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## COVID-19 Guide

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### Adjustments to Transplant Program and OPO Evaluation Metrics

The Scientific Registry of Transplant Recipients (SRTR), under contract from the Health Resources and Services Administration (HRSA), is charged with evaluating the performance of the nation's transplant system through publication of semi-annual transplant program-specific reports (PSRs) and organ procurement organization (OPO)-specific reports (OSRs). These reports contain performance metrics covering various time periods. For OPOs, these metrics include eligible death conversion rates and deceased donor organ yield. For transplant programs, they include pre-transplant mortality rates (formerly called waitlist mortality rates), transplant rates, organ offer acceptance rates, patient mortality after listing, and 1-month, 90-day, 1-year, 1-year conditional on 90-day, and 3-year posttransplant outcomes including graft survival and patient survival.

In response to the current global pandemic, SRTR modified the evaluation metrics for transplant programs and OPOs for the reports released in January 2021, July 2021 and January 2022. These reports made adjustments to transplant program and OPO performance metrics so that data beyond the declaration of a national public health emergency on March 13, 2020, were not included in the metrics.

Modifications for the July 2022 reporting cycle were considered at the Analytic Methods Subcommittee of the SRTR Review Committee (SRC) at its meeting on March 24, 2021, and the full SRC meetings April 27, 2021 and on January 11, 2022. Both the Analytic Methods Subcommittee and the full SRC recommended an ongoing carve out of the first quarter of the pandemic (March 13, 2020 through June 12, 2020) from adjusted performance metrics, as detailed below. These recommendations were reviewed by HRSA's Division of Transplantation, which oversees SRTR. HRSA approved these recommendations, which SRTR will implement for the July 2022 reporting cycle. These changes will remain in force beyond the July 2022 reporting cycle, unless otherwise amended:

Posttransplant Outcomes (including 1-month, 90-day, 1-year, 1-year conditional on 90-day, and 3-year graft and patient survival): Evaluation cohorts will exclude transplants performed between March 13, 2020 and June 12, 2020, inclusive of March 13 and June 12. Patients given transplants before March 13, 2020 will have follow-up censored on March 12, 2020. Patients given transplants after June 12, 2020 will resume normal follow-up. Follow-up will not resume for patients given transplants before March 13, 2020 who are alive with function on June 12, 2020; however, this may be reconsidered as SRTR continues to explore moving to a period-prevalent methodology:

1-month, 90-day, 1-year & 1-year conditional on 90-day Patient and Graft Survival Evaluations: Transplants 1/1/2019-3/12/2020, follow-up through 3/12/2020. Transplants 6/13/2020-6/30/2021, follow-up through 12/31/2021.

3-year Patient and Graft Survival Evaluations: Transplants 7/1/2016-12/31/2018; follow-up through 3/12/2020.

Pre-Transplant Mortality Rate (formerly called Waitlist Mortality Rate): Evaluation cohorts will exclude March 13, 2020 through June 12, 2020, inclusive of March 13 and June 12:



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Days after listing (and before transplant) between 1/1/2020-3/12/2020 and 6/13/2020-12/31/2021.

Transplant Rate: Evaluation cohorts will exclude March 13, 2020 through June 12, 2020, inclusive of March 13 and June 12:

Candidates on the waitlist 1/1/2020-3/12/2020 and 6/13/2020-12/31/2021.

Overall Rate of Mortality After Listing: Evaluation cohorts will exclude March 13, 2020 through June 12, 2020, inclusive of March 13 and June 12:

Evaluation period: 1/1/2020-3/12/2020 and 6/13/2020-12/31/2021.

Offer Acceptance Rate: These evaluations are based on normal reporting cohorts.

Offers received 1/1/2021-12/31/2021.

These decisions will apply to the evaluations released in the SRTR's semi-annual program-specific reports scheduled for release on July 6, 2022. These changes have been communicated to the leadership of the Organ Procurement and Transplantation Network's (OPTN) Membership and Professional Standards Committee (MSPC). These decisions will then be re-evaluated as more information becomes available in preparation for the release scheduled for January 2023.

As with the January 2022 reports, SRTR will continue to report descriptive data beyond March 12, 2020, e.g., waitlist counts, transplant counts, recipient characteristics, donor counts, donor characteristics, etc., but will alter data for performance evaluation metrics as described above.



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This report contains a wide range of useful information about the liver transplant program at Hospital of the University of Pennsylvania. The report has three main sections:

- A. Program Summary
- B. Waiting List Information
- C. Transplant Information

The Program Summary is a one-page summary highlighting characteristics of the program, including the number of candidates on the waiting list, the number of transplants performed at the program, the number of patients being cared for by the program, and patient outcomes, including outcomes while on the waiting list (the transplant rate and the death rate while on the waiting list) and outcomes after transplant (patient and graft survival probabilities). If the program performed transplants in both adults and children, survival probabilities for adults and children (pediatrics) are provided separately. For each of the outcomes measures presented, a comparison is provided showing what would be expected at this program if it were performing as similar programs around the country perform when treating similar patients. More details regarding these outcome measures are provided in Sections B and C of the report.

The Waiting List Information section contains more detailed information on how many candidates are on the waiting list at the program, the types of candidates on the waiting list, how long candidates typically have to wait for a transplant at this program, how frequently candidates successfully receive a transplant, and how often candidates on the waiting list die before receiving a transplant.

Table B1 shows the activity on this program's waiting list during two recent 1-year periods and provides comparisons to all programs within this program's OPTN region (see <http://optn.transplant.hrsa.gov/members/regions.asp> for information on OPTN regions) and the nation as a whole. Tables B2 and B3 describe the candidates on the waiting list at this program, with comparisons to candidates waiting in the same donor service area (OPO/DSA) the OPTN region, and the nation as a whole.

Table B4 shows how many candidates were removed from the waiting list because they received a transplant. The program's transplant rate is calculated as the number of candidates who received a transplant divided by the person-years observed at the program (person-years is a combination of how many candidates were on the waiting list along with how long each candidate was followed since some candidates are not on the waiting list for the entire year). The transplant rate and comparisons to what would be expected at this program are presented in Figures B1 and B2. Figure B1 shows the transplant rate compared to what was expected at this program. The expected transplant rate is an estimate of what we would expect at this program if it were performing transplants at rates similar to other programs in the US with similar candidates on their waiting lists. The expected rate is only an estimate, and is made with a certain level of uncertainty. This uncertainty is shown in Figure B2. Figure B2 displays the ratio of the observed to the expected transplant rate. A ratio of 1 indicates that the observed transplant rate was equal to the expected transplant rate, while a ratio less than 1 indicates the observed rate was lower than expected rate and a ratio greater than 1 indicates the observed rate was higher than the expected rate. However, the level of uncertainty must be considered when interpreting these numbers. The 95% interval is also shown on Figure B2. This interval provides a range within which the true ratio of observed to expected transplant rates is likely to be. If this



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confidence interval includes (crosses) 1.0, then we cannot say that this program's observed transplant rate is different from what would be expected. The observed transplant rate at this program was 130.4 per 100 person-years. Transplant rates are also provided for adult and pediatric patients separately along with comparisons to adult and pediatric rates in the DSA, the OPTN region, and the nation. Transplant rates are also presented excluding transplants from a living donor (Table B4D and Figures B1D-B3D). Please refer to the PSR Technical Methods documentation available at <http://www.srtr.org> for more detail regarding how expected rates are calculated.

The pre-transplant mortality rate (previously called the waiting list mortality rate) for candidates on the waiting list is presented in Table B5 and Figures B4-B6. These data are presented in the same way as the transplant rate data in the previous section. The intent of this table and figures is to describe risk of death once candidates are listed rather than while they are listed, but before they are transplanted. Therefore, time at risk and deaths after removal from the waiting list for reasons other than transplant, transfer to another transplant program, or recovery (no longer needing a transplant), and before any subsequent transplant, are included. As with transplant rates, mortality rates should be interpreted carefully taking into consideration the interval displayed in Figure B5. For a complete description of how observed and expected mortality rates are calculated, please refer to the technical documentation available at <http://www.srtr.org>.

Survival from listing is presented in Table B6 and Figures B7-B9. These data are presented in the same way as the pre-transplant mortality rate data in the previous section. The intent of this table and figures is to describe risk of death once candidates are listed rather than while they are listed, including after a transplant. As with transplant rates, mortality rates should be interpreted carefully taking into consideration the interval displayed in Figure B8. For a complete description of how observed and expected mortality rates are calculated, please refer to the technical documentation available at <http://www.srtr.org>.

Table B7 presents information on what happens to candidates on the waiting list by three different time points after listing: 6 months, 12 months, and 18 months. The table displays percentages of candidates who have died, been removed from the waiting list, been transplanted, or been transferred or lost-to-follow-up. Tables B8 and B9 provide more detail regarding how many candidates have received a deceased donor transplant by certain time points during the first 3 years after being put on the transplant waiting list. Each row of Tables B8 and B9 presents the percent of candidates who received a deceased donor transplant by each time point. Table B10 presents data on the time it took for different percentages of patients to be transplanted for candidates added to the list between 01/01/2016 and 06/30/2021. The time it took for 5% (the 5th percentile) of patients to receive a transplant at this program was 0.1 months. If "Not Observed" is displayed in the table, then too few candidates received transplants before 12/31/2021 to calculate a particular percentile of transplant times.

Table B11 contains a summary of the offer acceptance practices of the program. The offer acceptance ratio indicates whether the program is more or less likely to accept offers than the average program. If the offer acceptance ratio is greater than 1.0, then the program tends to accept more offers than average; if the offer acceptance ratio is less than 1.0, then the program tends to accept fewer offers than average. Figure B10 shows the distribution of program offer acceptance rates as well as the offer acceptance rate for this program. Figures B11 - B15 similarly show offer acceptance rates for subsets



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of offers.

The Transplant Information section begins with descriptions of transplant recipients in Tables C1 and C2. Data on recipients of deceased donor transplants are presented (Tables C1D and C2D); if applicable, data on recipients of living donor transplants are presented separately (Tables C1L and C2L). Comparisons to the region and the nation as a whole are provided. A description of the deceased donors used at this program is provided in Table C3D, along with characteristics of living donors in Table C3L, if applicable. Finally, information on the transplant procedure for deceased and living donor transplants is presented in Tables C4D and C4L, respectively.

Starting with Table C5, transplant outcomes are presented along with comparisons to what would be expected at this program and what happened in the nation as a whole. Tables C5-C14 (tables C5-C10 for Pancreas) present information on graft survival (survival of the transplanted organ), with data presented separately for adult and pediatric recipients. Patients are followed from the time of transplant until either failure of the transplanted organ or death, whichever comes first. Please refer to the technical methods for more information on these calculations (<http://www.srtr.org>).

While Tables C5-C14 present data on graft survival, Tables C15-C20 (tables C11-C20 for Pancreas) present information on patient survival. For these tables, patients are followed from the time of transplant until death, regardless of whether the transplant is functioning or the patient required another transplant to survive.

Tables C21 and C22 summarize the multiorgan transplant outcomes at this program. The summary statistics in these tables are descriptive and are not risk-adjusted for different donor and candidate characteristics.

Table D1 shows the rates of follow-up for living donors.

Additional information regarding the technical methods and the risk adjustment models used to estimate expected event rates is available on the SRTR website at <http://www.srtr.org>. We welcome and encourage feedback on these reports. Please feel free to share feedback with the SRTR at the following e-mail: [srtr@srtr.org](mailto:srtr@srtr.org).



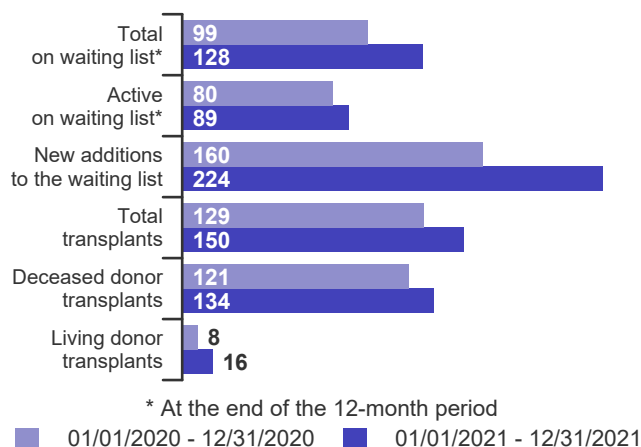
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## A. Program Summary

**Figure A1. Waiting list and transplant activity**

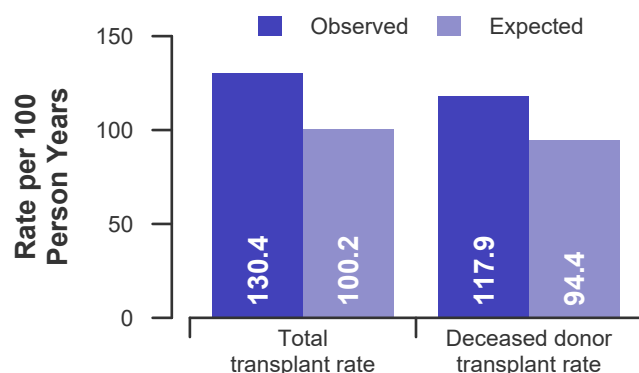


**Table A1. Census of transplant recipients**

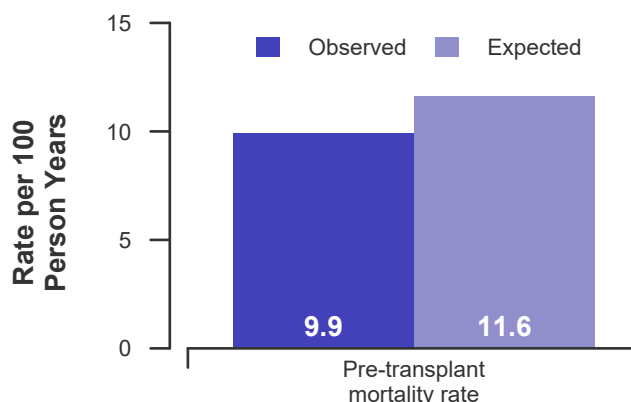
Recipients	01/01/2020-12/31/2020	01/01/2021-12/31/2021
Transplanted at this center	129	150
Followed by this center*	1,419	1,449
...transplanted at this program	1,352	1,384
...transplanted elsewhere	67	65

\* Recipients followed are transplant recipients for whom the center has submitted a post-transplant follow-up form for a transplant that took place before the 12-month interval for each column.

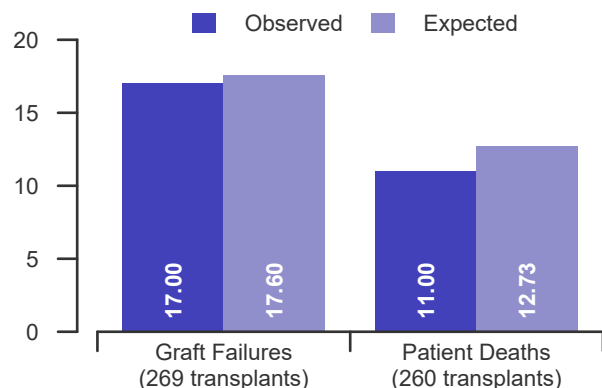
**Figure A2. Transplant rates**  
01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021



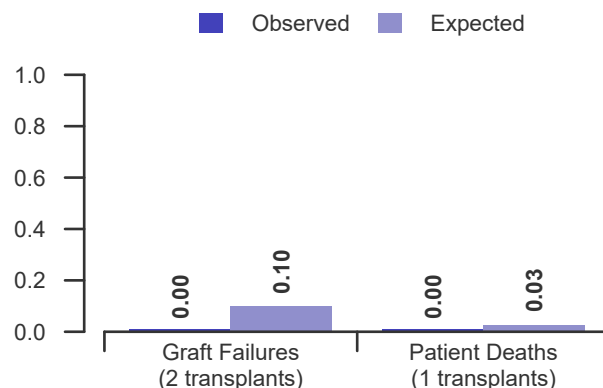
**Figure A3. Pre-transplant mortality rates**  
01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021



**Figure A4. First-year adult graft and patient survival:**  
01/01/2019 - 03/12/2020, 06/13/2020 - 06/30/2021



**Figure A5. First-year pediatric graft & patient survival:**  
01/01/2019 - 03/12/2020, 06/13/2020 - 06/30/2021







## B. Waiting List Information

Table B1. Waiting list activity summary: 01/01/2020 - 12/31/2021

Waiting List Registrations	Counts for this center		Activity for 01/01/2021 to 12/31/2021 as percent of registrants on waiting list on 01/01/2021		
	01/01/2020-12/31/2020	01/01/2021-12/31/2021	This Center (%)	OPTN Region (%)	U.S. (%)
<b>On waiting list at start</b>	112	99	100.0	100.0	100.0
<b>Additions</b>					
New listings at this center	160	224	226.3	93.2	113.7
<b>Removals</b>					
Transferred to another center	1	3	3.0	1.3	1.2
Received living donor transplant*	8	16	16.2	8.5	4.7
Received deceased donor transplant*	121	134	135.4	51.7	71.2
Died	12	5	5.1	8.1	9.4
Transplanted at another center	3	4	4.0	2.3	2.3
Deteriorated	9	18	18.2	8.2	9.8
Recovered	10	10	10.1	6.6	9.3
Other reasons	9	5	5.1	8.3	9.4
<b>On waiting list at end of period</b>	99	128	129.3	98.2	96.4

\* These patients were removed from waiting list with removal code indicating transplant; this may not equal the number of transplants performed at this center during the specified period.





## B. Waiting List Information

**Table B2. Demographic characteristics of waiting list candidates****Candidates registered on the waiting list between 01/01/2021 and 12/31/2021**

Demographic Characteristic	New Waiting List Registrations 01/01/2021 to 12/31/2021 (%)			All Waiting List Registrations on 12/31/2021 (%)		
	This Center (N=224)	OPTN Region (N=1,518)	U.S. (N=13,840)	This Center (N=128)	OPTN Region (N=1,599)	U.S. (N=11,735)
<b>All (%)</b>	100.0	100.0	100.0	100.0	100.0	100.0
<b>Ethnicity/Race (%)*</b>						
White	72.8	75.0	69.0	71.1	75.0	66.7
African-American	8.5	10.7	7.4	11.7	12.6	7.0
Hispanic/Latino	9.4	8.8	17.5	6.2	8.5	19.5
Asian	8.5	5.1	4.3	9.4	3.4	5.3
Other	0.9	0.4	1.8	1.6	0.4	1.6
Unknown	0.0	0.0	0.0	0.0	0.0	0.0
<b>Age (%)</b>						
<2 years	0.0	2.1	2.1	0.0	1.4	1.2
2-11 years	0.0	2.4	1.6	0.0	1.1	1.2
12-17 years	0.0	1.2	1.2	0.8	1.1	1.0
18-34 years	8.0	7.7	7.1	4.7	5.8	6.3
35-49 years	24.6	21.7	21.0	13.3	19.0	19.4
50-64 years	45.1	43.1	46.0	55.5	52.7	51.0
65-69 years	18.3	15.7	15.5	19.5	14.8	15.5
70+ years	4.0	6.0	5.5	6.2	4.1	4.4
<b>Gender (%)</b>						
Male	58.9	61.3	60.9	64.1	60.7	60.4
Female	41.1	38.7	39.1	35.9	39.3	39.6

\* Race and ethnicity are reported together as a single data element, reflecting their data collection (either race or ethnicity is required, but not both). Patients formerly coded as white and Hispanic are coded as Hispanic. Race and ethnicity sum to 100%.



## B. Waiting List Information

**Table B3. Medical characteristics of waiting list candidates**

Candidates registered on the waiting list between 01/01/2021 and 12/31/2021

Medical Characteristic	New Waiting List Registrations 01/01/2021 to 12/31/2021 (%)			All Waiting List Registrations on 12/31/2021 (%)		
	This Center (N=224)	OPTN Region (N=1,518)	U.S. (N=13,840)	This Center (N=128)	OPTN Region (N=1,599)	U.S. (N=11,735)
<b>All (%)</b>	100.0	100.0	100.0	100.0	100.0	100.0
<b>Blood Type (%)</b>						
O	43.3	42.4	47.1	45.3	47.0	49.0
A	39.7	39.2	36.8	37.5	38.3	38.5
B	13.8	14.0	12.4	17.2	12.3	10.4
AB	3.1	4.4	3.6	0.0	2.3	2.1
Unknown	0.0	0.0	0.0	0.0	0.0	0.0
<b>Previous Transplant (%)</b>						
Yes	5.8	4.0	4.3	2.3	3.2	3.4
No	94.2	96.0	95.7	97.7	96.8	96.6
Unknown	0.0	0.0	0.0	0.0	0.0	0.0
<b>Primary Disease (%)</b>						
Acute Hepatic Necrosis	4.0	6.0	5.7	0.8	1.7	2.0
Non-Cholestatic Cirrhosis	65.6	66.5	67.5	67.2	72.7	69.9
Cholestatic Liver Disease/Cirrhosis	7.6	6.5	7.2	3.9	6.5	7.8
Biliary Atresia	0.0	2.1	1.7	0.8	1.4	1.6
Metabolic Diseases	0.9	2.3	1.9	0.8	1.9	1.5
Malignant Neoplasms	17.4	12.4	10.9	23.4	10.8	11.4
Other	4.5	4.2	5.1	3.1	4.9	5.8
Missing	0.0	0.0	0.1	0.0	0.0	0.1
<b>Medical Urgency Status/MELD/PELD at Listing (%)*</b>						
Status 1A	0.9	2.7	2.8	0.0	0.3	0.2
Status 1B	0.0	0.5	0.3	0.0	0.0	0.1
Status 2A	0.0	0.0	0.0	0.0	0.0	0.0
Status 2B	0.0	0.0	0.0	0.0	0.1	0.0
Status 3	0.0	0.0	0.0	0.0	0.1	0.2
MELD 6-10	12.5	19.0	15.7	26.6	36.7	29.4
MELD 11-14	12.1	11.3	11.4	14.8	22.0	21.8
MELD 15-20	20.1	18.3	20.6	31.2	21.9	26.1
MELD 21-30	19.2	20.3	24.7	9.4	11.8	14.0
MELD 31-40	18.8	15.0	13.8	0.8	1.2	1.0
PELD less than or equal to 10	0.0	2.6	1.6	0.0	2.0	1.7
PELD 11-14	0.0	0.1	0.2	0.0	0.2	0.1
PELD 15-20	0.0	0.6	0.4	0.0	0.1	0.2
PELD 21-30	0.0	0.5	0.3	0.0	0.1	0.1
PELD 31 or greater	0.0	0.1	0.1	0.0	0.0	0.0
Temporarily Inactive	13.8	4.5	4.0	16.4	3.5	5.1

\* MELD/PELD score based on laboratory measures is shown for listings beginning 2/27/2002 unless patient is Status 1 or Temporarily Inactive. MELD/PELD scores based on exception rules are not used. Status 1 separated into 1A and 1B in August 2005.



## B. Waiting List Information

Table B4. Transplant rates: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021

Waiting List Registrations	This Center	OPO/DSA	Region	U.S.
<b>All Candidates</b>				
Count on waiting list at start*	112	410	1,782	13,006
Person Years**	191.7	691.3	2,897.0	21,352.3
Removals for Transplant	250	631	1,736	16,102
<b>Adult (18+) Candidates</b>				
Count on waiting list at start*	111	398	1,708	12,544
Person Years**	190.0	668.4	2,788.8	20,651.2
Removals for transplant	250	584	1,590	15,170
<b>Pediatric (&lt;18) Candidates</b>				
Count on waiting list at start*	1	12	74	462
Person Years**	1.7	22.9	108.2	701.1
Removals for transplant	0	47	146	932

\* Counts in this table may be lower than similar counts in other waiting list tables, such as Table B1. A small percentage (~1%) of patients are found to have died or been transplanted before being removed from the waiting list, so these patients are excluded if the event occurs prior to the start of the study period. Inactive time on the waiting list is included in the calculations for this table.

\*\* Person years are calculated as days (converted to fractional years). The number of days from January 1 or from the date of first wait listing until death, transplant, removal from the waiting list or December 31. Person years excludes time on the waiting list between March 13, 2020 and June 12, 2020.

