



User Guide

This report contains a wide range of useful information about the liver transplant program at Duke University Hospital (NCDU). 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 148.8 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 death rate (also known as the 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 these tables and figures is to describe risk of death once candidates are listed rather than while they are listed. 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>.

Table B6 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 B7 and B8 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 B7 and B8 presents the percent of candidates who received a deceased donor transplant by each time point. Table B9 presents data on the time it took for different percentages of patients to be transplanted for candidates added to the list between 01/01/2013 and 06/30/2018. 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 12/31/2018 to calculate a particular percentile of transplant times.

Table B10 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 B7 shows the distribution of program offer acceptance rates as well as the offer acceptance rate for this program. Figures B8 - B12 similarly show offer acceptance rates for subsets 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.



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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-C10 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-C10 present data on graft survival, Tables C11-C16 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 C17 and C18 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

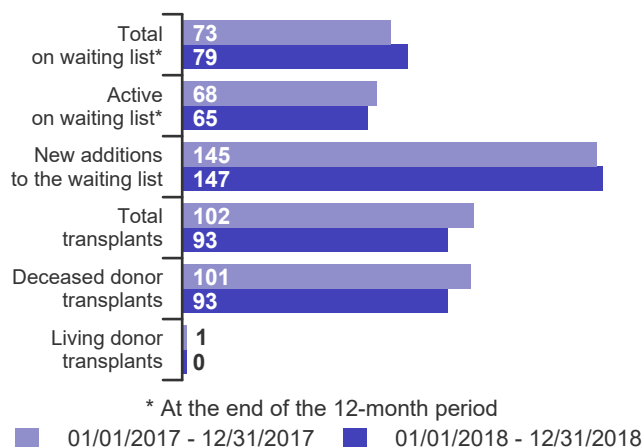


Table A1. Census of transplant recipients

Recipients	01/01/2017-12/31/2017	01/01/2018-12/31/2018
Transplanted at this center	102	93
Followed by this center*	624	642
...transplanted at this program	582	598
...transplanted elsewhere	42	44

* 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
01/01/2017 - 12/31/2018

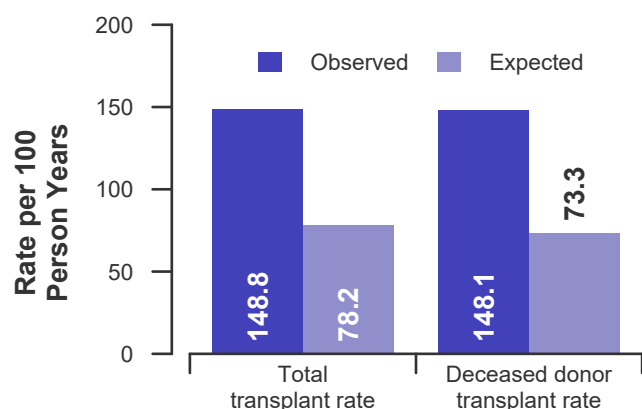


Figure A3. Waiting list mortality rates
01/01/2017 - 12/31/2018

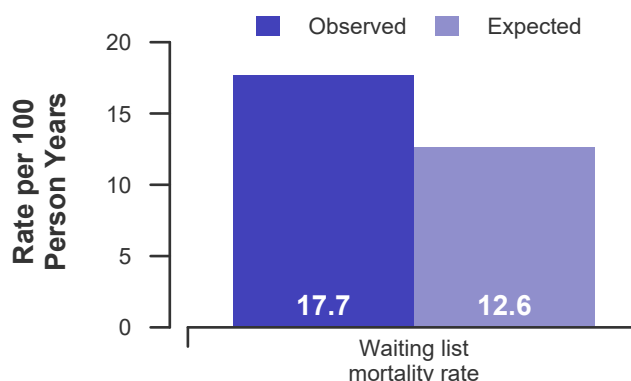


Figure A4. First-year adult graft and patient survival: 01/01/2016 - 06/30/2018

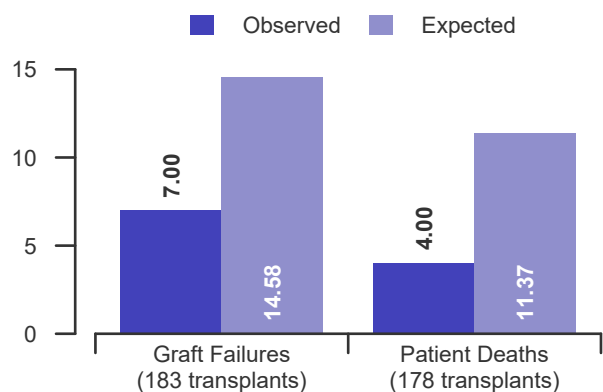
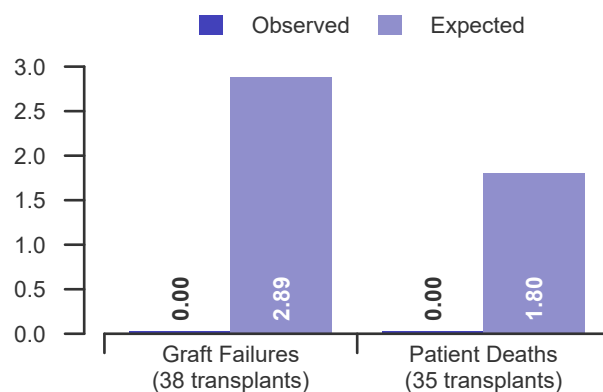


Figure A5. First-year pediatric graft and patient survival: 01/01/2016 - 06/30/2018





B. Waiting List Information

Table B1. Waiting list activity summary: 01/01/2017 - 12/31/2018

Waiting List Registrations	Counts for this center		Activity for 01/01/2018 to 12/31/2018 as percent of registrants on waiting list on 01/01/2018		
	01/01/2017-12/31/2017	01/01/2018-12/31/2018	This Center (%)	OPTN Region (%)	U.S. (%)
On waiting list at start	49	73	100.0	100.0	100.0
Additions					
New listings at this center	145	147	201.4	127.2	92.6
Removals					
Transferred to another center	0	1	1.4	1.7	1.1
Received living donor transplant*	1	0	0.0	0.9	2.8
Received deceased donor transplant*	101	93	127.4	88.8	55.3
Died	6	5	6.8	10.4	8.3
Transplanted at another center	2	11	15.1	3.9	2.8
Deteriorated	6	13	17.8	10.7	9.5
Recovered	4	11	15.1	7.4	7.5
Other reasons	1	7	9.6	8.1	9.1
On waiting list at end of period	73	79	108.2	95.3	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 01/01/2018 and 12/31/2018**

Demographic Characteristic	New Waiting List Registrations 01/01/2018 to 12/31/2018 (%)			All Waiting List Registrations on 12/31/2018 (%)		
	This Center (N=147)	OPTN Region (N=1,117)	U.S. (N=13,152)	This Center (N=79)	OPTN Region (N=837)	U.S. (N=13,680)
All (%)	100.0	100.0	100.0	100.0	100.0	100.0
Ethnicity/Race (%)*						
White	75.5	80.5	68.1	81.0	84.2	67.0
African-American	10.2	11.9	7.9	7.6	8.6	7.4
Hispanic/Latino	6.8	4.0	17.1	3.8	3.5	18.3
Asian	2.0	1.7	5.1	2.5	1.9	5.8
Other	5.4	1.9	1.8	5.1	1.8	1.5
Unknown	0.0	0.0	0.0	0.0	0.0	0.0
Age (%)						
<2 years	6.1	2.0	2.6	3.8	1.7	1.4
2-11 years	3.4	1.9	1.9	1.3	1.2	1.3
12-17 years	2.0	1.4	1.1	3.8	1.4	1.0
18-34 years	4.8	4.7	6.0	5.1	5.0	6.2
35-49 years	15.0	16.9	17.0	15.2	18.8	18.7
50-64 years	46.9	51.9	49.9	46.8	53.0	54.0
65+ years	21.8	21.2	21.5	24.1	18.9	17.3
Other (includes prenatal)	0.0	0.0	0.0	0.0	0.0	0.0
Gender (%)						
Male	64.6	62.8	62.2	63.3	63.7	60.8
Female	35.4	37.2	37.8	36.7	36.3	39.2

* 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 01/01/2018 and 12/31/2018

Medical Characteristic	New Waiting List Registrations 01/01/2018 to 12/31/2018 (%)			All Waiting List Registrations on 12/31/2018 (%)		
	This Center (N=147)	OPTN Region (N=1,117)	U.S. (N=13,152)	This Center (N=79)	OPTN Region (N=837)	U.S. (N=13,680)
All (%)	100.0	100.0	100.0	100.0	100.0	100.0
Blood Type (%)						
O	49.7	49.0	46.9	45.6	49.3	49.1
A	37.4	36.6	36.9	45.6	41.3	37.7
B	10.2	10.3	12.4	7.6	7.5	10.9
AB	2.7	4.1	3.8	1.3	1.8	2.4
Unknown	0.0	0.0	0.0	0.0	0.0	0.0
Previous Transplant (%)						
Yes	4.8	3.7	4.5	5.1	1.7	3.2
No	95.2	96.3	95.5	94.9	98.3	96.8
Unknown	0.0	0.0	0.0	0.0	0.0	0.0
Primary Disease (%)						
Acute Hepatic Necrosis	3.4	3.4	4.5	1.3	1.2	1.8
Non-Cholestatic Cirrhosis	57.8	68.8	65.4	64.6	73.5	71.2
Cholestatic Liver Disease/Cirrhosis	8.2	8.4	6.9	10.1	9.3	7.8
Biliary Atresia	5.4	2.2	2.4	2.5	1.9	1.8
Metabolic Diseases	3.4	3.3	2.5	3.8	2.2	1.8
Malignant Neoplasms	13.6	10.2	13.1	10.1	8.1	10.2
Other	8.2	3.6	5.2	7.6	3.8	5.3
Missing	0.0	0.0	0.1	0.0	0.0	0.1
Medical Urgency Status/MELD/PELD at Listing (%)*						
Status 1A	3.4	3.1	3.2	0.0	0.1	0.3
Status 1B	0.7	0.4	0.4	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	0.1	0.1
Status 3	0.0	0.0	0.0	0.0	0.2	0.7
MELD 6-10	19.7	16.0	19.9	25.3	17.4	29.7
MELD 11-14	24.5	17.5	18.8	39.2	31.4	29.0
MELD 15-20	23.8	30.2	22.6	25.3	35.6	24.7
MELD 21-30	12.2	18.1	17.0	3.8	8.0	8.4
MELD 31-40	6.1	8.2	10.9	0.0	0.7	0.8
PELD less than or equal to 10	3.4	2.0	2.1	3.8	2.0	1.9
PELD 11-14	0.7	0.2	0.3	0.0	0.2	0.2
PELD 15-20	1.4	0.4	0.6	0.0	0.1	0.2
PELD 21-30	2.0	0.4	0.4	1.3	0.1	0.1
PELD 31 or greater	0.0	0.0	0.1	0.0	0.0	0.0
Temporarily Inactive	2.0	3.5	3.8	1.3	3.7	3.9

* 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: 01/01/2017 - 12/31/2018

Waiting List Registrations	This Center	OPO/DSA	Region	U.S.
All Candidates				
Count on waiting list at start*	49	109	883	14,684
Person Years**	131.0	262.8	1,721.3	28,486.6
Removals for Transplant	195	278	1,610	16,332
Adult (18+) Candidates				
Count on waiting list at start*	46	104	859	14,113
Person Years**	122.7	252.3	1,672.4	27,396.5
Removals for transplant	165	245	1,518	15,145
Pediatric (<18) Candidates				
Count on waiting list at start*	3	5	24	571
Person Years**	8.4	10.5	48.9	1,090.1
Removals for transplant	30	33	92	1,187

* 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.

Figure B1. Observed and expected transplant rates: 01/01/2017 - 12/31/2018

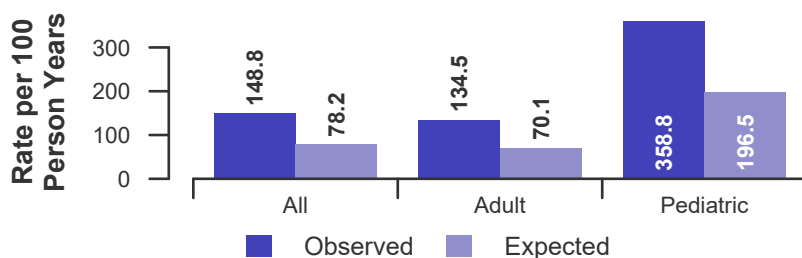


Figure B2. Transplant rate ratio estimate

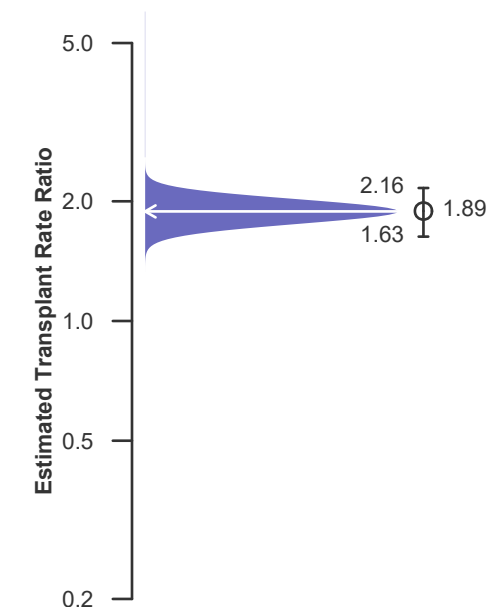
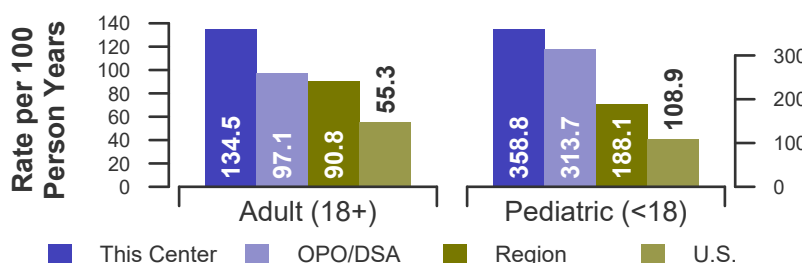


Figure B3. Observed adult (18+) and pediatric (<18) transplant rates: 01/01/2017 - 12/31/2018





B. Waiting List Information

Table B4D. Deceased donor transplant rates: 01/01/2017 - 12/31/2018

Waiting List Registrations	This Center	OPO/DSA	Region	U.S.
All Candidates				
Count on waiting list at start*	49	109	883	14,684
Person Years**	131.0	262.8	1,721.3	28,486.6
Removals for Transplant	194	277	1,589	15,565
Adult (18+) Candidates				
Count on waiting list at start*	46	104	859	14,113
Person Years**	122.7	252.3	1,672.4	27,396.5
Removals for transplant	165	245	1,499	14,513
Pediatric (<18) Candidates				
Count on waiting list at start*	3	5	24	571
Person Years**	8.4	10.5	48.9	1,090.1
Removals for transplant	29	32	90	1,052

* 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.

Figure B1D. Observed and expected deceased donor transplant rates: 01/01/2017 - 12/31/2018

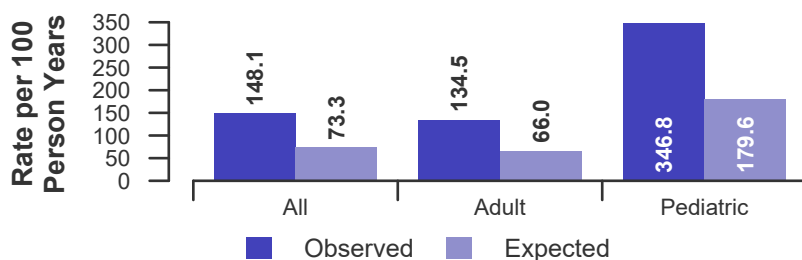


Figure B2D. Deceased donor transplant rate ratio estimate

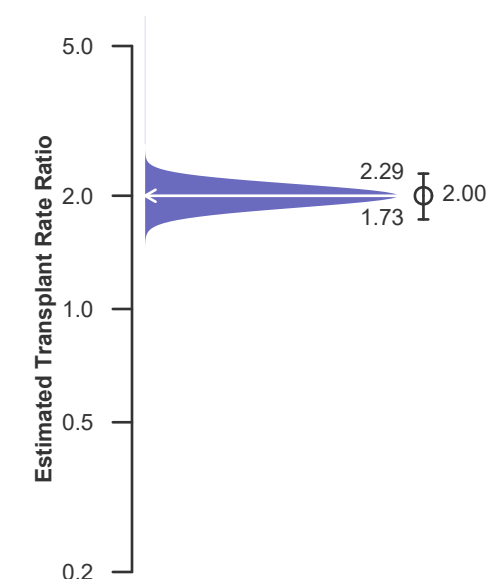
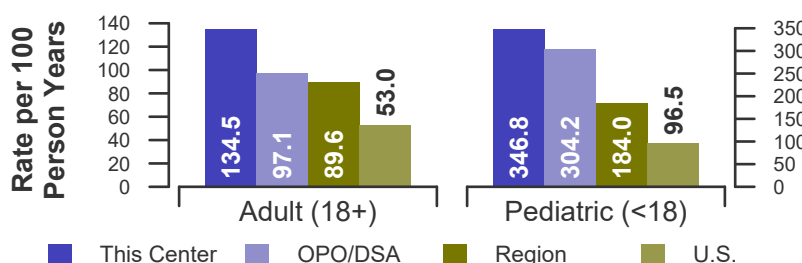


Figure B3D. Observed adult (18+) and pediatric (<18) deceased donor transplant rates: 01/01/2017 - 12/31/2018





B. Waiting List Information

Table B5. Waiting list mortality rates: 01/01/2017 - 12/31/2018

Waiting List Registrations	This Center	OPO/DSA	Region	U.S.
All Candidates				
Count on waiting list at start*	49	109	883	14,684
Person Years**	141.5	294.9	1,964.3	32,609.4
Number of deaths	25	58	311	3,958
Adult (18+) Candidates				
Count on waiting list at start*	46	104	859	14,113
Person Years**	132.7	283.7	1,913.4	31,432.0
Number of deaths	25	57	309	3,888
Pediatric (<18) Candidates				
Count on waiting list at start*	3	5	24	571
Person Years**	8.8	11.2	50.8	1,177.4
Number of deaths	0	1	2	70

* 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.

