

# ' R Q ¶ W ¶ D R H An Answer: An experiment with actual organ donor registrations

By Judd B. Kessler and Alvin E. Roth<sup>A</sup>

This Draft: February 21, 2013

## ABSTRACT

We experimentally investigate how individuals respond to an opportunity to change their actual Massachusetts organ donor registration status. Many unregistered individuals join the registry (29%) while almost all registered individuals remain (99%). How individuals are asked impacts the decision. Contrary to a popular hypothesis, a 3 P D Q G D W H G F K R L F H ' frame that forces individuals to choose either yes or no does not increase registration U D W H V R Y L H U ' D Q D P S W Q Z K L F K S H R S O H F K H F N D E R [ W R U not to register. A second experiment suggests 3 P D Q G D W H G F K R L F H ' K D W 3 P D Q G D W H G F K W D O V R

I.

One potential strategy to encourage organ do



0

completing a survey<sup>12</sup>. Subjects were not informed in advance however, that organ donation was the subject being studied.

Once they arrived at the laboratory, each subject was seated at an isolated computer terminal and provided with a consent form. The consent form indicated what subjects would do in the research study. To ensure subjects understood, the experimenter read one paragraph from the consent form aloud to all subjects. This paragraph read:

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 (See Appendix B for the full consent form.)

After signing the consent forms, subjects initiated the study by logging into the Massachusetts Organ and Tissue Donor Registry maintained by the (9)(a)4(st)83(mnut fr)

p ° H UH • 0 P € Ç W H Q u 0 Ç Q " R U A u Ç Q Ç Q h • p • G H • p 0 p ° H p H ³ p x À Q R U @ H U p R

Figure 1: Login Screens for the Experiment (Figure 1A) and the Massachusetts Registry of Motor Vehicles (Figure 1B)

