



COVID-19 Guide

Adjustments to Transplant Program and OPO Evaluation Metrics

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

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

The SRTR Review Committee (SRC) reviewed the metrics at its meetings on January 20, 2021, and February 9, 2021, with the goal of determining whether continued adjustments are necessary, or if the SRTR should resume regular reporting of transplant program and OPO performance metrics. The committee reviewed data on how the pandemic has affected the nation's transplant system, and the extent to which the effects varied geographically and temporally. The committee made the following recommendations to SRTR. These recommendations were reviewed by the Health Resources and Services Administration's (HRSA's) Division of Transplantation, which oversees the SRTR. HRSA approved of these recommendations which the SRTR will implement for the July 2021 reporting cycle:

Posttransplant Outcomes (including 1-month, 1-year, and 3-year graft and patient survival): Evaluations cohorts will continue to exclude transplants and follow-up time beyond March 12, 2020.

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

3-year Patient and Graft Survival Evaluations: Transplants 1/1/2015-12/31/2017; follow-up through 3/12/2020.

Pre-Transplant Mortality Rate (formerly called Waitlist Mortality Rate): Evaluation cohorts will be modified on an organ-specific basis:

Kidney and Lung: Candidates on the waitlist 1/1/2019-3/12/2020.

Liver, Heart, Pancreas, and Intestine: Candidates on the waitlist 1/1/2019-12/31/2020.

Transplant Rate: The first quarter following declaration of a national emergency will be excluded from the transplant rate evaluations for all organ types.

Candidates on the waitlist 1/1/2019-3/12/2020 and 6/13/2020-12/31/2020.



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Overall Rate of Mortality After Listing: Patient follow-up will continue to be truncated on 3/12/2020:

Evaluation period: 1/1/2019-3/12/2020.

Offer Acceptance Rate: These evaluations will return to normal reporting cohorts.

Offers received 1/1/2020-12/31/2020.

These decisions will apply to the evaluations released in the SRTR's semi-annual program-specific reports scheduled for release on July 6, 2021. These changes have been communicated to the leadership of the Organ Procurement and Transplantation Network's Membership and Professional Standards Committee (MSPC). These decisions will then be re-evaluated as more information becomes available in preparation for the release scheduled for January 2022.

As with the January 2021 reports, SRTR will continue to report descriptive data beyond March 12, 2020, e.g., waitlist counts, transplant counts, recipient characteristics, donor counts, donor characteristics, etc., but will alter data for performance evaluation metrics as described above.



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This report contains a wide range of useful information about the heart transplant program at Vanderbilt University Medical Center (TNVU). 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 deceased donor transplant rate at this program was 223.7 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. Please refer to the PSR Technical Methods documentation available at <http://www.srtr.org> for more detail regarding how expected rates are calculated.

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

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

Table B7 presents information on what happens to candidates on the waiting list by three different time points after listing: 6 months, 12 months, and 18 months. The table displays percentages of candidates who have died, been removed from the waiting list, been transplanted, or been transferred or lost-to-follow-up. Tables B8 and B9 provide more detail regarding how many candidates have received a deceased donor transplant by certain time points during the first 3 years after being put on the transplant waiting list. Each row of Tables B8 and B9 presents the percent of candidates who received a deceased donor transplant by each time point. Table B10 presents data on the time it took for different percentages of patients to be transplanted for candidates added to the list between 01/01/2015 and 06/30/2020. 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 12/31/2020 to calculate a particular percentile of transplant times.

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



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

Starting with Table C5, transplant outcomes are presented along with comparisons to what would be expected at this program and what happened in the nation as a whole. Tables C5-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.

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

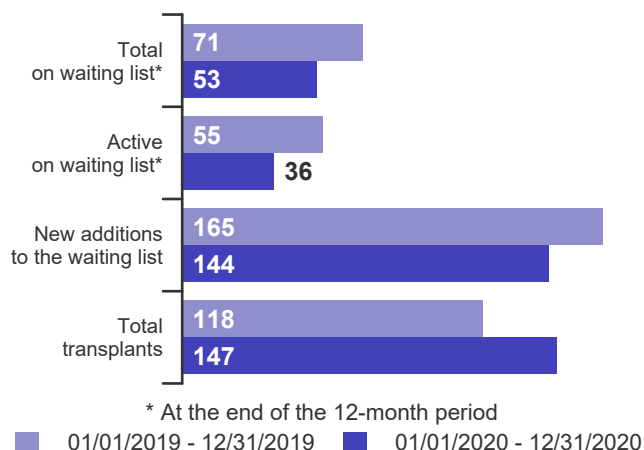


Table A1. Census of transplant recipients

Recipients	01/01/2019-12/31/2019	01/01/2020-12/31/2020
Transplanted at this center	118	147
Followed by this center*	636	653
...transplanted at this program	588	614
...transplanted elsewhere	48	39

* 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
01/01/2019 - 03/12/2020, 06/13/2020 - 12/31/2020

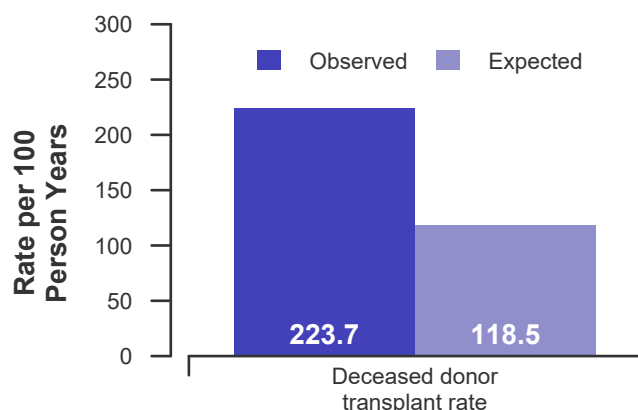


Figure A3. Pre-transplant mortality rates
01/01/2019 - 12/31/2020

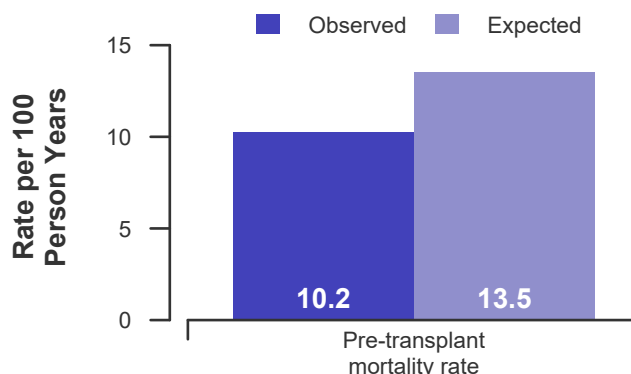


Figure A4. First-year adult graft and patient survival: 01/01/2018 - 03/12/2020

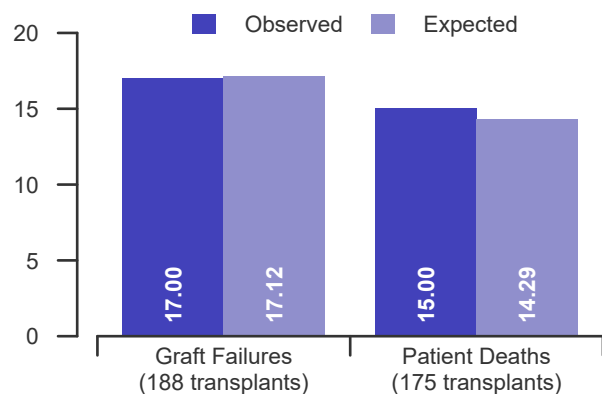
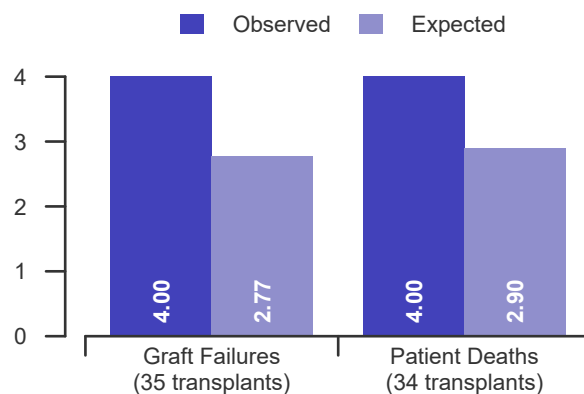


Figure A5. First-year pediatric graft and patient survival: 01/01/2018 - 03/12/2020





B. Waiting List Information

Table B1. Waiting list activity summary: 01/01/2019 - 12/31/2020

Waiting List Registrations	Counts for this center		Activity for 01/01/2020 to 12/31/2020 as percent of registrants on waiting list on 01/01/2020		
	01/01/2019-12/31/2019	01/01/2020-12/31/2020	This Center (%)	OPTN Region (%)	U.S. (%)
On waiting list at start	48	71	100.0	100.0	100.0
Additions					
New listings at this center	165	144	202.8	133.9	122.1
Removals					
Transferred to another center	0	1	1.4	4.8	2.4
Received living donor transplant*	0	0	0.0	0.0	0.0
Received deceased donor transplant*	118	147	207.0	117.2	97.2
Died	4	3	4.2	4.8	6.4
Transplanted at another center	1	0	0.0	0.9	1.1
Deteriorated	12	1	1.4	7.2	7.2
Recovered	3	4	5.6	3.9	5.0
Other reasons	4	6	8.5	10.0	8.3
On waiting list at end of period	71	53	74.6	85.2	94.5

* 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 01/01/2020 and 12/31/2020**

Demographic Characteristic	New Waiting List Registrations 01/01/2020 to 12/31/2020 (%)			All Waiting List Registrations on 12/31/2020 (%)		
	This Center (N=144)	OPTN Region (N=616)	U.S. (N=4,594)	This Center (N=53)	OPTN Region (N=392)	U.S. (N=3,555)
All (%)	100.0	100.0	100.0	100.0	100.0	100.0
Ethnicity/Race (%)*						
White	75.0	58.1	58.1	64.2	51.8	58.0
African-American	22.9	37.7	26.0	30.2	43.4	28.3
Hispanic/Latino	0.7	3.2	10.6	1.9	3.3	10.1
Asian	1.4	0.6	4.1	3.8	1.3	2.6
Other	0.0	0.3	1.2	0.0	0.3	1.0
Unknown	0.0	0.0	0.0	0.0	0.0	0.0
Age (%)						
<2 years	6.9	6.2	6.2	3.8	6.4	4.8
2-11 years	7.6	5.0	4.3	11.3	6.1	4.4
12-17 years	1.4	2.9	4.0	0.0	3.1	3.2
18-34 years	5.6	7.6	8.9	9.4	8.7	11.1
35-49 years	28.5	23.4	18.4	26.4	26.5	22.3
50-64 years	34.7	41.9	41.3	37.7	41.6	43.4
65-69 years	11.8	11.9	14.1	11.3	7.7	9.7
70+ years	3.5	1.1	2.9	0.0	0.0	1.1
Gender (%)						
Male	71.5	68.5	71.4	71.7	75.8	75.4
Female	28.5	31.5	28.6	28.3	24.2	24.6

