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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 Duke University Hospital. 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 274.0 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.

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A. Program Summary

Figure A1. Waiting list and transplant activity

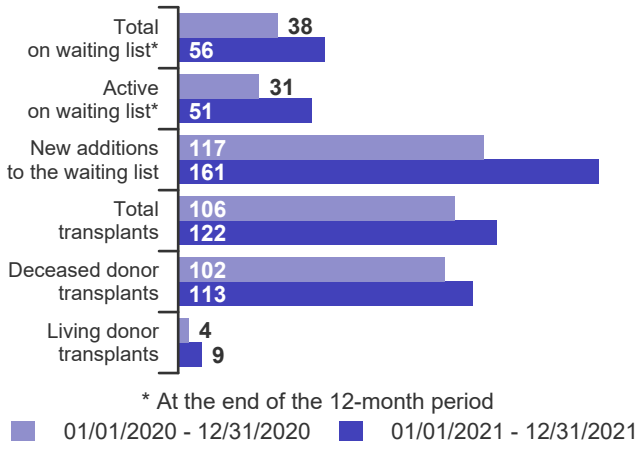


Table A1. Census of transplant recipients

Recipients	01/01/2020-12/31/2020	01/01/2021-12/31/2021
Transplanted at this center	106	122
Followed by this center*	836	807
...transplanted at this program	763	743
...transplanted elsewhere	73	64

* 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

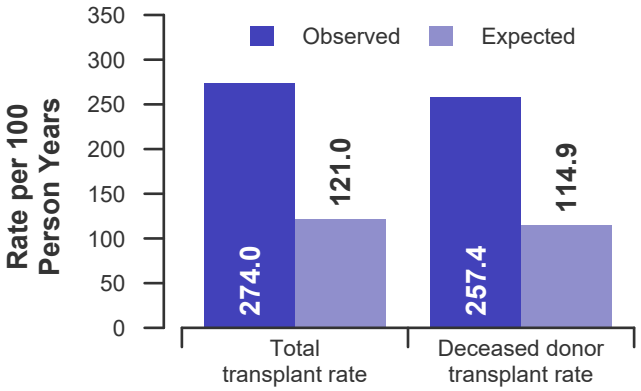


Figure A3. Pre-transplant mortality rates
01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021

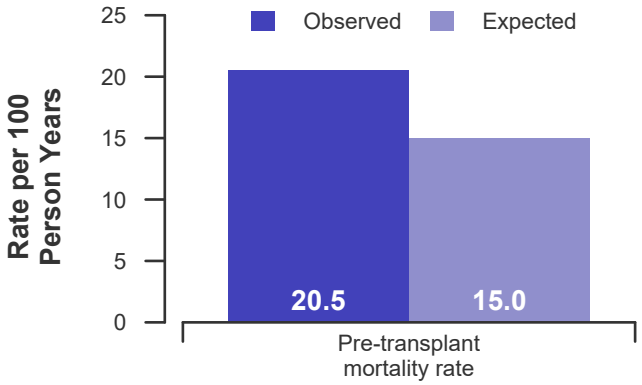


Figure A4. First-year adult graft and patient survival:
01/01/2019 - 03/12/2020, 06/13/2020 - 06/30/2021

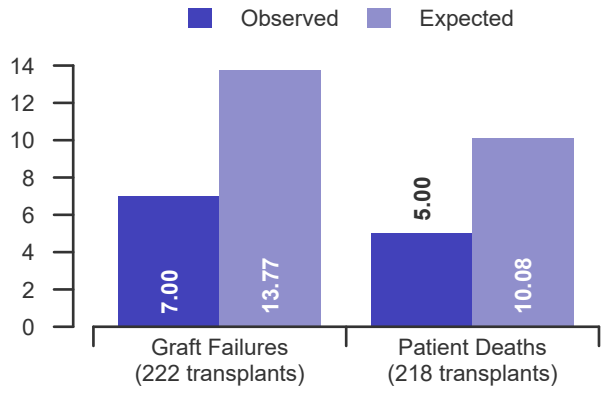
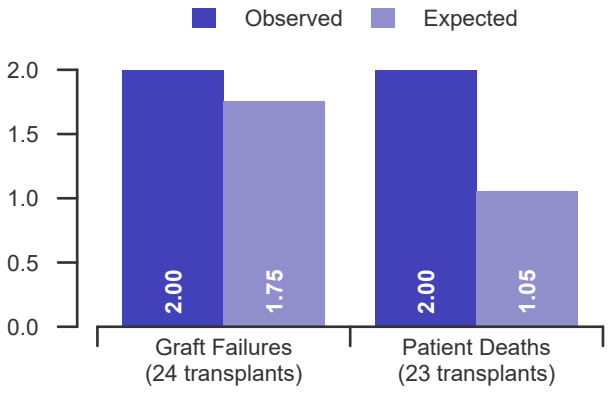


Figure A5. First-year pediatric graft & patient survival:
01/01/2019 - 03/12/2020, 06/13/2020 - 06/30/2021



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. (%)
On waiting list at start	48	38	100.0	100.0	100.0
Additions					
New listings at this center	117	161	423.7	160.0	113.7
Removals					
Transferred to another center	1	0	0.0	0.9	1.2
Received living donor transplant*	4	9	23.7	6.1	4.7
Received deceased donor transplant*	102	113	297.4	104.5	71.2
Died	1	6	15.8	15.3	9.4
Transplanted at another center	2	4	10.5	2.1	2.3
Deteriorated	7	3	7.9	9.6	9.8
Recovered	10	6	15.8	14.4	9.3
Other reasons	0	2	5.3	8.3	9.4
On waiting list at end of period	38	56	147.4	98.7	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=161)	OPTN Region (N=1,277)	U.S. (N=13,840)	This Center (N=56)	OPTN Region (N=788)	U.S. (N=11,735)
All (%)	100.0	100.0	100.0	100.0	100.0	100.0
Ethnicity/Race (%)*						
White	76.4	84.3	69.0	83.9	83.8	66.7
African-American	12.4	9.2	7.4	7.1	9.5	7.0
Hispanic/Latino	5.6	3.8	17.5	5.4	4.1	19.5
Asian	2.5	2.0	4.3	3.6	2.2	5.3
Other	3.1	0.7	1.8	0.0	0.5	1.6
Unknown	0.0	0.0	0.0	0.0	0.0	0.0
Age (%)						
<2 years	8.1	1.6	2.1	3.6	0.5	1.2
2-11 years	1.9	1.1	1.6	0.0	1.0	1.2
12-17 years	1.9	0.9	1.2	5.4	1.1	1.0
18-34 years	6.2	6.0	7.1	1.8	6.1	6.3
35-49 years	18.0	22.2	21.0	17.9	17.6	19.4
50-64 years	44.7	49.5	46.0	44.6	50.9	51.0
65-69 years	14.9	14.6	15.5	23.2	19.2	15.5
70+ years	4.3	4.1	5.5	3.6	3.6	4.4
Gender (%)						
Male	60.9	63.4	60.9	55.4	63.7	60.4
Female	39.1	36.6	39.1	44.6	36.3	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=161)	OPTN Region (N=1,277)	U.S. (N=13,840)	This Center (N=56)	OPTN Region (N=788)	U.S. (N=11,735)
All (%)	100.0	100.0	100.0	100.0	100.0	100.0
Blood Type (%)						
O	44.1	45.8	47.1	44.6	44.8	49.0
A	38.5	37.4	36.8	48.2	42.6	38.5
B	12.4	12.8	12.4	5.4	11.0	10.4
AB	5.0	3.9	3.6	1.8	1.5	2.1
Unknown	0.0	0.0	0.0	0.0	0.0	0.0
Previous Transplant (%)						
Yes	5.0	3.9	4.3	5.4	2.4	3.4
No	95.0	96.1	95.7	94.6	97.6	96.6
Unknown	0.0	0.0	0.0	0.0	0.0	0.0
Primary Disease (%)						
Acute Hepatic Necrosis	6.2	4.5	5.7	1.8	2.0	2.0
Non-Cholestatic Cirrhosis	53.4	76.3	67.5	48.2	75.8	69.9
Cholestatic Liver Disease/Cirrhosis	7.5	5.5	7.2	10.7	6.3	7.8
Biliary Atresia	5.6	1.6	1.7	3.6	1.3	1.6
Metabolic Diseases	5.0	2.4	1.9	3.6	1.9	1.5
Malignant Neoplasms	15.5	5.8	10.9	25.0	8.8	11.4
Other	6.8	4.0	5.1	7.1	3.9	5.8
Missing	0.0	0.0	0.1	0.0	0.0	0.1
Medical Urgency Status/MELD/PELD at Listing (%)*						
Status 1A	5.0	2.5	2.8	0.0	0.0	0.2
Status 1B	0.0	0.2	0.3	0.0	0.1	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	0.0	0.0
Status 3	0.0	0.0	0.0	0.0	0.0	0.2
MELD 6-10	13.0	10.6	15.7	26.8	17.3	29.4
MELD 11-14	4.3	10.6	11.4	10.7	21.6	21.8
MELD 15-20	18.0	21.5	20.6	25.0	34.1	26.1
MELD 21-30	34.2	30.9	24.7	26.8	20.3	14.0
MELD 31-40	16.1	14.6	13.8	3.6	1.5	1.0
PELD less than or equal to 10	3.1	1.1	1.6	0.0	0.8	1.7
PELD 11-14	1.2	0.2	0.2	3.6	0.4	0.1
PELD 15-20	1.2	0.5	0.4	0.0	0.0	0.2
PELD 21-30	1.2	0.2	0.3	0.0	0.1	0.1
PELD 31 or greater	0.0	0.0	0.1	0.0	0.0	0.0
Temporarily Inactive	1.2	2.6	4.0	3.6	3.7	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.
All Candidates				
Count on waiting list at start*	48	81	781	13,006
Person Years**	72.6	126.2	1,379.1	21,352.3
Removals for Transplant	199	261	1,493	16,102
Adult (18+) Candidates				
Count on waiting list at start*	42	75	758	12,544
Person Years**	67.6	120.6	1,345.3	20,651.2
Removals for transpant	179	241	1,435	15,170
Pediatric (<18) Candidates				
Count on waiting list at start*	6	6	23	462
Person Years**	5.1	5.6	33.8	701.1
Removals for transplant	20	20	58	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

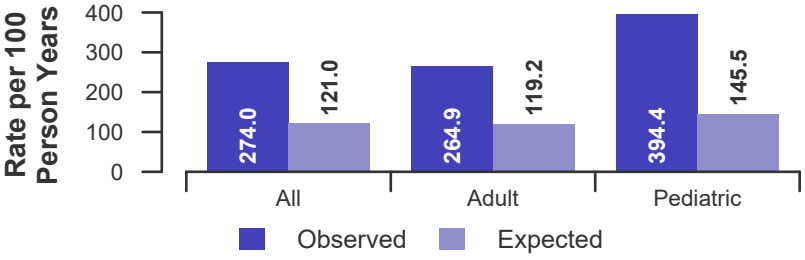


Figure B2. Transplant rate ratio estimate

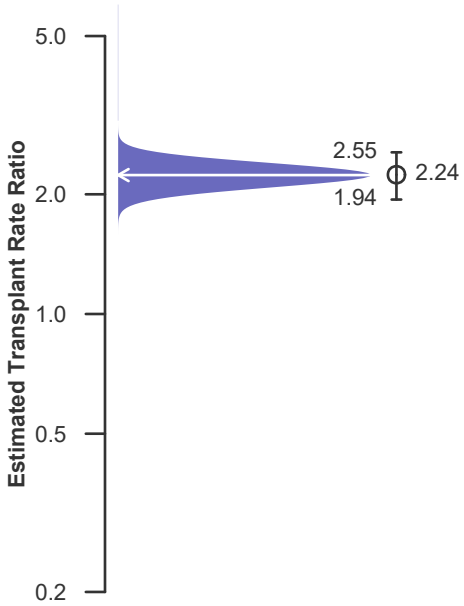
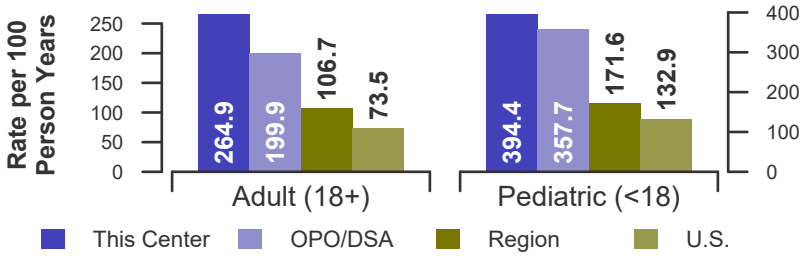


Figure B3. Observed adult (18+) and pediatric (<18) transplant rates: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021



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.
All Candidates				
Count on waiting list at start*	48	81	781	13,006
Person Years**	72.6	126.2	1,379.1	21,352.3
Removals for Transplant	187	249	1,414	15,126
Adult (18+) Candidates				
Count on waiting list at start*	42	75	758	12,544
Person Years**	67.6	120.6	1,345.3	20,651.2
Removals for transpant	171	233	1,360	14,327
Pediatric (<18) Candidates				
Count on waiting list at start*	6	6	23	462
Person Years**	5.1	5.6	33.8	701.1
Removals for transplant	16	16	54	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

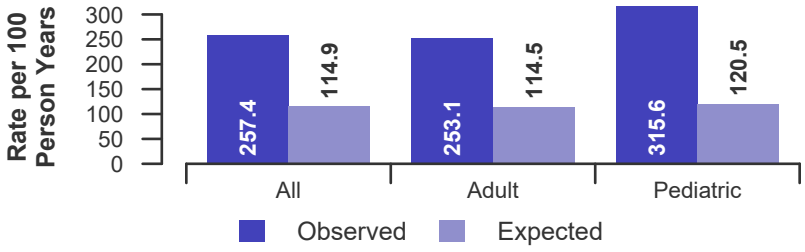


Figure B3D. Observed adult (18+) and pediatric (<18) deceased donor transplant rates: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021

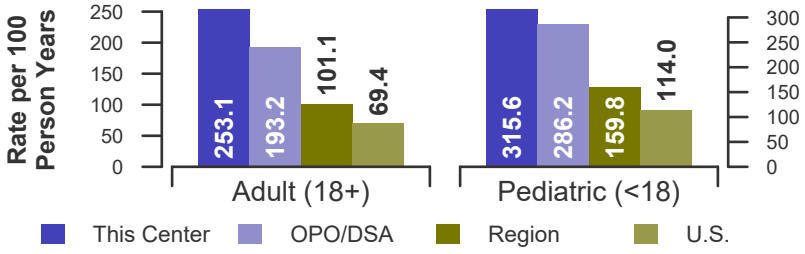
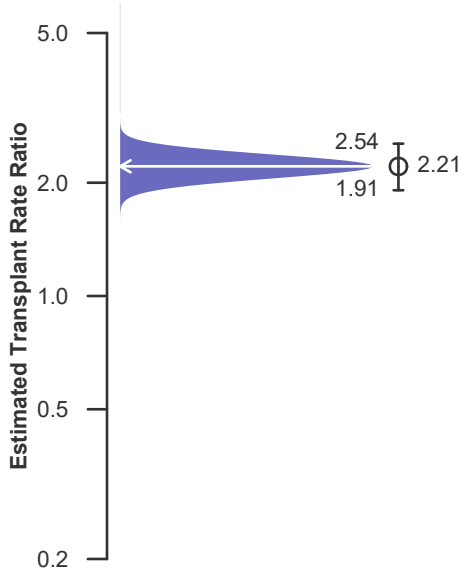


Figure B2D. Deceased donor transplant rate ratio estimate



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.
All Candidates				
Count on waiting list at start*	48	81	781	13,006
Person Years**	78.0	138.4	1,570.9	25,104.5
Number of deaths	16	29	291	3,146
Adult (18+) Candidates				
Count on waiting list at start*	42	75	758	12,544
Person Years**	72.6	132.5	1,532.4	24,313.6
Number of deaths	15	28	289	3,108
Pediatric (<18) Candidates				
Count on waiting list at start*	6	6	23	462
Person Years**	5.4	5.9	38.5	791.0
Number of deaths	1	1	2	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

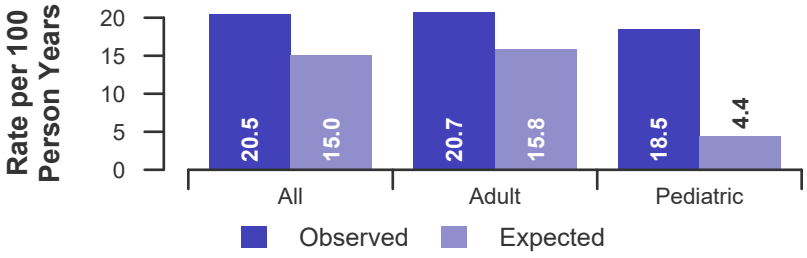


Figure B5. Pre-transplant mortality rate ratio estimate

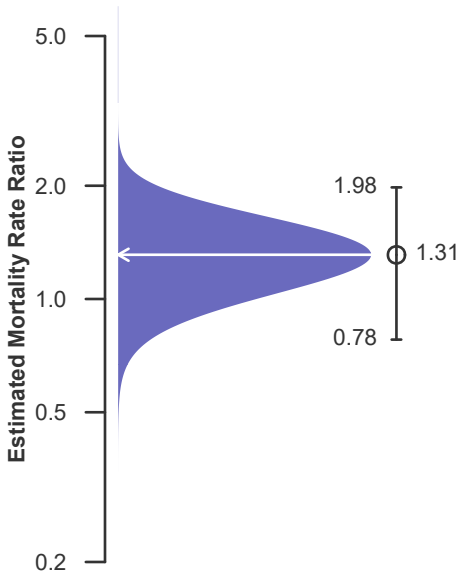
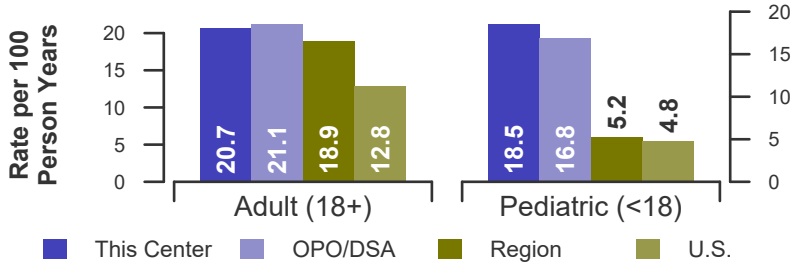


Figure B6. Observed adult (18+) and pediatric (<18) pre-transplant mortality rates: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021



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.
All Patients				
Count at risk during the evaluation period	820	1,146	6,761	76,170
Person-years*	983.0	1,382.1	7,964.2	90,051.6
Number of Deaths	51	88	591	6,398
Adult (18+) Patients				
Count at risk during the evaluation period	709	1,023	6,433	71,796
Person-years*	859.2	1,245.5	7,552.7	84,733.3
Number of Deaths	50	86	584	6,287
Pediatric (<18) Patients				
Count at risk during the evaluation period	111	123	328	4,374
Person-years*	123.8	136.6	411.5	5,318.4
Number of Deaths	1	2	7	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

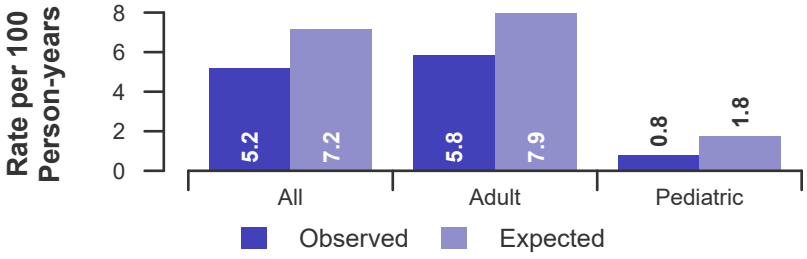


Figure B8. HR estimate of patient mortality after listing

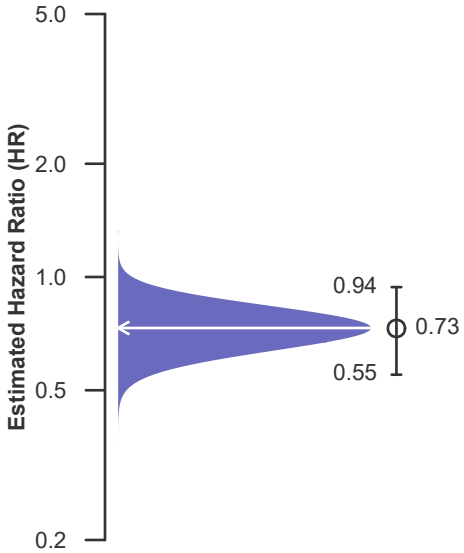
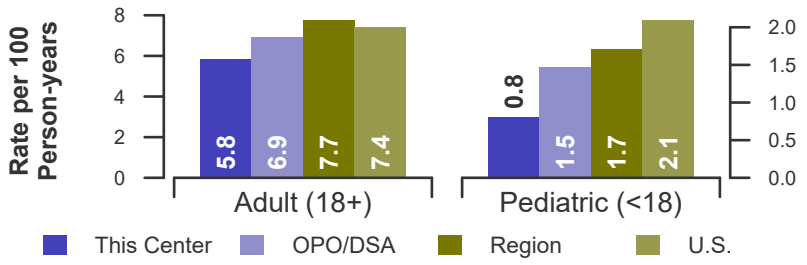


Figure B9. Observed adult (18+) and pediatric (<18) rates of patient mortality after listing: 01/01/2020 - 03/12/2020, 06/13/2020 - 12/31/2021



