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## Measuring and Explaining Racial and Ethnic Differences in Willingness to Donate Live Kidneys in the United States

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### Abstract

**Background**—Reasons for US racial-ethnic minority ESRD patients' reported difficulties identifying live kidney donors are poorly understood.

**Methods**—We conducted a national study to develop scales measuring willingness to donate live kidneys among US adults (scores ranged from 0 (not willing) to 10 (extremely willing)), and we tested whether racial-ethnic differences exist in willingness to donate. We also examined whether clinical, sociodemographic, and attitudinal factors mediated potential racial-ethnic differences in willingness.

**Results**—Among 845 participants, the majority were extremely willing to donate to relatives (77%) while fewer than half were extremely willing to donate to non-relatives (18%). In multivariable linear regression analyses, willingness to donate varied by race-ethnicity and recipient relationship to the donor. African Americans were less willing to donate to relatives than Whites (  $\beta$  : -0.48; 95% CI: -0.94 to -0.17;  $p=0.04$ ), but these differences were eliminated after

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accounting for socioeconomic factors, medical trust, and concerns about burial after death. There were no differences in willingness to donate between Hispanics and Whites.

**Conclusions**—African Americans' burial concerns, medical trust, and socioeconomic factors explained differences in their willingness to donate to relatives, suggesting efforts to address these barriers may enhance rates of live kidney donation in this group.

### Keywords

live donor kidney transplantation; live kidney donation; minority donation; racial-ethnic disparities; willingness to donate live kidneys

## INTRODUCTION

In the United States (US), racial-ethnic minorities with end stage renal disease (ESRD) have been persistently less likely to receive live donor kidney transplantation (LDKT) than their White counterparts over the past two decades<sup>1–4</sup>. Racial-ethnic disparities in LDKT may, in part, be due to minority ESRD patients' reported difficulties identifying live donors. To address disparities in LDKT, it is important to identify potential causes of these difficulties among racial-ethnic minorities, particularly since the majority of live kidney donations in the US are received from biological relatives (69% as of 2012)<sup>1</sup>. However, reasons for these reported difficulties identifying potential donors are poorly understood. Some prior studies suggest that racial-ethnic minority patients may be more likely to encounter difficulties in identifying potential donors who meet medical criteria for donation<sup>5–8</sup>. Other studies question whether difficulties may be due to racial-ethnic minorities' poor willingness to donate<sup>9–10</sup>.

Willingness to become a live donor could be influenced by potential donors' cultural norms defining families and close personal relationships<sup>11–12</sup> and could vary based on potential donors' perceived closeness to various recipients (e.g., ranging from very close relatives such as a parent or a child to more distant relatives such as cousins). Perceptions of family structure and relatedness may also vary according to race-ethnicity<sup>11</sup>. To date, few studies have assessed whether racial-ethnic differences exist in willingness to donate live kidneys to recipients with varying levels of relatedness to potential donors. Further, little is known about factors that might explain these potential racial-ethnic differences. Although prior studies have shown that willingness to donate deceased organs is influenced by potential donors' lack of trust in medical institutions and religious concerns about organ donation<sup>13–14</sup>, the influence of these and other potential factors on explaining differences in willingness to donate live kidneys is unknown.

Efforts to quantify racial-ethnic differences in willingness to donate live kidneys and to identify the root causes of these differences are crucial to developing strategies to improve rates of LDKT. The objective of this study was to assess whether racial-ethnic differences exist in potential donors' willingness to donate live kidneys to various recipients within a national sample. We also examined factors that could explain potential racial-ethnic differences in willingness.

## MATERIAL AND METHODS

### Study Design and Population

As part of a national cross-sectional study of US-based adults (aged 18–75 years) performed to study public attitudes about organ donation, we measured participants' willingness to donate live kidneys to various potential recipients, and we assessed whether racial-ethnic

differences in willingness exist. We hypothesized *a priori* that willingness to donate live kidneys would vary according to participants' race-ethnicity and relationship to the potential recipient. We further hypothesized that clinical, sociodemographic, and attitudinal factors would mediate racial-ethnic differences in willingness to donate live kidneys.

