Deceased Organ Donation and Allocation:
3 Experiments in Market Design

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Deceased organ allocation is in the news

- In Sept. 2012 the NY Times carried two stories
  - Organs aren't used efficiently (and some are wasted)
  - A new (compromise) proposal about how to allocate deceased-donor kidneys has been put out for discussion
- The issue of course is that there aren't enough transplantable donor organs.
- There are lots of interesting and important questions about how to most efficiently allocate the scarce supply (see e.g. Zenios et al.)
- But organ allocation has an unusual aspect: how organs are allocated may also influence the supply, by changing donation behavior.

Plan of this lecture

- describe 3 experiments related to the design of deceased donor organ allocation and solicitation
  - Describe relevant background on organ donation and transplantation (enough to indicate why we consider the options we consider, and not others)
  - Discuss what experiments— so far 2 abstract, 1 involving actual organ donor decisions—can contribute to the design/policy debate.

Organ Waiting List Data

Waiting list candidates: 115,508 (9/19/12)

Active waiting list candidates: 73,532

Transplants (2011): 28,537

- 22,518 from deceased donors
- 6,019 from living donors

Donors (2011): 14,145

- 8,126 deceased donors
- 6,019 living donors (almost all kidneys)

Kidney transplants are a big part

- Last Wednesday when I lectured to you about kidney exchange there were xx,xxx patients on the waiting list for deceased donor kidneys.
- This morning there were yy,yyy

Table 1: U.S. Kidney Transplants

Year	Deceased Donors	Deceased Donor Transplants	Living Donors	All Wait-list Patients	New Wait-list Additions
1999	5,386	8,044	4,725	41,176	21,845
2000	5,489	8,126	5,499	44,568	22,356
2001	5,528	8,233	6,042	47,576	22,502
2002	5,638	8,539	6,240	50,301	23,631
2003	5,753	8,667	6,473	53,530	24,683
2004	6,325	9,358	6,647	57,168	27,280
2005	6,700	9,913	6,571	61,562	29,145
2006	7,178	10,661	6,435	66,352	32,361
2007	7,240	10,591	6,043	71,862	32,424
2008	7,188	10,552	5,968	78,366	32,584
2009	7,248	10,442	6,389	84,244	33,671

The data for years 1999–2009 are provided by OPTN as of May 21, 2010. New Wait-list Additions counts patients (rather than registrants) to eliminate the problems of counting multiple times people who register in multiple centers. All Wait-list Patients also counts patients rather than registratants. All Wait-list Patients data from 1999-2007 are from the *2008 OPTN/SRTR Annual Report; All Wait-list Patients* data from 2008-2009 are extrapolated from Wait-list Additions and Waitlist Removals provided by OPTN as of May 21, 2010.

Where do donors come from?

- Live donors:
  - Mostly personally connected to a patient
  - Growing number of web-recruited donors
  - Small but growing number of non-directed donors
  - Kidney exchange is the fastest (but still very small) growing source of live donor transplants.
  - But, despite the growth in live donation, we're falling behind the need for transplantable kidneys.

Deceased donors

- **Donor registration**,
  - Opt in, mostly at Departments of Motor Vehicles (at time of driver's license)
  - Donations from unregistered donors can also be made by the surviving next-of-kin
    - **In New England, about half of the eligible unregistered cadavers become donors**
- Other proposals
  - Opt out (many countries)
  - Mandated choice
- **Organ allocation**
  - by waiting list, by region and organ
  - Different organs have different waiting list rules (e.g. liver is by health status, kidneys are primarily by waiting time)
- Other proposals
  - Singapore: first priority to registered donors
  - Israel: similar proposal adopted, just recently implemented

Motivation for the Israeli law

- "The consent rate for organ donation in Israel, defined as the proportion of actual donors of total number of medically eligible brain-dead donors, has consistently been 45% during the past decade, much lower than in most western countries…

- "In two formal surveys of public attitudes towards organ donation, which were done by the Israel National Transplant Centre in 1999 (n=758) and 20044 (n=417), 55% of individuals in each survey indicated their willingness to donate organs in exchange for prioritisation in organ allocation. In both surveys, the proportion of individuals who chose this option was much greater than the proportions choosing the second and third preferred options, which were direct (26%) or indirect financial compensation (25%), respectively, for organ donation. **The basis of this public reaction is mainly a perceived need to rectify the unfairness of free riders—people who are willing to accept an organ but refuse to donate one—as practised by a small yet prominent proportion of the Israeli public. These individuals are opposed to the idea of brain death and organ donation, yet they do not abstain from becoming candidates for transplantation when they need an organ for themselves.**"

- Lavee J, Ashkenazi T, Gurman G, Steinberg D. A new law for allocation of donor organs in Israel. Lancet 2010; 375:1131–1133.

Obstacles to field experiments

- Deceased organ donation and allocation is heavily regulated, and making changes is an extraordinarily cumbersome regulatory/political process with lots of interests at stake.

- One of the most important regulations is that money can't be used to attract donations.

The National Organ Transplant Act of 1984

Pub. L. 98-507, Section 301

(a) Prohibition of organ purchases

It shall be unlawful for any person to knowingly acquire, receive, or otherwise transfer any human organ for valuable consideration . . .

(b) Penalties

*Any person who violates subsection (a) of this section shall be fined not more than **$50,000 or imprisoned not more than five years, or both***

Challenges to lab experiments

- what kinds of hypotheses relevant to organ donation can be investigated in a laboratory experiment that doesn't involve actual organ donation decisions?

