WHICH WE ARE LOGGING YOU INTO NOW.

Panel 3A: Screenshot of login page in Experiment

The screenshot shows the Massachusetts Registry of Motor Vehicles website. At the top left is the state seal and the text "Massachusetts Registry of Motor Vehicles". To the right is a search bar with a "Search" button. Below the header is a navigation menu with links: Home, Online Services, Forms & Manuals, License & ID, Registration, Suspensions & Hearings, Title & Salvage, and Branch Info. The main content area is titled "Organ & Tissue Donor Enrollment". Below the title is a paragraph explaining that users need their MA License/Permit or ID Number, name, date of birth, and SSN to request donor status. A form titled "Please enter your information below:" contains fields for License/Permit/ID, Last name, First name, D.O.B. (MM/DD/YYYY), SSN (Last 4 digits), Email, and ReType Email. There are "Reset Form" and "Continue" buttons at the bottom of the form. To the right of the form is a "Print This Page" button and a "RELATED LINKS" section with links to "Change Your Address", "Renew Your Driver's License", "Replace Your Driver's License", "Renew Your Mass ID", "Replace Your Mass ID", "New England Organ Bank", and "Organ Donor FAQs". At the bottom of the page, there is a footer with "MassDOT Home | About Us | Employment | Contact Us | Site Policies" and "© 2013 Commonwealth of Massachusetts".

Panel 3B: Screenshot of login page on the Massachusetts Registry of Motor Vehicles Webpage that subjects did not see due to the experimental interface

Figure 3: Login Screens for the Experiment (Panel 3A) and the Massachusetts Registry of Motor Vehicles (Panel 3B)

In the choice frame variation, subjects were either provided with an opt-in frame or an active choice frame. In the opt-in frame, subjects were given the opportunity to change their organ donor status by checking a box and clicking “continue”. Leaving the box blank and clicking continue kept their organ donor registration status unchanged. In the active choice frame, subjects were provided with two radio buttons, one that would add them to the organ and tissue donor registry (or leave them on the registry if they were already on it) and one would leave them off the registry (or remove them from the registry if they were already on it). Subjects were required to check one of the buttons and click “continue” before continuing with the rest of the study.¹⁶ See Figure 4 for screenshots of the opt-in conditions (Panels 4A and 4C) as well as the active choice conditions (Panels 4B and 4D).

The other dimension that the experiment varied was the information provided to subjects before they decided whether or not to change their donor status. Subjects were either provided with a standard control message or a message that included a list of organs that might be donated in the event of deceased donation. See Figure 4 for screenshots of the control conditions (Panels 4A and 4B) as well as the list conditions (Panels 4C and 4D).¹⁷

¹⁶ If a subject had refused to answer the organ donation question, they would by default have retained their previous donor status. That said, no subjects made such a refusal.

¹⁷ Originally, we intended to have a third dimension of variation in which the request for registration referenced “head injuries in a car crash” as an explicit cause of death that might lead to organ donation. We hypothesized that donation would be more costly if associated with thoughts of death. Unfortunately, a software bug eliminated a line of text (“Those who register as organ donors agree to donate all their organs and tissues.”) from the screens of the first 43 subjects who received the head injury language without the list of organs. This bug prevented a clean analysis of the effect of head injuries language. After recognizing this bug and having continued low recruitment numbers, we decided to cut the head injuries language from future sessions of the experiment. In total, 121 subjects saw the head injuries language, 70 of those subjects were not donors when they entered the lab. All of our analysis is qualitatively the same if we exclude these subjects from the analysis.

ON THIS WEBSITE YOU CAN CHOOSE TO BE AN ORGAN AND TISSUE DONOR IN THE EVENT OF YOUR DEATH. IT IS ESTIMATED THAT ONE DONOR CAN SAVE OR ENHANCE THE LIVES OF AS MANY AS 50 PEOPLE BY DONATING ORGANS AND TISSUES. THOSE WHO REGISTER AS ORGAN DONORS AGREE TO DONATE ALL THEIR ORGANS AND TISSUES.

IF YOU CONTINUE WITHOUT CHECKING THE BOX, YOU WILL NOT BE REGISTERED AS AN ORGAN AND TISSUE DONOR.

I WANT TO REGISTER AS AN ORGAN AND TISSUE DONOR.

CONTINUE

Panel 4A: Screenshot of Experiment registration page (“Opt-in, Control”)

ON THIS WEBSITE YOU CAN CHOOSE TO BE AN ORGAN AND TISSUE DONOR IN THE EVENT OF YOUR DEATH. IT IS ESTIMATED THAT ONE DONOR CAN SAVE OR ENHANCE THE LIVES OF AS MANY AS 50 PEOPLE BY DONATING ORGANS AND TISSUES. THOSE WHO REGISTER AS ORGAN DONORS AGREE TO DONATE ALL THEIR ORGANS AND TISSUES.

PLEASE SELECT ONE OF THE FOLLOWING OPTIONS.

- I WANT TO REGISTER AS AN ORGAN AND TISSUE DONOR.
 I DO NOT WANT TO REGISTER AS AN ORGAN AND TISSUE DONOR.

CONTINUE

Panel 4B: Screenshot of Experiment registration page (“Active Choice, Control”)

ON THIS WEBSITE YOU CAN CHOOSE TO BE AN ORGAN AND TISSUE DONOR IN THE EVENT OF YOUR DEATH. IT IS ESTIMATED THAT ONE DONOR CAN SAVE OR ENHANCE THE LIVES OF AS MANY AS 50 PEOPLE BY DONATING THE FOLLOWING ORGANS AND TISSUES:

- BONE AND CONNECTIVE TISSUE
- CORNEAS
- EYES
- HEART (FOR VALVES)
- HEART WITH CONNECTIVE TISSUE
- KIDNEYS
- LIVER OR ILLIAC VESSELS
- LUNGS
- PANCREAS
- SKIN
- SMALL INTESTINE
- VEINS

THOSE WHO REGISTER AS ORGAN DONORS AGREE TO DONATE ALL THEIR ORGANS AND TISSUES.

IF YOU CONTINUE WITHOUT CHECKING THE BOX, YOU WILL NOT BE REGISTERED AS AN ORGAN AND TISSUE DONOR.

I WANT TO REGISTER AS AN ORGAN AND TISSUE DONOR.

CONTINUE

Panel 4C: Screenshot of Experiment registration page (“Opt-in, List”)

ON THIS WEBSITE YOU CAN CHOOSE TO BE AN ORGAN AND TISSUE DONOR IN THE EVENT OF YOUR DEATH. IT IS ESTIMATED THAT ONE DONOR CAN SAVE OR ENHANCE THE LIVES OF AS MANY AS 50 PEOPLE BY DONATING THE FOLLOWING ORGANS AND TISSUES:

- BONE AND CONNECTIVE TISSUE
- CORNEAS
- EYES
- HEART (FOR VALVES)
- HEART WITH CONNECTIVE TISSUE
- KIDNEYS
- LIVER OR ILLIAC VESSELS
- LUNGS
- PANCREAS
- SKIN
- SMALL INTESTINE
- VEINS

THOSE WHO REGISTER AS ORGAN DONORS AGREE TO DONATE ALL THEIR ORGANS AND TISSUES.

PLEASE SELECT ONE OF THE FOLLOWING OPTIONS.

I WANT TO REGISTER AS AN ORGAN AND TISSUE DONOR.

I DO NOT WANT TO REGISTER AS AN ORGAN AND TISSUE DONOR.

