

# Kidneys for Sale: Who Disapproves, and Why?

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**The shortage of transplant kidneys has spurred debate about legalizing monetary payments to donors to increase the number of available kidneys. However, buying and selling organs faces widespread disapproval. We survey a representative sample of Americans to assess disapproval for several forms of kidney market, and to understand why individuals disapprove by identifying factors that predict disapproval, including disapproval of markets for other body parts, dislike of increased scope for markets and distrust of markets generally. Our results suggest that while the public is potentially receptive to compensating kidney donors, among those who oppose it, general disapproval toward certain kinds of transactions is at least as important as concern about specific policy details. Between 51% and 63% of respondents approve of the various potential kidney markets we investigate, and between 42% and 58% want such markets to be legal. A total of 38% of respondents disapprove of at least one market. Respondents who distrust markets generally are not more disapproving of kidney markets; however we find significant correlations between kidney market disapproval and attitudes reflecting disapproval toward certain transactions—including both other body markets and market encroachment into traditionally nonmarket exchanges, such as food preparation.**

**Key words:** Deceased donor organs, economics, financial incentives, health policy, kidney transplantation, live donor transplantation

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## Introduction

The demand for transplantable kidneys exceeds the supply. If kidneys were a purchased commodity, the gap between supply and demand would mean the price was too low. But in most countries, a market for organs is regarded as 'repugnant' (1), and such markets are widely illegal. We use 'repugnant' in its economic sense—in a repugnant transaction the participants are willing to transact, but third parties disapprove and wish to prevent the transaction (rather than

in its psychological sense of eliciting disgust among potential participants). Hence repugnant transactions are often illegal (1).

This repugnance concerns monetary purchase of kidneys, not 'kidney exchange' between incompatible patient–donor pairs (2). The National Organ Transplant Act was amended (3) to clarify the legality of 'paired donations,' including large impersonal exchanges (4–6). A recent survey of transplant surgeons reveals majority support for non-cash incentives, but majority opposition to cash payments (7). A recent survey of economists found a substantial majority supports such payments (8). Previous surveys of the public (9) find both opposition (10) and support (11–13) for cash payments.

There is a vigorous debate whether some kind of regulated monetary market should be legalized. (e.g., a draft bill proposed by Senator Arlen Specter was rejected by the National Kidney Foundation). (14) Repugnance is referred to by both sides (15,16). The Declaration of Istanbul is an international expression of such repugnance (17).

We surveyed a representative sample of Americans, to investigate who disapproves of kidney sales, and why. We investigate three hypotheses about disapproval of kidney markets. First, it reflects a generalized disapproval of the 'sale and commoditization of body parts'. Second, it reflects a general disapproval of 'market encroachment on traditionally nonmarket transactions', that is repugnance toward introducing money to transactions previously carried out without money among families and friends. (E.g. Robin Young, interviewing one of the authors on NPR: 'I remember the first McDonalds coming to our neighborhood and my mother treated it as if it was some sort of *heathen* place. Go somewhere else but home to eat?') (18) Third, it reflects 'distrust of markets generally'.

## Materials and Methods

After a brief description of kidney transplantation, we elicited several measures of disapproval toward kidney markets. We also presented scenarios capturing disapproval of body-related markets and of market intrusion on traditionally nonmarket interactions. We measured attitudes toward markets generally, and collected demographic information and political affiliation. The full survey is available from the authors.

### **Markets for kidneys**

We described four potential kidney markets, varying both donor type (living vs. deceased) and purchaser type (individual vs. government). Respondents rated each market on a 7-point scale (1 = 'approve a great deal' ... 4 = 'neither approve nor disapprove' ... 7 = 'disapprove a great deal'). For example, the scenario describing the individual market for deceased donations is:

Alan has a serious kidney disease, and needs to have a kidney transplant. He does not have any friends or family who would be compatible donors.

*Scenario A:* Suppose it was legal for **individuals** to pay the family of a **deceased donor** to immediately receive a donated kidney. Would you approve or disapprove of Alan paying for a kidney from a deceased donor?

The corresponding scenario describing a regulated institutional market involving the government and/or insurance companies is:

*Scenario B:* Suppose that the **government and/or health insurance companies** were allowed to pay a standard payment to the family of a **deceased donor**. Would you approve or disapprove of such a program to pay for kidneys from deceased donors?

