



# Loopholes undermine donation: An experiment motivated by an organ donation priority loophole in Israel<sup>☆</sup>



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## ABSTRACT

Giving registered organ donors priority on organ waiting lists, as has been implemented in Israel and Singapore, provides an incentive for registration and has the potential to increase the pool of deceased donor organs. However, the implementation of a priority rule might allow for loopholes – as is the case in Israel – in which an individual can register to receive priority but avoid ever being in a position to donate organs. We experimentally investigate how such a loophole affects donation and find that the majority of subjects use the loophole when available. The existence of a loophole completely eliminates the increase in donation generated by the priority rule. When information about loophole use is made public, subjects respond to others' use of the loophole by withholding donation such that the priority system with a loophole generates fewer donations than an allocation system without priority.

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## 1. Introduction

There are currently over 120,000 people in the United States waiting for a life-saving organ transplant, the majority of which come from deceased donors.<sup>1</sup> But even though one deceased donor can save numerous lives and registering to be an organ donor is relatively easy (e.g. checking a box on a form at the state department of motor vehicles), only 43% of eligible Americans have registered (Donate Life America, 2012).

Understanding what motivates individuals to register as organ donors – and, more generally, what motivates individuals to privately provide public goods – is essential to model behavior and to implement successful policy.<sup>2</sup> In introducing the concept of warm glow (Andreoni, 1988, 1989, 1990), Jim Andreoni made the discipline recognize that forces beyond pure altruism (Becker, 1974) influence public good provision. It is a tribute to Jim, to whom this special issue is dedicated, that we can think clearly about these forces and that we have a rich vocabulary to talk about the various motivations at play in the private provision of public goods.

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<sup>1</sup> In 2012, nearly 80% of transplanted organs came from deceased donors (based on OPTN data accessed Nov. 9, 2013, <http://optn.transplant.hrsa.gov/>). Deceased donors agree to make their organs available upon death and can provide multiple vital organs (i.e. kidneys, liver, heart, pancreas, lungs, and intestine) and other tissues (e.g. corneas, skin, heart valves, cartilage, bone, tendons, and ligaments) whereas living donors overwhelmingly donate one kidney.

<sup>2</sup> This is particularly true in the context of organ donation, for which federal legislation prohibits the use of monetary incentives (see Roth, 2007).

As in most complicated environments, many of these motivations are at play when an individual makes the decision to register as an organ donor. A deceased donor has the potential to save numerous lives, generating an altruistic motive for registration. Since deceased donation benefits others, individuals might get warm glow from the act of registering. Finally, individuals might be reciprocal and be motivated to register when others register as well. Even when taken together, however, these motivations have not generated enough deceased donations to halt the steady lengthening of organ transplant waiting lists. For example, the kidney waiting list has grown continuously over the past decade (see Table 1).<sup>3</sup>

Since private provision has failed to generate enough deceased donor organs, policy makers are looking for other ways to motivate individuals to register as donors. While U.S. law prevents monetary incentives for organ donation, there are other ways to incent registration, one of which is to provide priority on organ donor waiting lists to those who previously registered as donors. Under the current U.S. organ allocation system, which is similar to the systems in most other nations, priority on waiting lists is given to those who have been waiting the longest or those with the most immediate medical need.<sup>4</sup> Under a priority system, organ allocation would also depend on whether an individual previously

<sup>3</sup> The kidney waiting list currently stands above 98,500, based on OPTN data accessed Nov. 9, 2013 (<http://optn.transplant.hrsa.gov/latestData/rptData.asp>). The long waiting list for kidneys results in part from the ability for kidney dialysis to keep patients with kidney failure alive for many years. No dialysis exists for other organs. Waiting lists for other organs are shorter in part because many patients on those lists die while waiting.

<sup>4</sup> The allocation rules vary by organ. In the United States, the kidney allocation is primarily by waiting time while the liver allocation is primarily by medical need. These policies are a function of feasible medical care: while kidney dialysis allows patients to survive for years without a kidney transplant, a patient whose liver fails will die very quickly without a liver transplant.

**Table 1**  
U.S. kidney donors, transplants, and waiting list.

	Deceased donors	Deceased donor transplants	Living donors	All wait list patients	New wait list additions
2002	5638	8539	6241	50,301	23,630
2003	5753	8668	6473	53,530	24,680
2004	6325	9359	6647	57,168	27,278
2005	6700	9913	6573	61,562	29,140
2006	7176	10,660	6436	66,352	32,356
2007	7240	10,591	6043	71,862	32,416
2008	7188	10,553	5968	76,089	32,577
2009	7248	10,442	6387	79,397	33,652
2010	7241	10,622	6278	83,919	34,404
2011	7434	11,043	5771	86,547	33,564
2012	7421	10,868	5620	89,576	34,834

The data is provided by OPTN as of Nov. 1, 2013. New wait-list additions count patients (rather than registrants) to eliminate the problems of counting multiple times people who register in multiple centers. All wait list patients also count patients rather than registrants. All wait list patients data through 2011 is from the 2008, 2009, and 2011 OPTN/SRTR Annual Reports, 2012 is calculated using 2011 data and 2012 New wait list additions and wait list removals data.

registered as an organ donor, with registered donors getting an organ more quickly than those who are not registered. This policy has been studied experimentally (Kessler and Roth, 2012) and has been implemented in Singapore and, most recently, in Israel. In Israel, the policy appears to have increased the number of deceased donor organs and the organ donor registration rate, at least temporarily (Lavee et al., 2013), although the research into its effectiveness is ongoing.

