1

Supplementary Online Content

Kulkarni S, Ladin K, Haakinson D, Greene E, Li L, Deng Y. Association of racial disparities with access to kidney transplant after the implementation of the new Kidney Allocation System. *JAMA Surg*. Published online April 3, 2019. doi:10.1001/jamasurg.2019.0512

eTable 1. Table for testing whether the effect of covariates varies across transitions

eTable 2. Final full model: parameter estimates and standard errors for all covariates and all transitions

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Table for testing whether the effect of covariates varies across transitions

Number	Model¥	Log-likelihood	Likelihood ratio statistics§	Degrees of freedom	P value	AIC
1	Null model	-422908.2				845862.4
2	gender	-422876.9	62.55245	6	<0.0001	845811.9
3	diabetes	-422279.9	1256.593	6	<0.0001	844617.8
4	age	-422314.7	1187.063	6	<0.0001	844687.4
5	Initial CPRA	-422793.9	228.5495	18	<0.0001	845669.9
6	dialysis	-422012.7	1790.996	6	<0.0001	844083.4
7	ABO	-422684.1	448.1393	18	<0.0001	845450.3
8	race	-422273.9	1238.525	18	<0.0001	844629.8
9	region	-421670.0	2476.461	50	<0.0001	843506
10	Transition specific model for all covariates	-419051.3	7713.823	138	<0.0001	838424.6
11	Model 10+CPRA*RACE interaction on transition 1	-419043.0	16.6117	9	0.0551	838426
12	Model 10+CPRA*RACE interaction on transition 2	-419045.2	12.27895	9	0.1980	838430.3
13	Model 10+CPRA*RACE interaction on transition 4	-419047.8	6.978988	9	0.6393	838435.6
14	Model 10+CPRA*RACE interaction on transition 5	-419046.0	10.58665	9	0.3051	838432
15	Model 10+CPRA*RACE interaction on transition 6	-419049.0	4.535441	9	0.8728	838438.1
16	Model 10+CPRA*RACE interaction on transition 7	-419047.3	8.075026	9	0.5266	838434.5
17	Final full model€	-419038.1	26.38023	9	0.0017	838416.2

¥Each covariate was sequentially allowed to differ across transitions by creating transition specific covariates, while the other covariates were kept identical across transition.

§ For model 2-10, the likelihood ratio statistics were calculated by comparing each model with Null model. For model 11-17, the likelihood ratio statistics were calculated by comparing each model with transition specific model 10.

€ The final full model is the transition specific model for all covariates (model 10) plus the interaction between CPRA and race for transition 3, which also provided the best fit using AIC criteria.

eTable 2. Final full model: parameter estimates and standard errors for all covariates and all transitions

