

## SUPPLEMENTAL MATERIAL

### Detailed Methods

#### Access rate

To calculate rate of access to transplantation at center  $j$ , we first identified the length of time ( $T_j$ ) for which we had data on the center by the earliest waitlist ID start date to the latest waitlist ID end date. Next, for each candidate waitlist ID and center, we calculated the length of time the candidate was waiting at the center ( $t_{ij}$ ) and the proportion of time waiting at the center ( $p_{ij} = t_{ij}/T_j$ ). The access rate for center  $j$  was defined as the number of transplants ( $N_j$ ) divided by the sum of the proportion of time candidates were waiting:  $r_j = N_j/\sum_i(p_{ij})$ .

The access rate and the transplant rate (as defined by the Scientific Registry for Transplant Recipients) are quite similar in nature. In fact, if calculated by year, they would be equivalent. Our calculation of access rate aimed to capture as much information as possible on each center while mitigating any potential bias due to the limited 'snapshot' of data we received; thus, we calculated access rate over the length of time for which we have data from the center taking into account proportion of time waiting over that time period.

#### Elastic net

For each of the outcomes, we considered a range of the elastic net mixing parameter ( $\alpha$ ): 0.2, 0.4, ..., 0.8 and for each mixing parameter ( $\alpha$ ), we performed 5-fold cross validation to select the optimal tuning parameter based on the minimal mean squared error (MSE) ( $\lambda.min$ ). To select the optimal mixing parameter ( $\alpha$ ), we chose the  $\alpha$  that achieved the lowest mean 5-fold cross-validation error at the optimal tuning parameter ( $\lambda.min$ ).

To determine the 15 most predictive characteristics for an outcome, all characteristics were standardized before the analyses so that the resulting coefficients could be directly compared. We ranked characteristics based on the absolute value of the elastic net coefficients to determine their relative importance for predicting each outcome of interest.

#### Ridge regression

Similar to the elastic net model, the glmnet [1] ridge regression tuning parameter ( $\lambda.min$ ) was chosen based on the lowest mean 5-fold cross-validation error, and all characteristics were standardized before analysis so the resulting coefficients could be directly compared. If a center had less than 10 observations in either of the dichotomous outcomes (e.g., < 10 offers accepted or < 10 offers rejected) or similarly, for modeling the organ sequence number, if the center performed less than 20 transplants, the center was excluded from the analysis.

#### Decision tree analysis

The conditional inference trees were implemented with the partykit package [2] in R. We limited the size and depth of the conditional inference trees as follows: in modeling offer acceptance, we specified a Bonferonni test with  $\alpha = 0.00001$ . In modeling organ acceptance and organ sequence number, we specified a Bonferonni test and the minbucket parameter (minimum sum of weights in a terminal node) to be 1% of the total number of observations.

#### Map figure methods

To construct the map figures, we used the sheet titled “Table G1” in the OSR data spreadsheet downloaded from <https://www.srtr.org/reports-tools/opo-specific-reports/>, named `osr_final_tables1808.xlsx` [3]. The OPO codes, State Names, County Names, and County FIPS from this sheet were merged with data from this study and then, using the County FIPS, merged with county data (`zip_data`) from the `noncensus` package in R [4] and then finally merged with US county data from the `mapdata` package in R [5], which contains state (region), county (subregion), long and lat coordinates. The figures were created using `geom_polygon` and `coord_map` functions in `ggplot2` [6].

To create the map figure of the median organ sequence numbers we only used data from donor hearts that were ultimately accepted. For each OPO, we calculated the median organ sequence number. OPOs were excluded from this figure, and shaded gray, if there were less than 20 transplants for that OPO in the data. OPOs excluded were HIOP, NMOP, NVLV, NYAP, NYWN, OHLC, and OHOV. The median organ sequence numbers were then merged with the county map data to construct the figure. Median organ sequence numbers across OPOs ranged from 1 to 8 and the median organ sequence number for Alaska (WALC) was 3 (not shown).

## REFERENCES

1. Friedman J, Hastie, T, Tibshirani R. Regularization Paths for Generalized Linear Models via Coordinate Descent. *Journal of Statistical Software* 2010; 33 (1) 1-22.
2. Hothorn T, Zeileis A. `partykit`: A Modular Toolkit for Recursive Partitioning in R. *Journal of Machine Learning Research* 2015; 16: 3905-3909.
3. Scientific Registry of Transplant Recipients. (2018). OSR data (`osr_final_tables1808.xlsx`) [Excel spreadsheet]. Retrieved from [https://www.srtr.org/media/1314/osr\\_final\\_tables1808.xlsx](https://www.srtr.org/media/1314/osr_final_tables1808.xlsx)
4. John A. Ramey (2014). `noncensus`: U.S. Census Regional and Demographic Data. R package version 0.1. <https://CRAN.R-project.org/package=noncensus>
5. Original S code by Richard A. Becker and Allan R. Wilks. R version by Ray Brownrigg. (2018). `mapdata`: Extra Map Databases. R package version 2.3.0. <https://CRAN.R-project.org/package=mapdata>
6. H. Wickham. `ggplot2`: Elegant Graphics for Data Analysis. Springer-Verlag New York, 2016.

**Supplemental Table 1:** Refusal codes associated with offer exclusion

<b>Excluded from this study (yes/no)</b>	<b>Percentage refused with code</b>	<b>Refusal code</b>	<b>Refusal description</b>
no	66.9	830	Donor age, hypertension, prolonged hypotension, high vasopressor/ medication dosage, cardiac arrest, evidence of infection/positive cultures, non-heart beating, etiology of death, donor unstable, donor diabetes, other medical history
no	16.3	831	Donor too large or small, weight incompatible with potential recipient
no	2.9	833	CDC high risk donor or other reasons related to social history
no	1.2	834	CMV, HBV, HCV, HIV, HTLV, VDRL, etc. donor testing is positive
no	0.4	835	Method/quality of preservation, length of cold ischemic time, length of warm ischemic time
no	0.7	836	Surgical damage, non-surgical trauma, diseased organ, organ vasculature, en bloc kidneys or any other anatomical reason
no	8.2	837	Testing unavailable, not done or unacceptable, abnormal biopsy, or other organ-specific reason
no	0	883	Organ Center uses this code for centers that were not offered an organ because their minimum acceptance criteria excluded their potential recipients. [OC use only – does not appear on user list]
no	1.1	898	Use only if the refusal reason does not fit the above categories. Be sure to write in the other reason, UNOS staff will review the OTHER reason and may recode if necessary.
no	0	921	Donor Quality
no	0	922	Donor Age
no	0	923	Donor Size/Weight
no	0	924	Donor ABO
no	0	925	Donor Social History
no	0	926	Positive Serological Tests
no	0	927	Organ Preservation
no	0	928	Organ Anatomical Damage or Defect
no	0	950	Heart: Cardiac function test results unavailable, not done or unacceptable
no	0	951	Heart: Abnormal Echocardiogram
no	0	952	Heart: Abnormal Coronary Angiography
no	0	953	Heart: Abnormal EKG results