As described previously, we randomly selected study participants from households identified using random digit selection of telephone numbers<sup>15</sup>. A majority of participants (n = 720, 85%) were selected from households identified using random digit selection of telephone numbers within the nine U.S. census divisions. We performed oversampling of households in all four U.S. census regions (n=125, 15%) to enhance the numbers of African American and Hispanic participants. The Institutional Review Board at the Johns Hopkins Medical Institutions approved the study, and all participants gave their informed oral consent prior to their inclusion in the study.

### Questionnaire administration

The 20-minute telephone questionnaire was administered to participants in both English and Spanish and assessed participants' 1) stated willingness to donate a live kidney, 2) sociodemographic characteristics and presence of comorbid medical conditions, 3) trust in the medical establishment, 4) knowledge about the benefits of kidney transplantation, and 5) donation related attitudes.

### Questions Assessing Willingness to Donate Live Kidneys

We presented participants with a list of potential recipients to whom they might be willing to donate a live kidney and asked them, "Please rate your willingness to donate a live kidney to each of the following people from 0 to 10 with 0 being 'not willing' and 10 being 'extremely willing' to donate." The list of potential recipients included 1) your parent, 2) your child, 3) your sibling, 4) your spouse, 5) your friend, 6) someone famous you do not know personally, 7) someone you do not know (stranger-not famous). Participants were asked to indicate their willingness to donate a live kidney to each of these potential recipients separately by indicating a number from 0 to 10 for each potential recipient listed (Appendix, A1).

### Assessment of Factors Potentially Associated with Differences in Willingness to Donate Live Kidneys

We examined seven classes of clinical, sociodemographic, and attitudinal factors we hypothesized were potentially associated with willingness to donate live kidneys: 1) demographic (age, gender, marital status), 2) clinical suitability (presence of comorbid medical conditions), 3) socioeconomic (education, annual household income, employment status, insurance status, number of dependents), 4) medical trust (physician trust, hospital trust), 5) religious concerns about donation, 6) concerns about the impact of donation upon burial or cremation after death, and 7) transplant knowledge. We selected these factors based upon the results of prior work suggesting that they may be associated with decisions about organ donation among US adults<sup>3-4, 7, 10, 13-14</sup>.

We categorized participants' self-reported race-ethnicity as White, African American, Hispanic, and Non-Hispanic Other racial-ethnic minority, and we assessed participants' age, gender, education completed, annual household income, marital status, employment status, health insurance status, and census region of residence. We also assessed the presence of comorbid medical conditions (i.e. conditions that would exclude participants from being considered clinically suitable to become a live kidney donor). Participants were asked to report whether they had ever been diagnosed with either of the following medical conditions: heart attack, stroke, hepatitis, liver disease, kidney stones, diabetes,

hypertension, cancer, or HIV/AIDS by indicating a response of “yes” versus “no.” We considered participants to have a comorbid medical condition if they responded “yes” to at least one of these medical diagnoses.

Using questions adapted from the Trust in Physician Scale<sup>16</sup>, we considered participants' attitudes regarding the medical establishment to include: 1) their explicitly stated trust in hospitals and 2) their explicitly stated trust in their physician. We assessed participants' trust in hospitals or physicians by asking them their agreement with the statements, “I trust hospitals to put my medical needs above all other considerations,” and, “I trust my physician to put my medical needs above all other consideration.” Possible responses for each question included “completely agree, mostly agree, somewhat agree, agree a little, or not at all.”

We assessed participants' religious views about organ donation by asking them their level of agreement with the following statement: “My religious views do not permit organ donation.” Possible responses included “strongly agree, agree, no opinion, disagree, strongly disagree, don't know, or not applicable.” We also assessed participants' level of agreement with the following statement: “All of my organs must be fully intact in preparation for burial or cremation.” Possible responses included “strongly agree, agree, no opinion, disagree, strongly disagree, or don't know.”

