

Innovation and Health Inequality: Evidence from Direct-Acting Antivirals
APPENDIX

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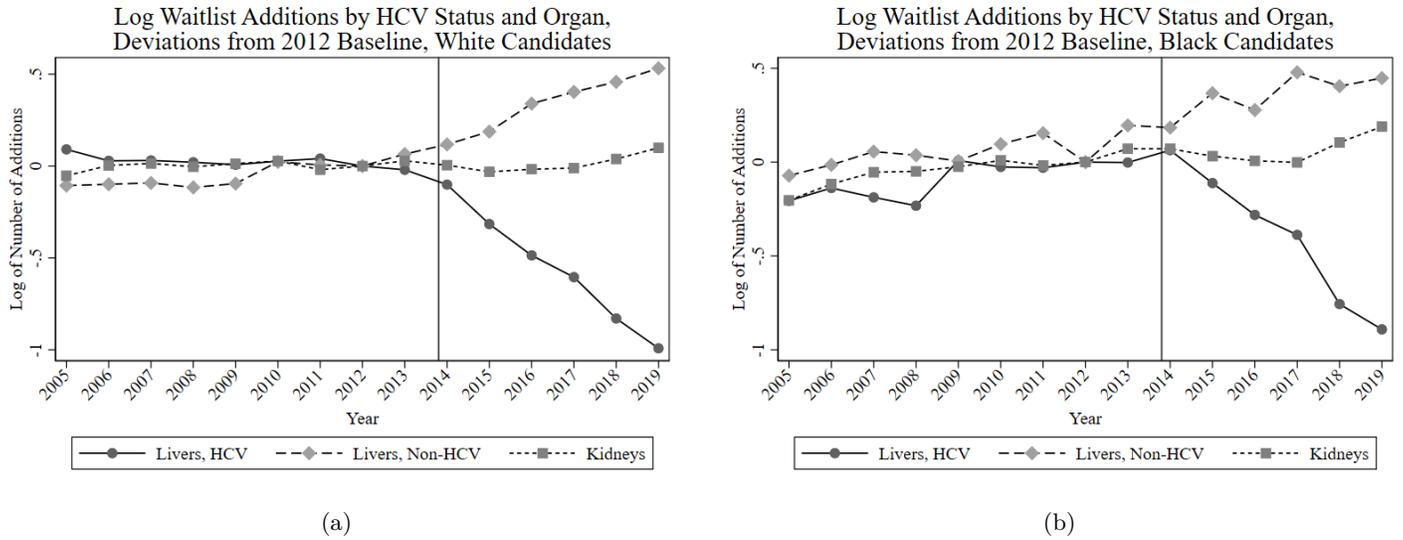
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April 23, 2025