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=114) Months Since Listing			U.S. (N=13,049) Months Since Listing		
	6	12	18	6	12	18
Alive on waiting list (%)	22.8	6.1	0.9	43.1	26.1	17.8
Died on the waiting list without transplant (%)	1.8	1.8	1.8	4.3	5.6	6.3
Removed without transplant (%):						
Condition worsened (status unknown)	3.5	3.5	3.5	4.0	5.8	6.8
Condition improved (status unknown)	0.9	2.6	4.4	1.3	2.1	3.2
Refused transplant (status unknown)	0.0	0.0	0.0	0.2	0.4	0.6
Other	0.0	0.0	0.0	1.7	3.2	4.3
Transplant (living donor from waiting list only) (%):						
Functioning (alive)	2.6	2.6	2.6	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	0.0	0.0	0.0	0.1	0.2
Status Yet Unknown**	0.0	0.0	0.9	0.0	0.1	1.0
Transplant (deceased donor) (%):						
Functioning (alive)	65.8	70.2	61.4	38.8	44.8	35.2
Failed-Retransplanted (alive)	0.0	0.0	0.0	0.4	0.6	0.7
Failed-alive not retransplanted	0.0	0.0	0.0	0.0	0.0	0.0
Died	1.8	4.4	4.4	1.8	3.0	4.1
Status Yet Unknown*	0.9	8.8	20.2	1.6	4.8	16.9
Lost or Transferred (status unknown) (%)	0.0	0.0	0.0	0.2	0.4	0.5
TOTAL (%)	100.0	100.0	100.0	100.0	100.0	100.0
Total % known died on waiting list or after transplant	3.5	6.1	6.1	6.1	8.7	10.6
Total % known died or removed as unstable	7.0	9.6	9.6	10.1	14.5	17.4
Total % removed for transplant	71.1	86.0	89.5	45.1	56.4	60.3
Total % with known functioning transplant (alive)	68.4	72.8	64.0	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=3) Months Since listing			U.S. (N=412) Months Since listing		
	6	12	18	6	12	18
Alive on waiting list (%)	0.0	0.0	0.0	2.4	1.7	0.7
Died on the waiting list without transplant (%)	0.0	0.0	0.0	8.0	8.0	8.0
Removed without transplant (%):						
Condition worsened (status unknown)	0.0	0.0	0.0	5.8	5.8	5.8
Condition improved (status unknown)	0.0	0.0	0.0	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
Transplant (living donor from waiting list only) (%):						
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
Transplant (deceased donor) (%):						
Functioning (alive)	100.0	100.0	100.0	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
Lost or Transferred (status unknown) (%)	0.0	0.0	0.0	0.2	0.2	0.2
TOTAL (%)	100.0	100.0	100.0	100.0	100.0	100.0
Total % known died on waiting list or after transplant	0.0	0.0	0.0	14.6	15.8	16.3
Total % known died or removed as unstable	0.0	0.0	0.0	20.4	21.6	22.1
Total % removed for transplant	100.0	100.0	100.0	63.6	63.6	63.6
Total % with known functioning transplant (alive)	100.0	100.0	100.0	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
All	401	27.2	71.6	75.8	76.6	38,225	20.2	50.2	57.3	59.0
Ethnicity/Race*										
White	297	24.9	70.4	75.8	76.4	26,227	20.3	51.2	57.8	59.5
African-American	49	36.7	73.5	73.5	75.5	3,270	23.2	54.5	61.5	62.8
Hispanic/Latino	23	26.1	78.3	82.6	82.6	6,242	18.8	46.0	54.0	56.1
Asian	8	37.5	87.5	87.5	87.5	1,838	18.7	43.6	54.2	56.3
Other	24	33.3	70.8	70.8	70.8	648	20.5	49.2	55.9	57.1
Unknown	0	--	--	--	--	0	--	--	--	--
Age										
<2 years	25	28.0	88.0	92.0	92.0	912	23.2	71.4	74.8	76.0
2-11 years	14	42.9	85.7	85.7	85.7	731	28.7	71.3	76.6	78.5
12-17 years	15	26.7	66.7	73.3	73.3	447	22.8	56.6	65.8	67.8
18-34 years	18	27.8	61.1	61.1	66.7	2,227	29.3	51.1	57.3	59.3
35-49 years	65	36.9	72.3	80.0	80.0	6,314	28.5	52.8	58.1	59.8
50-64 years	181	27.1	71.8	76.8	77.3	19,888	18.4	49.1	56.7	58.5
65-69 years	66	21.2	63.6	65.2	66.7	6,218	14.1	46.1	54.1	55.9
70+ years	17	0.0	76.5	76.5	76.5	1,488	13.3	44.4	52.4	53.0
Gender										
Male	252	25.8	75.0	79.8	80.2	23,958	19.9	51.4	58.9	60.6
Female	149	29.5	65.8	69.1	70.5	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	401	27.2	71.6	75.8	76.6	38,225	20.2	50.2	57.3	59.0
Blood Type										
O	198	26.8	73.7	77.3	77.8	17,831	19.3	47.8	55.5	57.3
A	148	23.0	61.5	67.6	68.9	14,083	19.1	48.8	55.9	57.6
B	42	38.1	90.5	92.9	92.9	4,764	23.4	57.2	63.4	64.9
AB	13	46.2	92.3	92.3	92.3	1,547	30.3	68.6	72.3	73.4
Previous Transplant										
Yes	22	27.3	59.1	59.1	63.6	1,900	29.0	52.5	57.9	59.4
No	379	27.2	72.3	76.8	77.3	36,325	19.7	50.1	57.3	59.0
Primary Disease										
Acute Hepatic Necrosis	13	76.9	76.9	76.9	84.6	1,637	50.8	59.8	62.4	63.1
Non-Cholestatic Cirrhosis	267	27.0	70.0	75.7	75.7	25,304	20.9	49.2	55.5	57.2
Cholestatic Liver Disease/Cirrhosis	38	23.7	57.9	57.9	63.2	2,678	16.9	48.8	56.2	58.9
Biliary Atresia	22	27.3	90.9	95.5	95.5	785	16.9	65.5	72.6	74.5
Metabolic Diseases	10	10.0	80.0	90.0	90.0	940	24.0	66.1	71.3	73.4
Malignant Neoplasms	27	14.8	74.1	74.1	74.1	4,859	7.6	47.5	60.0	61.4
Other	24	29.2	83.3	83.3	83.3	2,010	21.0	50.1	58.7	60.3
Missing	0	--	--	--	--	12	33.3	50.0	50.0	50.0
Medical Urgency Status/MELD/PELD at Listing*										
Status 1	0	--	--	--	--	0	--	--	--	--
Status 1A	12	66.7	66.7	66.7	66.7	1,182	61.1	61.8	61.8	61.9
Status 1B	1	100.0	100.0	100.0	100.0	155	42.6	81.3	81.3	81.3
Status 2A	0	--	--	--	--	0	--	--	--	--
Status 2B	0	--	--	--	--	0	--	--	--	--
Status 3	0	--	--	--	--	0	--	--	--	--
MELD 6-10	72	6.9	72.2	76.4	77.8	7,588	2.3	37.8	50.4	52.6
MELD 11-14	57	1.8	54.4	63.2	66.7	5,169	2.4	32.5	43.5	46.4
MELD 15-20	86	12.8	57.0	64.0	64.0	8,092	8.7	43.3	52.1	54.6
MELD 21-30	94	45.7	84.0	86.2	86.2	8,583	25.6	59.7	63.2	64.3
MELD 31-40	32	84.4	90.6	90.6	90.6	3,933	68.3	77.3	77.7	77.9
PELD less than or equal to 10	18	11.1	88.9	94.4	94.4	750	11.3	68.8	75.7	78.3
PELD 11-14	1	0.0	100.0	100.0	100.0	102	15.7	74.5	82.4	84.3
PELD 15-20	6	66.7	100.0	100.0	100.0	173	19.1	76.3	79.8	80.3
PELD 21-30	4	25.0	100.0	100.0	100.0	151	36.4	78.8	80.8	80.8
PELD 31 or greater	1	100.0	100.0	100.0	100.0	51	58.8	78.4	78.4	78.4
Temporarily Inactive	17	29.4	58.8	58.8	58.8	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

	Months to Transplant**			
Percentile	**Center**	**OPO/DSA**	**Region**	**U.S.**
5th	0.1	0.1	0.1	0.1
10th	0.2	0.2	0.2	0.2
25th	0.6	0.8	0.9	1.1
50th (median time to transplant)	2.9	4.2	5.6	8.2
75th	8.2	13.6	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.
Overall				
Number of Offers	1,575	3,176	29,210	279,788
Number of Acceptances	101	131	773	7,713
Expected Acceptances	55.7	118.9	924.4	7,700.2
Offer Acceptance Ratio*	1.79	1.10	0.84	1.00
95% Credible Interval**	[1.46, 2.15]	--	--	--
PHS increased infectious risk				
Number of Offers	215	459	4,699	42,931
Number of Acceptances	22	29	161	1,513
Expected Acceptances	9.2	22.8	198.6	1,510.4
Offer Acceptance Ratio*	2.14	1.25	0.81	1.00
95% Credible Interval**	[1.37, 3.08]	--	--	--
DCD donor				
Number of Offers	54	155	6,654	64,111
Number of Acceptances	5	5	54	822
Expected Acceptances	2.3	7.2	104.5	823.1
Offer Acceptance Ratio*	1.62	0.76	0.53	1.00
95% Credible Interval**	[0.65, 3.03]	--	--	--
HCV+ donor				
Number of Offers	60	133	1,218	9,564
Number of Acceptances	7	11	56	387
Expected Acceptances	3.7	8.2	62.4	385.6
Offer Acceptance Ratio*	1.57	1.27	0.90	1.00
95% Credible Interval**	[0.72, 2.75]	--	--	--
Hard-to-Place Livers (Over 50 Offers)				
Number of Offers	697	1,397	16,632	166,759
Number of Acceptances	16	16	74	1,019
Expected Acceptances	3.8	7.8	121.0	1,022.3
Offer Acceptance Ratio*	3.12	1.83	0.62	1.00
95% Credible Interval**	[1.85, 4.71]	--	--	--
Donor more than 500 miles away				
Number of Offers	393	732	7,865	83,724
Number of Acceptances	10	15	94	930
Expected Acceptances	9.8	18.2	115.7	902.2
Offer Acceptance Ratio*	1.02	0.84	0.82	1.03
95% Credible Interval**	[0.53, 1.67]	--	--	--

* The offer acceptance ratio estimates the relative offer acceptance practice of Duke University Hospital 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, [1.46, 2.15], indicates the location of NCDU's true offer acceptance ratio with 95% probability. The best estimate is 79% more likely to accept an offer compared to national acceptance behavior, but NCDU's performance could plausibly range from 46% higher acceptance up to 115% higher acceptance.

B. Waiting List Information

Figure B10. Offer acceptance: Overall

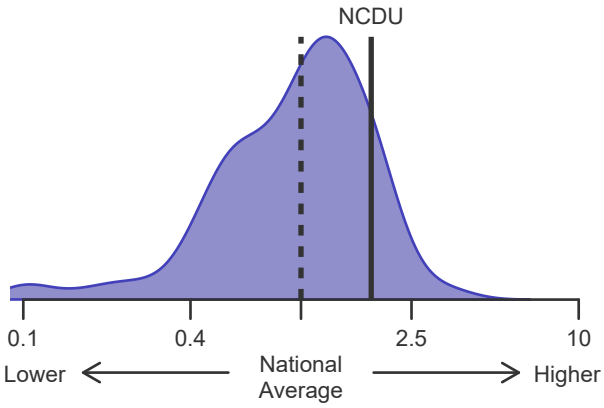


Figure B11. Offer acceptance: PHS increased infectious risk

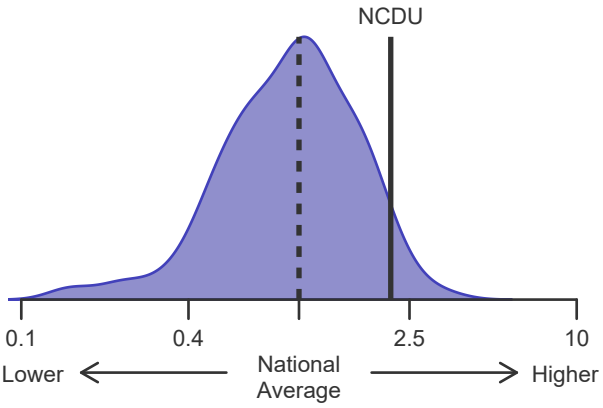


Figure B12. Offer acceptance: DCD Donor

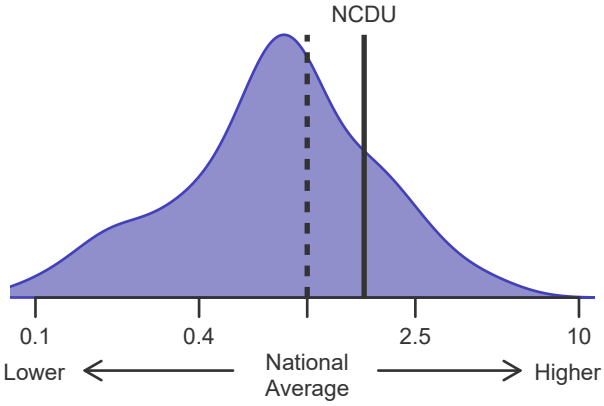


Figure B13. Offer acceptance: HCV+ Donor

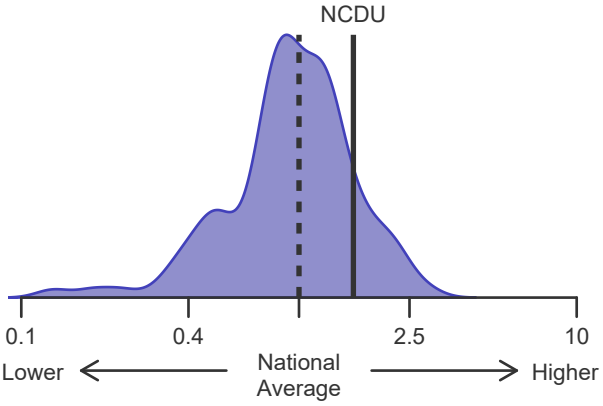


Figure B14. Offer acceptance: Offer number > 50

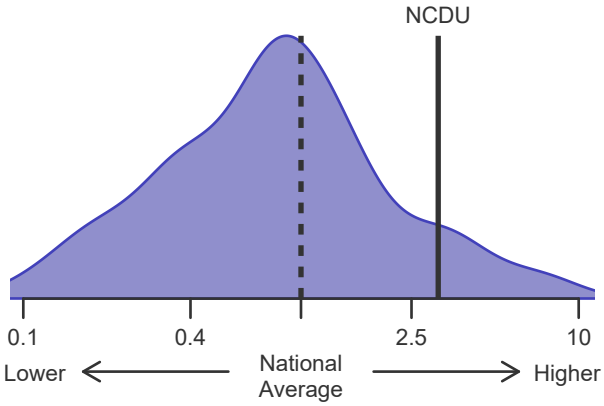
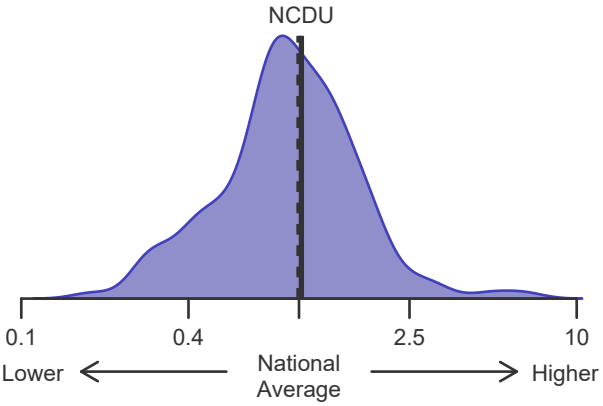


Figure B15. Offer acceptance: Donor more than 500 miles away



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=113)	Region (N=834)	U.S. (N=8,665)
Ethnicity/Race (%)*			
White	74.3	82.0	69.2
African-American	14.2	9.7	7.7
Hispanic/Latino	6.2	4.6	16.7
Asian	1.8	2.8	4.5
Other	3.5	1.0	1.9
Unknown	0.0	0.0	0.0
Age (%)			
<2 years	6.2	1.8	1.8
2-11 years	2.7	1.1	2.0
12-17	0.9	1.0	1.1
18-34	7.1	5.9	7.2
35-49 years	19.5	22.8	21.1
50-64 years	45.1	49.4	45.5
65-69 years	13.3	13.5	15.4
70+ years	5.3	4.6	5.8
Gender (%)			
Male	60.2	63.8	62.6
Female	39.8	36.2	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=9)	Region (N=49)	U.S. (N=569)
Ethnicity/Race (%)*			
White	66.7	83.7	73.1
African-American	22.2	14.3	5.6
Hispanic/Latino	11.1	2.0	17.4
Asian	0.0	0.0	2.8
Other	0.0	0.0	1.1
Unknown	0.0	0.0	0.0
Age (%)			
<2 years	22.2	4.1	8.8
2-11 years	11.1	2.0	4.0
12-17	0.0	0.0	0.7
18-34	11.1	8.2	12.1
35-49 years	22.2	24.5	18.8
50-64 years	33.3	38.8	35.1
65-69 years	0.0	18.4	15.1
70+ years	0.0	4.1	5.3
Gender (%)			
Male	22.2	44.9	47.6
Female	77.8	55.1	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=113)	Region (N=834)	U.S. (N=8,665)
Blood Type (%)			
O	42.5	44.4	46.0
A	38.9	37.5	35.9
B	12.4	12.7	13.4
AB	6.2	5.4	4.8
Previous Transplant (%)			
Yes	5.3	4.0	4.5
No	94.7	96.0	95.5
Body Mass Index (%)			
0-20	15.9	9.2	10.7
21-25	18.6	21.3	26.6
26-30	27.4	29.5	29.4
31-35	18.6	22.4	18.1
36-40	14.2	11.5	8.2
41+	5.3	5.5	4.0
Unknown	0.0	0.5	3.1
Primary Disease (%)			
Acute Hepatic Necrosis	6.2	3.7	6.4
Non-Cholestatic Cirrhosis	59.3	78.7	67.1
Cholestatic Liver Disease/Cirrhosis	4.4	4.7	6.7
Biliary Atresia	2.7	1.6	2.0
Metabolic Diseases	4.4	2.6	2.2
Malignant Neoplasms	16.8	7.0	12.3
Other	6.2	1.8	3.4
Missing	0.0	0.0	0.0
Medical Urgency Statust/MELD/PELD at Transplant (%)*			
Status 1A	6.2	3.4	3.2
Status 1B	0.9	0.5	0.9
MELD 6-10	13.3	8.6	10.1
MELD 11-14	3.5	5.5	6.6
MELD 15-20	14.2	12.6	14.6
MELD 21-30	32.7	35.7	30.3
MELD 31-40	22.1	24.0	24.9
PELD less than or equal to 10	1.8	0.5	1.2
PELD 11-14	0.0	0.4	0.2
PELD 15-20	0.9	0.7	0.5
PELD 21-30	1.8	0.4	0.3
PELD 31 or greater	0.0	0.0	0.3
Temporarily Inactive	0.0	0.0	0.0
Recipient Medical Condition at Transplant (%)			
Not Hospitalized	59.3	57.1	57.1
Hospitalized	22.1	27.6	26.6
ICU	18.6	15.0	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=9)	Region (N=49)	U.S. (N=569)
Blood Type (%)			
O	44.4	38.8	44.6
A	33.3	49.0	42.7
B	22.2	10.2	9.3
AB	0.0	2.0	3.3
Previous Transplant (%)			
Yes	0.0	2.0	1.6
No	100.0	98.0	98.4
Body Mass Index (%)			
0-20	44.4	16.3	19.9
21-25	11.1	32.7	32.5
26-30	44.4	32.7	27.9
31-35	0.0	10.2	10.0
36-40	0.0	4.1	5.4
41+	0.0	4.1	1.9
Unknown	0.0	0.0	2.3
Primary Disease (%)			
Acute Hepatic Necrosis	0.0	0.0	1.2
Non-Cholestatic Cirrhosis	11.1	63.3	47.8
Cholestatic Liver Disease/Cirrhosis	33.3	14.3	22.0
Biliary Atresia	44.4	8.2	10.5
Metabolic Diseases	0.0	2.0	2.3
Malignant Neoplasms	0.0	6.1	11.8
Other	11.1	6.1	4.4
Missing	0.0	0.0	0.0
Medical Urgency Statust/MELD/PELD at Transplant (%)*			
Status 1A	0.0	0.0	0.5
Status 1B	0.0	0.0	1.1
MELD 6-10	11.1	26.5	25.7
MELD 11-14	11.1	26.5	18.3
MELD 15-20	22.2	26.5	28.6
MELD 21-30	22.2	14.3	12.5
MELD 31-40	0.0	0.0	0.7
PELD less than or equal to 10	22.2	4.1	4.6
PELD 11-14	0.0	0.0	1.2
PELD 15-20	0.0	0.0	2.3
PELD 21-30	0.0	0.0	2.5
PELD 31 or greater	11.1	2.0	0.9
Temporarily Inactive	0.0	0.0	1.2
Recipient Medical Condition at Transplant (%)			
Not Hospitalized	88.9	91.8	85.9
Hospitalized	11.1	8.2	9.5
ICU	0.0	0.0	3.7
Unknown	0.0	0.0	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=113)	Region (N=834)	U.S. (N=8,665)
Cause of Death (%)			
Deceased: Stroke	29.2	23.6	25.9
Deceased: MVA	6.2	12.9	12.8
Deceased: Other	64.6	63.4	61.3
Ethnicity/Race (%)*			
White	68.1	66.2	61.9
African-American	17.7	23.0	18.1
Hispanic/Latino	12.4	8.3	15.8
Asian	1.8	1.7	3.0
Other	0.0	0.8	1.2
Not Reported	0.0	0.0	0.0
Age (%)			
<2 years	3.5	0.6	0.9
2-11 years	2.7	1.8	2.3
12-17	0.9	5.3	4.7
18-34	32.7	34.2	32.0
35-49 years	30.1	30.9	29.0
50-64 years	25.7	22.8	23.6
65-69 years	4.4	3.5	4.2
70+ years	0.0	1.0	3.2
Gender (%)			
Male	60.2	64.0	62.6
Female	39.8	36.0	37.4
Blood Type (%)			
O	47.8	47.6	49.7
A	38.9	38.4	36.4
B	9.7	10.4	11.2
AB	3.5	3.6	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=9)	Region (N=49)	U.S. (N=569)
Ethnicity/Race (%)*			
White	77.8	85.7	77.9
African-American	22.2	8.2	3.3
Hispanic/Latino	0.0	0.0	14.6
Asian	0.0	2.0	3.2
Other	0.0	4.1	1.1
Not Reported	0.0	0.0	0.0
Age (%)			
0-11 years	0.0	0.0	0.0
12-17	0.0	2.0	0.2
18-34	22.2	34.7	44.3
35-49 years	55.6	49.0	43.1
50-64 years	22.2	14.3	12.1
65-69 years	0.0	0.0	0.4
70+ years	0.0	0.0	0.0
Gender (%)			
Male	33.3	49.0	43.8
Female	66.7	51.0	56.2
Blood Type (%)			
O	88.9	61.2	63.6
A	11.1	36.7	30.1
B	0.0	2.0	5.4
AB	0.0	0.0	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=113)	Region (N=834)	U.S. (N=8,665)
Cold Ischemic Time (Hours): Local (%)			
Deceased: 0-5 hr	73.9	71.1	69.2
Deceased: 6-10 hr	26.1	27.9	29.1
Deceased: 11-15 hr	0.0	0.5	0.9
Deceased: 16-20 hr	0.0	0.5	0.1
Deceased: 21+ hr	0.0	0.0	0.1
Not Reported	0.0	0.0	0.5
Cold Ischemic Time (Hours): Shared (%)			
Deceased: 0-5 hr	46.7	39.7	45.1
Deceased: 6-10 hr	53.3	57.8	51.7
Deceased: 11-15 hr	0.0	0.6	1.9
Deceased: 16-20 hr	0.0	0.0	0.3
Deceased: 21+ hr	0.0	0.3	0.2
Not Reported	0.0	1.6	0.8
Procedure Type (%)			
Single organ	89.4	92.9	89.8
Multi organ	10.6	7.1	10.2
Donor Location (%)			
Local Donation Service Area (DSA)	20.4	24.1	34.6
Another Donation Service Area (DSA)	79.6	75.9	65.4
Median Time in Hospital After Transplant	13.0 Days	10.0 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=9)	Region (N=49)	U.S. (N=569)
Relation with Donor (%)			
Related	55.6	59.2	56.9
Unrelated	44.4	40.8	42.9
Not Reported	0.0	0.0	0.2
Procedure Type (%)			
Single organ	100.0	100.0	100.0
Multi organ	0.0	0.0	0.0
Median Time in Hospital After Transplant	16.0 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

	NCDU	U.S.
Number of transplants evaluated	222	17,361
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	98.63%	96.90%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	97.18%	--
Number of observed graft failures (including deaths) during the first month after transplant	3	531
Number of expected graft failures (including deaths) during the first month after transplant	6.24	--
Estimated hazard ratio*	0.61	--
95% credible interval for the hazard ratio**	[0.20, 1.24]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.20, 1.24], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 39% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 80% reduced risk up to 24% increased risk.