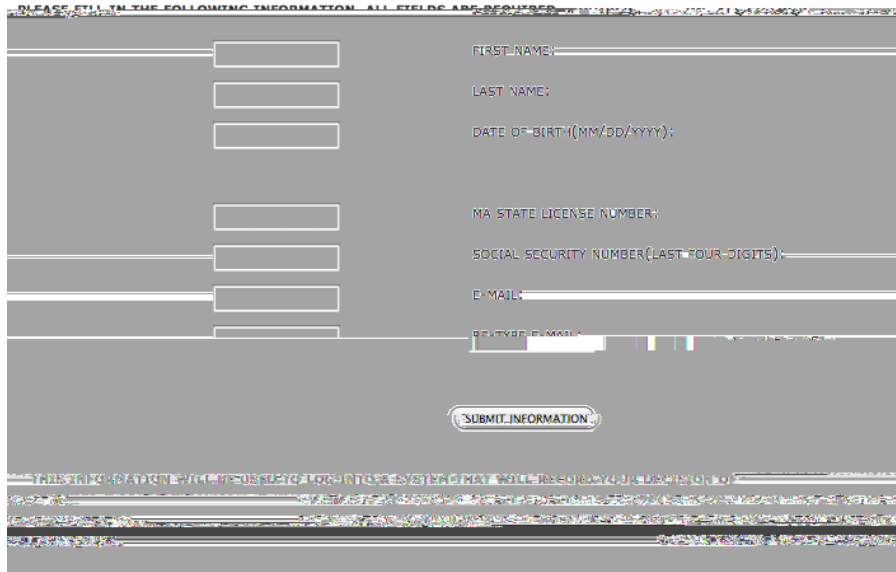


Figure 1A: Screenshot of login page in Experiment

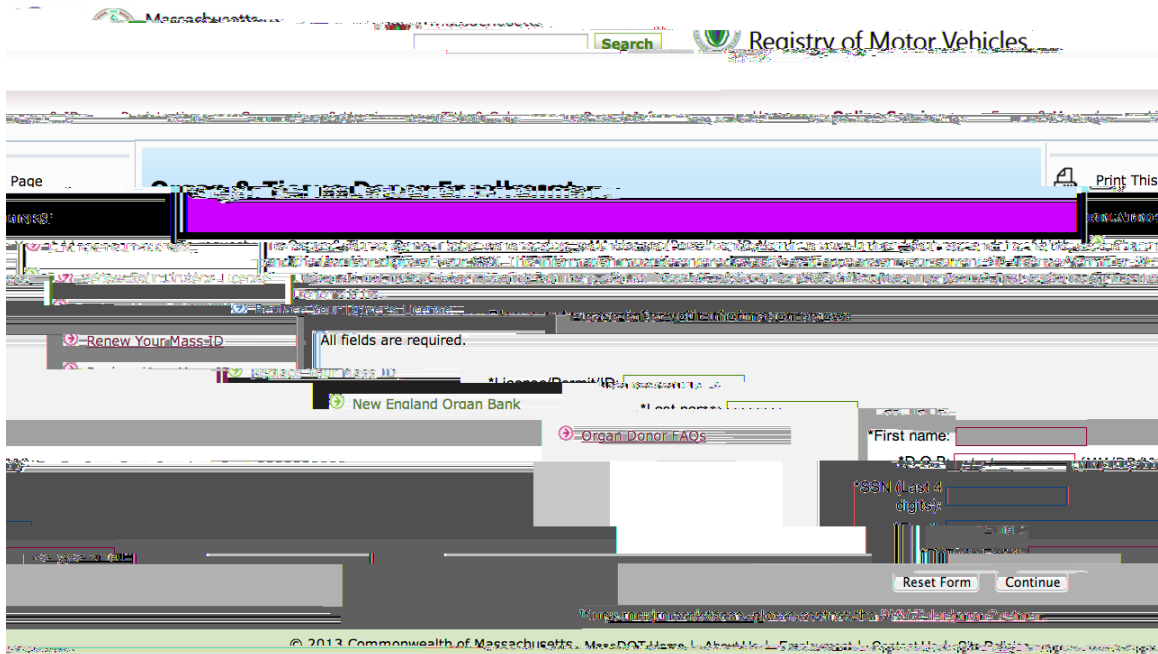


Figure 1B: Screenshot of login page on the Massachusetts Registry of Motor Vehicles Webpage that subjects did not see due to the experimental interface

Since the software interacted with the Massachusetts DOT database, we were able to determine the status of each subject's license based on that status. In particular, our experimental software gave each current status

the opportunity to join the organ and tissue donor registry and each current donor the opportunity to remove their name from the registry. The ability to change registration status at the start of the experiment is valuable because it allows us to investigate changes in registration status in both directions (from non-donor to donor and vice versa) and it allows us to investigate our experimental manipulations in both initial donors and non-donors.

After logging into the registry, all subjects<sup>2</sup>

heart (for valves), heart with connective tissue, kidneys, liver or iliac vessels, lungs,

preceded by a bullet. See Figure 3 for screenshots of the control conditions (3A and 3B) as well as the list condition (3C and 3D).<sup>15</sup>

After subjects made their organ donor registration decision, they completed a 40 question survey.

and from Massachusetts Registry of Motor Vehicles (Figure 3E)