Panel 4D: Screenshot of Experiment registration page (“Active Choice, List”)

Massachusetts
Registry of Motor Vehicles

Home **Online Services** Forms & Manuals License & ID Registration Suspensions & Hearings Title & Salvage Branch Info

Organ & Tissue Donor Enrollment Details

Transaction ID: 8419631LP 2/14/2013 10:16:29 AM

Your current Organ & Tissue Donor status is: No, I am not in the Organ & Tissue Donor Registry.

Yes, I wish to be an Organ & Tissue Donor.

Please do not change my current status.

If you require assistance, please contact the [RMV Telephone Center](#).

Print This Page

RELATED LINKS

- [Change Your Address](#)
- [Renew Your Driver's License](#)
- [Replace Your Driver's License](#)
- [Renew Your Mass ID](#)
- [Replace Your Mass ID](#)
- [New England Organ Bank](#)
- [Organ Donor FAQs](#)

MassDOT Home | About Us | Employment | Contact Us | Site Policies © 2013 Commonwealth of Massachusetts

Panel 4E: Screenshot of Massachusetts Registry of Motor Vehicles registration page that subjects did not see due to the experimental interface. Note: “Please do not change my current status.” is the default option that is automatically selected on the page. This selection is implemented when either the “Exit” or “Submit” button is pressed.

Figure 4: Registration Screens from the Experiment (Panel 4A, Panel 4B, Panel 4C, and Panel 4D) and from Massachusetts Registry of Motor Vehicles (Panel 4E)

Of the 368 subjects who participated in our study, 156 participants (42.4%) were observed to be registered donors and 212 participants (57.6%) were non-donors when they began the study (i.e. before being asked if they wished to change their status).

Results from these subjects are consistent with the results from the empirical analysis of the change in choice frame in California. Subjects in our experiment are somewhat more likely to register as donors when the request to register was provided in an opt-in frame rather than an active choice frame.

Even though changing the choice frame from opt in to active choice did not increase registration rates, we are able to increase rates in other ways. Subjects were significantly more likely to register as donors when exposed to the list of organs than if they received the standard message. Figure 5 shows the percentage of initially unregistered subjects who were registered at the end of the study by treatment.

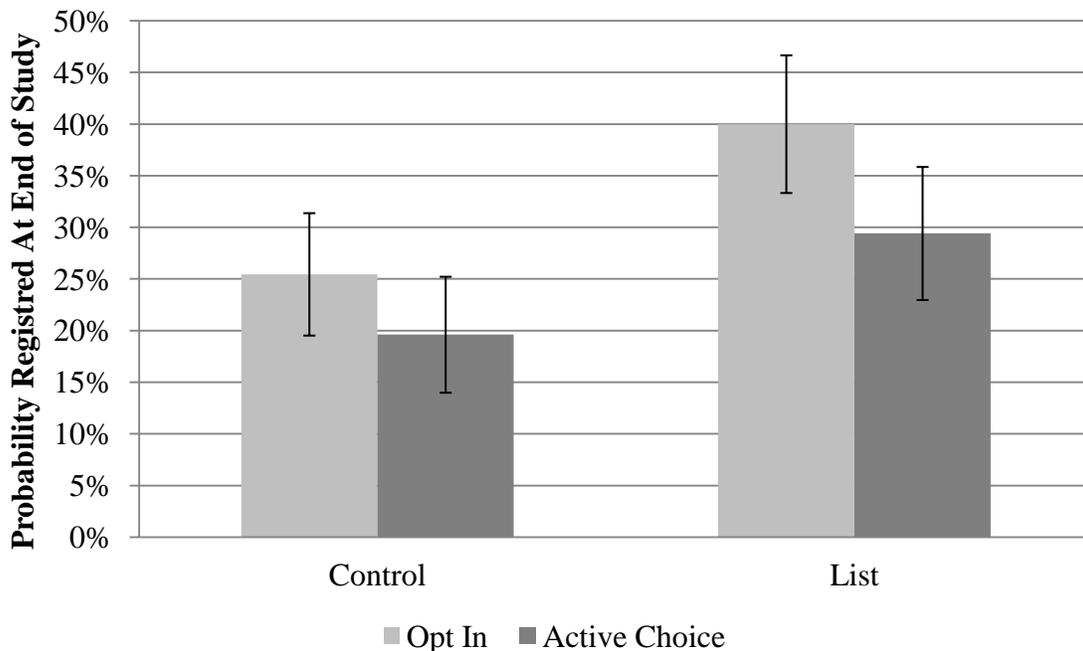


Figure 5: Share of the 212 initially unregistered subjects that registered in the experiment by condition (standard error bars around each mean). In both control and list conditions, the opt-in frame generated directionally more registrations than the active choice frame. Combining across control and list conditions, the active choice frame did not generate more registrants than the opt-in frame ($p=0.093$). Combining across opt-in and active choice frames, including a list of organs made subjects more likely to register ($p=0.049$).

Table 4 reports regression results about whether individuals end up on the registry (left panel) and whether previous non-donors join the registry (right panel).

Regressions (1) and (2) show that subjects who receive the opt-in frame and the list of organs are more likely to end up as registered donors than those who do not. Looking exclusively at subjects who were not donors at the start of the study in regressions (3) and (4), the active choice frame makes subjects 8 to 9 percentage points less likely to register as donors (8.2 is a 25% decrease on a base registration rate of 32.7% under the opt-in frame). The list of organs makes subjects 12 to 16 percentage points more likely to register as donors (12.3 is a 54% increase on a base registration rate of 22.6 under the control message).

The coefficients on *Active Choice Frame* and *List of Organs* do not change much as we add dummies for the date of the sessions in (2) and (4). While the experimental software randomized the treatment at the subject level, the experiment was run on 25 different dates over 21 months and subjects might differ across those dates, the dummy controls soak up variation in the types of people who come to participate on the different dates.

Table 4: Organ Donor Registration By Condition

	Organ and Tissue Donor Registration (0 or 1)			
	All Participants		All Initial Non-Donors	
	(1)	(2)	(3)	(4)
Active Choice Frame	-0.050 (0.037)	-0.063 (0.037)*	-0.082 (0.062)	-0.093 (0.066)
List of Organs	0.074 (0.037)**	0.082 (0.037)**	0.123 (0.062)**	0.160 (0.069)**
Initially Registered	0.700 (0.033)***	0.680 (0.035)***		
Constant	0.275 (0.033)***		0.275 (0.052)***	
Date Dummies	No	Yes	No	Yes
Observations	368	368	212	212
R-squared	0.50	0.54	0.03	0.12

Robust standard errors are in parentheses: * significant at 10%, ** significant at 5%, *** significant at 1%. Date dummies include a dummy for each of the 25 dates experimental sessions were run.

Results from Table 4 show that framing the decision to register as an active choice in which subjects have to either click “I want to register as an organ and tissue donor” or “I do not want to register as an organ and tissue donor” makes subjects directionally less likely to join the registry as compared to an opt-in frame where a subject simply checks the box next to “I want to register as an organ and tissue donor” and leaves it blank to not join the registry. While we do not get statistical significance beyond $p < 0.1$ (and we only get that in some specifications) a one-sided test can reject the hypothesis that active choice outperforms the opt-in frame among initial non-donors (25% to 33%, one-sided t-test 212 obs, $p < 0.1$). In our setting, asking people to check a box to join the registry and leaving it blank to not join the registry is no worse, and directionally better, than forcing them to choose one or the other. This experimental result is consistent with results in the previous section analyzing data from California. The magnitudes estimated here, that the active choice frame decreases registration rates by 5 to 6 percentage points across all participants, are the same order of magnitude as the decrease in registration rates of 2.2 to 2.7 percentage points we estimated off of the California policy change.