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



B. Waiting List Information

Table B3. Medical characteristics of waiting list candidates

Candidates registered on the waiting list between 01/01/2020 and 12/31/2020

Medical Characteristic	New Waiting List Registrations 01/01/2020 to 12/31/2020 (%)			All Waiting List Registrations on 12/31/2020 (%)		
	This Center (N=144)	OPTN Region (N=616)	U.S. (N=4,594)	This Center (N=53)	OPTN Region (N=392)	U.S. (N=3,555)
All (%)	100.0	100.0	100.0	100.0	100.0	100.0
Blood Type (%)						
O	47.9	46.3	44.4	56.6	63.0	60.8
A	31.9	33.3	36.4	26.4	23.7	27.5
B	16.0	16.1	14.4	15.1	11.7	10.0
AB	4.2	4.4	4.7	1.9	1.5	1.7
Unknown	0.0	0.0	0.0	0.0	0.0	0.0
Previous Transplant (%)						
Yes	6.2	3.9	3.8	5.7	3.3	3.4
No	93.8	96.1	96.2	94.3	96.7	96.6
Unknown	0.0	0.0	0.0	0.0	0.0	0.0
Primary Disease (%)						
Cardiomyopathy	51.4	61.4	58.9	43.4	53.8	56.2
Coronary Artery Disease	25.7	22.6	23.9	34.0	27.8	26.2
Retransplant/Graft Failure	4.9	2.9	3.2	1.9	1.5	2.7
Valvular Heart Disease	0.0	0.0	1.0	0.0	0.0	0.8
Congenital Heart Disease	17.4	10.9	10.9	20.8	14.0	11.8
Other	0.7	2.3	2.2	0.0	2.8	2.3
Missing	0.0	0.0	0.0	0.0	0.0	0.0
Medical Urgency Status at Listing (%)						
Status 1A	10.4	8.4	8.8	3.8	6.4	6.8
Status 1B	5.6	3.6	3.1	13.2	18.1	14.0
Status 2	0.0	1.6	2.2	7.5	9.9	16.5
Adult Status 1	2.8	3.9	4.2	0.0	0.0	0.1
Adult Status 2	17.4	21.4	19.7	1.9	2.6	2.8
Adult Status 3	9.7	8.3	9.7	3.8	3.3	4.2
Adult Status 4	31.9	33.9	30.4	37.7	34.7	31.2
Adult Status 5	4.9	2.1	2.9	13.2	3.8	3.2
Adult Status 6	16.7	15.7	17.1	18.9	19.4	18.5
Temporarily Inactive	0.7	1.0	2.0	0.0	1.8	2.8



B. Waiting List Information

Table B4D. Deceased donor transplant rates: 01/01/2019 - 03/12/2020, 06/13/2020 - 12/31/2020

Waiting List Registrations	This Center	OPO/DSA	Region	U.S.
All Candidates				
Count on waiting list at start*	48	52	413	3,822
Person Years**	100.6	110.8	749.4	6,479.9
Removals for Transplant	225	265	887	6,370
Adult (18+) Candidates				
Count on waiting list at start*	40	44	367	3,431
Person Years**	83.8	94.1	657.3	5,754.2
Removals for transplant	185	225	758	5,481
Pediatric (<18) Candidates				
Count on waiting list at start*	8	8	46	391
Person Years**	16.7	16.7	92.1	725.7
Removals for transplant	40	40	129	889

* 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: 01/01/2019 - 03/12/2020, 06/13/2020 - 12/31/2020

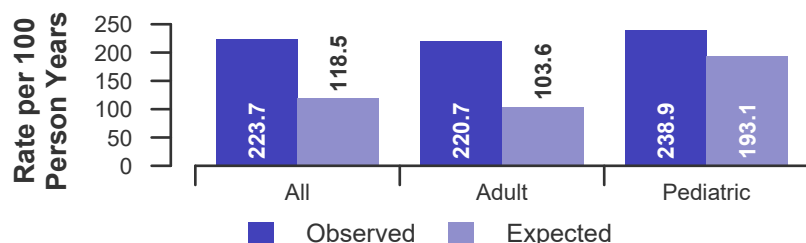


Figure B2D. Deceased donor transplant rate ratio estimate

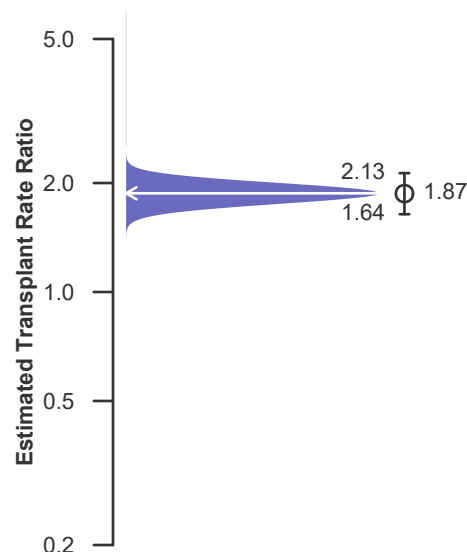
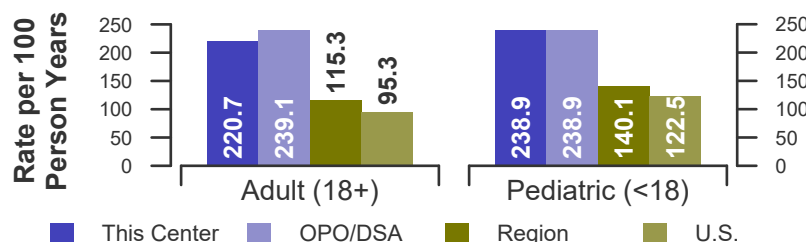


Figure B3D. Observed adult (18+) and pediatric (<18) deceased donor transplant rates: 01/01/2019 - 03/12/2020, 06/13/2020 - 12/31/2020





B. Waiting List Information

Table B5. Pre-transplant mortality rates: 01/01/2019 - 12/31/2020

Waiting List Registrations	This Center	OPO/DSA	Region	U.S.
All Candidates				
Count on waiting list at start*	48	52	413	3,822
Person Years**	136.7	150.5	978.6	8,480.4
Number of deaths	14	14	97	765
Adult (18+) Candidates				
Count on waiting list at start*	40	44	367	3,431
Person Years**	111.0	124.9	862.1	7,551.1
Number of deaths	12	12	85	645
Pediatric (<18) Candidates				
Count on waiting list at start*	8	8	46	391
Person Years**	25.7	25.7	116.5	929.3
Number of deaths	2	2	12	120

* 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 pre-transplant mortality rates: 01/01/2019 - 12/31/2020

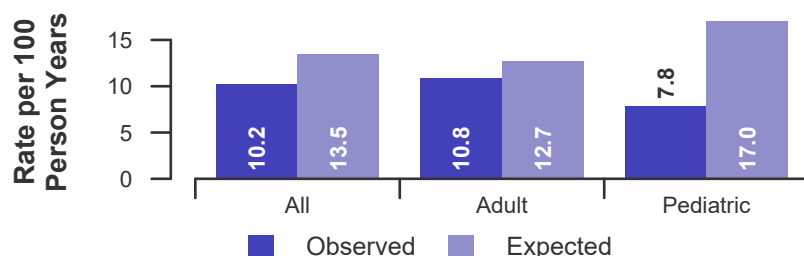


Figure B5. Pre-transplant mortality rate ratio estimate

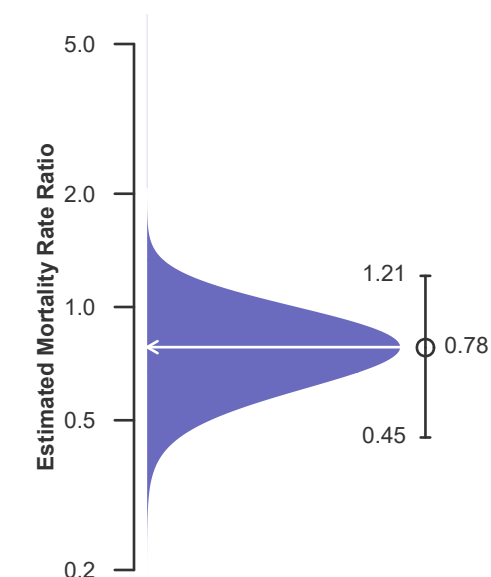
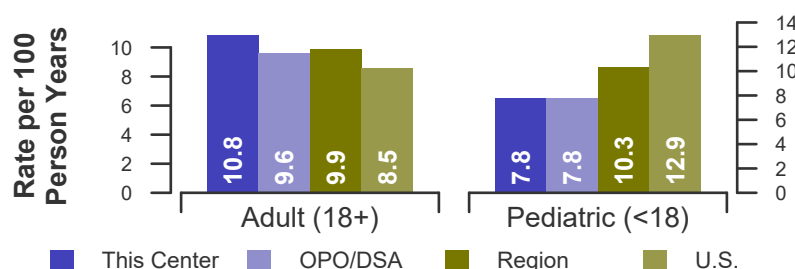


Figure B6. Observed adult (18+) and pediatric (<18) pre-transplant mortality rates: 01/01/2019 - 12/31/2020





B. Waiting List Information

Table B6. Rates of patient mortality after listing: 01/01/2019 - 03/12/2020

Waiting List Registrations	This Center	OPO/DSA	Region	U.S.
All Patients				
Count at risk during the evaluation period	591	697	2,893	23,453
Person-years*	528.3	633.9	2,642.1	21,933.8
Number of Deaths	47	51	191	1,257
Adult (18+) Patients				
Count at risk during the evaluation period	485	591	2,480	20,054
Person-years*	431.4	537.1	2,254.4	18,746.1
Number of Deaths	42	46	170	1,100
Pediatric (<18) Patients				
Count at risk during the evaluation period	106	106	413	3,399
Person-years*	96.8	96.8	387.7	3,187.6
Number of Deaths	5	5	21	157

* Person-years are calculated as days (converted to fractional years). The number of days from 01/01/2019, or from the date of first wait listing until death, reaching 5 years after listing or March 12, 2020.