no	0	954	Heart: Abnormal Hemodynamics
no	0	991	Donor Medical Urgency
no	0	997	Not offered - Min acceptance criteria not met - OC use only
no	0	998	Other: Other Specify
yes	NA	800	Potential recipient's condition has improved and transplant is currently unnecessary
yes	NA	801	Potential recipient too sick to attempt transplant at the time of offer, cannot be located, refused transplant, or is temporarily unsuitable for transplant
yes	NA	802	Either the potential recipient requires a multiple organ transplant or an organ of a different laterality is required (i.e., right lung is specified)
yes	NA	803	Patient transplanted, transplant in progress, or other offer being considered
yes	NA	810	Crossmatch results between donor and potential recipient positive
yes	NA	811	Number of HLA mismatches between donor and potential recipient unacceptable
yes	NA	812	No serum for crossmatching
yes	NA	813	Donor has HLA antigens that are unacceptable to the potential recipient
yes	NA	814	Potential recipient has high PRA and most likely would have a positive crossmatch
yes	NA	815	Potential recipient is highly sensitized and most likely would have positive crossmatch
yes	NA	820	Program unable to accept an organ at this time due to heavy workload
yes	NA	821	Transplant center refused due to transportation, logistics, distance, inclement weather issues, or unable to travel for procurement
yes	NA	822	Response was not received from center within the one-hour time period specified in policy
yes	NA	823	Surgeon unavailable to perform transplant procedure
yes	NA	824	Too far for the organ recovery team to travel or too far to ship
yes	NA	825	Transplant center refused due to transportation, logistics, inclement weather issues, or unable to travel for procurement
yes	NA	832	Donor ABO group incompatible / unacceptable [Only available for LIVER offers; will not display for other organ types]
yes	NA	850	Potential recipient was bypassed for priority multi-organ transplant

yes	NA	851	Potential recipient was bypassed because the donation was directed to a specific recipient.
yes	NA	852	Potential recipient was bypassed because the organ was from a military donor and was directed to a military recipient.
yes	NA	853	Potential recipient was bypassed due to the OPO's OPTN-approved alternative local unit, sharing agreement, or variance
yes	NA	860	Center bypassed potential recipient due to the urgent medical needs of another potential recipient. (Requires written verification by the transplant program to UNOS Policy Compliance Department.) (Also requires written verification by OPO to UNOS Policy Compliance Department; this bypass and narrative justification will be shared with bypassed centers.)
yes	NA	861	OPO bypassed potential recipient due to transportation logistics, including distance in relation to ischemic time or weather conditions. (Requires written verification by OPO to UNOS Policy Compliance Department; this bypass and narrative justification will be shared with bypassed centers.)
yes	NA	862	Potential recipient was bypassed due to urgent donor organ placement. (Requires written verification by OPO to UNOS Policy Compliance Department; this bypass and narrative justification will be shared with bypassed centers.)
yes	NA	863	Potential recipient bypassed as a result of offer(s) made during an expedited placement attempt. This includes offers of expanded donor organs, OR time constraints or family time constraints. (Requires written verification by OPO to UNOS Policy Compliance Department; this bypass and narrative justification will be shared with bypassed centers.)
yes	NA	880	Potential recipient was bypassed in order to place the kidney with the extra-renal organ recipient from the same donor.
yes	NA	881	Potential recipient was bypassed and not offered an organ because the policy requirement was satisfied prior to this sequence number (e.g., non-local 0 mismatches; non-local CPRA 99+ patients)
yes	NA	882	Organ Center uses this code for non-facilitated pancreas center refusals when a facilitated pancreas is offered. [OC use only – does not appear on user list]

yes	NA	884	No kidney available - bypass KP candidates
yes	NA	901	Recipient Ill
yes	NA	902	Recipient Unavailable
yes	NA	903	Recipient Refused
yes	NA	904	Multiple Organ Transplant Required
yes	NA	905	Recipient Transplanted/Inactive
yes	NA	906	Positive Crossmatch
yes	NA	907	HLA mismatch unacceptable
yes	NA	908	Recipient testing results unavailable
yes	NA	909	Patient condition improved, transplant not needed
yes	NA	910	Recipient Medical Urgency - recipient bypassed due to medical urgency of another recipient
yes	NA	911	Heavy workload - program unable to accept an organ at this time due to heavy workload
yes	NA	912	Operational - transportation, logistics, distance, exceeded one hour response time or placement time constrains related to organ ischemic time
yes	NA	913	Surgeon Unavailable - surgeon currently performing
yes	NA	992	Other: Multi-organ Transplant
yes	NA	993	Other: Directed Donation
yes	NA	994	Other: Military Donor
yes	NA	995	Other: ALU, Sharing Agreement, Variance
yes	NA	996	Other: Extra-renal placed with Kidney

NA: not applicable, HLA: human leukocyte antigen, CMV: cytomegalovirus, HBV: hepatitis B virus, HIV: human immunodeficiency virus, HTLV: human T-lymphotropic virus, VDRL: venereal disease research laboratory, OPO: organ procurement organization, OPTN: organ procurement and transplantation network, CPRA: calculated panel of reactive antibodies, KP: kidney pancreas, EKG: electrocardiogram

**Supplemental Table 2A:** Standardized coefficients and rankings for all candidate and donor characteristics predictive of donor heart *offer* acceptance