One concern with implementing priority for registered donors is the possibility that loopholes in the system would allow individuals to register and receive priority but avoid ever being in a position to donate their organs. For example, an organ allocation system could be gamed if it allowed individuals to receive priority immediately upon registration, letting individuals wait until they needed an organ to register as a donor—effectively giving them priority without requiring anything in return. Careful implementation of allocation rules can eliminate this scope for gaming. In Israel, individuals who did not register by April 1, 2012 only get priority three years after they join the registry.

While the Israeli legislation mitigated this particular type of gaming, it introduced a different loophole in the organ allocation system. One of the reported motivations for implementing the priority allocation legislation in Israel was widespread concern over free riding by ultraorthodox religious groups. These groups generally do not recognize brain death (i.e. when the brain ceases to function) as a valid form of death and consequently oppose providing deceased donor organs.<sup>5</sup> Members of these religious groups do not oppose receiving organs, however, even those recovered from brain dead donors. It has been argued that this group of explicit free riders – who will accept organs but do not provide them – a major factor for the historically low rates of organ donation in Israel (Lavee et al., 2010; Lavee and Brock, 2012). The priority allocation system was meant to minimize this free riding by rewarding registered donors and giving free riders lower priority on waiting lists.

Nevertheless, the implementation of the Israeli priority legislation created a loophole that may allow this type of free riding to continue. The Israeli donor card gives a registrant the option to check a box requesting that a clergyman be consulted before organ donation occurs (see Fig. 1).<sup>6</sup> An individual who wants priority but does not want to be a

<sup>5</sup> Most organ donation follows brain death, since the deceased patient can be left on a respirator, allowing the organs to be kept alive until they are recovered. Cardiac death (when there is an irreversible loss of circulation) requires fast action, on the order of a few minutes, for organ recovery to be possible. Data from the New England Organ Bank (NEOB) indicates that in New England recovery rates are much higher among potential donors who died from brain death than cardiac death. Recovery rates were about 20 percentage points higher for registered donors and about 15 percentage points higher for non-registered donors in 2010, 2011, and 2012. (Personal communication, Sean Fitzpatrick, NEOB.)

<sup>6</sup> During implementation, a number of people specifically advocated for this clergyman check-box option to remain on the card—amid suspicion that it was motivated by religious groups who wanted to receive priority without having to donate (see <http://www.haaretz.com/print-edition/news/officials-new-donor-cards-will-reduce-organ-transplants-1.374566>).

donor could check that box with the implicit or explicit understanding that his clergyman would refuse donation if the supposed “donor” were to die and be in a position to have his organs recovered.

Even without an explicit checkbox, there is still the potential for a loophole to be abused in the Israeli priority system. Signing the donor card in Israel is not binding, so next of kin are still asked about donation and can block the donation of a deceased who had signed a donor card (Lavee and Brock, 2012).<sup>7</sup> When next of kin make the final donation decision or can block the donation of a registered donor, individuals can register as donors to receive priority but instruct their next of kin to prevent their organs from being donated upon death, creating a loophole even if one is not explicitly available.

What is the potential effect of such a loophole on the efficacy of a priority allocation system? A loophole might eliminate the incentive to donate generated by the priority system, since individuals can register to get priority but take advantage of the loophole rather than donate. Additionally, however, the loophole might interact with individuals’ prosocial motivations for providing the public good. In particular, the loophole introduces a very explicit form of free riding in which free riders not only fail to donate but also abuse a system designed to reward contributors. This abuse could “poison the pool” and lead individuals who would have donated in the absence of priority to decide against donation in response to others taking advantage of the loophole. If a loophole poisons the pool, then introducing a priority system with a loophole might backfire and lead to fewer donors than the system without priority.

In this study, we use a laboratory game modeled on the decision to register as an organ donor to investigate how the existence of a loophole in a priority allocation system affects behavior. It will be years before we have data on actual donations and actual loophole use in Israel, but here we are able to study the loophole, understand what consequences it can have, and anticipate its effects. Certainly, some hypotheses about organ donation can only be investigated by asking for real organ donor registrations (see Kessler and Roth, 2013). However, a number of important aspects about the organ donation decision and the organ allocation system cannot be easily manipulated in practice but can be manipulated and studied in the laboratory. We can use the laboratory to study the incentive issues involved in organ donation, abstracted away from the important but complex sentiments associated with actual organs.<sup>8</sup>

In this paper, we replicate previous results from Kessler and Roth (2012) and find that a priority allocation system generates significantly higher organ donation rates, increasing the number of organs recovered

<sup>7</sup> This is also the case in the United States, where next of kin can refuse donation even if the deceased had previously joined a state registry (Glazier, 2006).

<sup>8</sup> In practice, the costs of registering as an organ donor are difficult to identify. Costs may include fears about differential medical care for registered organ donors, fears that organs will be removed at a time or in a manner that is inconsistent with religious beliefs, or simply discomfort from thinking about death. In the laboratory, we can (1) impose monetary costs to model (to some level of approximation) the costs faced by donors and (2) control those costs, for example by giving some potential donors low costs and others high costs.

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