- care must always be taken in extrapolating experimental results to complex environments outside the lab, and caution is particularly called for when the lab setting abstracts away from important but intangible issues. However the difficulty of performing comparable experiments or comparisons outside of the lab makes it sensible to look to simple experiments to generate hypotheses about organ donation policies.

Kessler, Judd B. and Alvin E. Roth, "Organ Allocation Policy and the Decision to Donate," *American Economic Review*, August 2012

- Experiment in an abstract setting…

Lab Experiment Design

- Subjects start each round with one "A unit" and two "B units"

- Each subject earns $1 in each period with an active A unit and at least one active B unit

- Each period, each subject's A unit has a 10% probability of failing and the B units has a 20% chance of failing

  - Like kidneys, both B units operate or fail together

Each round of the experiment

- Subject start with $2 and live for a number of periods

- Whenever a subject's A unit fails, he loses $1 and the round ends for him

- When a subject's B units fails, he has up to five periods to receive a B unit from someone else (during which he does not earn any money)

- If he does not receive a B unit in those five periods, he loses $1 and the round ends for him

Each round of the experiment

- A subject with failed B units could receive a B unit from another player in a given period if

  – Another player's A unit failed in a period while his B units were still active

  – And if that player had agreed to donate his B units at the start of that round

  – Donation had a cost, either 40 cents or 80 cents

Each session of the experiment

- Subjects played 31 rounds in a fixed group of 12 subjects

- Each group had 6 low-cost donors ($0.40) and 6 high-cost donors ($0.80) and subjects were only informed of their own cost of donation

- Just before round 31, Ss were told it would be the last round

Experimental conditions:

1. **Control** ("U.S."): transplant candidates received organs in order of waiting time

   – in terms of monetary payoffs, donating is a dominated strategy in this condition; costly, with no benefit to self, although benefits to others

2. **Priority** ("Israel"): those who agreed to be donors at the start of the round would be given priority

   – Priority makes donation less costly, since it comes with some benefit to self as well as benefit to others, primarily other donors (depends on # donors)

Experimental conditions:

3. Rebate (cash equivalent of Priority): B units were assigned as in the control condition, but donors received a rebate at the end of the experiment based on the number of other subjects in their group who agreed to be donors.

– Donation has reduced cost to self, and provides an expected benefit to all others and a cash benefit to other donors

4. Discount (cash equivalent of Priority with 5-6 donors): B units were assigned as in the control condition, but all subject costs were $0.35 lower than in the control condition.

– Donation has reduced cost to self and provides an expected benefit to all others (not just other donors)

Groups (within and between experimental design)

- Twenty groups played in the control condition for the first 15 rounds and then switched to one of the treatment conditions (17 groups) or stayed in the control condition (3 groups)

- The other twelve groups played one of the three treatment conditions for the first 15 rounds and then switched to the control condition for the last 16 rounds

Figure 1: Share Donating by Round
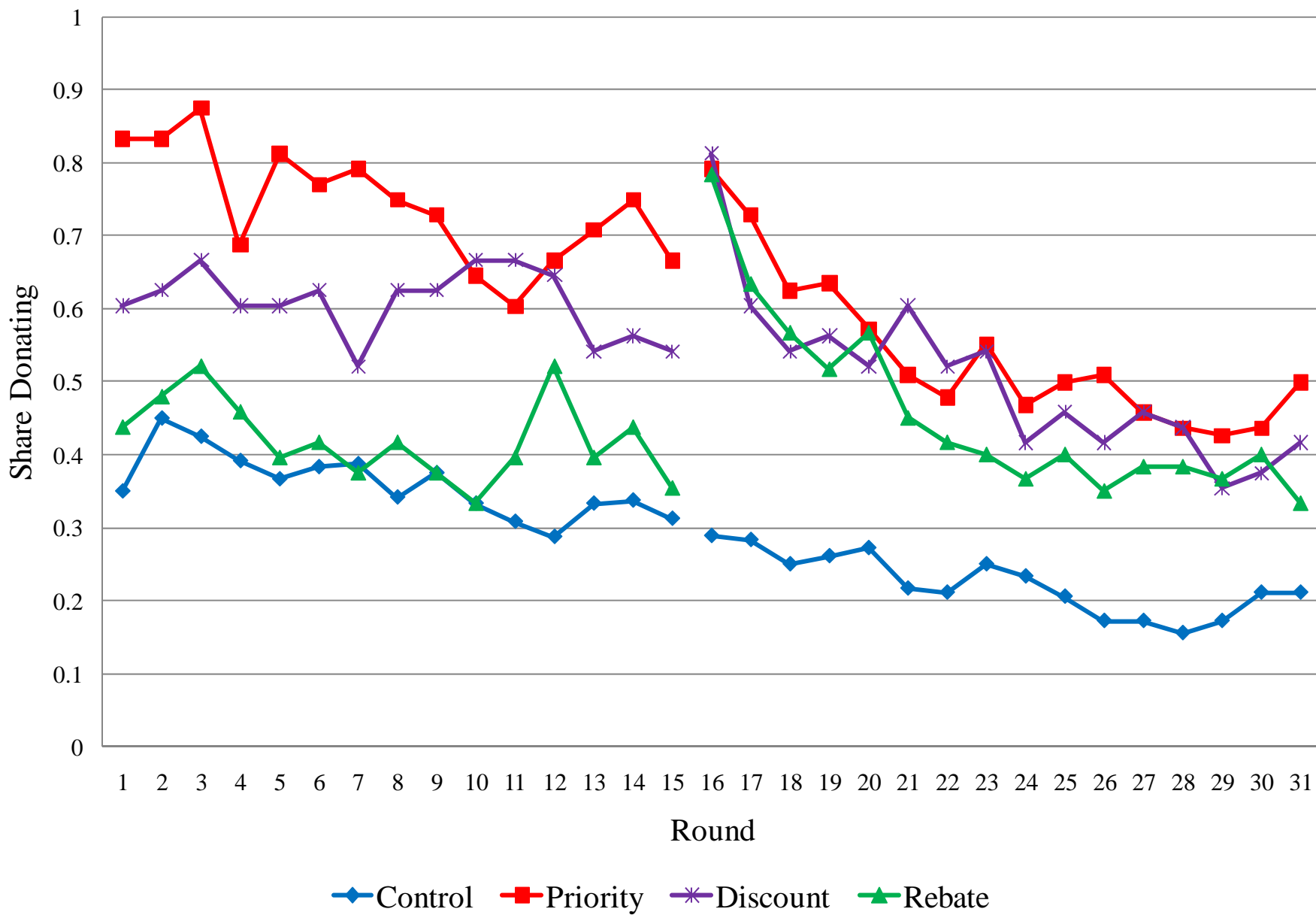
Experimental Results