Figure B1. Observed and expected transplant rates: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021

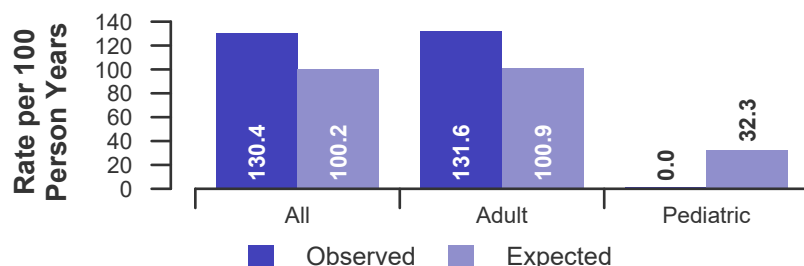


Figure B2. Transplant rate ratio estimate

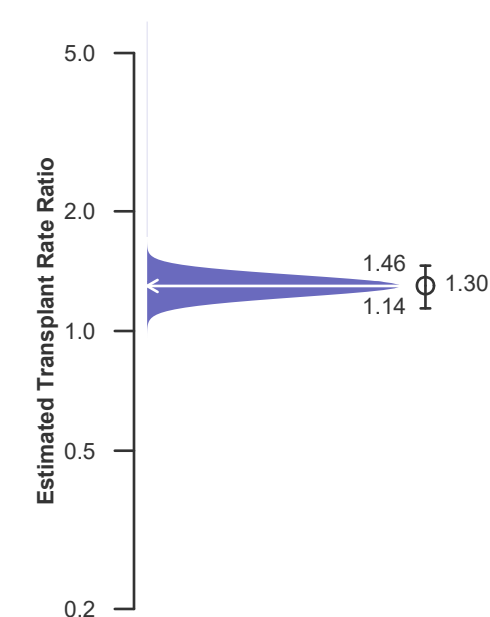
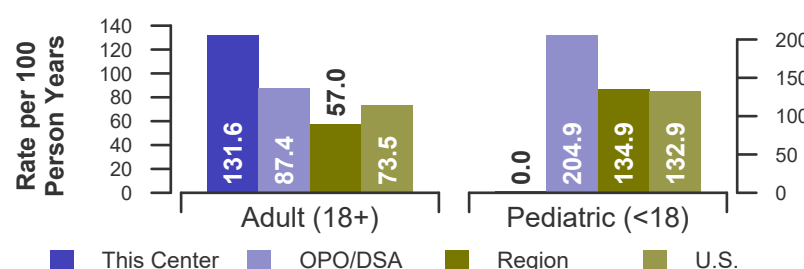


Figure B3. Observed adult (18+) and pediatric (<18) transplant rates: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021





## B. Waiting List Information

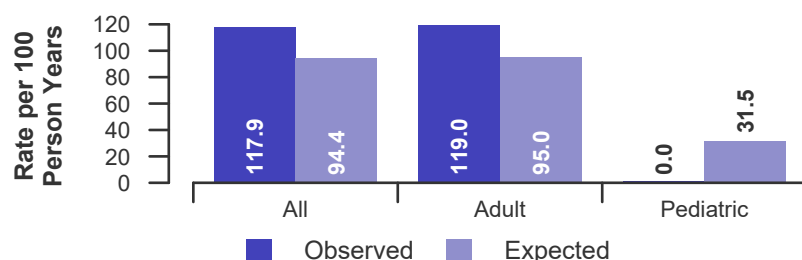
**Table B4D. Deceased donor transplant rates: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021**

Waiting List Registrations	This Center	OPO/DSA	Region	U.S.
<b>All Candidates</b>				
Count on waiting list at start*	112	410	1,782	13,006
Person Years**	191.7	691.3	2,897.0	21,352.3
Removals for Transplant	226	587	1,490	15,126
<b>Adult (18+) Candidates</b>				
Count on waiting list at start*	111	398	1,708	12,544
Person Years**	190.0	668.4	2,788.8	20,651.2
Removals for transplant	226	550	1,384	14,327
<b>Pediatric (&lt;18) Candidates</b>				
Count on waiting list at start*	1	12	74	462
Person Years**	1.7	22.9	108.2	701.1
Removals for transplant	0	37	106	799

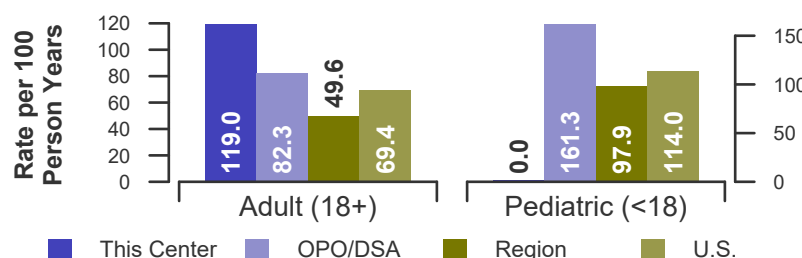
\* Counts in this table may be lower than similar counts in other waiting list tables, such as Table B1. A small percentage (~1%) of patients are found to have died or been transplanted before being removed from the waiting list, so these patients are excluded if the event occurs prior to the start of the study period. Inactive time on the waiting list is included in the calculations for this table.

\*\* Person years are calculated as days (converted to fractional years). The number of days from January 1 or from the date of first wait listing until death, transplant, removal from the waiting list or December 31. Person years excludes time on the waiting list between March 13, 2020 and June 12, 2020.

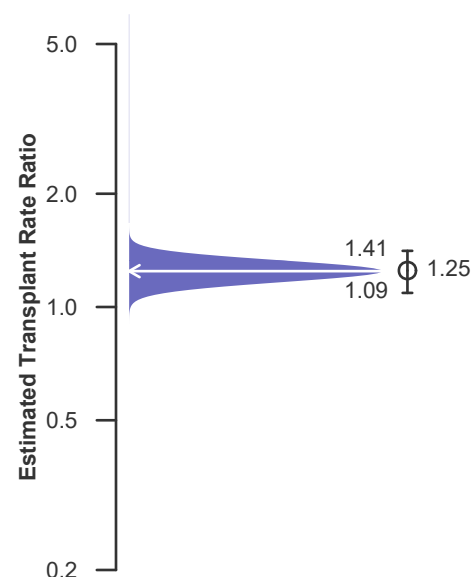
**Figure B1D. Observed and expected deceased donor transplant rates: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021**



**Figure B3D. Observed adult (18+) and pediatric (<18) deceased donor transplant rates: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021**



**Figure B2D. Deceased donor transplant rate ratio estimate**





## B. Waiting List Information

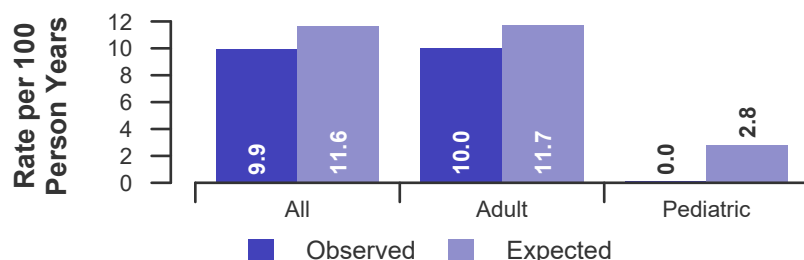
**Table B5. Pre-transplant mortality rates: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021**

Waiting List Registrations	This Center	OPO/DSA	Region	U.S.
<b>All Candidates</b>				
Count on waiting list at start*	112	410	1,782	13,006
Person Years**	221.5	829.1	3,345.6	25,104.5
Number of deaths	22	129	418	3,146
<b>Adult (18+) Candidates</b>				
Count on waiting list at start*	111	398	1,708	12,544
Person Years**	219.8	803.6	3,229.6	24,313.6
Number of deaths	22	128	415	3,108
<b>Pediatric (&lt;18) Candidates</b>				
Count on waiting list at start*	1	12	74	462
Person Years**	1.7	25.5	116.0	791.0
Number of deaths	0	1	3	38

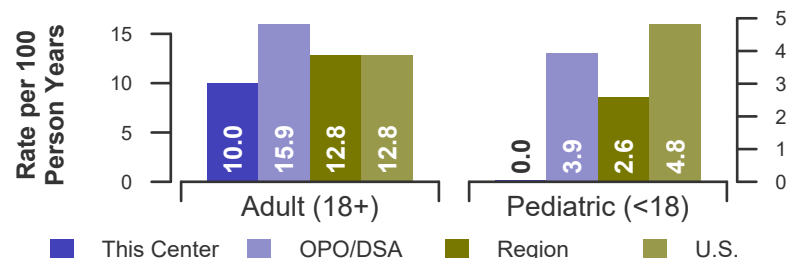
\* Counts in this table may be lower than similar counts in other waiting list tables, such as Table B1. A small percentage (~1%) of patients are found to have died or been transplanted before being removed from the waiting list, so these patients are excluded if the event occurs prior to the start of the study period. Inactive time on the waiting list is included in the calculations for this table.

\*\* Person years are calculated as days (converted to fractional years). The number of days from January 1 or from the date of first wait listing until death, transplant, 60 days after recovery, transfer or December 31. Person years excludes time on the waiting list between March 13, 2020 and June 12, 2020.

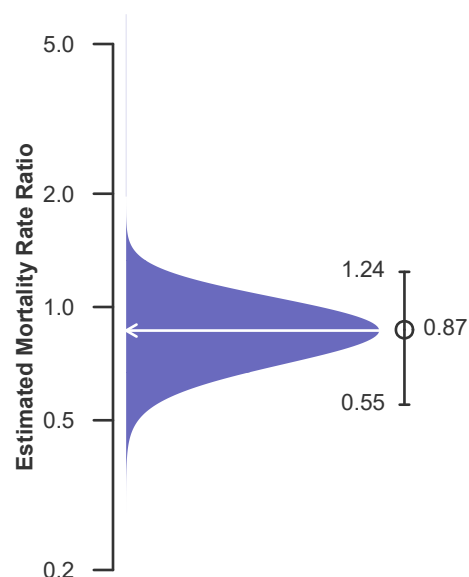
**Figure B4. Observed and expected pre-transplant mortality rates: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021**



**Figure B6. Observed adult (18+) and pediatric (<18) pre-transplant mortality rates: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021**



**Figure B5. Pre-transplant mortality rate ratio estimate**





## B. Waiting List Information

Table B6. Rates of patient mortality after listing: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021

Waiting List Registrations	This Center	OPO/DSA	Region	U.S.
<b>All Patients</b>				
Count at risk during the evaluation period	1,116	3,328	9,062	76,170
Person-years*	1,274.6	3,870.1	10,698.3	90,051.6
Number of Deaths	81	316	845	6,398
<b>Adult (18+) Patients</b>				
Count at risk during the evaluation period	1,113	3,158	8,457	71,796
Person-years*	1,269.7	3,658.8	9,978.7	84,733.3
Number of Deaths	80	313	837	6,287
<b>Pediatric (&lt;18) Patients</b>				
Count at risk during the evaluation period	3	170	605	4,374
Person-years*	4.9	211.3	719.5	5,318.4
Number of Deaths	1	3	8	111

\* Person-years are calculated as days (converted to fractional years). The number of days from 01/01/2020, or from the date of first wait listing until death, reaching 5 years after listing or December 31, 2021. Person years excludes time on the waiting list between March 13, 2020 and June 12, 2020.

\*\* Patient mortality after listing describes the relative survival experience of patients after listing. It depends on many factors, some of which are outside of the control of the transplant program. For example, availability of organs may not be the same in every part of the country.

Figure B7. Observed and expected rates of patient mortality after listing: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021

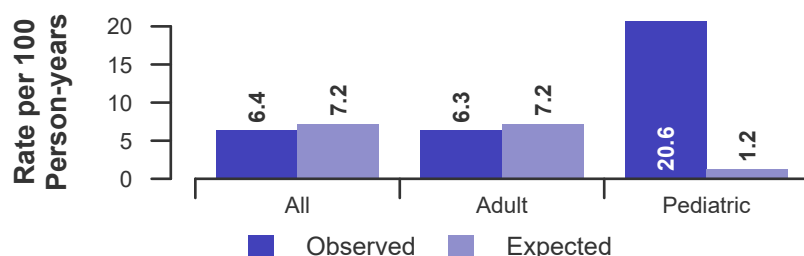


Figure B8. HR estimate of patient mortality after listing

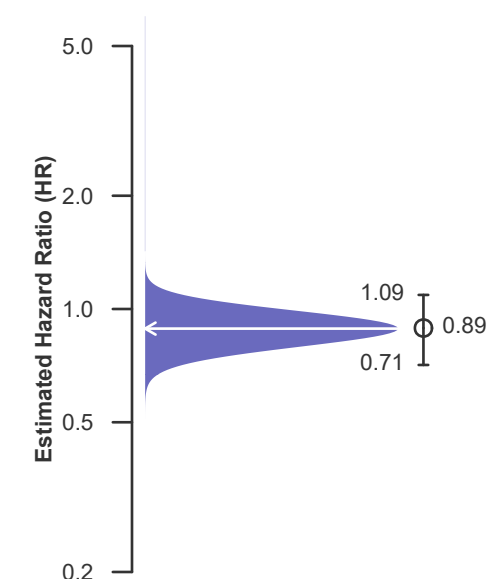
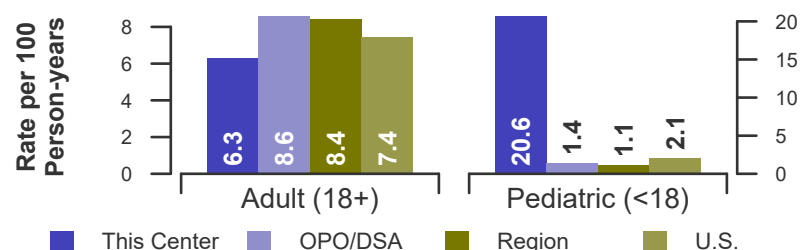


Figure B9. Observed adult (18+) and pediatric (<18) rates of patient mortality after listing: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021





## B. Waiting List Information

**Table B7. Waiting list candidate status after listing**  
**Candidates registered on waiting list between 07/01/2019 and 06/30/2020**

Waiting list status (survival status)	This Center (N=154)			U.S. (N=13,049)		
	Months Since Listing			Months Since Listing		
	6	12	18	6	12	18
<b>Alive on waiting list (%)</b>	39.6	18.2	9.7	43.1	26.1	17.8
<b>Died on the waiting list without transplant (%)</b>	4.5	5.2	6.5	4.3	5.6	6.3
<b>Removed without transplant (%):</b>						
Condition worsened (status unknown)	3.9	5.8	6.5	4.0	5.8	6.8
Condition improved (status unknown)	0.6	0.6	2.6	1.3	2.1	3.2
Refused transplant (status unknown)	0.6	0.6	0.6	0.2	0.4	0.6
Other	0.6	1.9	1.9	1.7	3.2	4.3
<b>Transplant (living donor from waiting list only) (%):</b>						
Functioning (alive)	3.9	3.2	1.9	2.4	2.9	2.2
Failed-Retransplanted (alive)	0.0	0.0	0.0	0.1	0.1	0.1
Failed-alive not retransplanted	0.0	0.0	0.0	0.0	0.0	0.0
Died	0.0	0.6	0.6	0.0	0.1	0.2
Status Yet Unknown**	0.0	0.0	1.3	0.0	0.1	1.0
<b>Transplant (deceased donor) (%):</b>						
Functioning (alive)	41.6	52.6	44.2	38.8	44.8	35.2
Failed-Retransplanted (alive)	0.6	1.3	1.3	0.4	0.6	0.7
Failed-alive not retransplanted	0.0	0.0	0.0	0.0	0.0	0.0
Died	3.2	4.5	5.8	1.8	3.0	4.1
Status Yet Unknown*	0.0	4.5	16.2	1.6	4.8	16.9
<b>Lost or Transferred (status unknown) (%)</b>	0.6	0.6	0.6	0.2	0.4	0.5
<b>TOTAL (%)</b>	100.0	100.0	100.0	100.0	100.0	100.0
Total % known died on waiting list or after transplant	7.8	10.4	13.0	6.1	8.7	10.6
Total % known died or removed as unstable	11.7	16.2	19.5	10.1	14.5	17.4
Total % removed for transplant	49.4	66.9	71.4	45.1	56.4	60.3
Total % with known functioning transplant (alive)	45.5	55.8	46.1	41.2	47.7	37.4

\* Follow-up form covering specified time period not yet completed, and possibly has not become due.





## B. Waiting List Information

**Table B7S1. Medical urgency status 1 candidate status after listing**

Candidates registered on the waiting list between 07/01/2019 and 06/30/2020

Waiting list status (survival status)	This Center (N=5)			U.S. (N=412)		
	Months Since listing			Months Since listing		
	6	12	18	6	12	18
<b>Alive on waiting list (%)</b>	0.0	0.0	0.0	2.4	1.7	0.7
<b>Died on the waiting list without transplant (%)</b>	20.0	20.0	20.0	8.0	8.0	8.0
<b>Removed without transplant (%):</b>						
Condition worsened (status unknown)	0.0	0.0	0.0	5.8	5.8	5.8
Condition improved (status unknown)	20.0	20.0	20.0	18.9	19.4	20.4
Refused transplant (status unknown)	0.0	0.0	0.0	0.2	0.5	0.5
Other	0.0	0.0	0.0	0.7	0.7	0.7
<b>Transplant (living donor from waiting list only) (%):</b>						
Functioning (alive)	0.0	0.0	0.0	1.9	1.9	1.7
Failed-Retransplanted (alive)	0.0	0.0	0.0	0.0	0.0	0.0
Failed-alive not retransplanted	0.0	0.0	0.0	0.0	0.0	0.0
Died	0.0	0.0	0.0	0.0	0.0	0.0
Status Yet Unknown**	0.0	0.0	0.0	0.0	0.0	0.2
<b>Transplant (deceased donor) (%):</b>						
Functioning (alive)	60.0	60.0	60.0	53.6	46.8	39.6
Failed-Retransplanted (alive)	0.0	0.0	0.0	0.7	0.7	1.0
Failed-alive not retransplanted	0.0	0.0	0.0	0.0	0.0	0.0
Died	0.0	0.0	0.0	6.6	7.8	8.3
Status Yet Unknown*	0.0	0.0	0.0	0.7	6.3	12.9
<b>Lost or Transferred (status unknown) (%)</b>	0.0	0.0	0.0	0.2	0.2	0.2
<b>TOTAL (%)</b>	100.0	100.0	100.0	100.0	100.0	100.0
Total % known died on waiting list or after transplant	20.0	20.0	20.0	14.6	15.8	16.3
Total % known died or removed as unstable	20.0	20.0	20.0	20.4	21.6	22.1
Total % removed for transplant	60.0	60.0	60.0	63.6	63.6	63.6
Total % with known functioning transplant (alive)	60.0	60.0	60.0	55.6	48.8	41.3

\* Follow-up form covering specified time period not yet completed, and possibly has not become due.



## B. Waiting List Information

**Table B8. Percent of candidates with deceased donor transplants: demographic characteristics**  
Candidates registered on the waiting list between 01/01/2016 and 12/31/2018

Characteristic	Percent transplanted at time periods since listing									
	This Center					United States				
	N	30 day	1 year	2 years	3 years	N	30 day	1 year	2 years	3 years
<b>All</b>	536	24.4	59.1	64.9	65.5	38,225	20.2	50.2	57.3	59.0
<b>Ethnicity/Race*</b>										
White	391	25.3	60.6	66.0	66.5	26,227	20.3	51.2	57.8	59.5
African-American	83	27.7	55.4	59.0	60.2	3,270	23.2	54.5	61.5	62.8
Hispanic/Latino	34	14.7	67.6	79.4	79.4	6,242	18.8	46.0	54.0	56.1
Asian	25	16.0	40.0	48.0	48.0	1,838	18.7	43.6	54.2	56.3
Other	3	0.0	33.3	66.7	66.7	648	20.5	49.2	55.9	57.1
Unknown	0	--	--	--	--	0	--	--	--	--
<b>Age</b>										
<2 years	0	--	--	--	--	912	23.2	71.4	74.8	76.0
2-11 years	0	--	--	--	--	731	28.7	71.3	76.6	78.5
12-17 years	1	0.0	0.0	0.0	0.0	447	22.8	56.6	65.8	67.8
18-34 years	52	40.4	57.7	59.6	61.5	2,227	29.3	51.1	57.3	59.3
35-49 years	73	27.4	50.7	53.4	53.4	6,314	28.5	52.8	58.1	59.8
50-64 years	305	24.3	62.6	70.2	70.5	19,888	18.4	49.1	56.7	58.5
65-69 years	89	15.7	59.6	64.0	65.2	6,218	14.1	46.1	54.1	55.9
70+ years	16	12.5	37.5	43.8	43.8	1,488	13.3	44.4	52.4	53.0
<b>Gender</b>										
Male	375	23.2	61.3	66.9	67.7	23,958	19.9	51.4	58.9	60.6
Female	161	27.3	54.0	60.2	60.2	14,267	20.8	48.3	54.7	56.5

\* Race and ethnicity are reported together as a single data element, reflecting their data collection (either race or ethnicity is required, but not both). Patients formerly coded as white and Hispanic are coded as Hispanic. Race and ethnicity sum to 100%.



## B. Waiting List Information

**Table B9. Percent of candidates with deceased donor transplants: medical characteristics**  
Candidates registered on the waiting list between 01/01/2016 and 12/31/2018

Characteristic	Percent transplanted at time periods since listing									
	This Center					United States				
	N	30 day	1 year	2 years	3 years	N	30 day	1 year	2 years	3 years
All	536	24.4	59.1	64.9	65.5	38,225	20.2	50.2	57.3	59.0
Blood Type										
O	236	21.2	56.8	63.6	64.4	17,831	19.3	47.8	55.5	57.3
A	189	21.7	55.6	61.4	61.9	14,083	19.1	48.8	55.9	57.6
B	89	36.0	68.5	71.9	71.9	4,764	23.4	57.2	63.4	64.9
AB	22	36.4	77.3	81.8	81.8	1,547	30.3	68.6	72.3	73.4
Previous Transplant										
Yes	29	37.9	65.5	65.5	65.5	1,900	29.0	52.5	57.9	59.4
No	507	23.7	58.8	64.9	65.5	36,325	19.7	50.1	57.3	59.0
Primary Disease										
Acute Hepatic Necrosis	25	64.0	72.0	76.0	76.0	1,637	50.8	59.8	62.4	63.1
Non-Cholestatic Cirrhosis	363	25.1	59.0	64.5	65.0	25,304	20.9	49.2	55.5	57.2
Cholestatic Liver Disease/Cirrhosis	33	36.4	66.7	75.8	75.8	2,678	16.9	48.8	56.2	58.9
Biliary Atresia	2	0.0	50.0	50.0	50.0	785	16.9	65.5	72.6	74.5
Metabolic Diseases	13	15.4	61.5	61.5	61.5	940	24.0	66.1	71.3	73.4
Malignant Neoplasms	73	5.5	60.3	68.5	68.5	4,859	7.6	47.5	60.0	61.4
Other	26	19.2	34.6	38.5	42.3	2,010	21.0	50.1	58.7	60.3
Missing	1	100.0	100.0	100.0	100.0	12	33.3	50.0	50.0	50.0
Medical Urgency Status/MELD/PELD at Listing*										
Status 1	0	--	--	--	--	0	--	--	--	--
Status 1A	10	70.0	70.0	70.0	70.0	1,182	61.1	61.8	61.8	61.9
Status 1B	0	--	--	--	--	155	42.6	81.3	81.3	81.3
Status 2A	0	--	--	--	--	0	--	--	--	--
Status 2B	0	--	--	--	--	0	--	--	--	--
Status 3	0	--	--	--	--	0	--	--	--	--
MELD 6-10	142	3.5	50.0	59.9	61.3	7,588	2.3	37.8	50.4	52.6
MELD 11-14	84	10.7	57.1	66.7	67.9	5,169	2.4	32.5	43.5	46.4
MELD 15-20	104	14.4	50.0	57.7	57.7	8,092	8.7	43.3	52.1	54.6
MELD 21-30	124	31.5	64.5	65.3	65.3	8,583	25.6	59.7	63.2	64.3
MELD 31-40	58	82.8	86.2	86.2	86.2	3,933	68.3	77.3	77.7	77.9
PELD less than or equal to 10	0	--	--	--	--	750	11.3	68.8	75.7	78.3
PELD 11-14	0	--	--	--	--	102	15.7	74.5	82.4	84.3
PELD 15-20	0	--	--	--	--	173	19.1	76.3	79.8	80.3
PELD 21-30	0	--	--	--	--	151	36.4	78.8	80.8	80.8
PELD 31 or greater	0	--	--	--	--	51	58.8	78.4	78.4	78.4
Temporarily Inactive	14	57.1	64.3	64.3	64.3	2,296	36.4	54.1	58.2	58.8

\* MELD/PELD score based on laboratory measures is shown for listings beginning 2/27/2002 unless patient is Status 1 or Temporarily Inactive. MELD/PELD scores based on exception rules are not used. Status 1 separated into 1A and 1B in August 2005.



## B. Waiting List Information

**Table B10. Time to transplant for waiting list candidates\***

Candidates registered on the waiting list between 01/01/2016 and 06/30/2021

Percentile	Center	Months to Transplant**		U.S.
		OPO/DSA	Region	
5th	0.1	0.1	0.1	0.1
10th	0.1	0.2	0.2	0.2
25th	0.7	1.1	1.4	1.1
50th (median time to transplant)	7.0	9.1	9.2	8.2
75th	Not Observed	Not Observed	Not Observed	Not Observed

\* If cells contain "Not Observed" fewer than that percentile of patients had received a transplant. For example, the 50th percentile of time to transplant is the time when 50% of candidates have received transplants. If waiting times are long, then the 50th percentile may not be observed during the follow-up period for this table. Also, if more than 50% of candidates are removed from the list due to death or other reasons before receiving transplants, then the 50th percentile of time to transplant will not be observed.

