

Supplemental Online Content

Saberi B, Gurakur A, Tamim H, et al. Racial disparities among HCC liver transplant candidates following 6-month wait policy change. *JAMA Netw Open*. 2023;6(11):e2341096. doi:10.1001/jamanetworkopen.2023.41096

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

eTable 1. Characteristics of Waitlisted Candidates Who Did Not Have HCC According to Race

	Total*	Asian	Black/AA	Latinx/o/a	White	p-value
Characteristics	N=36936	N=1207	N=2545	N=6387	N=26797	
Age, Mean (SD)	54.8 (10.7)	53.5 (11.8)	52.1 (12.2)	54.3 (10.6)	55.2 (10.5)	<.0001
Female, n (%)	15826 (42.9%)	495 (41.0%)	1256 (49.4%)	2841 (44.5%)	11234 (41.9%)	<.0001
Blood type, n (%)						
A	14560 (39.4%)	350 (29.0%)	711 (27.9%)	1946 (30.5%)	11553 (43.1%)	<.0001
B	3809 (10.3%)	347 (28.8%)	438 (17.2%)	574 (9.0%)	2450 (9.1%)	
AB	882 (2.4%)	75 (6.2%)	75 (3.0%)	92 (1.4%)	640 (2.4%)	
O	17685 (47.9%)	435 (36.0%)	1321 (51.9%)	3775 (59.1%)	12154 (45.4%)	
BMI (kg/m²), Mean (SD)	28.8 (6.2)	25.7 (5.1)	28.5 (6.2)	29.2 (6.1)	28.8 (6.2)	<.0001
Etiology, n (%)						
1 (HCV)	7659 (20.7%)	178 (14.8%)	850 (33.4%)	1413 (22.1%)	5218 (19.5%)	<.0001
2 (ALD)	12312 (33.3%)	233 (19.3%)	437 (17.2%)	2069 (32.4%)	9573 (35.7%)	
3 (NAFLD)	6783 (18.4%)	136 (11.3%)	119 (4.7%)	1252 (19.6%)	5276 (19.7%)	
4 (HBV)	503 (1.4%)	224 (18.6%)	68 (2.7%)	30 (0.5%)	181 (0.7%)	
5 (other)	9679 (26.2%)	436 (36.1%)	1071 (42.1%)	1623 (25.4%)	6549 (24.4%)	
Diabetes mellitus, n (%)	10433 (28.3%)	364 (30.2%)	739 (29.0%)	2261 (35.4%)	7069 (26.4%)	<.0001
HE, n (%)	20770 (56.2%)	509 (42.2%)	1267 (49.8%)	3560 (55.7%)	15434 (57.6%)	<.0001
Ascites, n (%)	23547 (63.8%)	602 (49.9%)	1466 (57.6%)	3992 (62.5%)	17487 (65.3%)	<.0001
MELD Score, Mean (SD)	20.7 (10.7)	21.2 (11.6)	22.5 (11.3)	22.0 (10.9)	20.2 (10.6)	<.0001
MELD exception, Mean (SD)	19.9 (11.1)	20.6 (12.0)	21.7 (11.8)	20.9 (11.6)	19.5 (10.9)	<.0001
Creatinine (mg/dl), Mean (SD)	1.6 (1.6)	1.7 (1.9)	2.3 (2.5)	1.7 (1.8)	1.5 (1.3)	<.0001
Bilirubin (mg/dL), Mean (SD)	6.8 (10.1)	8.7 (12.5)	8.1 (11.1)	7.7 (11.2)	6.4 (9.6)	<.0001
INR, Mean (SD)	1.9 (1.4)	2.0 (1.8)	2.1 (1.7)	2.0 (1.5)	1.9 (1.4)	<.0001
Albumin (g/dL), Mean (SD)	3.2 (0.8)	3.3 (0.8)	3.1 (0.8)	3.1 (0.8)	3.2 (0.7)	<.0001

*Patients who identified as “Other race” are not included in this table.