<b>Characteristic</b>	<b>Standardized coefficient</b>	<b>Rank (Importance)</b>
(Intercept)	-5.75	0
Candidate days waiting	-1.13	1
Candidate days on status 1B	-1.065	2
Donor age	-0.785	3
Candidate days on status 2	-0.606	4
Candidate days on status 1A	-0.501	5
Candidate BMI	-0.386	6
Donor/Candidate weight ratio	-0.359	7
Donor LV EF greater than 50	0.341	8
Candidate blood type O	0.33	9
Donor weight	0.327	10
Candidate unknown cigarette use	0.312	11
Candidate weight	0.293	12
Candidate height	-0.29	13
Candidate/Donor weight mismatch	-0.275	14
Donor LV EF 50 or less	-0.27	15
Donor height	0.26	16
Donor BUN	-0.247	17
Donor COD was head trauma	0.212	18
Donor blood type O	-0.208	19
Candidate/Donor no sex mismatch	0.195	20
Candidate/Donor sex mismatch	-0.195	21
Candidate blood type A	-0.164	22
Center volume high	0.148	23
Donor had PHS risk factors	-0.142	24
Donor history of hypertension	-0.13	25
Donor history of diabetes > 10 years	-0.129	26
Candidate blood type AB	-0.124	27
Donor blood type A	0.113	28
Donor did not have PHS risk factors	0.107	29
Donor no history of diabetes	0.09	30
Donor no history of hypertension	0.087	31
Donor COD was anoxia	-0.079	32
Donor history of cigarette use	-0.079	33
Donor race Multiracial	-0.071	34
Candidate male	-0.068	35

Candidate female	0.067	36
Donor no history of MI	0.066	37
Donor LV EF unknown	-0.061	38
Donor history of cocaine use	-0.06	39
Donor history of diabetes 6-10 years	-0.058	40
Donor blood type AB	0.058	41
Donor unknown history of diabetes	0.053	42
Donor female	-0.051	43
Donor male	0.049	44
Donor COD was CNS tumor	-0.048	45
Candidate age at listing	0.046	46
Donor BMI	-0.045	47
Donor no history of cigarette use	0.044	48
Center volume low	-0.036	49
Candidate unknown history of diabetes	-0.035	50
Candidate and Donor not identical blood type	-0.035	51
Candidate unknown if prior cardiac surgery at listing	-0.034	52
Donor given pre-recovery steroids	0.029	53
Donor last serum sodium value	0.026	54
Candidate no prior cardiac surgery at listing	0.026	55
Donor unknown history of MI	-0.026	56
Donor COD other	-0.026	57
Donor race Black	-0.025	58
Candidate race Asian	0.025	59
Center volume medium	-0.023	60
Candidate unknown pulmonary hypertension	-0.021	61
Candidate race Hispanic	0.016	62
Donor race Native Hawaiian/other Pacific Islander	-0.015	63
Donor given pre-recovery thyroxine	-0.014	64
Candidate had no history of diabetes	0.011	65
Donor race Hispanic	0.011	66
Donor not given pre-recovery steroids	-0.011	67
Candidate race Multiracial	0.011	68
Candidate no pulmonary hypertension	0.01	69
Donor history of diabetes unknown years	-0.01	70
Candidate history of diabetes unknown years	0.01	71
Donor blood type B	0.008	72
Donor no history heavy alcohol use	-0.007	73
Donor no history of cocaine use	0.007	74
Donor creatinine	-0.006	75



Donor unknown if given pre-recovery thyroxine	0.006	76
Donor total bilirubin	-0.005	77
Candidate cigarette use	-0.005	78
Donor PHS risk factors unknown	0.004	79
Donor unknown if given pre-recovery steroids	-0.004	80
Candidate race Native Hawaiian/other Pacific Islander	0.002	81
Candidate history of diabetes > 10 years	-0.002	82
Candidate race Native American/Alaska Native	-0.002	83
Donor race Asian	-0.002	84
Donor unknown history of heavy alcohol use	0.001	85
Donor race Native American/Alaska Native	0	86
Candidate race Black	0	87
Candidate history of diabetes 6-10 years	0	88
Center volume very low	0	89
Donor COD was cerebrovascular/stroke	0	90
Donor race White	0	91
Donor unknown history of cigarette use	0	92
Donor unknown history of hypertension	0	93
Donor history of diabetes 0-5 years	0	94
Donor unknown history of cocaine use	0	95
Donor history of MI	0	96
Donor not given pre-recovery thyroxine	0	97
Donor history of heavy alcohol use	0	98
Candidate race White	0	99
Candidate blood type B	0	100
Candidate prior cardiac surgery at listing	0	101
Candidate history of diabetes 0-5 years	0	102
Candidate no cigarette use	0	103
Candidate and Donor identical blood type	0	104
Candidate hypertension	0	105

LV: left ventricular, EF: ejection fraction, COD: cause of death, BMI: body mass index, PHS: public health service, MI: myocardial infarction, CNS: central nervous system

**Supplemental Table 2B:** Standardized coefficients and rankings for all donor and transplant center characteristics predictive of donor heart *organ* acceptance

<b>Characteristic</b>	<b>Standardized coefficient</b>	<b>Rank (Importance)</b>
(Intercept)	0.278	0
Donor age	-0.710	1
Donor LV EF greater than 50	0.588	2
Donor height	0.262	3
Donor COD was head trauma	0.179	4
Donor had PHS risk factors	-0.166	5
Donor history of hypertension	-0.166	6
Donor blood type AB	-0.161	7
Donor blood type O	0.139	8
Donor LV EF unknown	-0.108	9
Donor history of cigarette use	-0.103	10
Donor race Multiracial	-0.087	11
Donor blood type B	-0.071	12
Donor BUN	-0.071	13
Donor no history of MI	0.066	14
Donor history of diabetes > 10 years	-0.065	15
Donor male	0.062	16
Donor no history of diabetes	0.061	17
Donor history of diabetes 6-10 years	-0.057	18
Donor BMI	0.054	19
Donor female	-0.044	20
Donor total bilirubin	-0.033	21
Donor unknown history of diabetes	0.030	22
Donor history of diabetes unknown years	-0.029	23
Donor creatinine	-0.025	24
Donor last serum sodium value	0.025	25
Donor race Native Hawaiian/other Pacific Islander	-0.024	26
Donor no history of cigarette use	0.022	27
Donor no history of cocaine use	0.020	28
Donor given pre-recovery steroids	0.019	29
Donor COD was anoxia	-0.018	30
Donor unknown if given pre-recovery steroids	-0.015	31
Donor race Asian	-0.014	32
Donor race White	0.012	33