\*\* Censored on 12/31/2021. Calculated as the months after listing, during which the corresponding percent of all patients initially listed had received a transplant.



## B. Waiting List Information

Table B11. Offer Acceptance Practices: 01/01/2021 - 12/31/2021

Offers Acceptance Characteristics	This Center	OPO/DSA	Region	U.S.
<b>Overall</b>				
Number of Offers	4,302	16,524	44,320	279,788
Number of Acceptances	115	294	761	7,713
Expected Acceptances	93.9	496.7	1,056.9	7,700.2
Offer Acceptance Ratio*	1.22	0.59	0.72	1.00
95% Credible Interval**	[1.01, 1.45]	--	--	--
<b>PHS increased infectious risk</b>				
Number of Offers	815	3,267	7,249	42,931
Number of Acceptances	30	68	151	1,513
Expected Acceptances	22.7	116.1	214.2	1,510.4
Offer Acceptance Ratio*	1.29	0.59	0.71	1.00
95% Credible Interval**	[0.89, 1.78]	--	--	--
<b>DCD donor</b>				
Number of Offers	651	2,909	8,925	64,111
Number of Acceptances	1	5	43	822
Expected Acceptances	8.0	35.9	79.4	823.1
Offer Acceptance Ratio*	0.30	0.18	0.55	1.00
95% Credible Interval**	[0.06, 0.72]	--	--	--
<b>HCV+ donor</b>				
Number of Offers	110	681	1,266	9,564
Number of Acceptances	3	12	26	387
Expected Acceptances	2.5	29.3	47.9	385.6
Offer Acceptance Ratio*	1.10	0.45	0.56	1.00
95% Credible Interval**	[0.36, 2.26]	--	--	--
<b>Hard-to-Place Livers (Over 50 Offers)</b>				
Number of Offers	2,919	8,854	27,005	166,759
Number of Acceptances	27	46	101	1,019
Expected Acceptances	23.4	75.1	173.2	1,022.3
Offer Acceptance Ratio*	1.14	0.62	0.59	1.00
95% Credible Interval**	[0.76, 1.59]	--	--	--
<b>Donor more than 500 miles away</b>				
Number of Offers	620	2,158	9,044	83,724
Number of Acceptances	5	24	71	930
Expected Acceptances	5.7	41.7	108.9	902.2
Offer Acceptance Ratio*	0.90	0.60	0.66	1.03
95% Credible Interval**	[0.36, 1.69]	--	--	--

\* The offer acceptance ratio estimates the relative offer acceptance practice of Hospital of the University of Pennsylvania compared to the national offer acceptance practice. A ratio above one indicates the program is more likely to accept an offer compared to national offer acceptance practices (e.g., an offer acceptance ratio of 1.25 indicates a 25% more likely to accept an offer), while a ratio below one indicates the program is less likely to accept an offer compared to national offer acceptance practices (e.g., an offer acceptance ratio of 0.75 indicates a 25% less likely to accept an offer).

\*\* As an example, the 95% Credible Interval for the overall offer acceptance ratio, [1.01, 1.45], indicates the location of PAUP's true offer acceptance ratio with 95% probability. The best estimate is 22% more likely to accept an offer compared to national acceptance behavior, but PAUP's performance could plausibly range from 1% higher acceptance up to 45% higher acceptance.



## B. Waiting List Information

Figure B10. Offer acceptance: Overall

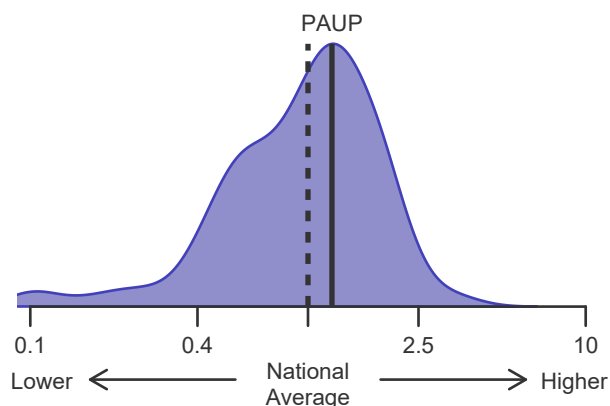


Figure B11. Offer acceptance:  
PHS increased infectious risk

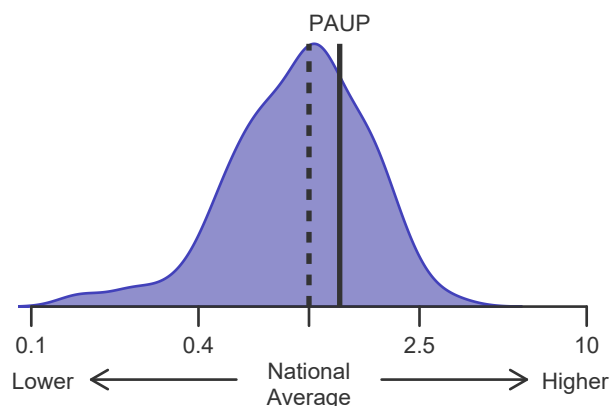


Figure B12. Offer acceptance: DCD Donor

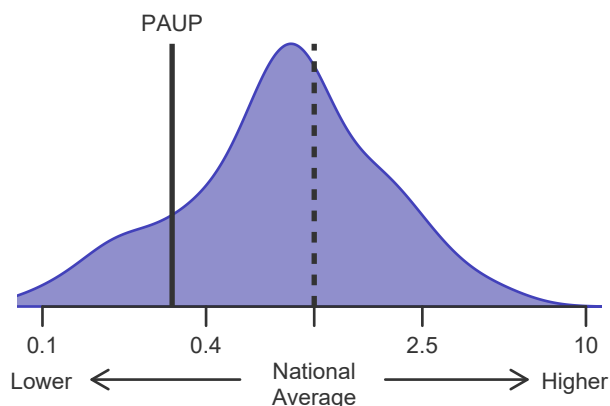


Figure B13. Offer acceptance: HCV+ Donor

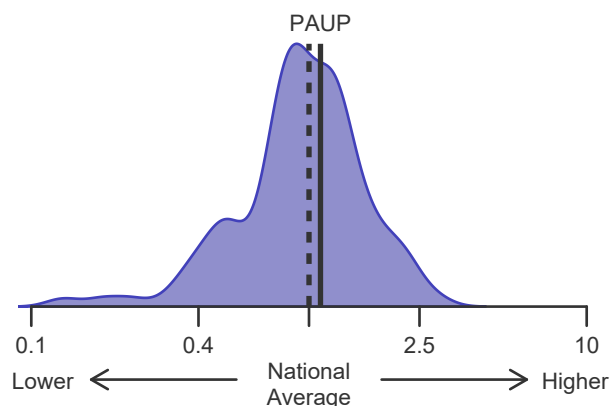


Figure B14. Offer acceptance: Offer number > 50

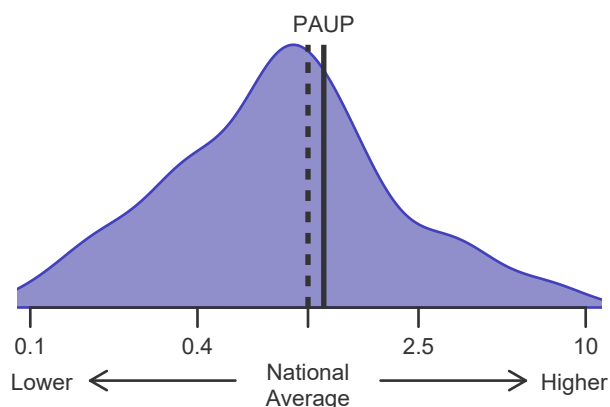
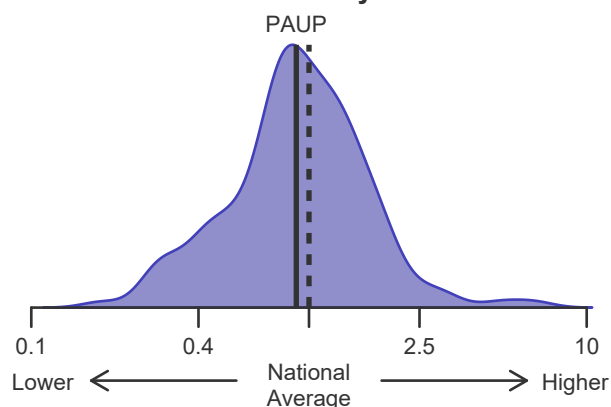


Figure B15. Offer acceptance:  
Donor more than 500 miles away





## C. Transplant Information

**Table C1D. Deceased donor transplant recipient demographic characteristics**

**Patients transplanted between 01/01/2021 and 12/31/2021**

Characteristic	Percentage in each category		
	Center (N=134)	Region (N=842)	U.S. (N=8,665)
<b>Ethnicity/Race (%)*</b>			
White	70.1	72.0	69.2
African-American	9.0	12.8	7.7
Hispanic/Latino	12.7	9.5	16.7
Asian	7.5	5.3	4.5
Other	0.7	0.4	1.9
Unknown	0.0	0.0	0.0
<b>Age (%)</b>			
<2 years	0.0	1.9	1.8
2-11 years	0.0	3.3	2.0
12-17	0.0	1.1	1.1
18-34	9.0	7.6	7.2
35-49 years	27.6	24.5	21.1
50-64 years	40.3	40.3	45.5
65-69 years	17.9	14.8	15.4
70+ years	5.2	6.5	5.8
<b>Gender (%)</b>			
Male	55.2	63.1	62.6
Female	44.8	36.9	37.4

\* Race and ethnicity are reported together as a single data element, reflecting their data collection (either race or ethnicity is required, but not both). Patients formerly coded as white and Hispanic are coded as Hispanic. Race and ethnicity sum to 100%.





## C. Transplant Information

**Table C1L. Living donor transplant recipient demographic characteristics****Patients transplanted between 01/01/2021 and 12/31/2021**

Characteristic	Percentage in each category		
	Center (N=16)	Region (N=138)	U.S. (N=569)
<b>Ethnicity/Race (%)*</b>			
White	93.8	87.0	73.1
African-American	0.0	5.8	5.6
Hispanic/Latino	6.2	4.3	17.4
Asian	0.0	2.9	2.8
Other	0.0	0.0	1.1
Unknown	0.0	0.0	0.0
<b>Age (%)</b>			
<2 years	0.0	7.2	8.8
2-11 years	0.0	6.5	4.0
12-17	0.0	0.7	0.7
18-34	25.0	10.1	12.1
35-49 years	6.2	10.9	18.8
50-64 years	25.0	39.1	35.1
65-69 years	43.8	19.6	15.1
70+ years	0.0	5.8	5.3
<b>Gender (%)</b>			
Male	62.5	53.6	47.6
Female	37.5	46.4	52.4

\* Race and ethnicity are reported together as a single data element, reflecting their data collection (either race or ethnicity is required, but not both). Patients formerly coded as white and Hispanic are coded as Hispanic. Race and ethnicity sum to 100%.



## C. Transplant Information

**Table C2D. Deceased donor transplant recipient medical characteristics**  
Patients transplanted between 01/01/2021 and 12/31/2021

Characteristic	Percentage in each category		
	Center (N=134)	Region (N=842)	U.S. (N=8,665)
<b>Blood Type (%)</b>			
O	44.0	41.8	46.0
A	37.3	35.9	35.9
B	13.4	16.7	13.4
AB	5.2	5.6	4.8
<b>Previous Transplant (%)</b>			
Yes	7.5	4.4	4.5
No	92.5	95.6	95.5
<b>Body Mass Index (%)</b>			
0-20	8.2	12.4	10.7
21-25	36.6	26.1	26.6
26-30	32.1	30.5	29.4
31-35	11.9	15.4	18.1
36-40	9.0	7.2	8.2
41+	2.2	3.9	4.0
Unknown	0.0	4.4	3.1
<b>Primary Disease (%)</b>			
Acute Hepatic Necrosis	3.0	7.2	6.4
Non-Cholestatic Cirrhosis	63.4	66.0	67.1
Cholestatic Liver Disease/Cirrhosis	9.0	5.2	6.7
Biliary Atresia	0.0	2.4	2.0
Metabolic Diseases	1.5	3.1	2.2
Malignant Neoplasms	19.4	11.8	12.3
Other	3.7	4.3	3.4
Missing	0.0	0.0	0.0
<b>Medical Urgency Statust/MELD/PELD at Transplant (%)*</b>			
Status 1A	0.7	3.0	3.2
Status 1B	0.0	2.5	0.9
MELD 6-10	11.9	10.8	10.1
MELD 11-14	7.5	5.2	6.6
MELD 15-20	10.4	12.1	14.6
MELD 21-30	35.1	27.3	30.3
MELD 31-40	28.4	27.1	24.9
PELD less than or equal to 10	0.0	1.5	1.2
PELD 11-14	0.0	0.2	0.2
PELD 15-20	0.0	0.4	0.5
PELD 21-30	0.0	0.5	0.3
PELD 31 or greater	0.0	0.2	0.3
Temporarily Inactive	0.0	0.1	0.0
<b>Recipient Medical Condition at Transplant (%)</b>			
Not Hospitalized	54.5	56.1	57.1
Hospitalized	41.8	29.6	26.6
ICU	3.7	14.0	16.3
Unknown	0.0	0.4	0.1

\* MELD/PELD score based on laboratory measures at the time of transplant is shown unless recipient is Status 1 or Temporarily Inactive. MELD/PELD scores based on exception rules are not used. Status 1 separated into 1A and 1B in August 2005



## C. Transplant Information

**Table C2L. Living donor transplant recipient medical characteristics**  
Patients transplanted between 01/01/2021 and 12/31/2021

Characteristic	Percentage in each category		
	Center (N=16)	Region (N=138)	U.S. (N=569)
<b>Blood Type (%)</b>			
O	12.5	34.1	44.6
A	68.8	48.6	42.7
B	18.8	11.6	9.3
AB	0.0	5.8	3.3
<b>Previous Transplant (%)</b>			
Yes	0.0	1.4	1.6
No	100.0	98.6	98.4
<b>Body Mass Index (%)</b>			
0-20	6.2	17.4	19.9
21-25	37.5	26.8	32.5
26-30	37.5	29.7	27.9
31-35	6.2	8.7	10.0
36-40	6.2	8.7	5.4
41+	6.2	2.2	1.9
Unknown	0.0	6.5	2.3
<b>Primary Disease (%)</b>			
Acute Hepatic Necrosis	0.0	2.2	1.2
Non-Cholestatic Cirrhosis	43.8	41.3	47.8
Cholestatic Liver Disease/Cirrhosis	25.0	20.3	22.0
Biliary Atresia	0.0	6.5	10.5
Metabolic Diseases	0.0	2.9	2.3
Malignant Neoplasms	31.2	21.7	11.8
Other	0.0	5.1	4.4
Missing	0.0	0.0	0.0
<b>Medical Urgency Statust/MELD/PELD at Transplant (%)*</b>			
Status 1A	0.0	0.7	0.5
Status 1B	0.0	2.2	1.1
MELD 6-10	18.8	24.6	25.7
MELD 11-14	25.0	15.9	18.3
MELD 15-20	43.8	29.0	28.6
MELD 21-30	12.5	13.0	12.5
MELD 31-40	0.0	2.2	0.7
PELD less than or equal to 10	0.0	5.8	4.6
PELD 11-14	0.0	0.0	1.2
PELD 15-20	0.0	2.2	2.3
PELD 21-30	0.0	3.6	2.5
PELD 31 or greater	0.0	0.0	0.9
Temporarily Inactive	0.0	0.7	1.2
<b>Recipient Medical Condition at Transplant (%)</b>			
Not Hospitalized	93.8	91.3	85.9
Hospitalized	6.2	4.3	9.5
ICU	0.0	0.7	3.7
Unknown	0.0	3.6	0.9

\* MELD/PELD score based on laboratory measures at the time of transplant is shown unless recipient is Status 1 or Temporarily Inactive. MELD/PELD scores based on exception rules are not used. Status 1 separated into 1A and 1B in August 2005



## C. Transplant Information

**Table C3D. Deceased donor characteristics**

Transplants performed between 01/01/2021 and 12/31/2021

Donor Characteristic	Percentage in each category		
	Center (N=134)	Region (N=842)	U.S. (N=8,665)
<b>Cause of Death (%)</b>			
Deceased: Stroke	25.4	24.2	25.9
Deceased: MVA	7.5	9.1	12.8
Deceased: Other	67.2	66.6	61.3
<b>Ethnicity/Race (%)*</b>			
White	59.0	63.4	61.9
African-American	23.9	22.2	18.1
Hispanic/Latino	11.9	10.9	15.8
Asian	3.7	2.9	3.0
Other	1.5	0.6	1.2
Not Reported	0.0	0.0	0.0
<b>Age (%)</b>			
<2 years	0.0	1.0	0.9
2-11 years	1.5	3.2	2.3
12-17	3.7	5.2	4.7
18-34	29.9	30.6	32.0
35-49 years	36.6	28.3	29.0
50-64 years	25.4	24.6	23.6
65-69 years	2.2	3.4	4.2
70+ years	0.7	3.7	3.2
<b>Gender (%)</b>			
Male	62.7	62.2	62.6
Female	37.3	37.8	37.4
<b>Blood Type (%)</b>			
O	50.0	47.4	49.7
A	40.3	37.1	36.4
B	7.5	12.5	11.2
AB	2.2	3.1	2.7
Unknown	0.0	0.0	0.0

\* Race and ethnicity are reported together as a single data element, reflecting their data collection (either race or ethnicity is required, but not both). Patients formerly coded as white and Hispanic are coded as Hispanic. Race and ethnicity sum to 100%.



## C. Transplant Information

**Table C3L. Living donor characteristics****Transplants performed between 01/01/2021 and 12/31/2021**

Donor Characteristic	Percentage in each category		
	Center (N=16)	Region (N=138)	U.S. (N=569)
<b>Ethnicity/Race (%)*</b>			
White	93.8	89.9	77.9
African-American	0.0	3.6	3.3
Hispanic/Latino	6.2	2.9	14.6
Asian	0.0	3.6	3.2
Other	0.0	0.0	1.1
Not Reported	0.0	0.0	0.0
<b>Age (%)</b>			
0-11 years	0.0	0.0	0.0
12-17	0.0	0.0	0.2
18-34	50.0	45.7	44.3
35-49 years	50.0	41.3	43.1
50-64 years	0.0	13.0	12.1
65-69 years	0.0	0.0	0.4
70+ years	0.0	0.0	0.0
<b>Gender (%)</b>			
Male	68.8	50.0	43.8
Female	31.2	50.0	56.2
<b>Blood Type (%)</b>			
O	25.0	51.4	63.6
A	62.5	37.7	30.1
B	12.5	8.7	5.4
AB	0.0	2.2	0.9
Unknown	0.0	0.0	0.0

\* Race and ethnicity are reported together as a single data element, reflecting their data collection (either race or ethnicity is required, but not both). Patients formerly coded as white and Hispanic are coded as Hispanic. Race and ethnicity sum to 100%.



## C. Transplant Information

**Table C4D. Deceased donor transplant characteristics**  
Transplants performed between 01/01/2021 and 12/31/2021

Transplant Characteristic	Percentage in each category		
	Center (N=134)	Region (N=842)	U.S. (N=8,665)
<b>Cold Ischemic Time (Hours): Local (%)</b>			
Deceased: 0-5 hr	39.6	58.6	69.2
Deceased: 6-10 hr	60.4	40.1	29.1
Deceased: 11-15 hr	0.0	0.0	0.9
Deceased: 16-20 hr	0.0	0.0	0.1
Deceased: 21+ hr	0.0	0.4	0.1
Not Reported	0.0	0.9	0.5
<b>Cold Ischemic Time (Hours): Shared (%)</b>			
Deceased: 0-5 hr	14.8	37.7	45.1
Deceased: 6-10 hr	84.0	57.5	51.7
Deceased: 11-15 hr	1.2	2.3	1.9
Deceased: 16-20 hr	0.0	0.2	0.3
Deceased: 21+ hr	0.0	0.7	0.2
Not Reported	0.0	1.6	0.8
<b>Procedure Type (%)</b>			
Single organ	85.8	90.7	89.8
Multi organ	14.2	9.3	10.2
<b>Donor Location (%)</b>			
Local Donation Service Area (DSA)	39.6	27.6	34.6
Another Donation Service Area (DSA)	60.4	72.4	65.4
<b>Median Time in Hospital After Transplant</b>	10.0 Days	12.0 Days	10.0 Days



## C. Transplant Information

**Table C4L. Living donor transplant characteristics**  
**Transplants performed between 01/01/2021 and 12/31/2021**

Transplant Characteristic	Percentage in each category		
	Center (N=16)	Region (N=138)	U.S. (N=569)
<b>Relation with Donor (%)</b>			
Related	87.5	56.5	56.9
Unrelated	12.5	42.8	42.9
Not Reported	0.0	0.7	0.2
<b>Procedure Type (%)</b>			
Single organ	100.0	100.0	100.0
Multi organ	0.0	0.0	0.0
<b>Median Time in Hospital After Transplant</b>	9.0 Days	9.0 Days	10.0 Days





## C. Transplant Information

**Table C5. Adult (18+) 1-month survival with a functioning graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

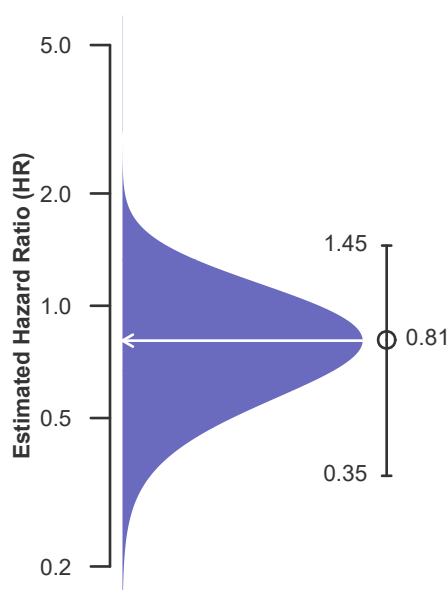
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	269	17,361
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	97.73%	96.90%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	97.04%	--
Number of observed graft failures (including deaths) during the first month after transplant	6	531
Number of expected graft failures (including deaths) during the first month after transplant	7.92	--
Estimated hazard ratio*	0.81	--
95% credible interval for the hazard ratio**	[0.35, 1.45]	--

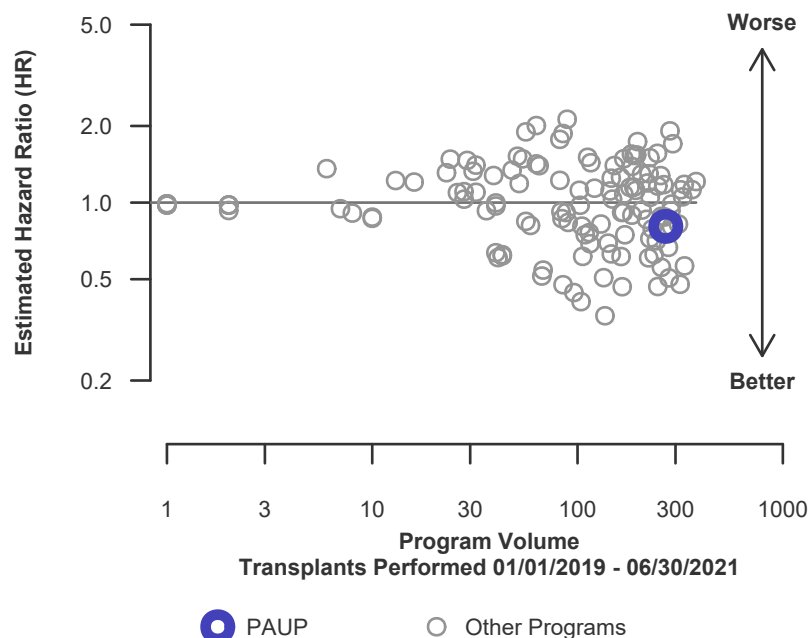
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.35, 1.45], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 19% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 65% reduced risk up to 45% increased risk.