Abbreviations: ALD: alcoholic liver disease; BMI: body mass index, HBV: hepatic B virus, HCC: hepatocellular carcinoma, HCV: hepatic C virus, HE: hepatic encephalopathy,

INR: international normalisation ratio, MELD: model for end-stage liver disease, NAFLD: non-alcoholic fatty liver disease, PVT: portal vein thrombosis; SD: standard deviation,

TIPS: transjugular intrahepatic shunt

eTable 2. Comparison of Dropout in Patients With HCC in Era 1 According to Race

Comparison	p-values
Across all 4groups	< 0.001
White vs Black/AA	0.008
White vs Latinx/o/a	0.77
White vs Asian	<0.001
Black/AA vs Latinx/o/a	0.01
Black/AA vs Asian	<0.001
Latinx/o/a vs Asian	<0.001

eTable 3. Comparison of Dropout in Patients With HCC in Era 2 According to Race

Comparison	p-values
Across all 4 groups	< 0.001
White vs Black/AA	0.73
White vs Latinx/o/a	0.36
White vs Asian	<0.001
Black/AA vs Latinx/o/a	0.73
Black/AA vs Asian	<0.001
Latinx/o/a vs Asian	<0.001

eTable 4. Characteristics of LT Recipients Who Did Not Have HCC According to Race

	Total	Asian	Black/AA	Latinx/o/a	White	p-value
Characteristics	N=43079	N=1195	N=3641	N=6011	N=32232	
Age, Mean (SD)	53.7 (10.9)	52.0 (11.9)	51.2 (12.1)	52.7 (11.0)	54.3 (10.7)	<.0001
Female, n (%)	16561 (38.4)	469 (39.3)	1693 (46.5)	2447 (40.7)	11952 (37.1)	<.0001
ABO, n (%)						<.0001
A	15696 (36.4)	305 (25.5)	858 (23.6)	1794 (29.9)	12739 (39.5)	
B	5914 (13.7)	370 (31.0)	856 (23.5)	731 (12.2)	3957 (12.3)	
AB	2258 (5.2)	130 (10.9)	198 (5.4)	179 (3.0)	1751 (5.4)	
O	19211 (44.6)	390 (32.6)	1729 (47.5)	3307 (55.0)	13785 (42.8)	
BMI (kg/m ²), Mean (SD)	29.2 (6.0)	25.8 (5.2)	28.6 (6.3)	29.5 (6.0)	29.3 (6.0)	<.0001
Etiology, n (%)						<.0001
1 (HCV)	9548 (22.2)	165 (13.8)	1262 (34.7)	1461 (24.3)	6660 (20.7)	
2 (ALD)	13302 (30.9)	237 (19.8)	579 (15.9)	1915 (31.9)	10571 (32.8)	