Figure B4. Observed and expected waiting list mortality rates: 01/01/2017 - 12/31/2018

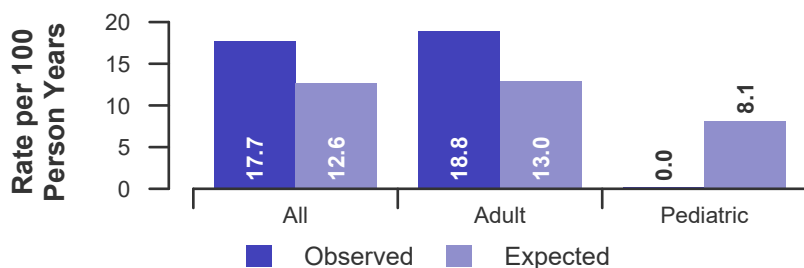


Figure B5. Waiting list mortality rate ratio estimate

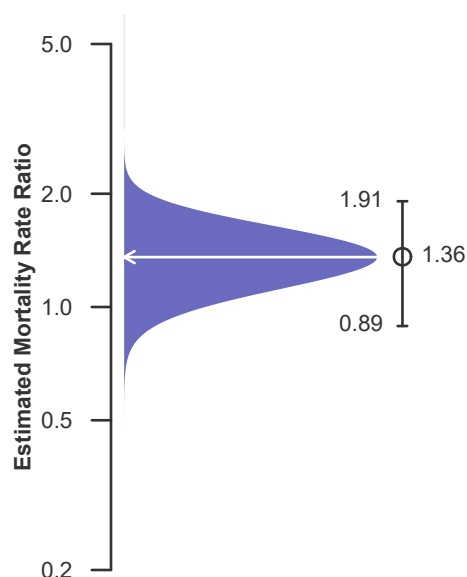
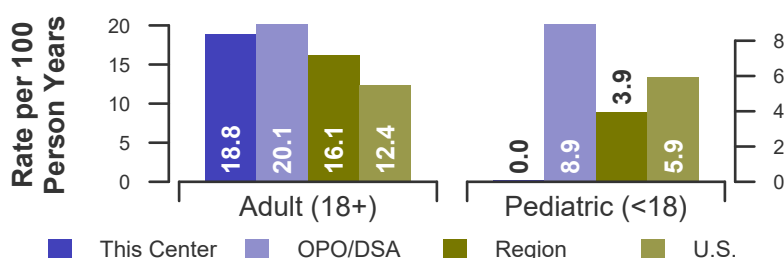


Figure B6. Observed adult (18+) and pediatric (<18) waiting list mortality rates: 01/01/2017 - 12/31/2018





B. Waiting List Information

Table B6. Waiting list candidate status after listing
Candidates registered on waiting list between 07/01/2016 and 06/30/2017

Waiting list status (survival status)	This Center (N=108)			U.S. (N=13,000)		
	Months Since Listing			Months Since Listing		
	6	12	18	6	12	18
Alive on waiting list (%)	21.3	8.3	5.6	48.3	28.2	18.7
Died on the waiting list without transplant (%)	3.7	4.6	4.6	4.6	6.2	6.8
Removed without transplant (%):						
Condition worsened (status unknown)	2.8	3.7	3.7	4.4	6.6	7.7
Condition improved (status unknown)	1.9	1.9	2.8	1.0	1.7	2.4
Refused transplant (status unknown)	0.0	0.9	0.9	0.2	0.4	0.6
Other	0.0	0.0	0.0	1.5	3.1	4.3
Transplant (living donor from waiting list only) (%):						
Functioning (alive)	0.9	0.9	0.0	1.8	2.2	1.6
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	0.1	0.1	0.1
Status Yet Unknown**	0.0	0.0	0.9	0.0	0.1	0.8
Transplant (deceased donor) (%):						
Functioning (alive)	66.7	67.6	48.1	33.7	42.2	33.7
Failed-Retransplanted (alive)	0.9	0.9	0.9	0.3	0.4	0.6
Failed-alive not retransplanted	0.0	0.0	0.0	0.0	0.0	0.0
Died	0.9	2.8	2.8	2.1	3.3	4.1
Status Yet Unknown*	0.9	8.3	29.6	1.7	4.8	17.7
Lost or Transferred (status unknown) (%)	0.0	0.0	0.0	0.3	0.6	0.8
TOTAL (%)	100.0	100.0	100.0	100.0	100.0	100.0
Total % known died on waiting list or after transplant	4.6	7.4	7.4	6.7	9.6	11.1
Total % known died or removed as unstable	7.4	11.1	11.1	11.1	16.2	18.8
Total % removed for transplant	70.4	80.6	82.4	39.6	53.2	58.7
Total % with known functioning transplant (alive)	67.6	68.5	48.1	35.5	44.4	35.3

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



B. Waiting List Information

Table B6S1. Medical urgency status 1 candidate status after listing

Candidates registered on the waiting list between 07/01/2016 and 06/30/2017

Waiting list status (survival status)	This Center (N=4)			U.S. (N=434)		
	Months Since listing			Months Since listing		
	6	12	18	6	12	18
Alive on waiting list (%)	0.0	0.0	0.0	3.7	1.8	1.4
Died on the waiting list without transplant (%)	25.0	25.0	25.0	6.2	6.2	6.2
Removed without transplant (%):						
Condition worsened (status unknown)	0.0	0.0	0.0	6.5	6.5	6.5
Condition improved (status unknown)	50.0	50.0	50.0	16.1	17.3	17.5
Refused transplant (status unknown)	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	1.2	1.4	1.6
Transplant (living donor from waiting list only) (%):						
Functioning (alive)	0.0	0.0	0.0	1.4	1.4	1.2
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	0.2	0.2	0.2
Status Yet Unknown**	0.0	0.0	0.0	0.0	0.0	0.2
Transplant (deceased donor) (%):						
Functioning (alive)	25.0	25.0	25.0	55.5	49.5	36.4
Failed-Retransplanted (alive)	0.0	0.0	0.0	1.2	1.2	1.2
Failed-alive not retransplanted	0.0	0.0	0.0	0.2	0.0	0.0
Died	0.0	0.0	0.0	6.9	8.5	9.0
Status Yet Unknown*	0.0	0.0	0.0	0.5	5.3	18.0
Lost or Transferred (status unknown) (%)	0.0	0.0	0.0	0.5	0.7	0.7
TOTAL (%)	100.0	100.0	100.0	100.0	100.0	100.0
Total % known died on waiting list or after transplant	25.0	25.0	25.0	13.4	15.0	15.4
Total % known died or removed as unstable	25.0	25.0	25.0	19.8	21.4	21.9
Total % removed for transplant	25.0	25.0	25.0	65.9	66.1	66.1
Total % with known functioning transplant (alive)	25.0	25.0	25.0	56.9	50.9	37.6

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



B. Waiting List Information

Table B7. Percent of candidates with deceased donor transplants: demographic characteristics
Candidates registered on the waiting list between 01/01/2013 and 12/31/2015

Characteristic	N	Percent transplanted at time periods since listing									
		This Center					United States				
		30 day	1 year	2 years	3 years		30 day	1 year	2 years	3 years	
All	277	25.6	70.4	73.6	76.5	35,110	16.9	44.1	52.0	53.9	
Ethnicity/Race*											
White	195	21.5	69.2	71.8	74.4	24,068	16.6	44.7	52.1	54.0	
African-American	51	37.3	74.5	82.4	88.2	3,467	20.9	49.4	57.0	59.0	
Hispanic/Latino	12	41.7	83.3	83.3	83.3	5,385	16.3	39.6	48.2	50.3	
Asian	7	28.6	57.1	57.1	57.1	1,710	15.5	40.3	51.6	53.8	
Other	12	25.0	66.7	66.7	66.7	480	18.1	44.0	52.9	54.8	
Unknown	0	--	--	--	--	0	--	--	--	--	
Age											
<2 years	35	37.1	85.7	85.7	85.7	864	24.3	69.9	75.2	76.4	
2-11 years	10	50.0	100.0	100.0	100.0	706	26.6	67.6	73.4	74.5	
12-17 years	5	40.0	100.0	100.0	100.0	438	21.7	55.3	64.6	67.1	
18-34 years	27	33.3	74.1	77.8	77.8	1,871	26.1	47.8	53.5	56.0	
35-49 years	49	22.4	67.3	69.4	71.4	5,407	23.2	45.6	51.7	53.7	
50-64 years	119	18.5	66.4	71.4	76.5	20,147	14.8	42.2	50.7	52.8	
65+ years	32	28.1	56.2	59.4	62.5	5,677	12.7	40.5	49.0	50.4	
Other (includes prenatal)	0	--	--	--	--	0	--	--	--	--	
Gender											
Male	180	26.7	72.8	77.2	80.0	22,377	16.5	45.1	53.4	55.3	
Female	97	23.7	66.0	67.0	70.1	12,733	17.7	42.4	49.4	51.4	

* 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%.



B. Waiting List Information

Table B8. Percent of candidates with deceased donor transplants: medical characteristics
Candidates registered on the waiting list between 01/01/2013 and 12/31/2015

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	277	25.6	70.4	73.6	76.5	35,110	16.9	44.1	52.0	53.9
Blood Type										
O	133	24.1	64.7	68.4	71.4	16,283	17.0	42.3	50.0	52.1
A	96	21.9	70.8	75.0	78.1	13,014	15.1	42.1	50.7	52.5
B	35	31.4	82.9	82.9	85.7	4,502	18.7	50.5	57.5	59.6
AB	13	53.8	92.3	92.3	92.3	1,311	27.9	65.6	70.2	71.5
Previous Transplant										
Yes	27	48.1	74.1	77.8	77.8	2,003	27.4	49.7	54.0	55.6
No	250	23.2	70.0	73.2	76.4	33,107	16.3	43.8	51.8	53.8
Primary Disease										
Acute Hepatic Necrosis	10	70.0	70.0	70.0	70.0	1,406	47.7	55.9	58.0	58.7
Non-Cholestatic Cirrhosis	166	22.3	65.7	70.5	73.5	23,745	16.4	41.5	48.5	50.4
Cholestatic Liver Disease/Cirrhosis	33	30.3	66.7	69.7	75.8	2,399	14.7	44.5	52.7	56.5
Biliary Atresia	22	36.4	86.4	86.4	86.4	699	15.7	65.2	73.2	74.7
Metabolic Diseases	7	14.3	100.0	100.0	100.0	833	21.4	62.5	68.8	70.3
Malignant Neoplasms	13	23.1	76.9	76.9	84.6	4,159	9.4	47.2	61.5	63.2
Other	26	19.2	80.8	80.8	80.8	1,855	19.3	45.7	53.6	56.2
Missing	0	--	--	--	--	14	7.1	14.3	14.3	14.3
Medical Urgency Status/MELD/PELD at Listing*										
Status 1	0	--	--	--	--	0	--	--	--	--
Status 1A	14	71.4	71.4	71.4	71.4	1,187	60.9	61.4	61.4	61.4
Status 1B	1	100.0	100.0	100.0	100.0	145	53.1	81.4	81.4	81.4
Status 2A	0	--	--	--	--	0	--	--	--	--
Status 2B	0	--	--	--	--	0	--	--	--	--
Status 3	0	--	--	--	--	0	--	--	--	--
MELD 6-10	47	10.6	76.6	78.7	78.7	7,003	3.6	34.7	48.8	51.3
MELD 11-14	45	2.2	48.9	53.3	62.2	6,642	3.0	28.8	39.4	42.7
MELD 15-20	64	10.9	53.1	62.5	68.8	8,028	6.5	38.1	46.6	49.2
MELD 21-30	46	45.7	89.1	89.1	89.1	5,911	25.0	56.8	59.6	60.4
MELD 31-40	21	71.4	76.2	76.2	76.2	3,730	65.2	71.9	72.1	72.1
PELD less than or equal to 10	18	16.7	88.9	88.9	88.9	674	9.5	65.3	74.5	76.3
PELD 11-14	4	50.0	100.0	100.0	100.0	114	17.5	69.3	77.2	77.2
PELD 15-20	11	36.4	90.9	90.9	90.9	174	14.9	75.3	79.9	82.2
PELD 21-30	3	66.7	100.0	100.0	100.0	150	22.7	73.3	76.7	76.7
PELD 31 or greater	0	--	--	--	--	55	58.2	74.5	74.5	76.4
Temporarily Inactive	3	0.0	66.7	66.7	66.7	1,297	7.2	31.1	40.6	41.6

* 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 B9. Time to transplant for waiting list candidates*

Candidates registered on the waiting list between 01/01/2013 and 06/30/2018

Percentile	Center	Months to Transplant**		U.S.
		OPO/DSA	Region	
5th	0.1	0.1	0.1	0.2
10th	0.2	0.3	0.2	0.3
25th	0.9	1.3	1.2	1.9
50th (median time to transplant)	3.8	6.2	5.8	11.2
75th	10.4	Not Observed	Not Observed	Not Observed

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

** Censored on 12/31/2018. 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 B10. Offer Acceptance Practices: 01/01/2018 - 12/31/2018

Offers Acceptance Characteristics	This Center	OPO/DSA	Region	U.S.
Overall				
Number of Offers	683	1,737	11,516	168,159
Number of Acceptances	76	114	700	7,003
Expected Acceptances	49.4	117.8	767.0	6,993.9
Offer Acceptance Ratio*	1.52	0.97	0.91	1.00
95% Credible Interval**	[1.20, 1.87]	--	--	--
PHS increased infectious risk				
Number of Offers	133	393	2,868	38,585
Number of Acceptances	17	31	220	1,979
Expected Acceptances	11.0	38.0	255.1	1,976.5
Offer Acceptance Ratio*	1.46	0.83	0.86	1.00
95% Credible Interval**	[0.88, 2.18]	--	--	--
DCD donor				
Number of Offers	18	250	2,504	34,675
Number of Acceptances	3	3	49	505
Expected Acceptances	1.0	4.0	44.2	509.0
Offer Acceptance Ratio*	1.65	0.83	1.10	0.99
95% Credible Interval**	[0.54, 3.39]	--	--	--
HCV+ donor				
Number of Offers	9	79	706	5,645
Number of Acceptances	1	3	51	356
Expected Acceptances	0.8	9.6	62.9	355.7
Offer Acceptance Ratio*	1.06	0.43	0.82	1.00
95% Credible Interval**	[0.22, 2.56]	--	--	--
Hard-to-Place Livers (Over 50 Offers)				
Number of Offers	293	863	5,341	97,991
Number of Acceptances	7	7	39	576
Expected Acceptances	3.3	8.7	42.0	581.8
Offer Acceptance Ratio*	1.71	0.84	0.93	0.99
95% Credible Interval**	[0.78, 2.99]	--	--	--
Donor more than 500 miles away				
Number of Offers	60	252	2,463	50,819
Number of Acceptances	4	4	47	704
Expected Acceptances	1.2	2.6	51.8	656.1
Offer Acceptance Ratio*	1.89	1.31	0.91	1.07
95% Credible Interval**	[0.69, 3.67]	--	--	--

* The offer acceptance ratio estimates the relative offer acceptance practice of Duke University Hospital (NCDU) 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, [1.20, 1.87], indicates the location of NCDU's true offer acceptance ratio with 95% probability. The best estimate is 52% more likely to accept an offer compared to national acceptance behavior, but NCDU's performance could plausibly range from 20% higher acceptance up to 87% higher acceptance.



B. Waiting List Information

Figure B7. Offer acceptance: Overall

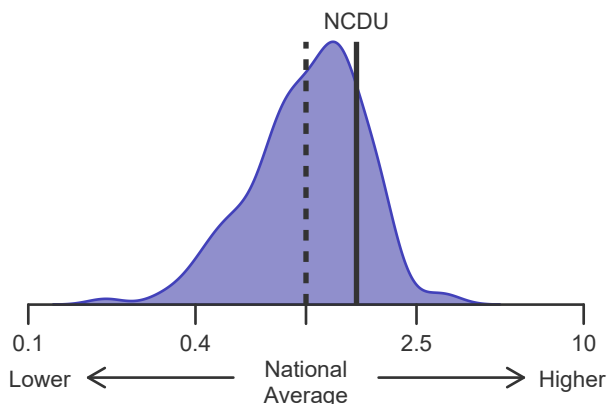


Figure B8. Offer acceptance: PHS increased infectious risk

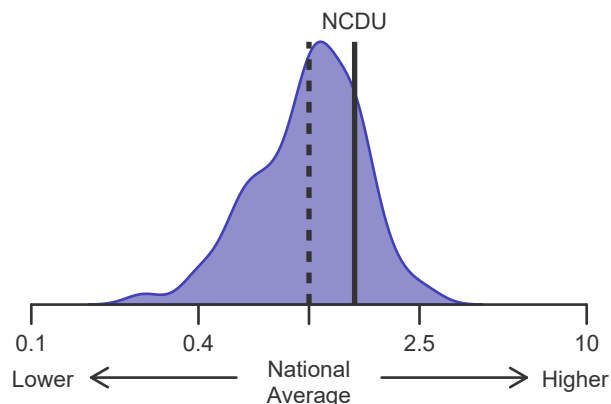


Figure B9. Offer acceptance: DCD Donor

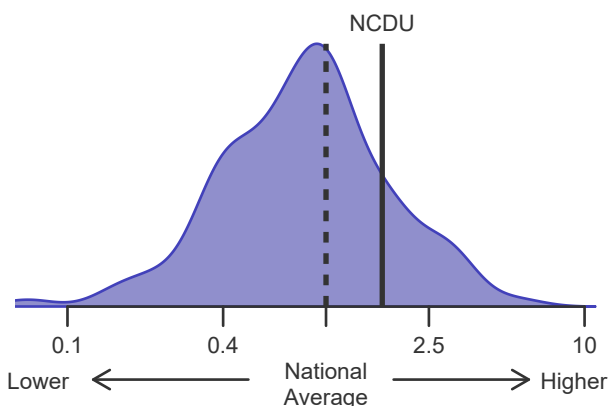


Figure B10. Offer acceptance: HCV+ Donor

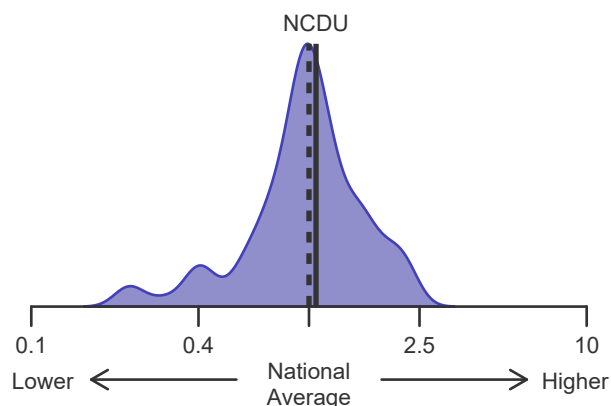


Figure B11. Offer acceptance: Offer number > 50

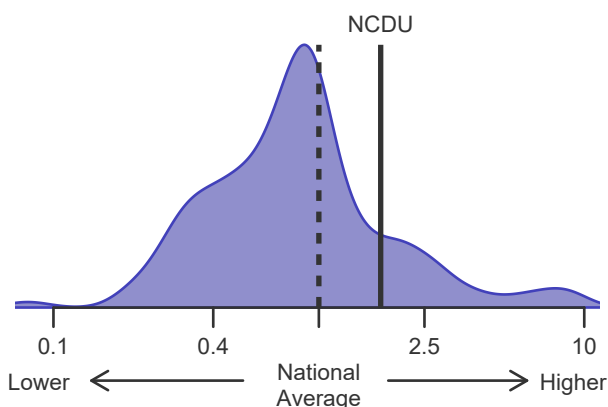
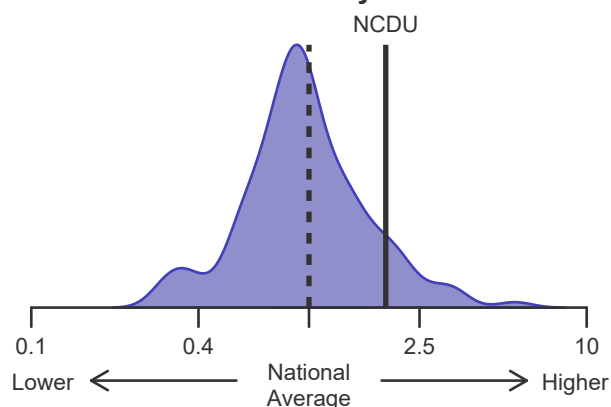


Figure B12. Offer acceptance: Donor more than 500 miles away





C. Transplant Information

Table C1D. Deceased donor transplant recipient demographic characteristics

Patients transplanted between 01/01/2018 and 12/31/2018

Characteristic	Percentage in each category		
	Center (N=93)	Region (N=780)	U.S. (N=7,849)
Ethnicity/Race (%)*			
White	76.3	80.3	68.6
African-American	10.8	12.3	8.8
Hispanic/Latino	5.4	4.2	16.0
Asian	1.1	1.4	4.8
Other	6.5	1.8	1.8
Unknown	0.0	0.0	0.0
Age (%)			
<2 years	8.6	1.7	2.6
2-11 years	6.5	2.4	2.6
12-17	1.1	1.0	1.2
18-34	4.3	4.5	6.0
35-49 years	15.1	14.7	16.5
50-64 years	50.5	52.2	49.3
65+ years	14.0	23.5	21.8
Unknown	0.0	0.0	0.0
Gender (%)			
Male	66.7	65.9	64.5
Female	33.3	34.1	35.5

* 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%.