- The donation rate is 2 to 2.5 times higher in the *priority* condition than in the control condition

- And, priority could be implemented outside of the lab in the current legal environment, while cash back is just something we can investigate in the lab…

Experimental Results

- After Ss have experience with the game and the cost structure, the cash back conditions seem to have the same effect as priority, so it may just reduce the cost of giving

- Before Ss have experience, priority produces the most donation, so it may be simpler to understand

Model of priority

- Two countervailing incentives
  - If a waiting list, you get a benefit from priority
  - If no waiting list, you may prefer not to incur the cost of donation
- With our experimental parameters there is no equilibrium at which anyone donates (when everyone is entirely cash motivated)
  - This depends on costs, rate of organ demand (B failure), and rate of organ supply (A failure)

Rebate Profiles (10 million simulations each)

- A=0.1; B=0.2; n=12
- A=0.1; B=0.1; n=12
- A=0.2; B=0.2; n=12
- A=0.1; B=0.05; n=12
- A=0.2; B=0.1; n=12
- A=0.3; B=0.1; n=12
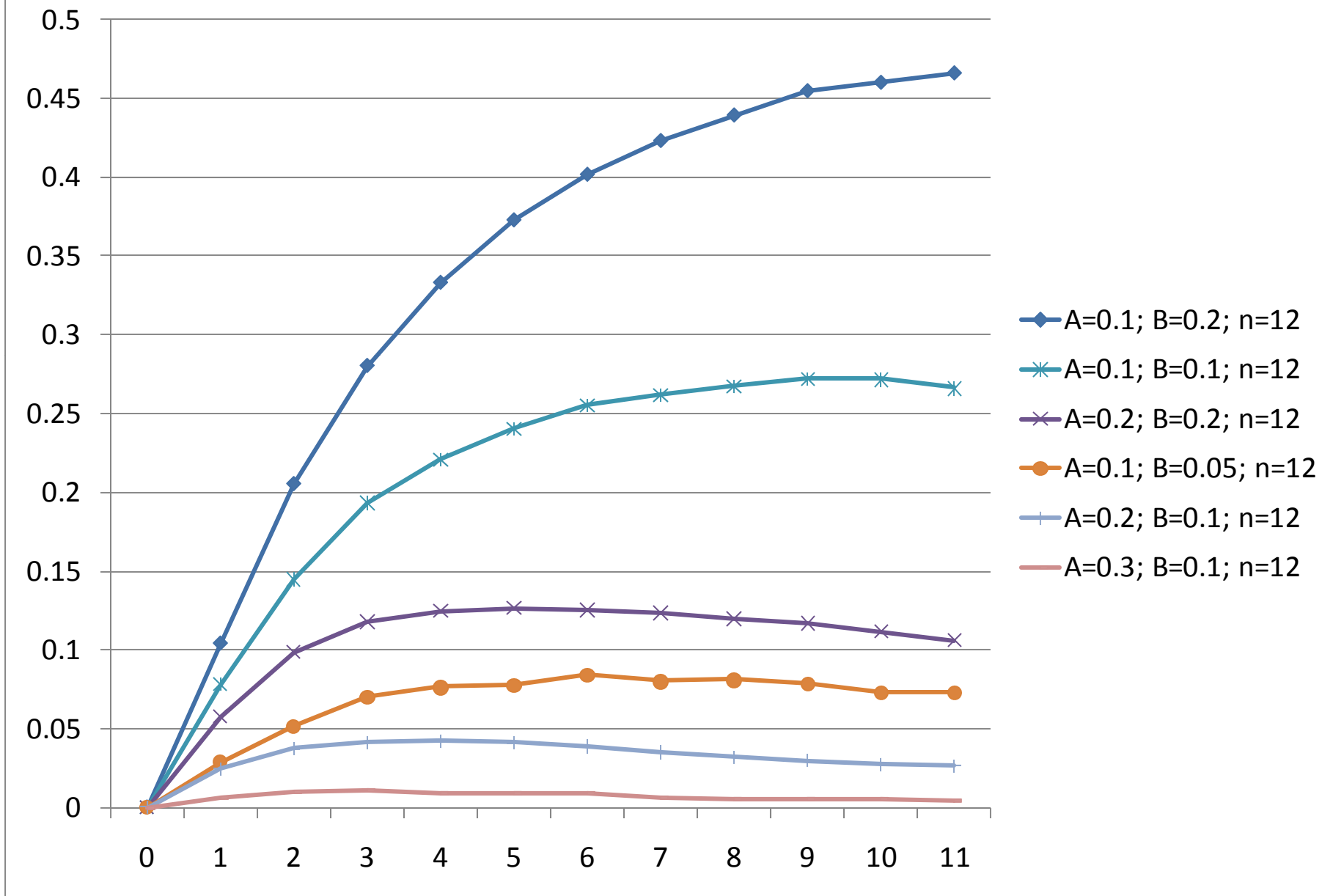
other registered donors in group of 12