Even if there were no change in donation rates as a result of framing the decision as an active choice, the active choice frame might have a negative effect on transplantation rates if the way in which the donor is asked to register causes the next of kin to make a different inference about the deceased’s wishes. For example, next of kin might interpret the choice “I do not want to register as an organ and tissue donor” as an explicit wish not to be a donor whereas leaving the box blank next to “I want to register as an organ and tissue donor” might be interpreted differently. Put another way, not being on the registry might provide different information to a deceased’s next of kin, depending on how the deceased was asked to register. We investigate this hypothesis with a follow-on experiment, discussed in the next section.

While our findings suggest that the recent switches to active choice framed questions may not increase registration rates (contrary to claims that in many cases prompted the switch), other results from our experiment suggest hope for encouraging organ donor registration.

Giving information about the benefits of donation, namely providing a list of organs that might be donated, increased the likelihood of registration among initial non-donors (34.9% with the list vs. 22.6% without the list, $p=0.049$). That we found an intervention able to increase registrations without changing the choice frame suggests that providing information can encourage people to register as donors, a promising result for policy interventions aimed to educate potential donors of the value of organ donation (see, e.g. Quinn et al. 2006, Thornton et al. 2012).¹⁸

The most pronounced result from our experiment, however, is that giving individuals the opportunity to change their status on the Massachusetts Organ and Tissue Donor Registry increased the number of registered donors (42.4% were registered at the start of the experiment vs. 58.4% at the end; test of proportions, 368 obs, $p<0.001$) even though the Massachusetts Department of Transportation had previously asked all of our subjects to register as organ donors.¹⁹ 61 of the 212 subjects (28.8%) who were initially not registered joined the registry while only 2 of the 156 subjects (1.3%) removed themselves from the registry. Put another way, subjects were 22 times more likely to add themselves to the registry than remove themselves.

¹⁸ Subsequent answers from the survey provide suggestive evidence for why the list of organs may have had a positive impact on the likelihood that subjects registered as organ donors. Being exposed to the list appears to make subjects believe that a single donor can save more lives and they are more likely to report a family member having received an organ. Among previously unregistered subject, those who see the list appear to report that more life-saving organs can be transplanted from a single deceased donor (12.7 versus 9.6, t-test 211 obs, $p=0.059$). In addition, subjects in that group who see the list are more likely to report that a family member has received an organ transplant (4.7% versus 0.9%, t-test 212 obs, $p=0.099$). The latter result suggests that subjects who are exposed to the list broaden their interpretation of what constitutes an organ transplant. Together, these results suggest that seeing the list may make subjects think (1) the value of being an organ donor is higher and (2) that they have personal connection to organ donation. Neither of these increases in response to seeing the list mediates the increase in the donation rate, however, suggesting that these effects are not the whole story.

¹⁹ Participants in the study must have previously received an identification card issued by Massachusetts, which means that non-donors in the study had been given the opportunity to register as a donor and had declined. From the Massachusetts RMV website: “When the customer applies for a Massachusetts permit/license/ID card, he/she will have the opportunity to become an organ and tissue donor by checking “yes” on the question “Would you like to register to be, or continue to be, an organ and tissue donor?” on the permit/license/ID card application.” (<https://secure.rmv.state.ma.us/Policybrowserpublic/PolicyBrowser.aspx> under “License Policy > Organ and Tissue Donor Policy > New Donors” (7/23/2012)

The results in Table 5 show that this effect of giving subjects the opportunity to change their organ registration status leading to more registered donors is not being driven by any particular subgroup. Table 5 breaks the experimental subjects down by demographic characteristics identified in our survey. We find directionally positive effects for every subgroup with more than 14 subjects and positive and statistically significant effects for every subgroup of more than 75 subjects.

There is no reason to believe that our experiment selected subjects particularly inclined towards organ donation. Organ donation was not mentioned in the recruitment materials and the share of subjects who showed up as registered donors was not statistically different from the share of Massachusetts residents who were registered in either year of our experiment (39% vs. 44% in 2010, $p=0.22$; 49% vs. 48% in 2011, $p=0.85$) (Donate Life America 2011, 2012).

When considering how our results speak to policy, it is worth addressing a potential concern of an experimenter demand effect in our study. An experimenter demand effect would arise if subjects in our laboratory setting try to please the experimenter by taking actions they believed the experimenters want them to take (e.g. Levitt and List 2007). In many contexts the concern about an experimenter demand effect creates a challenge for generalizability outside the lab where such forces are not at play. We are less concerned about the potential for an experimenter demand effect on the generalizability of our study given that in natural environments when individuals are asked to register as donors there is someone who is observing them, recording their behavior, and possibly directly encouraging them to do so. For example, in many cases outside of our lab setting from which we aim to generalize, DMV staff who are face-to-face with individuals directly ask them to register as donors. If anything, our experiment presents less pressure than the normal environment in which people might be asked to register as donors. We ensure anonymity as opposed to a government office where they are being identified alongside other personal information. In addition, we directly ask those who registered donors whether they would like to remove themselves from the registry, and do not observe any demand effect in the reverse direction, although donors find themselves in a symmetric environment as non-donors in our experiment, with all options reversed.

Table 5: Subject Demographics

	Number	Percent of Subjects	% Donor Before	% Donor After	PR test p-value
<i>All Subjects</i>	368	100%	42	58	0.000***
<i>Breakdown by age</i>					
18 to 21	108	29%	38	60	0.001***
22 to 30	140	38%	51	62	0.070*
31 and older	120	33%	36	53	0.009***
<i>Breakdown by race</i>					
Asian	54	15%	26	41	0.103
Black Hispanic	2	1%	0	0	.
Black Non-Hispanic	39	11%	31	51	0.065*
Native American	3	1%	100	100	.
Other	14	4%	21	21	.
White Hispanic	20	5%	50	55	0.752
White Non-Hispanic	236	64%	48	66	0.000***
<i>Breakdown by Educational Background</i>					
Grade School	4	1%	25	25	.
High School	30	8%	13	36	0.037**
Some College	146	40%	38	58	0.001***
College	113	31%	51	65	0.043**
Graduate Degree	75	20%	49	60	0.190
<i>Breakdown by Student Status</i>					
No	159	43%	40	55	0.007***
Part-Time	32	9%	53	63	0.448
Full-Time	177	48%	43	61	0.001***
<i>Breakdown by Family Income</i>					
<\$30,000	151	41%	42	56	0.021**
\$30,000 to \$90,000	148	40%	41	57	0.005***
\$90,000 +	69	19%	45	67	0.010**
<i>Breakdown by Marital Status</i>					
Single	318	85%	43	60	0.000***
Married	38	10%	42	61	0.108
Divorced	14	4%	36	36	.
Widowed	2	1%	0	0	.
<i>Breakdown by Number of Kids</i>					
0	332	90%	45	61	0.000***
1 +	36	10%	17	33	0.103

Provides demographic information about the 368 subjects who participated in the study as collected in the survey conducted after the registration decision. For each demographic breakdown, we show the percentage of those subjects who were donors before they entered the lab and those who were donors when they left. In the “PR test p-value” column, we denote the p-value associated with a two-sample test of proportions and indicate whether the change in percentage of registered donors during the experiment is statistically significant: * significant at 10%, ** significant at 5%, *** significant at 1%.