The two scenarios for living donors are written similarly. We also asked which markets respondents would want to be legalized (1 = 'strongly believe it should be legal' ... 4 = 'no opinion' ... 7 = 'strongly believe it should be legal'). Lastly we asked respondents to rank the four markets in order of acceptability.

### **Markets for other body parts**

If disapproval of kidney markets arises from general aversion to commoditizing bodies, individuals who disapprove of kidney markets will disapprove of markets for other body parts. To measure these attitudes we presented scenarios for paying blood donors, paying a surrogate mother and purchasing deceased donors. For example, the scenario describing paying blood donors is:

*Background:* Orange Diamond is a charity that organizes blood donations.

*Scenario:* Since they often don't have enough donors, they pay \$50 each time a person donates blood. Do you approve or disapprove of **paying these donors**?

### **Markets substituting for nonmarket transactions**

If disapproval reflects the belief that organs should be given by friends or family, people who disapprove of kidney markets may also disapprove of other purchases of services

otherwise given for free by loved ones (such as food preparation and child care). We presented paired market and non-market scenarios. The questions for cooking and takeout food are:

*Background:* John and Mary both work full time jobs, and have successful careers. They have two school-aged children. They are a prosperous middle class family. Their jobs keep them quite busy, and John and Mary are often too tired to cook a family meal.

*Scenario A:* Suppose that 3 to 4 nights a week John and Mary have Mary's sister Corrie come over to make dinner. Do you approve or disapprove of John and Mary **having Corrie cook dinner** instead of making dinner themselves?

*Scenario B:* Suppose that 3 to 4 nights a week John and Mary order take out or go out to restaurants with their children. Do you approve or disapprove of John and Mary **buying dinner from a restaurant** instead of making dinner themselves?

By contrasting the two scenarios we can identify disapproval toward the market-based solution, rather than disapproval toward other aspects of the scenario (e.g. both parents working). We also measured disapproval for prostitution, and promiscuity.

### **Markets generally**

People who disapprove of kidney markets may simply regard markets as generally exploitative. To assess this we employ questions drawn from a survey of attitudes toward capitalism and free markets (19). We measure agreement with statements that markets cause 'an unfair distribution of income', 'rewards people fairly', 'lead to an efficient use of resources', 'require a lot of government control', and are overall 'fair and ethical'. Thus individuals who disapprove of kidney markets may agree with the negative statements and/or disagree with the positive ones.

### **Internet survey**

We used the Zoomerang online survey panel of MarketTools, Inc (San Francisco, CA). MarketTools recruits 2.5 million potential participants through their website, as well as targeted recruitment so that the panel is nationally representative. Respondents earn points (worth approximately \$1) redeemable for prizes for each completed survey.

The survey was conducted in May 2008. A total of 8755 potential respondents 15 years or older were invited by email to take the survey, with 575 (5.97%) accessing the survey website. A total of 523 respondents completed the survey, with a completion rate of 90.96%.

**Table 1:** Summary of demographic variables of respondents

	Our sample	U.S. population
Mean age	44.60	44.30
% Female	54.68%	52.4%
% White	79.5%	68.2%
% Black	7.5%	11.6%
% Asian	5.3%	4.6%
% Hispanic	6.1%	13.8%
% Married	56.21%	54.1%
Mean number of children	1.58	1.9
Median household income	\$50–\$59K	\$50K
% Household income < \$30K	22.41%	25.69%
% Grade school or high school education only	23.71%	48.42%
% College educated	39.96%	33.0%
% Christian	69.46%	76.0%
% Attending religious services > 1/month	36.52%	N/A
% Republican	27.60%	39%
% Democrat	29.64%	32%

U.S. population data drawn from 2008 current population survey (CPS), 2008 American religious identification survey (ARIS) and 2008 election exit polls. U.S. population data for individuals age 15+ where possible.

Internet surveys are an emerging methodology compared to telephone surveys. Research describing their relative performance is still developing. Initial studies suggest internet surveys do not introduce additional biases compared to random digit phone surveys. Internet surveys often yield response rates of less than 10% (20), and as low as 2% (21,22). While nonresponse bias is always a concern, research suggests that low response rates do not necessarily indicate nonresponse bias (22,23).