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

Figure B7. Observed and expected rates of patient mortality after listing: 01/01/2019 - 03/12/2020

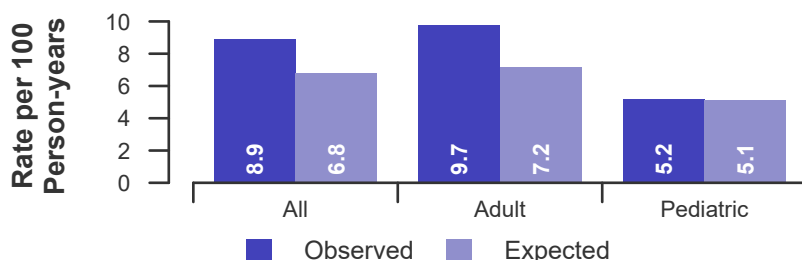


Figure B9. Observed adult (18+) and pediatric (<18) rates of patient mortality after listing: 01/01/2019 - 03/12/2020

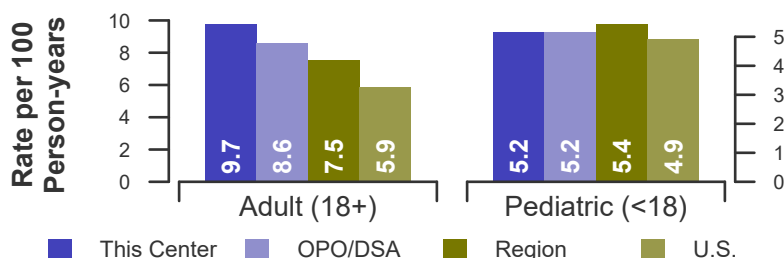
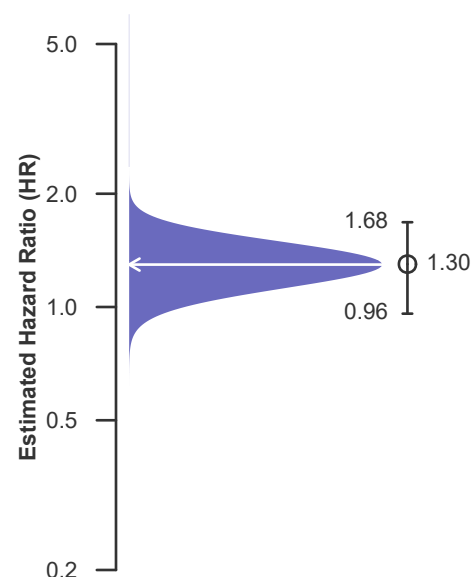


Figure B8. HR estimate of patient mortality after listing





B. Waiting List Information

Table B7. Waiting list candidate status after listing**Candidates registered on waiting list between 07/01/2018 and 06/30/2019**

Waiting list status (survival status)	This Center (N=144)			U.S. (N=4,673)		
	Months Since Listing			Months Since Listing		
	6	12	18	6	12	18
Alive on waiting list (%)	28.5	13.9	7.6	37.2	25.1	18.7
Died on the waiting list without transplant (%)	0.0	0.0	0.0	3.2	3.8	4.1
Removed without transplant (%):						
Condition worsened (status unknown)	5.6	6.9	7.6	3.2	4.0	4.6
Condition improved (status unknown)	0.7	0.7	0.7	0.8	1.7	2.4
Refused transplant (status unknown)	0.7	0.7	0.7	0.3	0.4	0.4
Other	0.0	0.7	1.4	1.7	2.7	3.4
Transplant (living or deceased donor) (%):						
Functioning (alive)	59.0	59.7	32.6	49.3	51.7	37.3
Failed-Retransplanted (alive)	0.7	0.7	0.7	0.1	0.2	0.2
Failed-alive not retransplanted	0.0	0.0	0.0	0.0	0.0	0.0
Died	4.2	6.2	8.3	3.3	5.0	6.0
Status Yet Unknown*	0.7	10.4	39.6	0.4	4.3	21.6
Lost or Transferred (status unknown) (%)	0.0	0.0	0.7	0.5	0.9	1.2
TOTAL (%)	100.0	100.0	100.0	100.0	100.0	100.0
Total % known died on waiting list or after transplant	4.2	6.2	8.3	6.5	8.8	10.1
Total % known died or removed as unstable	9.7	13.2	16.0	9.7	12.8	14.7
Total % removed for transplant	64.6	77.1	81.2	53.2	61.2	65.1
Total % with known functioning transplant (alive)	59.0	59.7	32.6	49.3	51.7	37.3

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



B. Waiting List Information

Table B8. Percent of candidates with deceased donor transplants: demographic characteristics
Candidates registered on the waiting list between 01/01/2015 and 12/31/2017

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	279	20.1	62.4	71.3	74.2	13,580	16.3	55.2	63.2	65.8	
Ethnicity/Race*											
White	194	18.6	63.4	71.1	74.7	8,322	16.4	55.3	63.3	66.1	
African-American	73	23.3	58.9	69.9	71.2	3,146	14.4	51.7	60.3	62.9	
Hispanic/Latino	7	14.3	71.4	85.7	85.7	1,418	16.6	58.9	65.9	68.3	
Asian	5	40.0	60.0	80.0	80.0	544	25.0	63.1	70.2	72.2	
Other	0	--	--	--	--	150	16.7	59.3	63.3	64.7	
Unknown	0	--	--	--	--	0	--	--	--	--	
Age											
<2 years	28	14.3	71.4	71.4	71.4	837	18.6	60.2	61.2	61.4	
2-11 years	16	12.5	50.0	56.2	56.2	597	13.9	62.0	69.5	72.0	
12-17 years	13	7.7	84.6	84.6	92.3	530	24.9	73.2	80.4	81.3	
18-34 years	26	26.9	69.2	84.6	84.6	1,274	16.1	52.5	59.8	63.2	
35-49 years	56	25.0	60.7	73.2	76.8	2,546	13.1	49.6	59.3	62.4	
50-64 years	107	16.8	55.1	67.3	72.0	5,703	15.6	54.0	62.9	66.0	
65-69 years	26	23.1	69.2	69.2	69.2	1,775	17.7	56.7	64.8	66.7	
70+ years	7	57.1	85.7	85.7	85.7	318	29.9	66.4	67.9	68.6	
Gender											
Male	205	17.6	58.5	69.3	72.7	9,655	15.1	53.9	62.7	65.5	
Female	74	27.0	73.0	77.0	78.4	3,925	19.1	58.2	64.2	66.5	

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



B. Waiting List Information

Table B9. Percent of candidates with deceased donor transplants: medical characteristics
Candidates registered on the waiting list between 01/01/2015 and 12/31/2017

Characteristic	N	Percent transplanted at time periods since listing					United States				
		This Center									
		30 day	1 year	2 years	3 years		30 day	1 year	2 years	3 years	
All	279	20.1	62.4	71.3	74.2	13,580	16.3	55.2	63.2	65.8	
Blood Type											
O	134	14.9	56.7	67.9	71.6	6,045	10.0	45.8	55.0	58.3	
A	100	22.0	64.0	72.0	75.0	5,002	20.3	61.9	68.9	71.1	
B	32	31.2	71.9	78.1	78.1	1,905	19.2	60.7	68.7	71.0	
AB	13	30.8	84.6	84.6	84.6	627	36.0	75.3	79.6	80.2	
Previous Transplant											
Yes	17	11.8	47.1	52.9	64.7	590	11.0	42.9	48.0	50.8	
No	262	20.6	63.4	72.5	74.8	12,990	16.5	55.7	63.8	66.5	
Primary Disease											
Cardiomyopathy	155	23.9	65.2	76.8	77.4	7,729	17.5	57.6	66.2	68.6	
Coronary Artery Disease	66	19.7	50.0	56.1	63.6	3,638	15.3	52.3	60.4	63.7	
Retransplant/Graft Failure	14	14.3	57.1	57.1	71.4	494	10.3	42.9	48.0	51.2	
Valvular Heart Disease	1	0.0	100.0	100.0	100.0	136	16.9	59.6	64.0	66.9	
Congenital Heart Disease	42	7.1	71.4	78.6	78.6	1,381	14.3	54.4	60.3	62.1	
Other	1	100.0	100.0	100.0	100.0	202	16.8	46.0	53.5	55.0	
Missing	0	--	--	--	--	0	--	--	--	--	
Medical Urgency Status at Listing											
Status 1A	82	36.6	70.7	70.7	70.7	4,286	31.0	69.6	72.6	73.5	
Status 1B	107	20.6	61.7	74.8	77.6	5,469	13.2	56.5	66.1	69.0	
Status 2	80	3.8	57.5	66.2	71.2	3,373	4.0	36.8	48.6	52.7	
Unknown	10	10.0	40.0	80.0	90.0	452	6.2	39.2	46.7	50.9	



B. Waiting List Information

Table B10. Time to transplant for waiting list candidates*

Candidates registered on the waiting list between 01/01/2015 and 06/30/2020

Percentile	Center	Months to Transplant**		U.S.
		OPO/DSA	Region	
5th	0.1	0.1	0.2	0.2
10th	0.2	0.2	0.3	0.4
25th	0.6	0.5	1.0	1.2
50th (median time to transplant)	3.8	2.9	5.2	6.2
75th	15.9	15.0	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 12/31/2020. Calculated as the months after listing, during which the corresponding percent of all patients initially listed had received a transplant.



B. Waiting List Information

Table B11. Offer Acceptance Practices: 01/01/2020 - 12/31/2020

Offers Acceptance Characteristics	This Center	OPO/DSA	Region	U.S.
Overall				
Number of Offers	770	906	6,837	55,469
Number of Acceptances	121	147	488	3,294
Expected Acceptances	51.6	60.1	396.4	3,289.0
Offer Acceptance Ratio*	2.29	2.40	1.23	1.00
95% Credible Interval**	[1.91, 2.72]	--	--	--
PHS increased infectious risk				
Number of Offers	249	289	2,540	18,453
Number of Acceptances	46	52	179	1,044
Expected Acceptances	13.3	16.1	137.6	1,041.4
Offer Acceptance Ratio*	3.14	2.99	1.30	1.00
95% Credible Interval**	[2.31, 4.08]	--	--	--
Ejection fraction < 60				
Number of Offers	260	308	2,358	18,634
Number of Acceptances	31	40	155	958
Expected Acceptances	12.5	14.9	115.0	957.6
Offer Acceptance Ratio*	2.27	2.49	1.34	1.00
95% Credible Interval**	[1.57, 3.11]	--	--	--
Donor Age >= 40				
Number of Offers	263	320	2,586	22,419
Number of Acceptances	21	29	88	666
Expected Acceptances	6.6	8.3	68.2	674.5
Offer Acceptance Ratio*	2.68	3.01	1.28	0.99
95% Credible Interval**	[1.70, 3.88]	--	--	--
Hard-to-Place Hearts (Over 50 Offers)				
Number of Offers	193	214	2,002	17,586
Number of Acceptances	12	14	44	267
Expected Acceptances	2.0	2.2	24.2	264.3
Offer Acceptance Ratio*	3.47	3.85	1.76	1.01
95% Credible Interval**	[1.90, 5.51]	--	--	--
Donor more than 500 miles away				
Number of Offers	205	252	1,516	15,138
Number of Acceptances	33	39	115	699
Expected Acceptances	9.7	11.7	82.0	686.4
Offer Acceptance Ratio*	2.99	3.00	1.39	1.02
95% Credible Interval**	[2.08, 4.05]	--	--	--

* The offer acceptance ratio estimates the relative offer acceptance practice of Vanderbilt University Medical Center (TNVU) 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, [1.91, 2.72], indicates the location of TNVU's true offer acceptance ratio with 95% probability. The best estimate is 129% more likely to accept an offer compared to national acceptance behavior, but TNVU's performance could plausibly range from 91% higher acceptance up to 172% higher acceptance.