**Figure C1. Adult (18+) 1-month graft failure HR estimate**



**Figure C2. Adult (18+) 1-month graft failure HR program comparison**





## C. Transplant Information

**Table C5D. Adult (18+) 1-month survival with a functioning deceased donor graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

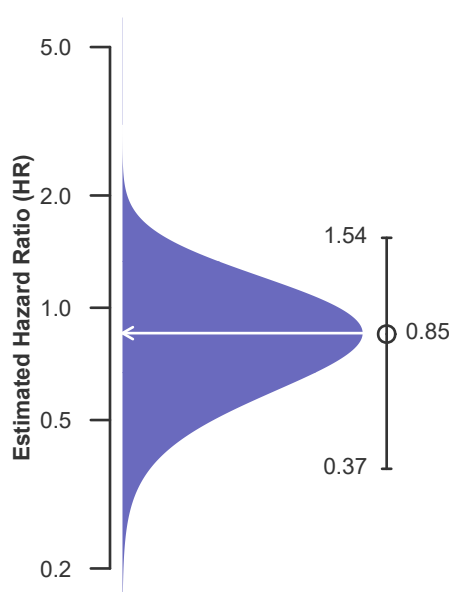
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	243	16,325
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	97.48%	96.84%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	96.96%	--
Number of observed graft failures (including deaths) during the first month after transplant	6	509
Number of expected graft failures (including deaths) during the first month after transplant	7.36	--
Estimated hazard ratio*	0.85	--
95% credible interval for the hazard ratio**	[0.37, 1.54]	--

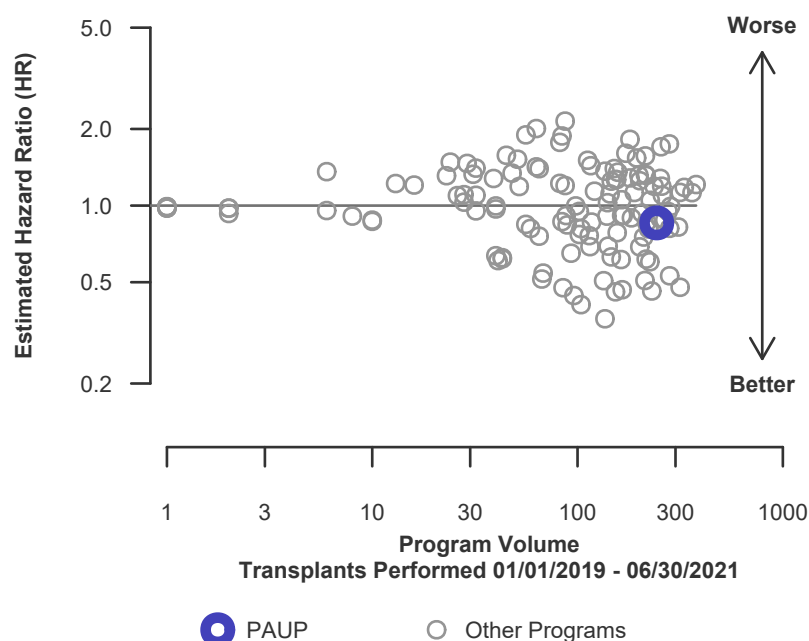
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.37, 1.54], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 15% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 63% reduced risk up to 54% increased risk.

**Figure C1D. Adult (18+) 1-month deceased donor graft failure HR estimate**



**Figure C2D. Adult (18+) 1-month deceased donor graft failure HR program comparison**





## C. Transplant Information

**Table C5L. Adult (18+) 1-month survival with a functioning living donor graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

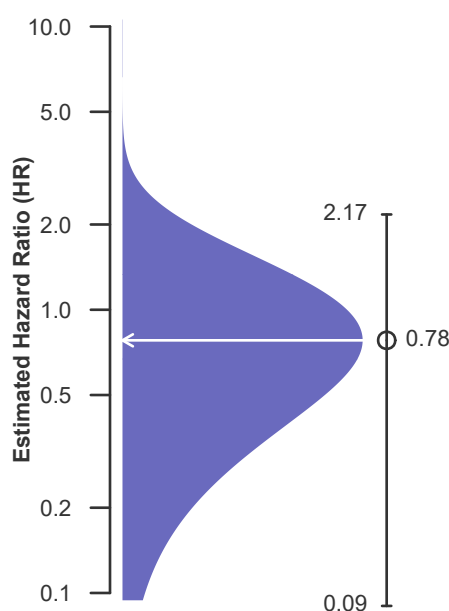
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	26	1,036
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	100.00%	97.85%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	97.85%	--
Number of observed graft failures (including deaths) during the first month after transplant	0	22
Number of expected graft failures (including deaths) during the first month after transplant	0.56	--
Estimated hazard ratio*	0.78	--
95% credible interval for the hazard ratio**	[0.09, 2.17]	--

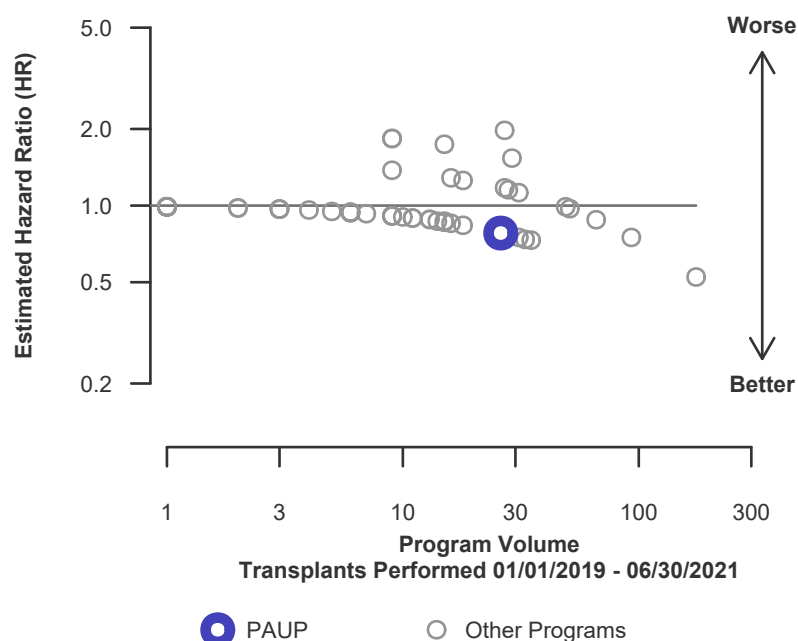
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.09, 2.17], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 22% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 91% reduced risk up to 117% increased risk.

**Figure C1L. Adult (18+) 1-month living donor graft failure HR estimate**



**Figure C2L. Adult (18+) 1-month living donor graft failure HR program comparison**





## C. Transplant Information

**Table C6. Adult (18+) 90-Day survival with a functioning graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

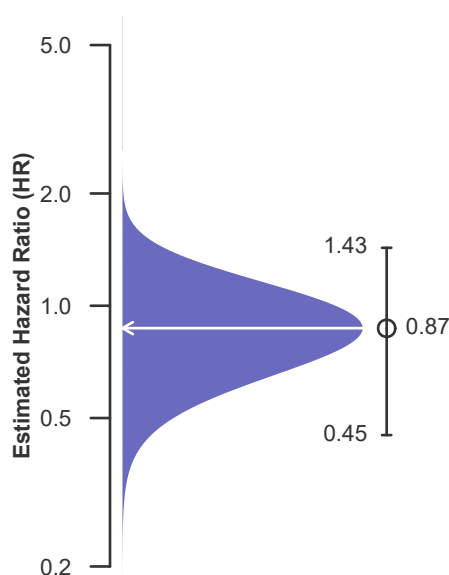
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	269	17,361
Estimated probability of surviving with a functioning graft at 90 days (unadjusted for patient and donor characteristics)	96.14%	95.51%
Expected probability of surviving with a functioning graft at 90 days (adjusted for patient and donor characteristics)	95.50%	--
Number of observed graft failures (including deaths) during the first 90 days after transplant	10	755
Number of expected graft failures (including deaths) during the first 90 days after transplant	11.78	--
Estimated hazard ratio*	0.87	--
95% credible interval for the hazard ratio**	[0.45, 1.43]	--

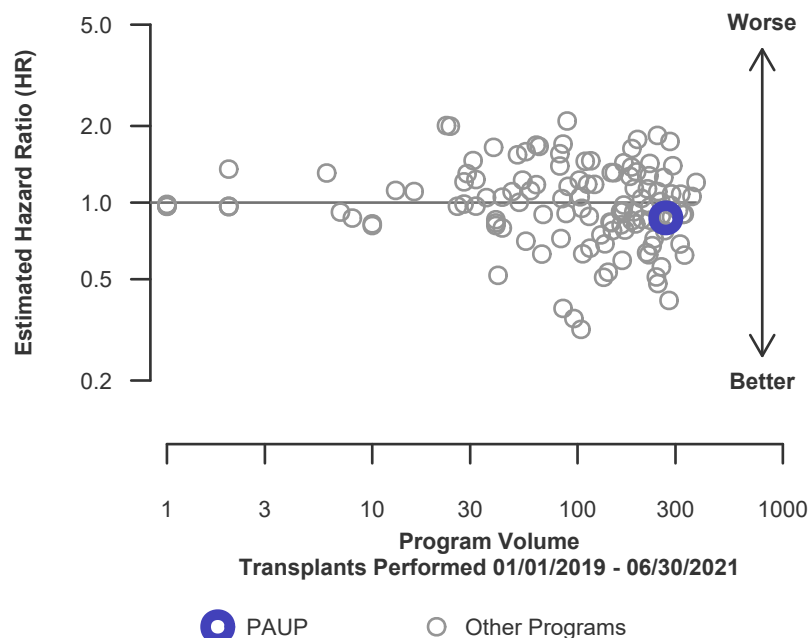
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.45, 1.43], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 13% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 55% reduced risk up to 43% increased risk.

**Figure C3. Adult (18+) 90-Day graft failure HR estimate**



**Figure C4. Adult (18+) 90-Day graft failure HR program comparison**





## C. Transplant Information

**Table C6D. Adult (18+) 90-Day survival with a functioning deceased donor graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

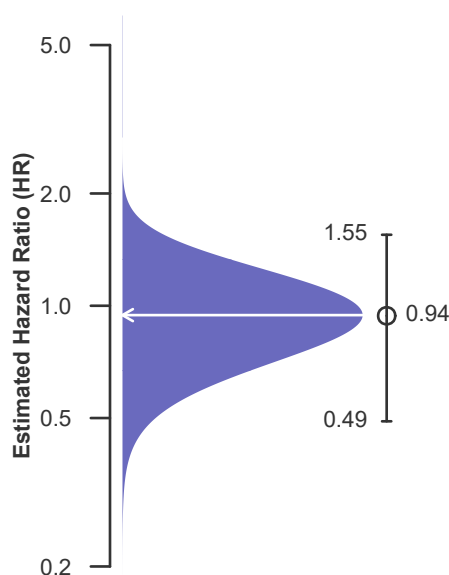
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	243	16,325
Estimated probability of surviving with a functioning graft at 90 days (unadjusted for patient and donor characteristics)	95.72%	95.49%
Expected probability of surviving with a functioning graft at 90 days (adjusted for patient and donor characteristics)	95.46%	--
Number of observed graft failures (including deaths) during the first 90 days after transplant	10	714
Number of expected graft failures (including deaths) during the first 90 days after transplant	10.71	--
Estimated hazard ratio*	0.94	--
95% credible interval for the hazard ratio**	[0.49, 1.55]	--

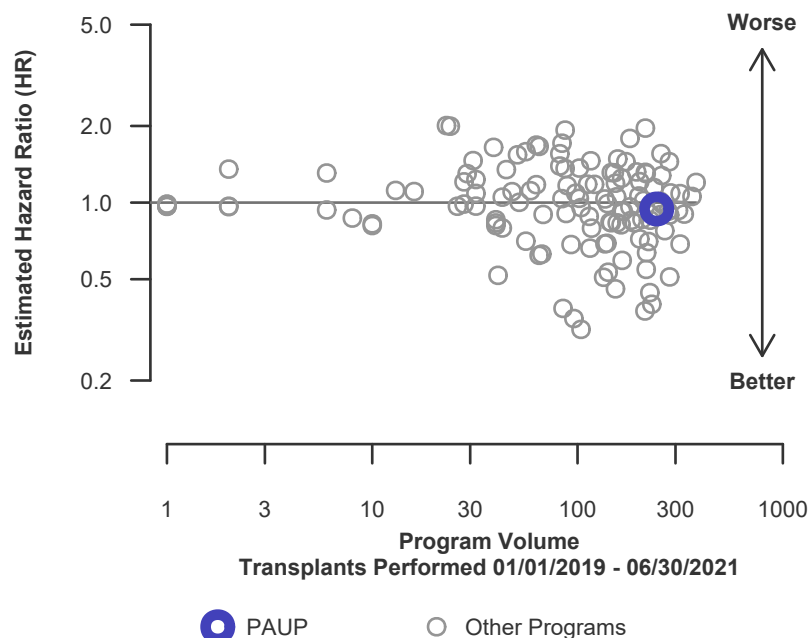
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.49, 1.55], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 6% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 51% reduced risk up to 55% increased risk.

**Figure C3D. Adult (18+) 90-Day deceased donor graft failure HR estimate**



**Figure C4D. Adult (18+) 90-Day deceased donor graft failure HR program comparison**





## C. Transplant Information

**Table C6L. Adult (18+) 90-Day survival with a functioning living donor graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

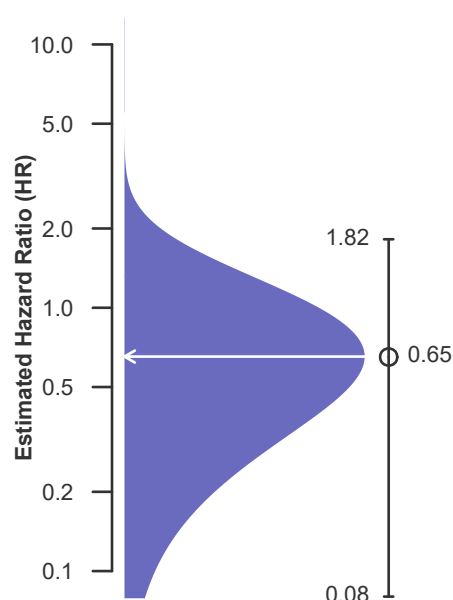
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	26	1,036
Estimated probability of surviving with a functioning graft at 90 days (unadjusted for patient and donor characteristics)	100.00%	95.86%
Expected probability of surviving with a functioning graft at 90 days (adjusted for patient and donor characteristics)	95.87%	--
Number of observed graft failures (including deaths) during the first 90 days after transplant	0	41
Number of expected graft failures (including deaths) during the first 90 days after transplant	1.06	--
Estimated hazard ratio*	0.65	--
95% credible interval for the hazard ratio**	[0.08, 1.82]	--

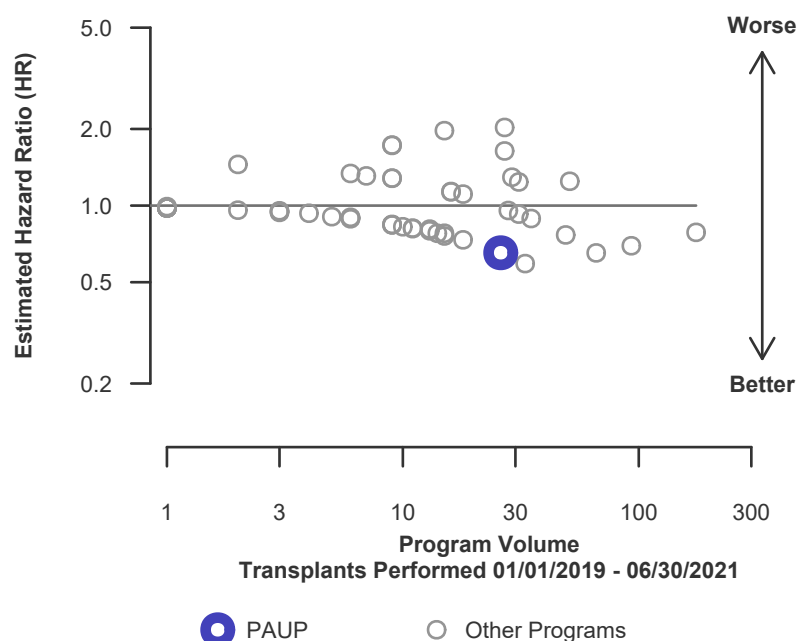
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.08, 1.82], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 35% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 92% reduced risk up to 82% increased risk.

**Figure C3L. Adult (18+) 90-Day living donor graft failure HR estimate**



**Figure C4L. Adult (18+) 90-Day living donor graft failure HR program comparison**





## C. Transplant Information

**Table C7. Adult (18+) 1-year survival with a functioning graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

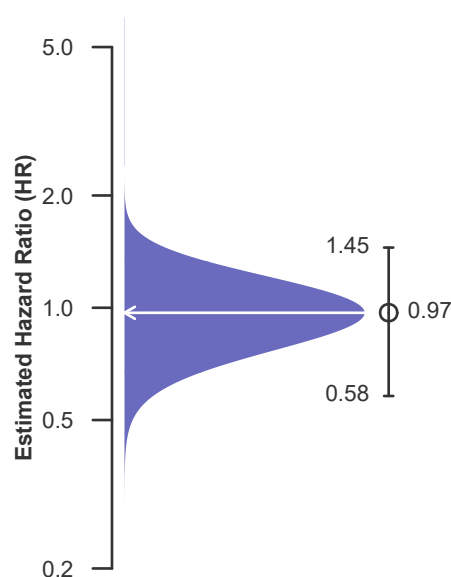
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	269	17,361
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	92.32%	92.28%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	92.07%	--
Number of observed graft failures (including deaths) during the first year after transplant	17	1,106
Number of expected graft failures (including deaths) during the first year after transplant	17.60	--
Estimated hazard ratio*	0.97	--
95% credible interval for the hazard ratio**	[0.58, 1.45]	--

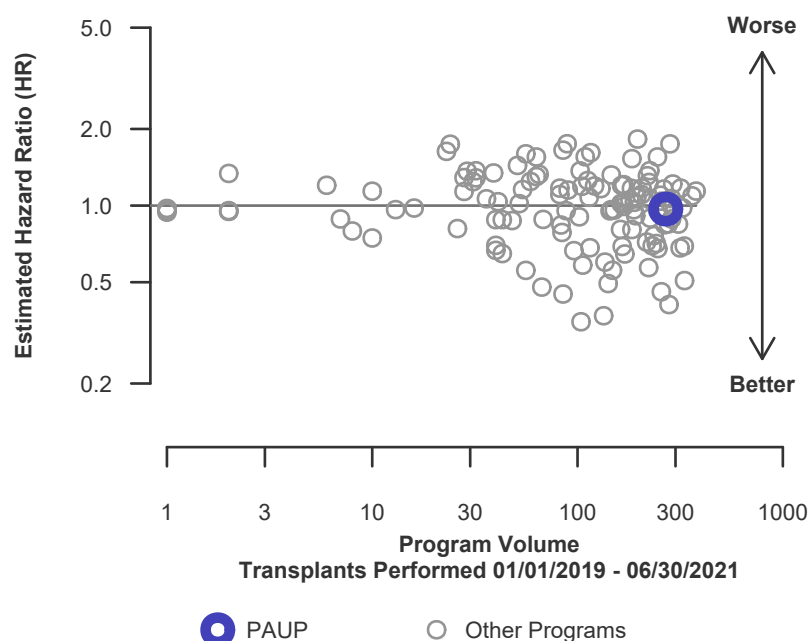
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.58, 1.45], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 3% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 42% reduced risk up to 45% increased risk.

**Figure C5. Adult (18+) 1-year graft failure HR estimate**



**Figure C6. Adult (18+) 1-year graft failure HR program comparison**







## C. Transplant Information

**Table C7D. Adult (18+) 1-year survival with a functioning deceased donor graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

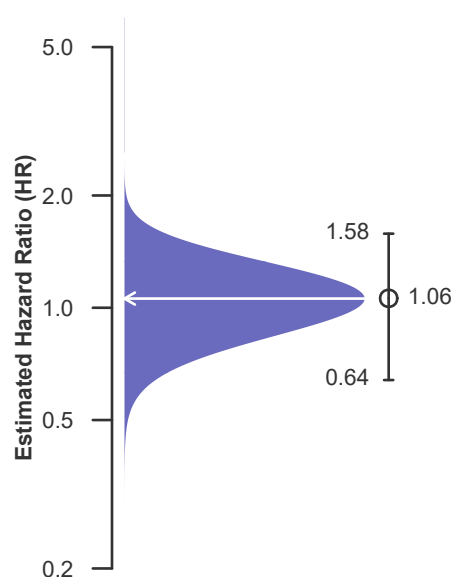
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	243	16,325
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	91.47%	92.28%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	92.04%	--
Number of observed graft failures (including deaths) during the first year after transplant	17	1,045
Number of expected graft failures (including deaths) during the first year after transplant	15.95	--
Estimated hazard ratio*	1.06	--
95% credible interval for the hazard ratio**	[0.64, 1.58]	--

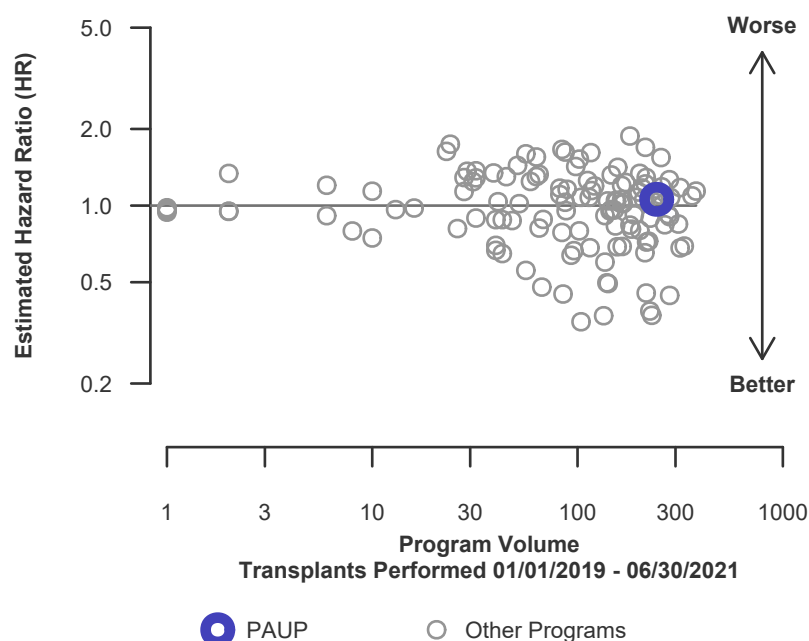
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.64, 1.58], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 6% higher risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 36% reduced risk up to 58% increased risk.

**Figure C5D. Adult (18+) 1-year deceased donor graft failure HR estimate**



**Figure C6D. Adult (18+) 1-year deceased donor graft failure HR program comparison**





## C. Transplant Information

**Table C7L. Adult (18+) 1-year survival with a functioning living donor graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

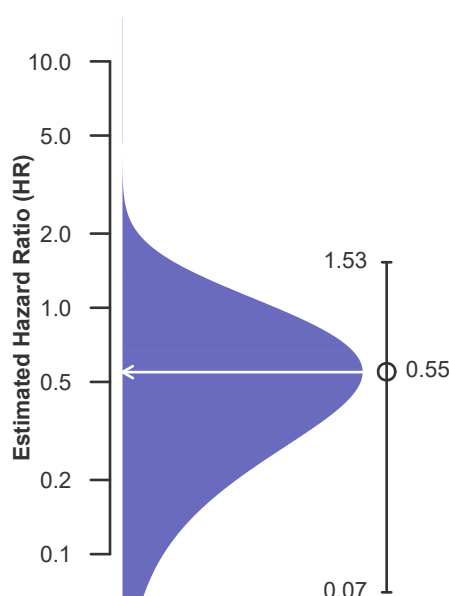
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	26	1,036
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	100.00%	92.32%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	92.33%	--
Number of observed graft failures (including deaths) during the first year after transplant	0	61
Number of expected graft failures (including deaths) during the first year after transplant	1.65	--
Estimated hazard ratio*	0.55	--
95% credible interval for the hazard ratio**	[0.07, 1.53]	--

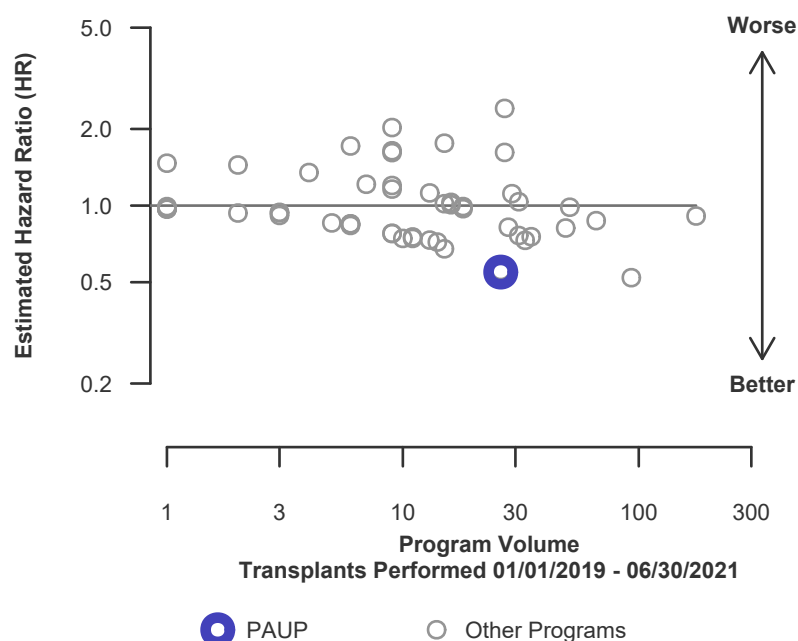
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.07, 1.53], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 45% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 93% reduced risk up to 53% increased risk.