C. Transplant Information

Table C1L. Living donor transplant recipient demographic characteristics

Patients transplanted between 01/01/2018 and 12/31/2018

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



C. Transplant Information

Table C2D. Deceased donor transplant recipient medical characteristics
Patients transplanted between 01/01/2018 and 12/31/2018

Characteristic	Percentage in each category		
	Center (N=93)	Region (N=780)	U.S. (N=7,849)
Blood Type (%)			
O	48.4	46.9	44.9
A	36.6	35.5	36.2
B	10.8	12.7	14.1
AB	4.3	4.9	4.8
Previous Transplant (%)			
Yes	3.2	3.1	4.9
No	96.8	96.9	95.1
Body Mass Index (%)			
0-20	19.4	10.8	12.4
21-25	28.0	25.9	27.4
26-30	31.2	30.6	29.7
31+	21.5	32.6	29.6
Unknown	0.0	0.1	0.9
Primary Disease (%)			
Acute Hepatic Necrosis	4.3	3.5	4.9
Non-Cholestatic Cirrhosis	44.1	67.3	61.2
Cholestatic Liver Disease/Cirrhosis	6.5	6.3	6.8
Biliary Atresia	8.6	2.4	2.9
Metabolic Diseases	3.2	3.6	3.1
Malignant Neoplasms	24.7	14.6	17.5
Other	8.6	2.3	3.6
Missing	0.0	0.0	0.1
Medical Urgency Statust/MELD/PELD at Transplant (%)*			
Status 1A	4.3	3.2	3.6
Status 1B	1.1	1.2	1.4
MELD 6-10	17.2	15.0	14.7
MELD 11-14	9.7	15.3	13.1
MELD 15-20	21.5	23.2	20.0
MELD 21-30	15.1	25.0	22.4
MELD 31-40	18.3	14.2	21.5
PELD less than or equal to 10	5.4	1.7	1.8
PELD 11-14	0.0	0.1	0.3
PELD 15-20	1.1	0.3	0.5
PELD 21-30	6.5	0.9	0.5
PELD 31 or greater	0.0	0.0	0.2
Temporarily Inactive	0.0	0.0	0.0
Recipient Medical Condition at Transplant (%)			
Not Hospitalized	68.8	74.4	66.0
Hospitalized	21.5	14.0	18.1
ICU	9.7	11.5	15.6
Unknown	0.0	0.1	0.2

* 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 01/01/2018 and 12/31/2018

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



C. Transplant Information

Table C3D. Deceased donor characteristics

Transplants performed between 01/01/2018 and 12/31/2018

Donor Characteristic	Percentage in each category		
	Center (N=93)	Region (N=780)	U.S. (N=7,849)
Cause of Death (%)			
Deceased: Stroke	44.1	28.5	27.4
Deceased: MVA	14.0	15.4	13.7
Deceased: Other	41.9	56.2	58.9
Ethnicity/Race (%)*			
White	64.5	69.9	63.2
African-American	33.3	24.6	18.9
Hispanic/Latino	2.2	3.7	14.2
Asian	0.0	1.0	2.7
Other	0.0	0.8	1.1
Not Reported	0.0	0.0	0.0
Age (%)			
<2 years	3.2	0.5	1.3
2-11 years	4.3	2.2	2.8
12-17	6.5	5.8	4.7
18-34	26.9	36.8	33.2
35-49 years	31.2	29.2	26.6
50-64 years	18.3	18.8	23.3
65+ years	9.7	6.7	8.0
Unknown	0.0	0.0	0.0
Gender (%)			
Male	55.9	58.1	60.5
Female	44.1	41.9	39.5
Blood Type (%)			
O	49.5	48.8	48.6
A	36.6	35.9	36.6
B	11.8	12.6	12.1
AB	2.2	2.7	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 01/01/2018 and 12/31/2018

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



C. Transplant Information

Table C4D. Deceased donor transplant characteristics
Transplants performed between 01/01/2018 and 12/31/2018

Transplant Characteristic	Percentage in each category		
	Center (N=93)	Region (N=780)	U.S. (N=7,849)
Cold Ischemic Time (Hours): Local (%)			
Deceased: 0-5 hr	60.4	70.5	63.5
Deceased: 6-10 hr	37.7	27.3	34.3
Deceased: 11-15 hr	1.9	1.4	1.3
Deceased: 16-20 hr	0.0	0.2	0.1
Deceased: 21+ hr	0.0	0.2	0.1
Not Reported	0.0	0.4	0.6
Cold Ischemic Time (Hours): Shared (%)			
Deceased: 0-5 hr	47.5	55.5	41.5
Deceased: 6-10 hr	52.5	44.1	54.9
Deceased: 11-15 hr	0.0	0.4	2.6
Deceased: 16-20 hr	0.0	0.0	0.1
Deceased: 21+ hr	0.0	0.0	0.0
Not Reported	0.0	0.0	0.9
Procedure Type (%)			
Liver alone	82.8	90.4	89.9
Liver and another organ	17.2	9.6	10.1
Sharing (%)			
Local	57.0	64.0	63.2
Shared	43.0	36.0	36.8
Median Time in Hospital After Transplant*	11.0 Days	8.0 Days	9.0 Days

* Multiple organ transplants are excluded from this statistic.



C. Transplant Information

Table C4L. Living donor transplant characteristics

Transplants performed between 01/01/2018 and 12/31/2018

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



C. Transplant Information

Table C5. Adult (18+) 1-month survival with a functioning graft
Single organ transplants performed between 01/01/2016 and 06/30/2018
Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	183	16,600
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	98.36%	96.20%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	96.64%	--
Number of observed graft failures (including deaths) during the first month after transplant	3	631
Number of expected graft failures (including deaths) during the first month after transplant	6.20	--
Estimated hazard ratio*	0.61	--
95% credible interval for the hazard ratio**	[0.20, 1.25]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, 1.25], 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 25% increased risk.

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

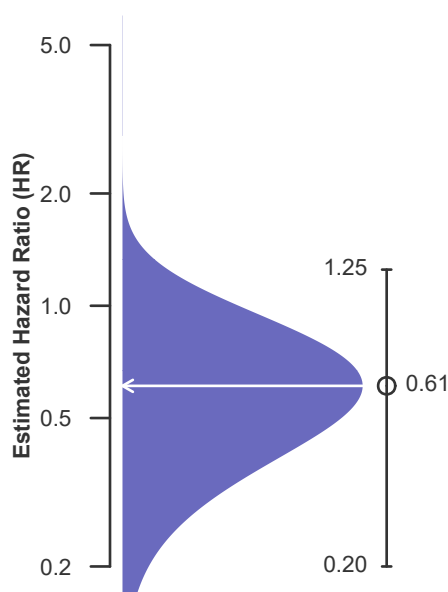
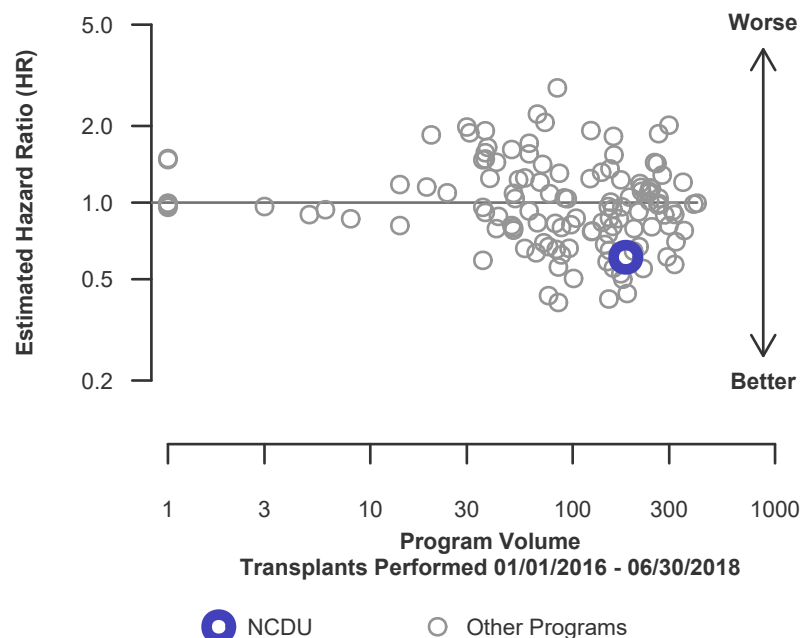


Figure C2. Adult (18+) 1-month graft failure HR program comparison





C. Transplant Information

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

Single organ transplants performed between 01/01/2016 and 06/30/2018

Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	182	15,876
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	98.35%	96.20%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	96.64%	--
Number of observed graft failures (including deaths) during the first month after transplant	3	604
Number of expected graft failures (including deaths) during the first month after transplant	6.16	--
Estimated hazard ratio*	0.61	--
95% credible interval for the hazard ratio**	[0.20, 1.25]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, 1.25], 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 25% increased risk.

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

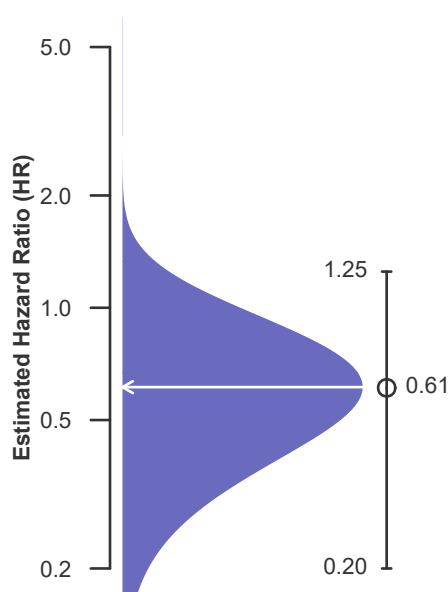
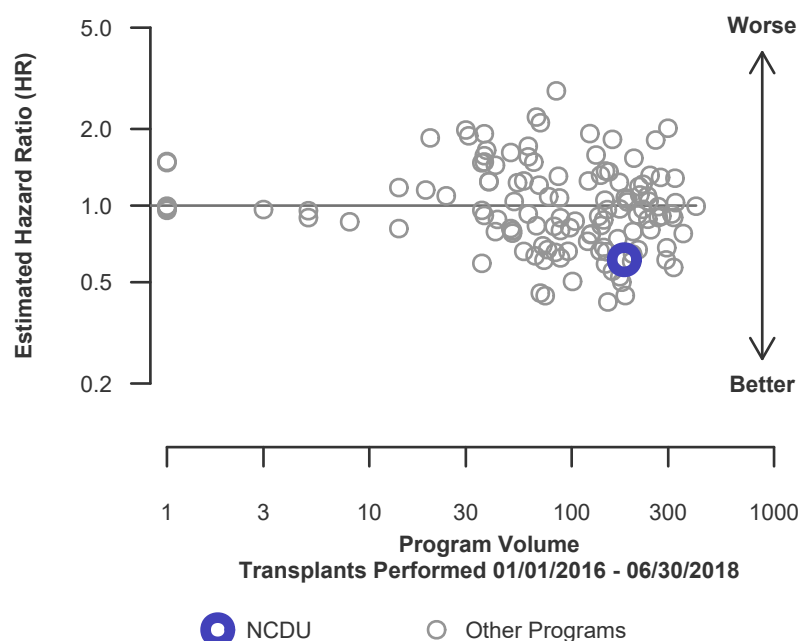


Figure C2D. Adult (18+) 1-month deceased donor graft failure HR program comparison





C. Transplant Information

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

Single organ transplants performed between 01/01/2016 and 06/30/2018

Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	1	724
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	100.00%	96.27%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	96.28%	--
Number of observed graft failures (including deaths) during the first month after transplant	0	27
Number of expected graft failures (including deaths) during the first month 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 (NCDU)'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, 2.73], 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 173% increased risk.

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

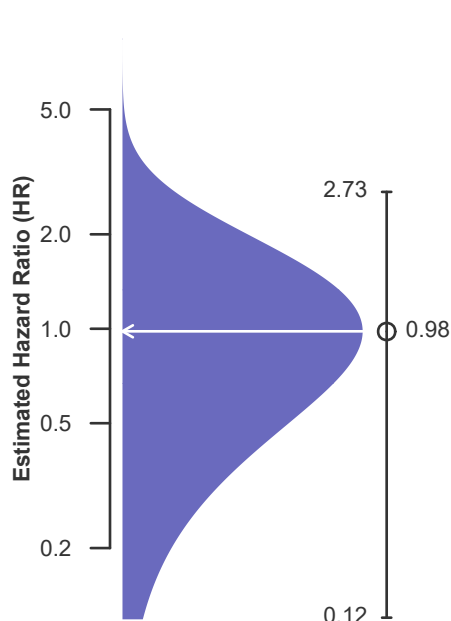
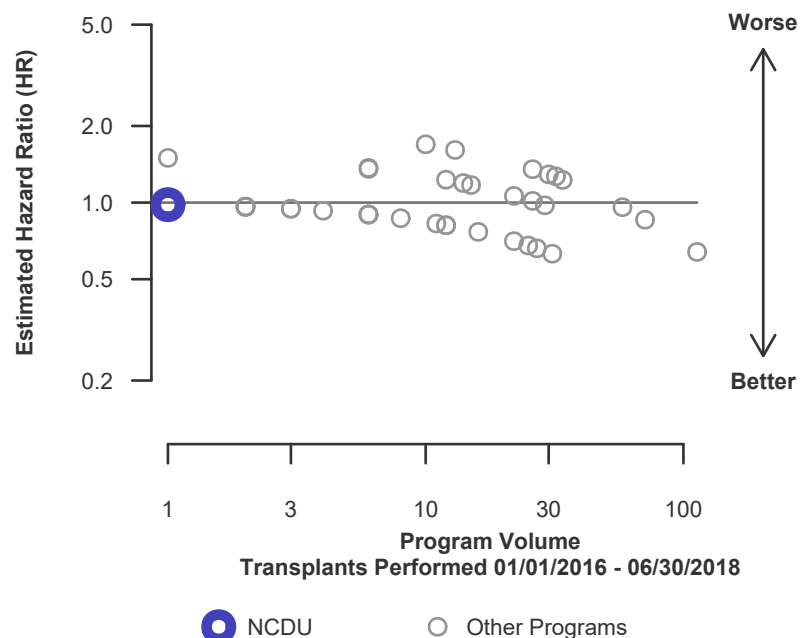


Figure C2L. Adult (18+) 1-month living donor graft failure HR program comparison





C. Transplant Information

Table C6. Adult (18+) 1-year survival with a functioning graft
Single organ transplants performed between 01/01/2016 and 06/30/2018
Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	183	16,600
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	96.05%	91.04%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	91.83%	--
Number of observed graft failures (including deaths) during the first year after transplant	7	1,413
Number of expected graft failures (including deaths) during the first year after transplant	14.58	--
Estimated hazard ratio*	0.54	--
95% credible interval for the hazard ratio**	[0.25, 0.95]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, 0.95], 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 75% reduced risk up to 5% reduced risk.

Figure C3. Adult (18+) 1-year graft failure HR estimate

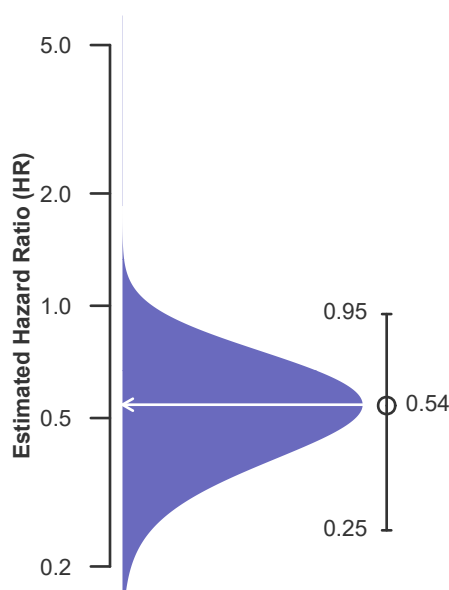
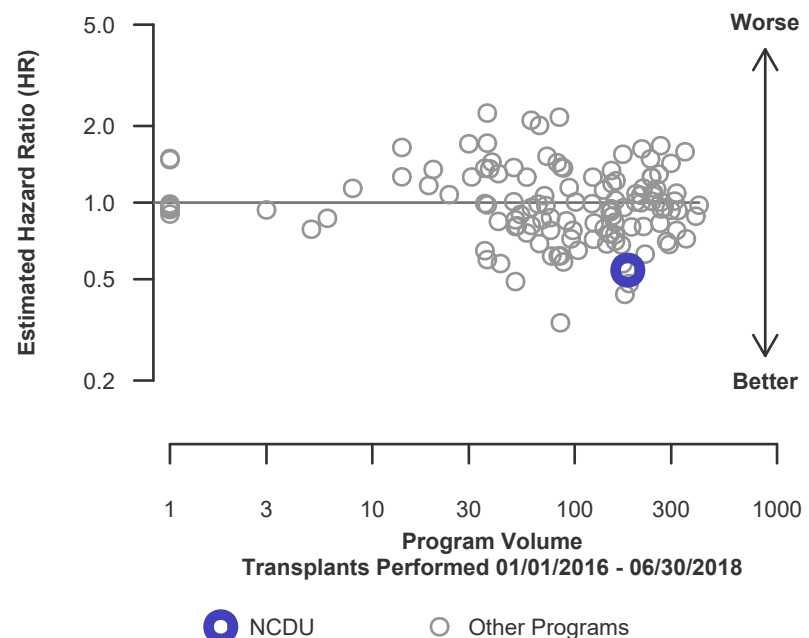


Figure C4. Adult (18+) 1-year graft failure HR program comparison





C. Transplant Information

Table C6D. Adult (18+) 1-year survival with a functioning deceased donor graft
Single organ transplants performed between 01/01/2016 and 06/30/2018
Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	182	15,876
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	96.58%	91.04%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	91.84%	--
Number of observed graft failures (including deaths) during the first year after transplant	6	1,352
Number of expected graft failures (including deaths) during the first year after transplant	14.53	--
Estimated hazard ratio*	0.48	--
95% credible interval for the hazard ratio**	[0.21, 0.87]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.21, 0.87], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 52% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 79% reduced risk up to 13% reduced risk.

Figure C3D. Adult (18+) 1-year deceased donor graft failure HR estimate

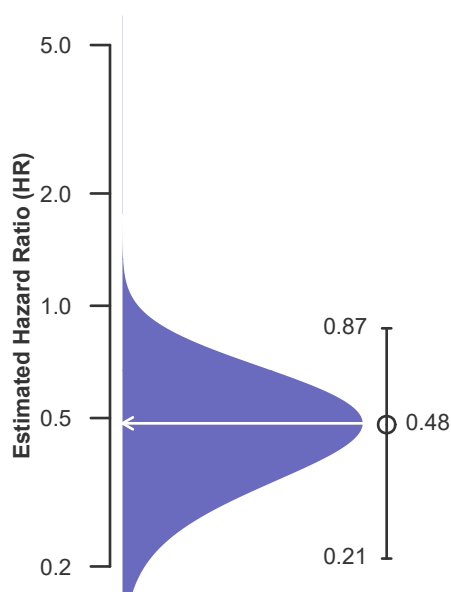
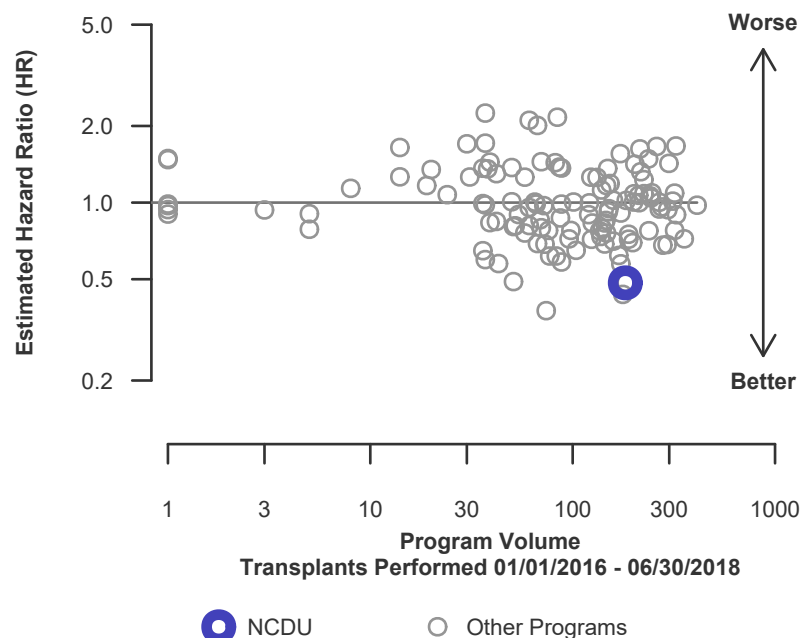


Figure C4D. Adult (18+) 1-year deceased donor graft failure HR program comparison





C. Transplant Information

Table C6L. Adult (18+) 1-year survival with a functioning living donor graft

Single organ transplants performed between 01/01/2016 and 06/30/2018

Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	1	724
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	0.00%	91.12%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	91.13%	--
Number of observed graft failures (including deaths) during the first year after transplant	1	61
Number of expected graft failures (including deaths) during the first year after transplant	0.05	--
Estimated hazard ratio*	1.47	--
95% credible interval for the hazard ratio**	[0.30, 3.53]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, 3.53], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 47% higher risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 70% reduced risk up to 253% increased risk.