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

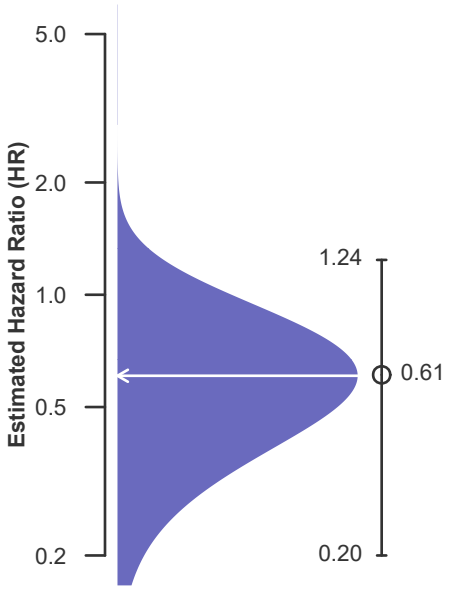
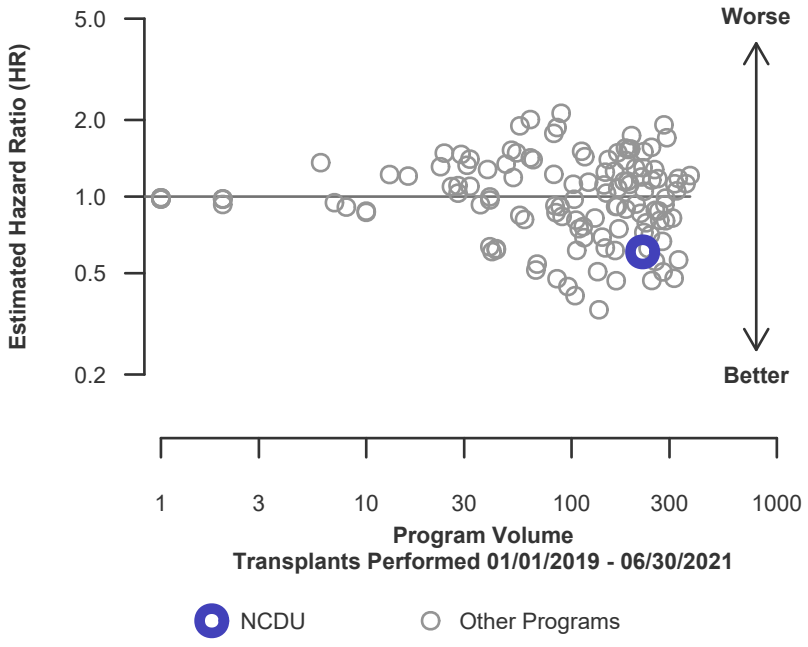


Figure C2. Adult (18+) 1-month graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	216	16,325
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	98.59%	96.84%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	97.16%	--
Number of observed graft failures (including deaths) during the first month after transplant	3	509
Number of expected graft failures (including deaths) during the first month after transplant	6.11	--
Estimated hazard ratio*	0.62	--
95% credible interval for the hazard ratio**	[0.20, 1.26]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.20, 1.26], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 38% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 80% reduced risk up to 26% increased risk.

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

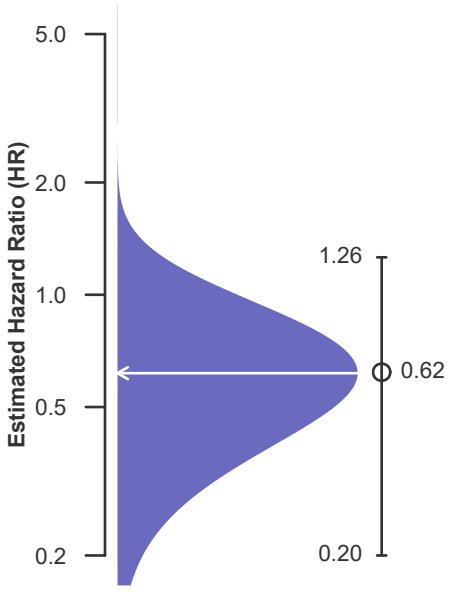
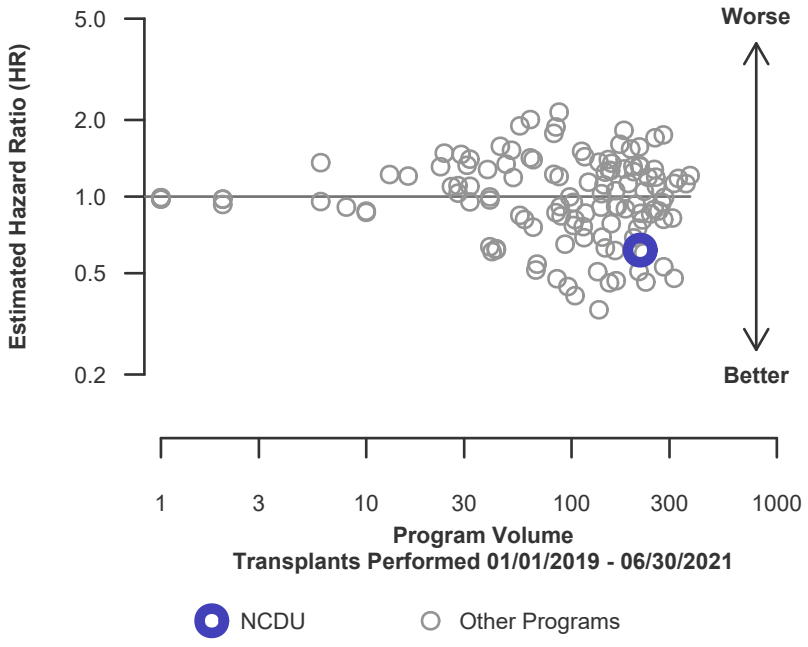


Figure C2D. Adult (18+) 1-month deceased donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	6	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	0.13	--
Estimated hazard ratio*	0.94	--
95% credible interval for the hazard ratio**	[0.11, 2.62]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.11, 2.62], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 6% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 89% reduced risk up to 162% increased risk.

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

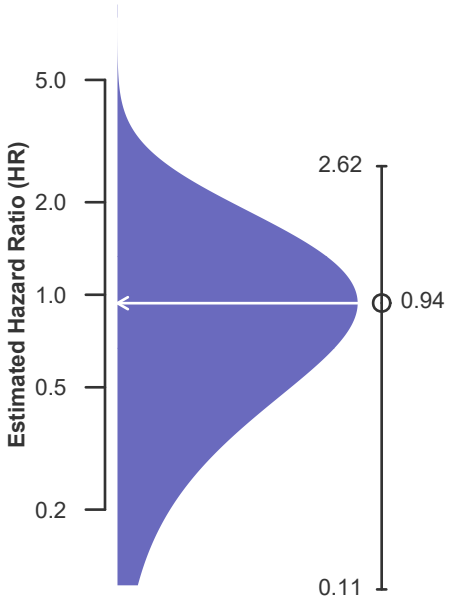
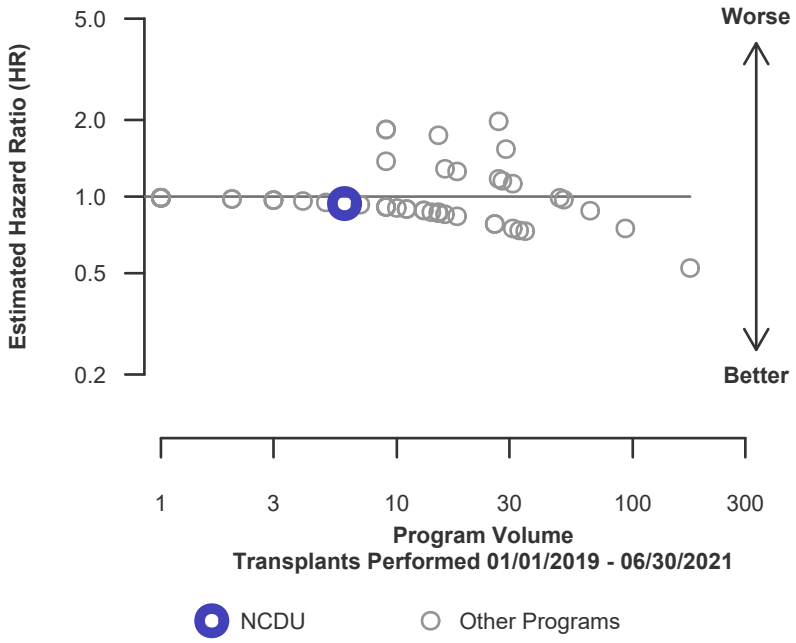


Figure C2L. Adult (18+) 1-month living donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	222	17,361
Estimated probability of surviving with a functioning graft at 90 days (unadjusted for patient and donor characteristics)	97.65%	95.51%
Expected probability of surviving with a functioning graft at 90 days (adjusted for patient and donor characteristics)	95.76%	--
Number of observed graft failures (including deaths) during the first 90 days after transplant	5	755
Number of expected graft failures (including deaths) during the first 90 days after transplant	9.22	--
Estimated hazard ratio*	0.62	--
95% credible interval for the hazard ratio**	[0.25, 1.16]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.25, 1.16], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 38% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 75% reduced risk up to 16% increased risk.

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

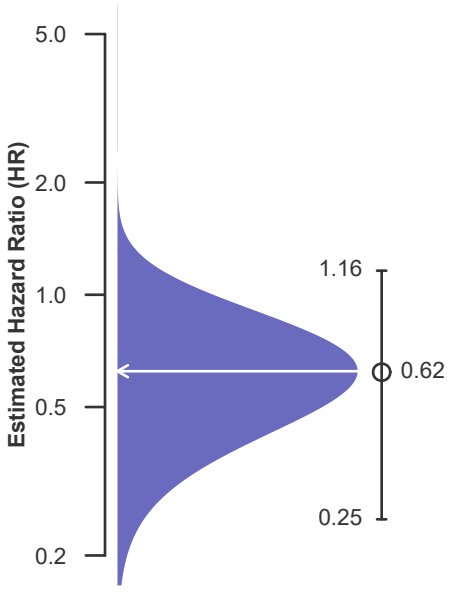
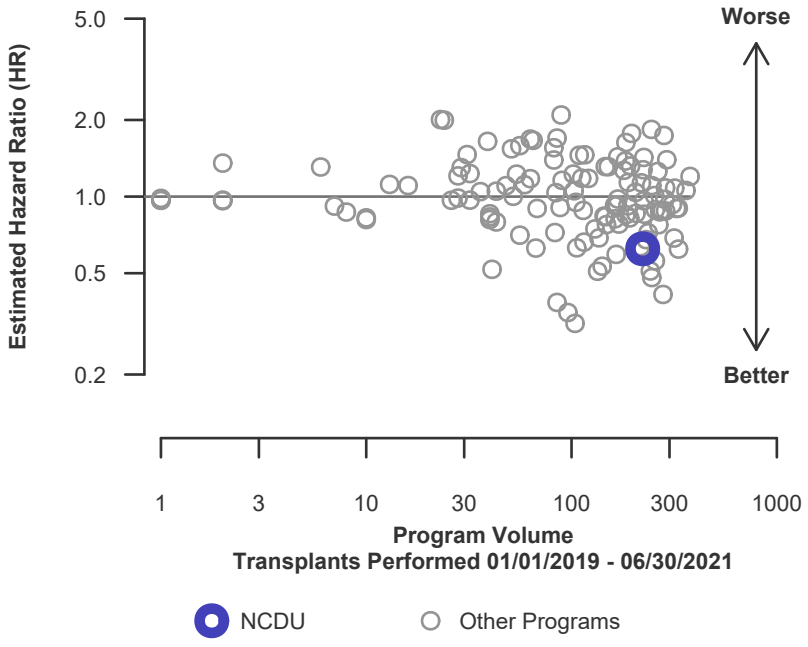


Figure C4. Adult (18+) 90-Day graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	216	16,325
Estimated probability of surviving with a functioning graft at 90 days (unadjusted for patient and donor characteristics)	98.08%	95.49%
Expected probability of surviving with a functioning graft at 90 days (adjusted for patient and donor characteristics)	95.76%	--
Number of observed graft failures (including deaths) during the first 90 days after transplant	4	714
Number of expected graft failures (including deaths) during the first 90 days after transplant	8.98	--
Estimated hazard ratio*	0.55	--
95% credible interval for the hazard ratio**	[0.20, 1.06]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.20, 1.06], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 45% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 80% reduced risk up to 6% increased risk.

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

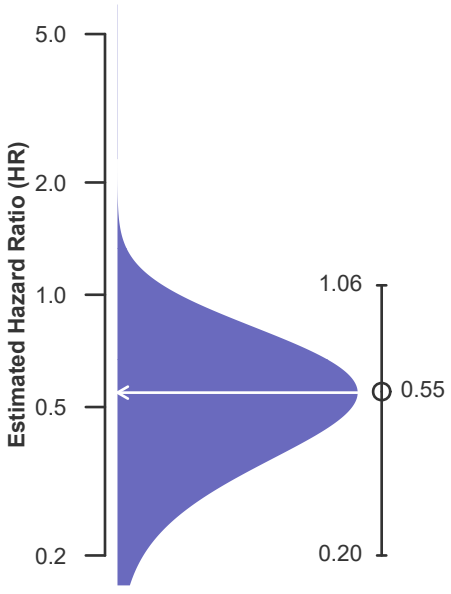
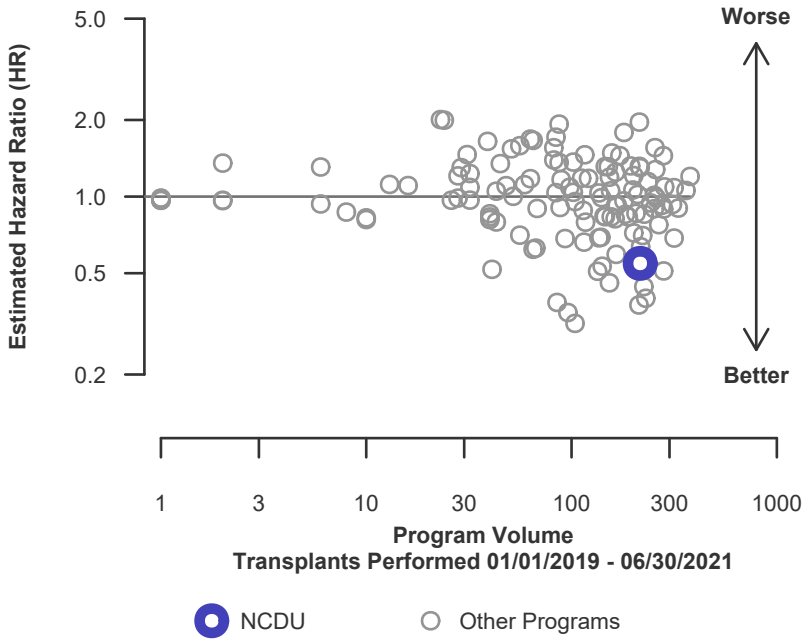


Figure C4D. Adult (18+) 90-Day deceased donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	6	1,036
Estimated probability of surviving with a functioning graft at 90 days (unadjusted for patient and donor characteristics)	83.33%	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	1	41
Number of expected graft failures (including deaths) during the first 90 days after transplant	0.24	--
Estimated hazard ratio*	1.34	--
95% credible interval for the hazard ratio**	[0.28, 3.22]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.28, 3.22], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 34% higher risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 72% reduced risk up to 222% increased risk.

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

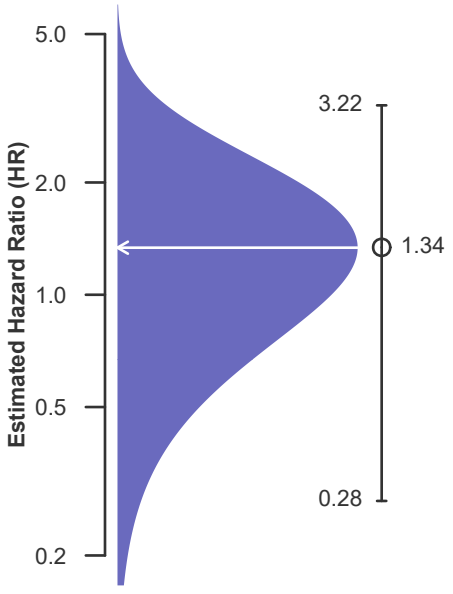
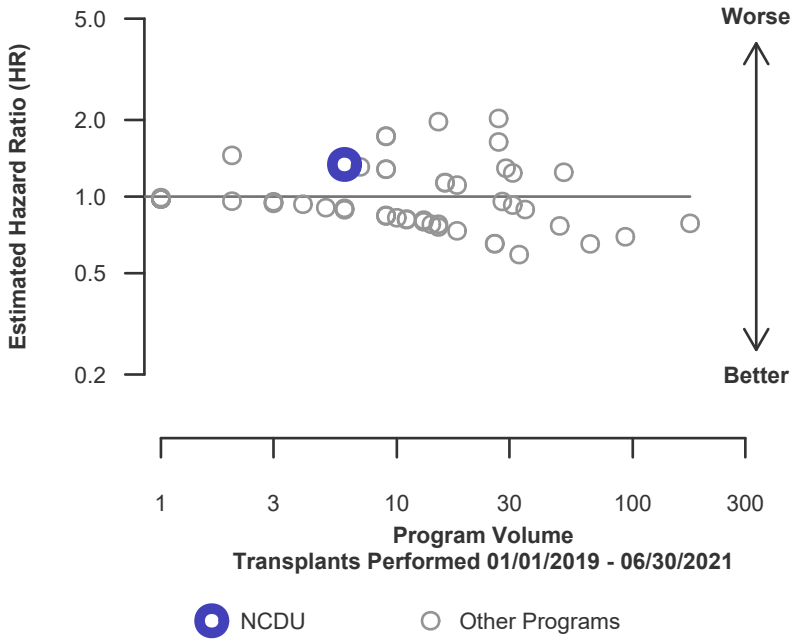


Figure C4L. Adult (18+) 90-Day living donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	222	17,361
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	95.53%	92.28%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	92.54%	--
Number of observed graft failures (including deaths) during the first year after transplant	7	1,106
Number of expected graft failures (including deaths) during the first year after transplant	13.77	--
Estimated hazard ratio*	0.57	--
95% credible interval for the hazard ratio**	[0.26, 1.00]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.26, 1.00], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 43% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 74% reduced risk up to 0% reduced risk.

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

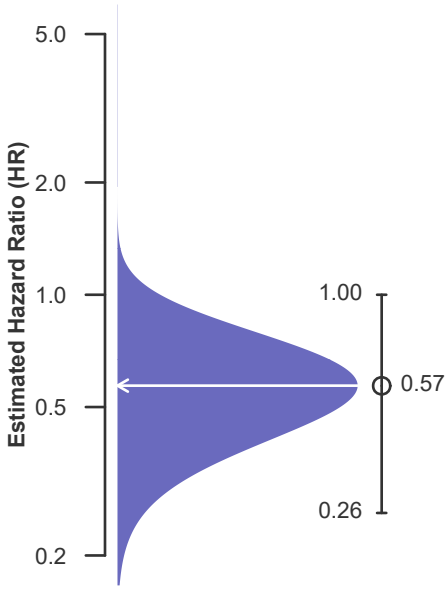
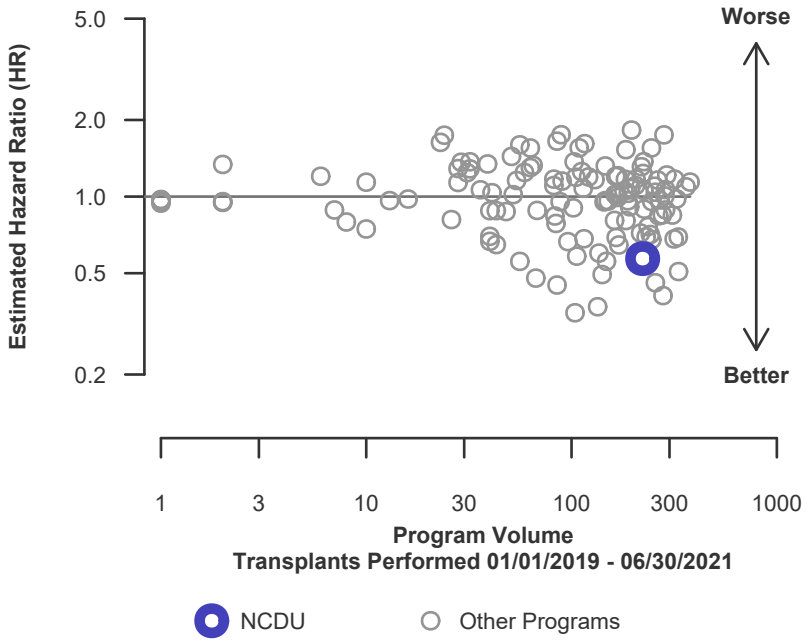


Figure C6. Adult (18+) 1-year graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	216	16,325
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	96.88%	92.28%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	92.55%	--
Number of observed graft failures (including deaths) during the first year after transplant	5	1,045
Number of expected graft failures (including deaths) during the first year after transplant	13.44	--
Estimated hazard ratio*	0.45	--
95% credible interval for the hazard ratio**	[0.18, 0.85]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.18, 0.85], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 55% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 82% reduced risk up to 15% reduced risk.

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

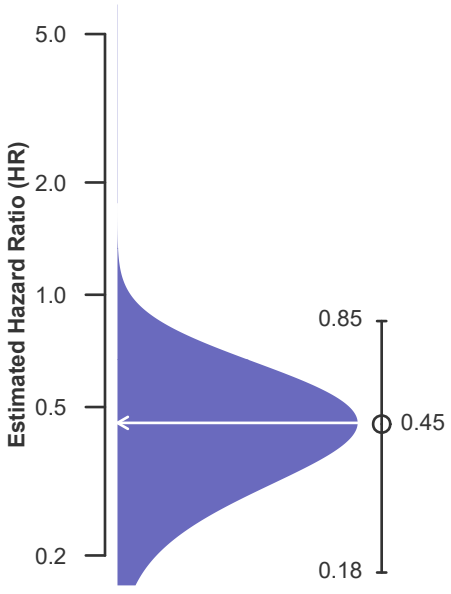
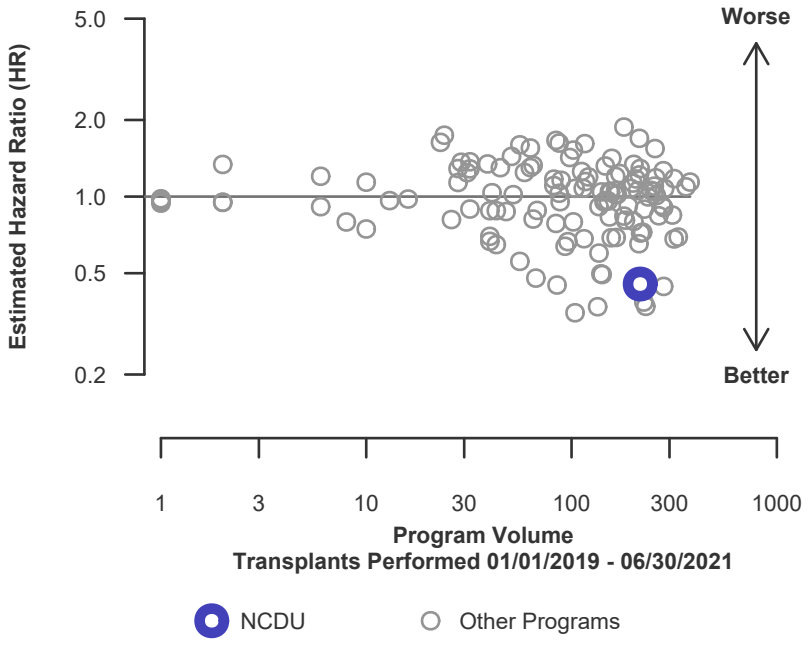


Figure C6D. Adult (18+) 1-year deceased donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	6	1,036
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	41.67%	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	2	61
Number of expected graft failures (including deaths) during the first year after transplant	0.33	--
Estimated hazard ratio*	1.71	--
95% credible interval for the hazard ratio**	[0.47, 3.76]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.47, 3.76], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 71% higher risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 53% reduced risk up to 276% increased risk.