IV. Next-of-Kin Decisions

To investigate the potential effect of the decision frame in which an individual was asked to register as a donor on the decision of their next of kin, we designed a survey experiment. 803 subjects recruited on Amazon's Mechanical Turk platform participated on January 8, 2013.²⁰

These subjects saw one of two decision screens from the first experiment (either the opt-in frame or active choice frame registration question without the list) and were told that a hypothetical deceased had chosen to join or not join the registry.²¹ In particular, for the opt-in frame subjects were told the deceased either: "selected 'I want to register as an organ and tissue donor'" or "did not select 'I want to register as an organ and tissue donor'". For the active choice frame subjects were told the deceased either: "selected 'I want to register as an organ and tissue donor'" or "selected 'I do not want to register as an organ and tissue donor'". The subject was then asked whether the next-of-kin should donate the organs of the deceased²² and how confident they were in that answer.²³ The subjects were asked to make decisions about all four scenarios, presented one-at-a-time in one of four random orders.²⁴

²⁰ Mechanical Turk is an online marketplace run by Amazon.com and has become a common platform for survey experiments <https://www.mturk.com/mturk/welcome> (Buhrmester, Kwang and Gosling 2011). Subjects were told the survey would take 5 to 10 minutes (on average it was completed in just over 5 minutes). Subjects were paid \$0.50 for completing the survey, relatively large compensation on Mechanical Turk.

²¹ Instructions read: "An individual has died. The individual's next of kin has been asked whether or not they would like to donate the organs of the deceased. The only information that the next of kin has about the wishes of the deceased is that the deceased saw this screen..." and subjects were shown one of two organ donation decision screens from the main experiment (either Figure 4A or Figure 4B) along with what the hypothetical deceased had chosen in that scenario.

²² We take whether subjects thought next of kin should donate the organs of the deceased as an indicator for what actual next of kin would do. We considered a number of other question wordings and deemed this one to be the most reasonable to implement. Asking what a subject would do if they were the next of kin risked introducing noise based on a subject's own attitudes and we worried the question might have negative psychological consequences associated with thinking vividly about a loved one's death. Asking what a hypothetical next of kin *would* do seemed unreasonable without providing information about whether the next of kin was an organ donor himself, and we did not want to introduce that dimension of complexity to the survey.

²³ Options were: "very confident," "confident," "somewhat confident," and "not confident."

²⁴ The subject's first scenario was randomly chosen to be either: (1) a deceased who joined the registry in an opt-in frame, (2) a deceased who had not joined the registry in an opt-in frame, (3) a deceased who joined the registry in an active choice frame, or (4) a deceased who had not joined

Figure 6, shows subjects' responses from the first scenario they are asked about (i.e. using only the between-subject variation). Subjects are more likely to report that next-of-kin should donate the organs of an unregistered deceased when the deceased simply did not opt in rather than when the deceased explicitly said "no" to donation under an active choice frame. When the deceased was not on the registry because the deceased had not opted in, 38.1% of subjects stated that the next of kin should donate the organs. When the deceased was not on the registry because they indicated they did not want to register under an active choice frame, only 26.7% of subjects thought next of kin should donate. This 11.4 percentage point difference is statistically significant (t-test, 405 observations, $p=0.014$) and represents a 43% increase (on the base of 26.7 percent) in the share of subjects who say the next of kin should donate the organs of the deceased.

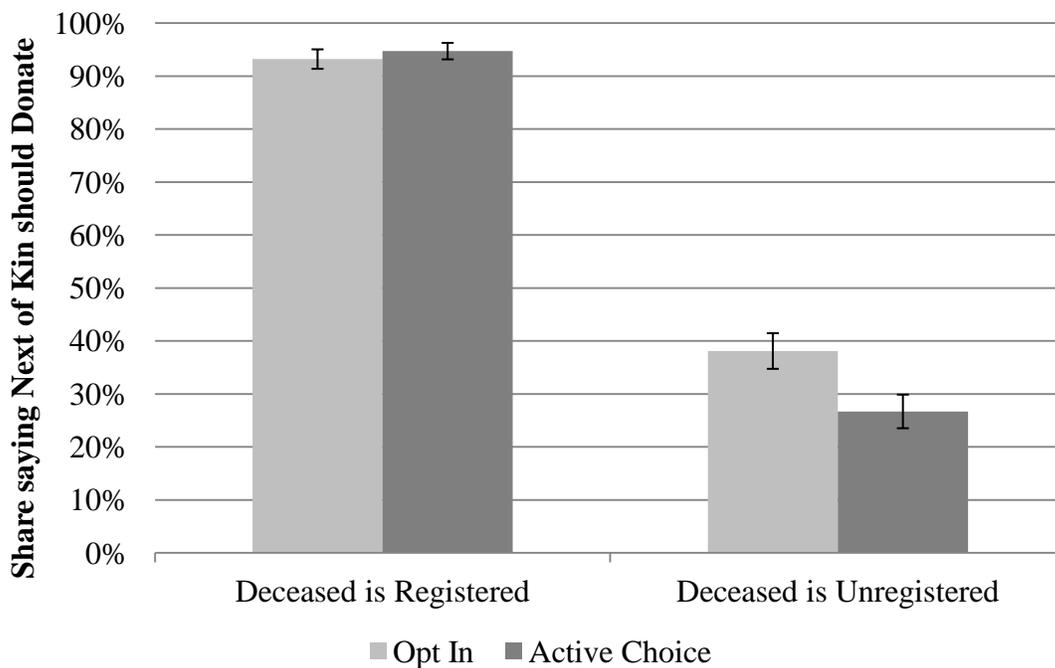


Figure 6. Share of subjects in second experiment saying next of kin should donate organs of the deceased by condition (standard error bars around each mean). Subjects are much more reluctant to donate the organs of an unregistered deceased who explicitly indicated that he did not want to be a donor in an active choice frame than an unregistered deceased who simply did not opt in (26.7% in active choice vs. 38.1% in opt in, $p=0.014$).

the registry in an active choice frame. Subjects then saw the opposite decision by the deceased in the same frame, then saw the first decision by the deceased in the other frame, and finally saw the opposite decision of the deceased in the other frame.

While Figure 6 shows results from the first question subjects are asked, results are the same when we include all four questions that subjects answered and when we include their confidence levels. Table 6 displays regression results on data from this experiment. Regressions (1) and (2) report the results from the first scenario that subjects saw when asked whether the next of kin should donate the organs of the deceased. Regressions (3) and (4) use all four scenarios about which subjects answered and combine the within and between variation, identifying an even stronger impact of the active choice frame on the likelihood of donating the organs of an unregistered deceased.

In these regressions, the excluded group is beliefs about what next of kin should do when the deceased chose to register in the opt-in frame. Consequently, the coefficient *Active Choice Frame* reflects the change in what subjects think the next of kin should do when the deceased registered under an active choice frame rather than an opt-in frame. The coefficient *Not On Registry* reflects the change when the deceased chose not register rather than register under the opt-in frame. The interaction *Active Choice Frame*Not On Registry* is the differential effect of going from opt-in to active choice for those who are unregistered rather than registered. The regressions show that people respond differentially to the active choice frame when the deceased was not on the registry. In particular, they are significantly less likely to think next of kin should donate the organs of the deceased when the deceased chose not to register under the active choice frame than when they chose not to register under the opt-in frame. Results are consistent for the confidence measure with all the same differences statistically significant ($p < 0.01$).²⁵

Interestingly, these regressions also demonstrate that subjects are somewhat more likely to think the next of kin should donate the organs of a deceased who registered under an active choice frame than who registered under an opt-in frame (the difference is significant when considering all four scenarios in regressions (3) and (4). However, this difference is small relative the decrease in likelihood of registration among non-registered donors (the effect of the active choice frame is 3% for registered donors and -14.3% for those who are not registered). In addition, there is reason to be a bit less

²⁵ Data that includes the confidence measures along with the binary choices is presented in Table A3 in the Appendix.

concerned about how next of kin respond when the deceased is registered, since due to improvements in registration technology, a deceased being registered is increasingly likely to proceed with donation.