Figure C3L. Adult (18+) 1-year living donor graft failure HR estimate

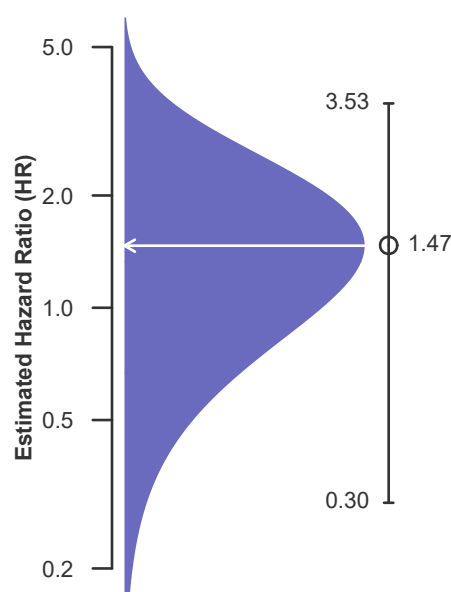
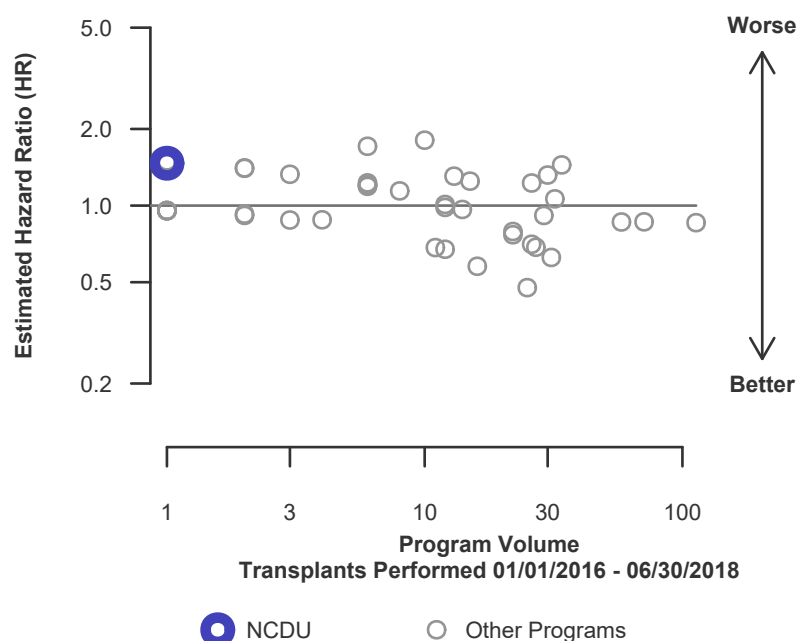


Figure C4L. Adult (18+) 1-year living donor graft failure HR program comparison





C. Transplant Information

Table C7. Adult (18+) 3-year survival with a functioning graft

Single organ transplants performed between 07/01/2013 and 12/31/2015

Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	129	14,203
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	88.37%	83.29%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	85.13%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	15	2,373
Number of expected graft failures (including deaths) during the first 3 years after transplant	19.58	--
Estimated hazard ratio*	0.79	--
95% credible interval for the hazard ratio**	[0.46, 1.20]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.46, 1.20], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 21% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 54% reduced risk up to 20% increased risk.

Figure C5. Adult (18+) 3-year graft failure HR estimate

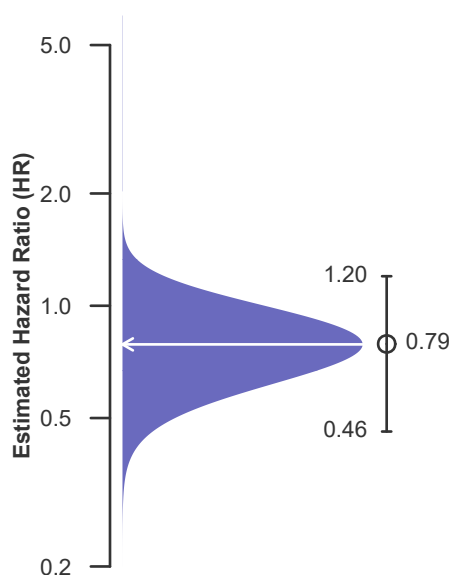
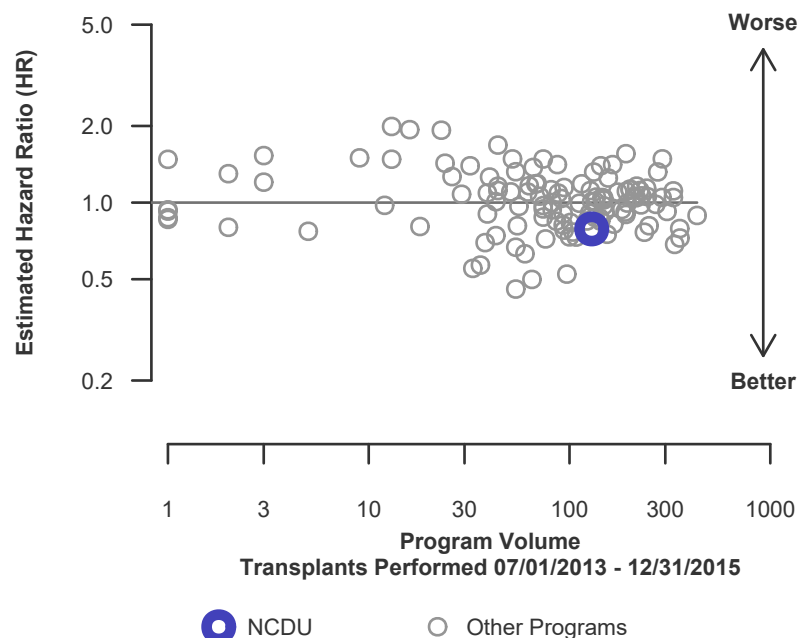


Figure C6. Adult (18+) 3-year graft failure HR program comparison





C. Transplant Information

Table C7D. Adult (18+) 3-year survival with a functioning deceased donor graft

Single organ transplants performed between 07/01/2013 and 12/31/2015

Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	125	13,595
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	88.80%	83.34%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	85.23%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	14	2,265
Number of expected graft failures (including deaths) during the first 3 years after transplant	18.90	--
Estimated hazard ratio*	0.77	--
95% credible interval for the hazard ratio**	[0.44, 1.18]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.44, 1.18], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 23% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 56% reduced risk up to 18% increased risk.

Figure C5D. Adult (18+) 3-year deceased donor graft failure HR estimate

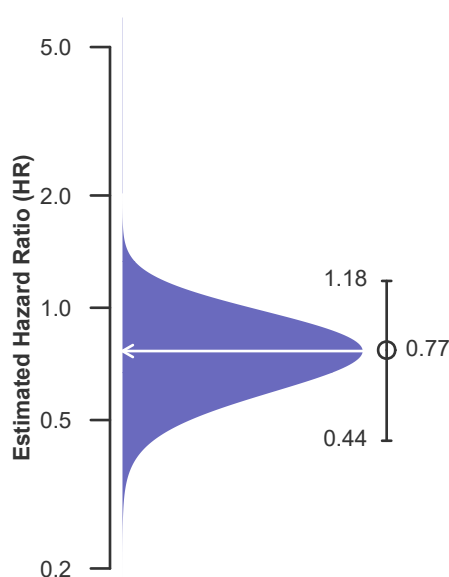
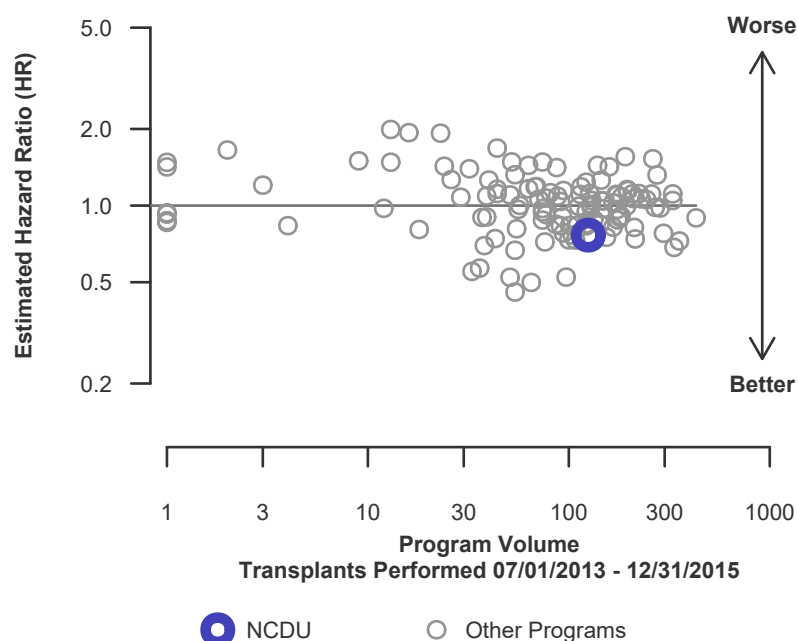


Figure C6D. Adult (18+) 3-year deceased donor graft failure HR program comparison





C. Transplant Information

Table C7L. Adult (18+) 3-year survival with a functioning living donor graft

Single organ transplants performed between 07/01/2013 and 12/31/2015

Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	4	608
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	75.00%	82.24%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	82.26%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	1	108
Number of expected graft failures (including deaths) during the first 3 years after transplant	0.68	--
Estimated hazard ratio*	1.12	--
95% credible interval for the hazard ratio**	[0.23, 2.70]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.23, 2.70], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 12% higher risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 77% reduced risk up to 170% increased risk.

Figure C5L. Adult (18+) 3-year living donor graft failure HR estimate

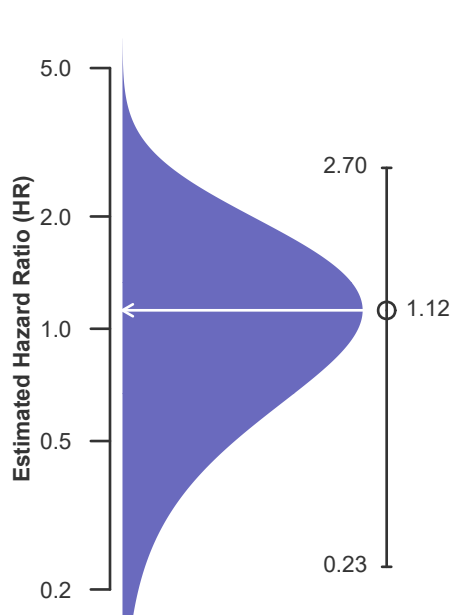
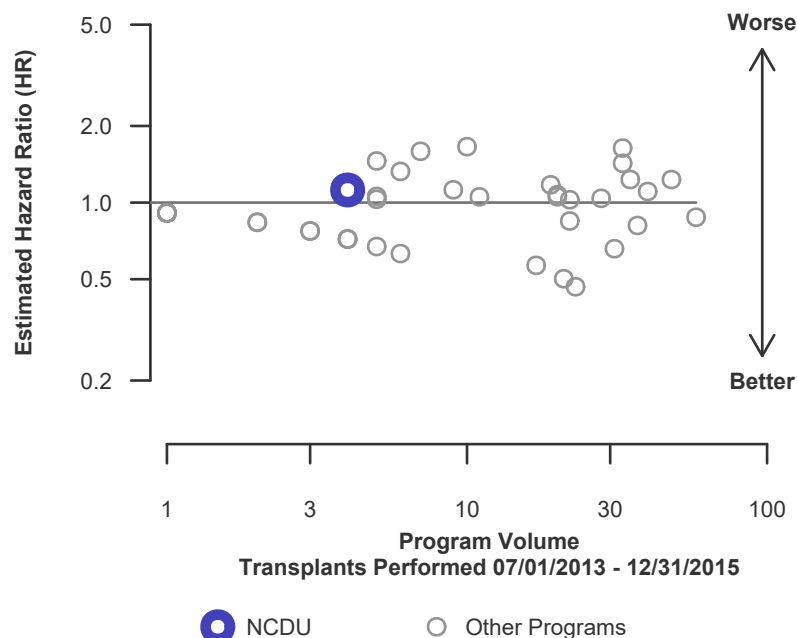


Figure C6L. Adult (18+) 3-year living donor graft failure HR program comparison





C. Transplant Information

Table C8. Pediatric (<18) 1-month survival with a functioning graft
Single organ transplants performed between 01/01/2016 and 06/30/2018
Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	38	1,378
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	100.00%	95.72%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	96.23%	--
Number of observed graft failures (including deaths) during the first month after transplant	0	59
Number of expected graft failures (including deaths) during the first month after transplant	1.46	--
Estimated hazard ratio*	0.58	--
95% credible interval for the hazard ratio**	[0.07, 1.61]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.07, 1.61], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 42% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 93% reduced risk up to 61% increased risk.

Figure C7. Pediatric (<18) 1-month graft failure HR estimate

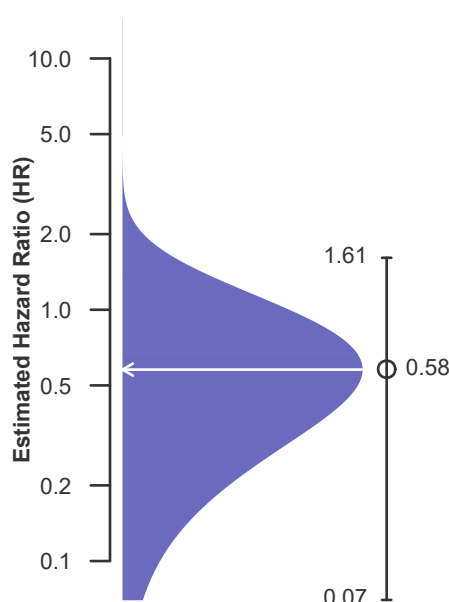
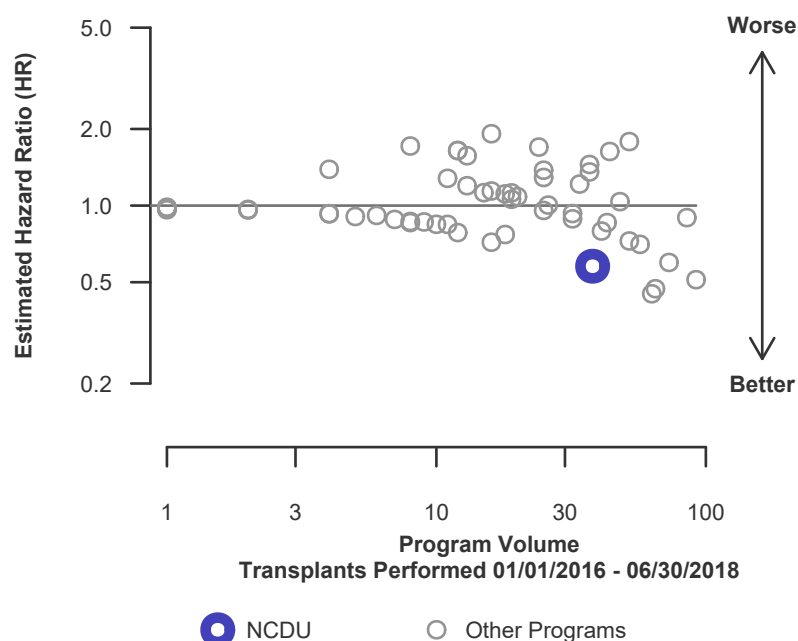


Figure C8. Pediatric (<18) 1-month graft failure HR program comparison





C. Transplant Information

Table C8D. Pediatric (<18) 1-month survival with a functioning deceased donor graft

Single organ transplants performed between 01/01/2016 and 06/30/2018

Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	37	1,214
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	100.00%	95.55%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	96.21%	--
Number of observed graft failures (including deaths) during the first month after transplant	0	54
Number of expected graft failures (including deaths) during the first month after transplant	1.43	--
Estimated hazard ratio*	0.58	--
95% credible interval for the hazard ratio**	[0.07, 1.62]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.07, 1.62], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 42% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 93% reduced risk up to 62% increased risk.

Figure C7D. Pediatric (<18) 1-month deceased donor graft failure HR estimate

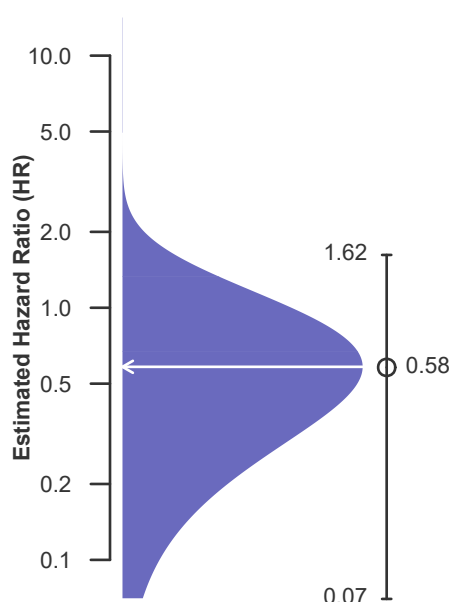
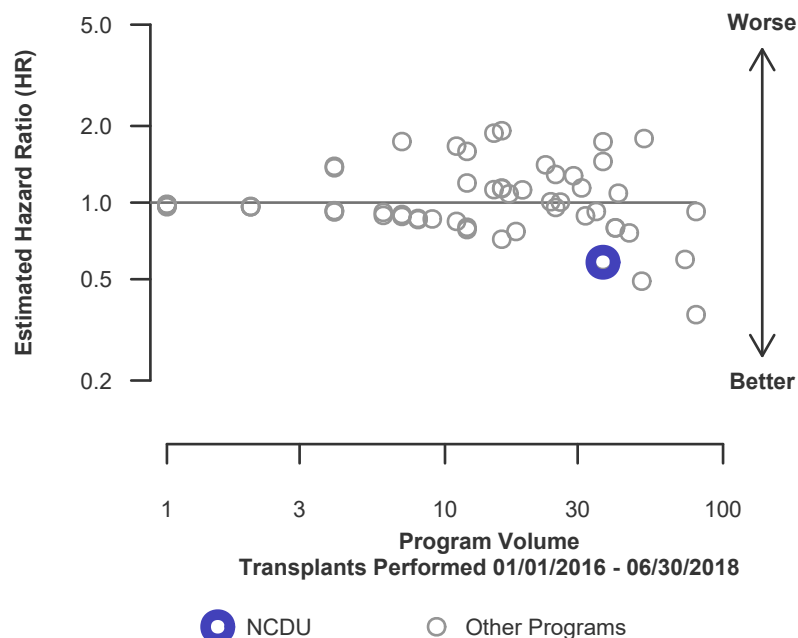


Figure C8D. Pediatric (<18) 1-month deceased donor graft failure HR program comparison





C. Transplant Information

Table C8L. Pediatric (<18) 1-month survival with a functioning living donor graft

Single organ transplants performed between 01/01/2016 and 06/30/2018

Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	1	164
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	100.00%	96.95%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	96.96%	--
Number of observed graft failures (including deaths) during the first month after transplant	0	5
Number of expected graft failures (including deaths) during the first month 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 (NCDU)'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, 2.74], 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 174% increased risk.