**Figure C5L. Adult (18+) 1-year living donor graft failure HR estimate**



**Figure C6L. Adult (18+) 1-year living donor graft failure HR program comparison**





## C. Transplant Information

**Table C8. Adult (18+) 1-year Conditional survival with a functioning graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

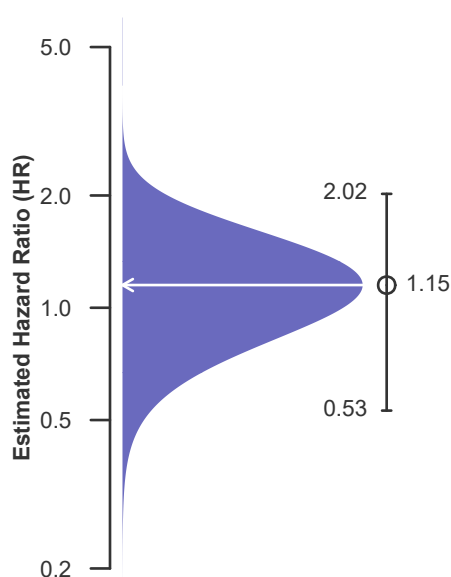
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	226	14,725
Estimated probability of surviving with a functioning graft at 1 year, among patients with a functioning graft at day 90 (unadjusted for patient and donor characteristics)	96.02%	96.62%
Expected probability of surviving with a functioning graft at 1 year, among patients with a functioning graft at day 90 (adjusted for patient and donor characteristics)	96.41%	--
Number of observed graft failures (including deaths) from day 91 through day 365 after transplant	7	351
Number of expected graft failures (including deaths) from day 91 through day 365 after transplant	5.82	--
Estimated hazard ratio*	1.15	--
95% credible interval for the hazard ratio**	[0.53, 2.02]	--

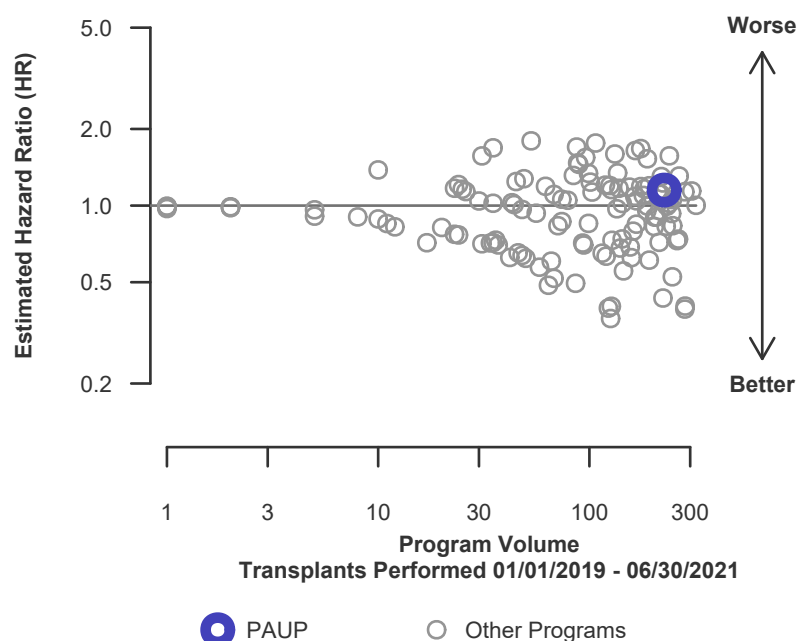
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.53, 2.02], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 15% higher risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 47% reduced risk up to 102% increased risk.

**Figure C7. Adult (18+) 1-year Conditional graft failure HR estimate**



**Figure C8. Adult (18+) 1-year Conditional graft failure HR program comparison**





## C. Transplant Information

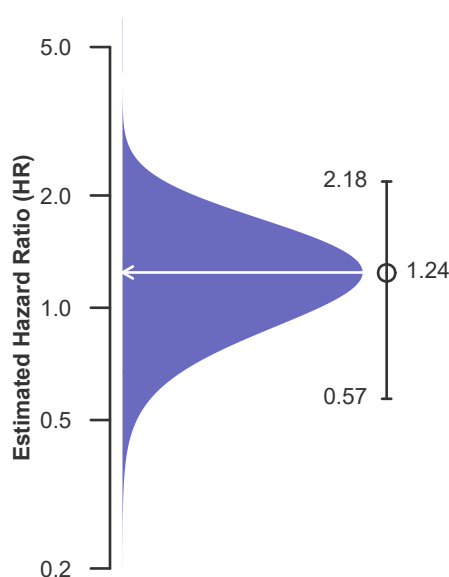
**Table C8D. Adult (18+) 1-year Conditional survival with a functioning deceased donor graft**  
Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021  
Deaths and retransplants are considered graft failures  
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	203	13,834
Estimated probability of surviving with a functioning graft at 1 year, among patients with a functioning graft at day 90 (unadjusted for patient and donor characteristics)	95.55%	96.64%
Expected probability of surviving with a functioning graft at 1 year, among patients with a functioning graft at day 90 (adjusted for patient and donor characteristics)	96.42%	--
Number of observed graft failures (including deaths) from day 91 through day 365 after transplant	7	331
Number of expected graft failures (including deaths) from day 91 through day 365 after transplant	5.24	--
Estimated hazard ratio*	1.24	--
95% credible interval for the hazard ratio**	[0.57, 2.18]	--

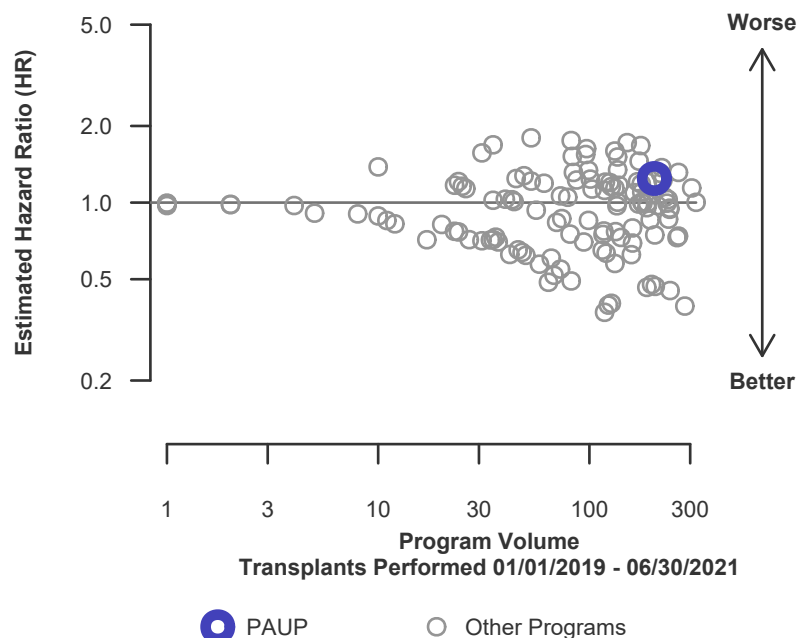
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.57, 2.18], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 24% higher risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 43% reduced risk up to 118% increased risk.

**Figure C7D. Adult (18+) 1-year Conditional deceased donor graft failure HR estimate**



**Figure C8D. Adult (18+) 1-year Conditional deceased donor graft failure HR program comparison**





## C. Transplant Information

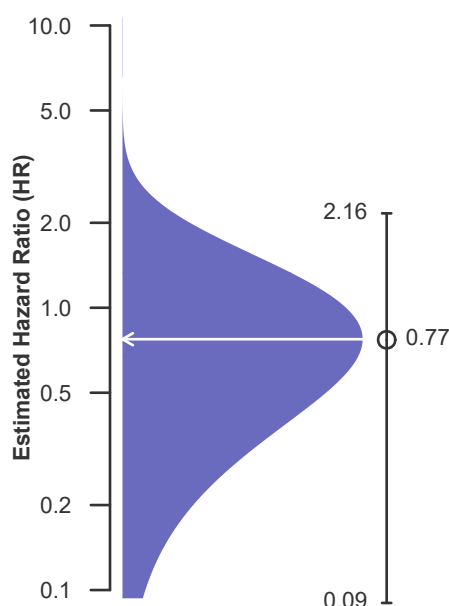
**Table C8L. Adult (18+) 1-year Conditional survival with a functioning living donor graft**  
Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021  
Deaths and retransplants are considered graft failures  
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	23	891
Estimated probability of surviving with a functioning graft at 1 year, among patients with a functioning graft at day 90 (unadjusted for patient and donor characteristics)	100.00%	96.31%
Expected probability of surviving with a functioning graft at 1 year, among patients with a functioning graft at day 90 (adjusted for patient and donor characteristics)	96.31%	--
Number of observed graft failures (including deaths) from day 91 through day 365 after transplant	0	20
Number of expected graft failures (including deaths) from day 91 through day 365 after transplant	0.58	--
Estimated hazard ratio*	0.77	--
95% credible interval for the hazard ratio**	[0.09, 2.16]	--

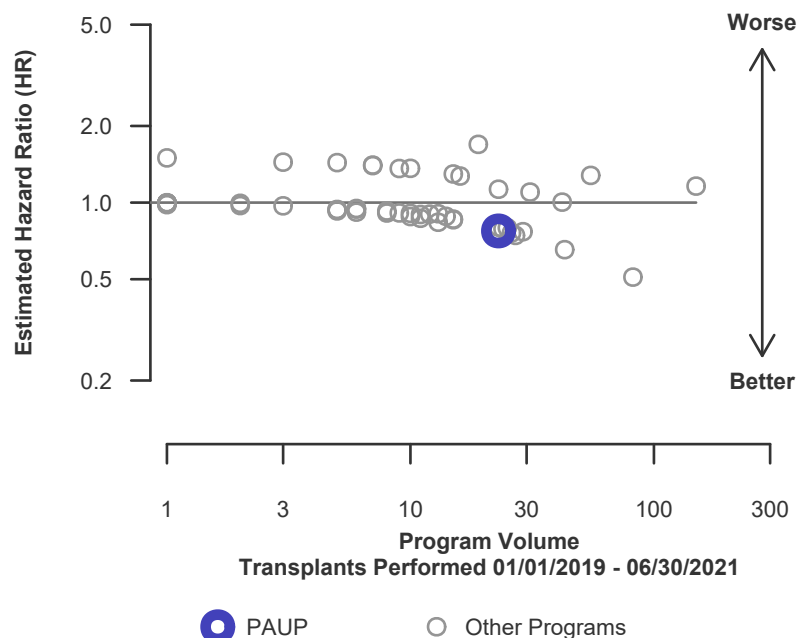
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.09, 2.16], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 23% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 91% reduced risk up to 116% increased risk.

**Figure C7L. Adult (18+) 1-year Conditional living donor graft failure HR estimate**



**Figure C8L. Adult (18+) 1-year Conditional living donor graft failure HR program comparison**





## C. Transplant Information

**Table C9. Adult (18+) 3-year survival with a functioning graft**

Single organ transplants performed between 07/01/2016 and 12/31/2018

Deaths and retransplants are considered graft failures

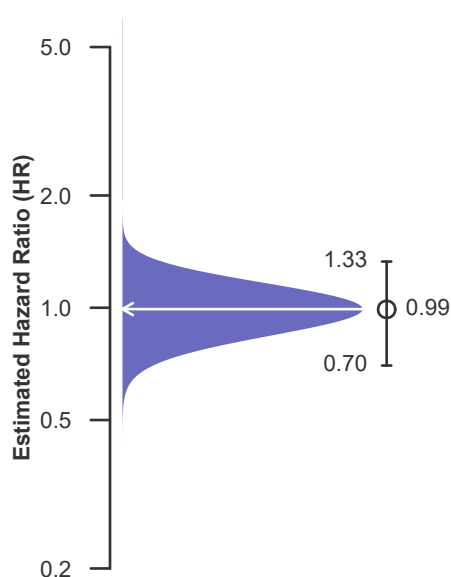
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	303	16,922
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	87.04%	85.91%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	86.46%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	36	2,109
Number of expected graft failures (including deaths) during the first 3 years after transplant	36.32	--
Estimated hazard ratio*	0.99	--
95% credible interval for the hazard ratio**	[0.70, 1.33]	--

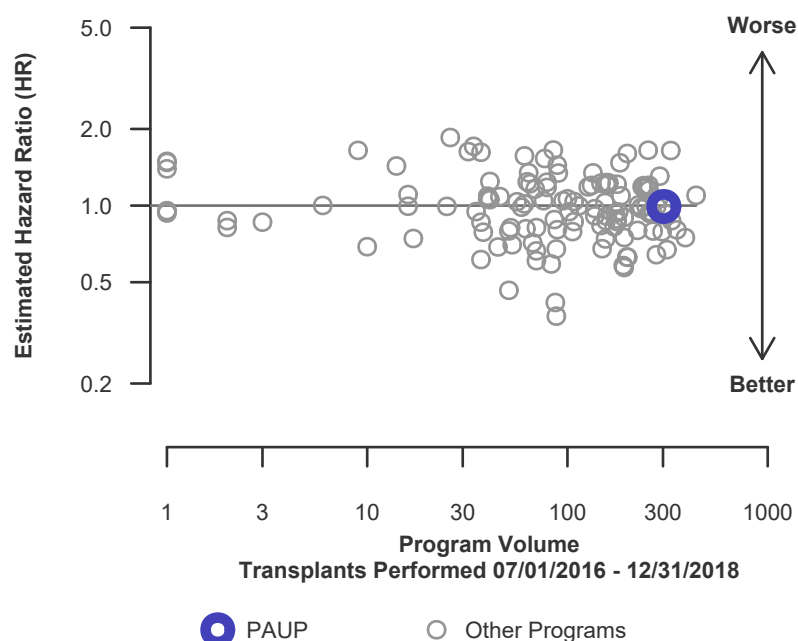
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.70, 1.33], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 1% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 30% reduced risk up to 33% increased risk.

**Figure C9. Adult (18+) 3-year graft failure HR estimate**



**Figure C10. Adult (18+) 3-year graft failure HR program comparison**





## C. Transplant Information

**Table C9D. Adult (18+) 3-year survival with a functioning deceased donor graft**

Single organ transplants performed between 07/01/2016 and 12/31/2018

Deaths and retransplants are considered graft failures

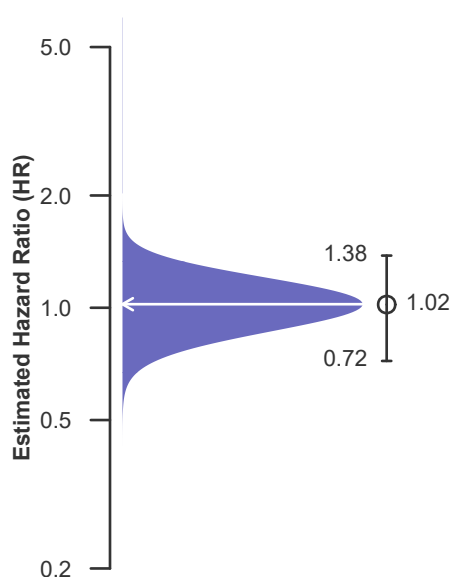
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	277	16,150
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	86.58%	85.86%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	86.40%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	34	2,020
Number of expected graft failures (including deaths) during the first 3 years after transplant	33.22	--
Estimated hazard ratio*	1.02	--
95% credible interval for the hazard ratio**	[0.72, 1.38]	--

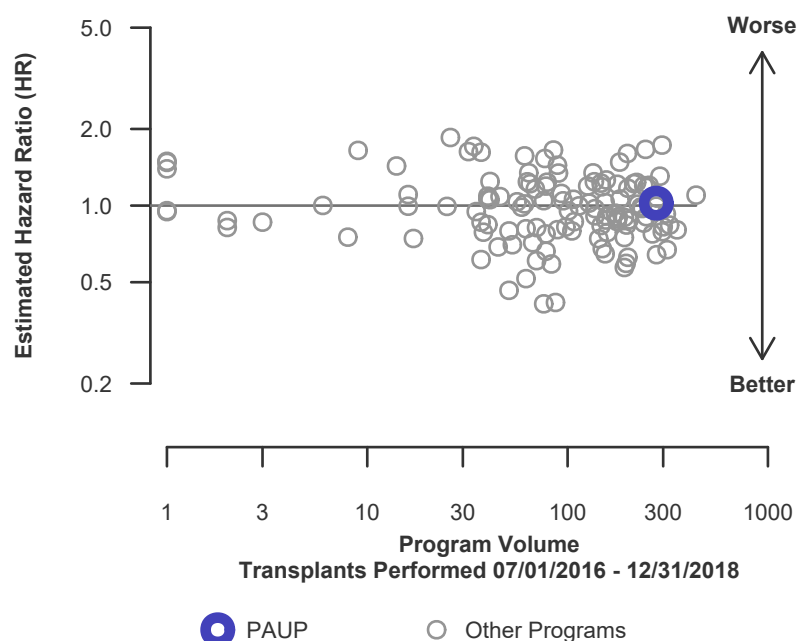
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.72, 1.38], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 2% higher risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 28% reduced risk up to 38% increased risk.

**Figure C9D. Adult (18+) 3-year deceased donor graft failure HR estimate**



**Figure C10D. Adult (18+) 3-year deceased donor graft failure HR program comparison**







## C. Transplant Information

**Table C9L. Adult (18+) 3-year survival with a functioning living donor graft**

Single organ transplants performed between 07/01/2016 and 12/31/2018

Deaths and retransplants are considered graft failures

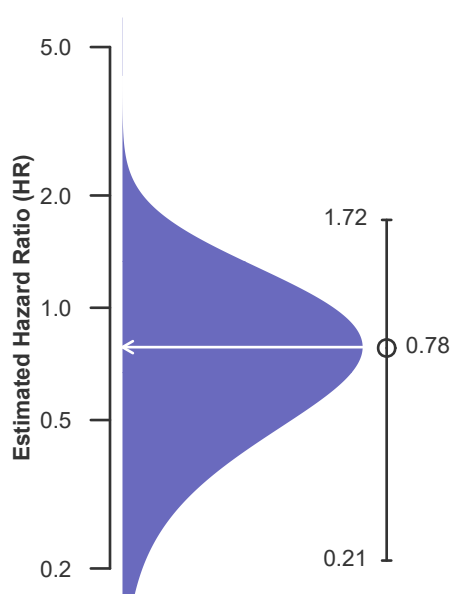
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	26	772
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	92.15%	87.03%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	87.04%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	2	89
Number of expected graft failures (including deaths) during the first 3 years after transplant	3.10	--
Estimated hazard ratio*	0.78	--
95% credible interval for the hazard ratio**	[0.21, 1.72]	--

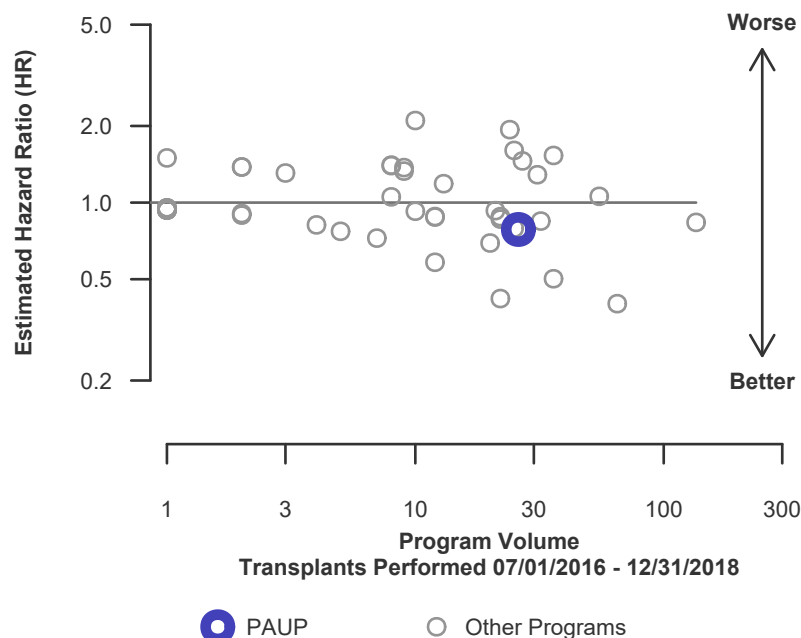
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.21, 1.72], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 22% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 79% reduced risk up to 72% increased risk.

**Figure C9L. Adult (18+) 3-year living donor graft failure HR estimate**



**Figure C10L. Adult (18+) 3-year living donor graft failure HR program comparison**







## C. Transplant Information

**Table C10. Pediatric (<18) 1-month survival with a functioning graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

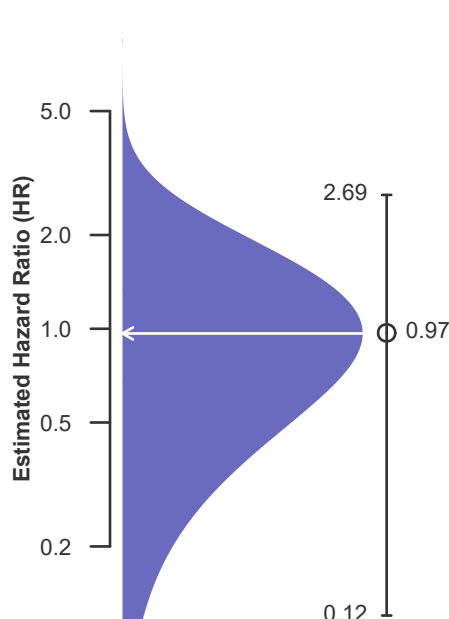
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	2	1,140
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	100.00%	95.84%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	96.52%	--
Number of observed graft failures (including deaths) during the first month after transplant	0	47
Number of expected graft failures (including deaths) during the first month after transplant	0.07	--
Estimated hazard ratio*	0.97	--
95% credible interval for the hazard ratio**	[0.12, 2.69]	--

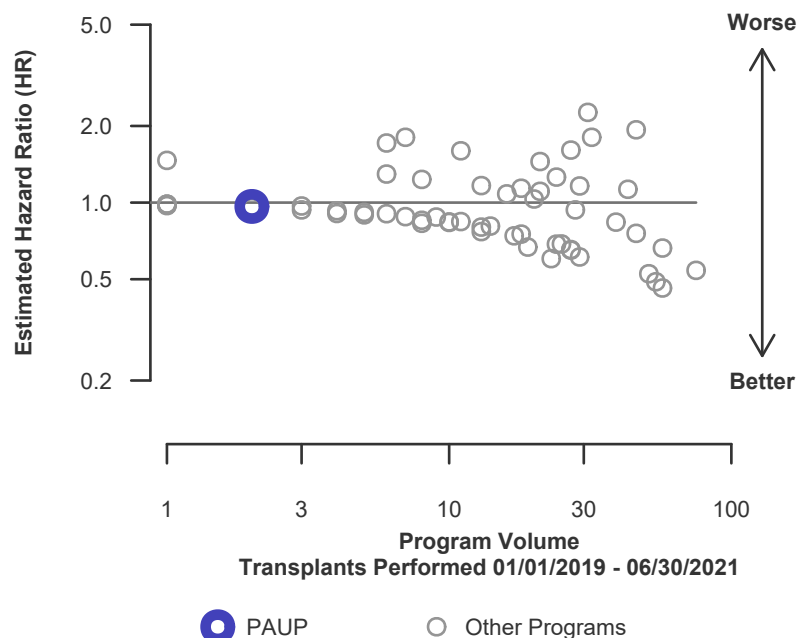
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.69], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 3% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 169% increased risk.