2-period game

- Period 1 agents choose to register as a donor
- Period 2 payoffs realized
  - Probability agents have kidney failure θ
  - Probability agents have brain death β
  - Number of kidneys is α (=2?)
- Call $\alpha\beta/\theta$ the "production-need ratio" (kidneys a donor generates/needs in expectation)
- Agents who have kidney failure earn utility 0 unless they receive a kidney and earn utility 1

Agents

- Continuum of agents with donation costs
  $c \sim F(c)$ where c can be negative

- So some agents donate even without priority

Without Priority

- Only agents who have negative costs donate

- So, share of donors in equilibrium is F(0)
  – Note that F(0) doesn't seem to be negligible, either in the experiment or in the U.S. population. There are donors, just not enough.

- The probability of receiving a kidney if you need one is independent of donor status and is $p = [\alpha\beta/\theta] * F(0)$

With Priority

- αβ/θ > 1 (donors can provide for non donors)
    - Get share of donors $F(c^*) = \dfrac{\theta - \theta c^*}{\alpha\beta - \theta c^*}$
    - All donors get a kidney if they need one
    - Non donors get a kidney with probability 1-F(c*)

- αβ/θ < 1 (donors cannot meet demand)
    - Agents donate if c < αβ/θ, so share of donors $F\left(\frac{\alpha\beta}{\theta}\right)$
    - Donors get a kidney with probability αβ/θ
    - Non-donors never get a kidney

Note the importance of 'altruistic' donors (including donations by next of kin)

- They are the donors under the current system.

- And under a priority system, priority access to those donors' organs would be the incentive for additional donation decisions.

- This is what makes a national priority system a more feasible system than a private members-only club.

LifeSharers — Organs for Organ Donors

Welcome to LifeSharers

If you ever need an organ for a transplant operation, chances are you will die before you get one. You can improve your odds by joining LifeSharers. Membership is free.

LifeSharers is a non-profit national network of organ donors. LifeSharers members promise to donate upon their death, and they give fellow members first access to their organs. As a LifeSharers member, you will have access to organs that otherwise may not be available to you. As the LifeSharers network grows, more and more organs may become available to you -- if you are a member.

Even if you are already a registered organ donor, you should join the LifeSharers network. By doing so, you will have access to organs that otherwise may not be available to you.

By joining LifeSharers you will help reduce the deadly organ shortage. By offering your organs first to other organ donors you create an incentive for non-donors to become donors. As more people register as organ donors, fewer people will die waiting for transplants.

By joining LifeSharers you will also make the organ transplant system fairer by helping registered organ donors get their fair share of organs. About half of the organs transplanted in the United States go to people who have not agreed to donate their own organs when they die. That's not fair, and it's one of the reasons there is such a large organ shortage.
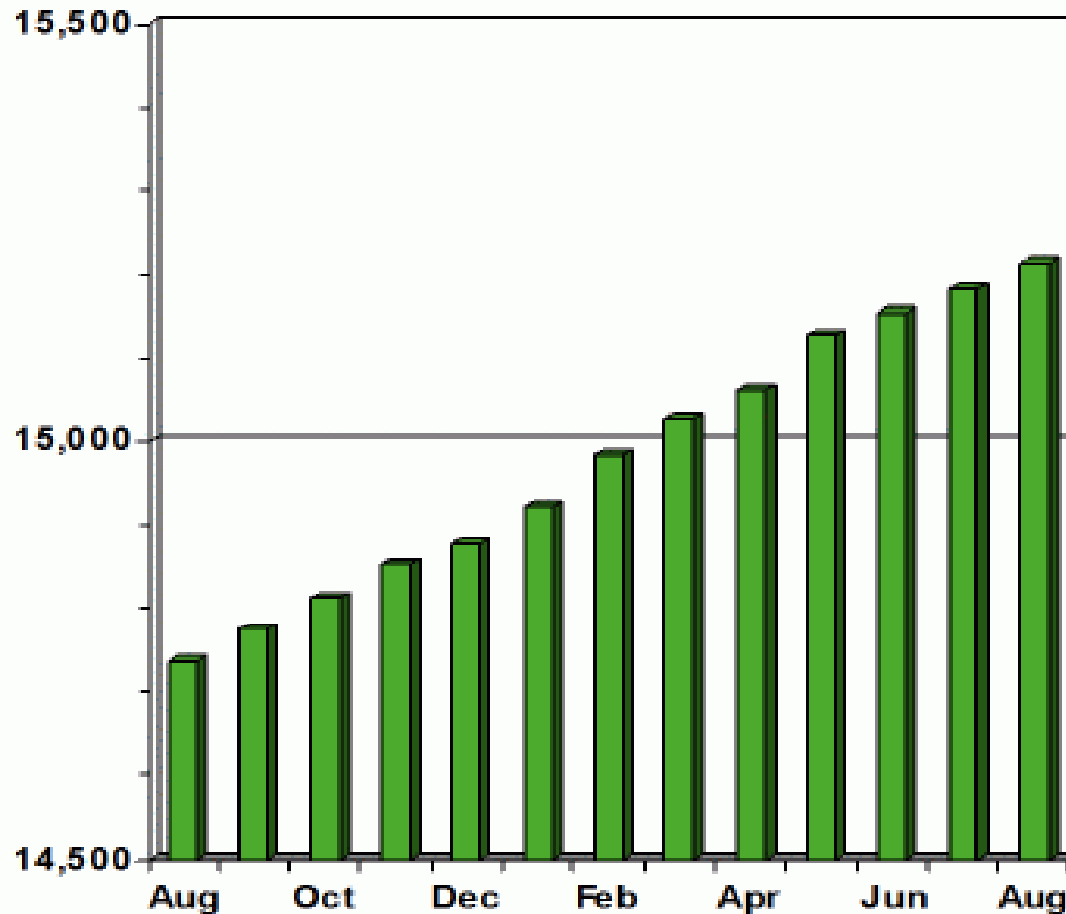
Join LifeSharers now. It's free. It could save your life. Everyone is welcome to join. There's no age limit, and no one is excluded due to any pre-existing medical condition. Once you've joined, you can sign up your children as well.