B. Waiting List Information

Figure B10. Offer acceptance: Overall

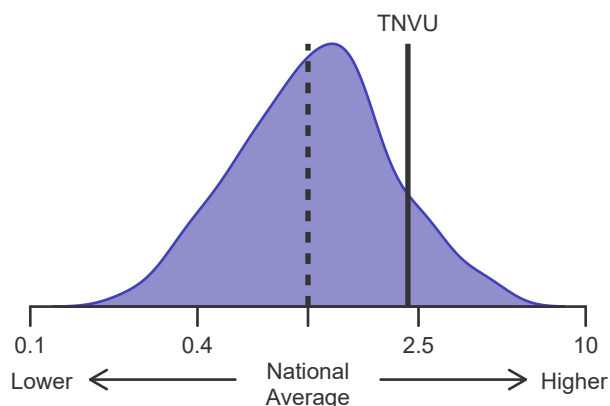


Figure B11. Offer acceptance: PHS increased infectious risk

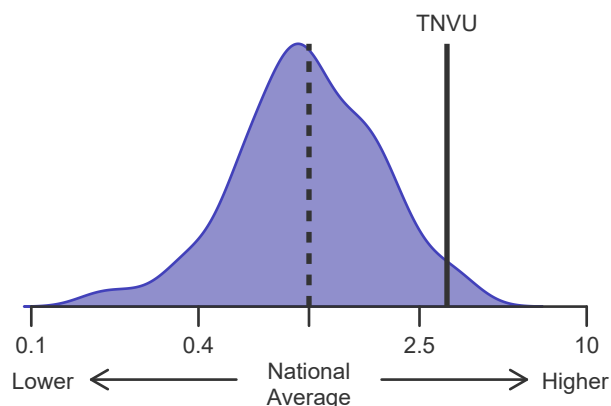


Figure B12. Offer acceptance: Ejection fraction < 60

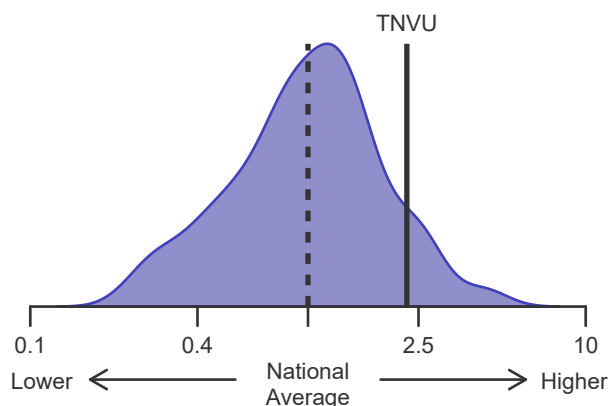


Figure B13. Offer acceptance: Donor age >= 40

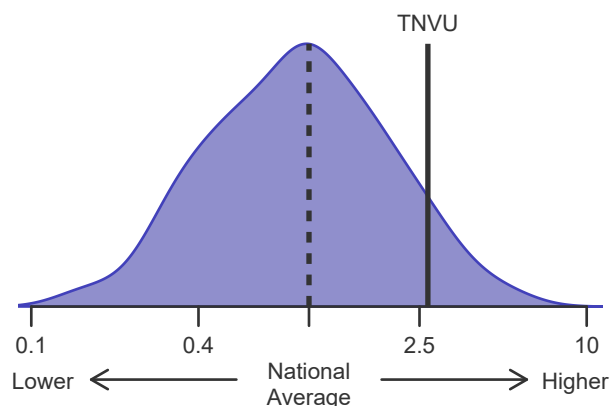


Figure B14. Offer acceptance: Offer number > 50

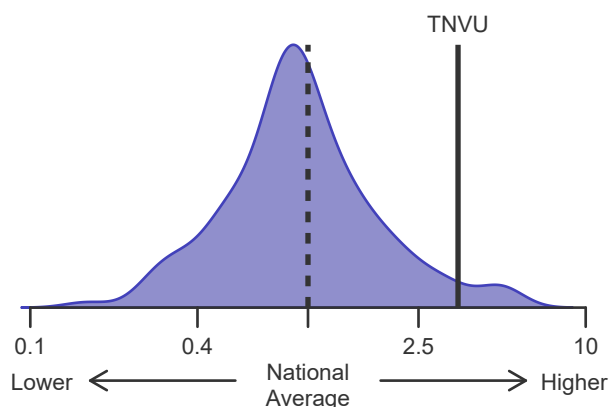
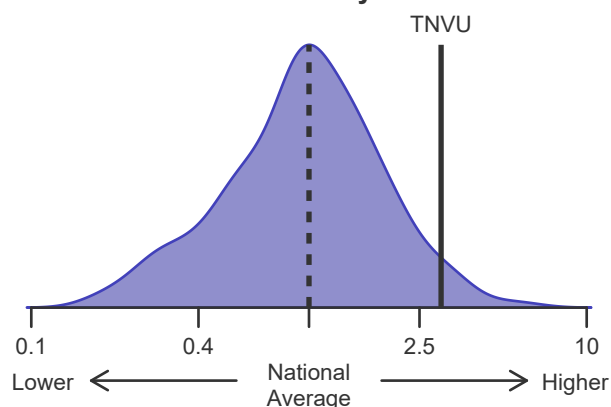


Figure B15. Offer acceptance: Donor more than 500 miles away





C. Transplant Information

Table C1D. Deceased donor transplant recipient demographic characteristics**Patients transplanted between 01/01/2020 and 12/31/2020**

Characteristic	Percentage in each category		
	Center (N=147)	Region (N=539)	U.S. (N=3,657)
Ethnicity/Race (%)*			
White	74.1	62.5	59.4
African-American	25.2	35.1	25.0
Hispanic/Latino	0.7	1.9	10.6
Asian	0.0	0.4	3.8
Other	0.0	0.2	1.1
Unknown	0.0	0.0	0.0
Age (%)			
<2 years	7.5	4.6	4.2
2-11 years	6.8	4.5	4.3
12-17	1.4	3.0	4.2
18-34	4.1	7.6	8.9
35-49 years	23.8	22.3	18.6
50-64 years	38.8	42.7	41.8
65-69 years	13.6	13.7	14.5
70+ years	4.1	1.7	3.5
Gender (%)			
Male	68.7	69.2	71.6
Female	31.3	30.8	28.4

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



C. Transplant Information

Table C2D. Deceased donor transplant recipient medical characteristics
Patients transplanted between 01/01/2020 and 12/31/2020

Characteristic	Percentage in each category		
	Center (N=147)	Region (N=539)	U.S. (N=3,657)
Blood Type (%)			
O	51.7	45.6	40.3
A	30.6	34.1	39.2
B	14.3	16.0	15.1
AB	3.4	4.3	5.4
Previous Transplant (%)			
Yes	9.5	4.1	3.6
No	90.5	95.9	96.4
Body Mass Index (%)			
0-20	18.4	15.4	16.7
21-25	19.0	20.8	27.1
26-30	28.6	32.5	30.5
31-35	22.4	23.7	19.4
36-40	9.5	6.3	4.6
41+	2.0	1.3	0.6
Unknown	0.0	0.0	1.1
Primary Disease (%)			
Cardiomyopathy	52.4	65.1	63.2
Coronary Artery Disease	29.9	23.9	24.6
Retransplant/Graft Failure	0.0	0.0	0.0
Valvular Heart Disease	0.0	0.0	1.0
Congenital Heart Disease	17.0	10.2	9.8
Other	0.7	0.7	1.3
Missing	0.0	0.0	0.1
Medical Urgency Status at Transplant (%)			
Status 1A	12.2	10.4	9.8
Status 1B	3.4	1.9	2.4
Status 2	0.0	0.0	0.7
Adult Status 1	2.7	6.7	6.9
Adult Status 2	30.6	39.3	38.9
Adult Status 3	15.6	14.1	15.9
Adult Status 4	25.9	22.6	19.9
Adult Status 5	0.7	0.7	0.9
Adult Status 6	8.8	4.3	4.6
Recipient Medical Condition at Transplant (%)			
Not Hospitalized	47.6	36.7	34.8
Hospitalized	11.6	14.7	13.7
ICU	40.8	48.6	50.9
Unknown	0.0	0.0	0.6
Recipient Circulatory Support Status at Transplant (%)			
No Support Mechanism	25.9	20.2	21.2
Devices*	49.0	59.6	61.3
Other Support Mechanism	25.2	20.2	17.0
Unknown	0.0	0.0	0.5

* Devices include ventricular assist devices (VAD), extracorporeal membrane oxygenation (ECMO), intraaortic balloon pump (IABP), and total artificial heart (TAH).



C. Transplant Information

Table C3D. Deceased donor characteristics**Transplants performed between 01/01/2020 and 12/31/2020**

Donor Characteristic	Percentage in each category		
	Center (N=147)	Region (N=539)	U.S. (N=3,657)
Cause of Death (%)			
Deceased: Stroke	11.6	11.5	12.2
Deceased: MVA	12.2	18.0	18.3
Deceased: Other	76.2	70.5	69.5
Ethnicity/Race (%)*			
White	66.7	64.6	59.9
African-American	18.4	25.0	18.1
Hispanic/Latino	10.9	8.5	18.8
Asian	2.0	0.9	1.9
Other	2.0	0.9	1.3
Not Reported	0.0	0.0	0.0
Age (%)			
<2 years	6.8	4.1	3.3
2-11 years	4.1	3.2	4.0
12-17	7.5	5.0	6.5
18-34	50.3	55.5	52.4
35-49 years	27.9	27.8	28.1
50-64 years	3.4	4.3	5.7
65-69 years	0.0	0.2	0.0
70+ years	0.0	0.0	0.0
Gender (%)			
Male	68.7	73.1	71.0
Female	31.3	26.9	29.0
Blood Type (%)			
O	59.9	57.3	52.6
A	27.2	30.4	34.6
B	10.9	10.0	10.9
AB	2.0	2.2	1.9
Unknown	0.0	0.0	0.0

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



C. Transplant Information

Table C4D. Deceased donor transplant characteristics
Transplants performed between 01/01/2020 and 12/31/2020

Transplant Characteristic	Percentage in each category		
	Center (N=147)	Region (N=539)	U.S. (N=3,657)
Total Ischemic Time (Minutes): Local (%)			
Deceased: 0-90 min	22.6	19.1	10.7
Deceased: 91-180 min	54.8	55.1	62.0
Deceased: 181-270 min	16.1	19.1	23.4
Deceased: 271-360 min	6.5	4.5	2.2
Deceased: 361+ min	0.0	1.1	0.4
Not Reported	0.0	1.1	1.3
Total Ischemic Time (Minutes): Shared (%)			
Deceased: 0-90 min	1.7	0.4	0.4
Deceased: 91-180 min	27.6	22.4	18.4
Deceased: 181-270 min	56.0	58.0	65.7
Deceased: 271-360 min	7.8	11.8	12.0
Deceased: 361+ min	6.0	6.7	2.7
Not Reported	0.9	0.7	0.7
Procedure Type (%)			
Single organ	83.7	90.7	90.8
Multi organ	16.3	9.3	9.2
Donor Location (%)			
Local Donation Service Area (DSA)	21.1	16.5	22.8
Another Donation Service Area (DSA)	78.9	83.5	77.2
Median Time in Hospital After Transplant*	17.0 Days	17.0 Days	17.0 Days

* Multi organ transplants are excluded from this statistic.