**Figure C11. Pediatric (<18) 1-month graft failure HR estimate**



**Figure C12. Pediatric (<18) 1-month graft failure HR program comparison**





## C. Transplant Information

**Table C10D. Pediatric (<18) 1-month survival with a functioning deceased donor graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

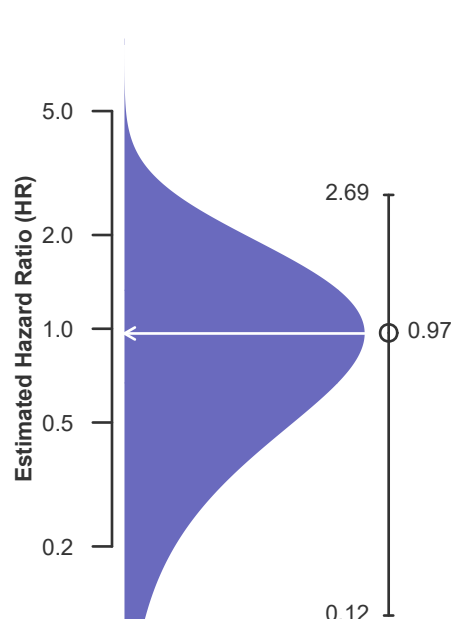
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	2	971
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	100.00%	95.64%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	96.52%	--
Number of observed graft failures (including deaths) during the first month after transplant	0	42
Number of expected graft failures (including deaths) during the first month after transplant	0.07	--
Estimated hazard ratio*	0.97	--
95% credible interval for the hazard ratio**	[0.12, 2.69]	--

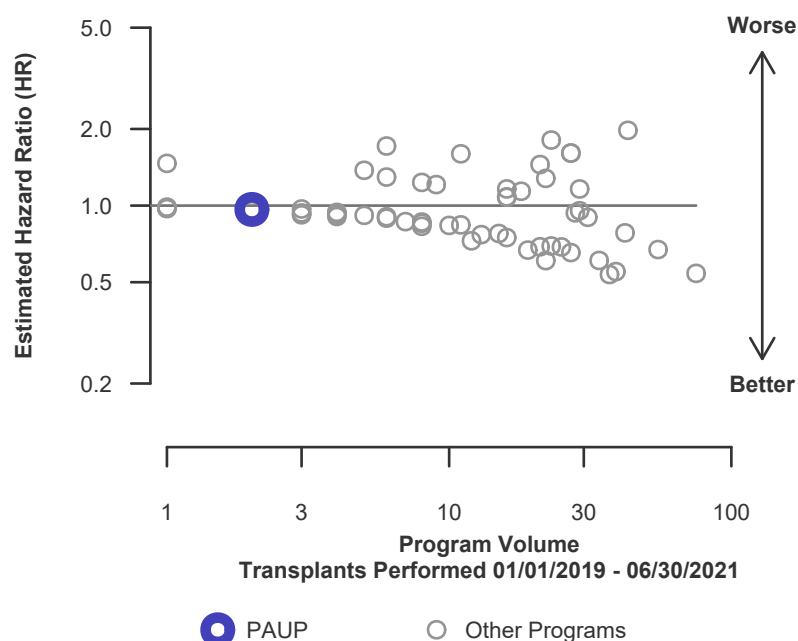
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.69], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 3% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 169% increased risk.

**Figure C11D. Pediatric (<18) 1-month deceased donor graft failure HR estimate**



**Figure C12D. Pediatric (<18) 1-month deceased donor graft failure HR program comparison**





## C. Transplant Information

### Table C10L. Pediatric (<18) 1-month survival with a functioning living donor graft

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

This center did not perform any  
transplants relevant to  
this table during  
01/01/2019-06/30/2021

### Figure C11L. Pediatric (<18) 1-month living donor graft failure HR estimate

This center did not perform any  
transplants relevant to  
this figure during  
01/01/2019-06/30/2021

### Figure C12L. Pediatric (<18) 1-month living donor graft failure HR program comparison

This center did not perform any  
transplants relevant to  
this figure during  
01/01/2019-06/30/2021



## C. Transplant Information

**Table C11. Pediatric (<18) 90-Day survival with a functioning graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

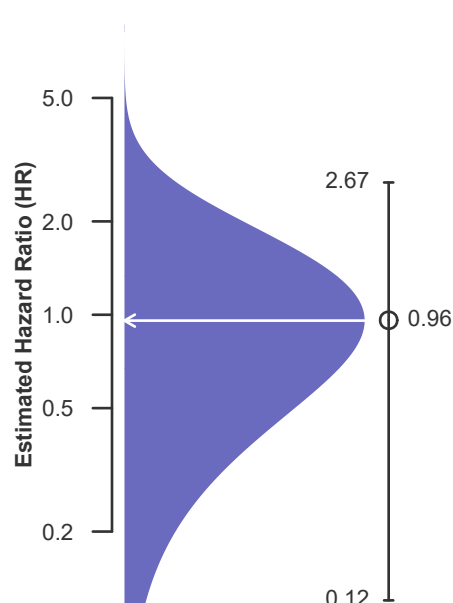
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	2	1,140
Estimated probability of surviving with a functioning graft at 90 days (unadjusted for patient and donor characteristics)	100.00%	94.81%
Expected probability of surviving with a functioning graft at 90 days (adjusted for patient and donor characteristics)	95.66%	--
Number of observed graft failures (including deaths) during the first 90 days after transplant	0	58
Number of expected graft failures (including deaths) during the first 90 days after transplant	0.09	--
Estimated hazard ratio*	0.96	--
95% credible interval for the hazard ratio**	[0.12, 2.67]	--

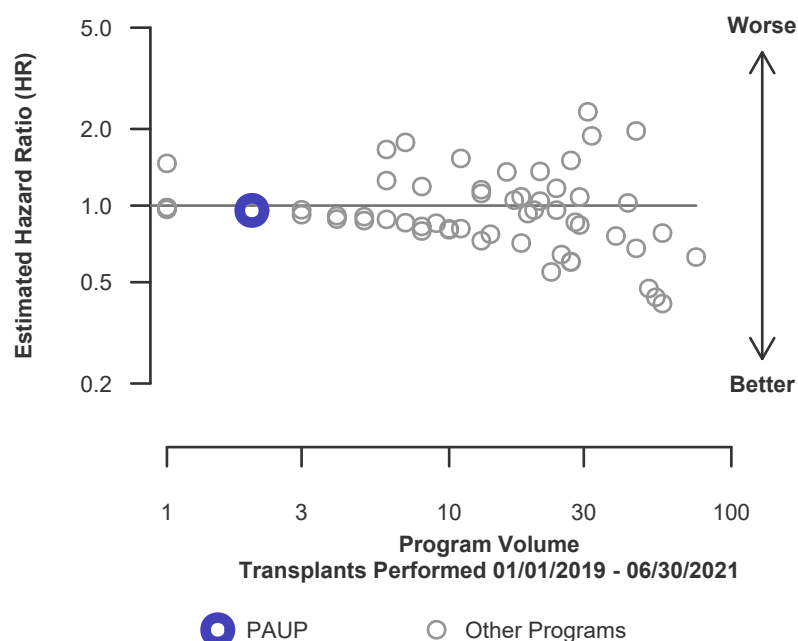
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.67], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 4% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 167% increased risk.

**Figure C13. Pediatric (<18) 90-Day graft failure HR estimate**



**Figure C14. Pediatric (<18) 90-Day graft failure HR program comparison**





## C. Transplant Information

**Table C11D. Pediatric (<18) 90-Day survival with a functioning deceased donor graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

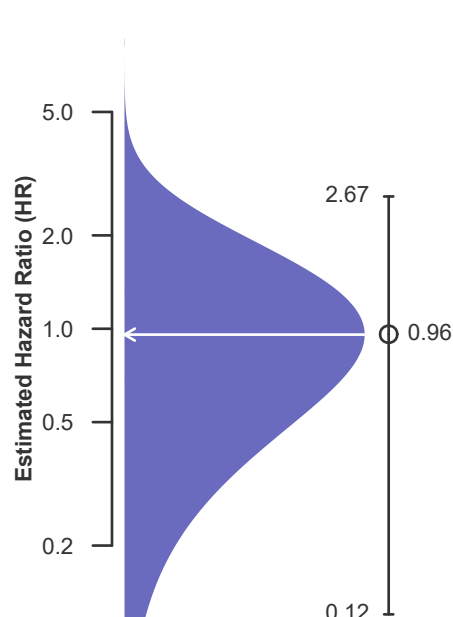
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	2	971
Estimated probability of surviving with a functioning graft at 90 days (unadjusted for patient and donor characteristics)	100.00%	94.54%
Expected probability of surviving with a functioning graft at 90 days (adjusted for patient and donor characteristics)	95.66%	--
Number of observed graft failures (including deaths) during the first 90 days after transplant	0	52
Number of expected graft failures (including deaths) during the first 90 days after transplant	0.09	--
Estimated hazard ratio*	0.96	--
95% credible interval for the hazard ratio**	[0.12, 2.67]	--

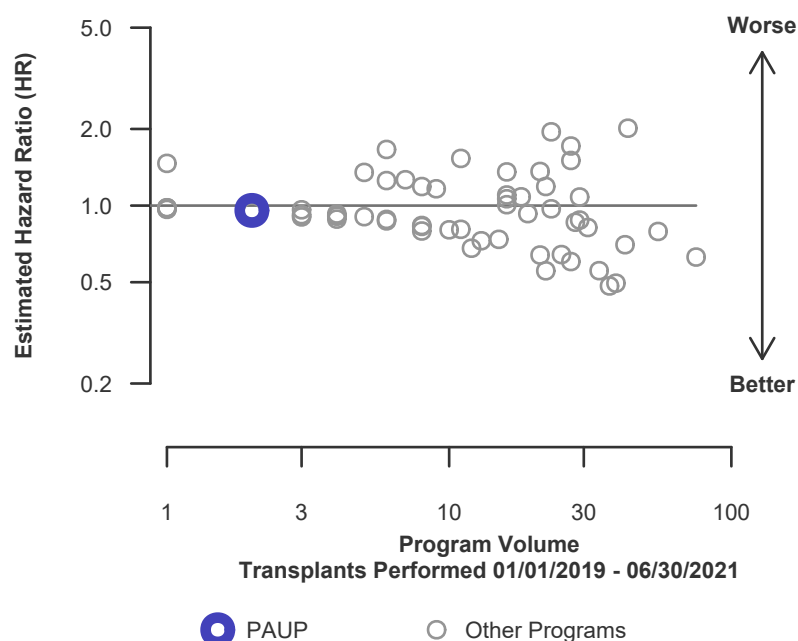
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.67], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 4% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 167% increased risk.

**Figure C13D. Pediatric (<18) 90-Day deceased donor graft failure HR estimate**



**Figure C14D. Pediatric (<18) 90-Day deceased donor graft failure HR program comparison**





## C. Transplant Information

### Table C11L. Pediatric (<18) 90-Day survival with a functioning living donor graft

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

This center did not perform any  
transplants relevant to  
this table during  
01/01/2019-06/30/2021

### Figure C13L. Pediatric (<18) 90-Day living donor graft failure HR estimate

This center did not perform any  
transplants relevant to  
this figure during  
01/01/2019-06/30/2021

### Figure C14L. Pediatric (<18) 90-Day living donor graft failure HR program comparison

This center did not perform any  
transplants relevant to  
this figure during  
01/01/2019-06/30/2021



## C. Transplant Information

**Table C12. Pediatric (<18) 1-year survival with a functioning graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

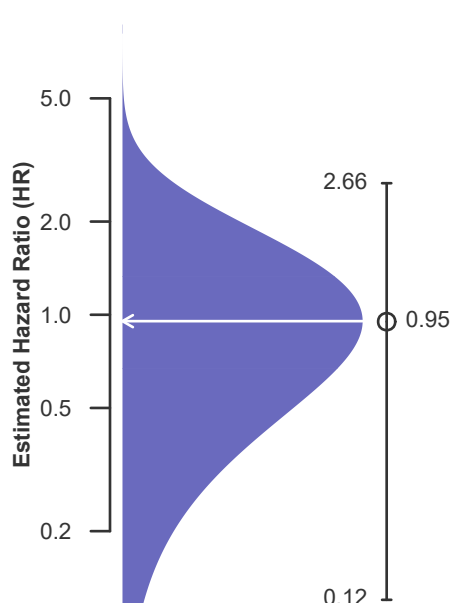
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	2	1,140
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	100.00%	92.39%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	93.55%	--
Number of observed graft failures (including deaths) during the first year after transplant	0	74
Number of expected graft failures (including deaths) during the first year after transplant	0.10	--
Estimated hazard ratio*	0.95	--
95% credible interval for the hazard ratio**	[0.12, 2.66]	--

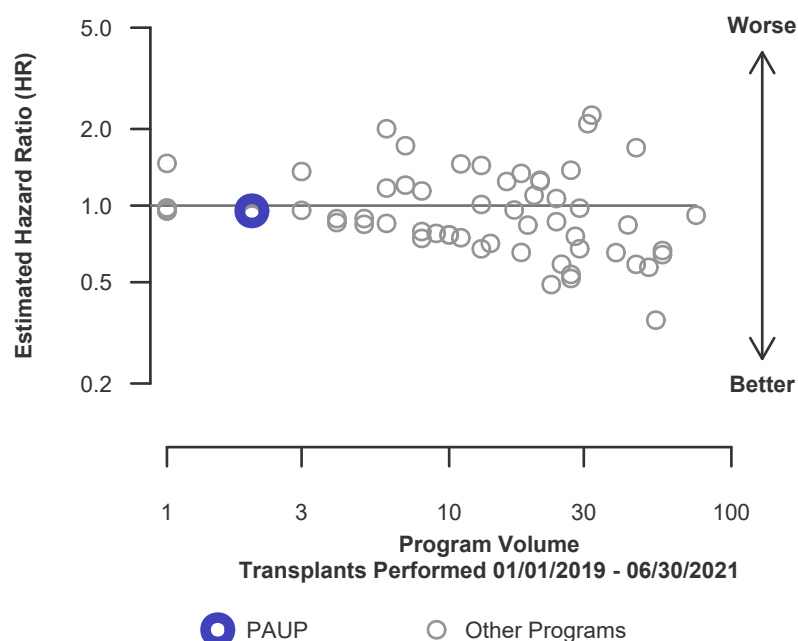
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.66], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 5% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 166% increased risk.

**Figure C15. Pediatric (<18) 1-year graft failure HR estimate**



**Figure C16. Pediatric (<18) 1-year graft failure HR program comparison**





## C. Transplant Information

**Table C12D. Pediatric (<18) 1-year survival with a functioning deceased donor graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

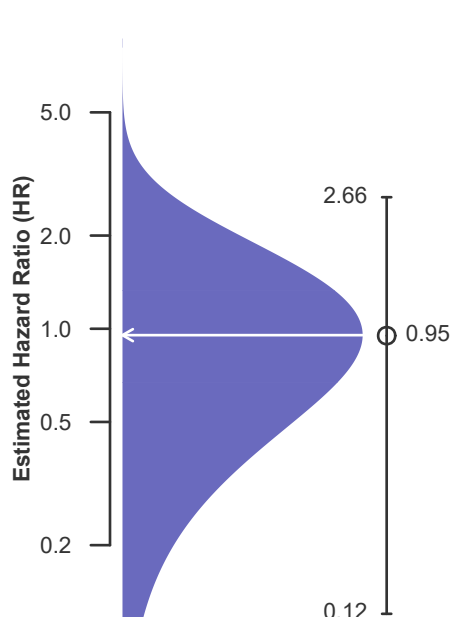
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	2	971
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	100.00%	92.53%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	93.55%	--
Number of observed graft failures (including deaths) during the first year after transplant	0	64
Number of expected graft failures (including deaths) during the first year after transplant	0.10	--
Estimated hazard ratio*	0.95	--
95% credible interval for the hazard ratio**	[0.12, 2.66]	--

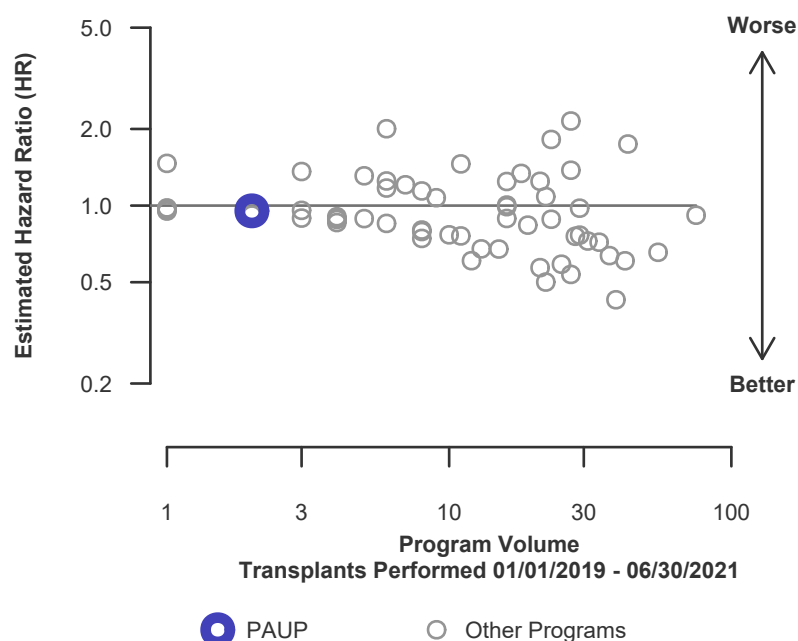
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.66], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 5% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 166% increased risk.

**Figure C15D. Pediatric (<18) 1-year deceased donor graft failure HR estimate**



**Figure C16D. Pediatric (<18) 1-year deceased donor graft failure HR program comparison**







## C. Transplant Information

### Table C12L. Pediatric (<18) 1-year survival with a functioning living donor graft

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

This center did not perform any  
transplants relevant to  
this table during  
01/01/2019-06/30/2021

### Figure C15L. Pediatric (<18) 1-year living donor graft failure HR estimate

This center did not perform any  
transplants relevant to  
this figure during  
01/01/2019-06/30/2021

### Figure C16L. Pediatric (<18) 1-year living donor graft failure HR program comparison

This center did not perform any  
transplants relevant to  
this figure during  
01/01/2019-06/30/2021



## C. Transplant Information

**Table C13. Pediatric (<18) 1-year Conditional survival with a functioning graft**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Deaths and retransplants are considered graft failures

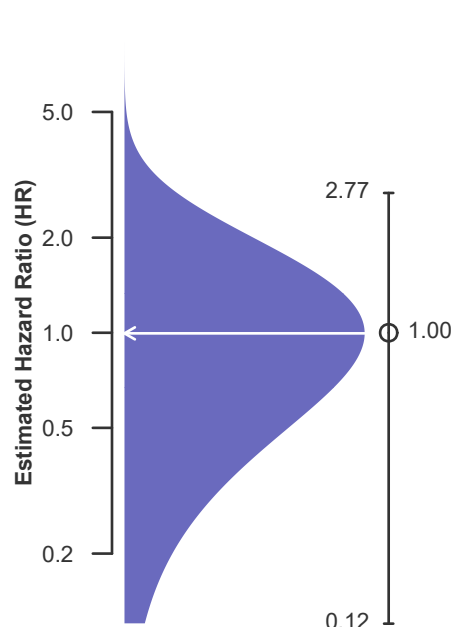
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	2	959
Estimated probability of surviving with a functioning graft at 1 year, among patients with a functioning graft at day 90 (unadjusted for patient and donor characteristics)	100.00%	97.45%
Expected probability of surviving with a functioning graft at 1 year, among patients with a functioning graft at day 90 (adjusted for patient and donor characteristics)	97.79%	--
Number of observed graft failures (including deaths) from day 91 through day 365 after transplant	0	16
Number of expected graft failures (including deaths) from day 91 through day 365 after transplant	0.01	--
Estimated hazard ratio*	1.00	--
95% credible interval for the hazard ratio**	[0.12, 2.77]	--

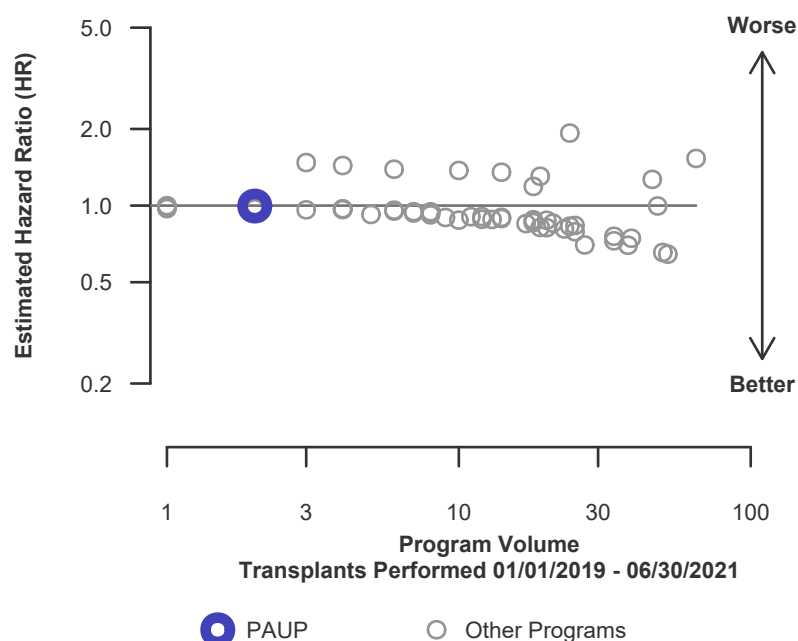
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.77], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 0% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 177% increased risk.

**Figure C17. Pediatric (<18) 1-year Conditional graft failure HR estimate**



**Figure C18. Pediatric (<18) 1-year Conditional graft failure HR program comparison**





## C. Transplant Information

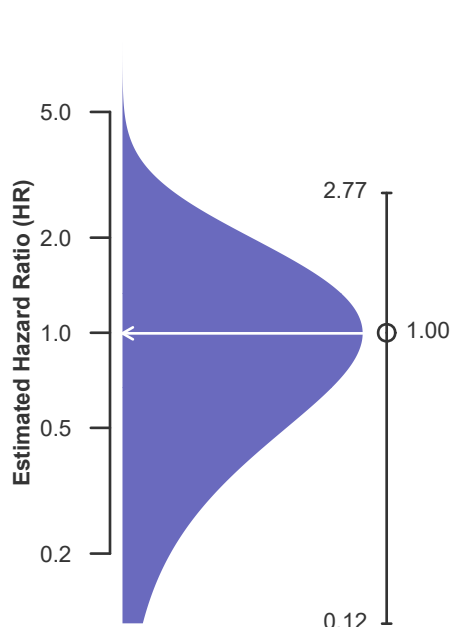
**Table C13D. Pediatric (<18) 1-year Conditional survival with a functioning deceased donor graft**  
Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021  
Deaths and retransplants are considered graft failures  
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	2	821
Estimated probability of surviving with a functioning graft at 1 year, among patients with a functioning graft at day 90 (unadjusted for patient and donor characteristics)	100.00%	97.87%
Expected probability of surviving with a functioning graft at 1 year, among patients with a functioning graft at day 90 (adjusted for patient and donor characteristics)	97.79%	--
Number of observed graft failures (including deaths) from day 91 through day 365 after transplant	0	12
Number of expected graft failures (including deaths) from day 91 through day 365 after transplant	0.01	--
Estimated hazard ratio*	1.00	--
95% credible interval for the hazard ratio**	[0.12, 2.77]	--

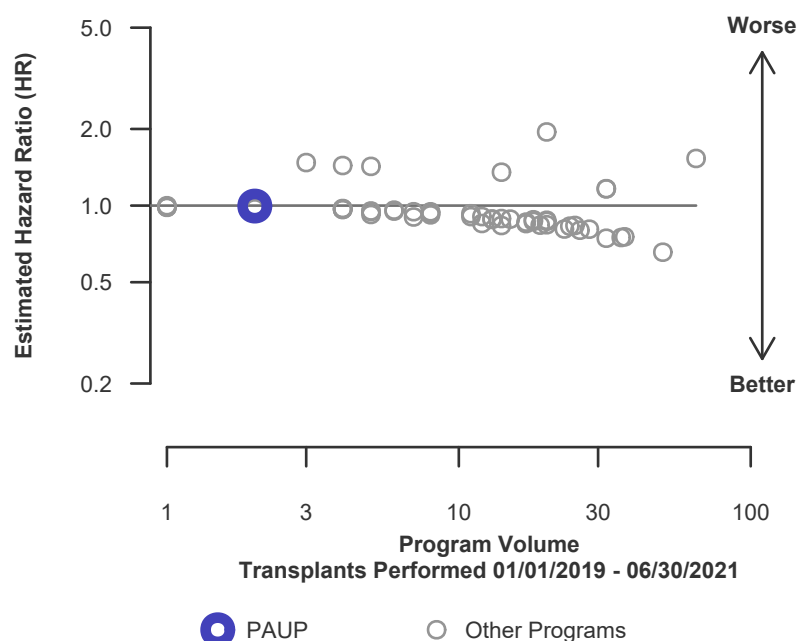
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected graft failure rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected graft failure rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.77], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 0% lower risk of graft failure compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 177% increased risk.