Notably, Chang and Krasnick (24) and Berrens et al. (25) each ran the same survey with both telephone and internet samples. While Chang and Krasnick find the internet sam-

ple had somewhat greater demographic deviations from the U.S. population, it was more accurate on a number of dimensions including greater predictive validity, greater reliability and less social desirability bias. Berrens et al. find that with demographic controls the opinions measured are not significantly different between methodologies. Thus while our sample is somewhat more educated than the U.S. population (see Table 1), and has basic computer skills, these comparative studies suggest our approval measures may be largely representative. Nonresponse bias is also mitigated in our survey because the solicitation email did not include the topic, hence we would not expect responders to have different attitudes toward kidney markets than nonresponders.

### Data analysis

Table 1 summarizes the demographic characteristics of our sample, which has broad enough coverage to identify the impact of these variables.

### Attitudes toward kidney markets

We begin by examining respondents' overall support toward kidney markets. Table 2, Panel A reports the percent of respondents who approve and disapprove of each market (i.e. the fraction who chose any of the three 'approve'/'disapprove' answers—the omitted category is 'neither approve nor disapprove'). A majority approved of each potential market; only between 16 and 27% disapproved. Respondents were more favorable to markets involving government or another institutional purchaser, rather than individual patients buying kidneys directly. This difference was significant for both living and deceased donors (using a two-tailed *t*-test,  $p < 0.01$  for both comparisons). While attitudes toward legality show a similar large difference between positive and negative ratings for payments from the government (or insurance companies), individual markets have a much smaller difference (only 42–44% choose 'legal' compared to 31–35% choosing 'illegal'). Respondents' policy preferences were slightly more negative than their approval sentiments (shifting some respondents from

**Table 2:** Disapproval rates

Panel A: Kidney markets						
Donor	Purchaser	Approve (%)	Disapprove (%)	Legal (%)	Illegal (%)	Modal rank
Deceased	Individual	50.67	26.58	42.26	33.84	3
Deceased	Government	62.72	15.87	57.55	16.83	1
Living	Individual	54.49	22.75	44.17	31.17	4
Living	Government	60.99	17.40	56.21	19.69	2
Panel B: Family and body transactions						
Scenario	Approve (%)	Disapprove (%)	Scenario	Approve (%)	Disapprove (%)	
Sister cook food	46.85	23.90	Sex: prostitute	8.41	71.51	
Order food	43.02	31.17	Pay for blood	68.07	11.85	
Kids with grandma	79.54	6.12	Surrogacy	65.77	16.44	
Kids in daycare	66.16	16.25	Buy body for medical	54.88	24.47	
Elder care	65.20	16.25	Buy body for misc.	42.83	32.12	
Sex: promiscuous	31.36	35.18				

positive to neutral and from neutral to negative). This could be due to a bias toward the *status quo*, or consideration for the attitudes of others who are more disapproving.

To consider what other responses correlate with disapproval of kidney markets, we use two dependent variables to capture overall kidney disapproval. First, we sum the disapproval ratings to construct an aggregate measure of disapproval of kidney markets. (We weight responses equally, because weights generated by factor analysis on each of the four disapproval measures differed by less than 0.024.) This aggregate measure had mean 13.1 and standard deviation 5.7. We also construct a dummy variable that equals one if the respondent disapproved of at least one of the four markets. A total of 38% of respondents disapproved of at least one market.

**Demographics and personal experience**

Respondents employed in healthcare have somewhat higher total disapproval of kidney markets, although the difference is insignificant (*t*-test  $p = 0.45$ ), however they are significantly more likely to disapprove of at least one market (a difference of 8 percentage points,  $p = 0.05$ ). Organ donors are not more disapproving by either measure ( $p = 0.67$ ,  $p = 0.22$ , respectively). However, respondents who know a transplant recipient are less disapproving overall ( $p = 0.04$ ) and are 22 percentage points less likely to disapprove of any such market ( $p = 0.04$ ). Women are somewhat more disapproving of kidney markets overall ( $p = 0.04$ ), although their likelihood of disapproving of at least one market is not significantly different ( $p = 0.69$ ). There do not appear to be consistent patterns for race, nor does disapproval decrease by income or any level of education.