C. Transplant Information

Table C5D. Adult (18+) 1-month survival with a functioning deceased donor graft
Single organ transplants performed between 01/01/2018 and 03/12/2020
Deaths and retransplants are considered graft failures

	TNVU	U.S.
Number of transplants evaluated	188	6,025
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	93.02%	96.69%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	96.03%	--
Number of observed graft failures (including deaths) during the first month after transplant	13	196
Number of expected graft failures (including deaths) during the first month after transplant	7.75	--
Estimated hazard ratio*	1.54	--
95% credible interval for the hazard ratio**	[0.86, 2.41]	--

* The hazard ratio provides an estimate of how Vanderbilt University Medical Center (TNVU)'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 TNVU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

** The 95% credible interval, [0.86, 2.41], indicates the location of TNVU's true hazard ratio with 95% probability. The best estimate is 54% higher risk of graft failure compared to an average program, but TNVU's performance could plausibly range from 14% reduced risk up to 141% increased risk.

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

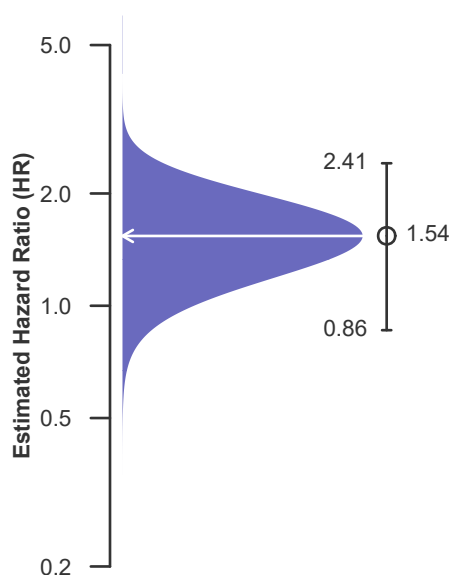
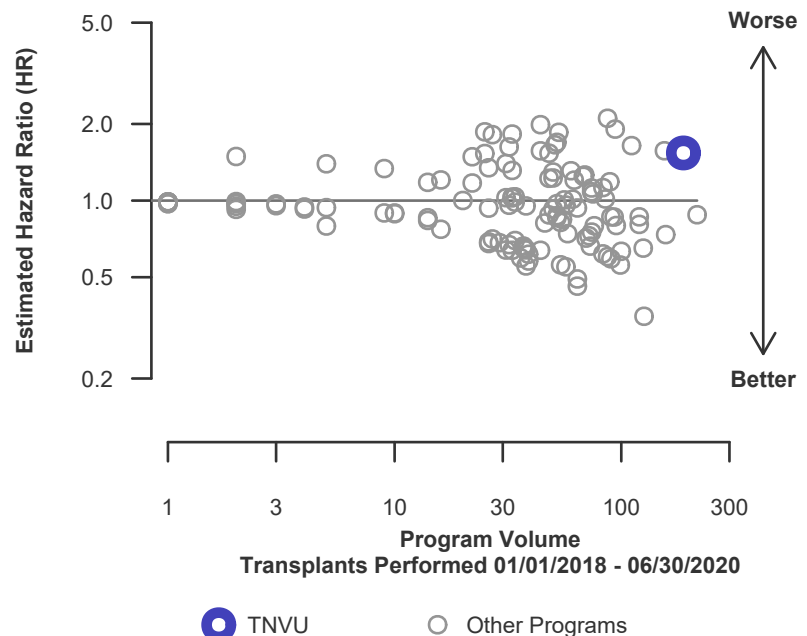


Figure C2D. Adult (18+) 1-month deceased donor graft failure HR program comparison





C. Transplant Information

Table C6D. Adult (18+) 1-year survival with a functioning deceased donor graft
Single organ transplants performed between 01/01/2018 and 03/12/2020
Deaths and retransplants are considered graft failures

	TNVU	U.S.
Number of transplants evaluated	188	6,025
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	89.93%	91.48%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	90.15%	--
Number of observed graft failures (including deaths) during the first year after transplant	17	454
Number of expected graft failures (including deaths) during the first year after transplant	17.12	--
Estimated hazard ratio*	0.99	--
95% credible interval for the hazard ratio**	[0.60, 1.49]	--

* The hazard ratio provides an estimate of how Vanderbilt University Medical Center (TNVU)'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 TNVU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

** The 95% credible interval, [0.60, 1.49], indicates the location of TNVU's true hazard ratio with 95% probability. The best estimate is 1% lower risk of graft failure compared to an average program, but TNVU's performance could plausibly range from 40% reduced risk up to 49% increased risk.

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

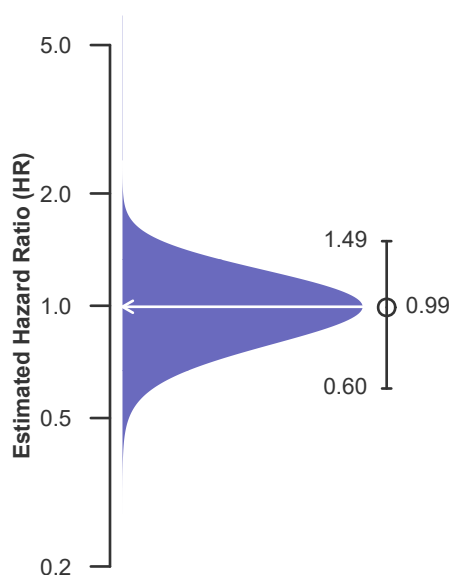
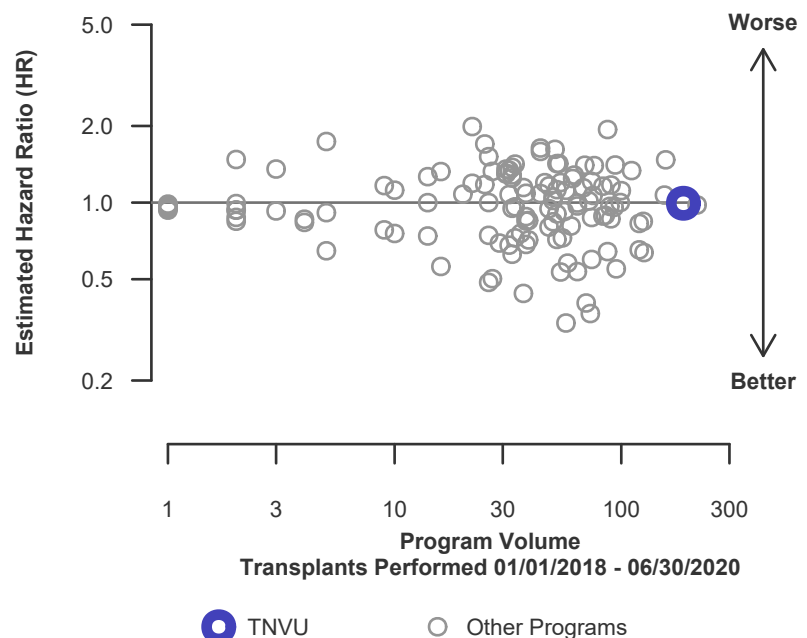


Figure C4D. Adult (18+) 1-year deceased donor graft failure HR program comparison





C. Transplant Information

Table C7D. Adult (18+) 3-year survival with a functioning deceased donor graft
Single organ transplants performed between 07/01/2015 and 12/31/2017
Deaths and retransplants are considered graft failures

	TNVU	U.S.
Number of transplants evaluated	174	6,269
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	82.20%	85.63%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	85.55%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	30	878
Number of expected graft failures (including deaths) during the first 3 years after transplant	24.50	--
Estimated hazard ratio*	1.21	--
95% credible interval for the hazard ratio**	[0.83, 1.66]	--

* The hazard ratio provides an estimate of how Vanderbilt University Medical Center (TNVU)'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 TNVU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

** The 95% credible interval, [0.83, 1.66], indicates the location of TNVU's true hazard ratio with 95% probability. The best estimate is 21% higher risk of graft failure compared to an average program, but TNVU's performance could plausibly range from 17% reduced risk up to 66% increased risk.

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

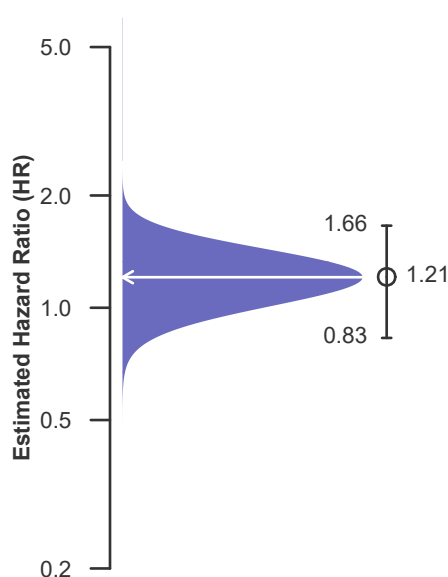
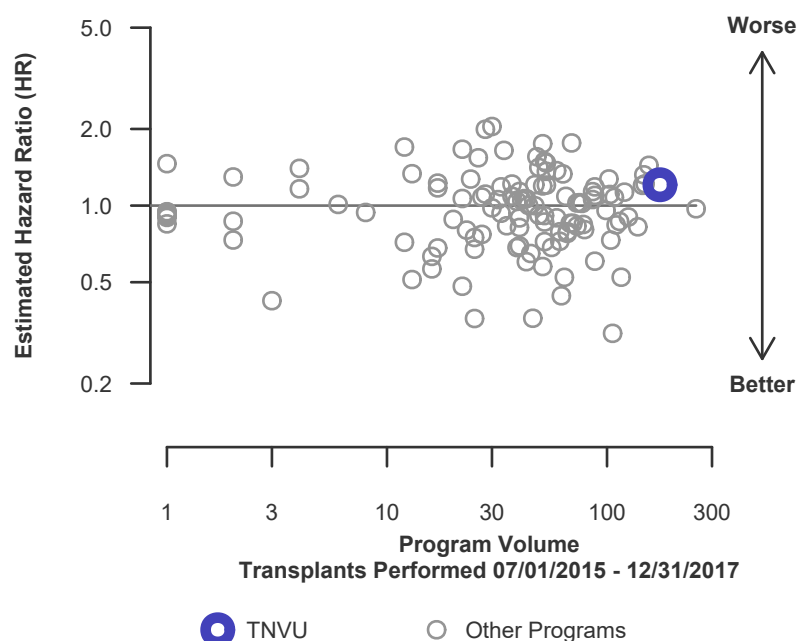


Figure C6D. Adult (18+) 3-year deceased donor graft failure HR program comparison





C. Transplant Information

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

Single organ transplants performed between 01/01/2018 and 03/12/2020

Deaths and retransplants are considered graft failures

	TNVU	U.S.
Number of transplants evaluated	35	1,075
Estimated probability of surviving with a functioning graft at 1 month (unadjusted for patient and donor characteristics)	100.00%	97.64%
Expected probability of surviving with a functioning graft at 1 month (adjusted for patient and donor characteristics)	96.85%	--
Number of observed graft failures (including deaths) during the first month after transplant	0	25
Number of expected graft failures (including deaths) during the first month after transplant	1.12	--
Estimated hazard ratio*	0.64	--
95% credible interval for the hazard ratio**	[0.08, 1.79]	--

* The hazard ratio provides an estimate of how Vanderbilt University Medical Center (TNVU)'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 TNVU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

** The 95% credible interval, [0.08, 1.79], indicates the location of TNVU's true hazard ratio with 95% probability. The best estimate is 36% lower risk of graft failure compared to an average program, but TNVU's performance could plausibly range from 92% reduced risk up to 79% increased risk.