We assessed participants' knowledge of the benefits of transplantation by asking them their level of agreement with the following statement: “People who receive kidney transplants live longer and have a better quality of life.” Possible responses included “completely agree, mostly agree, somewhat agree, agree a little, or not at all.” We considered participants to correctly understand the benefits of a kidney transplant if they answered “completely agree” or “mostly agree” (understand) versus “somewhat agree”, “agree a little”, “or not at all” (not understand).

## STATISTICAL ANALYSIS

### Scale Development

Using data obtained from the individual scales assessing participants' willingness to donate live kidneys to individual family members, friends, or strangers, we used principal components analysis and common factor analysis to test whether we could develop a scale to present an overall measure of individual participants' composite willingness to donate live kidneys. We calculated the Pearson's rank correlation coefficients and matrix for each of the willingness-to-donate survey items (parent, child, sibling, spouse, friend, someone famous, stranger). We examined screeplots and correlation measures, and we used the criteria of eigenvalues greater than 1 and factor loadings greater than 0.5 to determine the number of underlying factors. We performed varimax rotation to aid the interpretations of the factor solutions.

### Associations of Factors with Willingness to Donate Live Kidneys

To obtain national estimates generalizable to US households, we weighted all analyses using sampling probabilities based on the distribution of 111,040,725 households in the census regions we sampled. We described and assessed potential racial-ethnic differences in participants' sociodemographic, attitudinal, and clinical characteristics using weighted analyses to calculate the chi-square statistic for proportions and analysis of variance (with Bonferroni correction) for pairwise comparisons of means. In a baseline multivariable linear regression model comprising fixed, demographic covariates (age, gender, and marital status), we assessed the independent association of race-ethnicity with participants' willingness to donate live kidneys. In subsequent regression models, we explored potential mediation of the original association between race-ethnicity and willingness to donate by

adding the remaining 6 classes of clinical, sociodemographic, and attitudinal factors (one-at-a-time) to the baseline model in order to examine their independent effects on the coefficient estimates for race-ethnicity. In our final regression model, we included all of the variables. We considered statistically significant attenuation of originally observed coefficient estimates reflecting associations between race-ethnicity and willingness to donate to indicate variables' potential mediation of racial-ethnic differences in willingness. We considered two-sided p-values of less than 0.05 to be statistically significant. All statistical analyses were performed using STATA 11.0 to account for the complex survey design and weighting.

## RESULTS

### Response Rate, Sociodemographic, and Clinical Characteristics of Study Participants

Prior to oversampling, we contacted a total of 847 households who agreed to randomization of participants within the household, and 720 respondents from these households agreed to participate in the study (representing 85% of contacted households). This initial sample consisted of only 44 African Americans and 63 Hispanics. We then identified an additional 125 racial-ethnic minorities (58 African Americans and 67 Hispanics) through oversampling, resulting in 845 total completed telephone interviews. The median age among study participants was 45 years. A majority of participants were female, married or living with a partner, employed, had annual household incomes of at least \$40,000 US dollars, and had health insurance coverage. Statistically significant differences in age, education, marital status, annual household income, health insurance coverage, and distribution of participants across census regions were noted across racial-ethnic groups. We found no racial-ethnic differences in diagnosis of comorbid medical conditions among study participants. (Table 1)