Table 6: Next-of-Kin Decisions By Condition

	Should Next of Kin Donate The Organs of the Deceased (0 or 1)			
	First Scenario Only		All Four Scenarios	
	(1)	(2)	(3)	(4)
Active Choice Frame	0.016 (0.024)	0.012 (0.023)	0.030 (0.009)***	0.030 (0.009)***
Not On Registry	-0.551 (0.038)***	-0.544 (0.037)***	-0.564 (0.019)***	-0.564 (0.019)***
Active Choice Frame* Not On Registry	-0.130 (0.052)**	-0.126 (0.051)**	-0.173 (0.016)***	-0.173 (0.016)***
Registered		0.158 (0.027)***		0.116 (0.016)***
Constant	0.932 (0.018)***	0.834 (0.028)***	0.913 (0.015)***	0.838 (0.020)***
Order Dummies			Yes	Yes
Observations	803	803	3212	3212
Clusters			803	803
R-squared	0.41	0.44	0.36	0.47

Active Choice Frame and *Not on Registry* are indicators of the scenario the subject was being asked about. *Registered* is a dummy variable indicating whether a subject reported in the survey that followed these scenarios that he was a registered donor on his state registry. OLS specifications with robust standard errors are in parentheses, clustered at the subject level in regressions (3) and (4): * significant at 10%; ** significant at 5%, *** significant at 1%.

In particular, since the Uniform Anatomical Gift Act of 1968 (UAGA), joining a state registry has been a legally binding decision to be an organ donor after death, but next of kin were often consulted about donation anyway, given that the deceased may have joined the state registry years ago and so their presence on the registry might not reflect the deceased's current intent to donate (Glazier et al. 2009).²⁶ Recently, however, computer-based registries have provided a way for potential donors to easily change their organ donor status if they change their mind, which means being on the registry can be more easily interpreted as current intent to donate. Consequently, doctors can now

²⁶ Next of kin were historically asked since: (1) the driver's license of a potential donor was often not available at the time of death and (2) a registered donor might have changed his or her mind about donation after having been issued the driver's license and these wishes might have been communicated to the next of kin (Glazier 2006).

sometimes recover organs from registered donors (but not from unregistered potential donors) without receiving explicit permission from the next of kin (Glazier 2006).

Our results suggest that the way in which individuals are asked to become donors can affect beliefs about what next of kin should do when asked about donating the organs of a deceased. In particular, subjects thought it was less appropriate to donate the organs of someone who had chosen not to be a donor under an active choice frame than someone who had failed to opt-in to be a donor under an opt-in frame.

We must be careful when we extrapolate experimental survey results to questions of policy. That said, while we can change the way an individual is asked to register as a donor in the lab, it is impossible to experiment on how next of kin respond to the way a deceased was asked to register as a donor without a major experimental manipulation of state policy like the one in California followed by a long wait for people to die and next of kin to make organ donation decisions. Consequently we think it is reasonable to start the process with experimental survey data that can provide guidance about how individuals might respond to state policies and what policy might be best.²⁷

²⁷ Looking at empirical results of policy changes, like we did for registration rates in California in Section II, will also be a fruitful avenue to pursue. With more data, empirical studies may be possible in Illinois, New York, and in Great Britain, all of which have changed from opt-in to active choice when people register for driver's licenses (in 2006 in Illinois, see Thaler 2009; in August 2011 in Great Britain, see Wellesley 2011; and in 2013 in New York, see <http://newyork.cbslocal.com/2012/10/04/gov-cuomo-signs-laurens-law-in-effort-to-boost-number-of-organ-donors/>). To study next-of-kin decisions, in addition to waiting a while before newly registered donors die and either do or do not become actual deceased donors, other changes in donor registration will also have to be accounted for. For example, in Britain, those with public insurance are also now given multiple opportunities to register when they interact with the National Health Service.

V. Discussion

Two sets of results inform the title of our paper: “Don’t Take ‘No’ For An Answer.” The first is that giving individuals the opportunity to join the organ and tissue donor registry in Massachusetts generates a significant number of new registrants, even though these Massachusetts ID holders have been previously asked to register as an organ donor and have declined. Put simply, asking again for organ donation generates more donors — we shouldn’t assume that “no” is a final answer (i.e. don’t take no for an answer). The second set of results is that the active choice frame that asks for a yes or a no option does not increase the number of registered donors above an opt-in frame either in the policy change in California or in our experiment (active choice may even decrease rates of organ donor registration as compared to opt in) and we identify a potential additional risk of asking subjects to register under active choice, since people become less supportive of next of kin donating the organs of an unregistered deceased when that deceased declined to register under an active choice frame. Put simply, our results suggest that active choice may not improve outcomes over opt-in — when asking people to register we might prefer an opt-in frame that does not offer a “no” option as an answer (i.e. don’t take *no* for an answer).

On the first “don’t take no for an answer,” we saw a large increase in the number of donors who registered as a result of having the opportunity to change their organ and donor registration status as part of our study, even though they had declined to register previously. We are not worried about an experimenter demand effect making our results difficult to generalize, since we are investigating a decision in which there is usually scrutiny and pressure when the request is made. Our result suggests that policy makers who want to increase the number of organ donors may find it useful to ask for organ donation regularly in a variety of contexts (e.g. on income tax documents as has been proposed in some states).²⁸ In other contexts, individuals are asked repeatedly to make

²⁸ While it is illegal to pay people to register as donors it is legal to pay people to participate in a research study where they make an organ donation decision. Consequently, one might wonder about the cost effectiveness of generating organ donors by inviting people to participate in similar research studies. We paid 368 subjects \$15 for taking our survey and the study generated a net increase of 59 donors (61 individuals joined the registry while 2 individuals removed themselves

the same prosocial decision. For example, charities often ask donors repeatedly to give during an annual fundraising campaign,²⁹ as do political campaigns during a campaign cycle.

There are a number of reasons why asking repeatedly may increase the probability that an agent says yes to a charitable request. First, individuals might not pay attention to any particular request, where failure to respond to a request keeps the individual in the default state of not being a donor. In that case, a subsequent request might be addressed while a first was ignored. Second, individuals might respond differently to a repeated request if the number of requests is a signal of the value of the action being requested (e.g. charities might signal the value or need for funds with multiple requests; similarly, asking repeatedly for organ donor registration might signal the need for registered organ donors). Third, individuals might feel guilty from saying no to each request and saying yes might alleviate current and future guilt associated with the related requests. Fourth, individuals might receive new information between times they are asked the request and that information might change their mind.