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

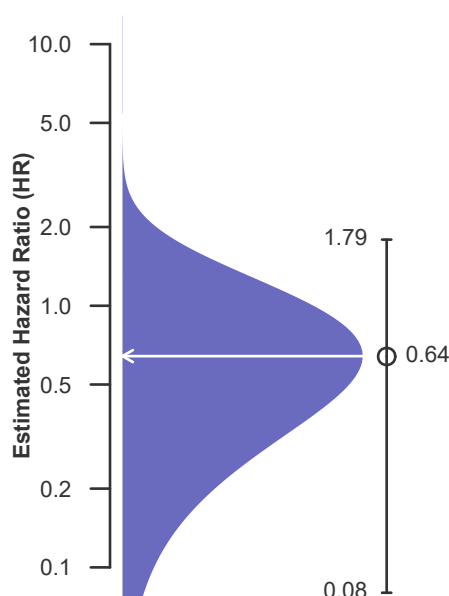
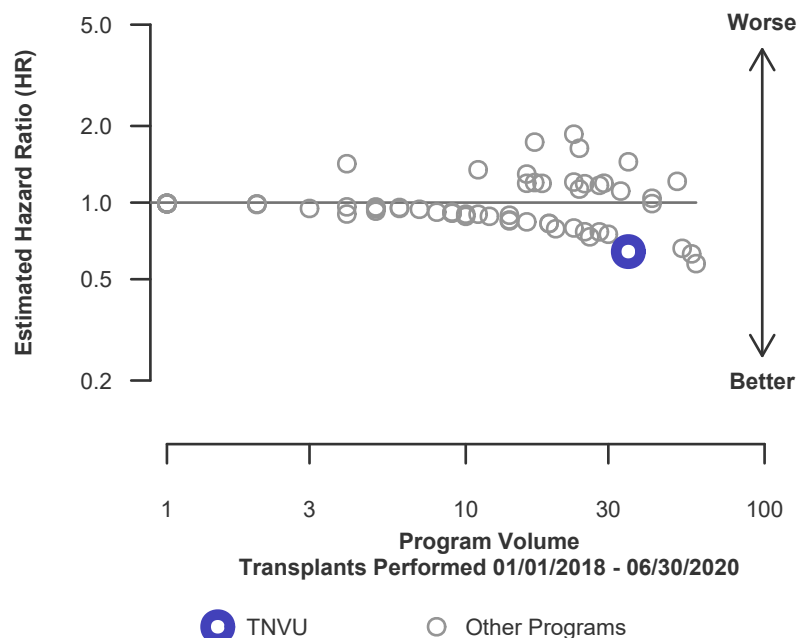


Figure C8D. Pediatric (<18) 1-month deceased donor graft failure HR program comparison





C. Transplant Information

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

Single organ transplants performed between 01/01/2018 and 03/12/2020

Deaths and retransplants are considered graft failures

	TNVU	U.S.
Number of transplants evaluated	35	1,075
Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)	85.59%	92.06%
Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)	89.55%	--
Number of observed graft failures (including deaths) during the first year after transplant	4	74
Number of expected graft failures (including deaths) during the first year after transplant	2.77	--
Estimated hazard ratio*	1.26	--
95% credible interval for the hazard ratio**	[0.46, 2.45]	--

* The hazard ratio provides an estimate of how Vanderbilt University Medical Center (TNVU)'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 TNVU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

** The 95% credible interval, [0.46, 2.45], indicates the location of TNVU's true hazard ratio with 95% probability. The best estimate is 26% higher risk of graft failure compared to an average program, but TNVU's performance could plausibly range from 54% reduced risk up to 145% increased risk.

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

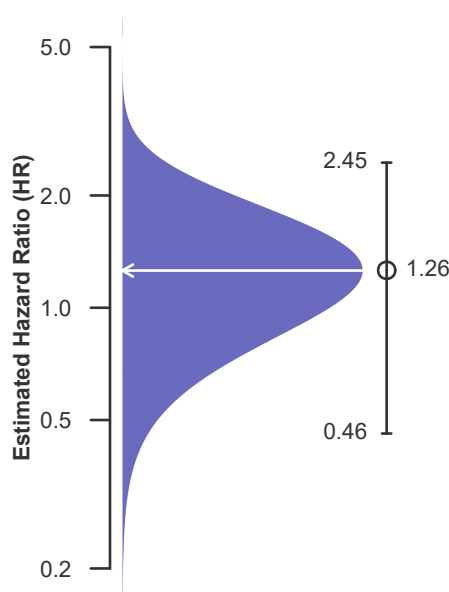
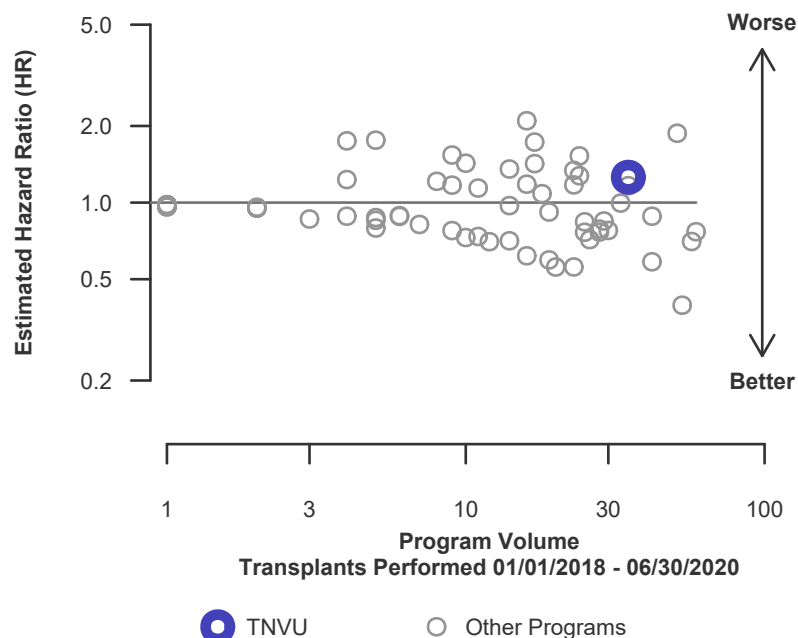


Figure C10D. Pediatric (<18) 1-year deceased donor graft failure HR program comparison





C. Transplant Information

Table C10D. Pediatric (<18) 3-year survival with a functioning deceased donor graft
Single organ transplants performed between 07/01/2015 and 12/31/2017
Deaths and retransplants are considered graft failures

	TNVU	U.S.
Number of transplants evaluated	37	1,114
Estimated probability of surviving with a functioning graft at 3 years (unadjusted for patient and donor characteristics)	94.59%	88.49%
Expected probability of surviving with a functioning graft at 3 years (adjusted for patient and donor characteristics)	88.50%	--
Number of observed graft failures (including deaths) during the first 3 years after transplant	2	124
Number of expected graft failures (including deaths) during the first 3 years after transplant	4.18	--
Estimated hazard ratio*	0.65	--
95% credible interval for the hazard ratio**	[0.18, 1.42]	--

* The hazard ratio provides an estimate of how Vanderbilt University Medical Center (TNVU)'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 TNVU's graft failure rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

** The 95% credible interval, [0.18, 1.42], indicates the location of TNVU's true hazard ratio with 95% probability. The best estimate is 35% lower risk of graft failure compared to an average program, but TNVU's performance could plausibly range from 82% reduced risk up to 42% increased risk.

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

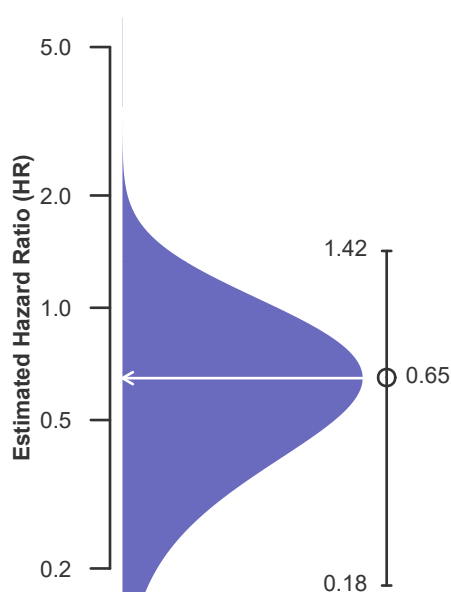
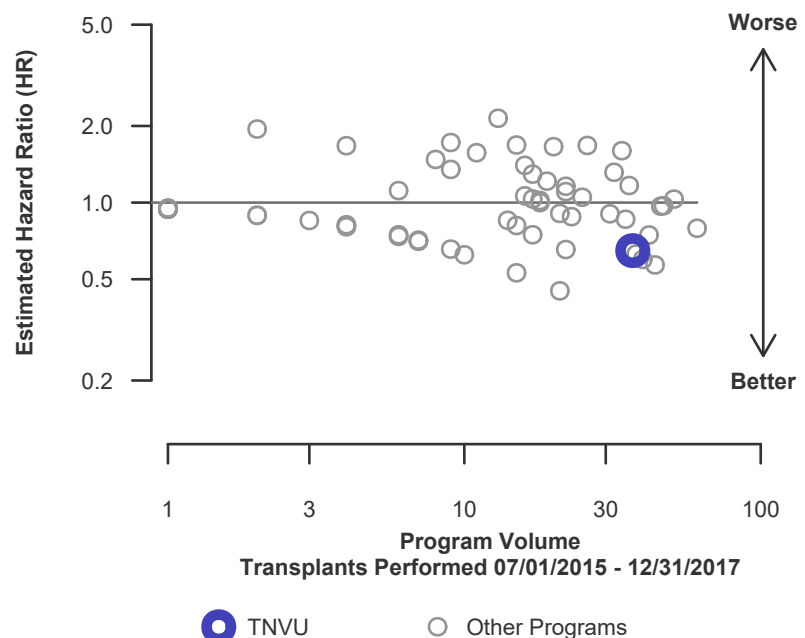


Figure C12D. Pediatric (<18) 3-year deceased donor graft failure HR program comparison





C. Transplant Information

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

Single organ transplants performed between 01/01/2018 and 03/12/2020

Retransplants excluded

	TNVU	U.S.
Number of transplants evaluated	175	5,868
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	94.24%	97.09%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	96.72%	--
Number of observed deaths during the first month after transplant	10	168
Number of expected deaths during the first month after transplant	5.71	--
Estimated hazard ratio*	1.56	--
95% credible interval for the hazard ratio**	[0.80, 2.55]	--

* The hazard ratio provides an estimate of how Vanderbilt University Medical Center (TNVU)'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 TNVU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

** The 95% credible interval, [0.80, 2.55], indicates the location of TNVU's true hazard ratio with 95% probability. The best estimate is 56% higher risk of patient death compared to an average program, but TNVU's performance could plausibly range from 20% reduced risk up to 155% increased risk.