Donor history of cocaine use	-0.012	34
Donor race Black	-0.010	35
Donor no history of hypertension	0.010	36
Donor race Native American/Alaska Native	-0.009	37
Donor COD other	-0.006	38
Donor no history heavy alcohol use	-0.006	39
Donor COD was CNS tumor	0.005	40
Donor history of MI	-0.003	41
Donor unknown history of heavy alcohol use	0.001	42
Donor weight	0.000	43
Donor COD was cerebrovascular/stroke	0.000	44
Donor race Hispanic	0.000	45
Donor blood type A	0.000	46
Donor unknown history of cigarette use	0.000	47
Donor unknown history of hypertension	0.000	48
Donor history of diabetes 0-5 years	0.000	49
Donor unknown history of cocaine use	0.000	50
Donor unknown history of MI	0.000	51
Donor not given pre-recovery steroids	0.000	52
Donor not given pre-recovery thyroxine	0.000	53
Donor given pre-recovery thyroxine	0.000	54
Donor unknown if given pre-recovery thyroxine	0.000	55
Donor did not have PHS risk factors	0.000	56
Donor PHS risk factors unknown	0.000	57
Donor history of heavy alcohol use	0.000	58
Donor LV EF 50 or less	0.000	59

LV: left ventricular, EF: ejection fraction, COD: cause of death, BMI: body mass index, PHS: public health service, MI: myocardial infarction, CNS: central nervous system

**Supplemental Table 2C:** Standardized coefficients and rankings for all donor characteristics predictive of *organ sequence number*

<b>Characteristic</b>	<b>Standardized coefficient</b>	<b>Rank (Importance)</b>
(Intercept)	2.311	0
Recipient days waiting	-0.329	1
Recipient days on status 2	0.316	2
Center volume high	0.316	3
Donor blood type O	0.208	4
Donor ischemic time 4 or more hours	0.182	5
Recipient age at listing	0.175	6
Donor age	0.158	7
Recipient blood type AB	-0.155	8
Donor height	-0.137	9
Donor ischemic time < 4 hours	-0.131	10
Donor BMI	0.128	11
Donor COD was head trauma	-0.127	12
Donor race Hispanic	-0.117	13
Recipient unknown hypertension status	-0.113	14
Recipient blood type B	-0.104	15
Recipient and Donor identical blood type	-0.084	16
Donor history of cocaine use	0.082	17
Donor had PHS risk factors	0.071	18
Recipient and Donor not identical blood type	0.070	19
Recipient prior cardiac surgery at listing	0.064	20
Donor creatinine	0.057	21
Recipient race Hispanic	-0.052	22
Donor no history of cigarette use	-0.050	23
Donor COD was CNS tumor	0.045	24
Recipient BMI	0.044	25
Center volume low	-0.044	26
Recipient history of diabetes unknown years	-0.043	27
Donor history of diabetes > 10 years	0.042	28
Donor history of heavy alcohol use	-0.042	29
Recipient race Asian	-0.041	30
Donor did not have PHS risk factors	-0.037	31
Donor female	0.037	32
Donor total bilirubin	-0.037	33

Recipient male	-0.037	34
Recipient race Native Hawaiian/other Pacific Islander	-0.033	35
Donor male	-0.032	36
Donor blood type AB	-0.031	37
Donor race Asian	-0.030	38
Donor unknown history of MI	-0.030	39
Donor history of diabetes 6-10 years	0.030	40
Recipient history of diabetes > 10 years	0.028	41
Recipient female	0.028	42
Recipient history of diabetes 0-5 years	0.026	43
Recipient race Multiracial	-0.022	44
Donor COD was anoxia	0.022	45
Donor not given pre-recovery thyroxine	0.022	46
Donor history of hypertension	0.020	47
Recipient unknown history of diabetes	0.017	48
Donor last serum sodium value	0.016	49
Donor unknown if given pre-recovery steroids	-0.014	50
Donor given pre-recovery steroids	0.013	51
Donor race Native American/Alaska Native	-0.013	52
Donor race Multiracial	-0.010	53
Donor race Native Hawaiian/other Pacific Islander	-0.010	54
Donor unknown if given pre-recovery thyroxine	-0.008	55
Recipient race Native American/Alaska Native	-0.008	56
Donor/Recipient no weight mismatch	-0.006	57
Donor unknown history of hypertension	-0.005	58
Donor unknown history of diabetes	-0.004	59
Donor history of MI	0.003	60
Recipient history of diabetes 6-10 years	-0.003	61
Donor no history of diabetes	-0.002	62
Center volume medium	-0.002	63
Donor/Recipient weight mismatch	0.002	64
Recipient unknown cigarette use	0.001	65
Recipient/Donor no sex mismatch	0.000	66
Recipient/Donor sex mismatch	0.000	67
Donor weight	0.000	68
Donor BUN	0.000	69
Recipient days on status 1B	0.000	70
Recipient height	0.000	71
Recipient weight	0.000	72
Donor/Recipient weight ratio	0.000	73
Center volume very low	0.000	74

Donor COD was cerebrovascular/stroke	0.000	75
Donor COD other	0.000	76
Donor race White	0.000	77
Donor race Black	0.000	78
Donor blood type A	0.000	79
Donor blood type B	0.000	80
Donor history of cigarette use	0.000	81
Donor unknown history of cigarette use	0.000	82
Donor no history of hypertension	0.000	83
Donor history of diabetes 0-5 years	0.000	84
Donor history of diabetes unknown years	0.000	85
Donor no history of cocaine use	0.000	86
Donor unknown history of cocaine use	0.000	87
Donor no history of MI	0.000	88
Donor not given pre-recovery steroids	0.000	89
Donor given pre-recovery thyroxine	0.000	90
Donor PHS risk factors unknown	0.000	91
Donor no history heavy alcohol use	0.000	92
Donor unknown history of heavy alcohol use	0.000	93
Recipient race White	0.000	94
Recipient race Black	0.000	95
Recipient blood type O	0.000	96
Recipient blood type A	0.000	97
Recipient no prior cardiac surgery at listing	0.000	98
Recipient unknown if prior cardiac surgery at listing	0.000	99
Recipient had no history of diabetes	0.000	100
Recipient no cigarette use	0.000	101
Recipient cigarette use	0.000	102
Recipient no hypertension	0.000	103
Recipient hypertension	0.000	104
Donor ischemic time unknown	0.000	105

LV: left ventricular, EF: ejection fraction, COD: cause of death, BMI: body mass index, PHS: public health service, MI: myocardial infarction, CNS: central nervous system

**Supplemental Table 3A:** Candidate and donor characteristics predictive of mortality or re-transplantation within 30 days