**Religion and politics**

Religiously active Christians are significantly more disapproving of kidney markets ( $p < 0.01$ ), and are 14 percentage points more likely to disapprove of at least one market ( $p < 0.01$ ). A total of 92% of religiously active respondents identified as Christian. Not enough respondents identified as religiously active non-Christians to determine their attitudes. To measure political attitudes, we elicit party identification and identification as socially/economically liberal/conservative. While we do not find a significant effect of party affiliation, both social and economic conservatives are significantly more disapproving of kidney markets (total disapproval:  $p < 0.01$  and  $p = 0.07$ , respectively), with social conservatives being 16 percentage points more likely to disapprove of at least one market ( $p < 0.01$ ) and economic conservatives 12 percentage points more likely to disapprove ( $p < 0.01$ ).

**Attitudes toward capitalism**

If respondents dislike kidney markets because they think markets generally are exploitative, then we should expect people who agree with negative statements about markets and/or disagree with positive statements to disapprove of

**Table 3:** Traditionally nonmarket and body-related transactions

Variables	(1) Total disapproval	(2) Disapprove of at least one
Food: family cooks	-0.0680 (0.186)	-0.0530 (0.0461)
Food: order takeout	0.473*** (0.180)	0.0993** (0.0429)
Kids: family cares for	0.269 (0.218)	-0.0115 (0.0568)
Kids: daycare	0.0248 (0.212)	-0.0265 (0.0527)
Eldercare	0.0187 (0.173)	-0.00609 (0.0455)
Sex: promiscuous	0.144 (0.170)	0.0624 (0.0446)
Sex: prostitute	-0.198 (0.167)	-0.0584 (0.0472)
Pay for blood	0.629*** (0.198)	0.0352 (0.0445)
Pay for surrogacy	0.616*** (0.172)	0.0810* (0.0437)
Pay for deceased donors (Medical)	0.497** (0.206)	0.0836* (0.0499)
Pay for deceased donors (Misc)	0.120 (0.214)	0.0527 (0.0491)
Political and religious controls	Yes	Yes
Demographic and experience controls	Yes	Yes
Constant	4.836*** (1.540)	-1.764*** (0.442)
Observations	415	415
R-squared	0.280	

Column 1 is OLS, Column 2 is Probit.  
Robust standard errors in parentheses.  
\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

kidney markets more. However, we find either no relationship or the opposite relationship. Respondents who agree that markets lead to unequal outcomes (an antimarket attitude) are less disapproving of kidney markets with marginal significance ( $p = 0.08$ ), as are respondents who agree that markets need to be strongly controlled ( $p = 0.07$ ). In addition, neither agreeing with specific promarket statements, nor having an overall favorable impression of markets, are significantly related to attitudes toward kidney markets. Hence there is no pattern that antimarket attitudes predict disapproval of kidney markets.

**Family and body transaction scenarios**

We now examine whether disapproval of kidney markets is related to more general repugnance, either toward commoditization of other body parts or toward other forms of market encroachment on traditionally nonmarket mechanisms. Table 2 Panel B shows approval and disapproval of each of the scenarios relating to family and body transactions. Only prostitution elicits majority disapproval. Disapproval of kidney markets is less than disapproval of frequently ordering takeout food, is greater than disapproval for paying blood donors and comparable to the disapproval of paying surrogate mothers and purchasing deceased donors for medical purposes.

To assess whether disapproval toward kidney markets is related to either disapproval of market transactions for bodies and/or other typically nonmarket interactions, we regress kidney disapproval on disapproval toward the other scenarios (Table 3). Significant positive coefficients indicate

disapproval of the specific scenario is correlated with disapproving of kidney markets.

Disapproval toward scenarios representing both hypotheses is significantly correlated with disapproval toward kidney markets. Three transactions relating to body parts are significant when looking at total disapproval, with two of them (surrogacy and deceased donors) also being marginally significant for disapproving of at least one market. The effects are large. The first specification indicates that, for any of the three body scenarios, if we compared respondents who strongly approved of the body scenario with respondents who strongly disapproved we would expect the latter group to have a larger total disapproval toward kidney markets between 3.12 and 3.79 points (an increase of between 0.52 and 0.66 standard deviations in the total kidney disapproval measure). Similarly, the second specification indicates that if we compared respondents who strongly approved of the surrogacy scenario or deceased donor scenario to those who strongly disapproved the latter group would be 22 percentage points more likely to disapprove of at least one of the kidney markets.