Learn more about why you should join LifeSharers.

Watch our 3-minute movie.

LifeSharers members as of 1/31/2011
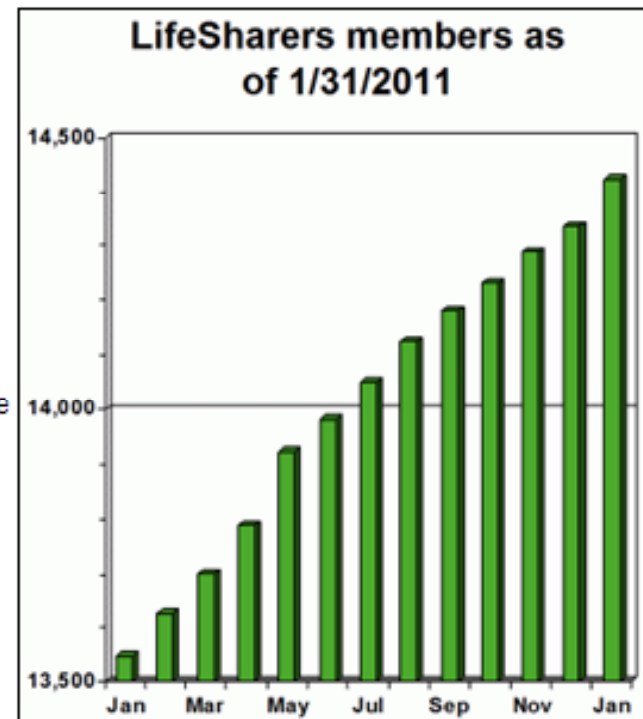
LifeSharers members as of 8/31/2012

Q. How many LifeSharers members have died and donated organs?
A. We have not yet had a member die in circumstances that would have permitted recovery of his or her organs. (accessed 9/24/12)

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A new experiment motivated by the Israeli experience

- Market design deals with big strategy sets, and the implementation of the Israeli law hasn't been simple…

Israel Transplant Law - [ORGAN TRANSPLANT ACT, 2008](#)

- **Section 3**, clause 9(b)(4)(a-c)
- (b)   The Steering Committee's duties shall be as follows:
- ……
- (4) To draw up directives in the matter of the allocation of organs removed under the Anatomy and Pathology Act or organs brought to Israel under Section 6 of this Act, provided that at the time of said allocation the following considerations, inter alia, be taken into account:
- (a) The consent of a person during his life to the removal of an organ after his death, as set out in Article 28 of this Act, should he or a first-degree relative need a transplant;
- (b) An organ donation under the Anatomy and Pathology Act, should a first-degree relative need a transplant;
- (c) The live donation of an organ to an unspecified recipient, should the donor or a first-degree relative need a transplant;
-

clause (c) was recently amended by omitting the words "to an unspecified recipient".

Israeli Organ allocation priority categories*

- **Based on clause 9(4)(b) in the Organ Transplant Law, candidates for transplantation will be prioritized during organs allocation as follows:**

  - **<u>Top priority</u>** will be granted to candidates whose first degree relative donated organs after death or have been themselves live kidney or liver-lobe donors;

  - **<u>Second priority</u>** will be granted to candidates who have registered as organ donors at least 3 years prior of being listed;

  - **<u>Third priority</u>** will be granted to candidates whose first degree relatives have registered as organ donors at least 3 years prior of their listing;

* Slides from Jay Lavee

ADDITIONAL SCORES FOR ALLOCATION PRIORITY CATEGORIES

	KIDNEY	HEART	LUNG (LAS)	LIVER (MELD)
Candidate's first degree relative donated organ after death or candidate was a live organ donor	3.5	Top of Status 2 candidacy list	15	3.5
Candidate is a registered donor	2	Following previous prioritization category candidates in Status 2	10	2
Candidate's first-degree relative is a registered donor	0.5	Following previous prioritization category candidates in Status 2	2.5	0.5

Further implementation

- Children younger than 18 years old, or legally invalid candidates for the purpose of signing a donor card, will not be included in the prioritization plan and will retain their priority status for organ allocation versus an adult who merits priority.