Figure C7L. Pediatric (<18) 1-month living donor graft failure HR estimate

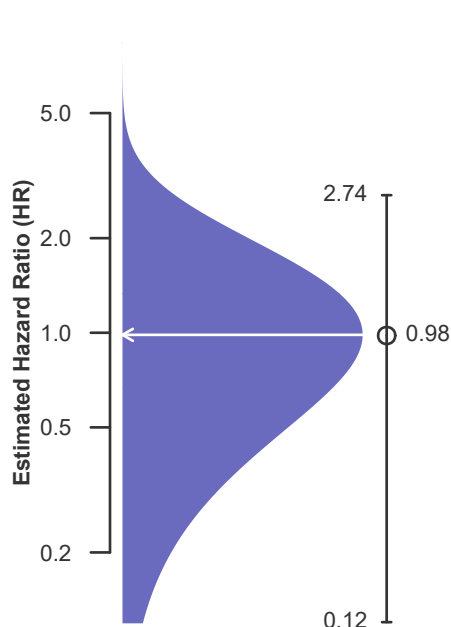
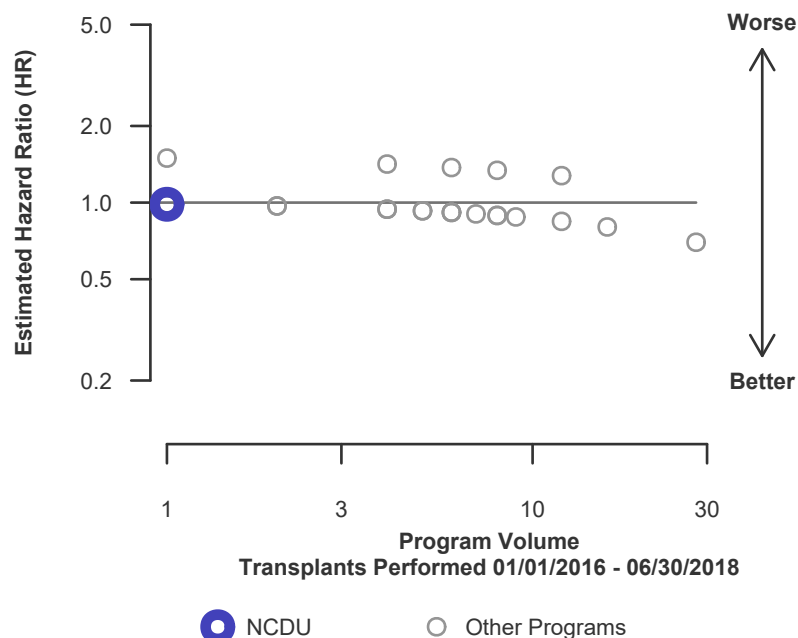


Figure C8L. Pediatric (<18) 1-month living donor graft failure HR program comparison





C. Transplant Information

Table C9. Pediatric (<18) 1-year survival with a functioning graft
Single organ transplants performed between 01/01/2016 and 06/30/2018
Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	38	1,378
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	100.00%	92.15%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	92.47%	--
Number of observed graft failures (including deaths) during the first year after transplant	0	105
Number of expected graft failures (including deaths) during the first year after transplant	2.89	--
Estimated hazard ratio*	0.41	--
95% credible interval for the hazard ratio**	[0.05, 1.14]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.05, 1.14], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 59% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 95% reduced risk up to 14% increased risk.

Figure C9. Pediatric (<18) 1-year graft failure HR estimate

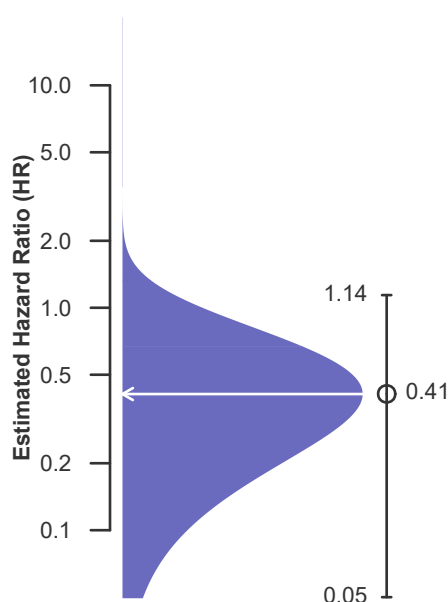
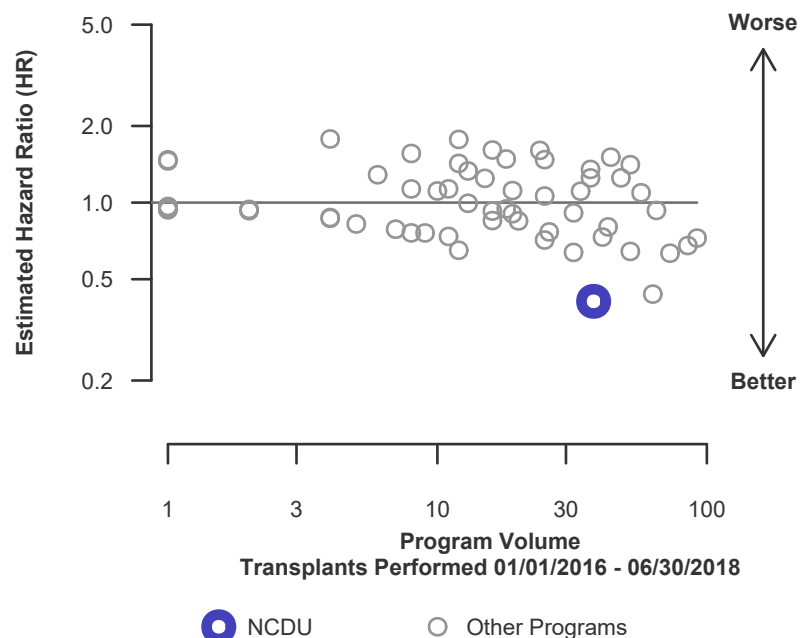


Figure C10. Pediatric (<18) 1-year graft failure HR program comparison





C. Transplant Information

Table C9D. Pediatric (<18) 1-year survival with a functioning deceased donor graft

Single organ transplants performed between 01/01/2016 and 06/30/2018

Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	37	1,214
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	100.00%	91.95%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	92.43%	--
Number of observed graft failures (including deaths) during the first year after transplant	0	95
Number of expected graft failures (including deaths) during the first year after transplant	2.82	--
Estimated hazard ratio*	0.41	--
95% credible interval for the hazard ratio**	[0.05, 1.16]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.05, 1.16], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 59% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 95% reduced risk up to 16% increased risk.

Figure C9D. Pediatric (<18) 1-year deceased donor graft failure HR estimate

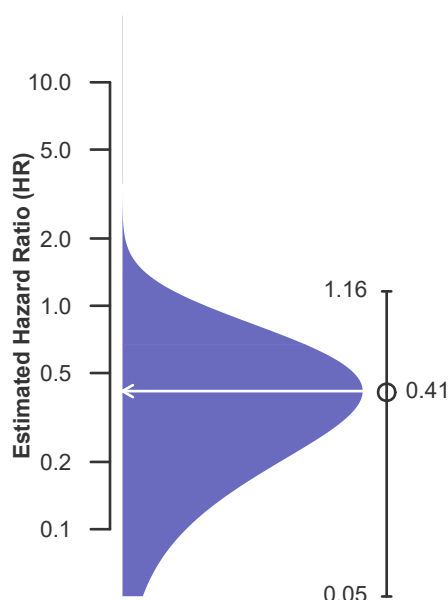
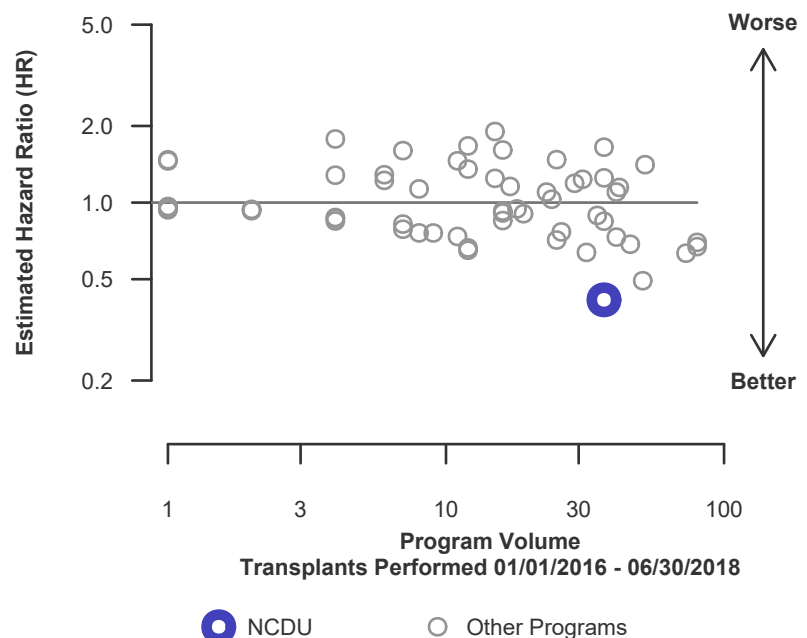


Figure C10D. Pediatric (<18) 1-year deceased donor graft failure HR program comparison





C. Transplant Information

Table C9L. Pediatric (<18) 1-year survival with a functioning living donor graft
Single organ transplants performed between 01/01/2016 and 06/30/2018
Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	1	164
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	100.00%	93.65%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	93.67%	--
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	0.07	--
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 (NCDU)'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 C9L. Pediatric (<18) 1-year living donor graft failure HR estimate

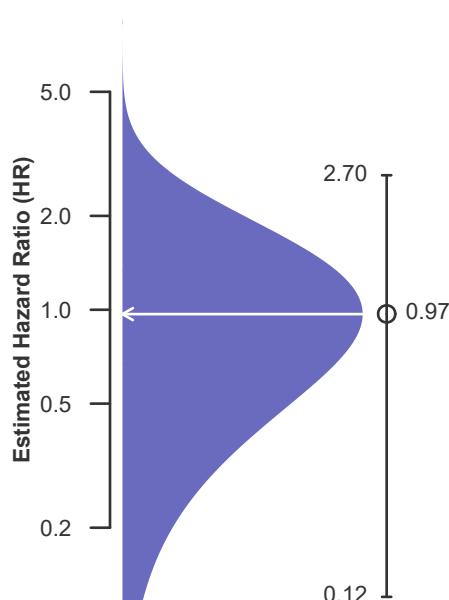
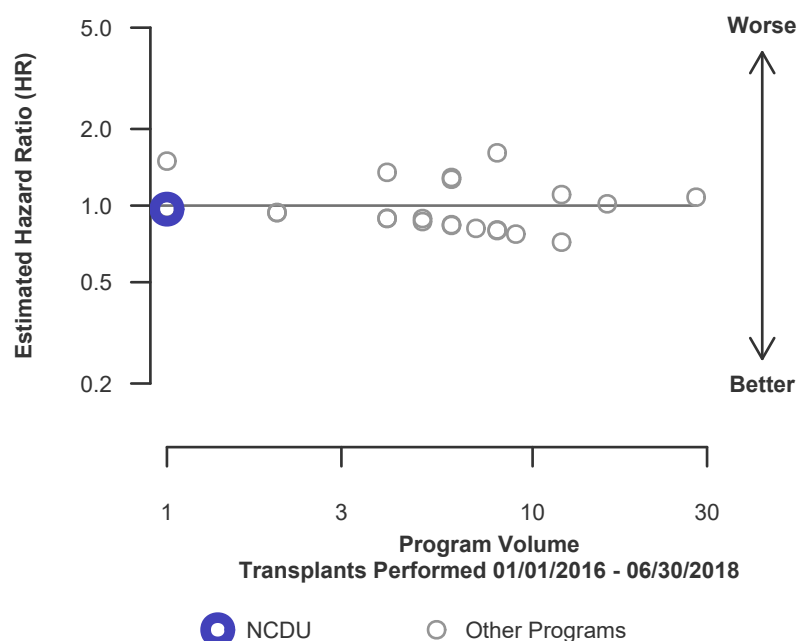


Figure C10L. Pediatric (<18) 1-year living donor graft failure HR program comparison





C. Transplant Information

Table C10. Pediatric (<18) 3-year survival with a functioning graft
Single organ transplants performed between 07/01/2013 and 12/31/2015
Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	29	1,258
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	89.66%	87.60%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	87.43%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	3	156
Number of expected graft failures (including deaths) during the first 3 years after transplant	3.61	--
Estimated hazard ratio*	0.89	--
95% credible interval for the hazard ratio**	[0.29, 1.83]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, 1.83], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 11% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 71% reduced risk up to 83% increased risk.

Figure C11. Pediatric (<18) 3-year graft failure HR estimate

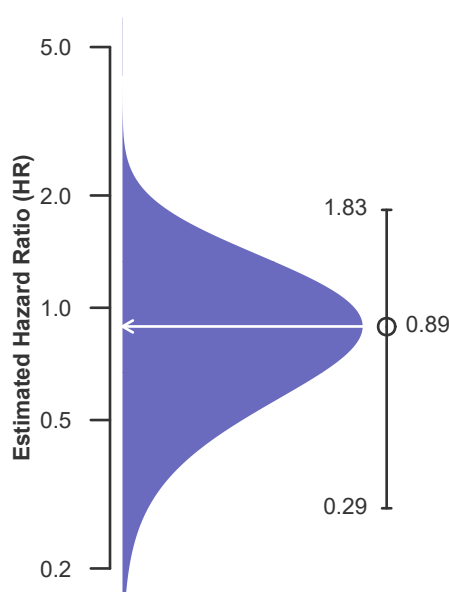
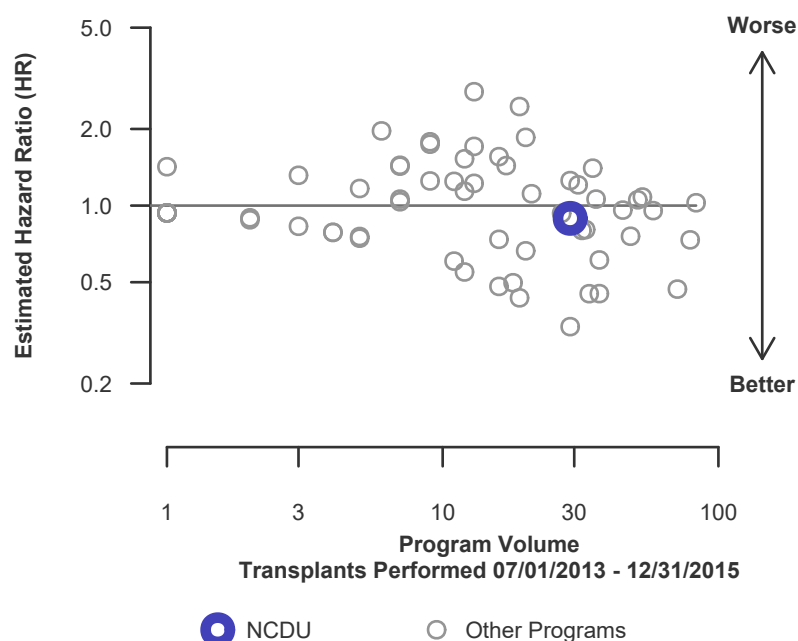


Figure C12. Pediatric (<18) 3-year graft failure HR program comparison





C. Transplant Information

Table C10D. Pediatric (<18) 3-year survival with a functioning deceased donor graft
Single organ transplants performed between 07/01/2013 and 12/31/2015
Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	27	1,106
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	88.89%	87.16%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	87.18%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	3	142
Number of expected graft failures (including deaths) during the first 3 years after transplant	3.42	--
Estimated hazard ratio*	0.92	--
95% credible interval for the hazard ratio**	[0.30, 1.89]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, 1.89], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 8% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 70% reduced risk up to 89% increased risk.

Figure C11D. Pediatric (<18) 3-year deceased donor graft failure HR estimate

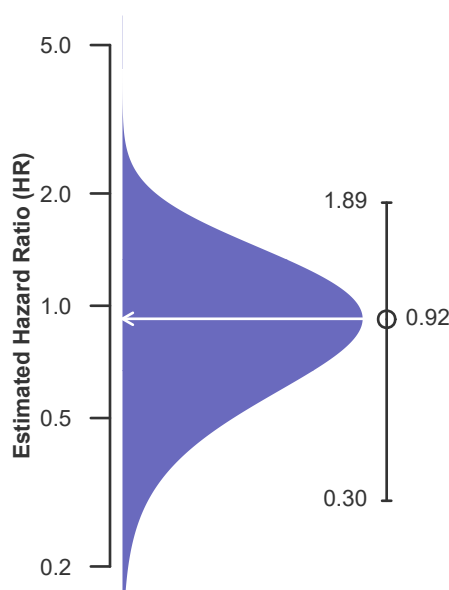
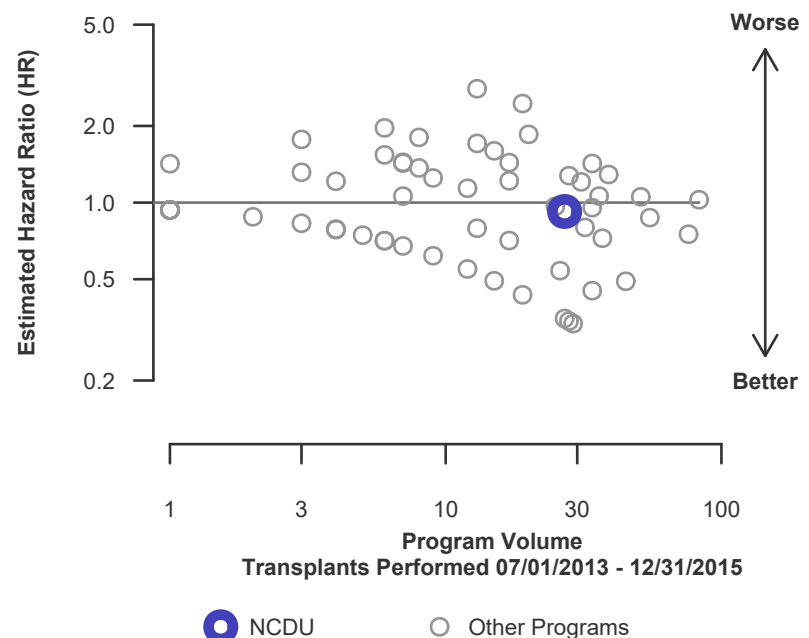


Figure C12D. Pediatric (<18) 3-year deceased donor graft failure HR program comparison





C. Transplant Information

Table C10L. Pediatric (<18) 3-year survival with a functioning living donor graft

Single organ transplants performed between 07/01/2013 and 12/31/2015

Deaths and retransplants are considered graft failures

	NCDU	U.S.
Number of transplants evaluated	2	152
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	100.00%	90.79%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	90.82%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	0	14
Number of expected graft failures (including deaths) during the first 3 years after transplant	0.19	--
Estimated hazard ratio*	0.91	--
95% credible interval for the hazard ratio**	[0.11, 2.54]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, 2.54], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 9% lower risk of graft failure compared to an average program, but NCDU's performance could plausibly range from 89% reduced risk up to 154% increased risk.

Figure C11L. Pediatric (<18) 3-year living donor graft failure HR estimate

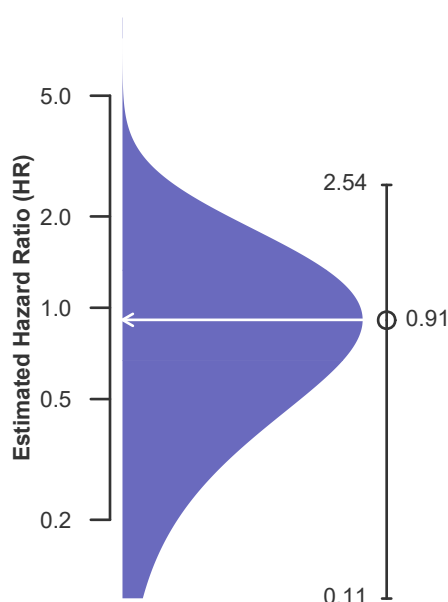
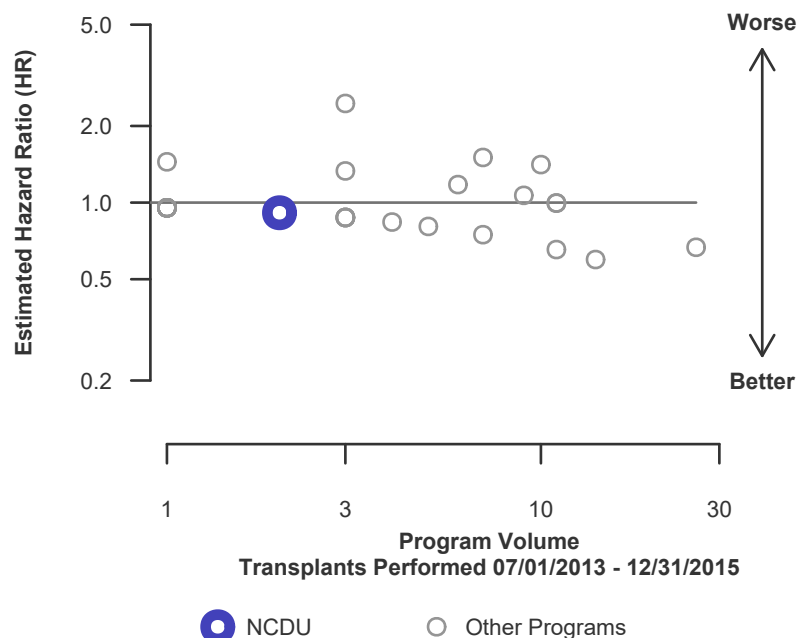


Figure C12L. Pediatric (<18) 3-year living donor graft failure HR program comparison





C. Transplant Information

Table C11. Adult (18+) 1-month patient survival

Single organ transplants performed between 01/01/2016 and 06/30/2018

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	178	15,950
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	98.88%	97.55%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	97.74%	--
Number of observed deaths during the first month after transplant	2	390
Number of expected deaths during the first month after transplant	4.05	--
Estimated hazard ratio*	0.66	--
95% credible interval for the hazard ratio**	[0.18, 1.45]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.18, 1.45], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 34% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 82% reduced risk up to 45% increased risk.