Disapproval toward one of the scenarios relating to traditionally nonmarket transactions is also significantly correlated: respondents who disapprove of the busy parents who consistently eat out or order takeout rather than cooking for their children are significantly more disapproving of kidney markets. The effect size is again large: respondents who strongly disapprove of the takeout scenario are estimated to disapprove of kidney markets by 2.85 more points than respondents who strongly approve of the takeout scenario (an increase of 0.50 standard deviations in the total kidney disapproval measure). Those who strongly disapprove of the takeout scenario are 23 percentage points more likely to disapprove of at least one kidney market compared to those who strongly approve of the takeout scenario. Note that disapproval for the corresponding scenario with a nonmarket solution (having a family member cook) does not significantly predict disapproval for kidney markets (and in fact has a coefficient near zero). This suggests that the connection between disapproval for eating out/ordering takeout and disapproval for kidney markets is coming from the use of the market rather than other features of the scenario (such as both parents working).

The coefficients on the religion and politics variables are no longer significant when included alongside disapproval toward these scenarios. This suggests that these general ideologies are important in predicting attitudes toward kidney markets as proxies for the more particular attitudes toward body-related or traditionally nonmarket transactions.

#### **Comparing general objections to policy concerns**

We now want to compare the importance of general concerns about repugnant transactions to concerns about specific policy details in influencing attitudes toward kidney

markets. We identify respondents as 'sensitive to repugnance' if they disapprove of at least one of the four significant scenarios (takeout food, blood donations, surrogacy, medical deceased donors). A total of 68% of respondents who disapprove of kidney markets are sensitive to repugnance (significantly more than the 51% who do not disapprove of kidney markets; Fisher's exact test  $p < 0.01$ ). We identify respondents as 'sensitive to policy details' if they consistently rate both the individual markets higher or lower than the corresponding government markets, or if they rate both the living donor markets higher or lower than the corresponding deceased donor markets. Note that a respondent can be policy sensitive whether or not they disapprove of any kidney market. A total of 60% of respondents who disapprove of kidney markets are sensitive to policy details (significantly more than the 26% who do not disapprove of kidney markets;  $p < 0.01$ ). Therefore, among those who disapprove of kidney markets at least as many respondents are concerned with repugnant transactions (68%) as are concerned with policy details (60%). Moreover, among kidney market disapprovers caring about repugnance and caring about policy details are negatively correlated ( $\rho = -0.21$ ,  $p = 0.002$ ).

#### **Are food- and body-related disapproval distinct?**

We now demonstrate that body-related transactions and family food preparation represent two distinct predictors of kidney disapproval. First, while the correlation between the takeout food scenario and each of the body scenarios is significant, they are all small ( $\rho$  between 0.05 and 0.15). Second, among respondents who are sensitive to repugnance, many disapprove of only the takeout food scenario or only one of the body scenarios. Specifically, of the respondents who disapprove of kidney markets, 21% disapprove of both the takeout food scenario and at least one of the body scenarios, 17% disapprove of only the takeout food scenario, 30% disapprove of only one or more of the body scenarios, and 32% disapprove of neither.

Moreover, respondents who disapprove of the market infringing on family food preparation have different religious and political characteristics than respondents who disapprove of body-related transactions. Religiously active Christians are not significantly more likely to disapprove of ordering takeout ( $t$ -test  $p = 0.42$ ), but are strongly more disapproving of paying for blood, surrogate mothers and deceased donors for medical purposes ( $p < 0.01$ ,  $p < 0.01$ ,  $p = 0.02$  respectively). In addition, social conservatives do not have stronger views on takeout food ( $p = 0.39$ ), while they do significantly disapprove of all three body related markets ( $p = 0.02$ ,  $p < 0.01$ ,  $p < 0.01$ ). Similarly, being an economic conservative has no relationship with attitudes toward takeout food ( $p = 0.93$ ), while it predicts disapproval of the body related markets ( $p < 0.01$  for all three). Thus, while many respondents disapprove of both the takeout food scenario and body-related market scenarios, the questions measure two distinct attitudes.