### Scales Measuring Willingness to Donate Live Kidneys

As a result of the principal components and common factor analyses, we found that a two-factor solution reflecting two different types of overall willingness: willingness to donate to relatives (i.e., living-related kidneys) and willingness to donate to non-relatives (i.e., living non-related kidneys) best fit our data. (Appendix, A2–A3) The first four survey items (parent, child, sibling, spouse) loaded more strongly onto the first factor (willingness to donate living-related kidneys), and two survey items (someone famous, stranger) loaded strongly onto the second factor (willingness to donate living non-related kidneys). One of the items (friends) loaded above 0.5 onto both factors; however, the correlation coefficient results supported the inclusion of this item onto the second factor. Thus, we averaged individuals' responses across the first 4 survey items (parent, child, sibling, spouse) to create an overall score reflecting composite willingness to donate living-related kidneys, and we averaged individuals' responses across the final 3 survey items (friend, someone famous, stranger) to create an overall score reflecting composite willingness to donate living non-related kidneys. Cronbach's alpha, a measure of reliability, was greater than 0.80 for both scales, indicating that the scales had good internal consistency. Scores for each scale ranged from 0 (not willing) to 10 (extremely willing), with higher scores reflecting greater willingness to donate live kidneys. We performed all subsequent analyses assessing potential differences in willingness to donate to relatives and non-relatives using scores derived from these scales as the main dependent variables.

### Donation-Related Attitudes and Transplant Knowledge

Participants' attitudes regarding medical trust, donation-related attitudes, and transplant knowledge varied according to their race-ethnicity. African Americans were statistically significantly less likely than Whites to completely or mostly believe that people who receive a kidney transplant live longer and have a better quality of life. African Americans and Hispanics were statistically significantly less likely than Whites to completely or mostly

trust physicians or hospitals to put their medical needs above all other considerations. African Americans and Hispanics were statistically significantly more likely than Whites to agree with or have no opinion about the following statements: “my religious views do not permit organ donation” and “all of my organs must be fully intact in preparation for burial or cremation” (Table 2).

### Racial-Ethnic Differences in Willingness to Donate Live Kidneys

Participants' willingness to donate live kidneys varied according to their race-ethnicity and recipient relationship to the participant. Overall, participants expressed greater willingness to donate living-related kidneys (Mean: 9.18; Standard Deviation: 2.06) than living non-related kidneys (Mean: 5.72; Standard Deviation: 3.04). We found no racial-ethnic differences in mean willingness to donate living non-related kidneys, but racial-ethnic differences existed in mean willingness to donate living-related kidneys. Mean willingness to donate living-related kidneys was highest among Hispanics (9.38), intermediate among Whites (9.25), and lowest among African Americans (8.78).

In multivariable models adjusting for age, gender, educational status, annual household income, marital status, employment status, census region, and presence of comorbid medical conditions, African Americans were less willing than their White counterparts to donate to relatives ( $\beta = -0.48$ ; 95% CI:  $-0.94$  to  $-0.17$ ;  $p=0.04$ ). However, we found no differences in willingness to donate to relatives between Hispanics and Whites ( $\beta = 0.90$ ; 95% CI:  $-0.36$  to  $0.54$ ;  $p=0.70$ ). There were also no racial-ethnic differences in willingness to donate to non-relatives among study participants. (Table 3)

### Factors Associated with Differences in Willingness to Donate Living-Related Kidneys between African Americans and Whites

To determine whether the observed difference in willingness to donate living-related kidneys between African Americans and Whites could be explained by clinical, sociodemographic, or attitudinal factors, we tested for potential mediation of differences within multivariable linear regression models. In separate models testing the individual contribution of clinical, sociodemographic, and attitudinal factors, we found that socioeconomic factors, medical trust, and concerns regarding burial and cremation were independently associated with and significantly attenuated differences in willingness to donate living-related kidneys between African Americans and Whites. Once we accounted for differences in each of these factors, we no longer observed statistically significant differences in willingness to donate living-related kidneys between African Americans and Whites. (Table 4)

## DISCUSSION

In this US study, we found that willingness to donate live kidneys varied by race-ethnicity and recipient relationship to the potential donor. To our knowledge, this is the first national study to demonstrate racial-ethnic differences in willingness among US adults using scales developed to measure composite willingness to donate live kidneys to various recipients and to assess the extent to which attitudinal, sociodemographic, and clinical factors might explain differences in willingness. Our findings shed light on the nature of racial-ethnic differences in willingness to donate live kidneys. African Americans were less willing than Whites to donate live kidneys to relatives, and but they were no less willing than Whites to donate to non-relatives. Differences we observed in willingness to donate live kidneys between African Americans and Whites were eliminated when we accounted for differences in socioeconomic factors, medical trust, and concerns about the impact of live donation upon burial or cremation after death.