Figure C13. Adult (18+) 1-month patient death HR estimate

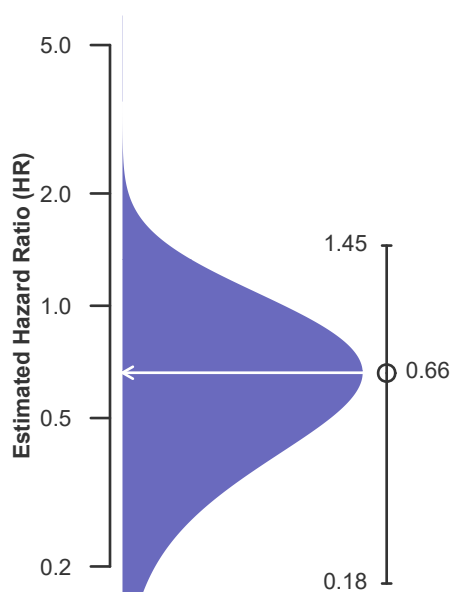
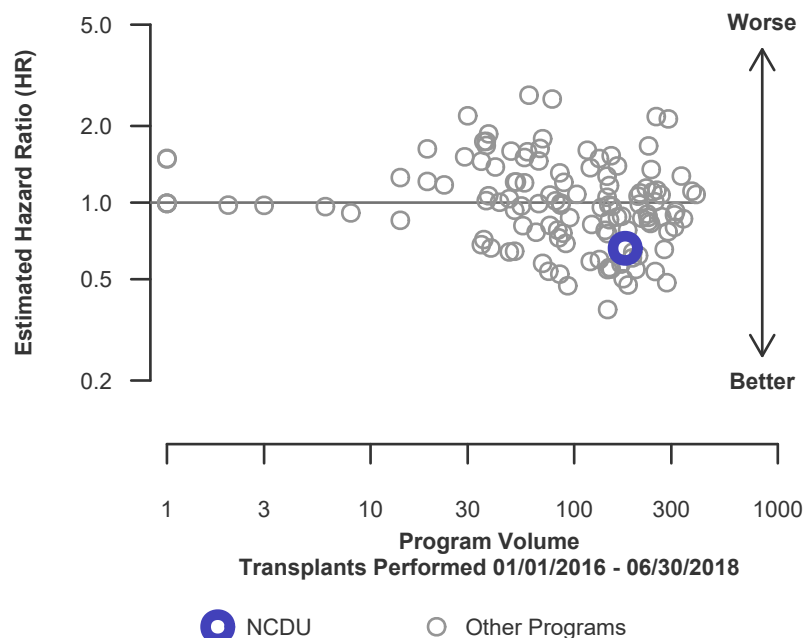


Figure C14. Adult (18+) 1-month patient death HR program comparison





C. Transplant Information

Table C11D. Adult (18+) 1-month patient survival (deceased donor graft recipients)

Single organ transplants performed between 01/01/2016 and 06/30/2018

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	177	15,233
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	98.87%	97.50%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	97.73%	--
Number of observed deaths during the first month after transplant	2	381
Number of expected deaths during the first month after transplant	4.04	--
Estimated hazard ratio*	0.66	--
95% credible interval for the hazard ratio**	[0.18, 1.45]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.18, 1.45], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 34% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 82% reduced risk up to 45% increased risk.

Figure C13D. Adult (18+) 1-month patient death HR estimate (deceased donor grafts)

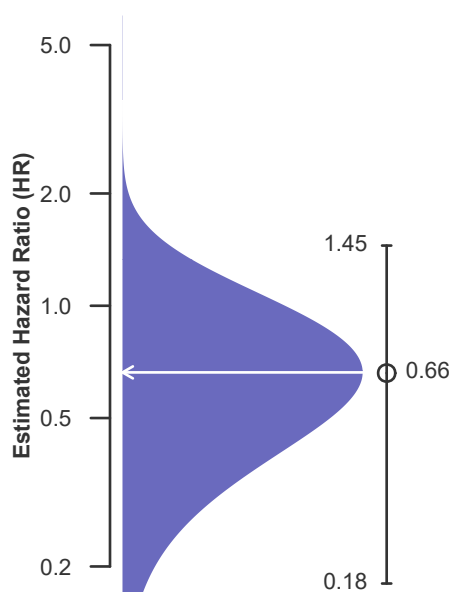
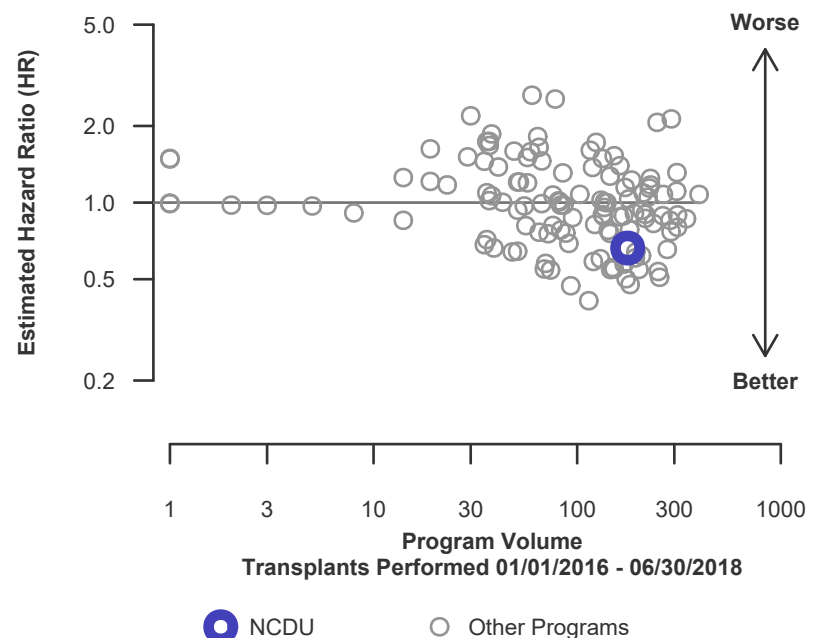


Figure C14D. Adult (18+) 1-month patient death HR program comparison (deceased donor grafts)





C. Transplant Information

Table C11L. Adult (18+) 1-month patient survival (living donor graft recipients)

Single organ transplants performed between 01/01/2016 and 06/30/2018

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	1	717
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	100.00%	98.74%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	98.75%	--
Number of observed deaths during the first month after transplant	0	9
Number of expected deaths during the first month after transplant	0.01	--
Estimated hazard ratio*	0.99	--
95% credible interval for the hazard ratio**	[0.12, 2.77]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, 2.77], 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 177% increased risk.

Figure C13L. Adult (18+) 1-month patient death HR estimate (living donor grafts)

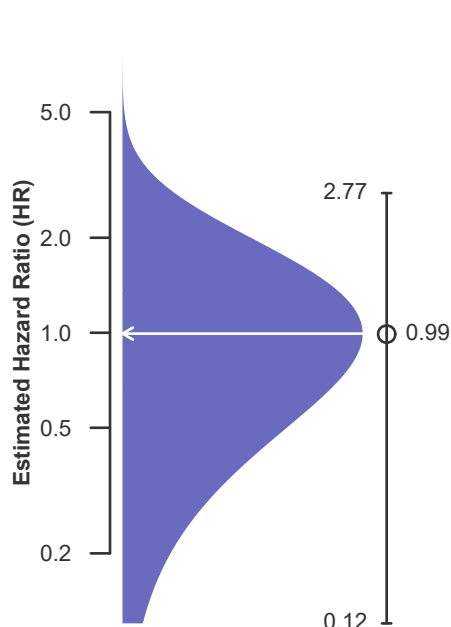
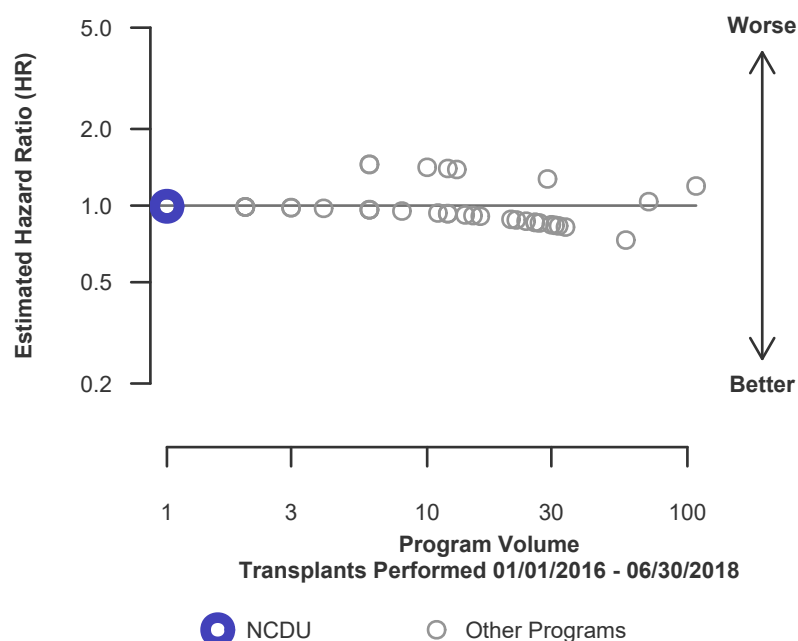


Figure C14L. Adult (18+) 1-month patient death HR program comparison (living donor grafts)





C. Transplant Information

Table C12. Adult (18+) 1-year patient survival

Single organ transplants performed between 01/01/2016 and 06/30/2018
Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	178	15,950
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	97.63%	93.04%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	93.40%	--
Number of observed deaths during the first year after transplant	4	1,045
Number of expected deaths during the first year after transplant	11.37	--
Estimated hazard ratio*	0.45	--
95% credible interval for the hazard ratio**	[0.16, 0.87]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.16, 0.87], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 55% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 84% reduced risk up to 13% reduced risk.

Figure C15. Adult (18+) 1-year patient death HR estimate

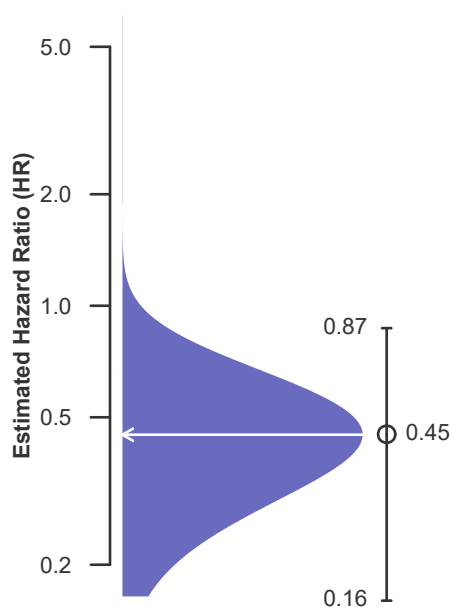
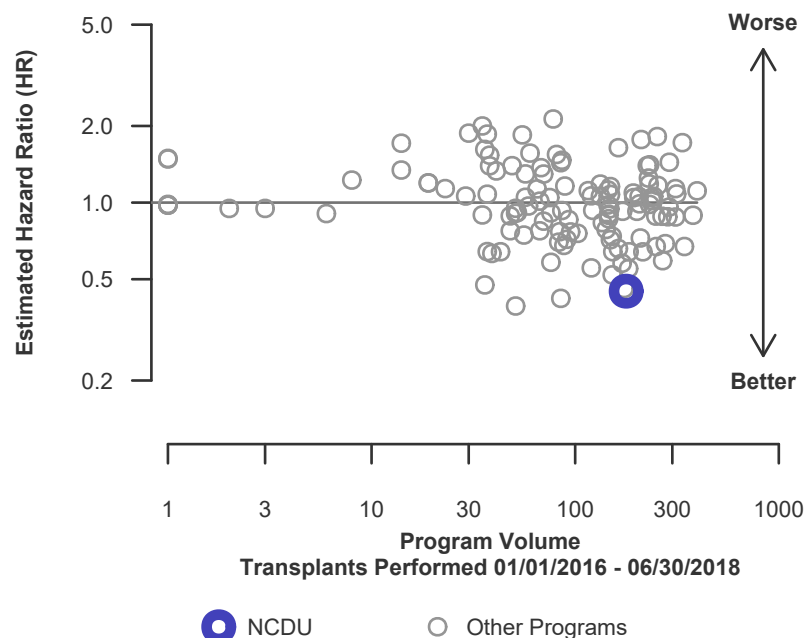


Figure C16. Adult (18+) 1-year patient death HR program comparison





C. Transplant Information

Table C12D. Adult (18+) 1-year patient survival (deceased donor graft recipients)

Single organ transplants performed between 01/01/2016 and 06/30/2018

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	177	15,233
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	97.61%	92.92%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	93.39%	--
Number of observed deaths during the first year after transplant	4	1,016
Number of expected deaths during the first year after transplant	11.33	--
Estimated hazard ratio*	0.45	--
95% credible interval for the hazard ratio**	[0.17, 0.88]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.17, 0.88], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 55% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 83% reduced risk up to 12% reduced risk.

Figure C15D. Adult (18+) 1-year patient death HR estimate (deceased donor grafts)

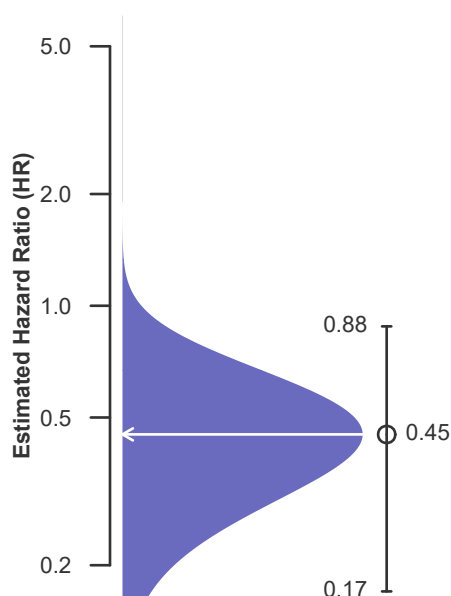
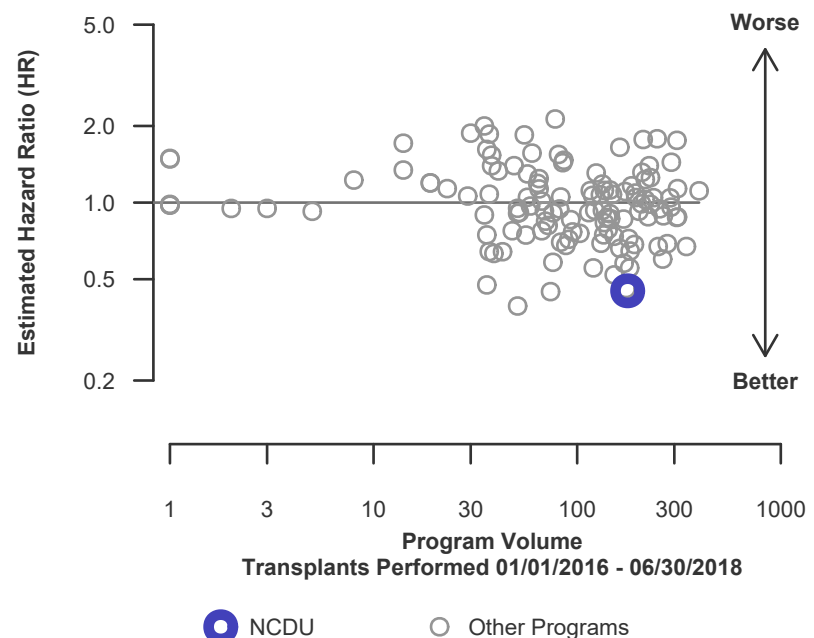


Figure C16D. Adult (18+) 1-year patient death HR program comparison (deceased donor grafts)





C. Transplant Information

Table C12L. Adult (18+) 1-year patient survival (living donor graft recipients)

Single organ transplants performed between 01/01/2016 and 06/30/2018

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	1	717
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	100.00%	95.61%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	95.61%	--
Number of observed deaths during the first year after transplant	0	29
Number of expected deaths during the first year after transplant	0.04	--
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 (NCDU)'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, 2.72], 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 172% increased risk.

Figure C15L. Adult (18+) 1-year patient death HR estimate (living donor grafts)

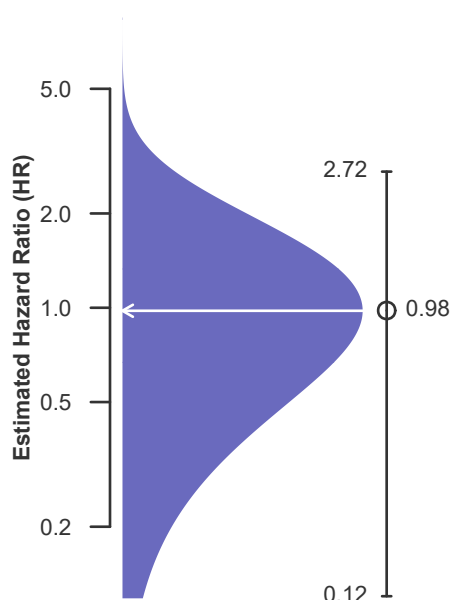
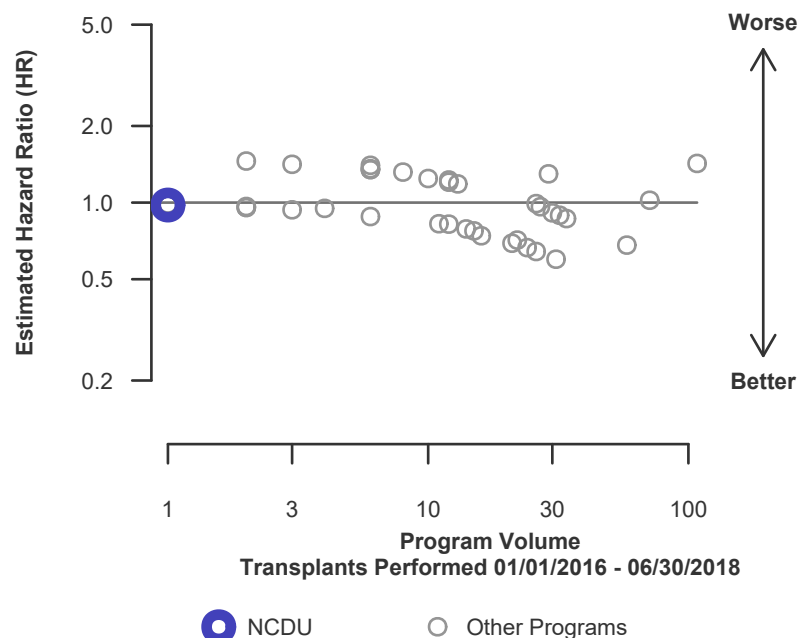


Figure C16L. Adult (18+) 1-year patient death HR program comparison (living donor grafts)





C. Transplant Information

Table C13. Adult (18+) 3-year patient survival

Single organ transplants performed between 07/01/2013 and 12/31/2015

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	122	13,591
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	90.16%	85.58%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	87.51%	--
Number of observed deaths during the first 3 years after transplant	12	1,960
Number of expected deaths during the first 3 years after transplant	15.60	--
Estimated hazard ratio*	0.80	--
95% credible interval for the hazard ratio**	[0.43, 1.26]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, 1.26], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 20% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 57% reduced risk up to 26% increased risk.