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

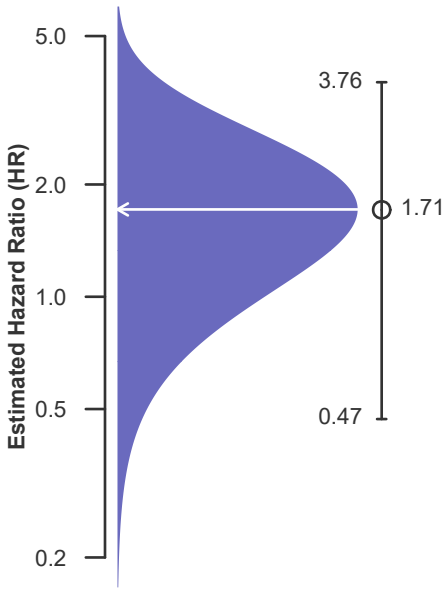
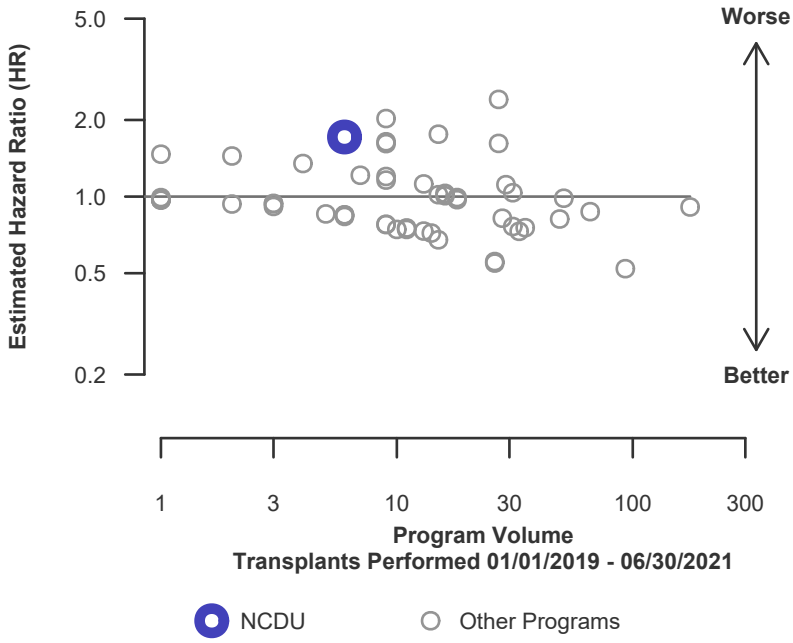


Figure C6L. Adult (18+) 1-year living donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	192	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)	97.83%	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)	96.63%	--
Number of observed graft failures (including deaths) from day 91 through day 365 after transplant	2	351
Number of expected graft failures (including deaths) from day 91 through day 365 after transplant	4.55	--
Estimated hazard ratio*	0.61	--
95% credible interval for the hazard ratio**	[0.17, 1.34]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.17, 1.34], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 39% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 83% reduced risk up to 34% increased risk.

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

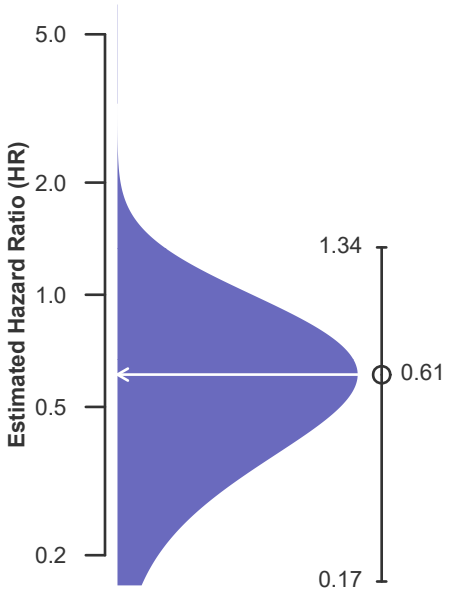
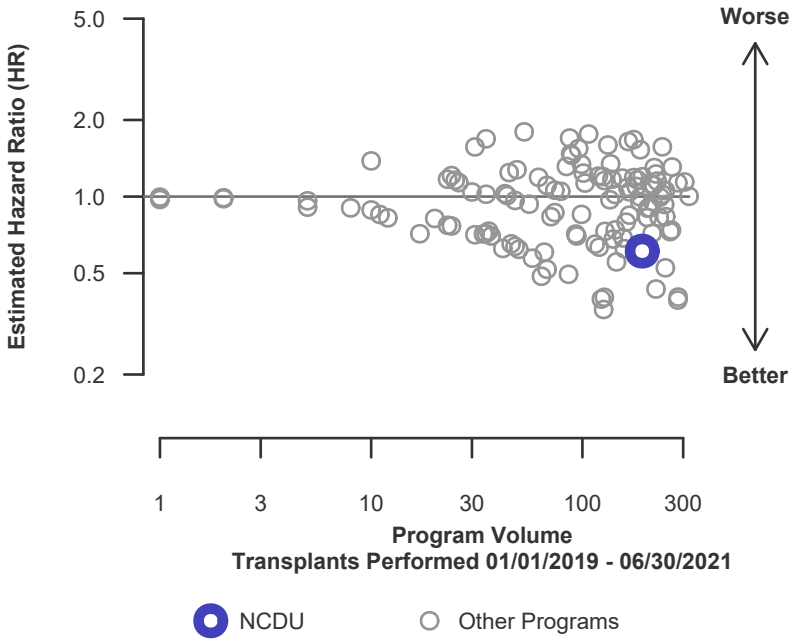


Figure C8. Adult (18+) 1-year Conditional graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	187	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)	98.78%	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)	96.64%	--
Number of observed graft failures (including deaths) from day 91 through day 365 after transplant	1	331
Number of expected graft failures (including deaths) from day 91 through day 365 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 Duke University Hospital'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 NCDU's graft failure 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 NCDU's true hazard ratio with 95% probability. The best estimate is 54% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 90% reduced risk up to 12% increased risk.

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

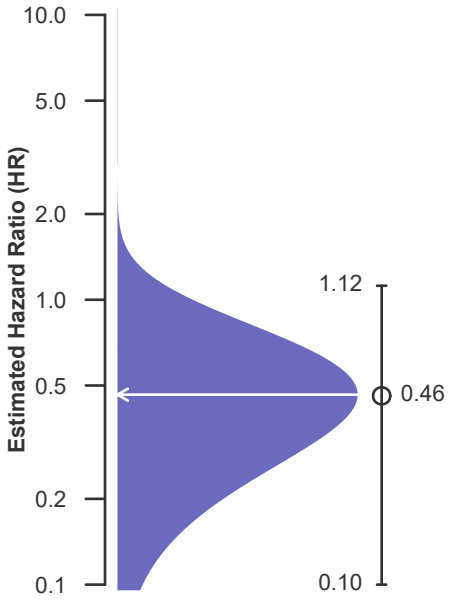
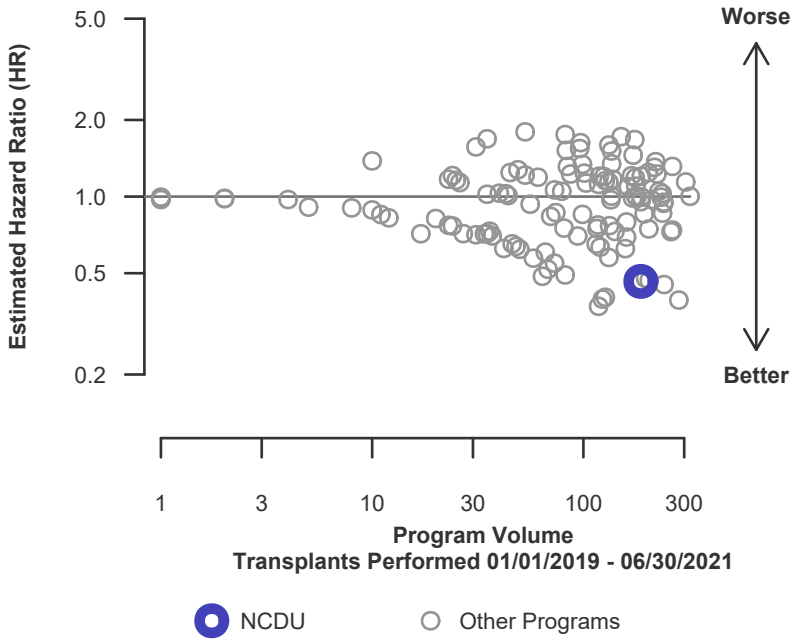


Figure C8D. Adult (18+) 1-year Conditional deceased donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	5	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)	50.00%	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	1	20
Number of expected graft failures (including deaths) from day 91 through day 365 after transplant	0.09	--
Estimated hazard ratio*	1.44	--
95% credible interval for the hazard ratio**	[0.30, 3.46]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.30, 3.46], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 44% higher risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 70% reduced risk up to 246% increased risk.

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

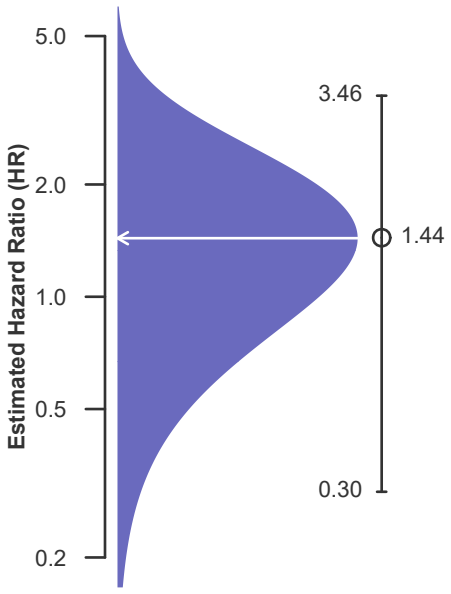
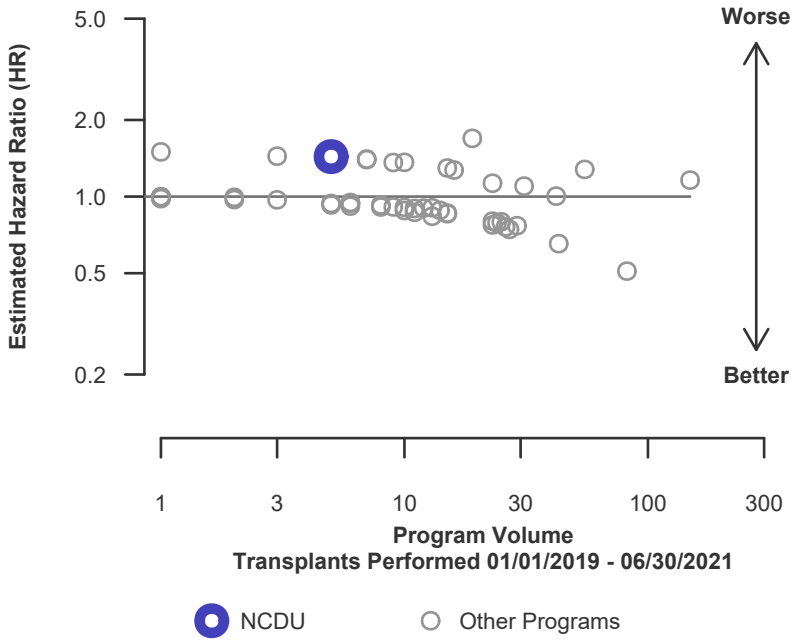


Figure C8L. Adult (18+) 1-year Conditional living donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	177	16,922
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	88.10%	85.91%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	86.95%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	18	2,109
Number of expected graft failures (including deaths) during the first 3 years after transplant	21.11	--
Estimated hazard ratio*	0.87	--
95% credible interval for the hazard ratio**	[0.53, 1.28]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.53, 1.28], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 13% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 47% reduced risk up to 28% increased risk.

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

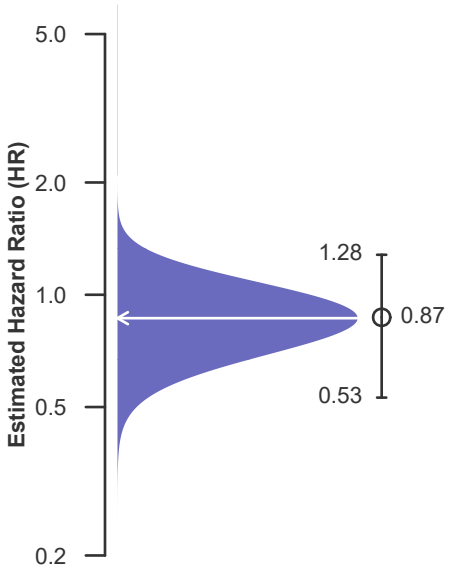
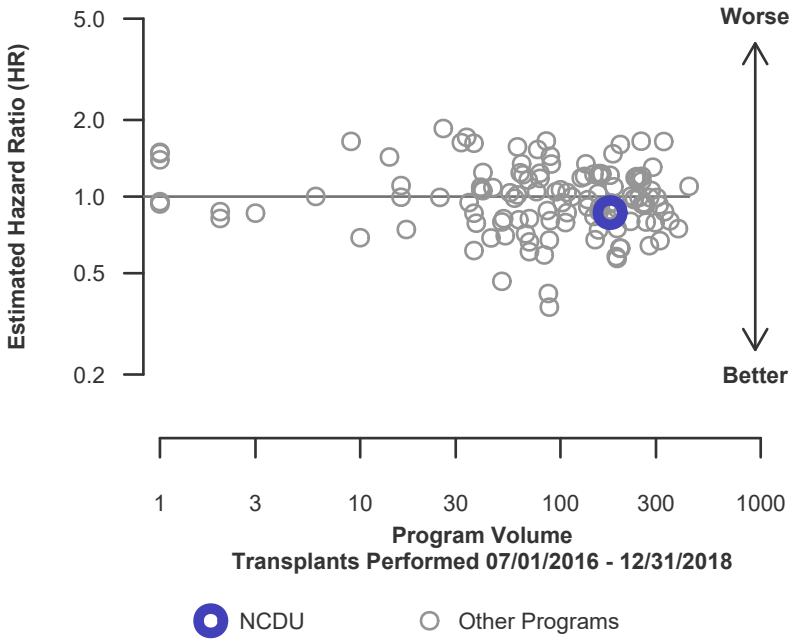


Figure C10. Adult (18+) 3-year graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	177	16,150
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	88.10%	85.86%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	86.95%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	18	2,020
Number of expected graft failures (including deaths) during the first 3 years after transplant	21.11	--
Estimated hazard ratio*	0.87	--
95% credible interval for the hazard ratio**	[0.53, 1.28]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.53, 1.28], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 13% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 47% reduced risk up to 28% increased risk.

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

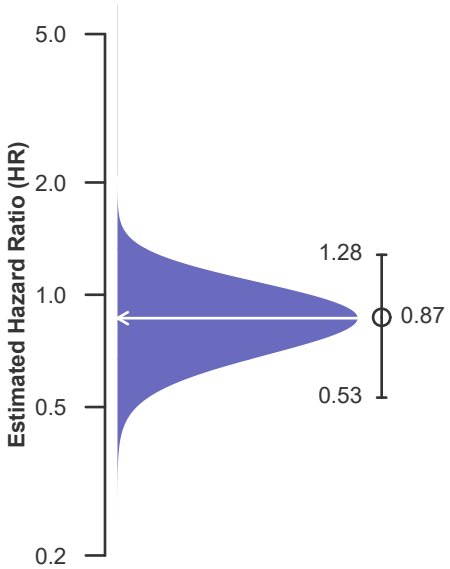
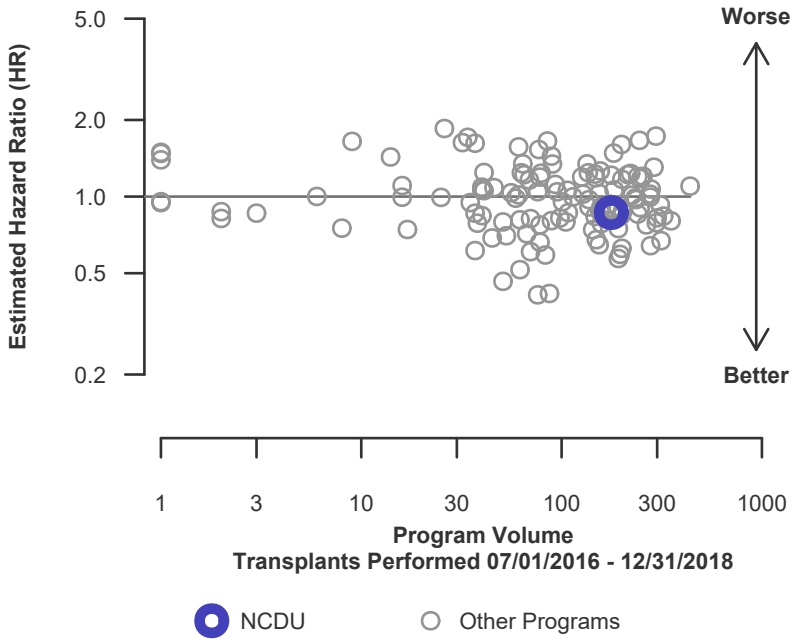


Figure C10D. Adult (18+) 3-year deceased donor graft failure HR program comparison



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

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

Figure C9L. Adult (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 C10L. Adult (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 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

	NCDU	U.S.
Number of transplants evaluated	24	1,140
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	90.68%	95.84%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	95.16%	--
Number of observed graft failures (including deaths) during the first month after transplant	2	47
Number of expected graft failures (including deaths) during the first month after transplant	1.18	--
Estimated hazard ratio*	1.26	--
95% credible interval for the hazard ratio**	[0.34, 2.76]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.34, 2.76], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 26% higher risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 66% reduced risk up to 176% increased risk.

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

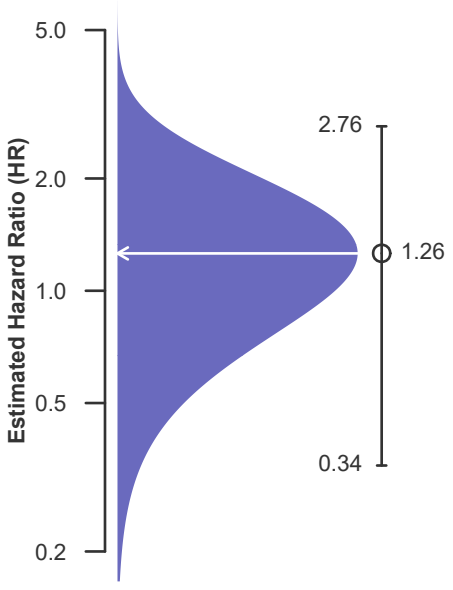
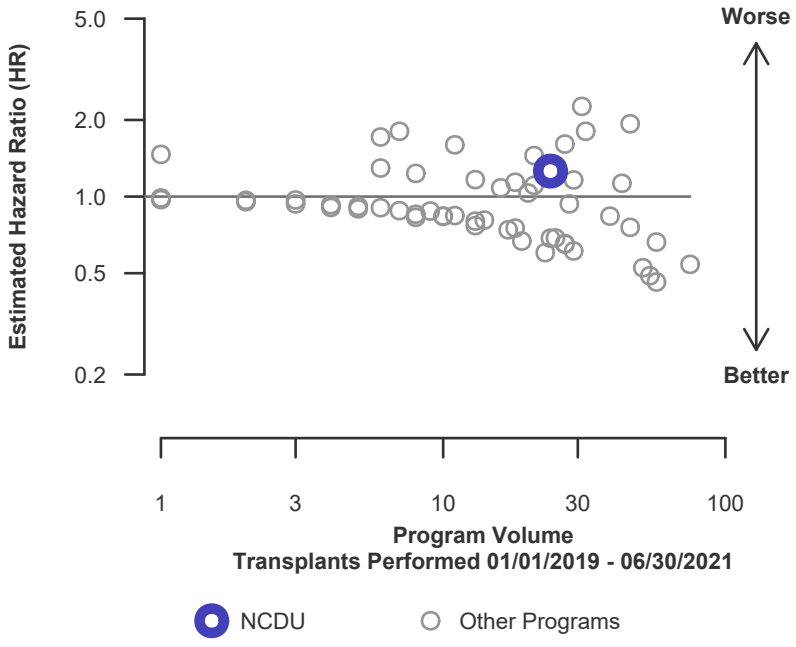


Figure C12. Pediatric (<18) 1-month graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	22	971
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	90.23%	95.64%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	95.00%	--
Number of observed graft failures (including deaths) during the first month after transplant	2	42
Number of expected graft failures (including deaths) during the first month after transplant	1.13	--
Estimated hazard ratio*	1.28	--
95% credible interval for the hazard ratio**	[0.35, 2.80]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.35, 2.80], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 28% higher risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 65% reduced risk up to 180% increased risk.

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

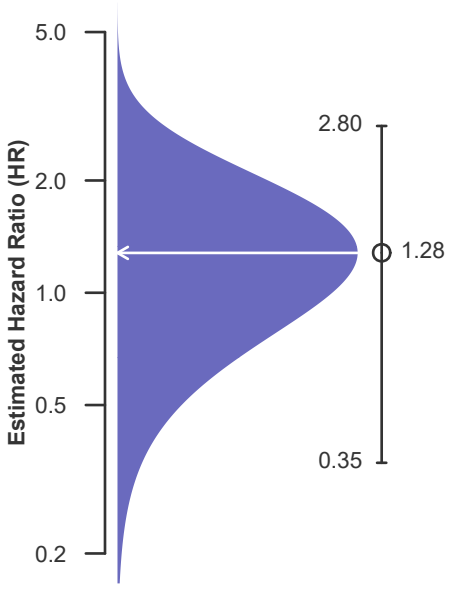
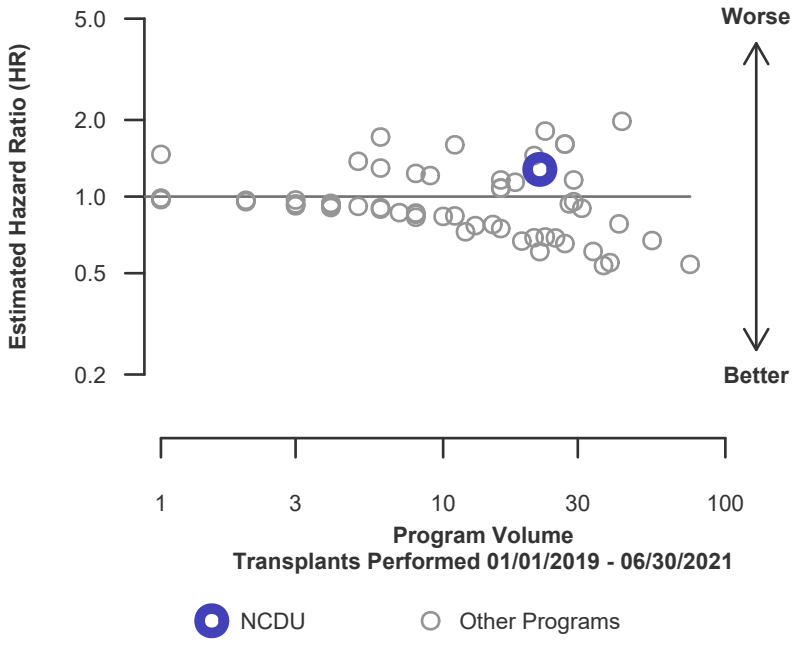


Figure C12D. Pediatric (<18) 1-month deceased donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	2	169
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	100.00%	96.97%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	96.98%	--
Number of observed graft failures (including deaths) during the first month after transplant	0	5
Number of expected graft failures (including deaths) during the first month after transplant	0.05	--
Estimated hazard ratio*	0.98	--
95% credible interval for the hazard ratio**	[0.12, 2.72]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.12, 2.72], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 2% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 88% reduced risk up to 172% increased risk.