Figure 3A 6FUHHQVKRWRI ([SHULPHQ, Control JMUWHDWPHQW S D J

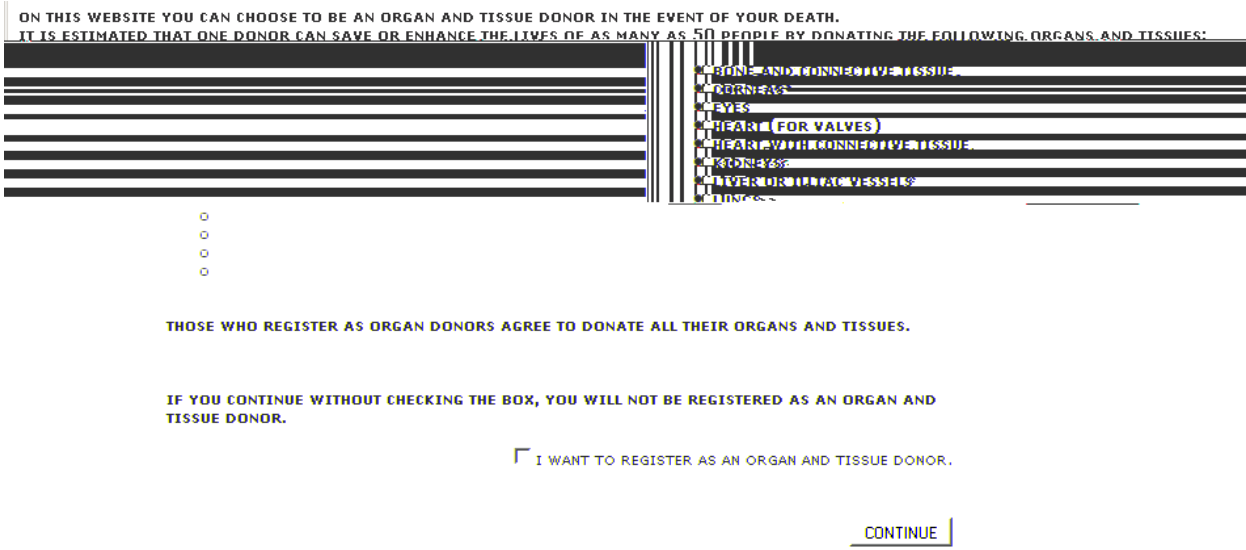


Figure 3& 6 FUHHQVKRW RI ([SHULPHQQ UHLJLW UUDWLRQ SD

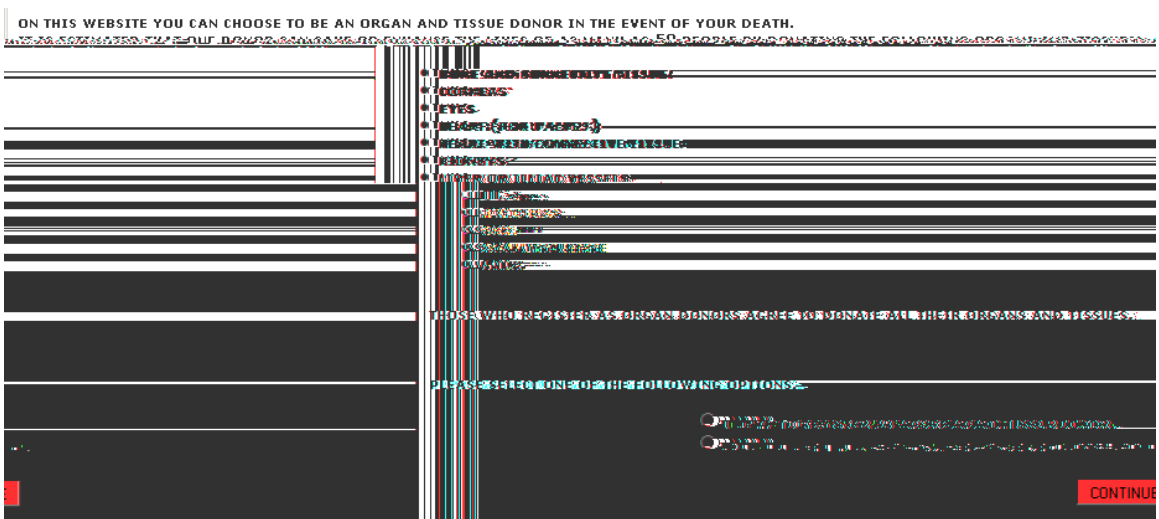


Figure 3' 6 FUHHQVKRW RI ([SHULPHQ Wd UHLJLW WW D WID W@ HSDW

Figure 3E: Screenshot of Massachusetts Registry of Motor Vehicles registration page that subject3hTCteeeeeeee

III.

### III.1 Asking again for organ donation

Table 1 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 registrars (ted )] TJ ET BT 1 0 044 299.1

t(whex3( )4( pe)imen(or) indi)s sin tisiea4(ol(l)20(y)20( )) TJ ET BT 1 0 0 3 691028 522.9 Tm 4(is

Result 2: People who are given the opportunity to change their organ donor registration status overwhelmingly add themselves to the registry and do not remove themselves from the registry.