Further implementation

- Status 1 candidates for heart or liver transplantation will continue to be given priority for organ allocation as usual, irrespective of their eligibility status on the basis of their new prioritization category.

- However, if two such candidates are equally suitable for a donated organ, then the one who qualifies for one of the prioritization categories will be given the organ.

Legislation, and implementation

– A donor may revoke his consent to donate an organ at any time before the organ is removed and shall bear no civil or criminal liability for such a revocation (section 8,34)

The donor card as implemented

חתימה על כרטיס תורם:

משרד הבריאות, המרכז הלאומי להשתלות
רח' נח מוזס 15, תל אביב 67442
טל: 610-609-800-1 פקס: 03-6957344

שם משפחה: _____ שם פרטי: _____ ת.ז.: ☐☐☐☐☐☐☐/☐

כתובת: _____ עיר: _____ מיקוד: _____

ש. לידה: _____ טל: _____ טל נוסף: _____

בתקווה, כי אוכל לעזור לזולת, אני מצווה בזה ותורם לאחר מותי

○ כל איבר מגופי שהזולת יכול להיעזר בו להצלת חייו.

או: ○ כליה ○ כבד ○ קרנית ○ לב ○ עור ○ ריאות ○ עצמות ○ לבלב

☐ בתנאי שאיש דת לפי בחירת המשפחה יאשר את התרומה לאחר מותי.

*תרומתי היא לצורך השתלה בלבד.
*הצטרפות מעל גיל 18 בלבד.

_____ חתימה   _____ תאריך

- **With the hope that I may be of help to another, I hereby order and donate after my death:**
- () Any organ of my body that another my find of use to save his/her life.
- Or:
- () Kidney () Liver () Cornea () Heart () Skin () Lungs () Bones () Pancreas
- **[] As long as a clergyman chosen by my family will approve the donation after my death.**

Empirical study of donation/allocation patterns in Israel (proposal), With Tamar Ashkenazy, Judd Kessler, Jay Lavee, Avraham Stoler

- How many registered donors are there each year, and how many check the box saying that a clergyman must be consulted?
- How many transplants are there each year, and how many go to people who have priority by virtue of being registered donors?
  - Of these, how many go to people who are "conditional" donors?
- Of the deceased registered donors whose organs are recoverable, how many are conditional donors? And of these conditional donors, how many become donors? i.e. how often do the clergymen approve? (In what circumstances, e.g. brain death versus DCD?)
- Are there any accompanying changes in live donation of kidneys (or lungs or livers)?
- What happens with pediatric candidates and live donors?
- What changes if any are observed in the aggregate figures of who receives organs (e.g. among the secular and religious communities)?
- What changes are observed in public opinion (surveys)
- It will be a long time before data are available about transplants from new donors.
- In the meantime…

A new experiment (with the "clergyman" priority option)

- ## Conditions:
  - Control (all potential recipients have equal chance at receiving available donated organs)
  - Priority (those who choose to donate and pay the cost of donation receive priority)
  - "Loophole priority"
    - "In each round, any donated B units that become available will be provided first to those members of the group who paid the cost to donate their B units in that round or who did not pay the cost to donate their B units but asked to receive priority in that round anyway."

Instructions for "loophole" expt

- **SCREEN 1**
- This experiment is a study of individual decision-making and behavior. Money earned will be paid to you in cash at the end of this experiment.
- You will play a game in a group of 8 people.
- You will play this game for a number of rounds in the same group.
- The rules of the game may change during your course of play, and you will be informed if they do.
- You will be paid based on one randomly selected round across the entire study.
-
- **SCREEN 2**
- At the start of each round, you will have $6, one A unit and two B units.
- Each round, there is a 25% chance that your A unit will fail.
- If your A unit fails, you do not earn any more money in that round.
- If your A unit does not fail, both your B units will fail (your B units operate or fail together).
- If your B units fail, you may receive a B unit from someone else.
- If you do not receive a B unit from someone else, you do not earn any more money in that round.
- If you do receive a B unit from someone else, you earn an additional $4 in that round.
-
- **SCREEN 3**
- Before the round begins, you must decide whether, if your A unit fails, you would like to donate your two B units to other players.
- If you decide to donate your B units, it will cost you {$0.50; $4}, but if your A unit fails, each of your two B units will go to a player with failed B units. A player with failed B units can receive one B unit.
- *OPTIONAL: In each round, 2 players will each have their A unit fail and 6 players will have their B units fail.*
-
- [NOTE: EXPERIMENTER WILL BE INSTRUCTED TO READ "If you decide to donate your B units, it has a cost, shown on your screen, but if your a unit fails…"]