Figure C17. Adult (18+) 3-year patient death HR estimate

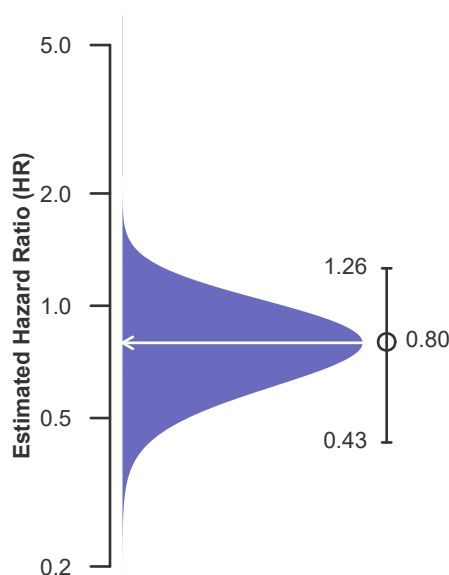
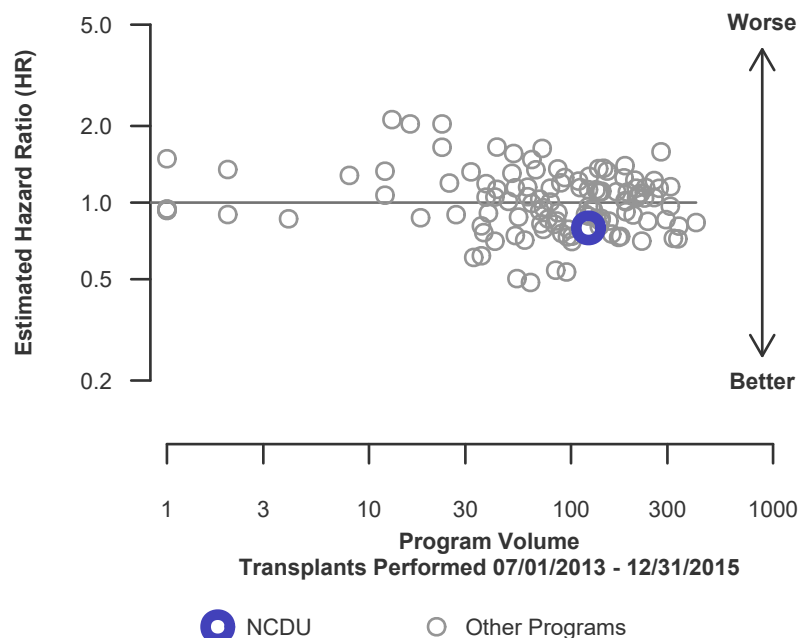


Figure C18. Adult (18+) 3-year patient death HR program comparison





C. Transplant Information

Table C13D. Adult (18+) 3-year patient survival (deceased donor graft recipients)

Single organ transplants performed between 07/01/2013 and 12/31/2015

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	118	12,989
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	90.68%	85.54%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	87.55%	--
Number of observed deaths during the first 3 years after transplant	11	1,878
Number of expected deaths during the first 3 years after transplant	15.11	--
Estimated hazard ratio*	0.76	--
95% credible interval for the hazard ratio**	[0.40, 1.23]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.40, 1.23], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 24% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 60% reduced risk up to 23% increased risk.

Figure C17D. Adult (18+) 3-year patient death HR estimate (deceased donor grafts)

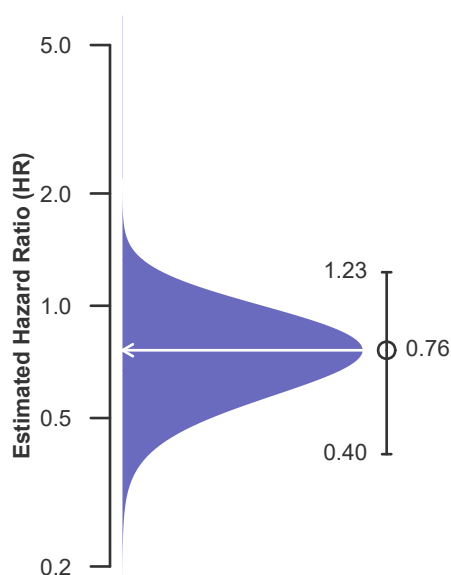
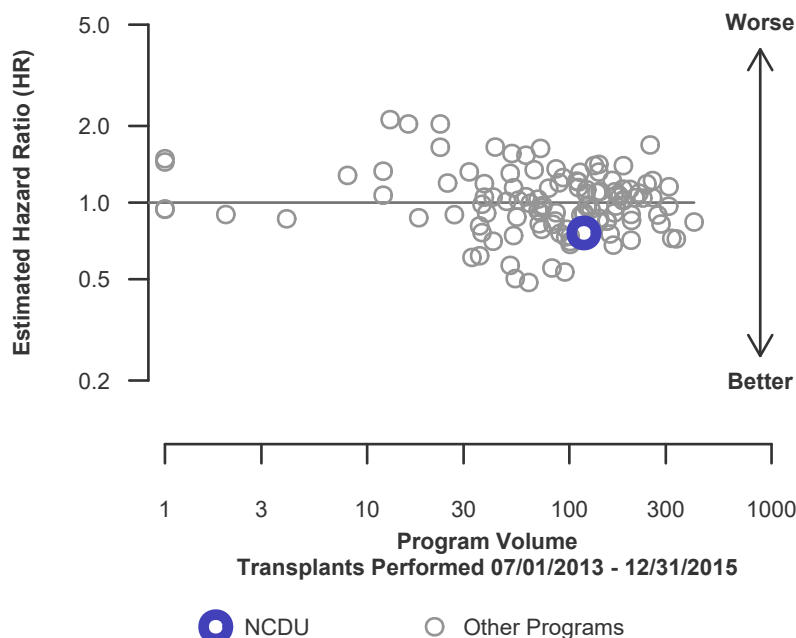


Figure C18D. Adult (18+) 3-year patient death HR program comparison (deceased donor grafts)





C. Transplant Information

Table C13L. Adult (18+) 3-year patient survival (living donor graft recipients)

Single organ transplants performed between 07/01/2013 and 12/31/2015

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	4	602
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	75.00%	86.38%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	86.39%	--
Number of observed deaths during the first 3 years after transplant	1	82
Number of expected deaths during the first 3 years after transplant	0.49	--
Estimated hazard ratio*	1.20	--
95% credible interval for the hazard ratio**	[0.25, 2.90]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.25, 2.90], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 20% higher risk of patient death compared to an average program, but NCDU's performance could plausibly range from 75% reduced risk up to 190% increased risk.

Figure C17L. Adult (18+) 3-year patient death HR estimate (living donor grafts)

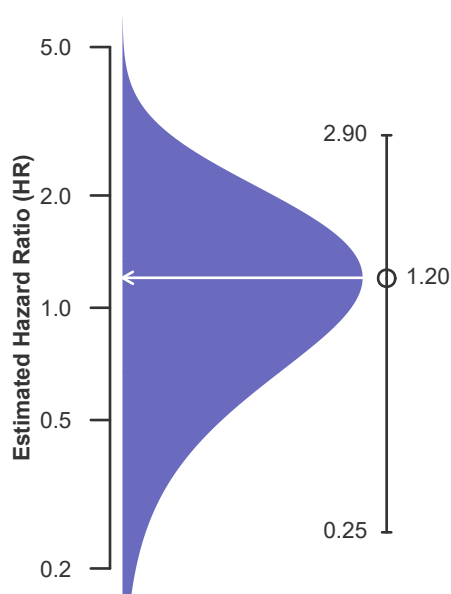
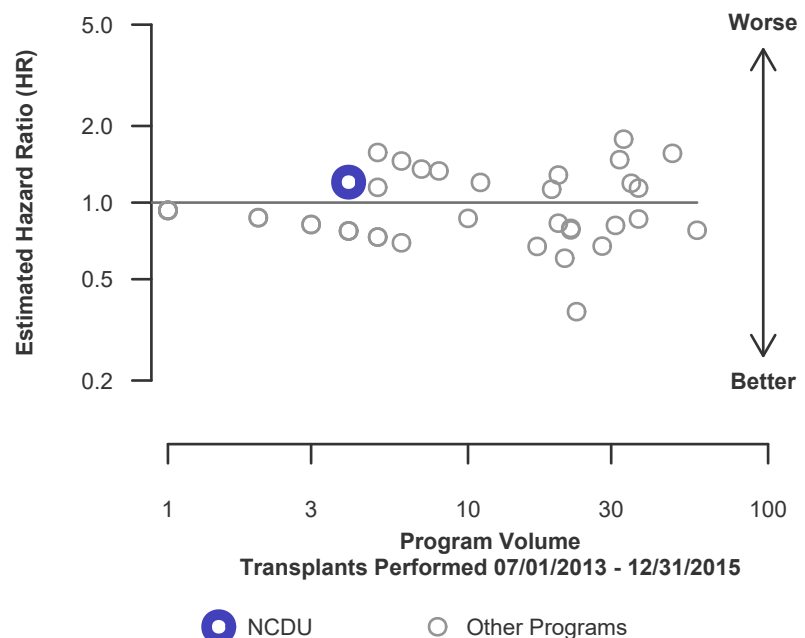


Figure C18L. Adult (18+) 3-year patient death HR program comparison (living donor grafts)





C. Transplant Information

Table C14. Pediatric (<18) 1-month patient survival

Single organ transplants performed between 01/01/2016 and 06/30/2018

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	35	1,294
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	100.00%	97.84%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	98.06%	--
Number of observed deaths during the first month after transplant	0	28
Number of expected deaths during the first month after transplant	0.69	--
Estimated hazard ratio*	0.74	--
95% credible interval for the hazard ratio**	[0.09, 2.07]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.09, 2.07], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 26% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 91% reduced risk up to 107% increased risk.

Figure C19. Pediatric (<18) 1-month patient death HR estimate

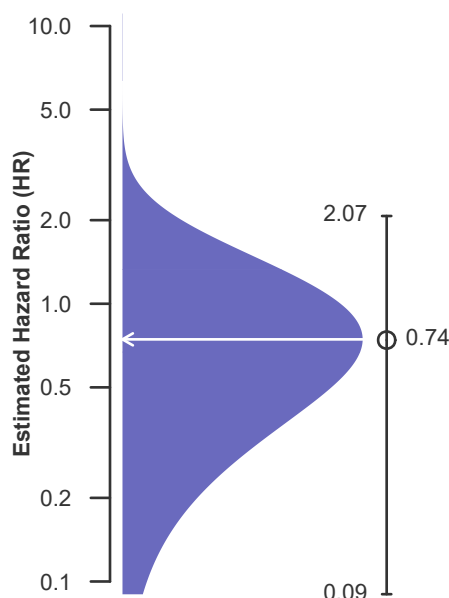
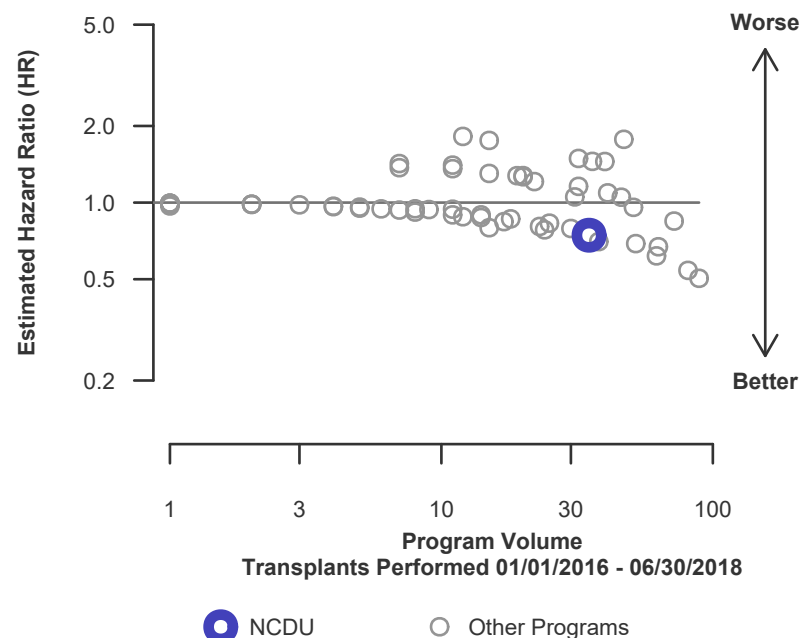


Figure C20. Pediatric (<18) 1-month patient death HR program comparison





C. Transplant Information

Table C14D. Pediatric (<18) 1-month patient survival (deceased donor graft recipients)

Single organ transplants performed between 01/01/2016 and 06/30/2018

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	34	1,131
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	100.00%	97.70%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	98.04%	--
Number of observed deaths during the first month after transplant	0	26
Number of expected deaths during the first month after transplant	0.67	--
Estimated hazard ratio*	0.75	--
95% credible interval for the hazard ratio**	[0.09, 2.08]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.09, 2.08], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 25% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 91% reduced risk up to 108% increased risk.

Figure C19D. Pediatric (<18) 1-month patient death HR estimate (deceased donor grafts)

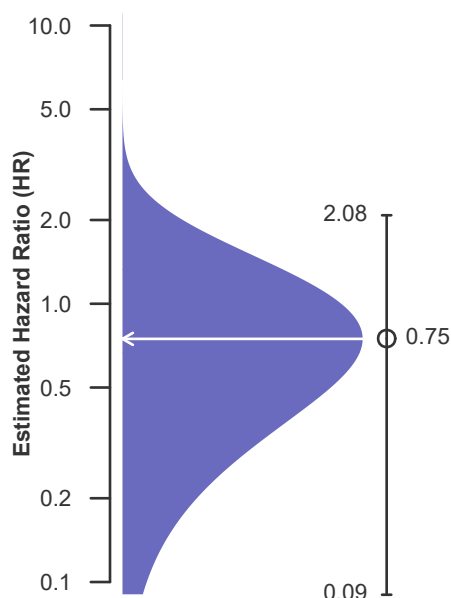
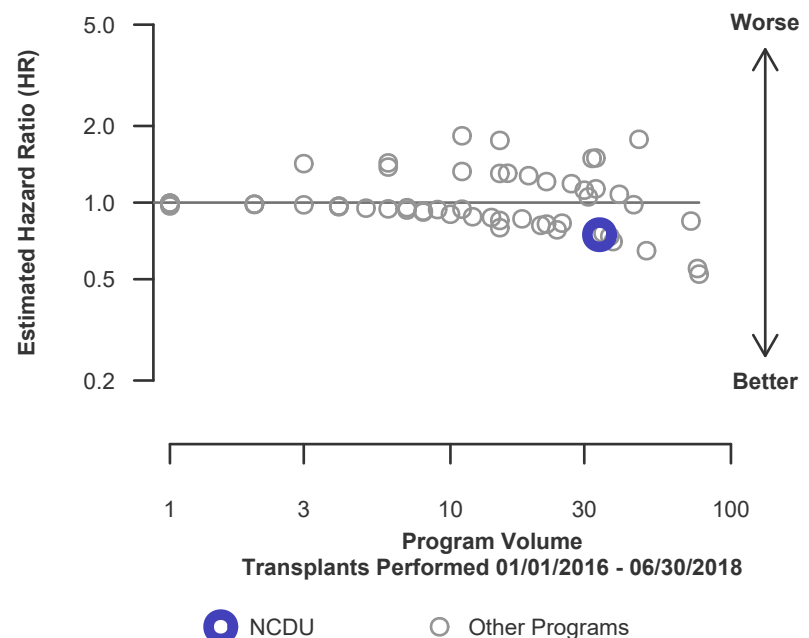


Figure C20D. Pediatric (<18) 1-month patient death HR program comparison (deceased donor grafts)





C. Transplant Information

Table C14L. Pediatric (<18) 1-month patient survival (living donor graft recipients)

Single organ transplants performed between 01/01/2016 and 06/30/2018

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	1	163
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	100.00%	98.77%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	98.78%	--
Number of observed deaths during the first month after transplant	0	2
Number of expected deaths during the first month after transplant	0.01	--
Estimated hazard ratio*	0.99	--
95% credible interval for the hazard ratio**	[0.12, 2.77]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, 2.77], 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 177% increased risk.

Figure C19L. Pediatric (<18) 1-month patient death HR estimate (living donor grafts)

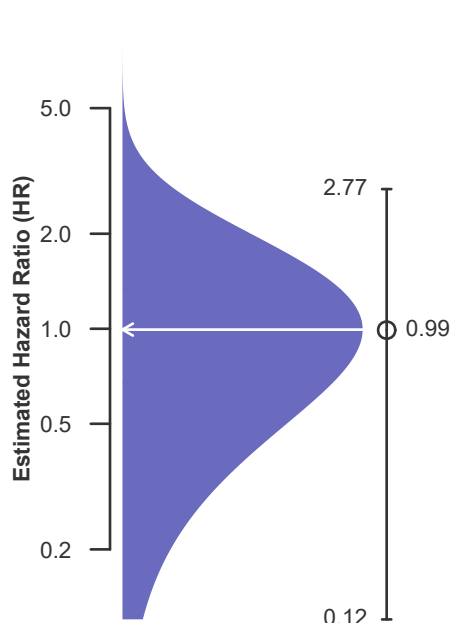


Figure C20L. Pediatric (<18) 1-month patient death HR program comparison (living donor grafts)





C. Transplant Information

Table C15. Pediatric (<18) 1-year patient survival

Single organ transplants performed between 01/01/2016 and 06/30/2018
Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	35	1,294
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	100.00%	94.82%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	94.77%	--
Number of observed deaths during the first year after transplant	0	64
Number of expected deaths during the first year after transplant	1.80	--
Estimated hazard ratio*	0.53	--
95% credible interval for the hazard ratio**	[0.06, 1.47]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.06, 1.47], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 47% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 94% reduced risk up to 47% increased risk.

Figure C21. Pediatric (<18) 1-year patient death HR estimate

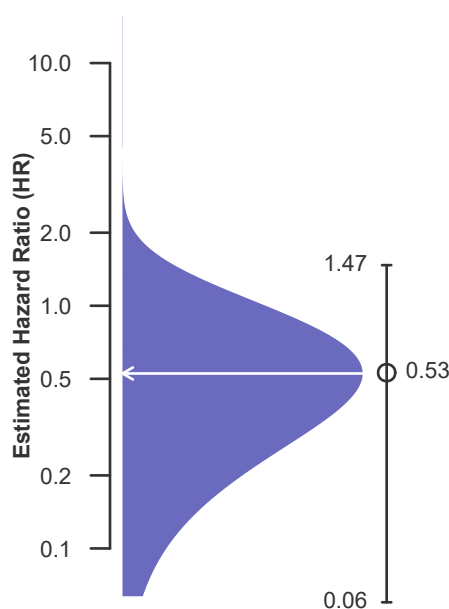
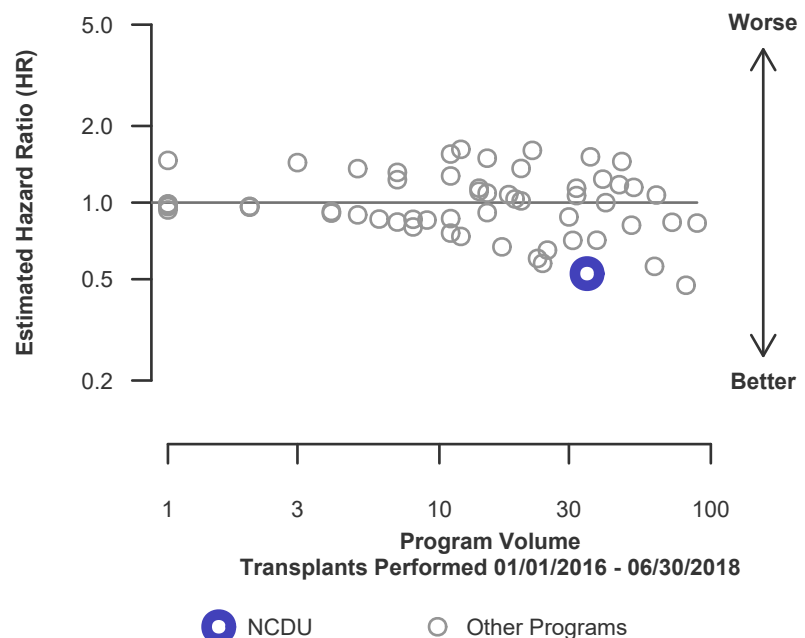


Figure C22. Pediatric (<18) 1-year patient death HR program comparison





C. Transplant Information

Table C15D. Pediatric (<18) 1-year patient survival (deceased donor graft recipients)

Single organ transplants performed between 01/01/2016 and 06/30/2018

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	34	1,131
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	100.00%	94.64%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	94.74%	--
Number of observed deaths during the first year after transplant	0	58
Number of expected deaths during the first year after transplant	1.76	--
Estimated hazard ratio*	0.53	--
95% credible interval for the hazard ratio**	[0.06, 1.48]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.06, 1.48], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 47% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 94% reduced risk up to 48% increased risk.