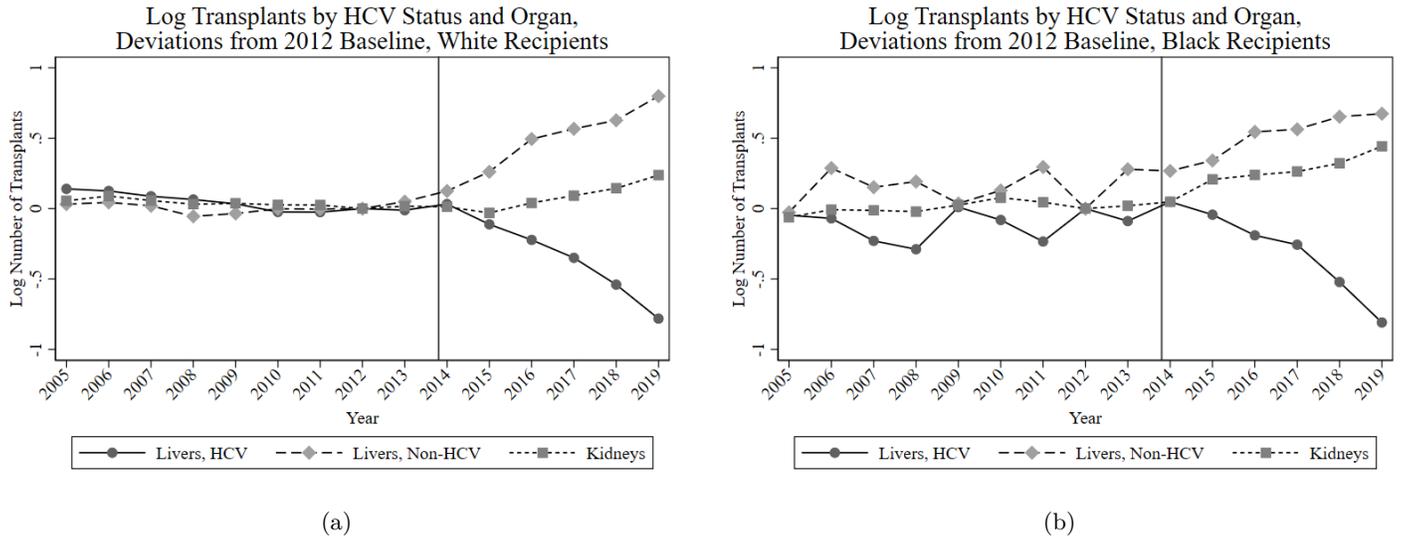
1 Figures

Figure 1: Log Additions by HCV, Organ, and Race

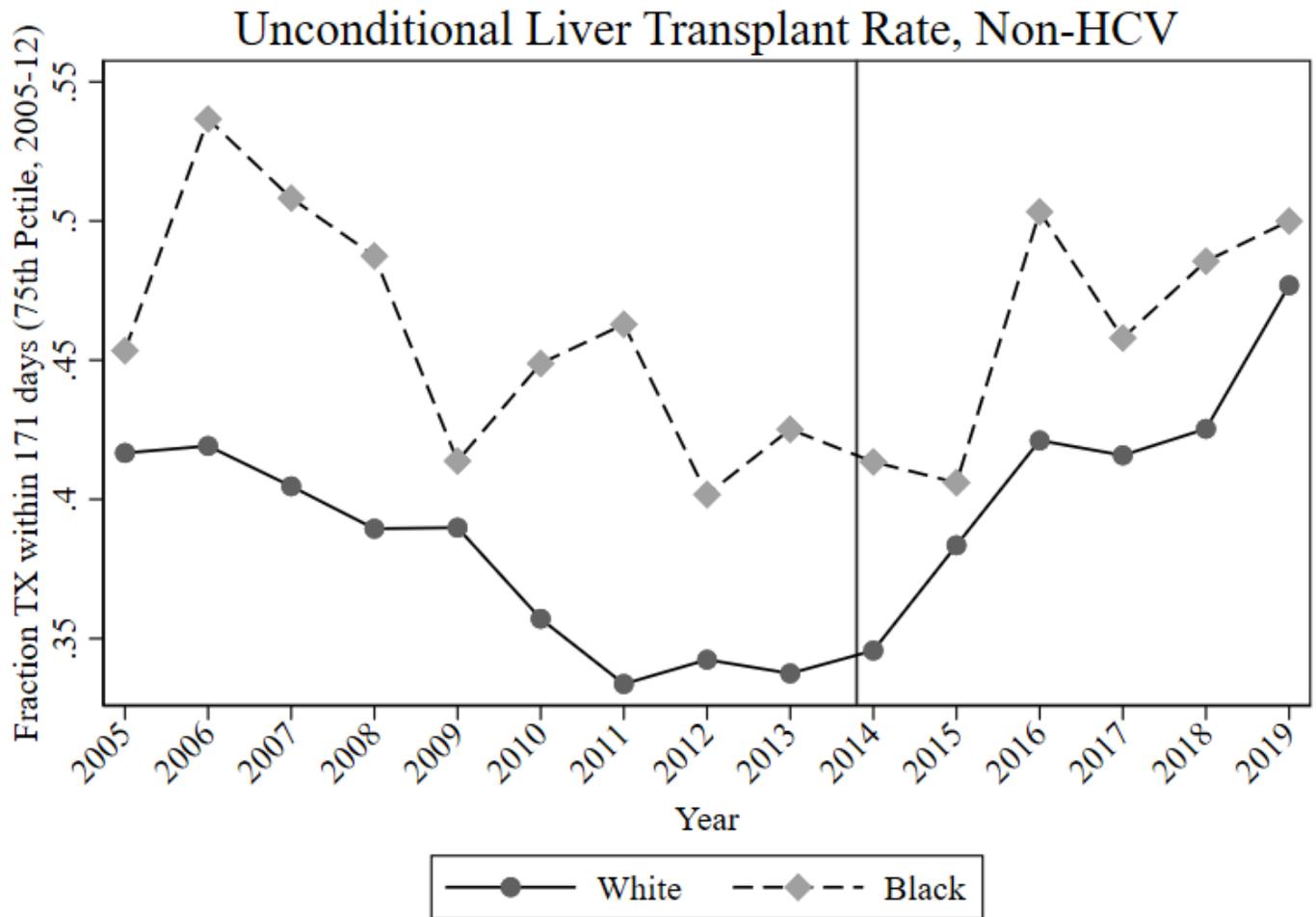


Notes: Authors' calculations of yearly national log counts using SRTR data. This figure adds the kidney registrant comparison group and recalculates the trends in terms of deviations from 2012. We exclude the 0.13% of kidney registrants who are known to have an HCV-related diagnosis using the optional diagnosis text field in the data.