Efforts to address factors that explain variation in willingness to donate may be most effective in narrowing differences in willingness. For instance, renewed efforts to emphasize the importance of engendering trusting relationships between potential donors (e.g., within patients' families and social networks) and medical providers they encounter during the course of their health care (e.g., through efforts to improve culturally sensitive communication) could help alleviate concerns regarding the safety of and potential clinical risks associated with LDKT<sup>20</sup>. Recent evidence suggests that African Americans may face serious short-term complications (e.g., increased risk of surgical mortality) and long-term complications from live donation, including increased risk of future kidney disease, hypertension, or diabetes requiring drug therapy, and greater likelihood of needing a kidney in the future, as compared with White donors<sup>21–26</sup>. Such evidence provides a legitimate basis for racial-ethnic minorities' concerns about the live donation process. Continued efforts, such as comprehensive surveillance systems, are needed to enhance tracking of long-term health outcomes and safety for donors of all races and ethnicities. Future work to develop and evaluate the effectiveness of interventions to directly improve potential donors' trust of the live kidney donation process (e.g., through full disclosure of the best available scientific evidence on the benefits and potential risks of donation as well as steps taken to minimize risks) could also help alleviate their concerns about the potential clinical risks of live donation.

While prior research has demonstrated that concerns about burial/cremation after death are related to willingness to donate deceased organs<sup>27–28</sup>, we are not aware of previous studies demonstrating an association between these concerns and willingness to donate live kidneys. Programs to enhance rates of live kidney donation may benefit from the involvement of cultural and spiritual leaders to address and alleviate concerns regarding burial and cremation. Discussions between potential donors and cultural or spiritual leaders may provide a venue through which concerns about live donation and its potential impact on body integrity after death can be addressed and demystified.

Our findings suggest that socioeconomic factors may also play an important role in donor decision-making, particularly among racial-ethnic minorities who may be less willing to donate if they perceive financial pressures as barriers to donation<sup>5, 29–30</sup>. While a majority of direct medical costs associated with living kidney donation in the US are covered by Medicare and/or private health insurance, live donors may still be faced with additional costs associated with the donation process, including lost wages due to time away from work, incidental medical expenses, transportation and lodging, and hired caregiver or child care costs<sup>29–31</sup>. Over the past decade, federal and state legislation providing support for living donors has been enacted in the US<sup>32–33</sup>. Nevertheless, the extent to which racial-ethnic minorities who are considering live donation are aware of these policies is unclear. Less awareness of these policies could be associated with greater financial concerns and less willingness to donate. The incorporation of financial counselors within educational efforts may reduce potential donors' financial concerns regarding the LDKT process and enhance willingness to donate among minorities<sup>5, 34</sup>.

Notably, we found no differences in willingness to donate to relatives or non-relatives between Hispanics and Whites. Because barriers to live kidney donation for racial-ethnic minorities appear to operate at multi-factorial levels for potential recipients and donors (including health system, provider, and patient levels)<sup>35</sup>, continued efforts to identify and address additional barriers which could hinder live kidney donation among Hispanics are needed. For instance, prior work suggests that Hispanic patients may harbor concerns about surgical risks for donors and recipients or may have knowledge deficits about the need for a kidney transplant, all of which could hinder their willingness to approach potential donors<sup>36</sup>.



We acknowledge the potential limitations of our study. First, we performed a telephone interview in which we attempted to ascertain sociodemographic information from participants in addition to their attitudes about organ donation intentions. It is likely persons who chose to participate in our questionnaire were more interested in live kidney donation than those who chose not to participate. Second, our participants were responding to a hypothetical circumstance in which they might be willing to donate a kidney. Reported willingness to donate may not predict actual behaviors when persons are faced with the real prospect of donating. Third, our limited sample of African American and Hispanic study participants may have different attitudes toward organ donation than those who chose not to participate in the study. This could potentially influence our study results and limit the generalizability of our findings to these racial-ethnic minorities. Finally, we did not have sufficient sample sizes to adequately assess potential differences in willingness to donate among other minority groups known to have disparate rates of organ donation, such as Native Americans, Pacific Islanders, and Asian immigrants. Nonetheless, we believe this national study provides great insight into potential targets for future interventions to improve racial-ethnic minorities' consideration of live kidney donation.