## Discussion

We find that a majority of our respondents approve of each of the four kidney markets we describe, while a substantial minority disapproves of at least one potential market. A similar majority favors the legality of having the government and/or insurance companies give a standard payment to donors; a plurality also would like an individual market to be legal, but nearly as many want such markets to be illegal. While recent surveys of the ASTS (7) and the public (10) find much greater disapproval of cash payments to donors, our results are in many ways congruent with theirs. In Rodrigue et al. (7) nearly 65% of transplant surgeons favor an income tax credit for donors, while in Boulware et al. (10) between 28% and 41% approve payments or tax credits to living donors from either government or their employer. Our methodology of describing scenarios with a hypothetical patient is closest to Guttman and Guttman (11); they also find a majority of the public (between 69% and 74%) in favor of allowing a patient to pay a living donor. They found much lower approval among physicians and transplant specialists (between 21% and 43% approval). The 2007 Harris poll (13) also found similar results to ours, with 49% in favor of living donors receiving financial compensation.

We caution that surveys responses can be influenced by question wording, hence we tried to avoid emotive contexts. The most reliable information comes from within-survey comparisons of responses to the different low context questions we ask, rather than between-survey comparisons, or attempts to assess absolute rates of particular views within the population. Thus while a large minority of our respondents disapprove of markets for kidneys, it is more informative to note that this is much less than the rate of disapproval of prostitution, comparable to the rate of disapproval of hiring a surrogate mother, and more than the rate of disapproval for buying blood.

We mainly explore the relationship between disapproval of kidney markets and other attitudes. We consider three hypotheses. First, this disapproval is part of a general disapproval of *the sale and commoditization of body parts*. Second, it reflects a disapproval of *the encroachment of markets on traditionally nonmarket transactions*. Third, disapproval of kidney sales reflects *distrust of markets generally*. Because we are comparing answers to similarly constructed questions, the resulting correlations should reflect patterns of attitudes in the population. However our survey cannot identify causation.

The responses support the first two hypotheses, as independent predictors of disapproval of kidney sales, but fail to support the third. *Disapproval of sales of blood, surrogate wombs and deceased donors for anatomy study is a predictor of disapproval of markets for kidneys*. These effects are strong—increasing the likelihood of disapproving of a kidney market by more than 20 percentage points.

*A second predictor of disapproval of kidney markets is disapproval of ordering takeout food instead of cooking at home*, where again this attitude increases the likelihood of disapproving of a kidney market by more than 20 percentage points. Moreover, disapproval of ordering takeout food predicts disapproval of kidney markets in a *different subset of people* than disapproval of markets involving other body parts.

Finally, distaste for kidney markets does *not* arise from distaste for markets generally. On the contrary, people who disapprove of kidney markets tend to *approve* of markets generally. (Both disapproving of kidney markets and approving of markets generally are positively correlated with identifying as socially conservative and/or Republican.)

The shortage of transplant kidneys has spurred extensive debate about monetary markets. Our results suggest both that the general public may be open to some form of monetary compensation to kidney donors, and that the opposition to such markets reflects not only specific concerns about policy details but that a substantial minority find kidney markets repugnant, that is they disapprove of others taking part in them.

We find majority approval of each kidney market, though a majority supports legality only for markets with the government or insurance companies as purchaser. This suggests that monetary compensation to donors by institutional intermediaries could receive public support. Both general disapproval of body-related markets and disapproval of market encroachment on traditionally nonmarket spheres contribute to disapproval of kidney markets; however we find no evidence that generally negative attitudes toward markets drive this repugnance. Social conservatism and being a religiously active Christian also predict of kidney market disapproval, though largely as proxies for general disapproval for body-related markets. Furthermore, disapproval for kidney markets seems driven by concerns about repugnant transactions at least as much as sensitivity to specific policy details. Unless proposals engage these fundamental concerns, perhaps by addressing the long-term welfare of kidney providers, they will fail to address the objections of a substantial minority.