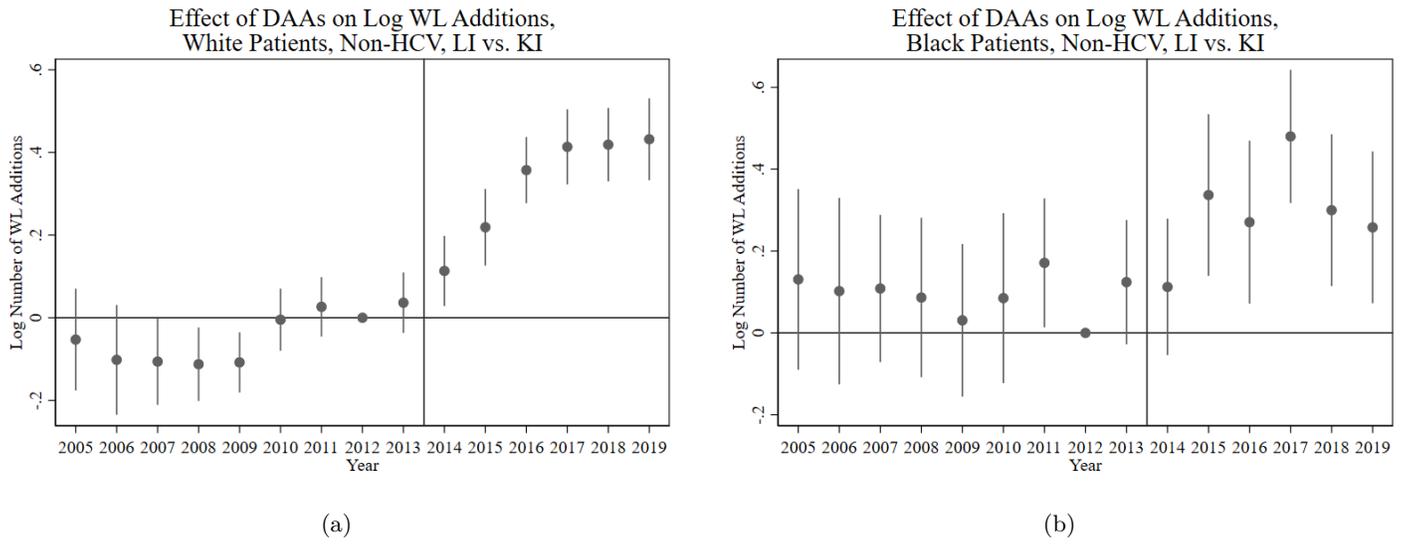
Figure 2: Log Transplants by HCV, Organ, and Race



Notes: Authors' calculations of yearly national log counts using SRTR data. This figure adds the kidney registrant comparison group and recalculates the trends in terms of deviations from 2012. We exclude the 0.13% of kidney registrants who are known to have an HCV-related diagnosis using the optional diagnosis text field in the data.