The increase in the number of donors highlighted in Result 1 was driven by both: (1) previous non-donors adding themselves to the registry and (2) previous donors keeping themselves in the registry. When given the opportunity to change their organ and tissue donor registration status, current donors were very unlikely to remove themselves from the registry (the 1.3% probability of removal from the registry is not statistically significantly different from zero; two-sided t-test,  $p > 0.1$ ). Previous non-donors, however, were quite likely to add themselves to the organ and tissue donor registry (the 28.8% probability of joining the registry is statistically and economically significant). These results suggest that the intention to register as a donor appears to be stable, while the intention not to register appears to be less stable.

These results are 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 is a good proxy for current intent to be a donor. This is an important fact for the Anatomical Gift Act, which says that these intention measures can be used to reflect the last wishes of a deceased donor (Glazier et al. 2009).

Furthermore, Glazier (2006) has suggested that an online registry from which one can register or update one's registration at any time makes it easier to donate. One might

Table 2: Demographics of Subject Population (n=368) (p=0.037\*\*)

	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					

Finally, the results on Table 2 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 2 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.

### III.2 How to ask for organ donation

The experimental variation in how BT 1 0 0 1 213.29 566.2 II.2 witpein su1 1o chTm [ BT 1



Result 4: Including a list of organs that might be donated by a deceased donor makes subjects more likely to register

Results from Table 4 show that framing the decision to register as a mandated organ law issue (e.g., "Organ Law Issue") is directionally less likely to join the registry (between 5 and 10 percentage points depending on the specification). The opt-in frame where a subject simply checks the box

## IV.1 Design

The survey was conducted on the Mechanical Turk platform on January 8, 2013. 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, a relatively large compensation for a 15 minute survey on Mechanical Turk.

In the survey, subjects were asked about what a hypothetical next of kin should do with regards to donating the organs of a recently deceased relative. The subjects were asked to make decisions about four scenarios, presented one at a time in one of four random orders. All scenarios began in the same way. Subjects 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..."

Subjects were then

with the same decision frame but the opposite decision by the deceased (e.g. if they first answered T X H V W L R Q V D E R X W D G H F H D V H G Z K R <sup>3</sup> V H O H F W H G μ , W L V V X H G R O P T I N U D Q H W W K H \ Z H U H W K H Q D V N H G D E R X W D V H O H F W μ , Z D Q W W R U H J L V W H U D o p i n D r a m e P U J D Q D Q G W L V V X

After answering both questions for one frame, they answered the questions for two more scenarios with decisions being made by next of kin under the other frame. For V L P S O L F L W \ W K H R U G H U R I W K H G H F H D V H G \ V G H F L V L R Q kept the same for each frame (e.g. if subjects had been asked about a deceased who joined the registry in the first scenario, they were asked about a deceased who joined the registry in the third scenario). This generated four orders of scenarios. Subjects were randomly assigned to one of these four orders.

7 R V X P P D U L ] H first scenario was mandated choice frame, chosen to be either: (1) a deceased who joined the registry in opt-in frame, (2) a deceased who had not joined the registry in opt-in frame, (3) a deceased who joined the registry in mandated choice frame, or (4) a deceased who had not joined the registry in mandated 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 the opposite decision of the deceased in the other frame.

## IV.2 Results

The design of the experiment allows for both a between-subject analysis of the next-of-kin's responses (comparing answers from the first scenario subjects saw) and a within-subject analysis (comparing how the same subject responded to the deceased making the decision to join or not join <sup>2</sup> the registry under different frames). We discuss the between-subject results first.

Result 5: Subjects think the next of kin should donate organs of an unregistered deceased more often when the deceased did not opt-in than when the deceased declined to register under mandated choice.