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

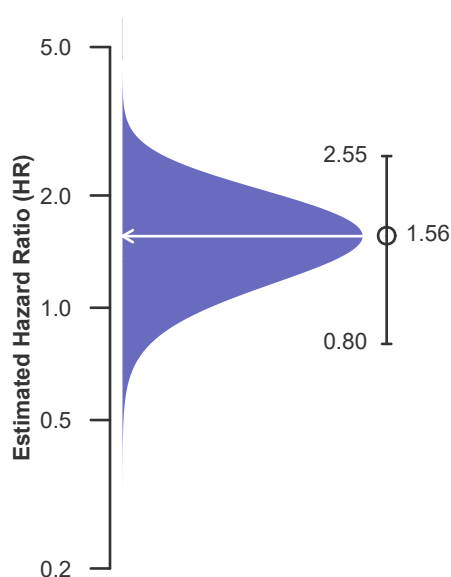
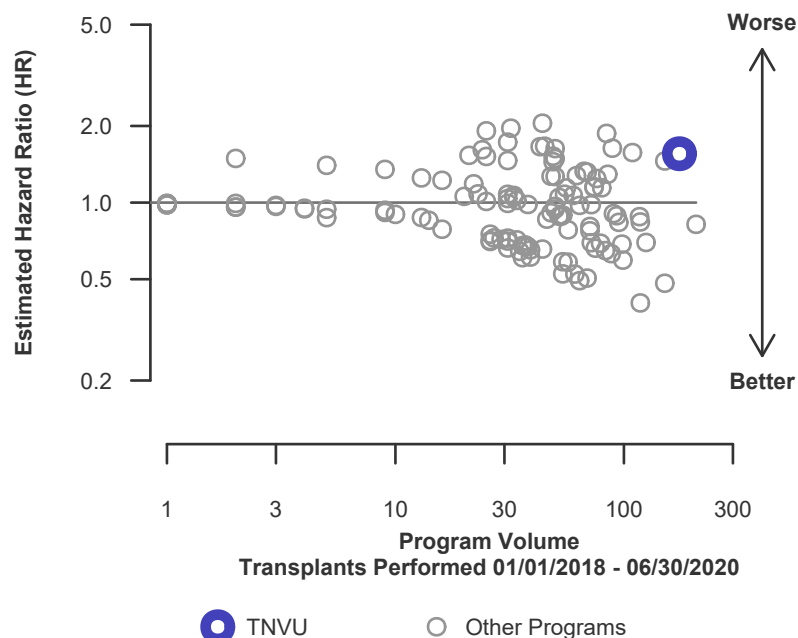


Figure C14D. Adult (18+) 1-month patient death HR program comparison (deceased donor grafts)





C. Transplant Information

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

Single organ transplants performed between 01/01/2018 and 03/12/2020
Retransplants excluded

	TNVU	U.S.
Number of transplants evaluated	175	5,868
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	90.26%	91.88%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	90.94%	--
Number of observed deaths during the first year after transplant	15	419
Number of expected deaths during the first year after transplant	14.29	--
Estimated hazard ratio*	1.04	--
95% credible interval for the hazard ratio**	[0.61, 1.59]	--

* The hazard ratio provides an estimate of how Vanderbilt University Medical Center (TNVU)'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 TNVU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

** The 95% credible interval, [0.61, 1.59], indicates the location of TNVU's true hazard ratio with 95% probability. The best estimate is 4% higher risk of patient death compared to an average program, but TNVU's performance could plausibly range from 39% reduced risk up to 59% increased risk.

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

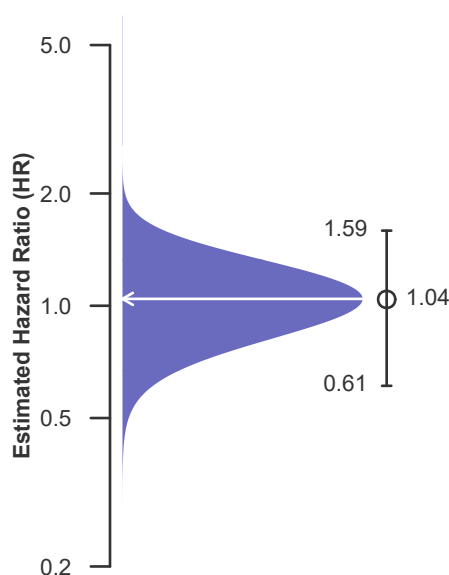
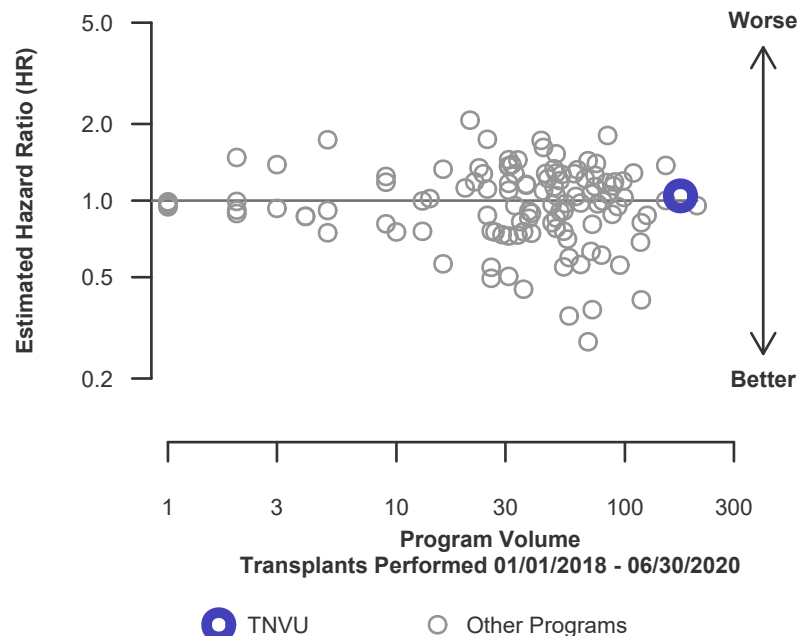


Figure C16D. Adult (18+) 1-year patient death HR program comparison (deceased donor grafts)





C. Transplant Information

Table C13D. Adult (18+) 3-year patient survival (deceased donor graft recipients)
Single organ transplants performed between 07/01/2015 and 12/31/2017
Retransplants excluded

	TNVU	U.S.
Number of transplants evaluated	171	6,144
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	84.33%	86.12%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	86.16%	--
Number of observed deaths during the first 3 years after transplant	26	831
Number of expected deaths during the first 3 years after transplant	23.01	--
Estimated hazard ratio*	1.12	--
95% credible interval for the hazard ratio**	[0.74, 1.57]	--

* The hazard ratio provides an estimate of how Vanderbilt University Medical Center (TNVU)'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 TNVU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

** The 95% credible interval, [0.74, 1.57], indicates the location of TNVU's true hazard ratio with 95% probability. The best estimate is 12% higher risk of patient death compared to an average program, but TNVU's performance could plausibly range from 26% reduced risk up to 57% increased risk.

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

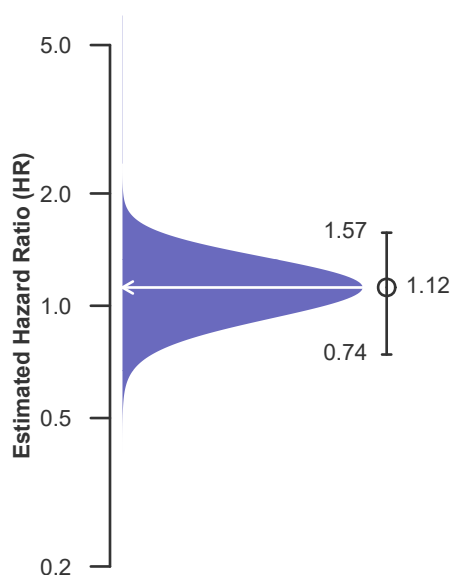
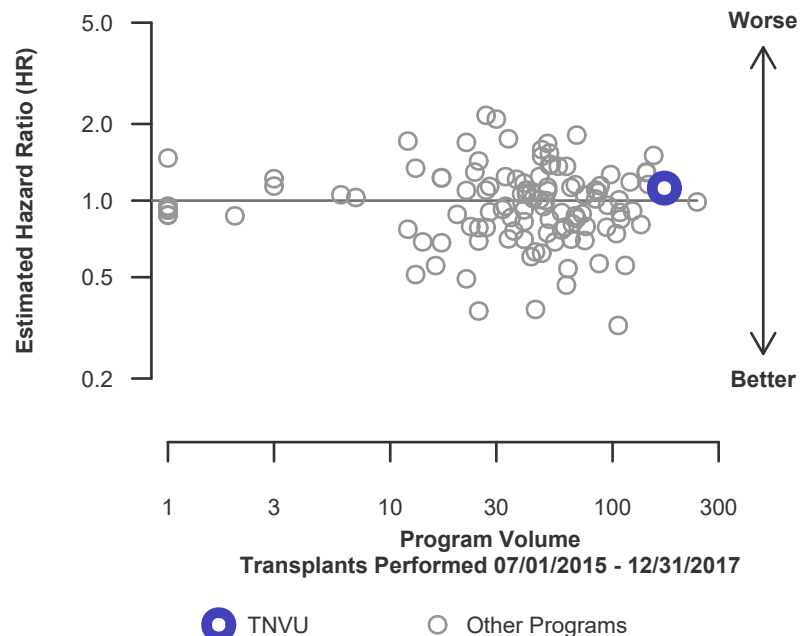


Figure C18D. Adult (18+) 3-year patient death HR program comparison (deceased donor grafts)





C. Transplant Information

Table C14D. Pediatric (<18) 1-month patient survival (deceased donor graft recipients)
Single organ transplants performed between 01/01/2018 and 03/12/2020
Retransplants excluded

	TNVU	U.S.
Number of transplants evaluated	34	1,031
Estimated probability of surviving at 1 month (unadjusted for patient and donor characteristics)	100.00%	97.63%
Expected probability of surviving at 1 month (adjusted for patient and donor characteristics)	96.53%	--
Number of observed deaths during the first month after transplant	0	24
Number of expected deaths during the first month after transplant	1.20	--
Estimated hazard ratio*	0.63	--
95% credible interval for the hazard ratio**	[0.08, 1.74]	--

* The hazard ratio provides an estimate of how Vanderbilt University Medical Center (TNVU)'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 TNVU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

** The 95% credible interval, [0.08, 1.74], indicates the location of TNVU's true hazard ratio with 95% probability. The best estimate is 37% lower risk of patient death compared to an average program, but TNVU's performance could plausibly range from 92% reduced risk up to 74% increased risk.