In conclusion, we identified important mediators of differences in willingness to donate living-related kidneys between African Americans and Whites. Our study suggests that burial concerns, medical trust, and socioeconomic factors mediated differences in willingness to donate living-related kidneys. Future studies are needed to help quantify the relative importance of each of these factors in explaining observed differences in willingness to donate. Efforts to quantitatively rank which factor(s) might be most important in explaining racial-ethnic differences in willingness to donate live kidneys could better inform the development of targeted interventions to address racial-ethnic disparities in receipt of live donor kidney transplantation.

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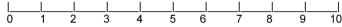
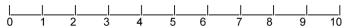


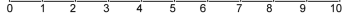
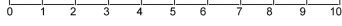
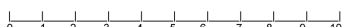
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# APPENDIX

## A1

### Questions Assessing Willingness to Donate Live Kidneys

**Instructions:** I am now going to read to you a list of people to whom you might donate a kidney as a live donor. Please rate your willingness to donate a kidney to these people from 0 to 10 with 0 being "not willing" and 10 being "extremely willing" to donate:

1. **Your parent:**  

2. **Your child:**  

3. **Your sibling:**  

4. **Your spouse:**  

5. **A friend:**  

6. **Someone famous (you do not know personally):**  

7. **Someone you do not know (stranger - not famous):**  


## A2

### Exploratory Factor Analysis: Assessment of Principal Components and Proportion of Variance Explained

Components	Eigenvalues	Proportion of Variance Explained	Cumulative Variance Explained
Component 1	4.28952	0.6128	0.6128
Component 2	1.45431	0.2078	0.8205
Component 3	0.364629	0.0521	0.8726
Component 4	0.321624	0.0459	0.9186
Component 5	0.220118	0.0314	0.9500
Component 6	0.181996	0.0260	0.9760
Component 7	0.167811	0.0240	1.0000

## A3

### Mean Distribution, Varimax Rotated Factor Loadings, Unique Variances, and Correlation Measures of Items Used to Measure Willingness to Donate Live Kidneys

Survey Item	Mean Score (Standard Deviation)	Component 1 (Relatives) Rotated Factor Loadings	Component 2 (Non-Relatives) Rotated Factor Loadings	Uniqueness	Item-Test Correlation	Item-Rest Correlation
Parent	8.956 (2.56)	<b>0.7983</b>	0.2439	0.3033	0.7771	0.6943
Child	9.515 (1.97)	<b>0.8670</b>	0.1291	0.2317	0.7279	0.6566
Sibling	9.082 (2.37)	<b>0.8909</b>	0.2088	0.1628	0.7877	0.7136
Spouse	9.085 (2.43)	<b>0.8158</b>	0.1974	0.2955	0.7614	0.6792

Survey Item	Mean Score (Standard Deviation)	Component 1 (Relatives) Rotated Factor Loadings	Component 2 (Non-Relatives) Rotated Factor Loadings	Uniqueness	Item-Test Correlation	Item-Rest Correlation
Friend	7.627 (2.87)	0.5621	<b>0.5684</b>	0.3610	0.8467	0.7771
Someone Famous	4.276 (3.76)	0.1401	<b>0.8585</b>	0.2433	0.7300	0.5770
Stranger	5.210 (3.62)	0.1860	<b>0.9283</b>	0.1036	0.7710	0.6414