Instructions, continued: Screen 4

- How are B units assigned to players who need a B unit?
- [CONTROL:
- In each round, any donated B units that become available will be assigned by random lottery such that every player who needs a B unit has an equal chance of receiving one.]
-
- [PRIORITY:
- In each round, any donated B units that become available will be provided first to those members of the group who paid the cost to donate their B units in that round.
- If there are not enough B units for everyone who paid the cost to donate their B units, then the available B units will be assigned by random lottery such that every player who paid the cost to donate their B units has an equal chance of receiving a B unit; people who did not pay the cost to donate their B units will not receive a B unit.
- If there are enough B units for everyone who paid the cost to donate their B units, then everyone who paid the cost to donate their B units will receive a B unit. Any additional B units will be assigned by random lottery such that every player who did not pay the cost to donate their B unit has an equal chance of receiving one.]
-
- [LOOPHOLE PRIORITY:
- In each round, any donated B units that become available will be provided first to those members of the group who paid the cost to donate their B units in that round or who did not pay the cost to donate their B units but asked to receive priority in that round anyway.
- If there are not enough B units for everyone who either paid the cost to donate their B units or who asked to receive priority without paying the cost, then the available B units will be assigned by random lottery such that every player who paid the cost to donate their B units or who asked to receive priority without paying the cost has an equal chance of receiving a B unit; people who did not pay the cost to donate their B units and who did not ask to receive priority will not receive a B unit.
- If there are enough B units for everyone who paid the cost to donate their B units and who asked to receive priority without paying the cost, then everyone who paid the cost to donate their B units or who asked to receive priority without paying the cost will receive a B unit. Any additional B units will be assigned by random lottery such that every player who did not pay the cost to donate their B unit and who did not ask to receive priority has an equal chance of receiving one.
-
- OPTIONAL: *Each player will be told whether their A unit failed or their B units failed and, if their B units failed, whether they received a B unit from another player. Players will not be told how many people paid the cost to donate their B units*

- SUMMARY
- In each round, you start with $6, an A unit, and two B units
- In each round, either your A unit will fail or your B units will fail. For a cost of {$0.50; $4} you can donate your B units so that in the event that your A unit fails, which occurs with probability 25%, each of your two B units goes to a player in your group who needs a B unit.
- If your B unit fails and you receive a B unit from another player in your group, you earn an additional $4 in that round.
- Any available B units will [CONTROL be assigned randomly among the members of the group that need a B unit.] [PRIORITY be assigned first to those who paid the cost to donate their B units and only then provided to those who did not pay the cost to donate their B units.] [LOOPHOLE PRIORITY be assigned first to those who either paid the cost to donate their B units or asked to receive priority; only after all those players have received a B unit will B units be assigned to those who did not pay the cost to donate their B units and did not ask to receive priority].
- One of the rounds of the study will be randomly chosen for cash payment and you receive whatever amount of money you earned in that round.

DECISION SCREEN

- You currently have $6.
-
- If you decide to donate your B units, it will cost you {$0.50; $4}, but if your A unit fails, each of your two B units will go to a player with failed B units. A player with failed B units can receive one B unit.
-
- By agreeing to donate your B units, you are helping people who are in need, just as you may be helped by people who agree to donate their B units.
-
- Please decide whether you would like to donate your two B units at a cost of {$0.50; $4}.
-
- [CONTROL
- Yes, I want to donate my B units
- No, I do not want to donate my B units]
-
- [PRIORITY
- Yes, I want to donate my B units and receive priority for a B unit if I need one
- No, I do not want to donate my B units]
-
-   [LOOPHOLE PRIORITY
- Yes, I want to donate my B units and receive priority for a B unit if I need one
- No, I do not want to donate my B units, but I do want to receive priority for a B unit if I need one
- No, I do not want to donate my B units]