In addition, we observe that subjects who are registered donors are unlikely to remove themselves from the registry when given the opportunity to do so (only 1.3% of registered donors in our study remove themselves from the registry even when there are no transaction costs of doing so). This suggests that once an individual is on the registry, it may not be necessary to repeatedly ask him to reaffirm his desire to be on the registry each time they renew their state license, permit or ID as is required in some states,

from the registry). Dividing the total cost of \$5,520 in subject payments by 59 suggests that our experiment generated new donors at a cost of \$93.56 per donor. Note that this calculation includes subject payments only and not other resources associated with the study, including experimenter time and lab resources. However, it is possible that subjects could be induced to participate in less extensive studies, for example with a shorter survey, for a lower subject payment cost. In addition, such studies could also take place outside of the laboratory, and our results may be indicative of those that would be obtained if it were simply made easy for people to register as donors in other venues (e.g. when donating blood, when visiting the doctor, or when paying taxes).

²⁹ Charities generally ask repeatedly for donations regardless of whether individuals have donated previously, although some charities promise not to send future appeals in a given year (or for a given campaign) to an individual who donates.

including Massachusetts,³⁰ but which could lead to accidental attrition off the registry if an individual does not pay attention to the question each time he or she is asked. Other states, such as Ohio,³¹ do not ask current donors to reaffirm. These results are additionally relevant for policy in that they suggest that an individual being listed on a state registry — or having a heart or an organ donor signature on his or her driver’s license — reliably reflects current intent to be a donor. This supports the policy established by the Anatomical Gift Act that these intention measures can be used to reflect the last wishes of a deceased donor (Glazier et al. 2009).

On the second “don’t take no for an answer,” we find that asking subjects to register in an active choice frame does not increase registrations over an opt-in frame either in the empirical analysis of the change in question in California or in our controlled laboratory experiment in Massachusetts. This suggests that over 80% of states may be requesting organ donation in a suboptimal way. It is worth discussing this result further since it contrasts with previous results on organ donation that suggest active choice is preferable to opt-in (see Johnson and Goldstein 2003, 2004; Thaler and Sunstein 2008; and Thaler 2009).

First, our results deal with actual donor registration decisions, which may explain some of the difference from previous papers that rely on hypothetical decisions (Johnson and Goldstein 2003, 2004). Second, unlike the hypothetical scenarios of Johnson and Goldstein (2003, 2004), which varied the state’s default for organ donation, we do not change the default for organ donation in Massachusetts in our laboratory experiment. We just vary how individuals are asked to register. The policy change in California is a little less clear-cut since one could interpret the change in the frame of the organ donation question a change in the default, and yet we still find a decrease in registration rates as a

³⁰ From the Massachusetts RMV website: “If the customer is currently registered as a donor, he/she still needs to check “yes” on the question “Would you like to register to be, or continue to be, an organ and tissue donor?” on the permit/license/ID card application in order to remain in the Massachusetts Donor Registry.” (<https://secure.rmv.state.ma.us/Policybrowserpublic/PolicyBrowser.aspx> under “License Policy > Organ and Tissue Donor Policy > New Donors” (7/23/2012)

³¹ The policy in Ohio is described here <http://www.dispatch.com/content/stories/local/2013/10/09/bmv-wont-offer-to-take-you-off-organ-donor-list.html> (7/3/2014)

result of adopting active choice. In a strict sense, however, the default of being a non-donor was not changed in California either, since an individual who never went to the DMV for a state ID would by default not be a registered donor.

Given that our results suggest a negative effect of active choice on registration rates (i.e. active choice is far from increasing registration rates), it is particularly worrisome that subjects in our second experiment also report that next of kin should be less willing to donate the organs of a non-registered deceased who failed to register under active choice. These results suggest that active choice fails to increase registration rates over opt-in and then potentially makes it more difficult to convert non-donors through the decisions of the next of kin.

It is worth emphasizing that in both the active choice and opt-in frames that we study, participants chose to register despite having previously declined to do so. So giving individuals repeated opportunities to easily change their registration status and become registered donors is helpful for both ways of framing the question.

Finally, it is also worth highlighting that giving information about the benefits of donation, namely providing a list of organs that might be donated, increases the likelihood of registration, which is promising for policy interventions that aim to educate potential donors of the value of organ donation (see a growing literature on messaging to increase organ donor registrations including Quinn et al. 2006 and Thornton et al. 2012).

In conclusion, we note that the frequency with which we ask individuals to provide public goods can have an impact on contribution decisions. The context of organ donor registration has an interesting added feature in which how we ask an individual to register as a donor can also affect the donation decisions of those who might be asked to donate on their behalf. Both the direct and indirect effects are worthy of consideration and analysis.

VI. References

- Ashlagi, Itai, Duncan. S. Gilchrist, Alvin E. Roth, Michael A. Rees. 2011
“Nonsimultaneous chains and dominos in kidney- paired donation-revisited.” *American Journal of Transplantation* 11(5): 984-994.
- Bergstrom, Theodore C., Rodney J. Garratt, and Damien Sheehan-Connor. 2009. “One Chance in a Million: Altruism and the Bone Marrow Registry.” *American Economic Review* 99 (4): 1309–34.
- Bergstrom, Ted C., Rodney J. Garratt, and Damien Sheehan-Connor. 2011. “Stem Cell Donor Matching for Patients of Mixed Race.” <http://escholarship.org/uc/item/22w466q9> (accessed June 1, 2012).
- Buhrmester, Michael, Tracy Kwang, and Samuel D. Gosling. 2011. “Amazon's Mechanical Turk A New Source of Inexpensive, Yet High-Quality, Data?” *Perspectives on Psychological Science*. 6 (1): 3-5.
- Donate Life America. 2011. *National Donor Designation Report Card 2011*. Richmond, VA: Donate Life America.
- Donate Life America. 2012. *National Donor Designation Report Card 2012*. Richmond, VA: Donate Life America.
- Donate Life America. 2013. *National Donor Designation Report Card 2013*. Richmond, VA: Donate Life America.
- Fève, Frédérique, Anne Cambon-Thomsen, Jean-François Eliaou, Pierre-Antoine Gourraud, Colette Raffoux, and Jean-Pierre Florens. 2007. “Évaluation Économique de l’Organisation d’un Registre de Donneurs de Cellules Souches Hématopoïétiques.” *Revue d’Épidémiologie et de Santé Publique* 55 (4): 275–84.
- Fève, Frédérique, and Jean-Pierre Florens. 2005. “Matching Models and Optimal Registry for Voluntary Organ Donation Registries.” Unpublished.
- Glazier, Alexandra K. 2006. “Donor Rights and Registries.” *Journal of Medical Ethics* 13 (1): 4.
- Glazier, Alexandra K., Alessandro Nanni Costa, J. M. Simón i Castellví, Antonio G. Spagnolo, Nunziata Comoretto, Jean Laffitte, Håkan Gäbel, et al. 2009. “A Colloquium on the Congress ‘A Gift for Life. Considerations on Organ Donation.’” *Transplantation* 88 (7S): S108–58.
- Health Resources and Services Administration. 2011. “2011 Annual Data Report” (available at http://srtr.transplant.hrsa.gov/annual_reports/2011/default.aspx)