3 (NAFLD)	8191 (19.0)	141 (11.8)	178 (4.9)	1149 (19.1)	6723 (20.9)	
4 (HBV)	754 (1.8)	267 (22.3)	131 (3.6)	48 (0.8)	308 (1.0)	
5 (other)	11284 (26.2)	385 (32.2)	1491 (41.0)	1438 (23.9)	7970 (24.7)	
Diabetes mellitus, n (%)	11202 (26.0)	349 (29.2)	913 (25.1)	1844 (30.7)	8096 (25.1)	<.0001
HE, n (%)	30321 (70.4)	756 (63.3)	2243 (61.6)	4289 (71.4)	23033 (71.5)	<.0001
Ascites, n (%)	36107 (83.8)	920 (77.0)	2840 (78.0)	5160 (85.8)	27187 (84.4)	<.0001
MELD Score, Mean (SD)	26.3 (9.0)	28.0 (9.5)	27.2 (8.7)	28.3 (9.1)	25.8 (9.0)	<.0001
MELD exception, Mean (SD)	28.4 (8.1)	30.4 (8.3)	29.0 (7.9)	30.3 (8.3)	27.9 (8.0)	<.0001
Creatinine (mg/dl), Mean (SD)	1.8 (1.6)	1.9 (1.9)	2.4 (2.3)	1.9 (1.7)	1.8 (1.5)	<.0001
Bilirubin (mg/dL), Mean (SD)	10.8 (11.9)	15.2 (14.4)	12.0 (12.3)	12.8 (13.0)	10.2 (11.4)	<.0001
INR, Mean (SD)	2.1 (1.0)	2.3 (1.2)	2.2 (1.1)	2.2 (1.1)	2.1 (1.0)	<.0001
Albumin (g/dL), Mean (SD)	3.1 (0.7)	3.1 (0.8)	2.9 (0.8)	3.2 (0.8)	3.1 (0.7)	<.0001
Wait Time (Days), Mean (SD)	216.9 (467.3)	232.8 (565.5)	200.9 (445.4)	232.6 (488.6)	215.2 (461.6)	<0.01
<i>Donor characteristics</i>						
Age (Years), Mean (SD)	40.8 (16.0)	39.9 (16.7)	38.6 (15.3)	40.3 (16.0)	41.1 (16.0)	<.0001
Female, n (%)	17197 (39.9)	516 (43.2)	1502 (41.3)	2353 (39.1)	12826 (39.8)	0.02
BMI (kg/m ²), Mean (SD)	27.9 (6.5)	26.8 (5.9)	27.5 (6.3)	27.4 (6.2)	28.1 (6.6)	<.0001
Race, n (%)						<.0001
White	27977 (64.9)	667 (55.8)	2221 (61.0)	3173 (52.8)	21916 (68.0)	
African American	7777 (18.1)	198 (16.6)	855 (23.5)	913 (15.2)	5811 (18.0)	
Latinx/o/a	5522 (12.8)	232 (19.4)	425 (11.7)	1482 (24.7)	3383 (10.5)	
Asian	1009 (2.3)	66 (5.5)	2.0 (2.4)	209 (3.5)	647 (2.0)	
Other	794 (1.8)	32 (2.7)	53 (1.5)	234 (3.9)	475 (1.5)	
Total Cold Ischemic Time (h), Mean (SD)	6.2 (2.4)	6.4 (2.4)	6.1 (2.5)	6.4 (2.5)	6.1 (2.4)	<.0001