Table 5 reports the percent 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 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

<sup>25</sup> 7 K H V F D O H U D Q J H V I U R P next of kin should donate equal to 3.5, D W W K H D Q G <sup>3</sup> Y H U \ F R Q I L G H Q W \ W K H Q H [ W 3.5, with confidence 3 X O G Q R W G O H Y H O V V S D F H G X Q L W H D F K D Q G Z L W K D X Q L W M X P S V K R X O G G R Q D W H W R e p o r t s h o u l d d o n a t e o r g a n s 0.5-5.5 Q

indicated they did not want to register under a mandated choice frame, only 26.7% of subjects thought next of kin should donate. This 11.4 percentage point difference is statistically significant (t-test, 803 observations,  $p < 0.05$ ) and represents a 43% increase (on the base of 26.7 percent) the number of subjects who say the next of kin should donate the organs of the deceased. Subjects are much more hesitant about donating the organs of a deceased who indicated that they did not want to be a donor in a mandated choice frame than a deceased who simply did not choose to become a donor.

Table 5:



deceased was asked to register as a donor without a major experimental manipulation of state policy (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 surveys that can provide guidance about how individuals might respond to state policies and what policy might be best<sup>27</sup>

V.



actual donor registration decisions which may explain some of the differences from previous papers that rely on hypothetical decisions. Second, we do not vary the default for organ donation in Massachusetts (as is varied in the hypotheticals of Johnson and Goldstein 2003, 2004). We just vary how individuals are asked to register. Given that our experiment does not find a benefit of mandated choice, registration rates that is particularly worrisome that subjects believe

## VI. References

Ashlagi Itai, Duncan S. Gilchrist, Alvin E. Roth, Michael A. Rees. 2011

<sup>3</sup> 1 R Q V L P X O W D Q H R X V F K D L - P a i r e d D o n a t i o n B e h a v i o r W i t h M e d i a  
*Journal of Transplantation* 11(5): 984-994.

Bergstrom, Theodore C., Rodney J. Garratt, and Damien Sheehan. 2009

& K D Q F H L Q D 0 L O O L R Q \$ O W U X L V P a i r e d D o n a t i o n B e h a v i o r  
*Review* 99(4): 1309-1314.

Bergstrom, Theodore C., Rodney J. Garratt, and Damien Sheehan. 2012

' R Q R U 0 D W F K L Q J I R U 3 D W L H Q W V R I 0 L [ H G 5 D F H ' K W W S  
(accessed June 1, 2012)

% X K U P H V W H U 0 L F K D H O 7 U D F \ . Z D Q J D Q G 6 D P X H O ' \* R V

Mechanical Turk A New Source of Inexpensive, Yet High-Quality Data  
*on Psychological Science*. 6 (1): 35.

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.

Fève, Frédérique, Anne Cambou, Thomsen, Jean-François Eliaou, Pierre-Antoine

Gourraud, Colette Raffoux, and Jean-Louis HUUH ) O R U H Q V <sup>3</sup> e Y D O X D W L R Q

O 1 2 U J D Q L Q D S W L R Q W G U I X G H ' R Q Q H X U V G H & H O R U O H V 6 R X F K  
55(4): 275-284.

Fève, Frédérique, and Jean-Louis HUUH ) O R U H Q V <sup>3</sup> 0 D W F K L Q J 0 R G H O V

5 H J L V W U \ I R U 9 R O X Q W D U \ 2 U n p a i r e d D o n a t i o n B e h a v i o r 5 H J L V W U L H V

\* O D ] L H U \$ O H [ D Q G U D . <sup>3</sup> ' R Q R U B u c h a n o f M e d i a E t h i c s 1 3 5 H J L V W U

(1): 4.

Glazier, Alexandra K., Alessandro Nanni Costa, J. M. Simón i Castellví, Antonio G.

Spagnolo, Nunziata Comoretto, Jean Laffitte, Håkan Gåbe, et al. <sup>3</sup> \$ & R O O R T X L X P

R Q W K H & R Q J U H V V μ \$ \* L I W I R U / L I H & T r a n s p l a n t a t i o n 5 H J L V W U L H V  
88(7S): S108-118.