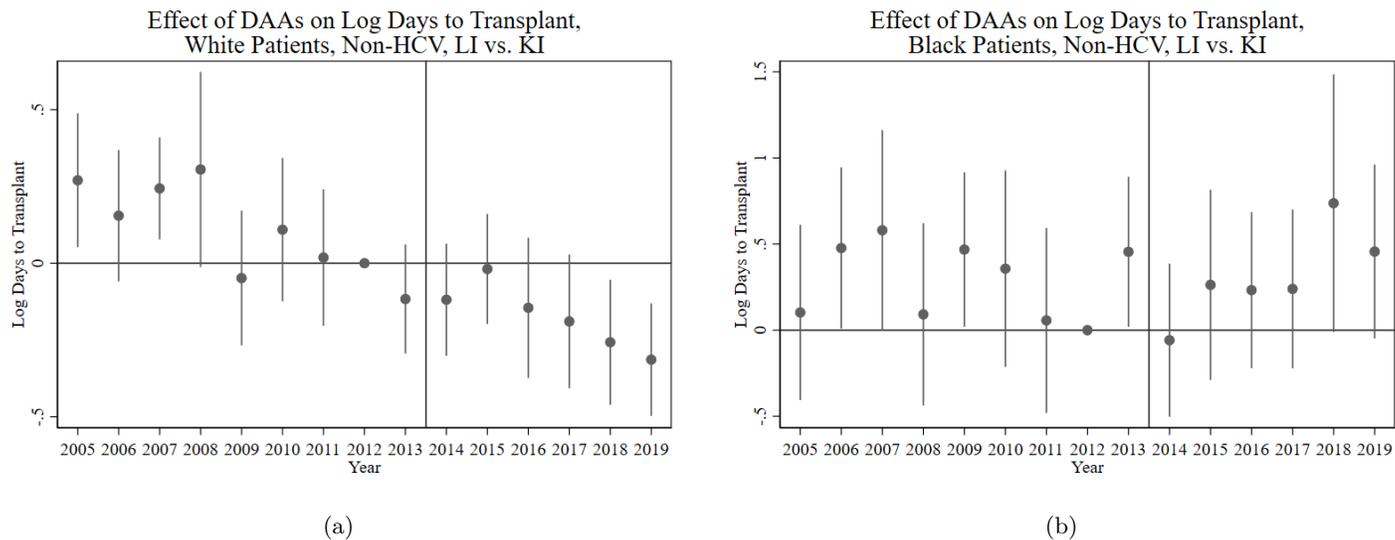
Figure 3: Transplant Rate by Race over Time for *HCV*⁻ Waiting List Registrants

Notes: Authors' calculations annual transplant rates by race using SRTR data. The transplant rate is defined as the fraction of patients registering for the waiting list in a given year who exited the list with a transplant in 171 days or less (i.e., the 75th percentile of days to TX among those receiving LI transplants in 2005-12).