Abbreviations: ALD: alcoholic liver disease; BMI: body mass index, HBV: hepatic B virus, HCC: hepatocellular carcinoma, HCV: hepatic C virus, HE: hepatic encephalopathy, INR: international normalization ratio, MELD: model for end-stage liver disease, NAFLD: non-alcoholic fatty liver disease, PVT: portal vein thrombosis; SD: standard deviation, TIPS: transjugular intrahepatic shunt

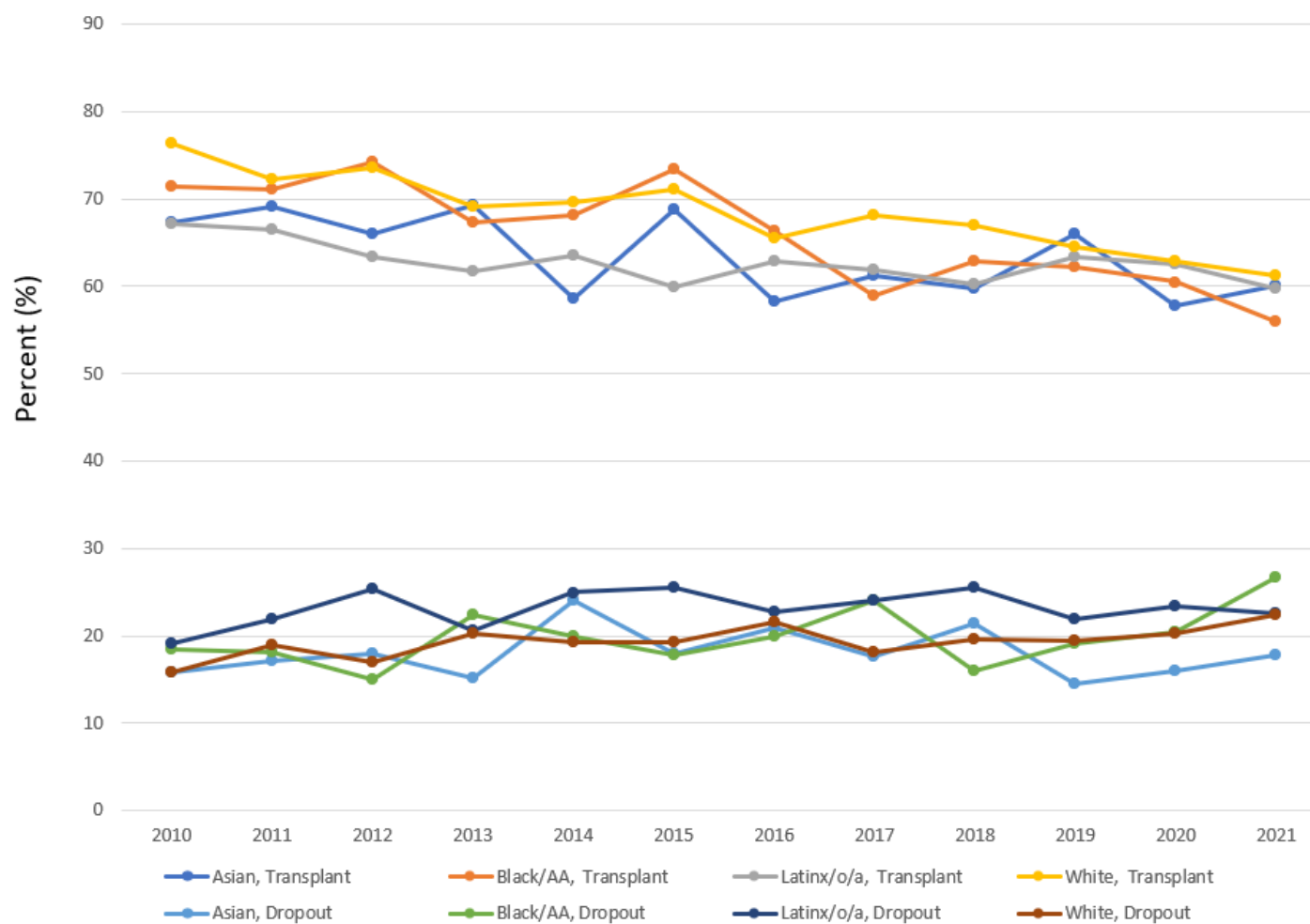
eTable 5. Comparison of Post-LT Survival in Patients With HCC in Era 1 According to Race

Comparison	p-values
Across all 4 groups	<0.0001
White vs Black/AA	0.0004
White vs Latinx/o/a	0.003
White vs Asian	<0.0001
Black/AA vs Latinx/o/a	<0.0001
Black/AA vs Asian	<0.0001
Latinx/o/a vs Asian	0.08

eTable 6. Comparison of Post-LT Survival in Patients With HCC in Era 2 According to Race