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Table 1

## Sociodemographic and Clinical Characteristics of Study Participants by Race-Ethnicity

Characteristic	Overall <sup>1</sup> N=845 n (%) <sup>2</sup>	Race-ethnicity			p-value
		White N=550 n (%) <sup>2</sup>	African American N=102 n (%) <sup>2</sup>	Hispanic N=130 n (%) <sup>2</sup>	
<b>Age</b>					<0.01
18–35 years	215 (25)	101 (18)	39 (38)	61 (47)	
36–49 years	296 (35)	202 (37)	33 (32)	52 (40)	
50+ years	307 (36)	247 (45)	30 (29)	16 (12)	
<b>Gender</b>					<0.01
Male	277 (33)	198 (36)	23 (23)	36 (28)	
Female	540 (64)	351 (64)	76 (75)	87 (67)	
<b>Education</b>					<0.01
Less than college graduate	412 (49)	248 (45)	62 (61)	85 (65)	
College graduate or beyond	400 (47)	301 (55)	37 (36)	37 (28)	
<b>Annual Household Income</b>					<0.01
\$0 – \$40,000	290 (34)	165 (30)	49 (48)	61 (47)	
\$40,001 – \$60,000	148 (17)	105 (19)	17 (17)	19 (15)	
Greater than \$60,000	308 (36)	243 (44)	25 (24)	26 (20)	
<b>Marital Status</b>					<0.01
Not married or living with a partner	333 (39)	202 (37)	62 (61)	50 (38)	
Married or living with a partner	477 (56)	346 (63)	37 (36)	71 (55)	
<b>Employment</b>					0.03
Full-time or part-time	551 (65)	371 (67)	67 (66)	84 (65)	
Student, homemaker, or retired	203 (24)	148 (27)	19 (19)	25 (19)	
Disabled or unemployed	58 (7)	30 (5)	13 (13)	13 (10)	
<b>Census region</b>					<0.01
North East	155 (18)	101 (18)	19 (19)	20 (15)	
North Central	167 (20)	126 (23)	22 (22)	10 (8)	
South	303 (36)	185 (34)	56 (55)	39 (30)	
West	220 (26)	138 (25)	5 (5)	61 (47)	
<b>Health Insurance Coverage</b>					<0.01
Insured	726 (86)	515 (94)	88 (86)	89 (68)	
Not Insured	79 (9)	33 (6)	11 (11)	32 (25)	
<b>Diagnosis of at least one comorbid medical condition<sup>3</sup></b>					0.08
Yes	353 (42)	246 (45)	48 (47)	37 (28)	

Characteristic	Overall <sup>1</sup> N=845 n (%) <sup>2</sup>	Race-ethnicity			p-value
		White N=550 n (%) <sup>2</sup>	African American N=102 n (%) <sup>2</sup>	Hispanic N=130 n (%) <sup>2</sup>	
No	460 (54)	303 (55)	51 (50)	84 (65)	

Notes:

<sup>1</sup> Including 37 'other' racial-ethnic minority groups (American Indian or Alaskan Natives, Native Hawaiian or other Pacific Islanders, Asians, "two or more races," and "others")

<sup>2</sup> Percentages may not add up to 100% due to missing values

<sup>3</sup> Comorbid medical conditions include self-reported diagnosis of at least one of the following: heart attack; stroke; hepatitis; liver disease; kidney stones; diabetes; hypertension; cancer; and HIV/AIDS