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

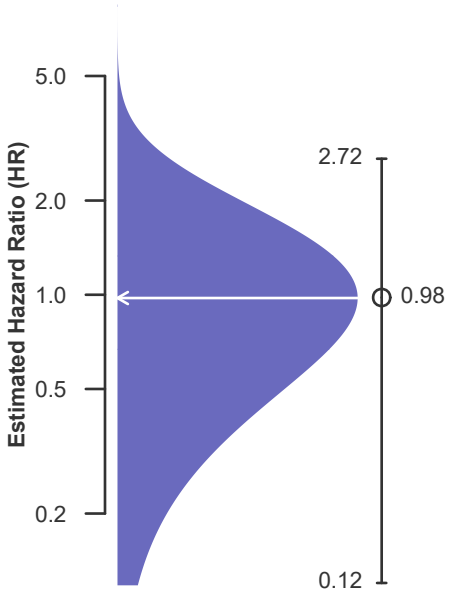
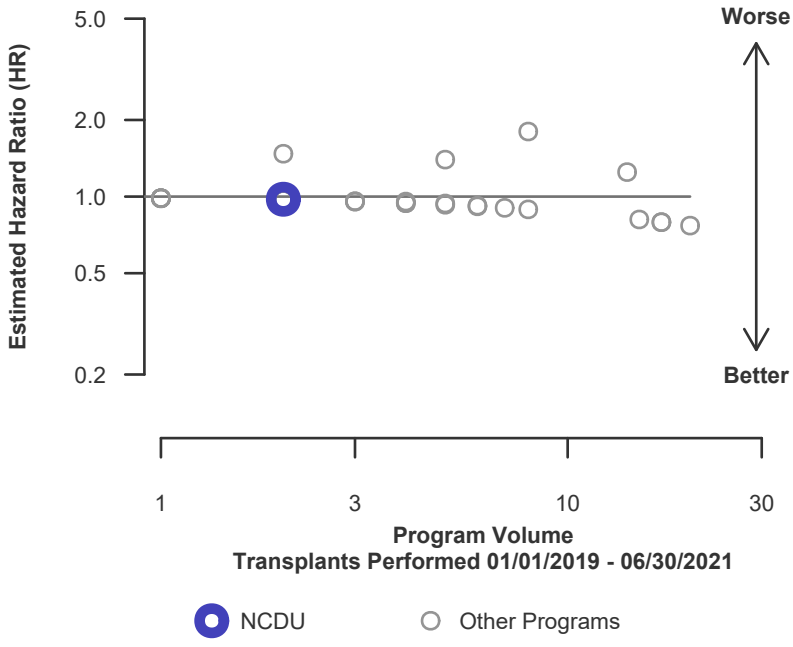


Figure C12L. Pediatric (<18) 1-month living donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	24	1,140
Estimated probability of surviving with a functioning graft at 90 days (unadjusted for patient and donor characteristics)	90.68%	94.81%
Expected probability of surviving with a functioning graft at 90 days (adjusted for patient and donor characteristics)	93.99%	--
Number of observed graft failures (including deaths) during the first 90 days after transplant	2	58
Number of expected graft failures (including deaths) during the first 90 days after transplant	1.42	--
Estimated hazard ratio*	1.17	--
95% credible interval for the hazard ratio**	[0.32, 2.56]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.32, 2.56], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 17% higher risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 68% reduced risk up to 156% increased risk.

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

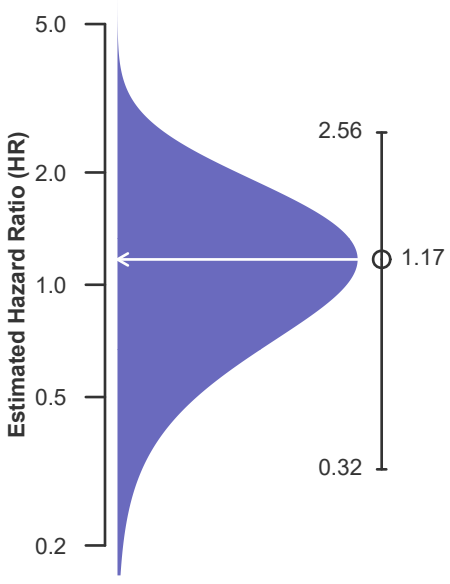
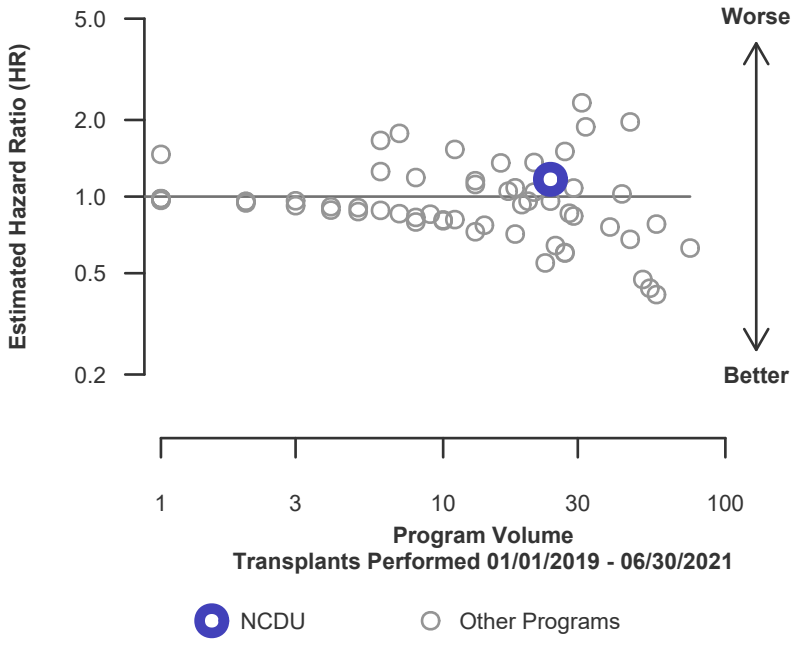


Figure C14. Pediatric (<18) 90-Day graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	22	971
Estimated probability of surviving with a functioning graft at 90 days (unadjusted for patient and donor characteristics)	90.23%	94.54%
Expected probability of surviving with a functioning graft at 90 days (adjusted for patient and donor characteristics)	93.78%	--
Number of observed graft failures (including deaths) during the first 90 days after transplant	2	52
Number of expected graft failures (including deaths) during the first 90 days after transplant	1.37	--
Estimated hazard ratio*	1.19	--
95% credible interval for the hazard ratio**	[0.32, 2.60]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.32, 2.60], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 19% higher risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 68% reduced risk up to 160% increased risk.

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

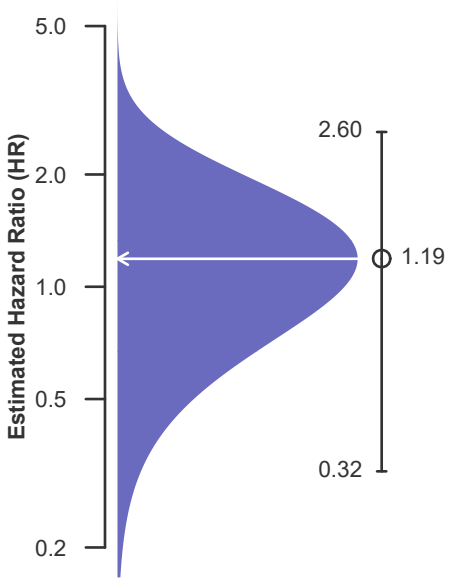
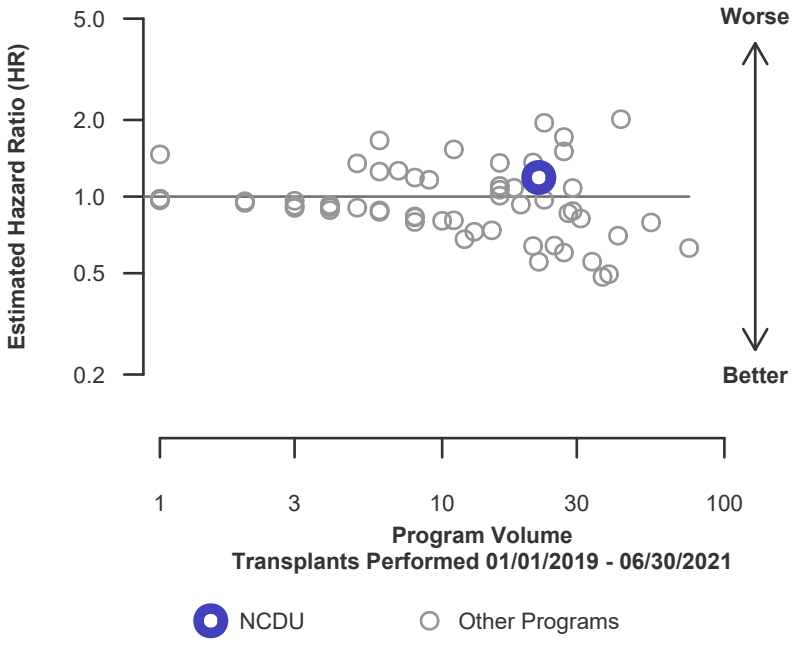


Figure C14D. Pediatric (<18) 90-Day deceased donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	2	169
Estimated probability of surviving with a functioning graft at 90 days (unadjusted for patient and donor characteristics)	100.00%	96.31%
Expected probability of surviving with a functioning graft at 90 days (adjusted for patient and donor characteristics)	96.33%	--
Number of observed graft failures (including deaths) during the first 90 days after transplant	0	6
Number of expected graft failures (including deaths) during the first 90 days after transplant	0.06	--
Estimated hazard ratio*	0.97	--
95% credible interval for the hazard ratio**	[0.12, 2.71]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.12, 2.71], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 3% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 88% reduced risk up to 171% increased risk.

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

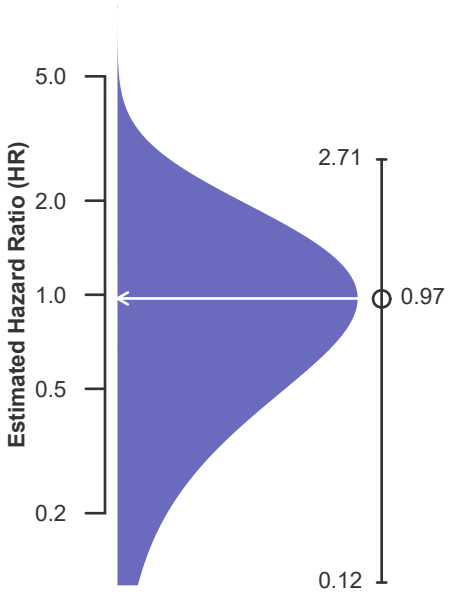
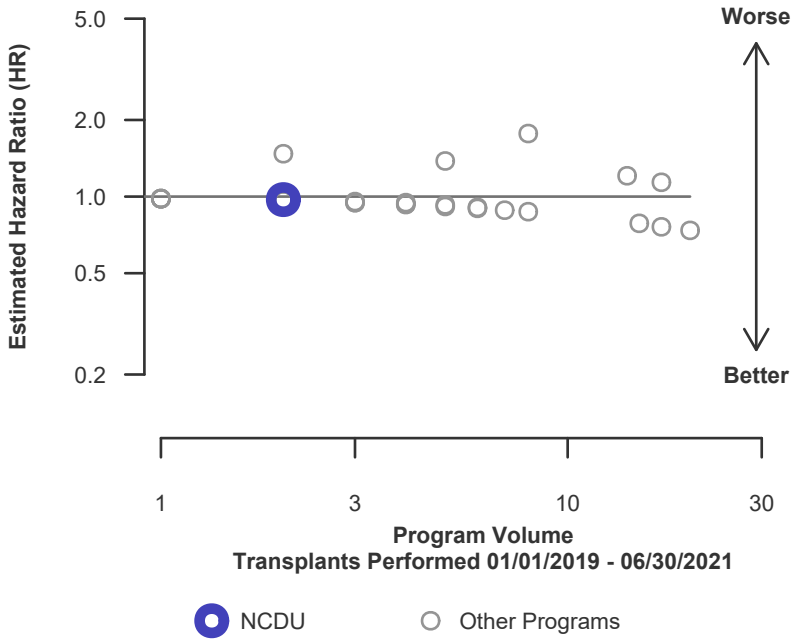


Figure C14L. Pediatric (<18) 90-Day living donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	24	1,140
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	90.68%	92.39%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	90.88%	--
Number of observed graft failures (including deaths) during the first year after transplant	2	74
Number of expected graft failures (including deaths) during the first year after transplant	1.75	--
Estimated hazard ratio*	1.07	--
95% credible interval for the hazard ratio**	[0.29, 2.34]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.29, 2.34], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 7% higher risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 71% reduced risk up to 134% increased risk.

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

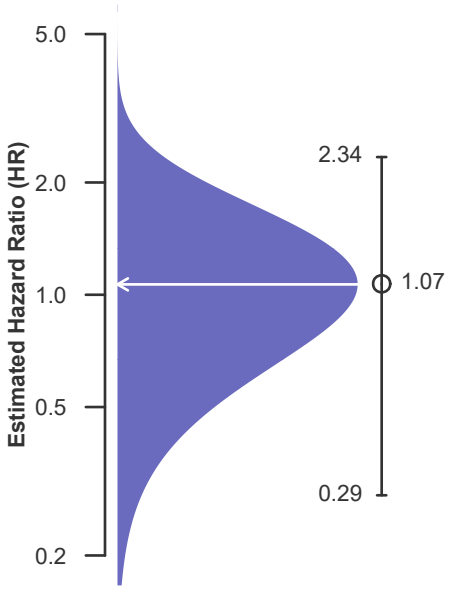
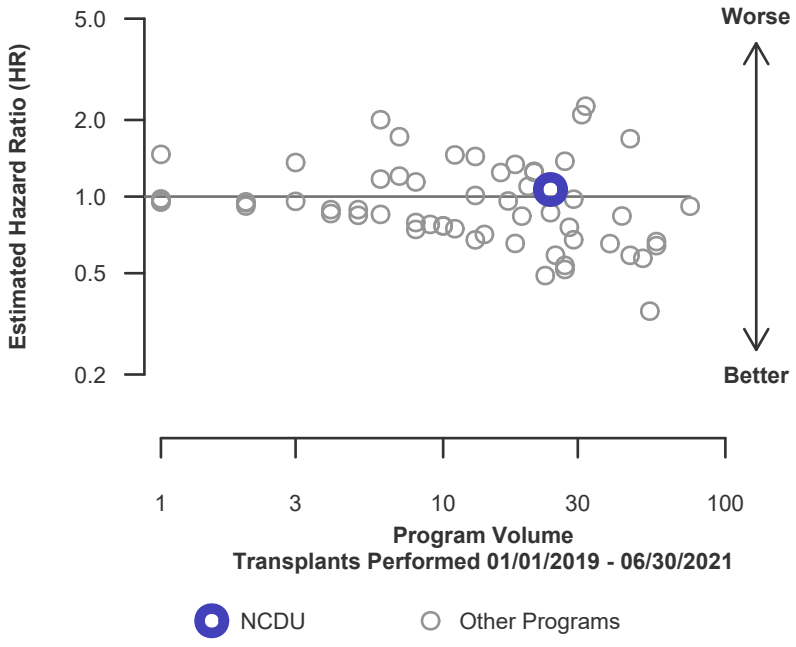


Figure C16. Pediatric (<18) 1-year graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	22	971
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	90.23%	92.53%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	90.85%	--
Number of observed graft failures (including deaths) during the first year after transplant	2	64
Number of expected graft failures (including deaths) during the first year after transplant	1.69	--
Estimated hazard ratio*	1.08	--
95% credible interval for the hazard ratio**	[0.30, 2.38]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.30, 2.38], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 8% higher risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 70% reduced risk up to 138% increased risk.

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

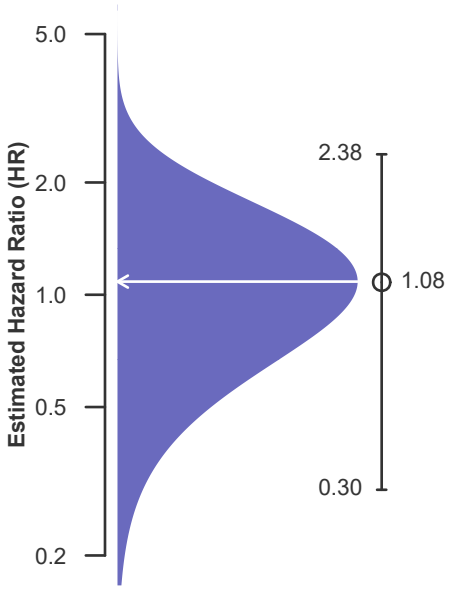
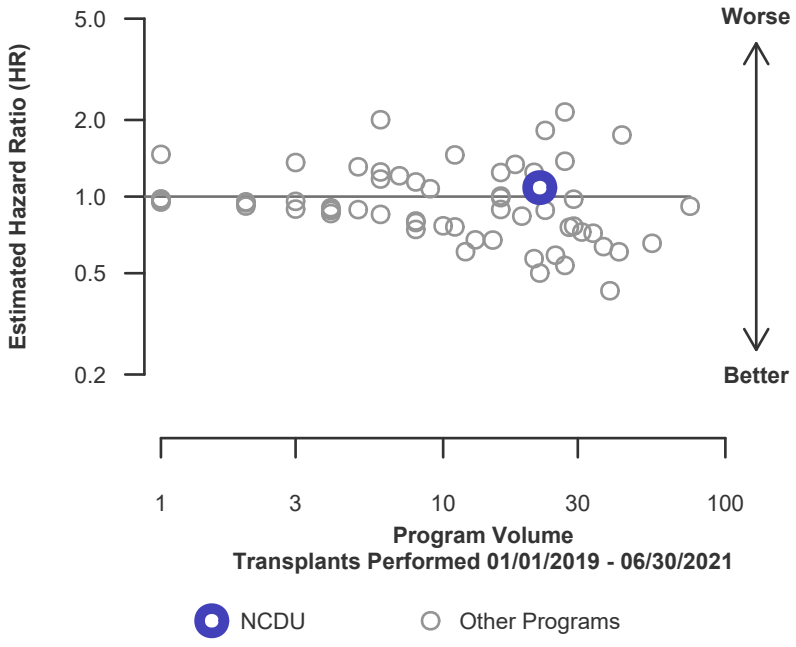


Figure C16D. Pediatric (<18) 1-year deceased donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	2	169
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	100.00%	91.15%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	91.20%	--
Number of observed graft failures (including deaths) during the first year after transplant	0	10
Number of expected graft failures (including deaths) during the first year after transplant	0.06	--
Estimated hazard ratio*	0.97	--
95% credible interval for the hazard ratio**	[0.12, 2.70]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.12, 2.70], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 3% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 88% reduced risk up to 170% increased risk.

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

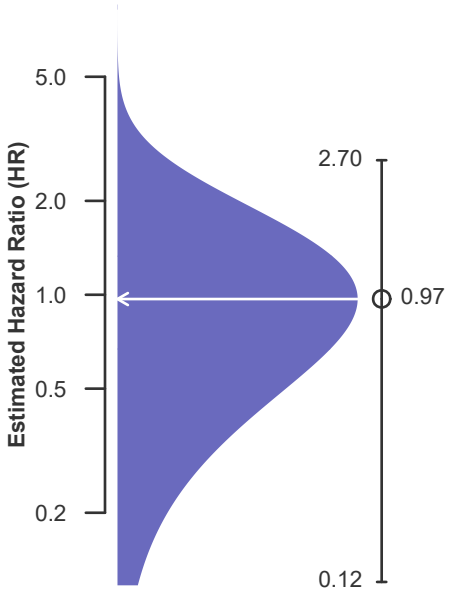
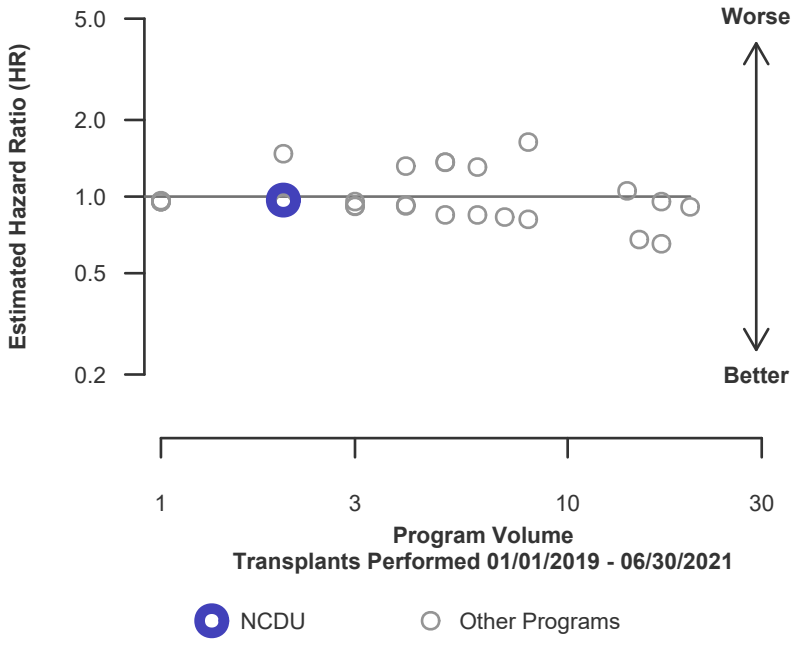


Figure C16L. Pediatric (<18) 1-year living donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	18	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)	96.69%	--
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	0.33	--
Estimated hazard ratio*	0.86	--
95% credible interval for the hazard ratio**	[0.10, 2.39]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.10, 2.39], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 14% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 90% reduced risk up to 139% increased risk.