<b>Characteristic</b>	<b>Standardized coefficient</b>	<b>Rank (Importance)</b>
(Intercept)	-4.232	0
Donor ischemic time unknown	0.160	1
Recipient height	-0.127	2
Recipient unknown cigarette use	0.088	3
Recipient prior cardiac surgery at listing	0.082	4
Donor history of cocaine use	0.074	5
Donor ischemic time < 4 hours	-0.066	6
Donor did not have PHS risk factors	-0.049	7
Recipient race Asian	0.047	8
Recipient race Multiracial	0.044	9
Donor unknown history of cocaine use	-0.036	10
Recipient unknown history of diabetes	0.033	11
Recipient no prior cardiac surgery at listing	-0.030	12
Donor had PHS risk factors	0.029	13
Donor last serum sodium value	-0.029	14
Donor no history of hypertension	-0.028	15
Donor blood type AB	0.027	16
Recipient weight	-0.023	17
Center volume high	-0.019	18
Donor unknown history of hypertension	0.013	19
Recipient no hypertension	-0.013	20
Donor LV EF 50 or less	0.007	21
Donor BMI	0.000	22
Donor age	0.000	23
Donor height	0.000	24
Donor weight	0.000	25
Donor BUN	0.000	26
Donor creatinine	0.000	27
Donor total bilirubin	0.000	28
Recipient days on status 1	0.000	29
Recipient days on status 1B	0.000	30
Recipient days on status 2	0.000	31
Recipient days waiting	0.000	32
Recipient BMI	0.000	33

Recipient age at listing	0.000	34
Donor/Recipient weight ratio	0.000	35
Center volume low	0.000	36
Center volume very low	0.000	37
Center volume medium	0.000	38
Donor male	0.000	39
Donor female	0.000	40
Donor COD was head trauma	0.000	41
Donor COD was anoxia	0.000	42
Donor COD was cerebrovascular/stroke	0.000	43
Donor COD other	0.000	44
Donor COD was CNS tumor	0.000	45
Donor race Black	0.000	46
Donor race White	0.000	47
Donor race Hispanic	0.000	48
Donor race Asian	0.000	49
Donor race Native American/Alaska Native	0.000	50
Donor race Native Hawaiian/other Pacific Islander	0.000	51
Donor race Multiracial	0.000	52
Donor blood type A	0.000	53
Donor blood type O	0.000	54
Donor blood type B	0.000	55
Donor no history of cigarette use	0.000	56
Donor history of cigarette use	0.000	57
Donor unknown history of cigarette use	0.000	58
Donor history of hypertension	0.000	59
Donor no history of diabetes	0.000	60
Donor history of diabetes 0-5 years	0.000	61
Donor history of diabetes > 10 years	0.000	62
Donor unknown history of diabetes	0.000	63
Donor history of diabetes 6-10 years	0.000	64
Donor history of diabetes unknown years	0.000	65
Donor no history of cocaine use	0.000	66
Donor no history of MI	0.000	67
Donor unknown history of MI	0.000	68
Donor history of MI	0.000	69
Donor not given pre-recovery steroids	0.000	70
Donor given pre-recovery steroids	0.000	71
Donor unknown if given pre-recovery steroids	0.000	72
Donor not given pre-recovery thyroxine	0.000	73
Donor given pre-recovery thyroxine	0.000	74



Donor unknown if given pre-recovery thyroxine	0.000	75
Donor PHS risk factors unknown	0.000	76
Donor no history heavy alcohol use	0.000	77
Donor history of heavy alcohol use	0.000	78
Donor unknown history of heavy alcohol use	0.000	79
Recipient male	0.000	80
Recipient female	0.000	81
Recipient race Hispanic	0.000	82
Recipient race White	0.000	83
Recipient race Black	0.000	84
Recipient race Native Hawaiian/other Pacific Islander	0.000	85
Recipient race Native American/Alaska Native	0.000	86
Recipient blood type A	0.000	87
Recipient blood type O	0.000	88
Recipient blood type B	0.000	89
Recipient blood type AB	0.000	90
Recipient unknown if prior cardiac surgery at listing	0.000	91
Recipient had no history of diabetes	0.000	92
Recipient history of diabetes 6-10 years	0.000	93
Recipient history of diabetes 0-5 years	0.000	94
Recipient history of diabetes > 10 years	0.000	95
Recipient history of diabetes unknown years	0.000	96
Recipient no cigarette use	0.000	97
Recipient cigarette use	0.000	98
Donor LV EF greater than 50	0.000	99
Donor LV EF unknown	0.000	100
Recipient and Donor identical blood type	0.000	101
Recipient and Donor not identical blood type	0.000	102
Recipient/Donor no sex mismatch	0.000	103
Recipient/Donor sex mismatch	0.000	104
Donor/Recipient no weight mismatch	0.000	105
Donor/Recipient weight mismatch	0.000	106
Recipient unknown hypertension status	0.000	107
Recipient hypertension	0.000	108
Donor ischemic time 4 or more hours	0.000	109

LV: left ventricular, EF: ejection fraction, COD: cause of death, BMI: body mass index, PHS: public health service, MI: myocardial infarction, CNS: central nervous system

**Supplemental Table 3B:** Candidate and donor characteristics predictive of mortality or re-transplantation within 1 year