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

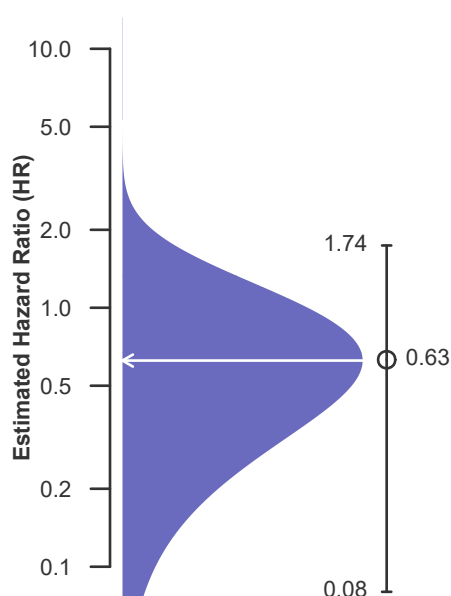
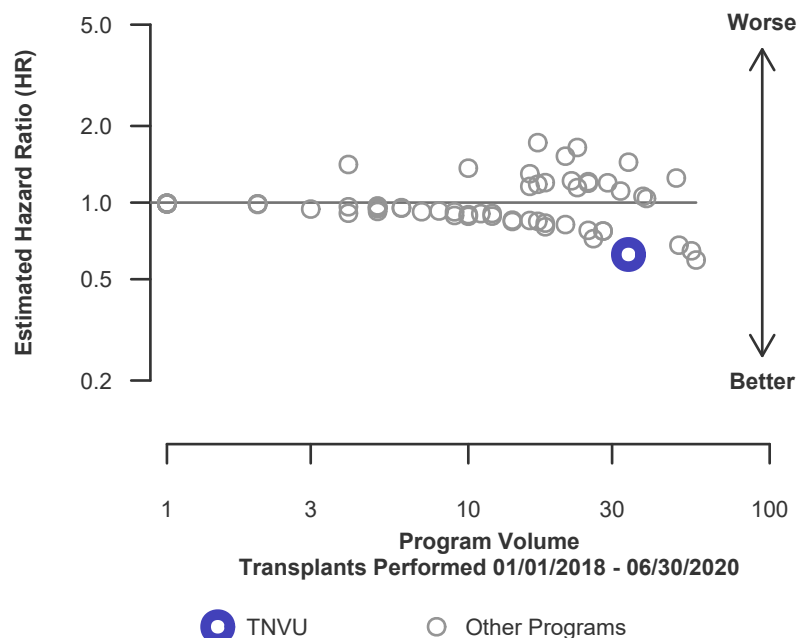


Figure C20D. Pediatric (<18) 1-month patient death HR program comparison (deceased donor grafts)





C. Transplant Information

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

Single organ transplants performed between 01/01/2018 and 03/12/2020

Retransplants excluded

	TNVU	U.S.
Number of transplants evaluated	34	1,031
Estimated probability of surviving at 1 year (unadjusted for patient and donor characteristics)	85.01%	92.16%
Expected probability of surviving at 1 year (adjusted for patient and donor characteristics)	88.75%	--
Number of observed deaths during the first year after transplant	4	70
Number of expected deaths during the first year after transplant	2.90	--
Estimated hazard ratio*	1.22	--
95% credible interval for the hazard ratio**	[0.45, 2.38]	--

* The hazard ratio provides an estimate of how Vanderbilt University Medical Center (TNVU)'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 TNVU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

** The 95% credible interval, [0.45, 2.38], indicates the location of TNVU's true hazard ratio with 95% probability. The best estimate is 22% higher risk of patient death compared to an average program, but TNVU's performance could plausibly range from 55% reduced risk up to 138% increased risk.

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

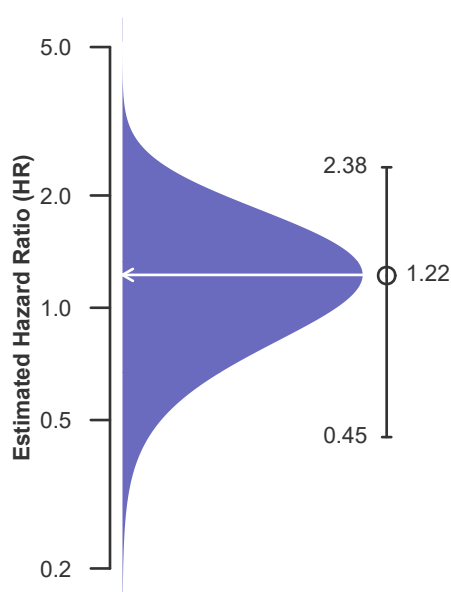
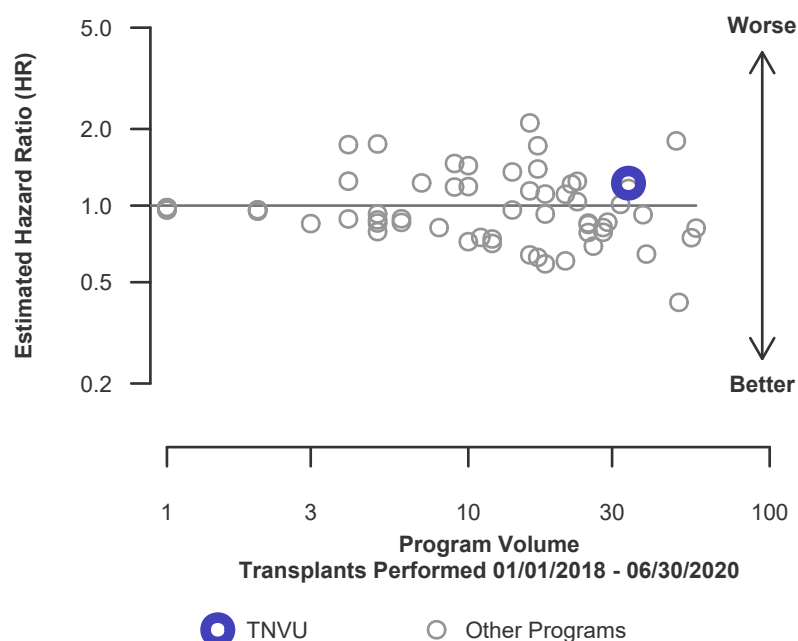


Figure C22D. Pediatric (<18) 1-year patient death HR program comparison (deceased donor grafts)





C. Transplant Information

Table C16D. Pediatric (<18) 3-year patient survival (deceased donor graft recipients)
Single organ transplants performed between 07/01/2015 and 12/31/2017
Retransplants excluded

	TNVU	U.S.
Number of transplants evaluated	35	1,066
Estimated probability of surviving at 3 years (unadjusted for patient and donor characteristics)	94.29%	88.91%
Expected probability of surviving at 3 years (adjusted for patient and donor characteristics)	88.91%	--
Number of observed deaths during the first 3 years after transplant	2	114
Number of expected deaths during the first 3 years after transplant	3.79	--
Estimated hazard ratio*	0.69	--
95% credible interval for the hazard ratio**	[0.19, 1.51]	--

* The hazard ratio provides an estimate of how Vanderbilt University Medical Center (TNVU)'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 TNVU's patient death rate were precisely the expected rate, the estimated hazard ratio would be 1.0.

** The 95% credible interval, [0.19, 1.51], indicates the location of TNVU's true hazard ratio with 95% probability. The best estimate is 31% lower risk of patient death compared to an average program, but TNVU's performance could plausibly range from 81% reduced risk up to 51% increased risk.

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

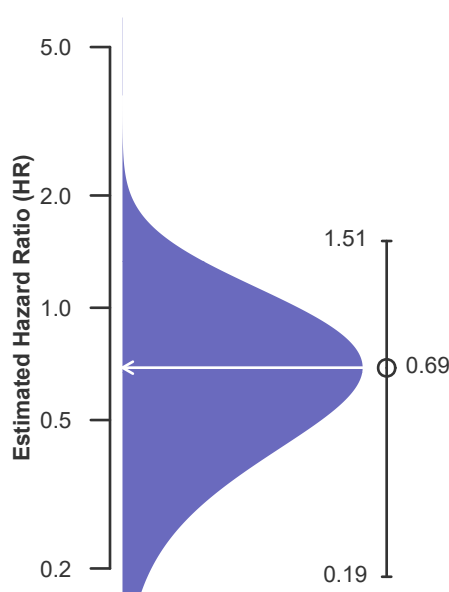
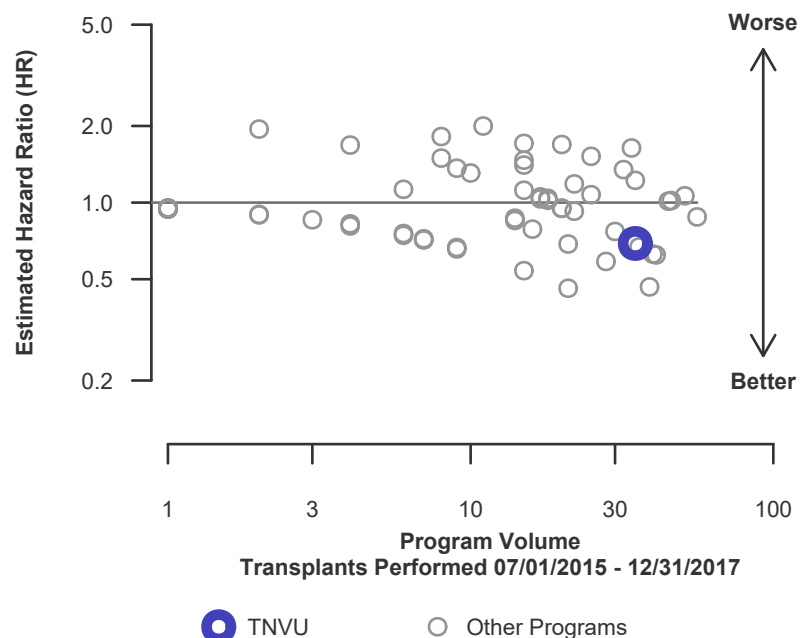


Figure C24D. Pediatric (<18) 3-year patient death HR program comparison (deceased donor grafts)





C. Transplant Information

Table C17. Multi-organ transplant graft survival: 01/01/2018 - 06/30/2020

Adult (18+) Transplants

Transplant Type	Transplants Performed		Heart Graft Failures		Estimated Heart Graft Survival	
	TNVU-TX1	USA	TNVU-TX1	USA	TNVU-TX1	USA
Kidney-Heart	30	550	4	63	86.7%	88.5%
Liver-Heart	5	103	1	15	80.0%	85.4%

Pediatric (<18) Transplants

Transplant Type	Transplants Performed		Heart Graft Failures		Estimated Heart Graft Survival	
	TNVU-TX1	USA	TNVU-TX1	USA	TNVU-TX1	USA
Kidney-Heart	1	10	0	3	100.0%	70.0%

Table C18. Multi-organ transplant patient survival: 01/01/2018 - 06/30/2020

Adult (18+) Transplants

Transplant Type	Transplants Performed		Patient Deaths		Estimated Patient Survival	
	TNVU-TX1	USA	TNVU-TX1	USA	TNVU-TX1	USA
Kidney-Heart	30	550	4	62	86.7%	88.7%
Liver-Heart	5	103	1	15	80.0%	85.4%

Pediatric (<18) Transplants

Transplant Type	Transplants Performed		Patient Deaths		Estimated Patient Survival	
	TNVU-TX1	USA	TNVU-TX1	USA	TNVU-TX1	USA
Kidney-Heart	1	10	0	3	100.0%	70.0%