	Transition 1: Active->inactive			Transition 2: Active->lving TX			Transition 3: Active->deceased TX			Transition 4: Active->death/other			Transition 5: inactive->active			Transition 6: Inactive->living TX			Transition 7: Inactive->death/other		
	Coef	SE	P	Coef	SE	P	Coef	SE	P	Coef	SE	P	Coef	SE	P	Coef	SE	P	Coef	SE	P
Gender (M vs.F)	-0.04	0.02	0.02	0.05	0.03	0.08	-0.10	0.03	0.00	-0.09	0.05	0.08	0.05	0.02	0.01	0.20	0.05	0.00	0.09	0.04	0.01
Age	0.00	0.00	0.00	-0.03	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	-0.02	0.00	0.00	0.02	0.00	0.00
Diabetes (Y vs. N)	0.13	0.02	0.00	-0.34	0.03	0.00	-0.29	0.03	0.00	0.43	0.05	0.00	-0.26	0.02	0.00	-0.72	0.06	0.00	0.10	0.04	0.01
Dialysis (Y vs. N)	0.20	0.02	0.00	-0.76	0.03	0.00	0.36	0.03	0.00	0.01	0.06	0.84	0.40	0.02	0.00	-0.14	0.05	0.01	0.68	0.04	0.00
ABO (AB vs. A)	0.21	0.04	0.00	0.25	0.07	0.00	0.66	0.05	0.00	-0.06	0.14	0.69	0.03	0.05	0.45	0.03	0.13	0.82	-0.09	0.10	0.36
ABO (B vs. A)	-0.11	0.03	0.00	-0.16	0.05	0.00	-0.36	0.04	0.00	-0.05	0.08	0.56	-0.02	0.03	0.40	-0.15	0.09	0.09	-0.17	0.06	0.01
ABO (O vs. A)	-0.12	0.02	0.00	-0.26	0.03	0.00	-0.49	0.03	0.00	-0.08	0.05	0.13	-0.03	0.02	0.15	-0.14	0.06	0.02	-0.06	0.04	0.11
CPRA (1-79 vs. 0)	0.16	0.03	0.00	-0.08	0.06	0.17	0.00	0.08	0.99	-0.25	0.10	0.01	0.20	0.03	0.00	0.11	0.10	0.25	0.00	0.07	0.95
CPRA (80-90 vs. 0)	0.16	0.10	0.10	-0.50	0.24	0.04	0.00	0.22	1.00	0.16	0.28	0.57	-0.11	0.11	0.30	-0.18	0.34	0.60	-0.25	0.24	0.31
CPRA (91-100 vs. 0)	0.24	0.07	0.00	-1.39	0.26	0.00	0.33	0.12	0.01	0.26	0.20	0.19	0.13	0.07	0.09	-0.65	0.34	0.05	0.29	0.14	0.04
Region (10 vs. 1)	0.25	0.05	0.00	-0.54	0.08	0.00	0.62	0.08	0.00	0.60	0.18	0.00	0.08	0.05	0.10	0.98	0.20	0.00	0.71	0.11	0.00
Region (11 vs. 1)	-0.06	0.05	0.18	-0.08	0.06	0.21	0.39	0.08	0.00	0.95	0.17	0.00	-0.21	0.05	0.00	-0.65	0.24	0.01	0.19	0.11	0.08
Region (2 vs. 1)	0.04	0.04	0.40	-0.43	0.07	0.00	0.41	0.08	0.00	0.89	0.17	0.00	0.08	0.05	0.07	0.71	0.20	0.00	0.54	0.10	0.00
Region (3 vs. 1)	-0.08	0.05	0.10	0.06	0.07	0.36	0.50	0.08	0.00	1.18	0.17	0.00	-0.02	0.05	0.74	0.88	0.21	0.00	0.61	0.11	0.00
Region (4 vs. 1)	-0.39	0.05	0.00	-0.70	0.07	0.00	0.40	0.08	0.00	0.86	0.17	0.00	-0.57	0.05	0.00	1.25	0.19	0.00	-0.07	0.11	0.52
Region (5 vs. 1)	0.73	0.05	0.00	-1.43	0.15	0.00	0.83	0.09	0.00	0.03	0.25	0.92	0.16	0.05	0.00	1.53	0.20	0.00	0.15	0.13	0.25
Region (6 vs. 1)	0.08	0.05	0.09	0.01	0.07	0.92	0.45	0.08	0.00	1.06	0.17	0.00	-0.04	0.05	0.47	1.11	0.20	0.00	0.48	0.11	0.00
Region (7 vs. 1)	0.51	0.05	0.00	-0.52	0.08	0.00	0.77	0.08	0.00	0.03	0.21	0.88	0.58	0.05	0.00	1.00	0.21	0.00	0.48	0.12	0.00
Region (8 vs. 1)	-0.66	0.06	0.00	0.09	0.07	0.19	0.55	0.08	0.00	0.85	0.18	0.00	-0.23	0.06	0.00	1.16	0.20	0.00	-0.19	0.14	0.17
Region (9 vs. 1)	0.59	0.05	0.00	-0.39	0.07	0.00	0.55	0.08	0.00	0.39	0.19	0.04	0.20	0.05	0.00	1.53	0.19	0.00	0.60	0.11	0.00
Race (Hispanic vs. Black)	0.03	0.03	0.24	0.64	0.06	0.00	-0.11	0.04	0.00	0.06	0.08	0.42	0.09	0.03	0.01	0.70	0.12	0.00	0.05	0.06	0.45
Race (Other vs. Black)	-0.07	0.04	0.04	0.43	0.07	0.00	-0.35	0.05	0.00	-0.18	0.10	0.08	0.16	0.04	0.00	0.77	0.14	0.00	-0.16	0.08	0.05
Race (White vs. Black)	0.31	0.02	0.00	1.22	0.05	0.00	-0.05	0.03	0.10	0.30	0.06	0.00	0.30	0.02	0.00	1.63	0.10	0.00	0.21	0.05	0.00
Interaction CPRA*RACE on transition 3									0.0017												
CPRA (1-79 vs. 0): Race (Hispanic vs. Black)							0.00	0.15	0.98												

CPRA (1-79 vs. 0): Race (Other vs. Black						0.00	0.18	0.99													
CPRA (1-79 vs. 0): Race (White vs. Black						-0.02	0.10	0.83													
CPRA (80-90 vs. 0): Race (Hispanic vs. Black)						0.55	0.42	0.19													
CPRA (80-90vs. 0): Race (Other vs. Black						0.96	0.42	0.02													
CPRA (80-90 vs. 0): Race (White vs. Black						0.63	0.28	0.03													
CPRA (91-100 vs. 0): Race (Hispanic vs. Black)						0.69	0.22	0.00													
CPRA (91-100 vs. 0): Race (Other vs. Black						0.76	0.28	0.01													
CPRA (91-100 vs. 0): Race (White vs. Black						0.58	0.16	0.00													