**Table 2**

## Medical Trust and Donation Attitudes by Study Participants' Race-Ethnicity

	Race-ethnicity				p-value
	Overall <sup>1</sup> N=845 n (%) <sup>2</sup>	White N=550 n (%) <sup>2</sup>	African American N=102 n (%) <sup>2</sup>	Hispanic N=130 n (%) <sup>2</sup>	
<b><u>Trust My Physician to Put My Medical Needs Above All Other Considerations</u></b>					<0.01
Completely or Mostly Agree	627 (74)	453 (82)	66 (64)	80 (62)	
Less Than Mostly Agree	181 (21)	95 (17)	32 (31)	40 (31)	
<b><u>Trust Hospitals to Put My Medical Needs Above All Other Considerations</u></b>					<0.01
Completely or Mostly Agree	401 (47)	295 (53)	35 (34)	53 (41)	
Less Than Mostly Agree	410 (48)	252 (46)	64 (63)	68 (53)	
<b><u>Believe People Who Receive Transplants Live Longer and Have a Better Quality of Life</u></b>					<0.01
Completely or Mostly Agree	504 (60)	352 (64)	40 (40)	77 (59)	
Less Than Mostly Agree	318 (38)	186 (33)	58 (57)	51 (40)	
<b><u>My Religious Views Do Not Permit Organ Donation</u></b>					<0.01
Disagree or Strongly Disagree	573 (68)	414 (75)	59 (58)	67 (51)	
Agree or Strongly Agree	51 (6)	21 (4)	10 (10)	17 (13)	
No Opinion	122 (14)	68 (12)	23 (23)	24 (18)	
Don't Know	42 (5)	20 (4)	7 (7)	13 (10)	
Not Applicable	35 (4)	26 (5)	1 (1)	5 (4)	
<b><u>All of My Organs Must be Fully Intact in Preparation for Burial or Cremation</u></b>					<0.01
Disagree or Strongly Disagree	726 (86)	516 (94)	73 (71)	97 (75)	
Agree or Strongly Agree	52 (6)	16 (3)	19 (19)	11 (8)	
No Opinion	31 (4)	10 (2)	5 (5)	15 (12)	
Don't Know	12 (1)	5 (1)	3 (3)	3 (2)	

Notes:

<sup>1</sup>Including 37 'other' racial-ethnic minority groups (American Indian or Alaskan Natives, Native Hawaiian or other Pacific Islanders, Asians, "two or more races," and "others")

<sup>2</sup>Percentages may not add up to 100% due to missing values



**Table 3**  
 Racial-Ethnic Differences in Willingness to Donate Live Kidneys to Relatives and Non-Relatives

Race-Ethnicity	Differences in Mean Willingness to Donate to Relatives		Differences in Mean Willingness to Donate to Non-Relatives	
	Univariable <sup>1</sup> Linear Regression	p-value	Univariable <sup>1</sup> Linear Regression	p-value
White (n=550)	[ref]	-----	[ref]	-----
African American (n=102)	-0.470	0.03*	-0.248	0.46
Hispanic (n=130)	0.130	0.52	-0.248	0.41
			Multivariable <sup>2</sup> Linear Regression	p-value
				-----
				[ref]
				-0.188
				0.61
				0.30

Notes:

<sup>1</sup> denotes linear regression models unadjusted for potential confounders.

<sup>2</sup> denotes linear regression models adjusted for age, gender, education, household income, marital status, employment, and census [ref] denotes reference group

\* denotes statistically significant difference at p<0.05.

**Table 4**

Mediation of Differences in Willingness to Donate Living-Related Kidneys between African Americans and Whites Due to Clinical, Attitudinal, and Sociodemographic Factors

Model Results by Race-Ethnicity						
		White (n=550)		African American (n=102)		Statistical Mediation of Differences?
	Model Covariates		p-value		p-value	
<b>Model 1</b>	Age, gender, and marital status	[ref]	-----	-0.503	0.03	(Baseline Model)
<b>Model 2</b>	Model 1 + clinical suitability	[ref]	-----	-0.502	0.03	No
<b>Model 3</b>	Model 1 + socioeconomic factors	[ref]	-----	-0.430	<b>0.06</b>	<b>Yes</b>
<b>Model 4</b>	Model 1 + medical trust	[ref]	-----	-0.436	<b>0.06</b>	<b>Yes</b>
<b>Model 5</b>	Model 1 + religious concerns	[ref]	-----	-0.476	0.03	No
<b>Model 6</b>	Model 1 + burial concerns	[ref]	-----	-0.352	<b>0.12</b>	<b>Yes</b>
<b>Model 7</b>	Model 1 + transplant knowledge	[ref]	-----	-0.559	0.02	No
<b>Model 8</b>	Model 1 + all factors	[ref]	-----	-0.355	<b>0.12</b>	<b>Yes</b>

Note: [ref] denotes reference group