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## References

1. Roth AE. Repugnance as a constraint on markets. *J Econ Perspect* 2007; 21: 37–58.

2. Rapaport FT. The case for a living emotionally related international kidney donor exchange registry. *Transplant Proc* 1986; XVIII: 5–9.
3. Charlie W. Norwood Living Organ Donation Act, Public Law 110–144, 121 Stat. 1813–1814, 21/12/2007.
4. Roth AE, Sönmez T, Ünver MU. Kidney exchange. *Quart J Econ* 2004; 119: 457–488.
5. Roth AE, Sönmez T, Ünver MU, Delmonico FL, Saidman SL. Utilizing list exchange and undirected good Samaritan donation through ‘chain’ paired kidney donations *Am J Transplant* 2006; 6: 2694–2705.
6. Rees MA, Kopke JE, Pelletier RP et al. A non-simultaneous extended altruistic donor chain. *N Engl J Med* 2009; 360: 1096–1101.
7. Rodrigue JR, Crist K, Roberts JP, Freeman RB, Merion RM, Reed AI. Stimulus for organ donation: A survey of the American Society of Transplant Surgeons Membership. *Am J Transplant* 2009; 9: 2172–2176.
8. Whaples R. The policy views of American Economic Association Members: The results of a new survey. *Econ J Watch* 2009; 6: 337–348.
9. Kranenburg L, Weimar W. Incentives for living kidney donation: What does the public think? *Transplantation* 2008; 86: 500–501.
10. Boulware LE, Troll MU, Wang NY, Powe NR. Public attitudes towards incentives for organ donation: A national study of different racial/ethnic and income groups. *Am J Transplant* 2006; 6: 2772–2785.
11. Guttman A, Guttman RD. Attitudes of healthcare professionals and the public towards the sale of kidneys for transplantation. *J Med Ethics* 1993; 19: 148–153.
12. Kittur DS, Hogan MM, Thukral VK, McGraw LJ, Alexander JW. Incentives for organ donation? *Lancet* 1991; 338: 1441–1443.
13. Americans are divided on offering financial incentives to organ donors. *Wall St J* May 17, 2007 <http://online.wsj.com/article/SB117889765086700017.html>.
14. Wait-listed to death, improving incentives for organ donations. *Wall St J* December 17, 2008, A20, <http://online.wsj.com/article/SB122948107890913051.html>.
15. Matas AJ, Hippen B, Satel S. In defense of a regulated system of compensation for living donation. *Curr Opin Organ Transplant* 2008; 13: 379–385.
16. Danovitch GM, Delmonico FL. The prohibition of kidney sales and organ markets should remain. *Curr Opin Organ Transplant* 2008; 13: 386–394.
17. Delmonico, Francis L. The development of the declaration of Istanbul on organ trafficking and transplant tourism. *Nephrol Dial Transplant* 2008; 23: 3381–3382.
18. Robin Young. The ‘Yuck!’ factor. *National Public Radio* March 25, 2008, minute 13: 30
19. Lephardt NE, Bredeen CH. The market attitude inventory: The development and testing of reliability and validity. *J Econ Econ Educ Res* 2005; 6: 63–72.
20. Couper MP. Web surveys: A review of issues and approaches. *Public Opin Q* 2000; 64: 464–494.
21. Schonlau M, Fricker R, Elliott M. Conducting research surveys via e-mail and the web. RAND, Santa Monica, CA, 2002: 20–24.
22. Yeager DS, Krasnick JA, Chang LC et al. Comparing the accuracy of RDD telephone surveys and internet surveys conducted with probability and non-probability samples. [working paper updated August 1, 2009 cited November 21, 2009] available at: [http://www.knowledgenetworks.com/insights/docs/Mode-04\\_2.pdf](http://www.knowledgenetworks.com/insights/docs/Mode-04_2.pdf).
23. Groves RM. Nonresponse rates and nonresponse bias in household surveys. *Public Opin Q* 2006; 70: 646–675.
24. Chang LC, Krasnick JA. National surveys via RDD telephone interviewing vs. the internet: Comparing sample representativeness and response quality. [working paper updated February 24, 2009 cited November 21, 2009] available at: <http://www.knowledgenetworks.com/ganp/docs/RDD-vs-Web.pdf>.
25. Berrrens RP, Bohara AK, Jenkins-Smith H, Silva C, Weimer DL The advent of internet surveys for political research: A comparison of telephone and internet samples. *Polit Anal* 2003; 11: 1–22.