**Figure C17D. Pediatric (<18) 1-year Conditional deceased donor graft failure HR estimate**



**Figure C18D. Pediatric (<18) 1-year Conditional deceased donor graft failure HR program comparison**





## C. Transplant Information

**Table C13L. Pediatric (<18) 1-year Conditional survival with a functioning living donor graft**  
Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021  
Deaths and retransplants are considered graft failures  
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

This center did not perform any  
transplants relevant to  
this table during  
01/01/2019-06/30/2021

**Figure C17L. Pediatric (<18)  
1-year Conditional living donor  
graft failure HR estimate**

This center did not perform any  
transplants relevant to  
this figure during  
01/01/2019-06/30/2021

**Figure C18L. Pediatric (<18) 1-year Conditional living donor  
graft failure HR program comparison**

This center did not perform any  
transplants relevant to  
this figure during  
01/01/2019-06/30/2021



## C. Transplant Information

### Table C14. Pediatric (<18) 3-year survival with a functioning graft

Single organ transplants performed between 07/01/2016 and 12/31/2018

Deaths and retransplants are considered graft failures

Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

This center did not perform any  
transplants relevant to  
this table during  
07/01/2016-12/31/2018

### Figure C19. Pediatric (<18) 3-year graft failure HR estimate

This center did not perform any  
transplants relevant to  
this figure during  
07/01/2016-12/31/2018

### Figure C20. Pediatric (<18) 3-year graft failure HR program comparison

This center did not perform any  
transplants relevant to  
this figure during  
07/01/2016-12/31/2018



## C. Transplant Information

### Table C14D. Pediatric (<18) 3-year survival with a functioning deceased donor graft

Single organ transplants performed between 07/01/2016 and 12/31/2018

Deaths and retransplants are considered graft failures

Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

This center did not perform any  
transplants relevant to  
this table during  
07/01/2016-12/31/2018

### Figure C19D. Pediatric (<18) 3-year deceased donor graft failure HR estimate

This center did not perform any  
transplants relevant to  
this figure during  
07/01/2016-12/31/2018

### Figure C20D. Pediatric (<18) 3-year deceased donor graft failure HR program comparison

This center did not perform any  
transplants relevant to  
this figure during  
07/01/2016-12/31/2018



## C. Transplant Information

### Table C14L. Pediatric (<18) 3-year survival with a functioning living donor graft

Single organ transplants performed between 07/01/2016 and 12/31/2018

Deaths and retransplants are considered graft failures

Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

This center did not perform any  
transplants relevant to  
this table during  
07/01/2016-12/31/2018

### Figure C19L. Pediatric (<18) 3-year living donor graft failure HR estimate

This center did not perform any  
transplants relevant to  
this figure during  
07/01/2016-12/31/2018

### Figure C20L. Pediatric (<18) 3-year living donor graft failure HR program comparison

This center did not perform any  
transplants relevant to  
this figure during  
07/01/2016-12/31/2018



## C. Transplant Information

**Table C15. Adult (18+) 1-month patient survival**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Retransplants excluded

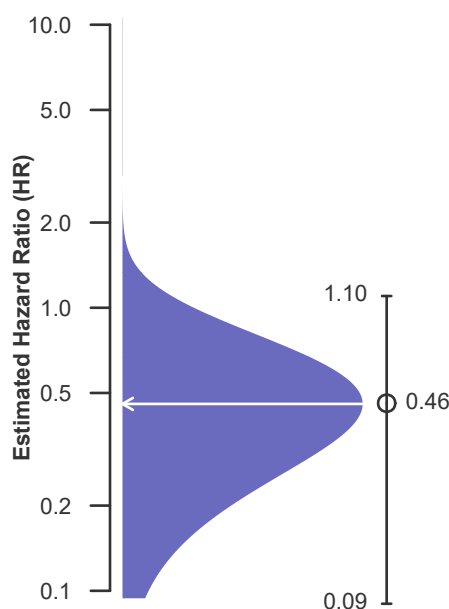
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	260	16,729
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	99.61%	98.17%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	98.23%	--
Number of observed deaths during the first month after transplant	1	303
Number of expected deaths during the first month after transplant	4.56	--
Estimated hazard ratio*	0.46	--
95% credible interval for the hazard ratio**	[0.09, 1.10]	--

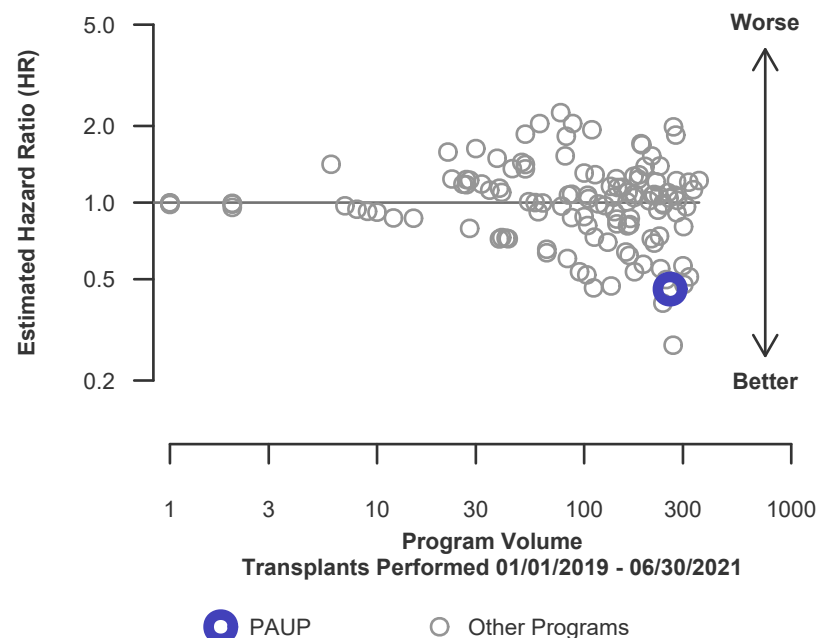
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.09, 1.10], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 54% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 91% reduced risk up to 10% increased risk.

**Figure C21. Adult (18+) 1-month patient death HR estimate**



**Figure C22. Adult (18+) 1-month patient death HR program comparison**







## C. Transplant Information

**Table C15D. Adult (18+) 1-month patient survival (deceased donor graft recipients)**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Retransplants excluded

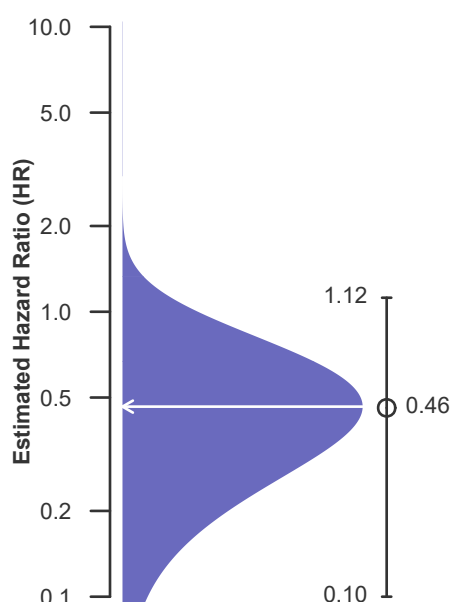
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	234	15,703
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	99.56%	98.07%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	98.08%	--
Number of observed deaths during the first month after transplant	1	299
Number of expected deaths during the first month after transplant	4.46	--
Estimated hazard ratio*	0.46	--
95% credible interval for the hazard ratio**	[0.10, 1.12]	--

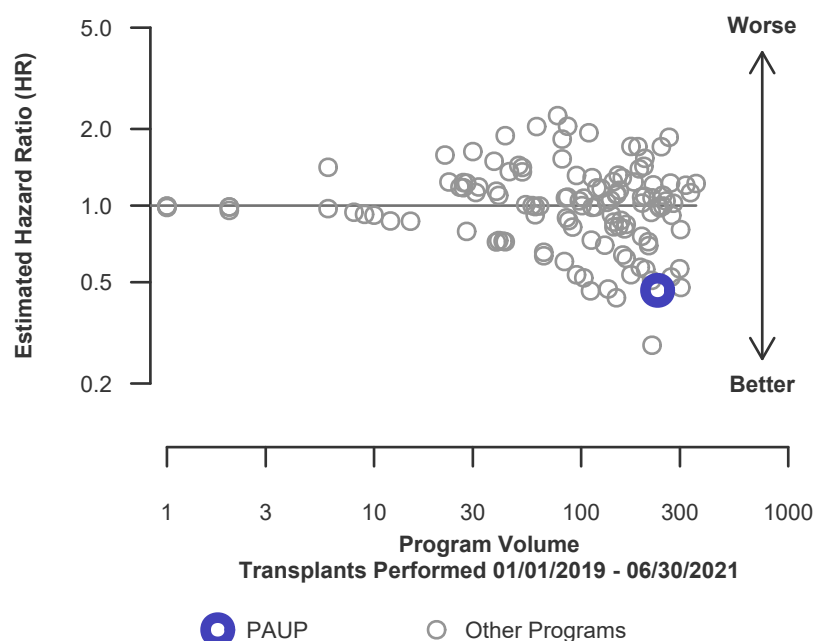
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.10, 1.12], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 54% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 90% reduced risk up to 12% increased risk.

**Figure C21D. Adult (18+) 1-month patient death HR estimate (deceased donor grafts)**



**Figure C22D. Adult (18+) 1-month patient death HR program comparison (deceased donor grafts)**





## C. Transplant Information

**Table C15L. Adult (18+) 1-month patient survival (living donor graft recipients)**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Retransplants excluded

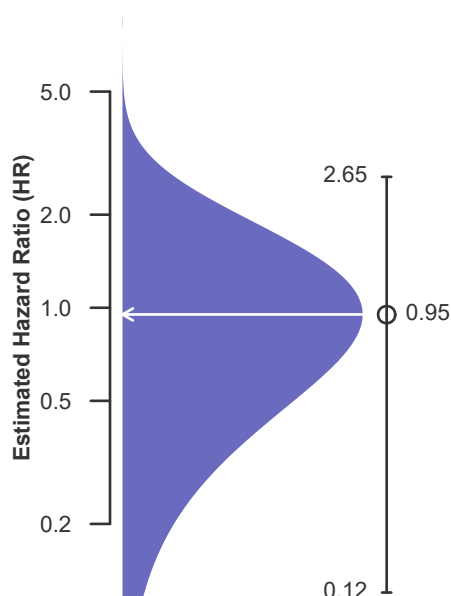
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	26	1,026
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	100.00%	99.61%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	99.61%	--
Number of observed deaths during the first month after transplant	0	4
Number of expected deaths during the first month after transplant	0.10	--
Estimated hazard ratio*	0.95	--
95% credible interval for the hazard ratio**	[0.12, 2.65]	--

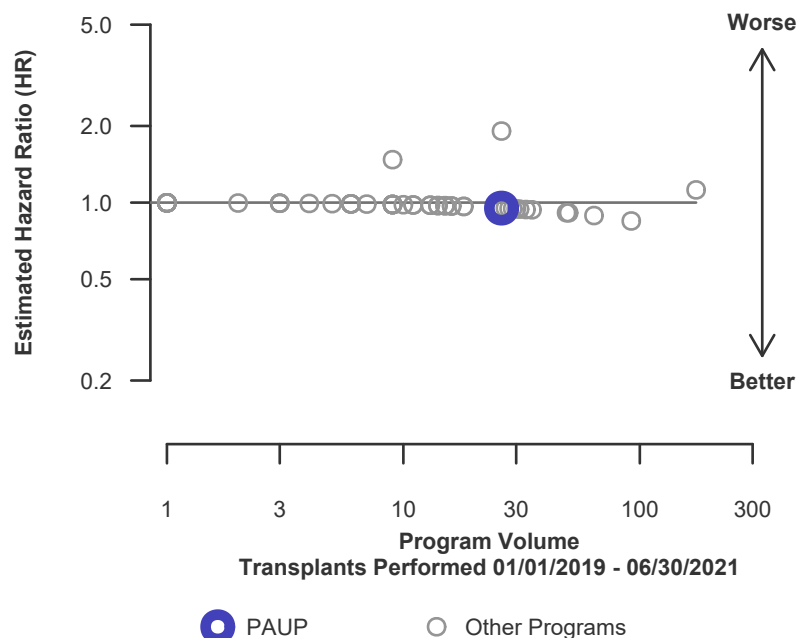
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.65], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 5% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 165% increased risk.

**Figure C21L. Adult (18+) 1-month patient death HR estimate (living donor grafts)**



**Figure C22L. Adult (18+) 1-month patient death HR program comparison (living donor grafts)**





## C. Transplant Information

**Table C16. Adult (18+) 1-year patient survival**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Retransplants excluded

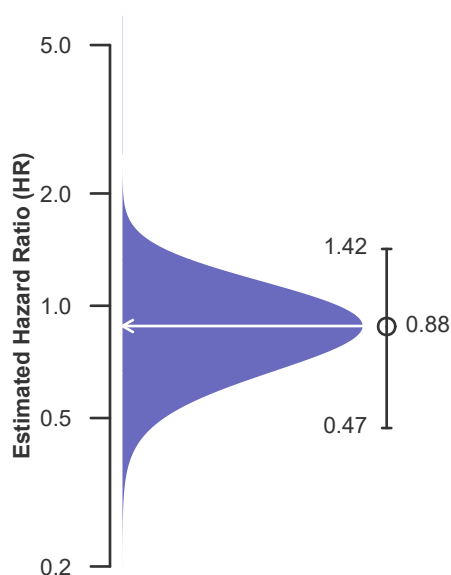
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	260	16,729
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	94.43%	94.25%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	93.92%	--
Number of observed deaths during the first year after transplant	11	768
Number of expected deaths during the first year after transplant	12.73	--
Estimated hazard ratio*	0.88	--
95% credible interval for the hazard ratio**	[0.47, 1.42]	--

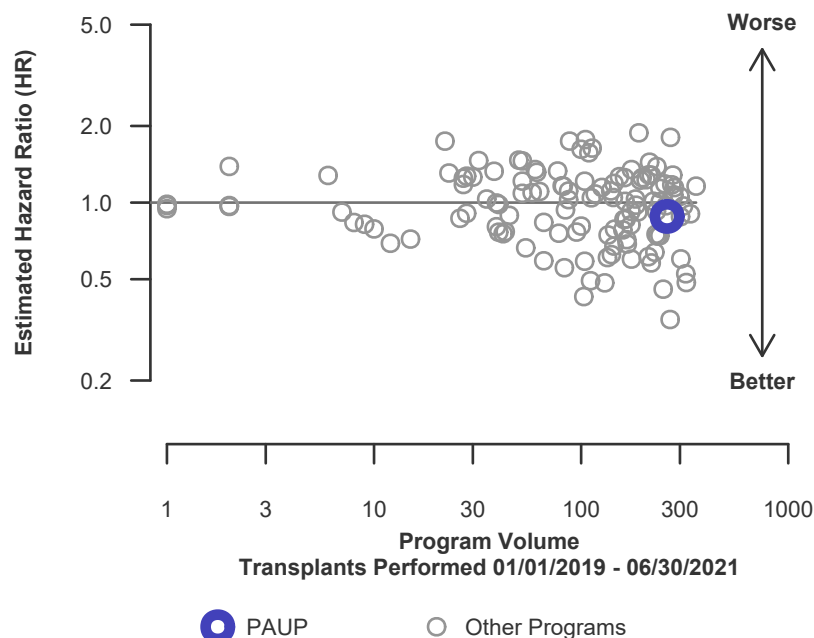
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.47, 1.42], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 12% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 53% reduced risk up to 42% increased risk.

**Figure C23. Adult (18+) 1-year patient death HR estimate**



**Figure C24. Adult (18+) 1-year patient death HR program comparison**





## C. Transplant Information

**Table C16D. Adult (18+) 1-year patient survival (deceased donor graft recipients)**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Retransplants excluded

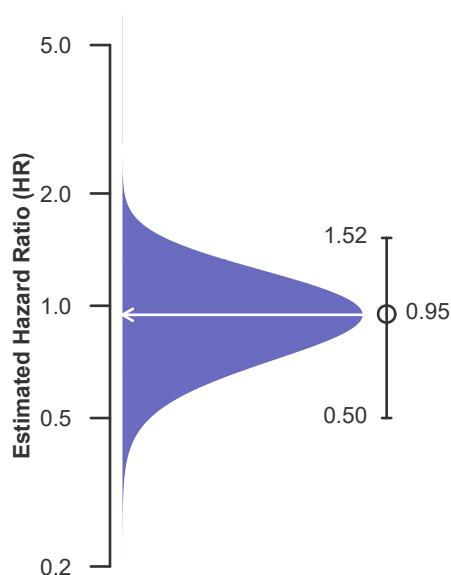
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	234	15,703
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	93.79%	94.18%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	93.78%	--
Number of observed deaths during the first year after transplant	11	732
Number of expected deaths during the first year after transplant	11.75	--
Estimated hazard ratio*	0.95	--
95% credible interval for the hazard ratio**	[0.50, 1.52]	--

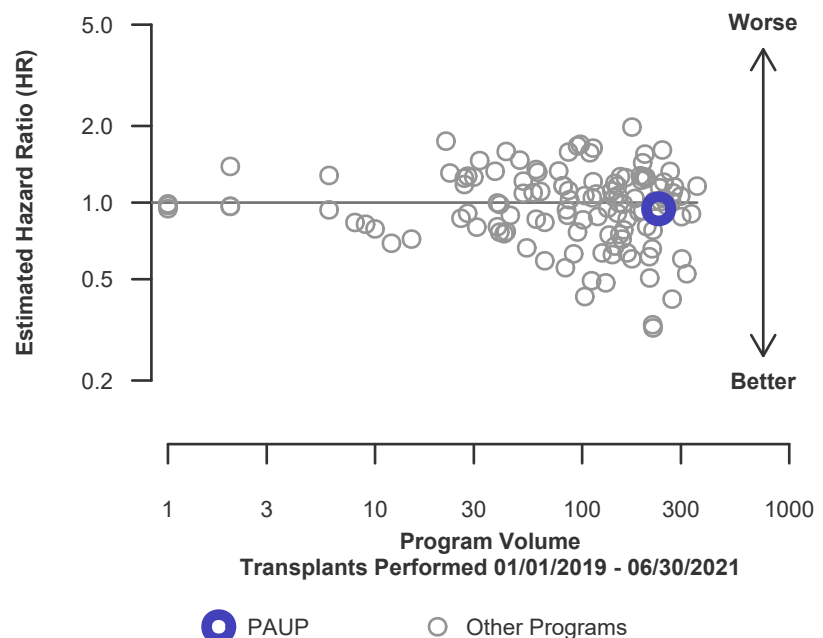
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.50, 1.52], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 5% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 50% reduced risk up to 52% increased risk.

**Figure C23D. Adult (18+) 1-year patient death HR estimate (deceased donor grafts)**



**Figure C24D. Adult (18+) 1-year patient death HR program comparison (deceased donor grafts)**





## C. Transplant Information

**Table C16L. Adult (18+) 1-year patient survival (living donor graft recipients)**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Retransplants excluded

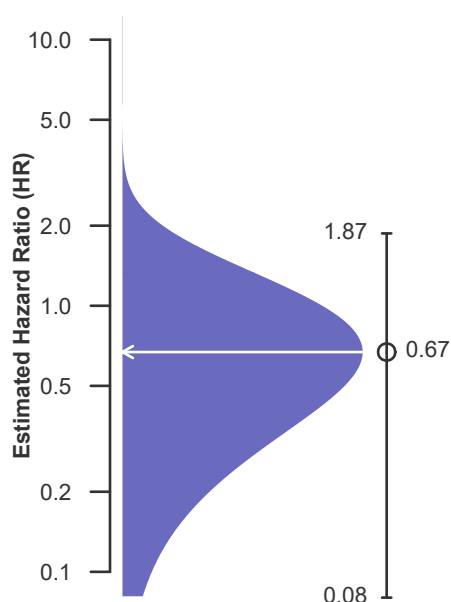
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	26	1,026
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	100.00%	95.23%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	95.24%	--
Number of observed deaths during the first year after transplant	0	36
Number of expected deaths during the first year after transplant	0.99	--
Estimated hazard ratio*	0.67	--
95% credible interval for the hazard ratio**	[0.08, 1.87]	--

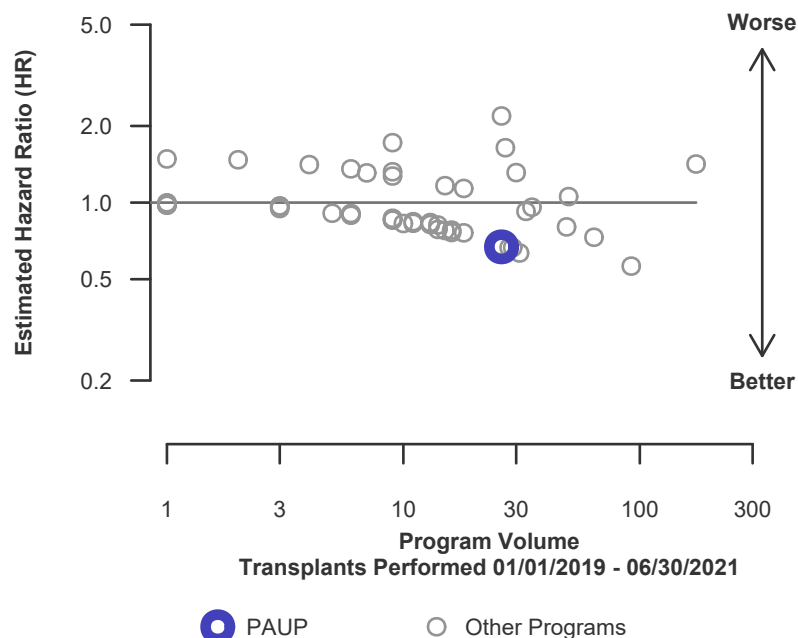
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.08, 1.87], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 33% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 92% reduced risk up to 87% increased risk.

**Figure C23L. Adult (18+) 1-year patient death HR estimate (living donor grafts)**



**Figure C24L. Adult (18+) 1-year patient death HR program comparison (living donor grafts)**





## C. Transplant Information

**Table C17. Adult (18+) 3-year patient survival**

Single organ transplants performed between 07/01/2016 and 12/31/2018

Retransplants excluded

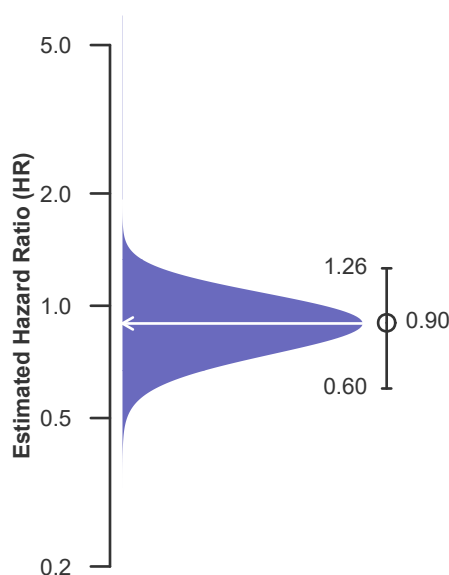
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	290	16,275
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	90.06%	88.07%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	88.51%	--
Number of observed deaths during the first 3 years after transplant	26	1,688
Number of expected deaths during the first 3 years after transplant	29.24	--
Estimated hazard ratio*	0.90	--
95% credible interval for the hazard ratio**	[0.60, 1.26]	--

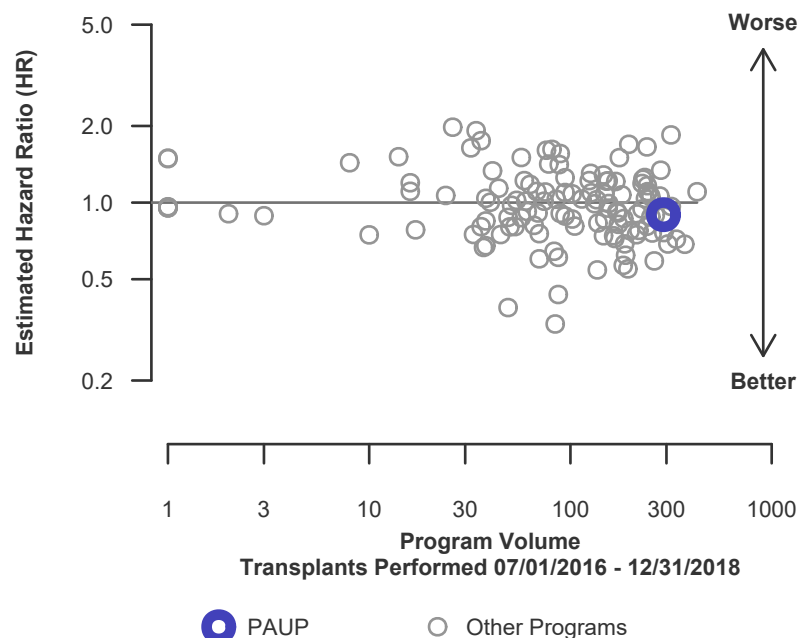
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.60, 1.26], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 10% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 40% reduced risk up to 26% increased risk.