Figure 4: Event Studies of Log HCV^- Additions by Race

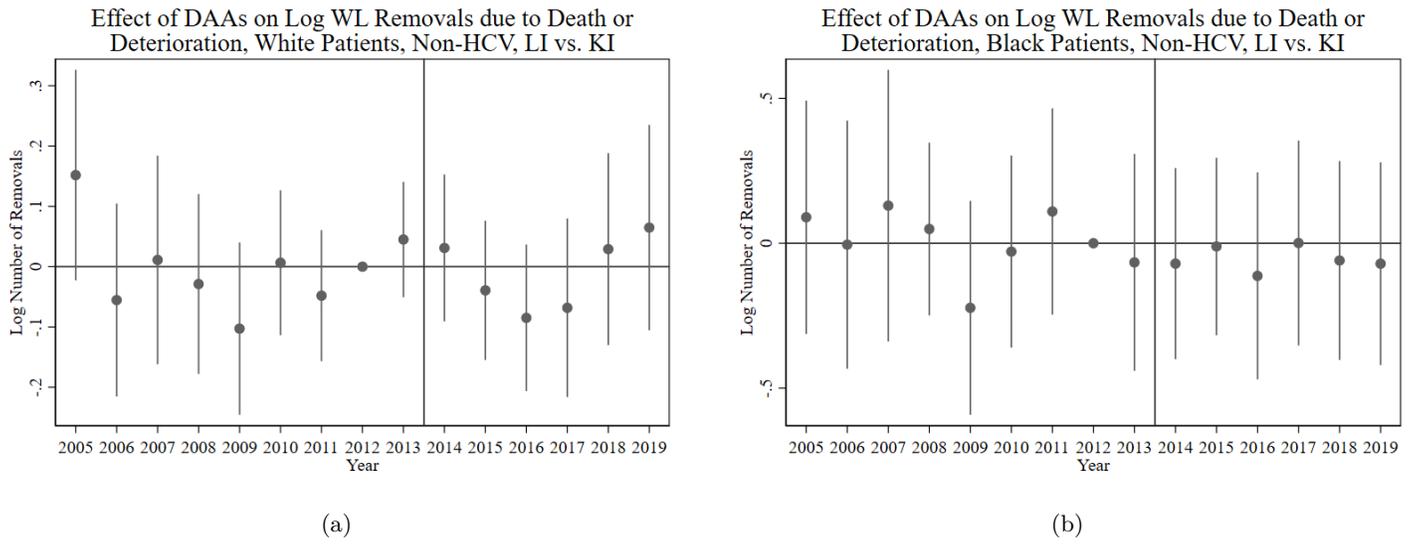
Notes: Event studies of the count of waiting list additions by race relative to the normalization of 2012. Results generated by Poisson regressions. Vertical bars represent the 95% confidence intervals.

Figure 5: Days to TX Event Studies by Race



Notes: Event studies of the log of time to transplant in days by race relative to the normalization of 2012. Vertical bars represent the 95% confidence intervals.

Figure 6: Waiting List Mortality Event Studies by Race



Notes: Event studies of the log of waiting list mortality rate by race relative to the normalization of 2012. Vertical bars represent the 95% confidence intervals.

2 Tables

Table 1: Regression Sensitivity to FE

	WL Additions, Poisson			TX, Poisson		
DAA x White	0.3941*** (0.0395)	0.3941*** (0.0395)	0.3803*** (0.0487)	0.4979*** (0.0433)	0.4979*** (0.0433)	0.4486*** (0.0469)
DAA x Black	0.3115*** (0.0419)	0.3115*** (0.0419)	0.2021*** (0.0683)	0.3637*** (0.0468)	0.3637*** (0.0468)	0.1106** (0.0558)
Organ FEs	✓	✓	✓	✓	✓	✓
DSA x Organ FEs		✓	✓		✓	✓
Year FEs			✓			✓
Observations	5,700	5,700	5,700	5,700	5,700	5,700
N of Clusters	95	95	95	95	95	95
	Days to TX, Poisson			TX Rate, Fraction OLS		
DAA x White	-0.0983** (0.0446)	-0.0989** (0.0447)	-0.2697*** (0.0513)	0.1442*** (0.0409)	0.1442*** (0.0408)	0.1953*** (0.0435)
DAA x Black	0.0817 (0.1577)	0.1029 (0.1474)	0.0323 (0.1507)	0.0437 (0.0741)	0.0539 (0.0750)	0.0360 (0.0763)
Organ FEs	✓	✓	✓	✓	✓	✓
DSA x Organ FEs		✓	✓		✓	✓
Year FEs			✓			✓
Observations	5,191	5,190	5,190	5,568	5,567	5,567
N of Clusters	95	95	95	95	95	95

Notes: Each column of coefficients comes from a poisson regression of the outcome of interest on the DAA treatment indicator interacted with racial/ethnic group, comparing group-specific liver counts to group-specific kidney counts. Note that all coefficients in this table except for the final column represent log point changes, which can be transformed into percentages using the formula $100 \times (e^{\hat{\beta}} - 1)$. While there are 57 DSAs in the U.S., we use modified DSA identifiers due to changes in DSA existence and services over time, which yields 50 kidney-serving DSA and 45 liver-serving DSA identifiers. Standard errors are in parentheses and are clustered at the DSA-by-organ level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 2: Triple Differences Estimates by Baseline *HCV* Rate