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

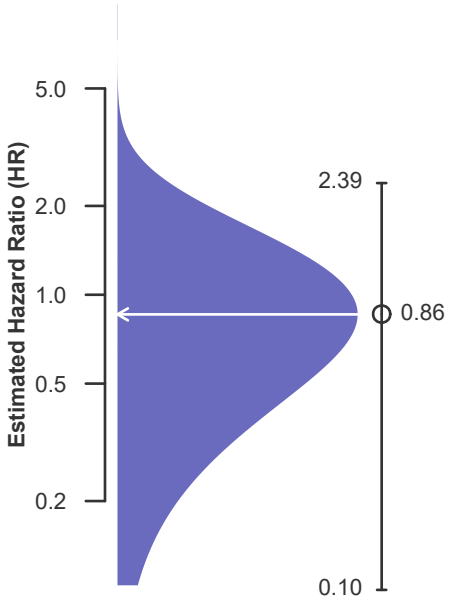
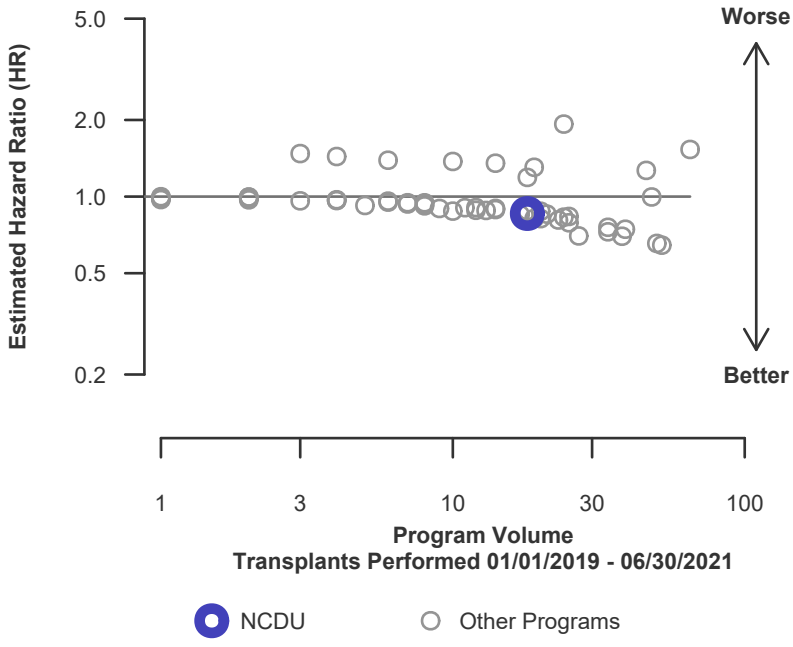


Figure C18. Pediatric (<18) 1-year Conditional graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	17	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)	96.87%	--
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	0.32	--
Estimated hazard ratio*	0.86	--
95% credible interval for the hazard ratio**	[0.10, 2.40]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.10, 2.40], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 14% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 90% reduced risk up to 140% increased risk.

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

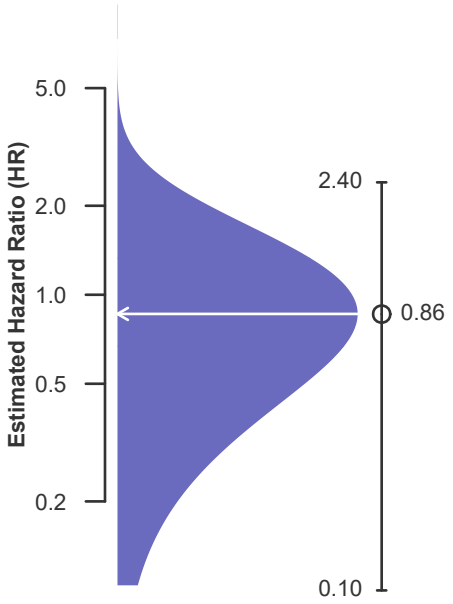
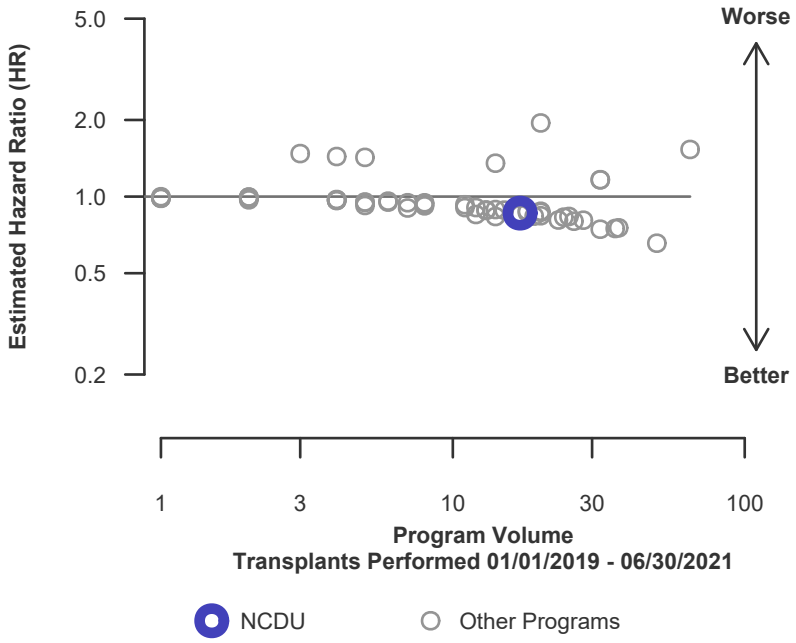


Figure C18D. Pediatric (<18) 1-year Conditional deceased donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	1	138
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%	94.64%
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)	94.68%	--
Number of observed graft failures (including deaths) from day 91 through day 365 after transplant	0	4
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 Duke University Hospital'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 NCDU'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 NCDU's true hazard ratio with 95% probability. The best estimate is 0% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 88% reduced risk up to 177% increased risk.

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

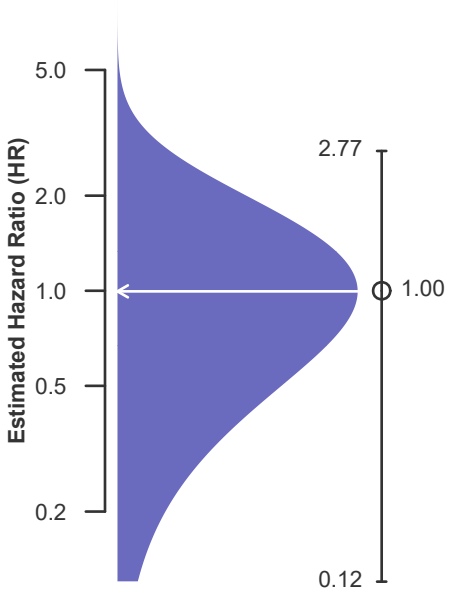
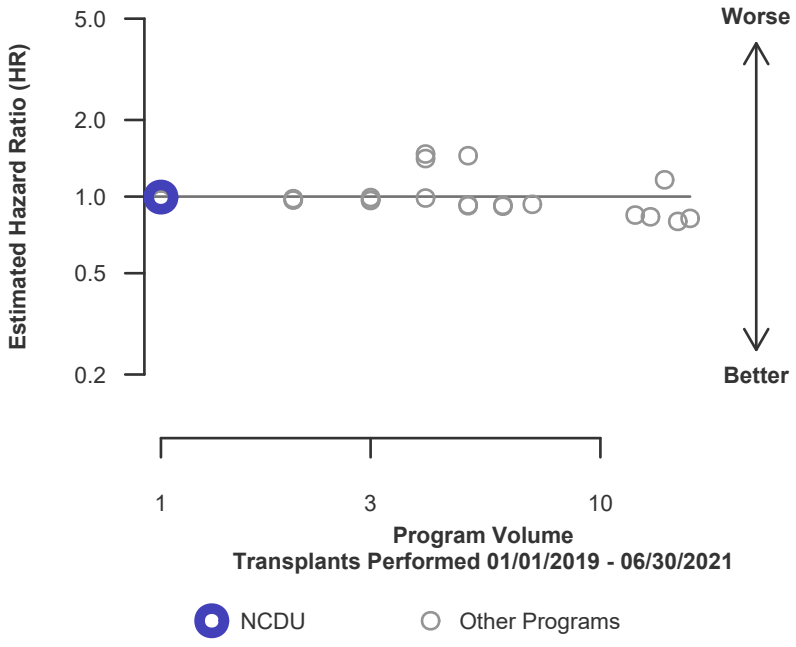


Figure C18L. Pediatric (<18) 1-year Conditional living donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	34	1,333
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	96.43%	89.42%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	88.85%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	1	129
Number of expected graft failures (including deaths) during the first 3 years after transplant	3.60	--
Estimated hazard ratio*	0.54	--
95% credible interval for the hazard ratio**	[0.11, 1.29]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.11, 1.29], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 46% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 89% reduced risk up to 29% increased risk.

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

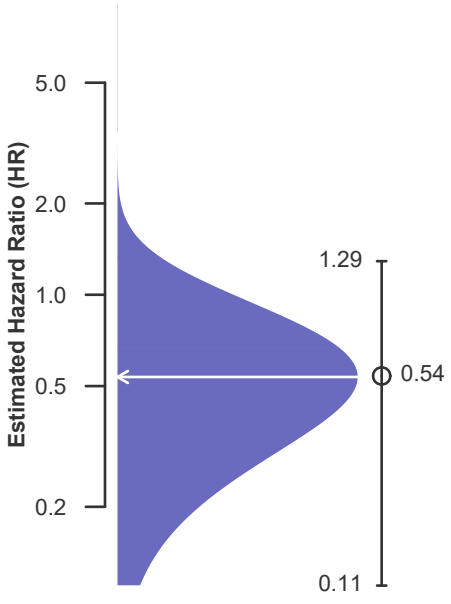
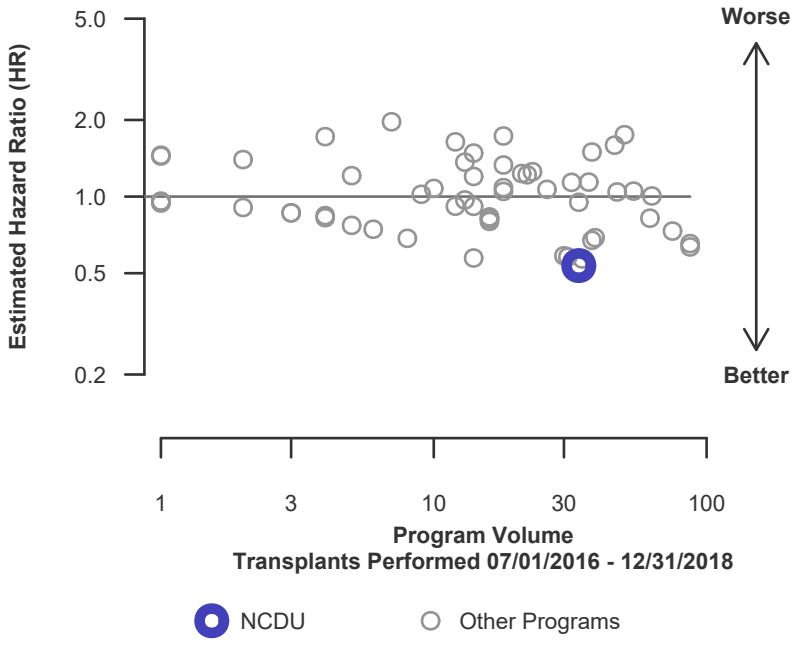


Figure C20. Pediatric (<18) 3-year graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	33	1,159
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	96.30%	88.68%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	88.69%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	1	119
Number of expected graft failures (including deaths) during the first 3 years after transplant	3.54	--
Estimated hazard ratio*	0.54	--
95% credible interval for the hazard ratio**	[0.11, 1.30]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.11, 1.30], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 46% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 89% reduced risk up to 30% increased risk.

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

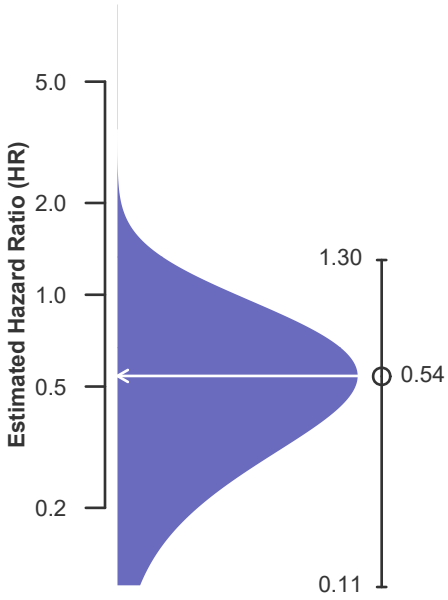
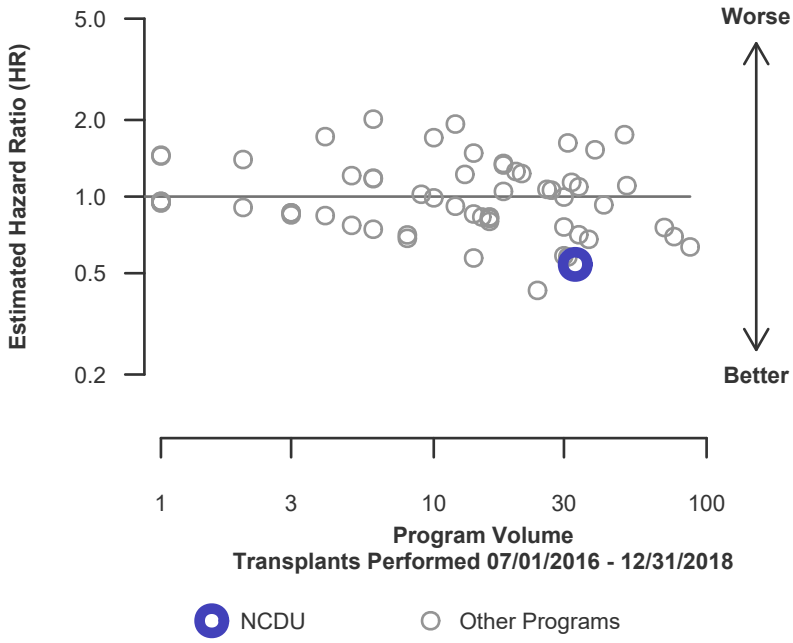


Figure C20D. Pediatric (<18) 3-year deceased donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	1	174
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	100.00%	94.13%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	94.15%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	0	10
Number of expected graft failures (including deaths) during the first 3 years after transplant	0.06	--
Estimated hazard ratio*	0.97	--
95% credible interval for the hazard ratio**	[0.12, 2.70]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.12, 2.70], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 3% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 88% reduced risk up to 170% increased risk.

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

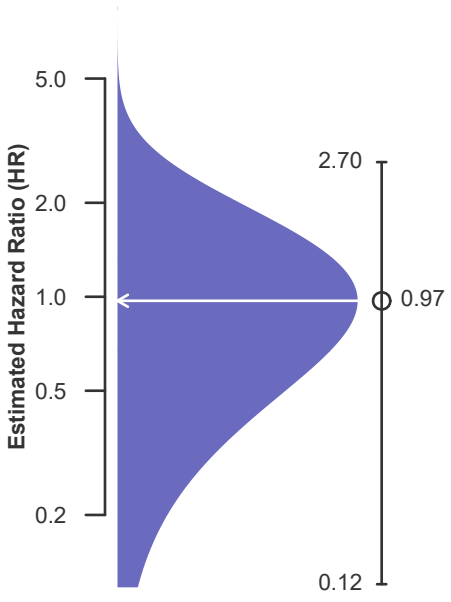
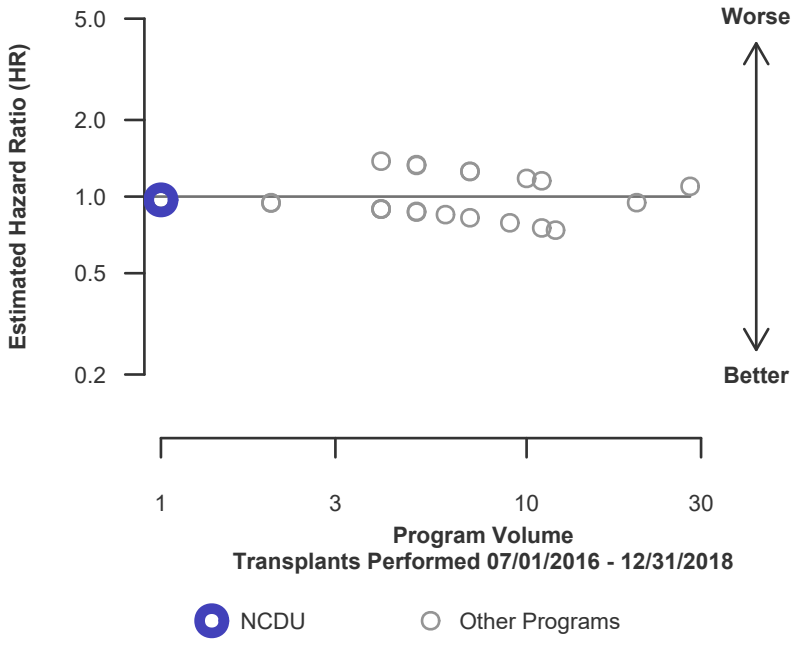


Figure C20L. Pediatric (<18) 3-year living donor graft failure HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	218	16,729
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	99.07%	98.17%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	98.26%	--
Number of observed deaths during the first month after transplant	2	303
Number of expected deaths during the first month after transplant	3.77	--
Estimated hazard ratio*	0.69	--
95% credible interval for the hazard ratio**	[0.19, 1.52]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.19, 1.52], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 31% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 81% reduced risk up to 52% increased risk.

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

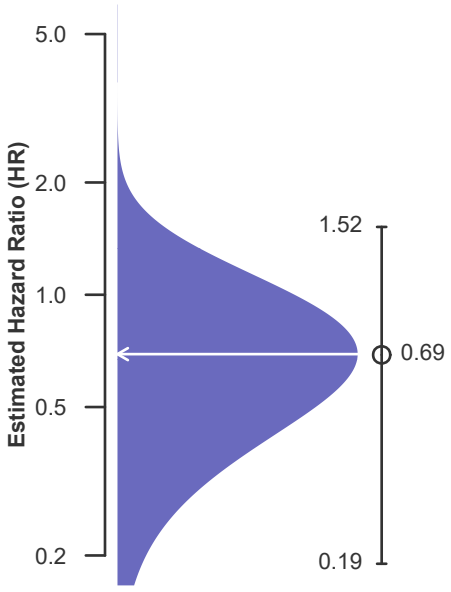
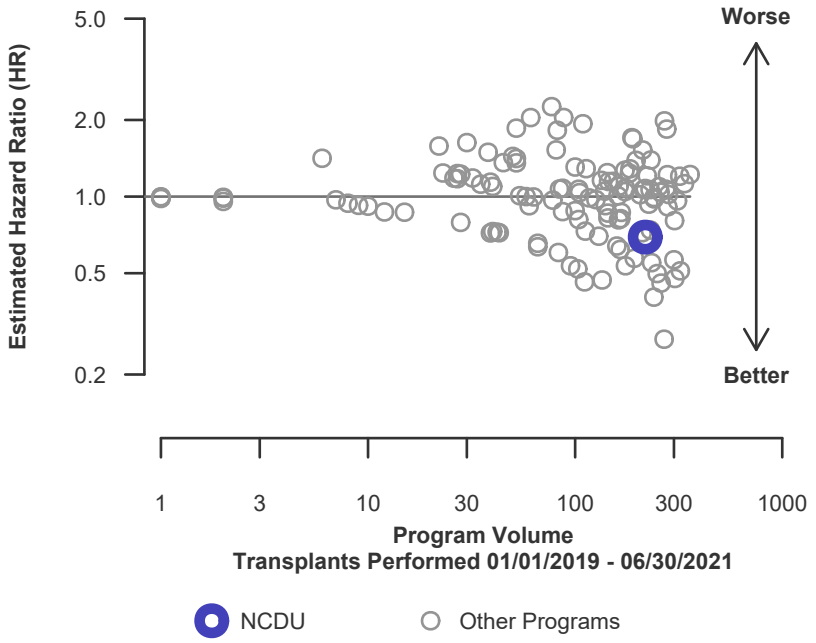


Figure C22. Adult (18+) 1-month patient death HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	212	15,703
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	99.04%	98.07%
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	2	299
Number of expected deaths during the first month after transplant	3.75	--
Estimated hazard ratio*	0.70	--
95% credible interval for the hazard ratio**	[0.19, 1.53]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.19, 1.53], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 30% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 81% reduced risk up to 53% increased risk.

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

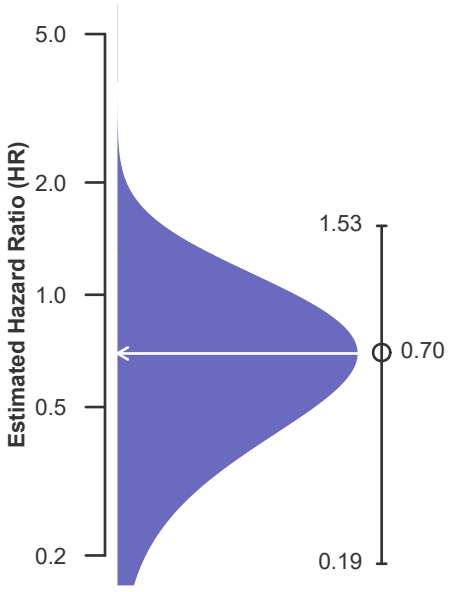
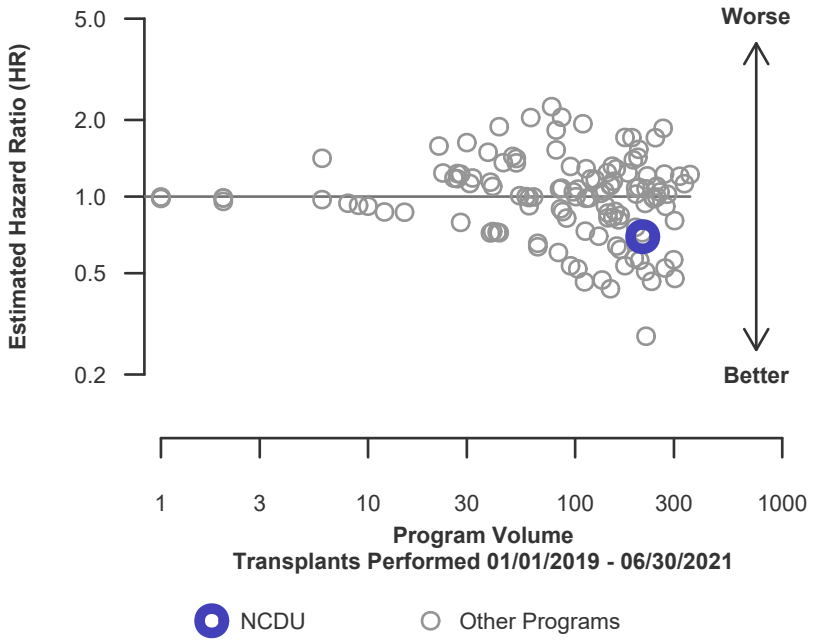


Figure C22D. Adult (18+) 1-month patient death HR program comparison (deceased donor grafts)



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

	NCDU	U.S.
Number of transplants evaluated	6	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	0.02	--
Estimated hazard ratio*	0.99	--
95% credible interval for the hazard ratio**	[0.12, 2.75]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU'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 NCDU's true hazard ratio with 95% probability. The best estimate is 1% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 88% reduced risk up to 175% increased risk.