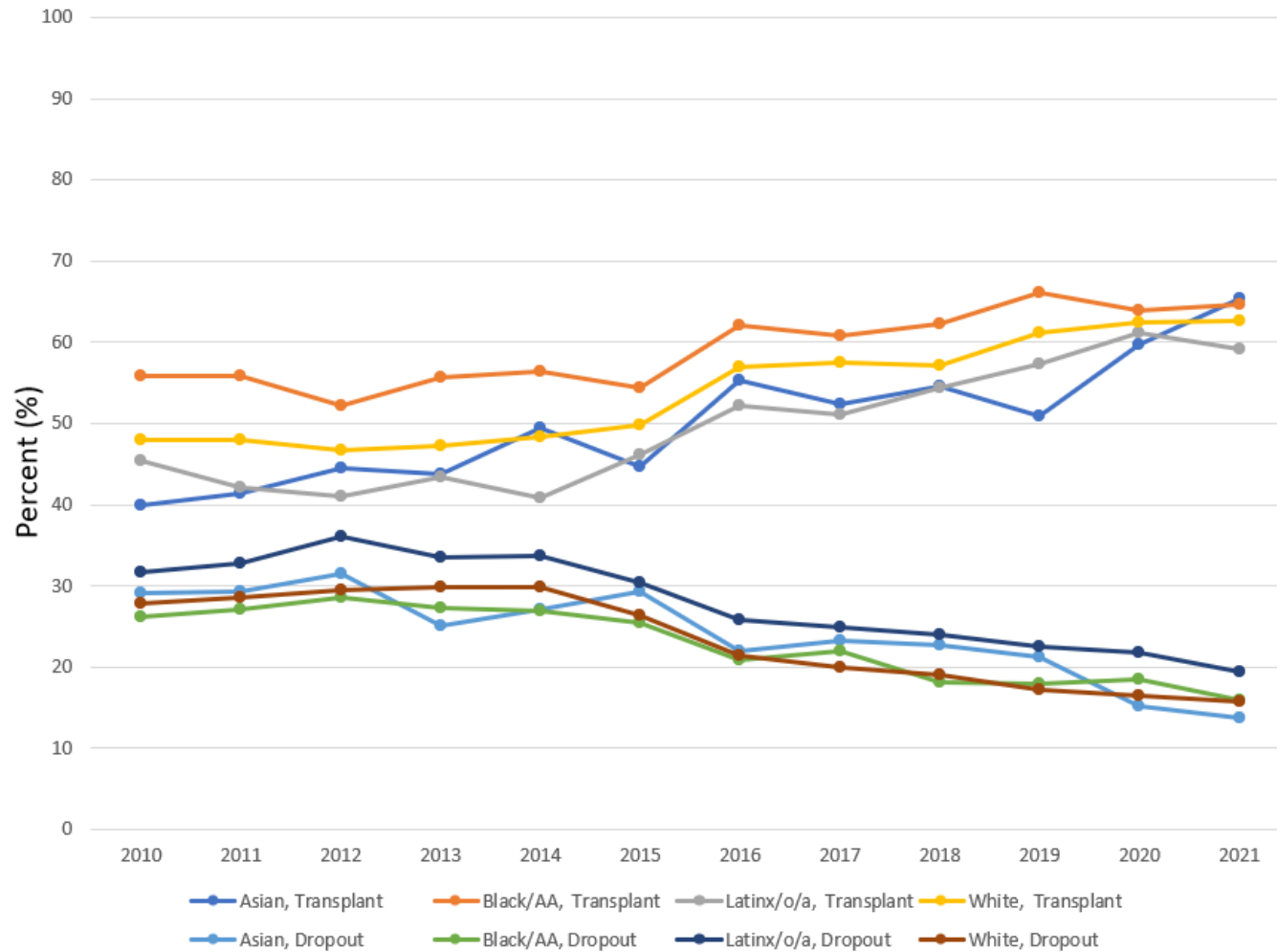
Comparison	p-values
Across all 4groups	0.001
White vs Black/AA	0.003
White vs Latinx/o/a	0.58
White vs Asian	0.02
Black/AA vs Latinx/o/a	0.03
Black/AA vs Asian	0.0002
Latinx/o/a vs Asian	0.02

eFigure. Trend of Proportion of Liver Transplants



eFigure 1A. Trend of proportion of liver transplant among HCC waitlisted candidates by race and Trend of proportion of drop-out among HCC waitlisted candidates by race. Based on OPTN data as of July 1st 2022

eFigure 1B. Trend of proportion of liver transplant among non-HCC waitlisted candidates by race and Trend of proportion of drop-out among non-HCC waitlisted candidates by race. Based on OPTN data as of July 1, 2022.



eFigure 1B. Trend of proportion of liver transplant among non-HCC waitlisted candidates by race and Trend of proportion of drop-out among non-HCC waitlisted candidates by race. Based on OPTN data as of July 1st 2022