	Waitlist Additions Poisson	Transplants Poisson	Days to TX Poisson	TX Rate Fraction, OLS
DAA x White	0.3210*** (0.0640)	0.3413*** (0.0568)	-0.2194*** (0.0774)	0.1518** (0.0708)
DAA x White x Above Median	0.0828 (0.0775)	0.1790** (0.0811)	-0.1076 (0.0908)	0.0989 (0.0816)
DAA x Black	0.1524 (0.0952)	0.0351 (0.0797)	0.1320 (0.1541)	-0.0453 (0.1380)
DAA x Black x Above Median	0.0737 (0.0893)	0.1325 (0.0938)	-0.1748 (0.2755)	0.1663 (0.1552)

Notes: Each column of coefficients comes from a regression of the outcome of interest on the DAA treatment indicator fully interacted with racial/ethnic group, organ, and an indicator for above median baseline *HCV* rate. Note that all coefficients in this table except for the final column represent log point changes, which can be transformed into percentages using the formula $100 \times (e^{\hat{\beta}} - 1)$. While there are 57 DSAs in the U.S., we use modified DSA identifiers due to changes in DSA existence and services over time, which yields 50 kidney-serving DSA and 45 liver-serving DSA identifiers. Standard errors are in parentheses and are clustered at the DSA-by-organ level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 3: Transplant Rate Robustness

	TX Rate	TX Rate Alt.
DAA x White	0.1953*** (0.0435) 0.496	0.0836*** (0.0144) 0.254
DAA x Black	0.036 (0.0763) 0.809	0.0282* (0.0166) 0.293
Observations	5,567	5,567
N	95	95

Notes: The table presents estimates on two different transplant rates. Column two presents our preferred rate as defined in the main text. Column three presents an alternative in which the denominator is the number of unique registrants present at any point during a calendar year. Group-specific baseline means of the dependent variable reflect the pre-treatment period (2005–2013) DSA-year means for HCV^- liver candidates only. While there are 57 DSAs in the U.S., we use modified DSA identifiers due to changes in DSA existence and services over time, which yields 50 kidney-serving DSA and 45 liver-serving DSA identifiers. Standard errors are in parentheses and are clustered at the DSA-by-organ level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 4: Waiting List Racial Composition Effects

	White	Black
DAA	0.000 (0.007)	0.008 (0.005)
	0.792	0.060
Observations	1,425	1,425
N	95	95

Notes: Each column represents the difference-in-differences coefficient of the effect of DAAs on the share of the waiting list for each respective racial group. Group-specific baseline means of the dependent variable reflect the pre-treatment period (2005–2013) DSA-year means in levels for HCV^- liver candidates only. While there are 57 DSAs in the U.S., we use modified DSA identifiers due to changes in DSA existence and services over time, which yields 50 kidney-serving DSA and 45 liver-serving DSA identifiers. Standard errors are in parentheses and are clustered at the DSA-by-organ level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 5: Difference-in-Differences Estimates: Above Median Black

	Above Median Black				
	TX Poisson	TX Rate Fraction, OLS	WL Additions Poisson	Days to TX Poisson	TX Rate Alt. Fraction, OLS
DAA x White	0.5109*** (0.0581) 53.54	0.1626** (0.0653) 0.577	0.4450*** (0.0606) 96.19	-0.2356*** (0.0761) 223.8	0.0699*** (0.0207) 0.281
DAA x Black	0.1628** (0.0644) 7.94	0.1085* (0.0635) 0.695	0.2207*** (0.0806) 12.96	0.2323 (0.1918) 191.4	0.0417** (0.0197) 0.308
Observations	2,820	2,773	2,820	2,641	2,773
N of Clusters	47	47	47	47	47

Notes: Regressions on the subsample on DSAs with above median Black patients removed from the waiting list between 2005 and 2013. All behaviors and outcomes correspond to their definitions in the main text. The alternative transplant rate treats the denominator as the number of unique registrants present at any point during a calendar year. Poisson coefficients can be transformed into percentages using the formula $100 \times (e^{\hat{\beta}} - 1)$. Group-specific baseline means of the dependent variable reflect the pre-treatment period (2005–2013) DSA-year means in levels for HCV^- liver candidates only. While there are 57 DSAs in the U.S., we use modified DSA identifiers due to changes in DSA existence and services over time, which yields 50 kidney-serving DSA and 45 liver-serving DSA identifiers. Standard errors are in parentheses and are clustered at the DSA-by-organ level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 6: Difference-in-Differences Estimates: Above Median White