+ H D O W K 5 H V R X U F H V D Q G 6 H U Y L F H V \$ G P L Q L V W U D W L R Q

(available at [http://srtr.transplant.hrsa.gov/annual\\_reports/2011/default.aspx](http://srtr.transplant.hrsa.gov/annual_reports/2011/default.aspx))

- R K Q V R Q ( U L F - D Q G ' D Q L H O \* \* R O G V W H L Q 3 0 2 <sup>3</sup> ' R ' H I

(5649): 1338-1349.

- RKQVRQ (ULF - DQG 'DQLHO \* \*ROGVWHLQ 3'HIDX  
*Transplantation* 78(12): 1713-16.

Kessler, Judd B., and Alvin E. Roth. 2012 3 2 UJDQ \$ OORFDWLRQ 3 ROLF\ DQG  
' R Q D *American Economic Review* 102 (5): 2018-47.

. HVVOHU - XGG % D Q G O G G e n D o n a t i o n L e v e l s a n d t h e  
Deterioration of Warm Glow Giving. Working Paper

Lacetera, Nicola, and Mario Macis. 2010 3 6 RFLDO , P D J H & R Q F H U Q V D Q G 3 U I  
% H K D Y L R U ) L H O G ( Y L G H Q F H I U R P J o u r n a l o f E c o n o m i c  
*Behavior and Organization* 76(2): 225-37.

/ D F H W H U D 1 L F R O D D Q G a n d m a t e r i a l i n c e n t i v e s f o r p r o s o c i a l  
activities backfire? The response to cash and food V K L Q F H Q W L Y H V I R U E O R R G  
*Journal of Economic Psychology* 31 (4): 738-748.

/ D F H W H U D 1 L F R O D 0 D U L R 0 D F L V D Q G 5 R E H U W 6 O R Q L P  
Incentives and Displacement Effects in P o r t u g a l  
*Journal: Economic Policy* 4 (1): 186-223.

- / D Y H H 7 \$ V K N H Q D J L \$ 6 W R O H U - & R K H Q D Q G 5 % H  
Increase in the National Organ Donation Rate in Israel Following Implementation of a  
New Organ Transplantation *American Journal of Transplantation*.

0 H O O V W U R P & D U O D Q G 0 D J Q X V - R K D Q Q H V V R Q 3 & U R  
: D V 7 L W P X V *Journal of the European Economic Association* 6 (4): 845-63.

Quinn, Michael T., G. Caleb Alexander, Diane Holmworth, Kate Grubbs O'Connor,  
' D Y L G 0 H O W J H U & R U S R U D W H & R Q W U L E X W L R Q V I R U / L I H &  
H Y D O X D W L R Q R I D Z R U N S O D F H L Q W H P R o g r e s s Q  
*Transplantation* 16 (3): 2539.

Roth, Alvin E., Tayfun Sönmez, and M 8 W N X h Q Y H U 3 . L G Q H \ ( [ F K D Q J H  
*Quarterly Journal of Economics* 119(2): 457-88.

Roth, Alvin E., Tayfun Sönmez, M. Utku Ünver, Francis L. Delmonico, and Susan L. Saidman. 2011. "Nudging Organ Donors." *The American Economic Review* 101(11): 2694-2705.

Saidman, Susan L., Alvin E. Roth, Tayfun Sönmez, M. Utku Ünver, and Francis L. Delmonico. 2011. "Nudging Organ Donors." *Transplantation* 91(5): 773-782.

Thaler, Richard H., and Cass R. Sunstein. 2008. *Nudge: Improving Decisions about Health, Wealth, and Happiness*. Cambridge, MA: Harvard University Press.

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., and Cass R. Sunstein. 2008. *Nudge: Improving Decisions about Health, Wealth, and Happiness*. New York: Free Press.

Thornton, J. Daryl, Marilyn Alejandra Rodriguez, Jane B. León, Jeffrey M. Albert, et al. 2011. "Nudging Organ Donors." *Annals of Internal Medicine* 156(7): 483-490.

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/2010/10/organationlegislationin.html>

<http://newyork.cbslocal.com/2012/10/04/govomesignslaurens-law-in-effort-to-boost-number-of-organdonors/>

## 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

## 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