Preliminary Data...
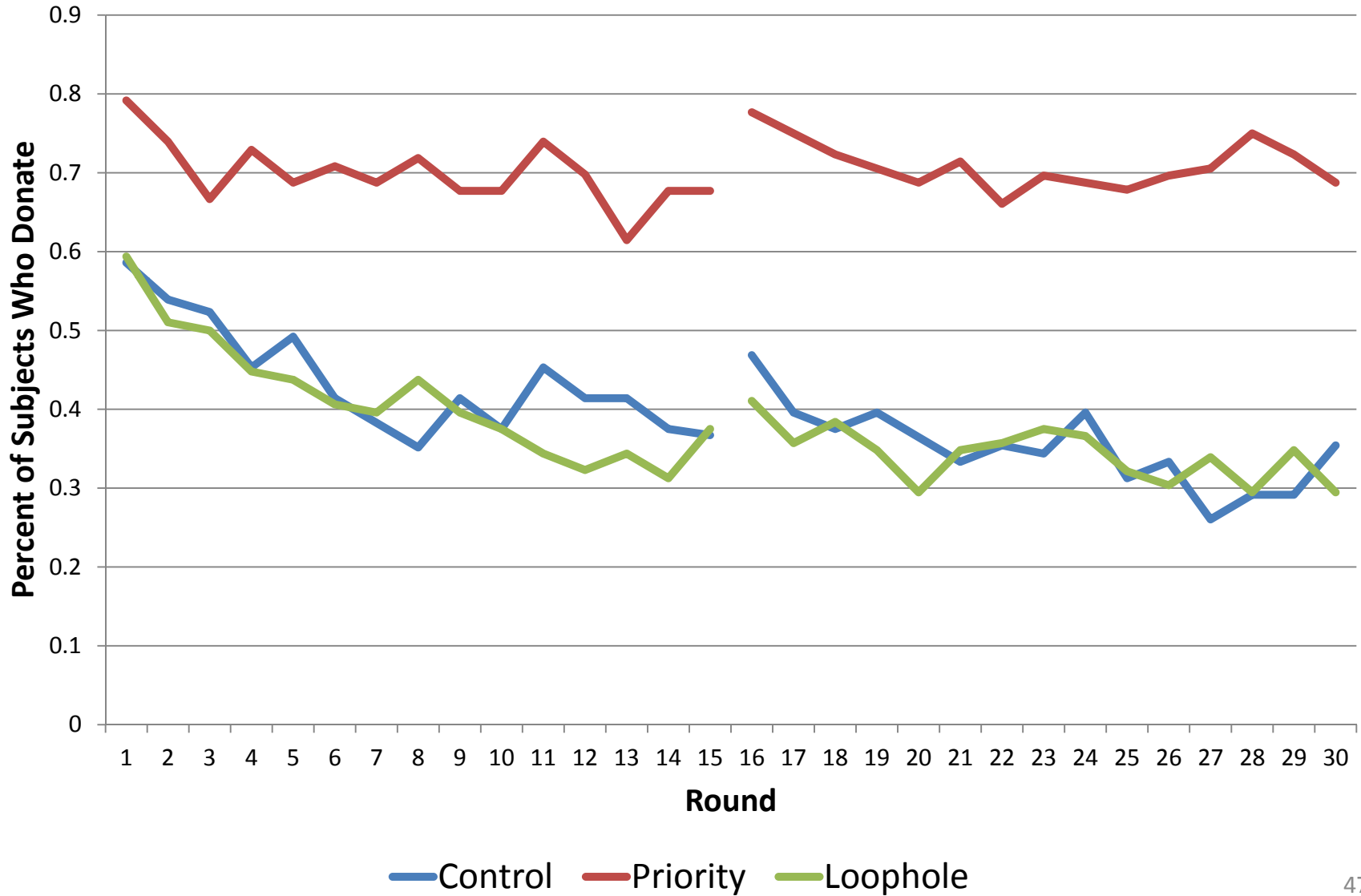
Preliminary Data…

- The Priority treatment generates more donors than the other two treatments ($p < 0.01$)

  - Priority also displays less decline in donation over time than the other treatments ($p < 0.05$)

- The Loophole Priority treatment replicates the control treatment — offering a loophole eliminates any benefit of priority

Preliminary Data…

- Earnings are substantially higher in the Priority treatment (p<0.01)

- There were 2 high-cost ($4 to donate) and 6 low-cost ($0.50 to donate) subjects per group, who are affected differently by priority:
  - The 2 high-cost donors each earn $0.58 less
  - The 6 low-cost donors each earn $0.74 more

Cautions

- In the laboratory, we didn't use real organs, but we imposed real costs, which we could manipulate
- In the lab we can look at architecture of priority rules, and compare priority changes to monetary cost changes that we couldn't look at in the field.
  - We can for example begin to address hypotheses about crowding out of altruistic motivation, club goods, etc.
- **BUT** organ donation involves lots of visceral issues not captured in an abstract setting
  - So we extrapolate with caution
- We would like to also study actual organ donation decisions
- and…we've found two different ways to do so, one conventionally empirical (proposal described earlier), and one experimental.

An experiment (in the U.S.) with actual donor decisions through online registry

Our login screen

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.

Massachusetts Form

A 2x2(x2) design

- List of organs that can be donated, No List
- **Opt in, Mandated Choice**
- [Low cost, high cost (add a phrase about cause of death could be e.g. auto accident)
  - Cut halfway through due to lack of power, made remainder low cost]

Opt In, No 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 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."

Opt In, No 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 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

Mandated Choice, No 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 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]

Mandated Choice, 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.

CONTINUE

Results

- 42% of our participants are already donors, close to the MA average, the others were asked at some point and said no
  - We know because they have an MA state id

- Don't take "no" for an answer
  - 29% of non-donors become donors when asked
  - only 1% of donors take themselves off the registry

Results

- Among the 58% who are not donors
  - We see a treatment effect of including the list of organs (37% donate with list, 23% without list)
    - Those shown the list think more lives are saved by donation
  - Mandated choice has a directionally *lower* donation rate than opt-in (**33% donate with opt-in, 25% with mandated choice**)
    - The probability that mandated choice is better than opt-in is less than 10%

Mandated choice, registry entries and transplants

- Recall that in New England, we presently get 50% of the eligible unregistered donors.

- So we were prepared to say that, unless more than 50% of the "no" choices from opt in turned into "yes" decisions under mandated choice, mandated choice might still not be better (because the next of kin would know that the deceased had chosen "no").

- But in fact, we got fewer "yes" choices under mandated choice
  - It appears that making "no" one of the readily suggested answers leads more people to choose it...

Other ways to get more donor organs?

More deceased donors?

Ask differently:

- Opt out (many countries)
  BUT…
  - US is second only to Spain in organ recovery rate (deceased organs transplanted per 10,000 people)
    - Deffains and Ythier (2010) argue that Spain's high rate results from more efficient transplant production chain
  - In US organs fall under Uniform Anatomical Gift Act, and opt out does not generate consent
    - A number of studies show that it does generate many more *registrations*…

Conclusions

- Markets and market design are complex
- Experiments give a window on some aspects that are hard (or impossible) to examine otherwise
- Enormous caution is needed before recommending policy
  - The recommendation of mandated choice may be premature in the case of organ donation…

Why do we have laws against simply buying and selling kidneys?

- I sure don't know the answer to this one, but I think it's a subject that social scientists need to study…

- It isn't just about body parts…