	Above Median White				
	TX Poisson	TX Rate Fraction, OLS	WL Additions Poisson	Days to TX Poisson	TX Rate Alt. Fraction, OLS
DAA x White	0.3725*** (0.0645) 41.36	0.1616** (0.0673) 0.531	0.3154*** (0.0686) 73.92	-0.2774*** (0.0675) 256.7	0.0747*** (0.0208) 0.271
DAA x Black	-0.1020 (0.1210) 2.23	-0.0980 (0.1403) 1.010	0.0501 (0.1001) 3.72	0.0087 (0.2161) 212.0	0.0017 (0.0277) 0.305
Observations	2,880	2,787	2,880	2,537	2,787
N of Clusters	48	48	48	48	48

Notes: Regressions on the subsample on DSAs with above median White patients removed from the waiting list between 2005 and 2013. All behaviors and outcomes correspond to their definitions in the main text. The alternative transplant rate treats the denominator as the number of unique registrants present at any point during a calendar year. Poisson coefficients can be transformed into percentages using the formula $100 \times (e^{\hat{\beta}} - 1)$. Group-specific baseline means of the dependent variable reflect the pre-treatment period (2005–2013) DSA-year means in levels for HCV^- liver candidates only. While there are 57 DSAs in the U.S., we use modified DSA identifiers due to changes in DSA existence and services over time, which yields 50 kidney-serving DSA and 45 liver-serving DSA identifiers. Standard errors are in parentheses and are clustered at the DSA-by-organ level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 7: Difference-in-Differences Estimates: Any Private Payer Under 65

	Any Private Payer Under 65				
	TX Poisson	TX Rate Fraction, OLS	WL Additions Poisson	Days to TX Poisson	TX Rate Alt. Fraction, OLS
DAA x White	0.4926*** (0.0460) 29.96	0.2166*** (0.0445) 0.494	0.4294*** (0.0465) 53.55	-0.3597*** (0.0579) 272.4	0.0991*** (0.0153) 0.255
DAA x Black	0.2345*** (0.0593) 2.84	0.1640 (0.1810) 0.878	0.2948*** (0.0622) 4.45	-0.1931 (0.1734) 263.7	0.0470* (0.0270) 0.293
Observations	5,685	5,424	5,700	4,804	5,424
N of Clusters	95	95	95	95	95

Notes: Regressions on the subsample of patients under the age of 65 who have a primary or secondary private payer. All behaviors and outcomes correspond to their definitions in the main text. The alternative transplant rate treats the denominator as the number of unique registrants present at any point during a calendar year. Poisson coefficients can be transformed into percentages using the formula $100 \times (e^{\hat{\beta}} - 1)$. Group-specific baseline means of the dependent variable reflect the pre-treatment period (2005–2013) DSA-year means in levels for HCV^- liver candidates only. While there are 57 DSAs in the U.S., we use modified DSA identifiers due to changes in DSA existence and services over time, which yields 50 kidney-serving DSA and 45 liver-serving DSA identifiers. Standard errors are in parentheses and are clustered at the DSA-by-organ level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 8: Racial Composition of Donors

	All DSAs	Above Median Black
DAA x White	-0.0059 (0.0059) 0.698	-0.0066 (0.0082) 0.650
DAA x Black	0.0046 (0.0045) 0.156	0.0066 (0.0071) 0.235
Observations	6,000	3,000
N	100	50

Notes: Each column represents the difference-in-differences coefficient on the share of the waiting list for each respective racial group. Group-specific baseline means of the dependent variable reflect the pre-treatment period (2005–2013) DSA-year means for HCV^- liver candidates only. While there are 57 DSAs in the U.S., we use modified DSA identifiers due to changes in DSA existence and services over time, which yields 50 kidney-serving DSA and 45 liver-serving DSA identifiers. Standard errors are in parentheses and are clustered at the DSA-by-organ level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$