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

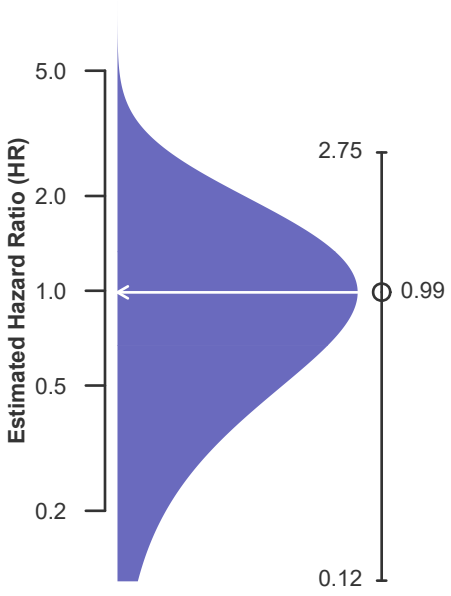
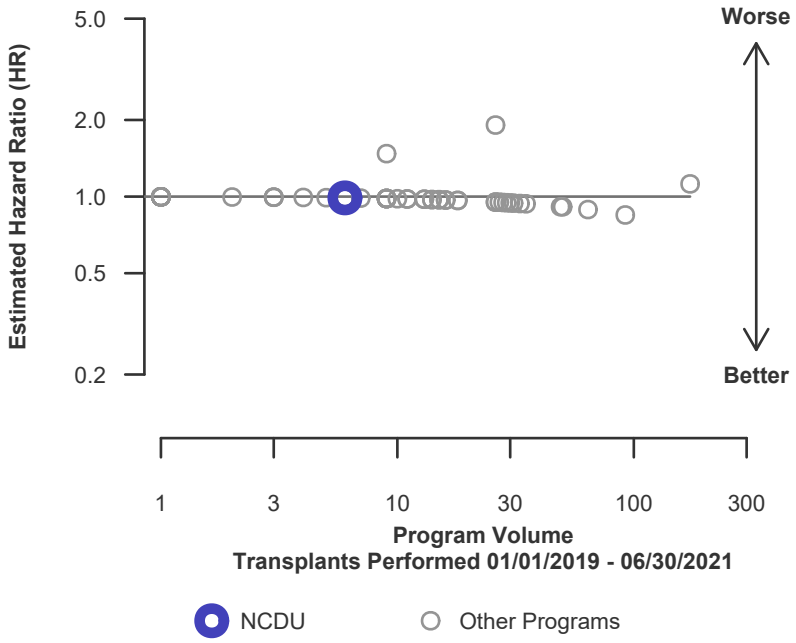


Figure C22L. Adult (18+) 1-month patient death HR program comparison (living donor grafts)



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

	NCDU	U.S.
Number of transplants evaluated	218	16,729
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	96.39%	94.25%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	94.26%	--
Number of observed deaths during the first year after transplant	5	768
Number of expected deaths during the first year after transplant	10.08	--
Estimated hazard ratio*	0.58	--
95% credible interval for the hazard ratio**	[0.23, 1.08]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.23, 1.08], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 42% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 77% reduced risk up to 8% increased risk.

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

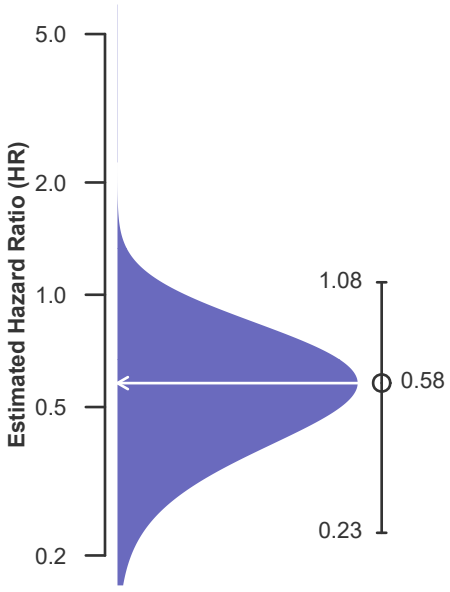
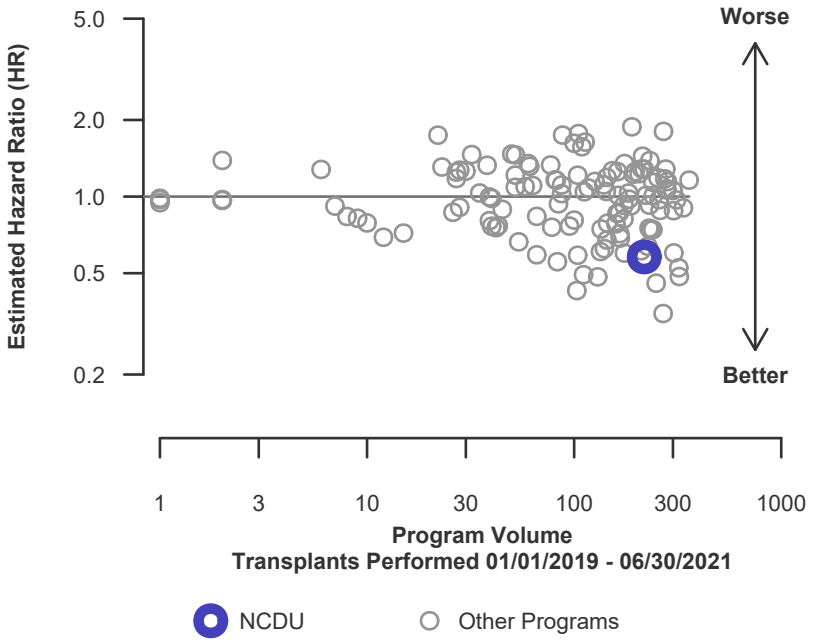


Figure C24. Adult (18+) 1-year patient death HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	212	15,703
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	97.30%	94.18%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	94.23%	--
Number of observed deaths during the first year after transplant	4	732
Number of expected deaths during the first year after transplant	9.87	--
Estimated hazard ratio*	0.51	--
95% credible interval for the hazard ratio**	[0.19, 0.98]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.19, 0.98], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 49% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 81% reduced risk up to 2% reduced risk.

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

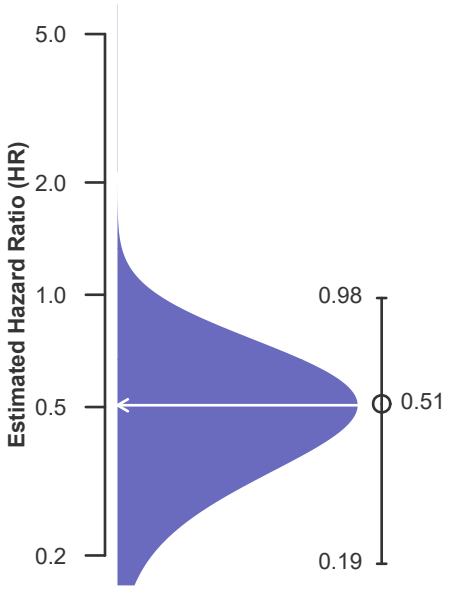
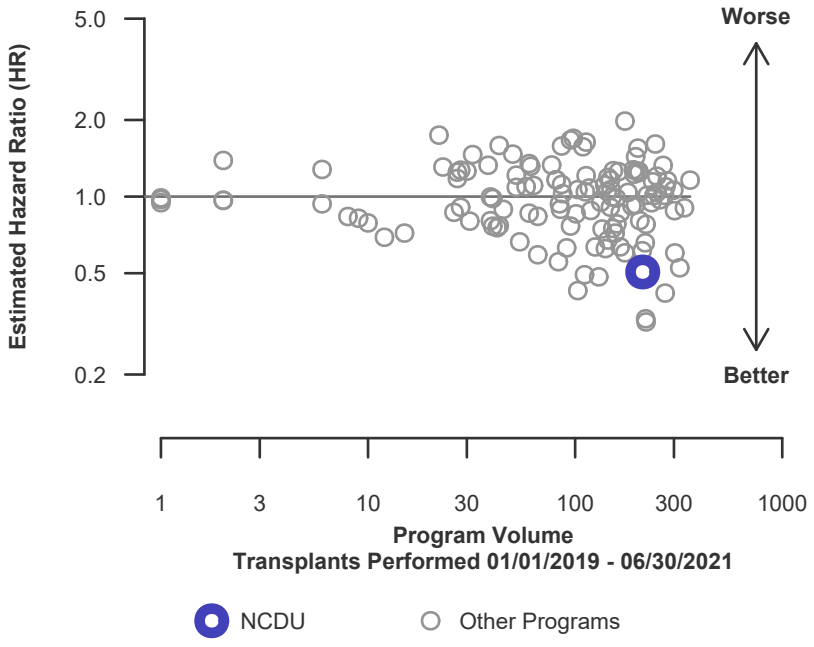


Figure C24D. Adult (18+) 1-year patient death HR program comparison (deceased donor grafts)



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

	NCDU	U.S.
Number of transplants evaluated	6	1,026
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	50.00%	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	1	36
Number of expected deaths during the first year after transplant	0.21	--
Estimated hazard ratio*	1.36	--
95% credible interval for the hazard ratio**	[0.28, 3.27]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.28, 3.27], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 36% higher risk of patient death compared to an average program, but NCDU's performance could plausibly range from 72% reduced risk up to 227% increased risk.

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

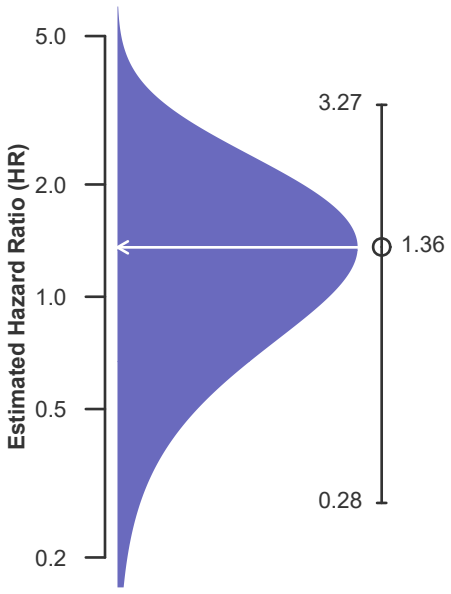
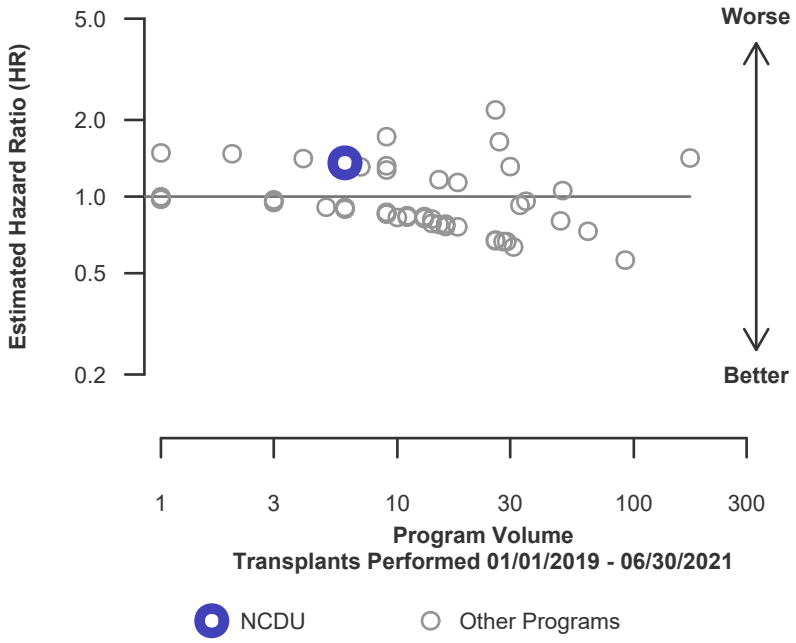


Figure C24L. Adult (18+) 1-year patient death HR program comparison (living donor grafts)



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

	NCDU	U.S.
Number of transplants evaluated	172	16,275
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	88.97%	88.07%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	88.57%	--
Number of observed deaths during the first 3 years after transplant	16	1,688
Number of expected deaths during the first 3 years after transplant	17.77	--
Estimated hazard ratio*	0.91	--
95% credible interval for the hazard ratio**	[0.54, 1.38]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.54, 1.38], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 9% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 46% reduced risk up to 38% increased risk.

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

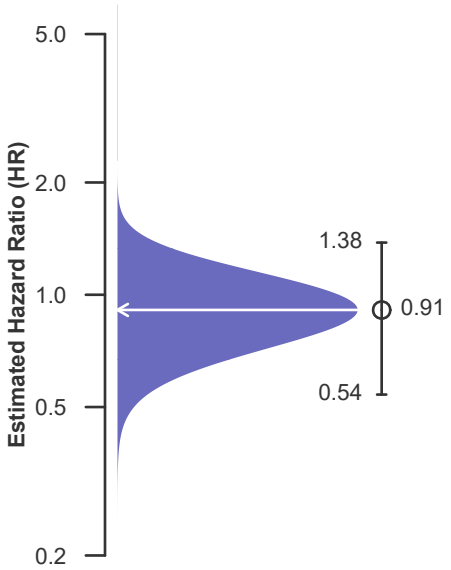
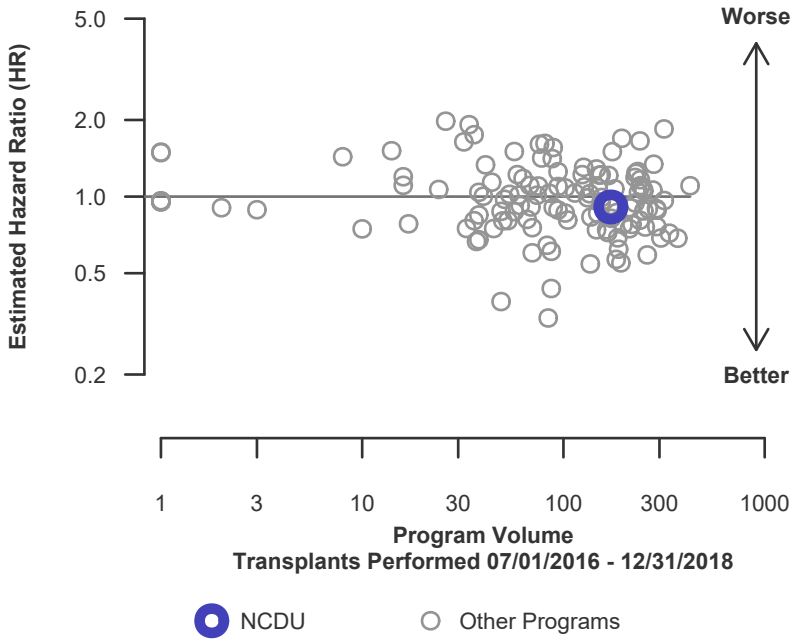


Figure C26. Adult (18+) 3-year patient death HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	172	15,511
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	88.97%	87.94%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	88.57%	--
Number of observed deaths during the first 3 years after transplant	16	1,627
Number of expected deaths during the first 3 years after transplant	17.77	--
Estimated hazard ratio*	0.91	--
95% credible interval for the hazard ratio**	[0.54, 1.38]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.54, 1.38], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 9% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 46% reduced risk up to 38% increased risk.

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

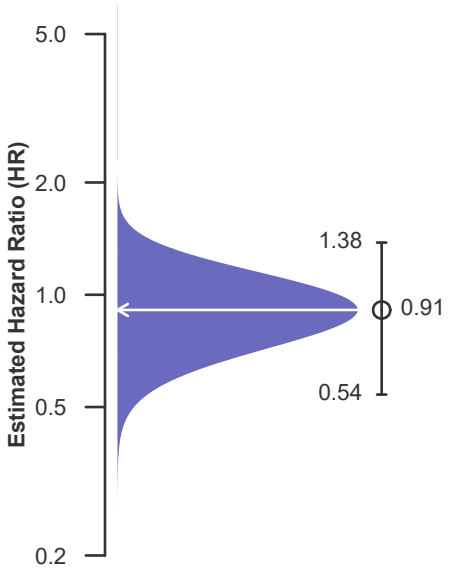
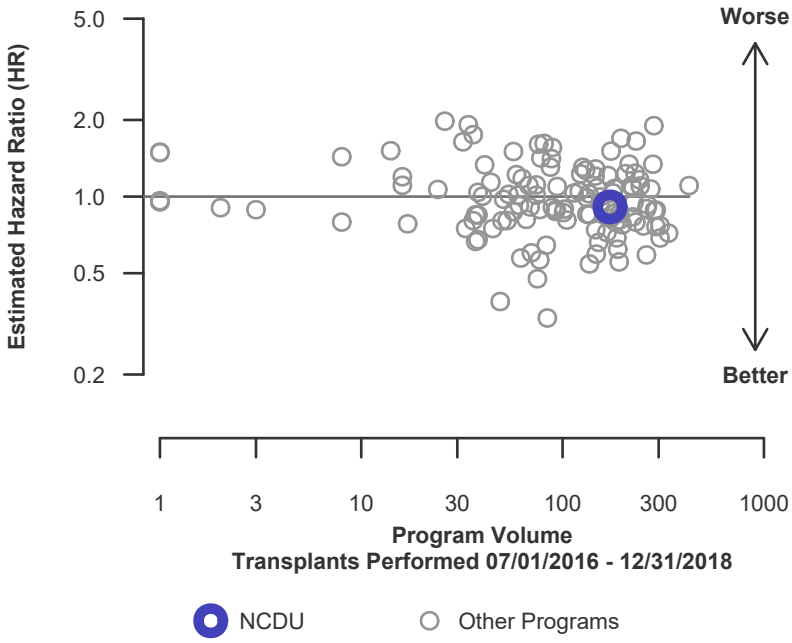


Figure C26D. Adult (18+) 3-year patient death HR program comparison (deceased donor grafts)



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

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

Figure C25L. Adult (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 C26L. Adult (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 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

	NCDU	U.S.
Number of transplants evaluated	23	1,070
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	90.23%	98.21%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	97.50%	--
Number of observed deaths during the first month after transplant	2	19
Number of expected deaths during the first month after transplant	0.57	--
Estimated hazard ratio*	1.56	--
95% credible interval for the hazard ratio**	[0.42, 3.41]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.42, 3.41], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 56% higher risk of patient death compared to an average program, but NCDU's performance could plausibly range from 58% reduced risk up to 241% increased risk.

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

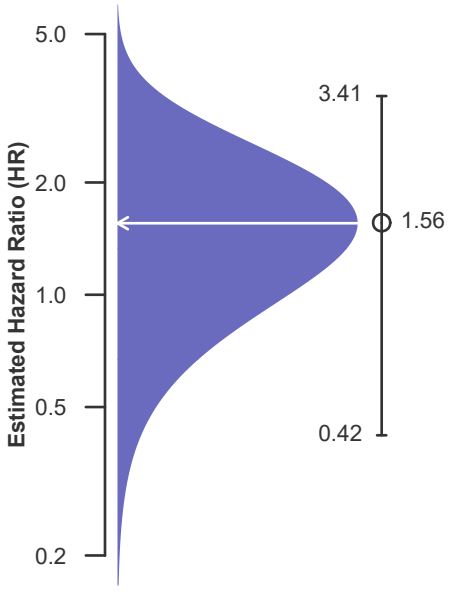
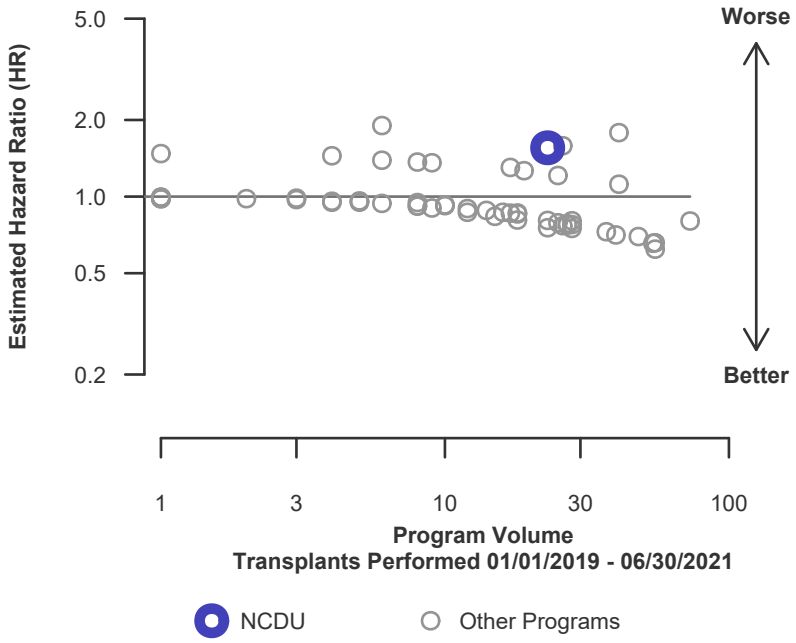


Figure C28. Pediatric (<18) 1-month patient death HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	21	903
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	89.72%	98.10%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	97.37%	--
Number of observed deaths during the first month after transplant	2	17
Number of expected deaths during the first month after transplant	0.55	--
Estimated hazard ratio*	1.57	--
95% credible interval for the hazard ratio**	[0.43, 3.43]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.43, 3.43], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 57% higher risk of patient death compared to an average program, but NCDU's performance could plausibly range from 57% reduced risk up to 243% increased risk.

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

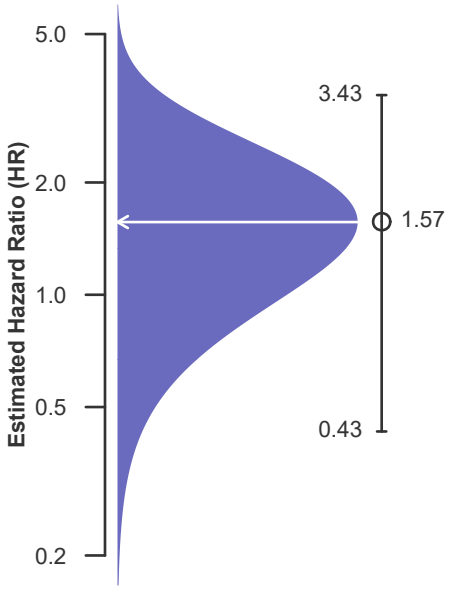
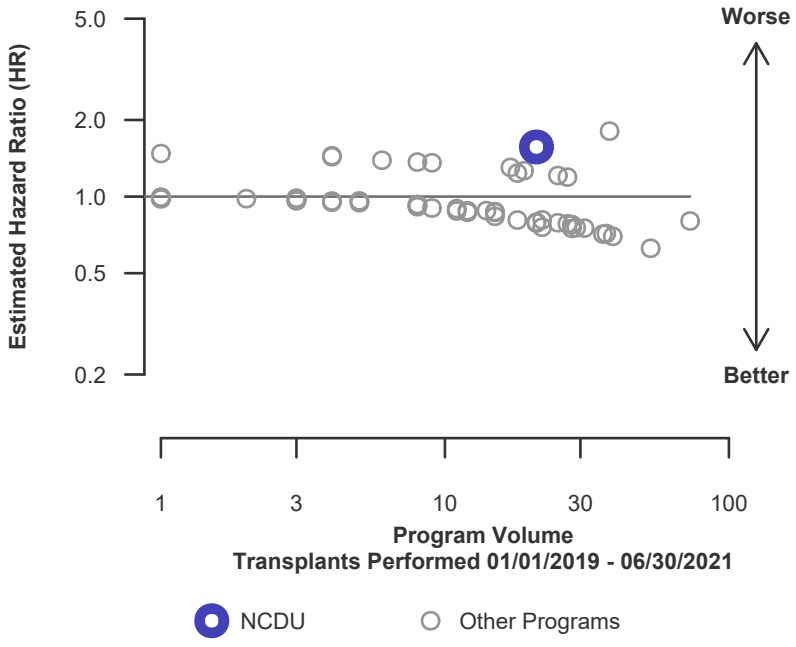


Figure C28D. Pediatric (<18) 1-month patient death HR program comparison (deceased donor grafts)



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

	NCDU	U.S.
Number of transplants evaluated	2	167
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	100.00%	98.76%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	98.77%	--
Number of observed deaths during the first month after transplant	0	2
Number of expected deaths during the first month after transplant	0.02	--
Estimated hazard ratio*	0.99	--
95% credible interval for the hazard ratio**	[0.12, 2.76]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.12, 2.76], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 1% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 88% reduced risk up to 176% increased risk.