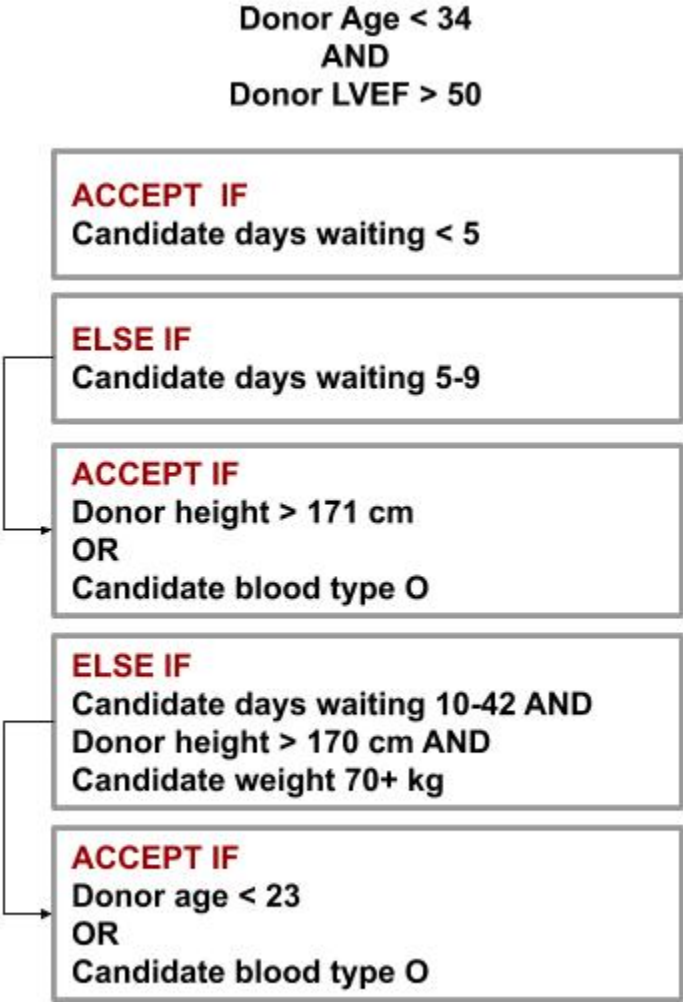
<b>Characteristic</b>	<b>Standardized coefficient</b>	<b>Rank (Importance)</b>
(Intercept)	-1.771	0
Recipient days on status 1B	0.043	1
Donor unknown history of cocaine use	-0.036	2
Donor no history of hypertension	-0.032	3
Donor race Black	0.028	4
Donor history of diabetes > 10 years	-0.027	5
Recipient history of diabetes 6-10 years	0.025	6
Recipient history of diabetes 0-5 years	-0.022	7
Center volume medium	0.022	8
Recipient male	-0.021	9
Donor COD other	0.021	10
Recipient female	0.020	11
Donor COD was anoxia	0.013	12
Recipient unknown cigarette use	-0.013	13
Center access rate	0.013	14
Recipient hypertension	0.013	15
Donor ischemic time 4 or more hours	0.013	16
Recipient race Multiracial	0.011	17
Donor race Native Hawaiian/other Pacific Islander	-0.010	18
Donor history of diabetes 0-5 years	0.010	19
Donor creatinine	-0.009	20
Recipient no cigarette use	0.008	21
Donor unknown if given pre-recovery steroids	-0.007	22
Donor ischemic time unknown	-0.006	23
Donor unknown history of cigarette use	-0.005	24
Donor COD was cerebrovascular/stroke	-0.004	25
Donor blood type O	-0.004	26
Recipient weight	-0.003	27
Donor no history of cigarette use	0.002	28
Donor unknown history of hypertension	0.001	29
Recipient/Donor no sex mismatch	0.001	30
Recipient/Donor sex mismatch	0.000	31
Donor BMI	0.000	32

Donor age	0.000	33
Donor height	0.000	34
Donor weight	0.000	35
Donor last serum sodium value	0.000	36
Donor BUN	0.000	37
Donor total bilirubin	0.000	38
Recipient days on status 1	0.000	39
Recipient days on status 2	0.000	40
Recipient days waiting	0.000	41
Recipient BMI	0.000	42
Recipient age at listing	0.000	43
Recipient height	0.000	44
Donor/Recipient weight ratio	0.000	45
Center volume high	0.000	46
Center volume low	0.000	47
Center volume very low	0.000	48
Donor male	0.000	49
Donor female	0.000	50
Donor COD was head trauma	0.000	51
Donor COD was CNS tumor	0.000	52
Donor race White	0.000	53
Donor race Hispanic	0.000	54
Donor race Asian	0.000	55
Donor race Native American/Alaska Native	0.000	56
Donor race Multiracial	0.000	57
Donor blood type A	0.000	58
Donor blood type B	0.000	59
Donor blood type AB	0.000	60
Donor history of cigarette use	0.000	61
Donor history of hypertension	0.000	62
Donor no history of diabetes	0.000	63
Donor unknown history of diabetes	0.000	64
Donor history of diabetes 6-10 years	0.000	65
Donor history of diabetes unknown years	0.000	66
Donor no history of cocaine use	0.000	67
Donor history of cocaine use	0.000	68
Donor no history of MI	0.000	69
Donor unknown history of MI	0.000	70
Donor history of MI	0.000	71
Donor not given pre-recovery steroids	0.000	72
Donor given pre-recovery steroids	0.000	73
Donor not given pre-recovery thyroxine	0.000	74
Donor given pre-recovery thyroxine	0.000	75

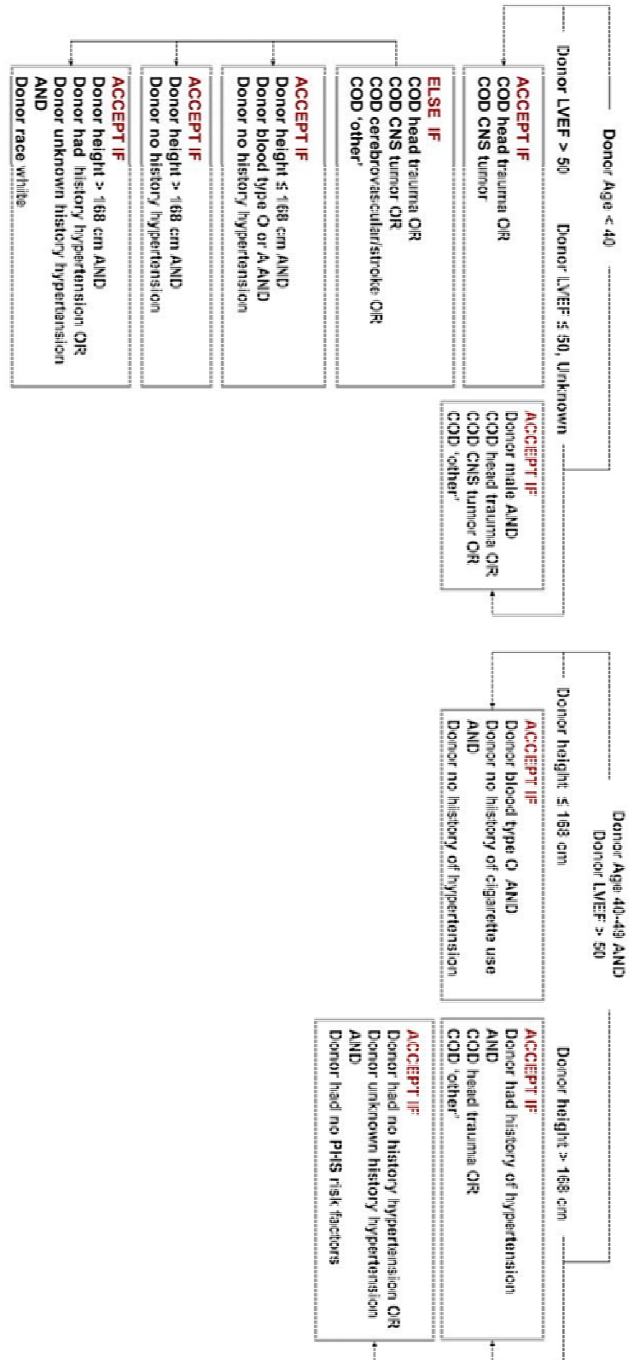
Donor unknown if given pre-recovery thyroxine	0.000	76
Donor did not have PHS risk factors	0.000	77
Donor had PHS risk factors	0.000	78
Donor PHS risk factors unknown	0.000	79
Donor no history heavy alcohol use	0.000	80
Donor history of heavy alcohol use	0.000	81
Donor unknown history of heavy alcohol use	0.000	82
Recipient race Hispanic	0.000	83
Recipient race White	0.000	84
Recipient race Black	0.000	85
Recipient race Asian	0.000	86
Recipient race Native Hawaiian/other Pacific Islander	0.000	87
Recipient race Native American/Alaska Native	0.000	88
Recipient blood type A	0.000	89
Recipient blood type O	0.000	90
Recipient blood type B	0.000	91
Recipient blood type AB	0.000	92
Recipient prior cardiac surgery at listing	0.000	93
Recipient no prior cardiac surgery at listing	0.000	94
Recipient unknown if prior cardiac surgery at listing	0.000	95
Recipient had no history of diabetes	0.000	96
Recipient history of diabetes > 10 years	0.000	97
Recipient unknown history of diabetes	0.000	98
Recipient history of diabetes unknown years	0.000	99
Recipient cigarette use	0.000	100
Donor LV EF greater than 50	0.000	101
Donor LV EF 50 or less	0.000	102
Donor LV EF unknown	0.000	103
Recipient and Donor identical blood type	0.000	104
Recipient and Donor not identical blood type	0.000	105
Donor/Recipient no weight mismatch	0.000	106
Donor/Recipient weight mismatch	0.000	107
Recipient no hypertension	0.000	108
Recipient unknown hypertension status	0.000	109
Donor ischemic time < 4 hours	0.000	110