- Johnson, Eric J., and Daniel G. Goldstein. 2003. "Do Defaults Save Lives?" *Science* 302 (5649): 1338–39.
- Johnson, Eric J., and Daniel G. Goldstein. 2004. "Defaults and Donation Decisions." *Transplantation* 78 (12): 1713–16.
- Kessler, Judd B., and Alvin E. Roth. 2012. "Organ Allocation Policy and the Decision to Donate." *American Economic Review* 102 (5): 2018–47.
- Kessler, Judd B., and Alvin E. Roth. 2014a. "Loopholes undermine donation: An experiment motivated by an organ donation priority loophole in Israel." *Journal of Public Economics* 114: 19–28.
- Kessler, Judd B., and Alvin E. Roth. 2014b. "Getting More Organs For Transplantation" *American Economic Review: Papers & Proceedings* 104 (5): 425–430.
- Lacetera, Nicola, and Mario Macis. 2010. "Social Image Concerns and Prosocial Behavior: Field Evidence from a Nonlinear Incentive Scheme." *Journal of Economic Behavior and Organization* 76 (2): 225–37.
- Lacetera, Nicola, and Mario Macis. 2010. "Do all material incentives for prosocial activities backfire? The response to cash and non-cash incentives for blood donations." *Journal of Economic Psychology* 31 (4): 738–748.
- Lacetera, Nicola, Mario Macis, and Robert Slonim. 2012. "Will There Be Blood? Incentives and Displacement Effects in Pro-Social Behavior." *American Economic Journal: Economic Policy* 4 (1): 186–223.
- Lacetera, Nicola, Mario Macis, and Sarah S. Stith. 2012. Removing financing barriers to organ and bone marrow donation: The effect of leave and tax legislation in the U.S. NBER Working Paper, No. 18299.
- Lavee, Jacob, Tamar Ashkenazi, Avi Stoler, J. Cohen, and R. Beyar. 2013. "Preliminary Marked Increase in the National Organ Donation Rate in Israel Following Implementation of a New Organ Transplantation Law." *American Journal of Transplantation* 13: 780-785.
- Levitt, Stephen D. and John A. List. 2007. "What Do Laboratory Experiments Measuring Social Preferences Tell Us About the Real World?" *Journal of Economic Perspectives* 21: 153-174.
- Mellstrom, Carl, and Magnus Johannesson. 2008. "Crowding Out in Blood Donation: Was Titmuss Right?" *Journal of the European Economic Association* 6 (4): 845–63.

- Quinn, Michael T., G. Caleb Alexander, Diane Hollingsworth, Kate Grubbs O'Connor, David Meltzer, Corporate Contributions for Life Consortium. 2006. "Design and evaluation of a workplace intervention to promote organ donation." *Progress in Transplantation* 16 (3): 253-9.
- Rees, Michael A., Jonathan E. Kopke, Ronald P. Pelletier et al. 2009. "A Nonsimultaneous, Extended, Altruistic-Donor Chain." *New England Journal of Medicine* 360 (11): 1096–1101.
- Roth, Alvin E., Tayfun Sönmez, and M. Utku Ünver. 2004. "Kidney Exchange." *Quarterly Journal of Economics* 119 (2): 457–88.
- Roth, Alvin E., Tayfun Sönmez, and M. Utku Ünver. 2005a. "A Kidney Exchange Clearinghouse in New England." *American Economic Review* 95 (2): 376–80.
- Roth, Alvin E., Tayfun Sönmez, and M. Utku Ünver. 2005b. "Pairwise Kidney Exchange." *Journal of Economic Theory* 125 (2): 151–88.
- Roth, Alvin E., Tayfun Sönmez, and M. Utku Ünver. 2007. "Efficient Kidney Exchange: Coincidence of Wants in Markets with Compatibility-Based Preferences." *American Economic Review* 97 (3): 828–51.
- Roth, Alvin E., Tayfun Sönmez, M. Utku Ünver, Francis L. Delmonico, and Susan L. Saidman. 2006. "Utilizing List Exchange and Undirected Good Samaritan Donation through 'Chain' Paired Kidney Exchanges." *American Journal of Transplantation* 6 (11): 2694–2705.
- Saidman, Susan L., Alvin E. Roth, Tayfun Sönmez, M. Utku Ünver, and Francis L. Delmonico. 2006. "Increasing the Opportunity of Live Kidney Donation By Matching for Two- and Three-Way Exchanges." *Transplantation* 81 (5): 773–82.
- Thaler, Richard H. and Cass R. Sunstein. 2003. "Libertarian Paternalism." *The American Economic Review Papers and Proceedings*. 93 (2): 175-179.
- Thaler, Richard H. and Cass R. Sunstein. 2008. *Nudge: Improving Decisions about Health, Wealth, and Happiness*. New Haven, CT: Yale University Press.
- Thaler, Richard H. 2009. "Opting in versus Opting out." *The New York Times*, September 26.
- Thornton, J. Daryl, Marilyn Alejandro-Rodriguez, Janeen B. León, Jeffrey M. Albert, et al. 2012 "Effect of an iPod video intervention on consent to donate organs: a randomized trial." *Annals of Internal Medicine*. 156 (7): 483-90.

Wellesley, Hugo. 2011. “A nudge in the right direction for organ donation—but is it enough?” *BMJ*; 343 doi: <http://dx.doi.org/10.1136/bmj.d5726> (Published 14 September 2011).

News Stories and Blog Posts cited:

<http://marketdesigner.blogspot.com/2010/05/kidney-exchange-time-series.html>

<http://newyork.cbslocal.com/2012/10/04/gov-cuomo-signs-laurens-law-in-effort-to-boost-number-of-organ-donors/>

<http://www.dispatch.com/content/stories/local/2013/10/09/bmv-wont-offer-to-take-you-off-organ-donor-list.html>

Appendix A: Study Recruitment Text on CLER Website

“IN ORDER TO PARTICIPATE IN THIS STUDY YOU MUST HAVE A MASSACHUSETTS DRIVER'S LICENSE, MA PERMIT, OR MA STATE ID AND WILL NEED TO PRESENT IT FOR ENTRY INTO THE STUDY. THOSE WITHOUT A MASSACHUSETTS DRIVER'S LICENSE, MA PERMIT, OR MA STATE ID WILL BE TURNED AWAY. YOU MUST ALSO KNOW THE LAST FOUR DIGITS OF YOUR SOCIAL SECURITY NUMBER.

Study Description: You will log into a state database, make a decision and complete a survey.

Compensation: Participants who arrive on time and are eligible to participate will receive \$15 for completing the study. There is the possibility that some subjects will be turned away from the experiment. Those who are eligible and are turned away will receive a \$10 turn-away fee and will not be required to stay for the study.”

Appendix B: Consent Form

Please consider this information carefully before deciding whether to participate in this research.

Purpose of the research: To understand the decision to register as an organ donor.

What you will do in this research: You will (1) enter information that will be used to log you into a registry of organ and tissue donors in Massachusetts, (2) be provided with information about organ and tissue donation, (3) decide whether or not you would like to register as an organ and tissue donor, and (4) complete a survey.

Time required: Participation will take approximately 45 minutes to complete.

Risks: There are no anticipated risks associated with participating in this study.

Benefits: At the end of the study, we will provide a thorough explanation of the study and of our hypotheses. We will describe the potential implications of the results of the study both if our hypotheses are supported and if they are disconfirmed. If you wish, you can send an email message to Judd Kessler (jkessler@hbs.edu) and we will send you a copy of any manuscripts based on the research (or summaries of our results).

Compensation: You will receive \$15 for participating in this study.

Confidentiality: Your participation in this study will remain confidential, and your identity or personal information will not be stored with your data. Your responses will be assigned a code number, and we will not connecting your name or any of your personal information with this number.

Participation and withdrawal: Your participation in this study is completely voluntary, and you may withdraw at any time without penalty. You will receive payment based on the proportion of the study you completed. You may withdraw by informing the researcher that you no longer wish to participate (no questions will be asked).

To Contact the Researcher: If you have questions about this research, please contact Judd Kessler, Doctoral Candidate, Baker Library 420F, 617-495-8845, jkessler@hbs.edu.