Figure C21D. Pediatric (<18) 1-year patient death HR estimate (deceased donor grafts)

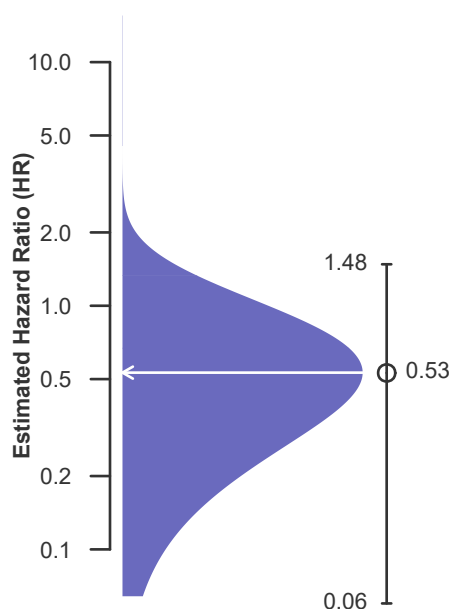
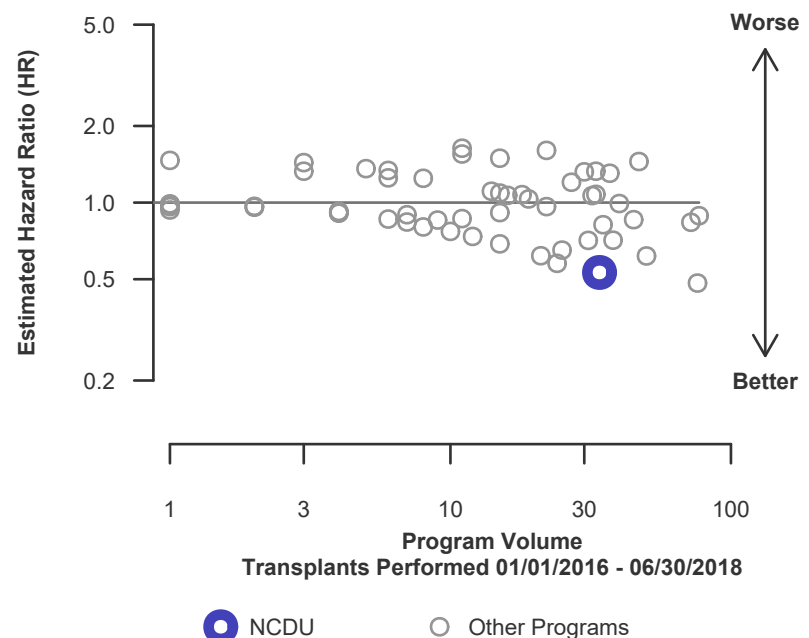


Figure C22D. Pediatric (<18) 1-year patient death HR program comparison (deceased donor grafts)





C. Transplant Information

Table C15L. Pediatric (<18) 1-year patient survival (living donor graft recipients)

Single organ transplants performed between 01/01/2016 and 06/30/2018

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	1	163
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	100.00%	96.07%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	96.08%	--
Number of observed deaths during the first year after transplant	0	6
Number of expected deaths during the first year 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 (NCDU)'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 C21L. Pediatric (<18) 1-year patient death HR estimate (living donor grafts)

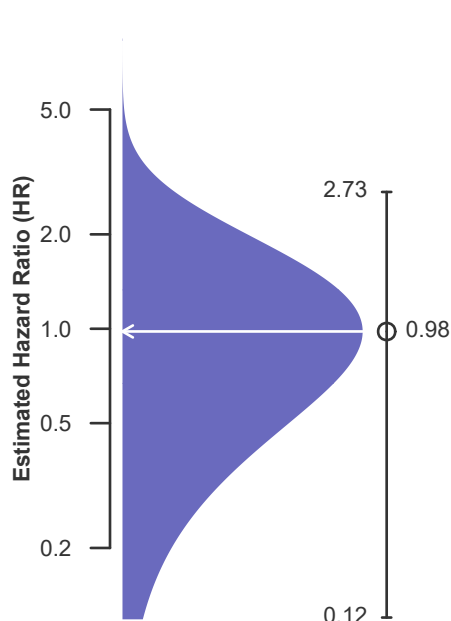
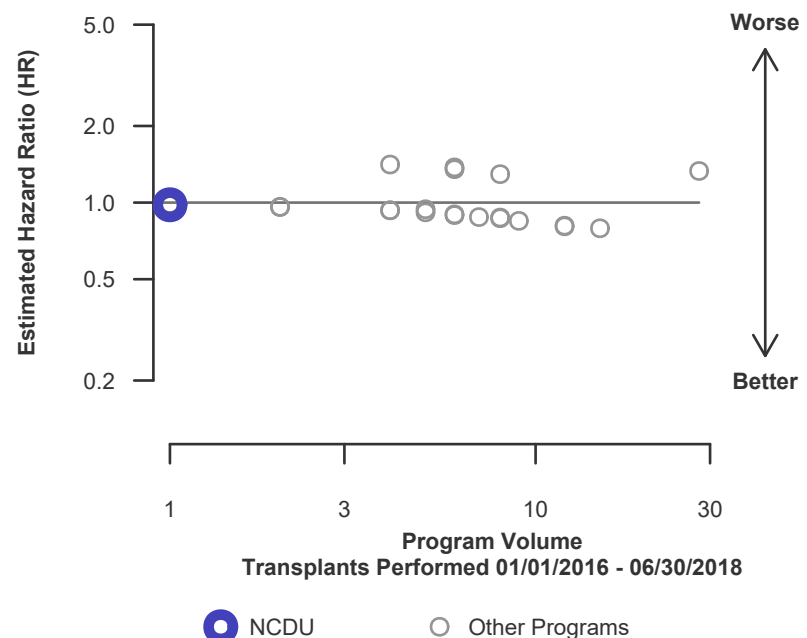


Figure C22L. Pediatric (<18) 1-year patient death HR program comparison (living donor grafts)





C. Transplant Information

Table C16. Pediatric (<18) 3-year patient survival

Single organ transplants performed between 07/01/2013 and 12/31/2015

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	25	1,154
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	96.00%	93.67%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	93.63%	--
Number of observed deaths during the first 3 years after transplant	1	73
Number of expected deaths during the first 3 years after transplant	1.59	--
Estimated hazard ratio*	0.84	--
95% credible interval for the hazard ratio**	[0.17, 2.01]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.17, 2.01], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 16% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 83% reduced risk up to 101% increased risk.

Figure C23. Pediatric (<18) 3-year patient death HR estimate

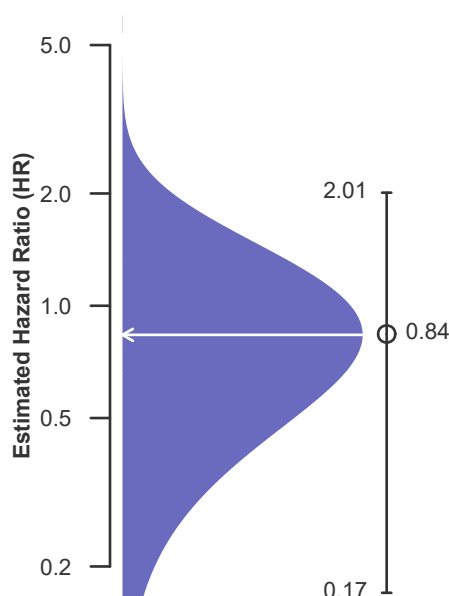
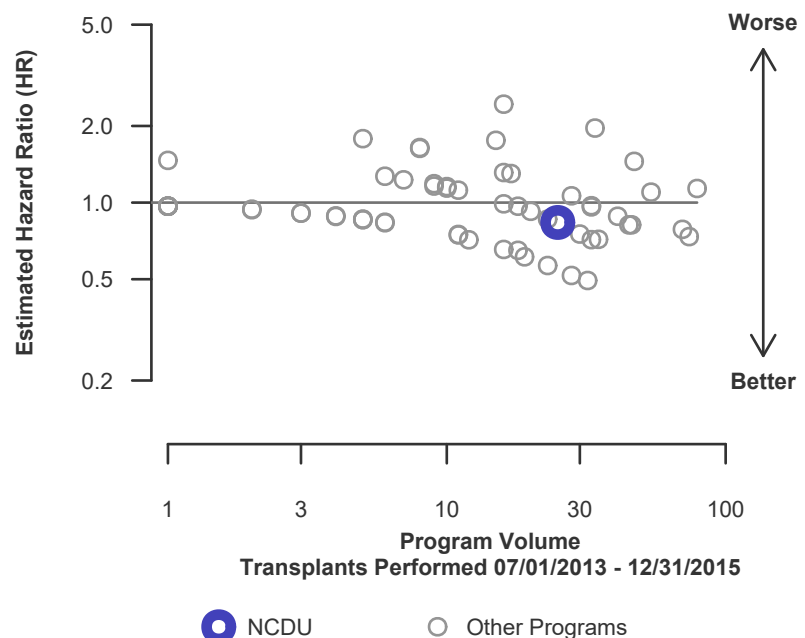


Figure C24. Pediatric (<18) 3-year patient death HR program comparison





C. Transplant Information

Table C16D. Pediatric (<18) 3-year patient survival (deceased donor graft recipients)

Single organ transplants performed between 07/01/2013 and 12/31/2015

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	23	1,007
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	95.65%	93.55%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	93.55%	--
Number of observed deaths during the first 3 years after transplant	1	65
Number of expected deaths during the first 3 years after transplant	1.48	--
Estimated hazard ratio*	0.86	--
95% credible interval for the hazard ratio**	[0.18, 2.08]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.18, 2.08], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 14% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 82% reduced risk up to 108% increased risk.

Figure C23D. Pediatric (<18) 3-year patient death HR estimate (deceased donor grafts)

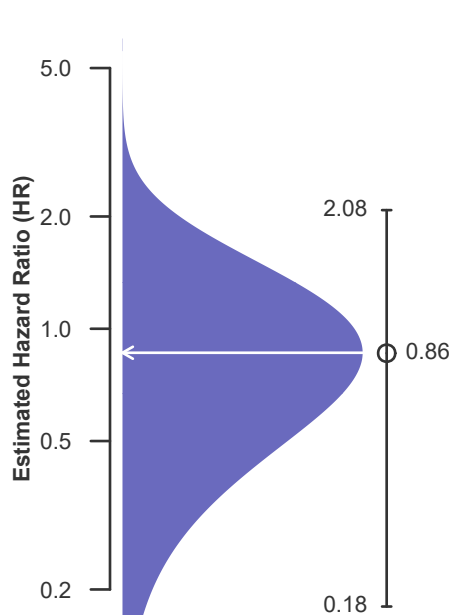
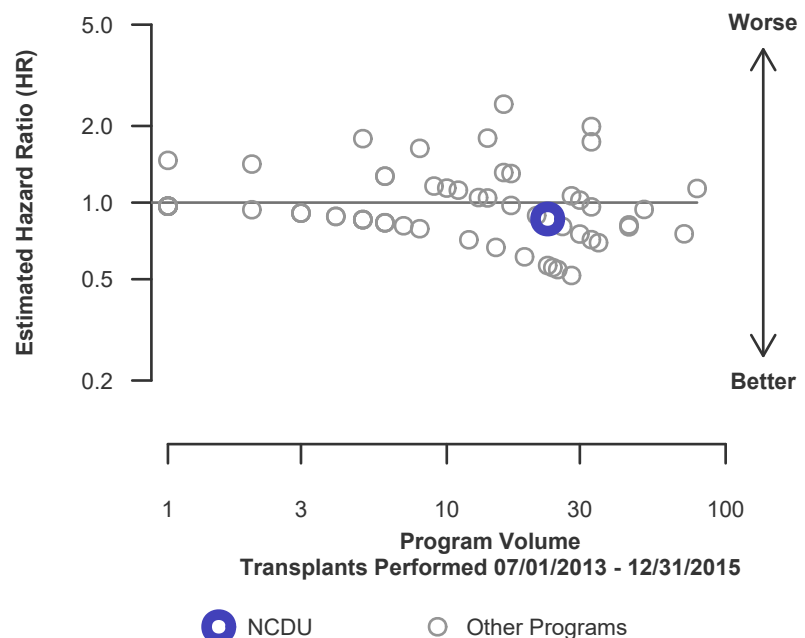


Figure C24D. Pediatric (<18) 3-year patient death HR program comparison (deceased donor grafts)





C. Transplant Information

Table C16L. Pediatric (<18) 3-year patient survival (living donor graft recipients)

Single organ transplants performed between 07/01/2013 and 12/31/2015

Retransplants excluded

	NCDU	U.S.
Number of transplants evaluated	2	147
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	100.00%	94.56%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	94.58%	--
Number of observed deaths during the first 3 years after transplant	0	8
Number of expected deaths during the first 3 years after transplant	0.11	--
Estimated hazard ratio*	0.95	--
95% credible interval for the hazard ratio**	[0.11, 2.64]	--

* The hazard ratio provides an estimate of how Duke University Hospital (NCDU)'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, [0.11, 2.64], indicates the location of NCDU's true hazard ratio with 95% probability. The best estimate is 5% lower risk of patient death compared to an average program, but NCDU's performance could plausibly range from 89% reduced risk up to 164% increased risk.

Figure C23L. Pediatric (<18) 3-year patient death HR estimate (living donor grafts)

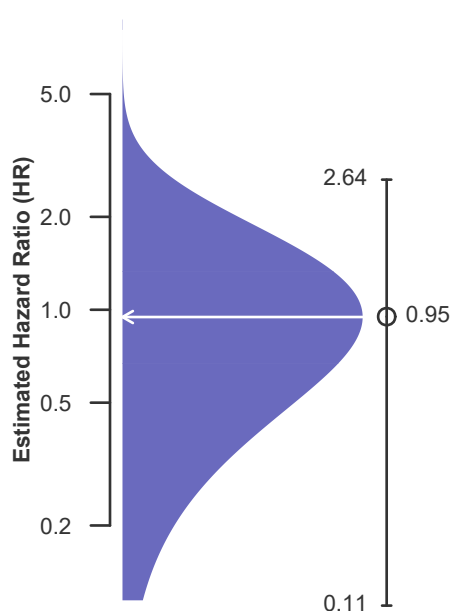
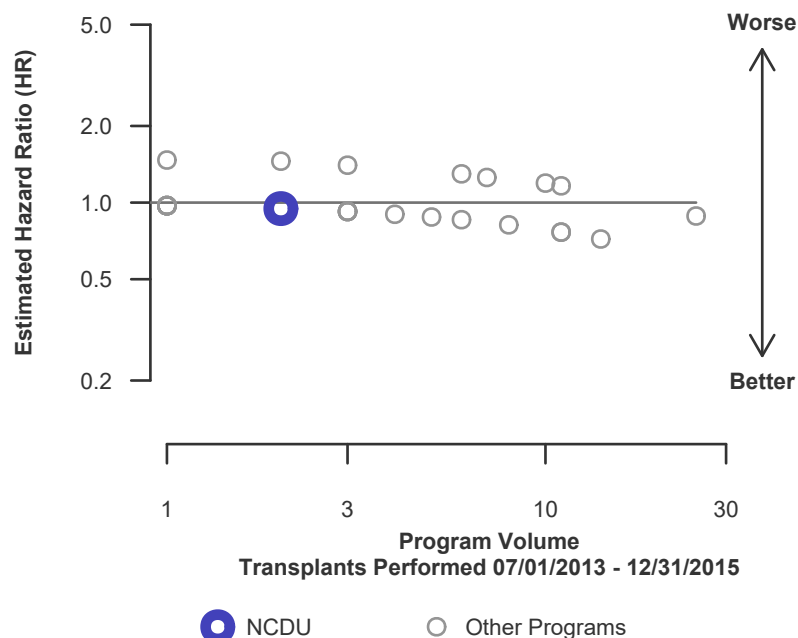


Figure C24L. Pediatric (<18) 3-year patient death HR program comparison (living donor grafts)





C. Transplant Information

Table C17. Multi-organ transplant graft survival: 01/01/2016 - 06/30/2018

Adult (18+) Transplants

Transplant Type	First-Year Outcomes					
	Transplants Performed		Liver Graft Failures		Estimated Liver Graft Survival	
	NCDU-TX1	USA	NCDU-TX1	USA	NCDU-TX1	USA
Kidney-Liver	22	1,761	2	169	88.9%	90.0%
Liver-Heart	1	63	0	6	100.0%	89.9%
Liver-Lung	2	18	0	4	100.0%	76.9%

Pediatric (<18) Transplants

Transplant Type	First-Year Outcomes					
	Transplants Performed		Liver Graft Failures		Estimated Liver Graft Survival	
	NCDU-TX1	USA	NCDU-TX1	USA	NCDU-TX1	USA
Pancreas-Liver-Intestine	3	75	0	10	100.0%	86.3%

Table C18. Multi-organ transplant patient survival: 01/01/2016 - 06/30/2018

Adult (18+) Transplants

Transplant Type	First-Year Outcomes					
	Transplants Performed		Patient Deaths		Estimated Patient Survival	
	NCDU-TX1	USA	NCDU-TX1	USA	NCDU-TX1	USA
Kidney-Liver	22	1,761	2	157	88.9%	90.7%
Liver-Heart	1	63	0	6	100.0%	89.9%
Liver-Lung	2	18	0	4	100.0%	76.9%

Pediatric (<18) Transplants

Transplant Type	First-Year Outcomes					
	Transplants Performed		Patient Deaths		Estimated Patient Survival	
	NCDU-TX1	USA	NCDU-TX1	USA	NCDU-TX1	USA
Pancreas-Liver-Intestine	3	75	0	10	100.0%	86.3%



D. Living Donor Information

Table D1. Living donor summary: 01/01/2016 - 12/31/2018

Living Donor Follow-Up	This Center			United States		
	01/2016- 12/2016	01/2017- 12/2017	01/2018- 06/2018	01/2016- 12/2016	01/2017- 12/2017	01/2018- 06/2018
Number of Living Donors	1	1	0	336	359	173
6-Month Follow-Up						
Donors due for follow-up	1	1	0	335	359	173
Timely clinical data	0 0.0%	1 100.0%	0 --%	291 86.9%	306 85.2%	157 90.8%
Timely lab data	0 0.0%	1 100.0%	0 --%	291 86.9%	293 81.6%	156 90.2%
12-Month Follow-Up						
Donors due for follow-up	1	1		335	359	
Timely clinical data	0 0.0%	1 100.0%		290 86.6%	293 81.6%	
Timely lab data	1 100.0%	1 100.0%		270 80.6%	281 78.3%	
24-Month Follow-Up						
Donors due for follow-up	1			334		
Timely clinical data	0 0.0%			259 77.5%		
Timely lab data	0 0.0%			214 64.1%		

Follow-up completion standards through 2 years post-donation were implemented in policy on February 1, 2013.