**Figure C25. Adult (18+) 3-year patient death HR estimate**



**Figure C26. Adult (18+) 3-year patient death HR program comparison**





## C. Transplant Information

**Table C17D. Adult (18+) 3-year patient survival (deceased donor graft recipients)**

Single organ transplants performed between 07/01/2016 and 12/31/2018

Retransplants excluded

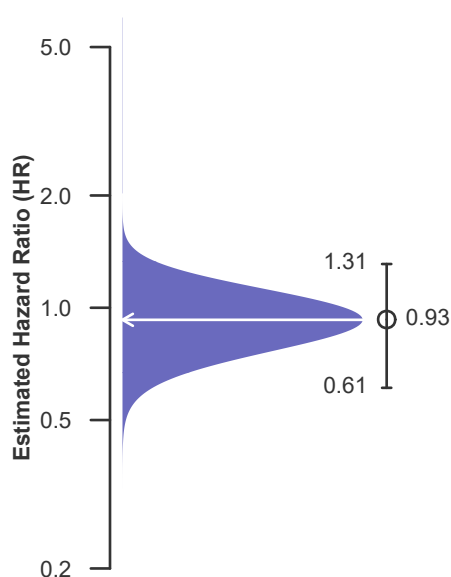
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	264	15,511
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	89.48%	87.94%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	88.29%	--
Number of observed deaths during the first 3 years after transplant	25	1,627
Number of expected deaths during the first 3 years after transplant	27.09	--
Estimated hazard ratio*	0.93	--
95% credible interval for the hazard ratio**	[0.61, 1.31]	--

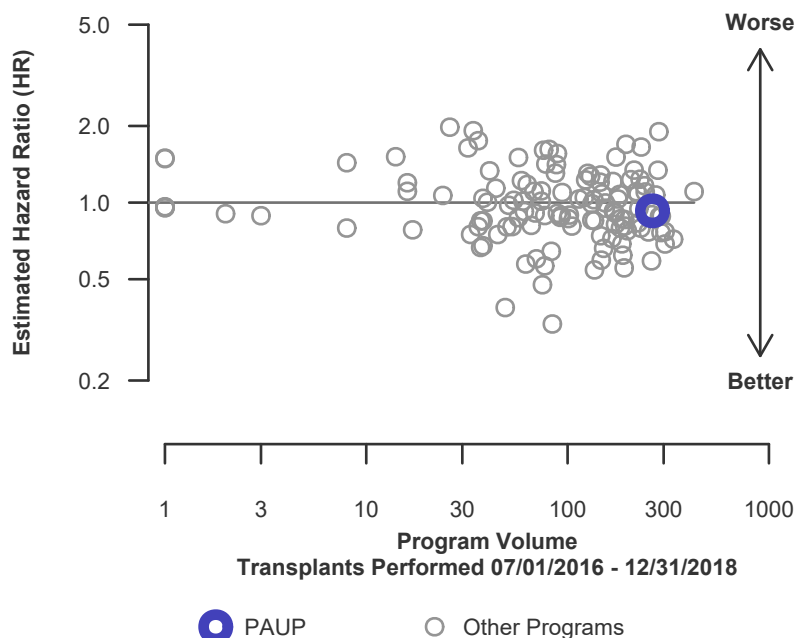
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.61, 1.31], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 7% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 39% reduced risk up to 31% increased risk.

**Figure C25D. Adult (18+) 3-year patient death HR estimate (deceased donor grafts)**



**Figure C26D. Adult (18+) 3-year patient death HR program comparison (deceased donor grafts)**







## C. Transplant Information

**Table C17L. Adult (18+) 3-year patient survival (living donor graft recipients)**

Single organ transplants performed between 07/01/2016 and 12/31/2018

Retransplants excluded

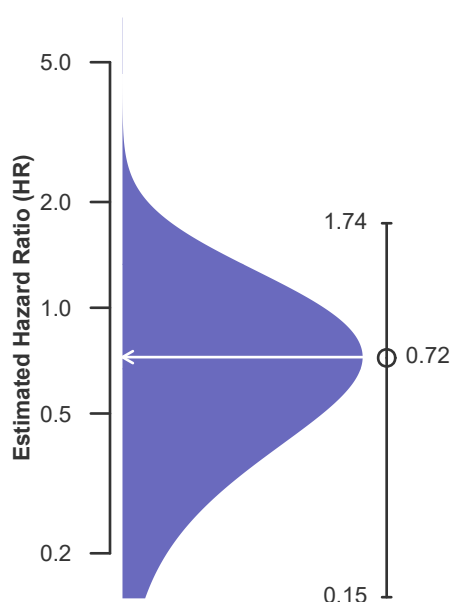
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	26	764
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	96.00%	90.72%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	90.72%	--
Number of observed deaths during the first 3 years after transplant	1	61
Number of expected deaths during the first 3 years after transplant	2.15	--
Estimated hazard ratio*	0.72	--
95% credible interval for the hazard ratio**	[0.15, 1.74]	--

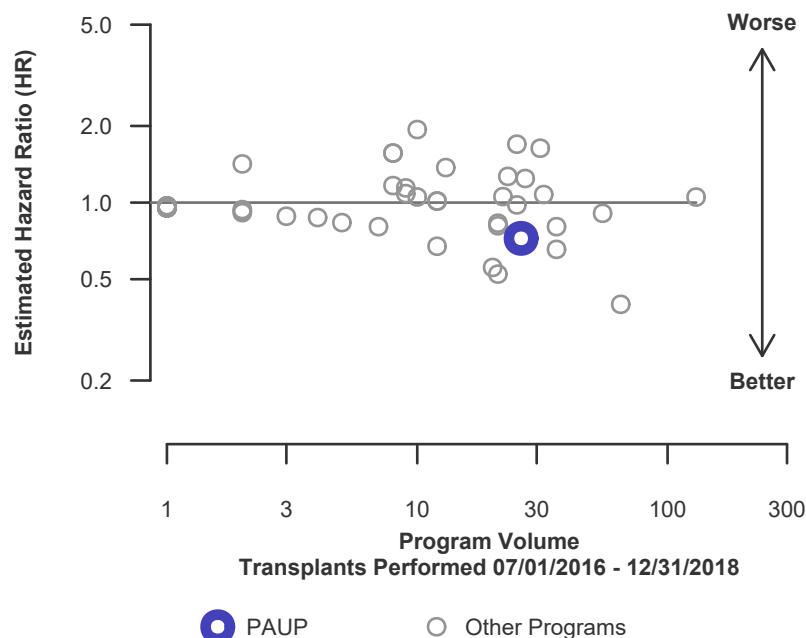
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.15, 1.74], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 28% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 85% reduced risk up to 74% increased risk.

**Figure C25L. Adult (18+) 3-year patient death HR estimate (living donor grafts)**



**Figure C26L. Adult (18+) 3-year patient death HR program comparison (living donor grafts)**







## C. Transplant Information

**Table C18. Pediatric (<18) 1-month patient survival**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Retransplants excluded

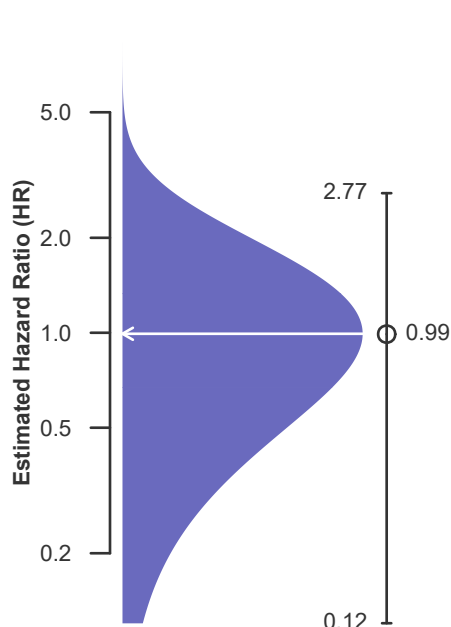
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	1	1,070
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	100.00%	98.21%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	98.51%	--
Number of observed deaths during the first month after transplant	0	19
Number of expected deaths during the first month after transplant	0.01	--
Estimated hazard ratio*	0.99	--
95% credible interval for the hazard ratio**	[0.12, 2.77]	--

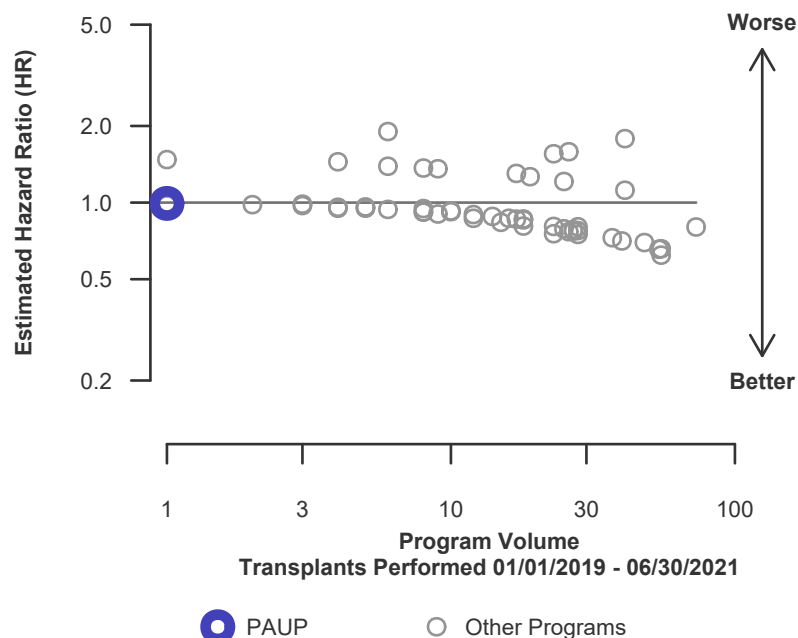
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.77], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 1% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 177% increased risk.

**Figure C27. Pediatric (<18) 1-month patient death HR estimate**



**Figure C28. Pediatric (<18) 1-month patient death HR program comparison**





## C. Transplant Information

**Table C18D. Pediatric (<18) 1-month patient survival (deceased donor graft recipients)**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Retransplants excluded

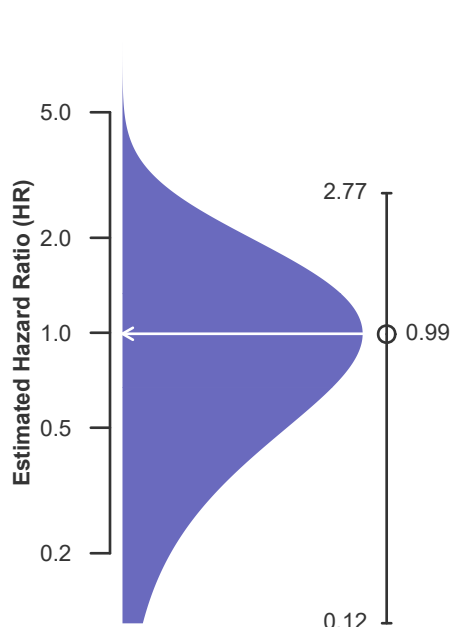
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	1	903
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	100.00%	98.10%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	98.51%	--
Number of observed deaths during the first month after transplant	0	17
Number of expected deaths during the first month after transplant	0.01	--
Estimated hazard ratio*	0.99	--
95% credible interval for the hazard ratio**	[0.12, 2.77]	--

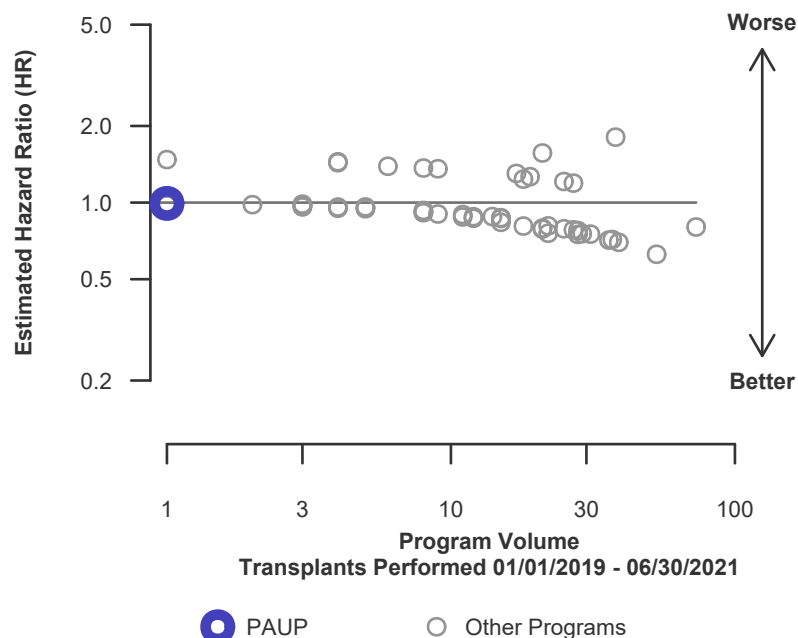
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.77], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 1% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 177% increased risk.

**Figure C27D. Pediatric (<18) 1-month patient death HR estimate (deceased donor grafts)**



**Figure C28D. Pediatric (<18) 1-month patient death HR program comparison (deceased donor grafts)**





## C. Transplant Information

### Table C18L. Pediatric (<18) 1-month patient survival (living donor graft recipients)

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Retransplants excluded

Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

This center did not perform any  
transplants relevant to  
this table during  
01/01/2019-06/30/2021

### Figure C27L. Pediatric (<18) 1-month patient death HR estimate (living donor grafts)

This center did not perform any  
transplants relevant to  
this figure during  
01/01/2019-06/30/2021

### Figure C28L. Pediatric (<18) 1-month patient death HR program comparison (living donor grafts)

This center did not perform any  
transplants relevant to  
this figure during  
01/01/2019-06/30/2021



## C. Transplant Information

**Table C19. Pediatric (<18) 1-year patient survival**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Retransplants excluded

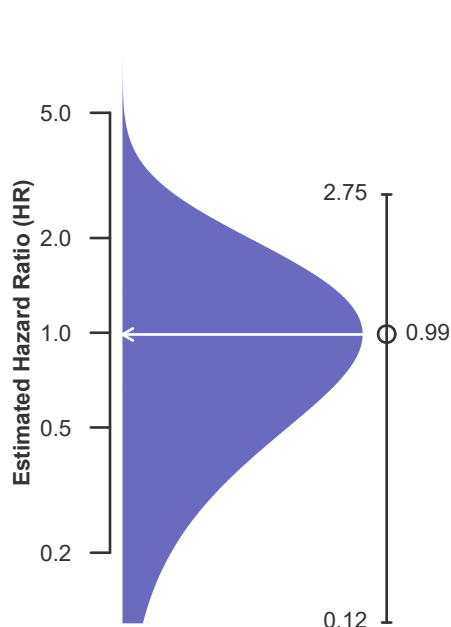
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	1	1,070
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	100.00%	95.04%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	96.18%	--
Number of observed deaths during the first year after transplant	0	42
Number of expected deaths during the first year after transplant	0.03	--
Estimated hazard ratio*	0.99	--
95% credible interval for the hazard ratio**	[0.12, 2.75]	--

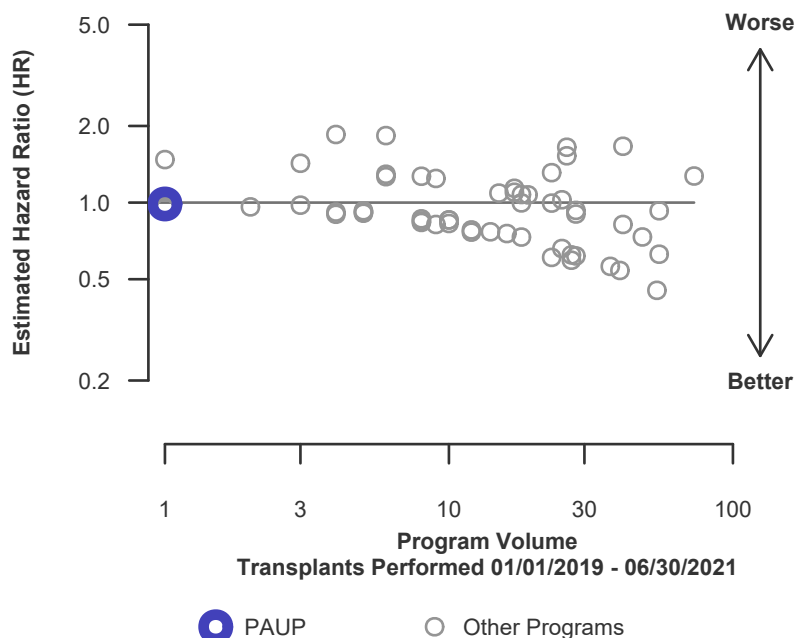
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.75], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 1% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 175% increased risk.

**Figure C29. Pediatric (<18) 1-year patient death HR estimate**



**Figure C30. Pediatric (<18) 1-year patient death HR program comparison**





## C. Transplant Information

**Table C19D. Pediatric (<18) 1-year patient survival (deceased donor graft recipients)**

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Retransplants excluded

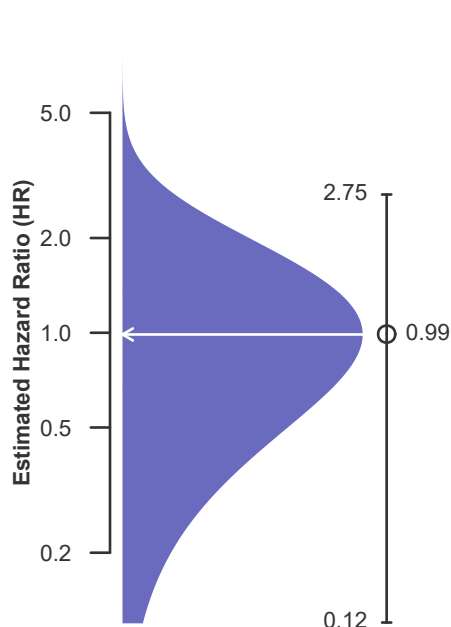
Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

	PAUP	U.S.
Number of transplants evaluated	1	903
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	100.00%	95.11%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	96.18%	--
Number of observed deaths during the first year after transplant	0	36
Number of expected deaths during the first year after transplant	0.03	--
Estimated hazard ratio*	0.99	--
95% credible interval for the hazard ratio**	[0.12, 2.75]	--

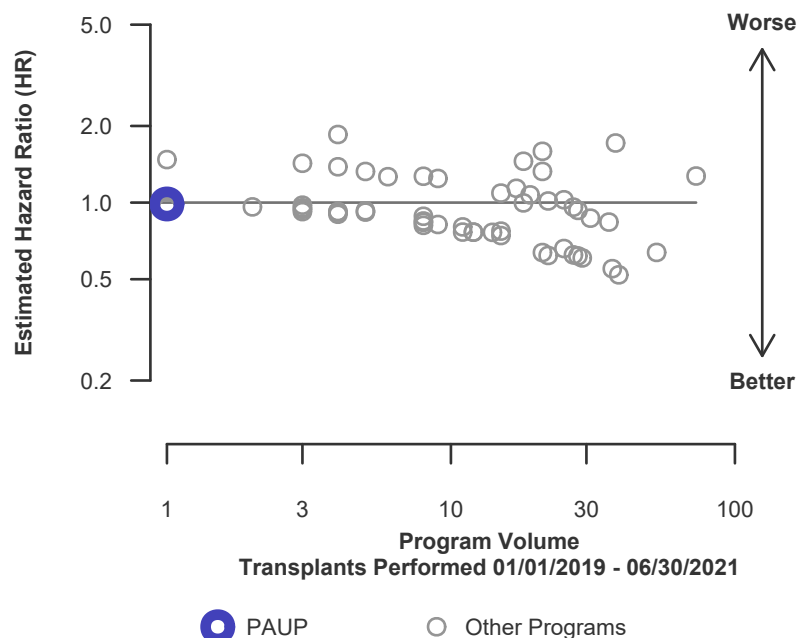
\* The hazard ratio provides an estimate of how Hospital of the University of Pennsylvania's results compare with what was expected based on modeling the transplant outcomes from all U.S. programs. A ratio above 1 indicates higher than expected patient death rates (e.g., a hazard ratio of 1.5 would indicate 50% higher risk), and a ratio below 1 indicates lower than expected patient death rates (e.g., a hazard ratio of 0.75 would indicate 25% lower risk). If PAUP's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

\*\* The 95% credible interval, [0.12, 2.75], indicates the location of PAUP's true hazard ratio with 95% probability. The best estimate is 1% lower risk of patient death compared to an average program, but PAUP's performance could plausibly range from 88% reduced risk up to 175% increased risk.

**Figure C29D. Pediatric (<18) 1-year patient death HR estimate (deceased donor grafts)**



**Figure C30D. Pediatric (<18) 1-year patient death HR program comparison (deceased donor grafts)**





## C. Transplant Information

### Table C19L. Pediatric (<18) 1-year patient survival (living donor graft recipients)

Single organ transplants performed between 01/01/2019 and 03/12/2020, and 06/13/2020 and 06/30/2021

Retransplants excluded

Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

This center did not perform any  
transplants relevant to  
this table during  
01/01/2019-06/30/2021

### Figure C29L. Pediatric (<18) 1-year patient death HR estimate (living donor grafts)

This center did not perform any  
transplants relevant to  
this figure during  
01/01/2019-06/30/2021

### Figure C30L. Pediatric (<18) 1-year patient death HR program comparison (living donor grafts)

This center did not perform any  
transplants relevant to  
this figure during  
01/01/2019-06/30/2021



## C. Transplant Information

### Table C20. Pediatric (<18) 3-year patient survival

Single organ transplants performed between 07/01/2016 and 12/31/2018

Retransplants excluded

Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

This center did not perform any  
transplants relevant to  
this table during  
07/01/2016-12/31/2018

### Figure C31. Pediatric (<18) 3-year patient death HR estimate

This center did not perform any  
transplants relevant to  
this figure during  
07/01/2016-12/31/2018

### Figure C32. Pediatric (<18) 3-year patient death HR program comparison

This center did not perform any  
transplants relevant to  
this figure during  
07/01/2016-12/31/2018



## C. Transplant Information

### Table C20D. Pediatric (<18) 3-year patient survival (deceased donor graft recipients)

Single organ transplants performed between 07/01/2016 and 12/31/2018

Retransplants excluded

Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

This center did not perform any  
transplants relevant to  
this table during  
07/01/2016-12/31/2018

### Figure C31D. Pediatric (<18) 3-year patient death HR estimate (deceased donor grafts)

This center did not perform any  
transplants relevant to  
this figure during  
07/01/2016-12/31/2018

### Figure C32D. Pediatric (<18) 3-year patient death HR program comparison (deceased donor grafts)

This center did not perform any  
transplants relevant to  
this figure during  
07/01/2016-12/31/2018





## C. Transplant Information

### Table C20L. Pediatric (<18) 3-year patient survival (living donor graft recipients)

Single organ transplants performed between 07/01/2016 and 12/31/2018

Retransplants excluded

Follow-up ends on 3/12/2020 for recipients transplanted prior to 3/13/2020

This center did not perform any  
transplants relevant to  
this table during  
07/01/2016-12/31/2018

### Figure C31L. Pediatric (<18) 3-year patient death HR estimate (living donor grafts)

This center did not perform any  
transplants relevant to  
this figure during  
07/01/2016-12/31/2018

### Figure C32L. Pediatric (<18) 3-year patient death HR program comparison (living donor grafts)

This center did not perform any  
transplants relevant to  
this figure during  
07/01/2016-12/31/2018



## C. Transplant Information

Table C21. Multi-organ transplant graft survival: 01/01/2019 - 06/30/2021

### Adult (18+) Transplants

Transplant Type	First-Year Outcomes					
	Transplants Performed		Liver Graft Failures		Estimated Liver Graft Survival	
	PAUP-TX1	USA	PAUP-TX1	USA	PAUP-TX1	USA
Kidney-Liver	31	1,858	1	184	96.8%	89.5%
Liver-Heart	4	106	2	13	50.0%	87.3%
Liver-Lung	3	42	0	4	100.0%	89.8%

### Pediatric (<18) Transplants

No pediatric (<18) multi-organ transplants were performed

Table C22. Multi-organ transplant patient survival: 01/01/2019 - 06/30/2021

### Adult (18+) Transplants

Transplant Type	First-Year Outcomes					
	Transplants Performed		Patient Deaths		Estimated Patient Survival	
	PAUP-TX1	USA	PAUP-TX1	USA	PAUP-TX1	USA
Kidney-Liver	31	1,858	1	171	96.8%	90.2%
Liver-Heart	4	106	2	13	50.0%	87.3%
Liver-Lung	3	42	0	4	100.0%	89.8%

### Pediatric (<18) Transplants

No pediatric (<18) multi-organ transplants were performed



## D. Living Donor Information

Table D1. Living donor summary: 01/01/2019 - 12/31/2021

Living Donor Follow-Up	This Center			United States		
	01/2019- 12/2019	01/2020- 12/2020	01/2021- 06/2021	01/2019- 12/2019	01/2020- 12/2020	01/2021- 06/2021
<b>Number of Living Donors</b>	17	12	5	516	485	274
<b>6-Month Follow-Up</b>						
Donors due for follow-up	12	3	5	342	127	271
Timely clinical data	10 83.3%	2 66.7%	5 100.0%	300 87.7%	105 82.7%	239 88.2%
Timely lab data	10 83.3%	3 100.0%	5 100.0%	299 87.4%	109 85.8%	238 87.8%
<b>12-Month Follow-Up</b>						
Donors due for follow-up	2	7		99	356	
Timely clinical data	1 50.0%	7 100.0%		80 80.8%	297 83.4%	
Timely lab data	1 50.0%	6 85.7%		74 74.7%	298 83.7%	
<b>24-Month Follow-Up</b>						
Donors due for follow-up	14			400		
Timely clinical data	13 92.9%			288 72.0%		
Timely lab data	11 78.6%			273 68.2%		

Follow-up forms due during the COVID-19 amnesty period from 3/13/2020-3/31/2021 are not included in timely clinical and lab data calculations