LV: left ventricular, EF: ejection fraction, COD: cause of death, BMI: body mass index, PHS: public health service, MI: myocardial infarction, CNS: central nervous system

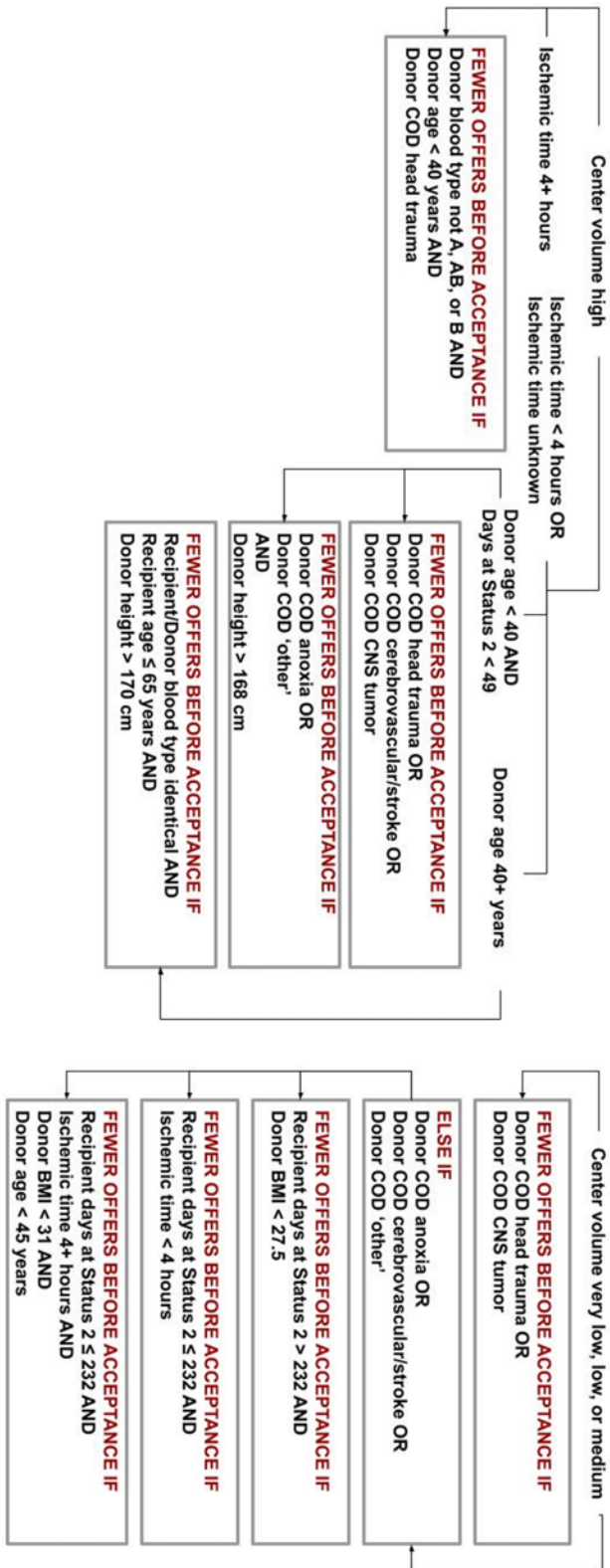
**Supplemental Figure 1:** Conditional inference tree analysis for donor heart *offer* acceptance