Whom to contact about your rights in this research, for questions, concerns, suggestions, or complaints that are not being addressed by the researcher, or research-related harm: Jane Calhoun, Harvard University Committee on the Use of Human Subjects in Research, 1414 Massachusetts Avenue, Room 234, Cambridge, MA 02138. Phone: 617-495-5459. E-mail: jcalhoun@fas.harvard.edu

Agreement:

The nature and purpose of this research have been sufficiently explained and I agree to participate in this study. I understand that I am free to withdraw at any time without incurring any penalty.

Signature: _____ Date: _____

Name (print): _____

Appendix C: Appendix Tables

Table A1: State Registration Rates from Q4 2010 to Q1 2012

State	Q4 2010	Q1 2011	Q2 2011	Q3 2011	Q4 2011	Q1 2012
Alaska	75.00%	77.00%	77.00%	78.00%	78.00%	79.00%
Arizona	26.34%	20.92%	22.61%	25.03%	23.51%	25.87%
California	26.66%	27.31%	27.43%	26.36%	26.07%	26.41%
Colorado	66.53%	66.74%	67.36%	67.15%	66.99%	65.94%
Connecticut	39.05%	38.53%	39.52%	40.31%	38.64%	39.84%
District of Columbia	33.19%	28.66%	29.51%	40.24%	37.91%	36.46%
Florida	37.53%	37.95%	39.47%	41.81%	40.37%	40.70%
Hawaii	41.70%	41.05%	42.71%	42.94%	43.07%	41.08%
Louisiana	53.72%	54.60%	56.19%	59.49%	55.10%	54.86%
Maryland	46.35%	45.29%	46.79%	45.90%	49.50%	45.60%
Michigan	15.63%	14.91%	19.23%	24.61%	22.94%	42.16%
Minnesota	53.58%	51.73%	52.02%	52.46%	52.80%	53.98%
Missouri	40.25%	39.87%	40.63%	40.89%	41.50%	41.27%
Montana	64.29%	64.06%	65.78%	66.83%	66.74%	65.23%
Nebraska	45.41%	43.37%	43.60%	44.05%	43.89%	45.19%
New Hampshire	55.76%	55.94%	56.43%	53.34%	52.48%	52.53%
New Jersey	30.37%	31.09%	30.39%	31.09%	31.27%	33.34%
New York	12.49%	12.67%	13.14%	14.51%	12.77%	12.29%
North Carolina	52.39%	51.90%	53.20%	53.40%	52.84%	51.26%
Ohio	55.45%	55.93%	57.01%	57.01%	57.51%	56.45%
Pennsylvania	45.31%	45.36%	45.53%	45.59%	45.51%	45.27%
South Carolina	30.83%	26.17%	25.56%	26.41%	29.66%	22.80%
Tennessee	32.68%	32.49%	33.82%	34.28%	33.85%	34.00%
Virginia	26.45%	36.23%	34.55%	35.90%	34.43%	37.01%
Washington	58.11%	58.93%	58.82%	58.46%	58.42%	59.47%
Wisconsin	57.35%	57.10%	57.20%	56.88%	56.60%	58.14%
Wyoming	59.31%	59.46%	59.37%	59.11%	58.54%	58.81%

Table A1 shows quarterly registration rates for the three quarters before and three quarters after the policy change in CA for all the states that made quarterly registration rate data available to Donate Life California or Donate Life America for the entire sample period.

Table A2: Change from Opt-in to Active Choice: Robustness Checks

	All Available States Q1 2011 to Q4 2012		All Available States Q2 2011 to Q3 2011		Low Rate States Q4 2010 to Q1 2012	
	(1)	(2)	(3)	(4)	(5)	(6)
Post*	-0.024	-0.023	-0.020	-0.016	-0.033	-0.032
California	(0.005)***	(0.004)***	(0.007)***	(0.006)**	(0.012)**	(0.011)**
Post	0.013	0.012	0.009	0.05	0.025	0.023
	(0.005)**	(0.004)***	(0.007)	(0.006)	(0.012)*	(0.011)*
Constant	0.443	0.382	0.452	0.383	0.312	0.282
	(0.003)***	(0.002)***	(0.003)***	(0.003)***	(0.006)***	(0.005)***
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	112	44,352,681	64	25,807,549	84	41,062,194
Clusters	28	28	32	32	14	14
R-squared	0.99	0.99	0.99	0.99	0.90	0.93

This table shows additional specifications for estimating the differences-in-differences coefficient *Post*California*, representing the effect on registration rates of changing the organ donor registration question from an opt-in framed question to an active choice framed question. Regressions (1), (3) and (5) use state-quarters as observations while regressions (2), (4) and (6) use binary choices of each individual who visits the DMVs as the unit of observation. All include state fixed effects. Robust standard errors clustered by state are in parentheses: * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A2 shows robustness checks for the empirical analysis of the policy change in California in which the organ donation question went from being asked as an opt-in framed question to an active choice framed question. In regressions (1) and (2), we restrict attention to data from 2011 only (i.e. the two quarters before and two quarters after the policy change). This allows us to add data from one additional state (Idaho) that had data from those four quarters but not all six we used in the original analysis. We see results are nearly identical to the main text where the estimated effect of changing the framing of the organ donation question is around 2.3 to 2.4 percentage points. In regressions (3) and (4) we restrict attention to data from the quarter before and the quarter after the policy change only, which allows us to add data from 4 additional states that had data from these two quarters. The coefficient on *Post*California* is still negative and significant. Finally, in regressions (5) and (6) we return to looking at 6 quarters of data, but restrict attention to states that had low (i.e. similar to CA) registration rates in the pre-period. In particular, we use as a control group for CA the 13 jurisdictions (12 states and DC) that had registration rates of below 44% in Q2 2011. The coefficient on *Post*California* gets larger in magnitude, suggesting a decrease in registration rates of 3.2 to 3.3 percentage points.

Table A3: Decisions and Confidence By Condition

Deceased was:	Question was:	Percent who said next of kin should donate		Average confidence: from confident should donate (3.5) to confident should not donate (-3.5)	
		<i>First Choice</i>	<i>All Four Scenarios</i>	<i>First Choice</i>	<i>All Four Scenarios</i>
Registered	Opt-in	93.2%	92.0%	2.65	2.62
	Active Choice	94.7%	94.9%	2.71	2.83
	<i>Difference (Opt-PC)</i>	<i>-1.6%</i>	<i>-3.0%**</i>	<i>-0.064</i>	<i>-0.209***</i>
Unregistered	Opt-in	38.1%	35.5%	-0.552	-0.728
	Active Choice	26.7%	21.2%	-1.31	-1.69
	<i>Difference (Opt-PC)</i>	<i>11.4%**</i>	<i>14.3%***</i>	<i>0.753***</i>	<i>0.966***</i>

Table A2 shows the percentage of subjects who said the next of kin should donate the organs of the deceased as well as their confidence on a 7-point scale (with mean 0) constructed from the confidence answers. The scale ranges from “very confident” that the next of kin should donate equal to 3.5, and “very confident” the next of kin should not donate equal to -3.5, with confidence levels spaced 1 unit each, and with a 1 unit jump from “not confident” that the next of kin should donate to “not confident” the next of kin should not donate, from 0.5 to -0.5. The “First Scenario Only” columns focus on the first scenario the subject saw (restricting the analysis to be between subjects) while the “All Four Scenarios” columns look at all the data (conducting analysis both within and between subjects). The stars indicate that the difference in responses between Opt-in and Active Choice are significantly different from 0 in a t-test: * significant at 10%, ** significant at 5%, *** significant at 1%.