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

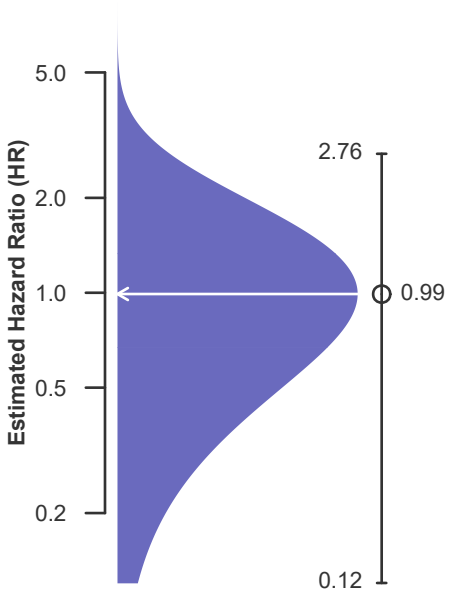
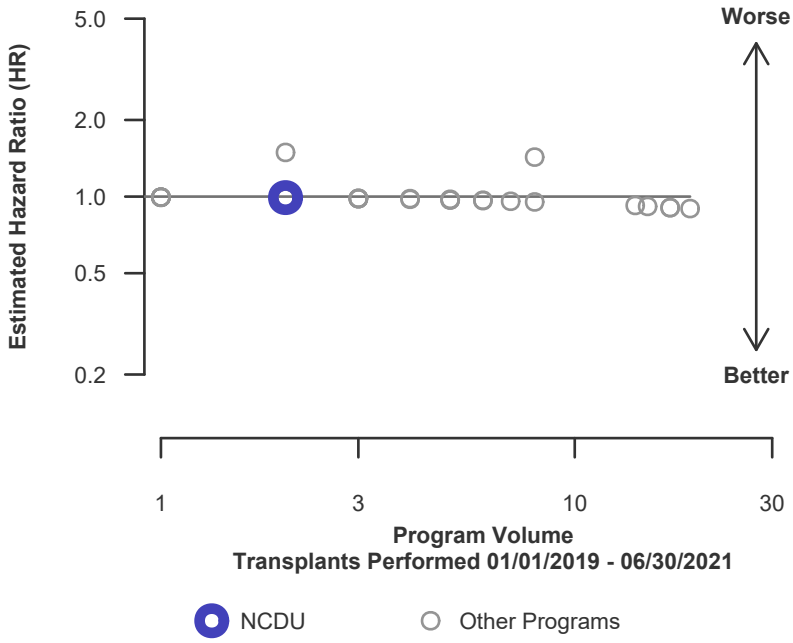


Figure C28L. Pediatric (<18) 1-month patient death HR program comparison (living donor grafts)



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

	NCDU	U.S.
Number of transplants evaluated	23	1,070
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	90.23%	95.04%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	93.46%	--
Number of observed deaths during the first year after transplant	2	42
Number of expected deaths during the first year after transplant	1.05	--
Estimated hazard ratio*	1.31	--
95% credible interval for the hazard ratio**	[0.36, 2.87]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.36, 2.87], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 31% higher risk of patient death compared to an average program, but NCDU's performance could plausibly range from 64% reduced risk up to 187% increased risk.

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

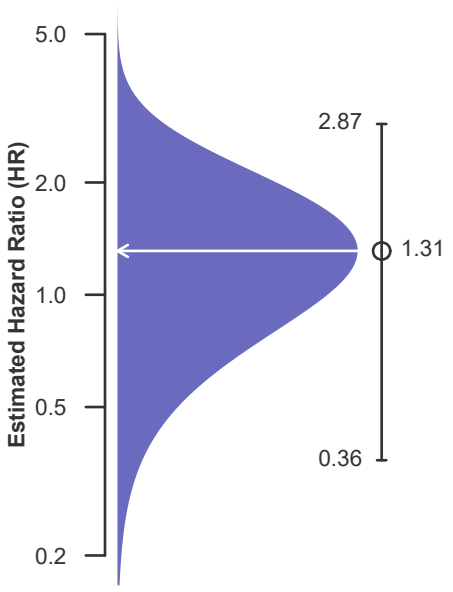
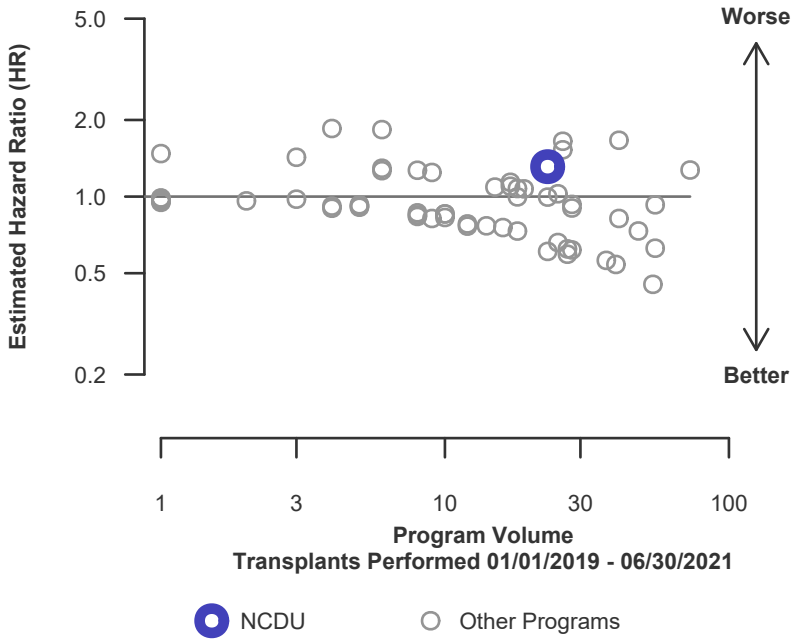


Figure C30. Pediatric (<18) 1-year patient death HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	21	903
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	89.72%	95.11%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	93.37%	--
Number of observed deaths during the first year after transplant	2	36
Number of expected deaths during the first year after transplant	1.02	--
Estimated hazard ratio*	1.33	--
95% credible interval for the hazard ratio**	[0.36, 2.91]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.36, 2.91], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 33% higher risk of patient death compared to an average program, but NCDU's performance could plausibly range from 64% reduced risk up to 191% increased risk.

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

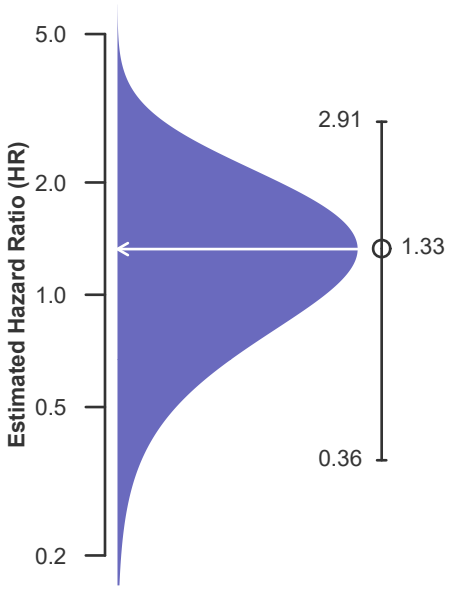
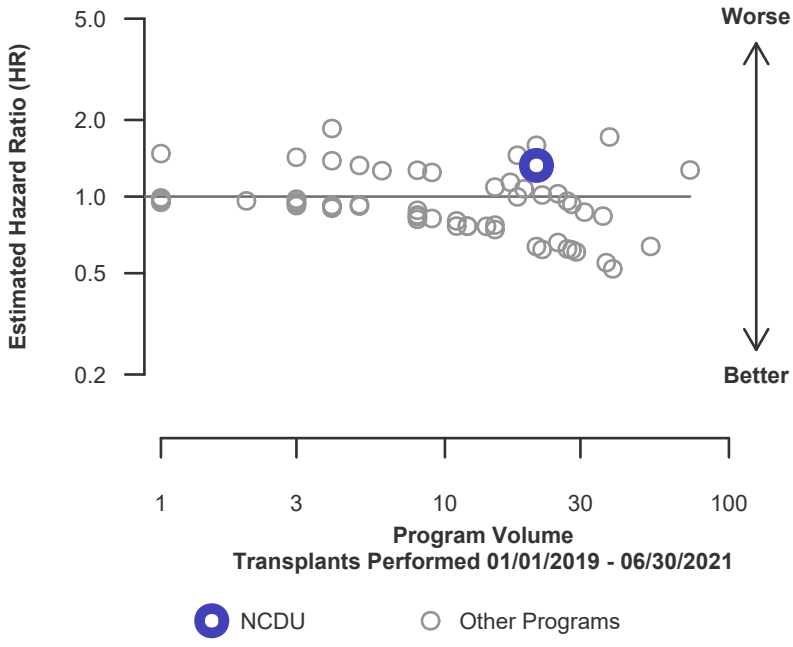


Figure C30D. Pediatric (<18) 1-year patient death HR program comparison (deceased donor grafts)



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

	NCDU	U.S.
Number of transplants evaluated	2	167
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	100.00%	94.37%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	94.40%	--
Number of observed deaths during the first year after transplant	0	6
Number of expected deaths during the first year after transplant	0.03	--
Estimated hazard ratio*	0.98	--
95% credible interval for the hazard ratio**	[0.12, 2.74]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.12, 2.74], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 2% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 88% reduced risk up to 174% increased risk.

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

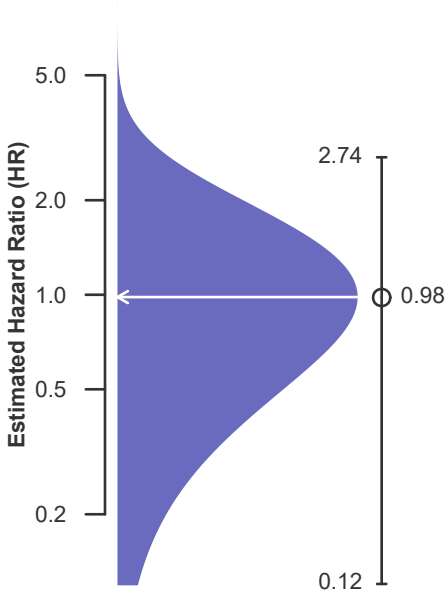
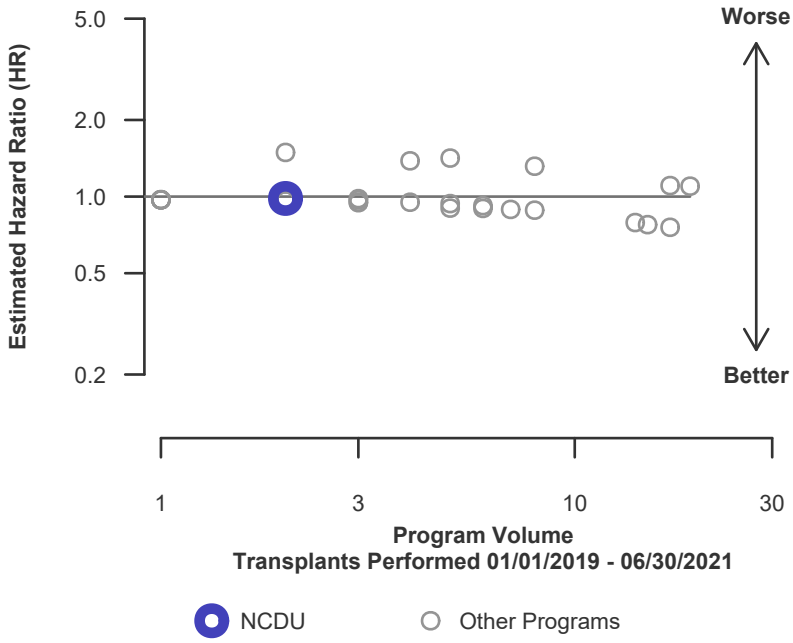


Figure C30L. Pediatric (<18) 1-year patient death HR program comparison (living donor grafts)



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

	NCDU	U.S.
Number of transplants evaluated	32	1,255
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	96.15%	92.82%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	92.42%	--
Number of observed deaths during the first 3 years after transplant	1	80
Number of expected deaths during the first 3 years after transplant	2.17	--
Estimated hazard ratio*	0.72	--
95% credible interval for the hazard ratio**	[0.15, 1.73]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.15, 1.73], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 28% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 85% reduced risk up to 73% increased risk.

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

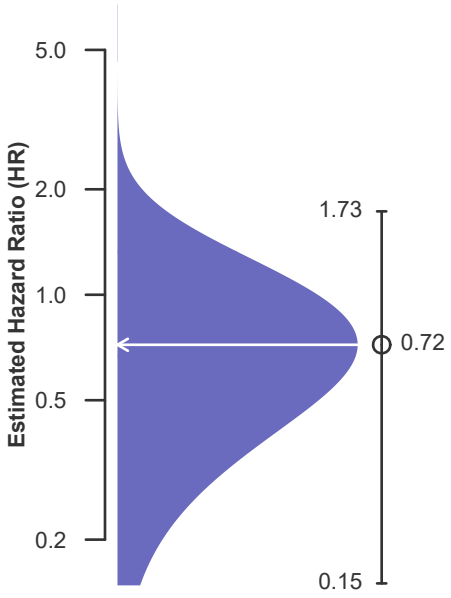
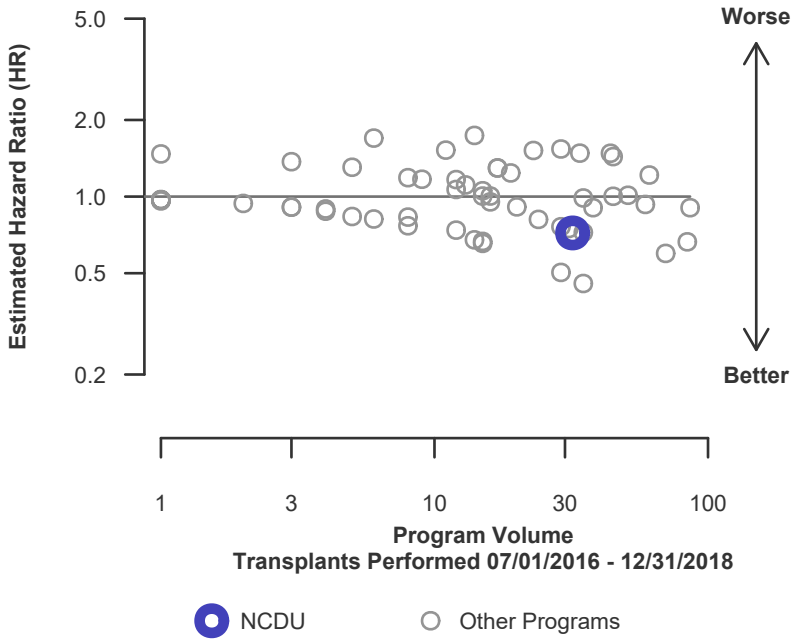


Figure C32. Pediatric (<18) 3-year patient death HR program comparison



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

	NCDU	U.S.
Number of transplants evaluated	31	1,083
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	96.00%	92.30%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	92.31%	--
Number of observed deaths during the first 3 years after transplant	1	73
Number of expected deaths during the first 3 years after transplant	2.13	--
Estimated hazard ratio*	0.73	--
95% credible interval for the hazard ratio**	[0.15, 1.75]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.15, 1.75], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 27% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 85% reduced risk up to 75% increased risk.

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

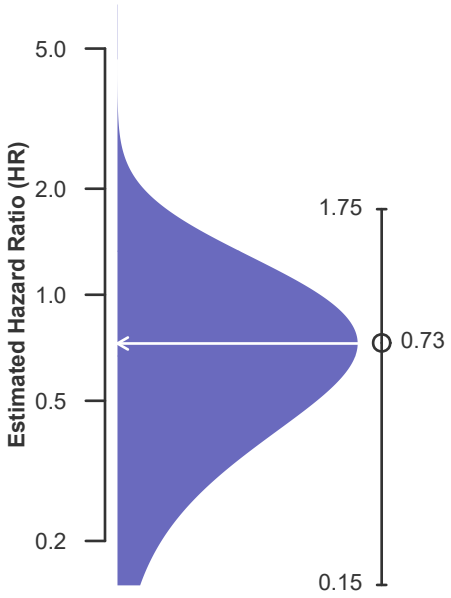
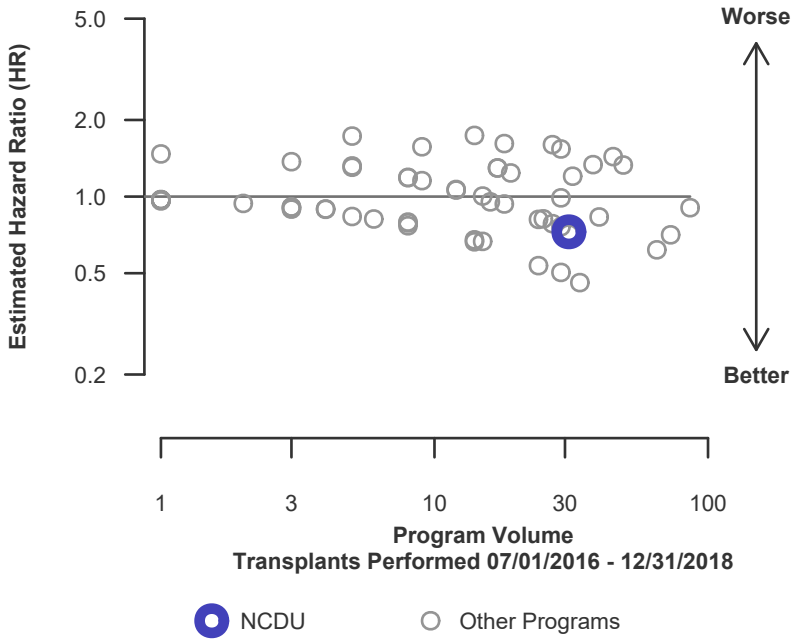


Figure C32D. Pediatric (<18) 3-year patient death HR program comparison (deceased donor grafts)



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

	NCDU	U.S.
Number of transplants evaluated	1	172
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	100.00%	95.81%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	95.82%	--
Number of observed deaths during the first 3 years after transplant	0	7
Number of expected deaths during the first 3 years after transplant	0.04	--
Estimated hazard ratio*	0.98	--
95% credible interval for the hazard ratio**	[0.12, 2.73]	--

* The hazard ratio provides an estimate of how Duke University Hospital'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 NCDU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.
** The 95% credible interval, [0.12, 2.73], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 2% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 88% reduced risk up to 173% increased risk.

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

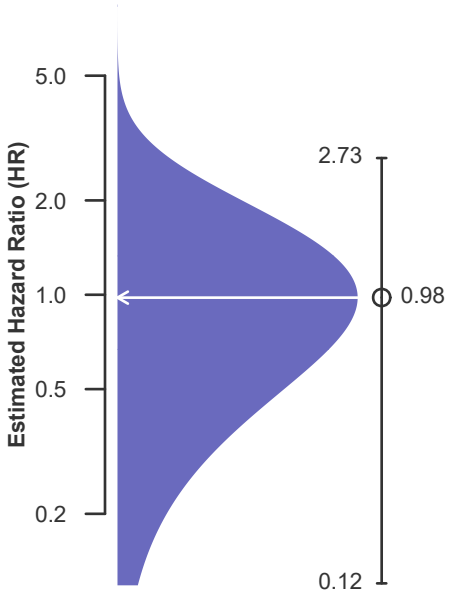
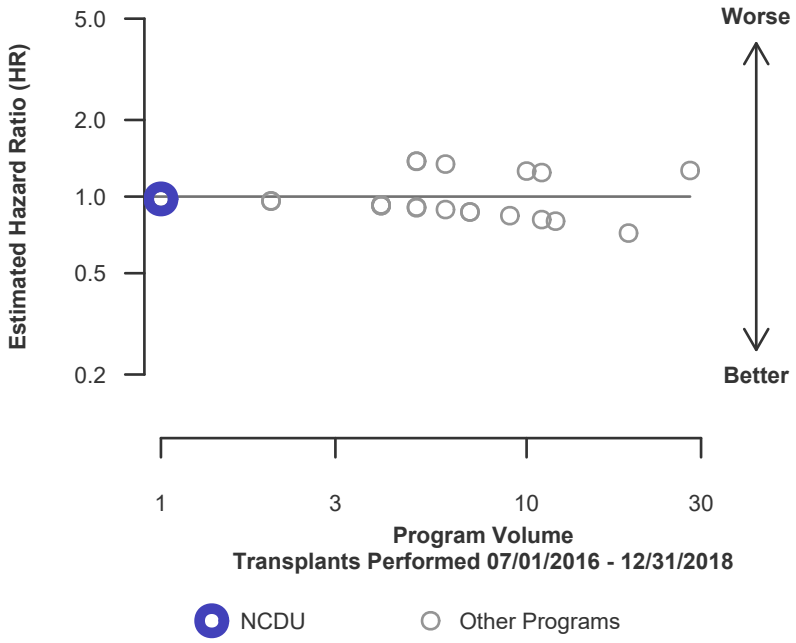


Figure C32L. Pediatric (<18) 3-year patient death HR program comparison (living donor grafts)



C. Transplant Information

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

Adult (18+) Transplants

Transplant Type	Transplants Performed		First-Year Outcomes: Liver Graft Failures		First-Year Outcomes: Estimated Liver Graft Survival	
	NCDU-TX1	USA	NCDU-TX1	USA	NCDU-TX1	USA
Kidney-Liver	22	1,858	3	184	84.2%	89.5%
Liver-Heart	4	106	1	13	75.0%	87.3%
Liver-Lung	2	42	0	4	100.0%	89.8%
Pancreas-Liver-Intestine	2	44	0	21	100.0%	51.9%

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	Transplants Performed		First-Year Outcomes: Patient Deaths		First-Year Outcomes: Estimated Patient Survival	
	NCDU-TX1	USA	NCDU-TX1	USA	NCDU-TX1	USA
Kidney-Liver	22	1,858	3	171	84.2%	90.2%
Liver-Heart	4	106	1	13	75.0%	87.3%
Liver-Lung	2	42	0	4	100.0%	89.8%
Pancreas-Liver-Intestine	2	44	0	20	100.0%	54.0%

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
Number of Living Donors	2	4	3	516	485	274
6-Month Follow-Up						
Donors due for follow-up	2	2	3	342	127	271
Timely clinical data	2 100.0%	2 100.0%	3 100.0%	300 87.7%	105 82.7%	239 88.2%
Timely lab data	2 100.0%	2 100.0%	3 100.0%	299 87.4%	109 85.8%	238 87.8%
12-Month Follow-Up						
Donors due for follow-up	0	3		99	356	
Timely clinical data	0 --%	3 100.0%		80 80.8%	297 83.4%	
Timely lab data	0 --%	3 100.0%		74 74.7%	298 83.7%	
24-Month Follow-Up						
Donors due for follow-up	2			400		
Timely clinical data	2 100.0%			288 72.0%		
Timely lab data	1 50.0%			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