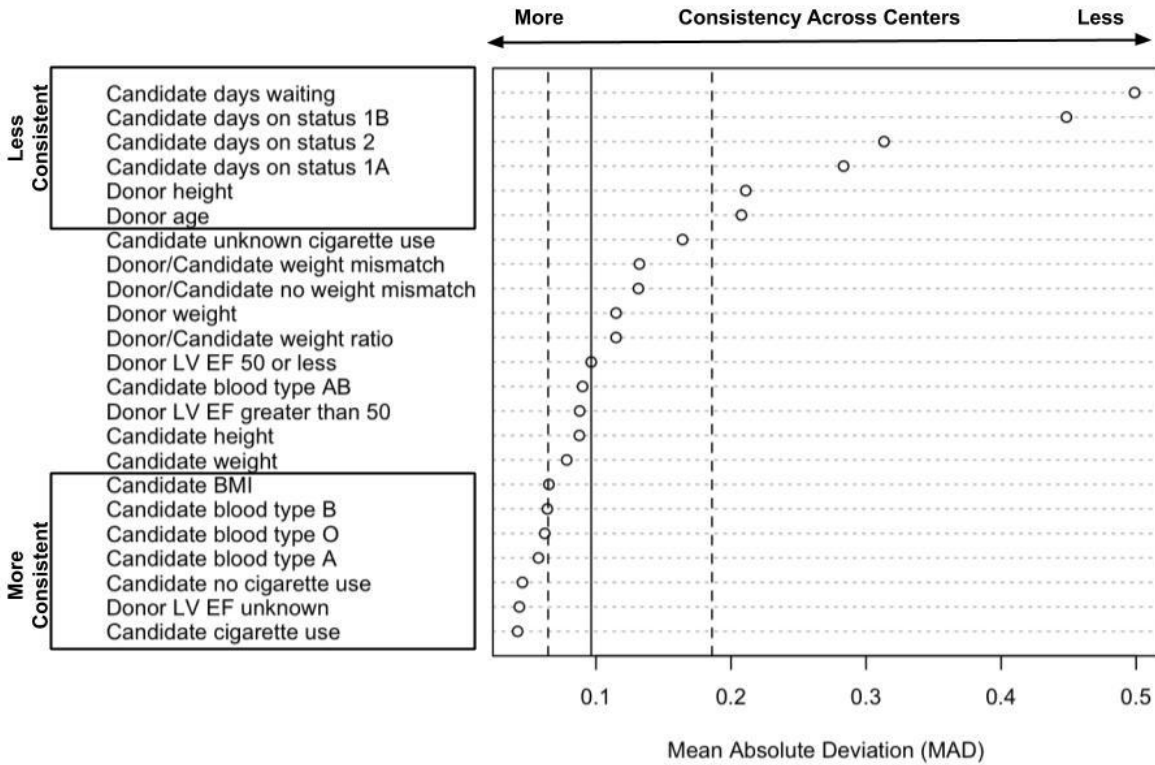
**Supplemental Figure 2:** Conditional inference tree analysis for donor heart *organ* acceptance



**Supplemental Figure 3:** Conditional inference tree analysis for *organ sequence number*

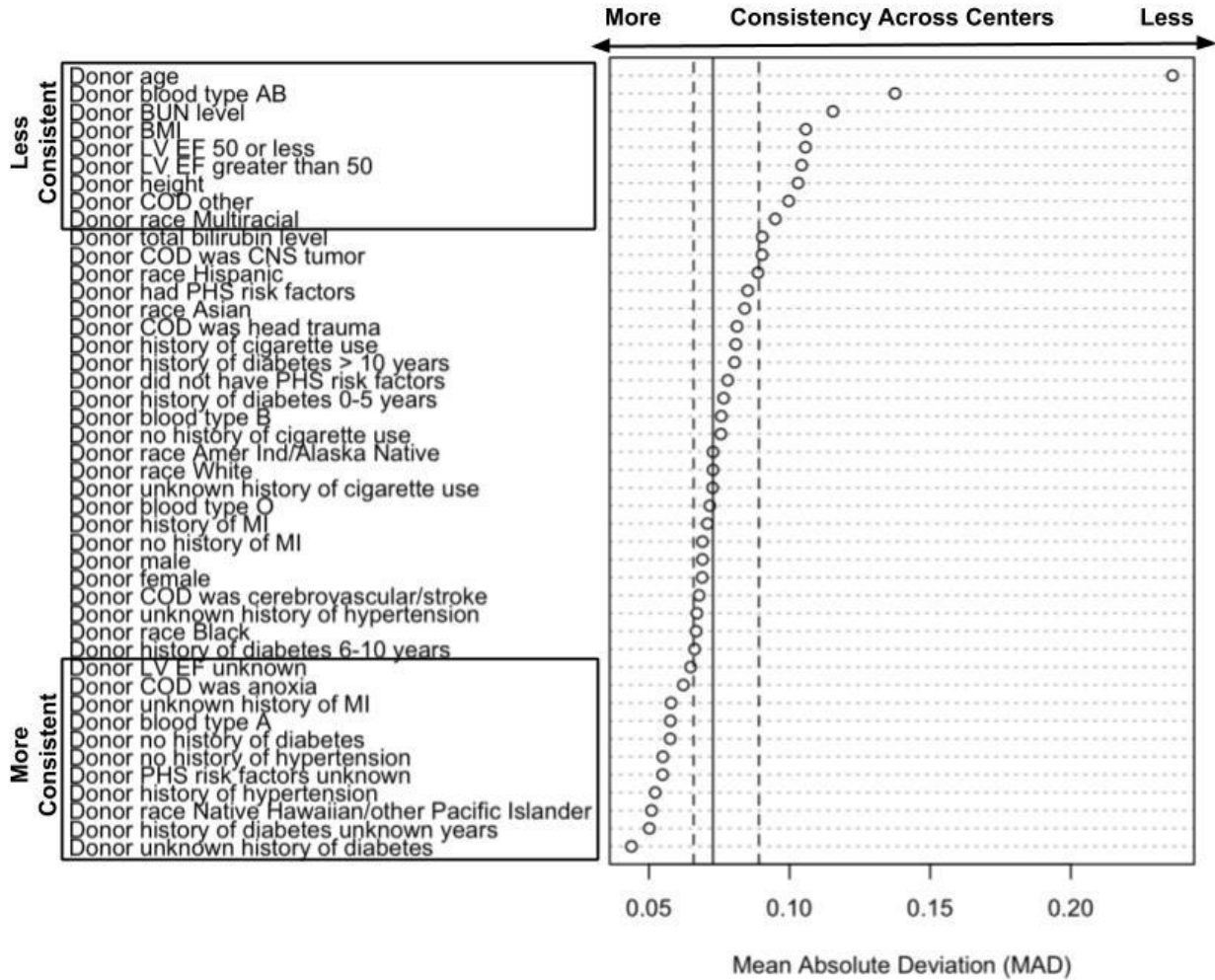


**Supplemental Figure 4:** Donor and candidate characteristics predictive of *offer* acceptance, demonstrating heterogeneity in consistency across transplant centers. BMI: body mass index, LV: left ventricular, EF: ejection fraction





**Supplemental Figure 5:** Donor characteristics that were predictive of *organ* acceptance, demonstrating heterogeneity in consistency across transplant centers. BUN: blood urea nitrogen, BMI: body mass index, LV: left ventricular, EF: ejection fraction, COD: cause of death, CNS: central nervous system, PHS: public health service, MI: myocardial infarction



**Supplemental Figure 6:** Donor and candidate characteristics that were predictive of *organ sequence number*, demonstrating great heterogeneity between transplant centers. COD: cause of death, BMI: body mass index; CNS: central nervous system

