

OPTN Data Advisory Committee

Descriptive Data Request

Update to Refusal Codes Three-Month Post-Implementation Monitoring Report

DHHS Contract No. 250-2019-00001C
Date Completed: March 30, 2022

Prepared for:
Data Advisory Committee
Committee Meeting
Date of Meeting: April 13, 2022

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Background/Purpose

In response to feedback received from the transplant community and at the recommendation of the OPTN Ad Hoc Systems Performance Committee, the OPTN Data Advisory Committee updated the list of options under the primary refusal and secondary refusal reason code drop downs in the offer details form section of DonorNet. Last revised in 2004, the new proposed list of refusal codes has incorporated multiple rounds of feedback received from various stakeholder groups, OPTN committees, and the larger transplant community between 2019-2021. The updated list intends to further the strategic priority of increasing donor and recipient matching by improving the refusal reason data used for quality improvement, retrospective reviews, and real-time decision making. By providing more relevant and granular options, the insights gathered will be more actionable and improve upon the current list by reducing the overutilization of the refusal code “donor age or quality” which accounted for 66% of the primary refusal reasons entered between July 2019 and June 2020. These revisions did not change or add data collection, but provide a revised list of options that are more relevant, discrete, and mutually exclusive, to promote the collection of more actionable data. A crosswalk between previously used and new refusal codes is provided in Figure 1.

Strategic Plan Goal or Committee Project Addressed

Increase the number of transplants by efficient donor/recipient matching.

Committee Request

The OPTN will analyze data beginning at three months after implementation of the new refusal codes, allowing for two months of data with the first review. In order to facilitate monthly updates, the results will be provided to the committee via a standard report or dashboard for two years, with a presentation of updated results to the committee quarterly for the first year and a final report presentation at the end of year two.

The first two items below will be provided overall, by match organ type, size of program (small, medium, large) as defined by transplant volume in calendar year 2020, and relative location on match run. Stratifications of location on match run will be done by match organ type, and before or after the 90th percentile for rank of acceptances in calendar year 2020 for that organ type. The analysis will include:

- The percentage of patient-specific refusals by reason, to identify any code not being used or making up an unexpectedly high proportion of the total (suggesting that it has become a new, nonspecific catch-all code).
- Limited to range refusals (center refusing for multiple patients at same time), the percentage by reason to identify any code making up an unexpectedly high proportion of the total (suggesting that it has become a new, nonspecific catch-all code).
- A review of the cases (stratified only by match organ) where the “other/specify” text field was used, to identify any manually-entered reasons not currently in the list and making up a significant proportion of the total “others”. This will identify any additional codes needing to be added to the updated list. Due to the manual effort required, this portion of the analysis will be updated quarterly during the first year, and once in year two of implementation.

Additionally, UNOS staff will provide feedback on questions received from members related to the new refusal codes.

Figure 1: A high-level overview of the changes to refusal codes that were approved by the OPTN Board of Directors in June 2021. This serves as a crosswalk between previously used and new refusal codes available to transplant hospitals

PREVIOUS REFUSAL CODE	NEW REFUSAL CODE
800 - Patient's condition improved, transplant not needed	722 - Candidate's condition improved, transplant not needed
801 - Patient ill, unavailable, refused, or temporarily unsuitable	720 - Candidate temporarily medically unsuitable 727 - Candidate unavailable 728 - Candidate refused
802 - Multiple organ transplant or different laterality is required	723 - Candidate requires different laterality 724 - Candidate requires multiple organ transplant
803 - Patient txed, tx in progress, or other offer being considered	721 - Candidate transplanted or pending transplant
810 - Positive crossmatch 813 - Unacceptable Antigens	732 - Positive physical crossmatch 733 - Positive virtual crossmatch/unacceptable antigens
811 - Number of HLA mismatches unacceptable	734 - Number of HLA mismatches unacceptable
812 - No serum for crossmatching	730 - No candidate serum for crossmatching 731 - No donor cells/specimen for crossmatching, or no time for crossmatch
814 - High PRA 815 - High CPRA	Removed
820 - Heavy workload 823 - Surgeon unavailable 825 - Operational – transplant center	760 - Resource time constraint (OPO, TXC, donor hospital, etc.) 762 - Recovery team availability 763 - Transplant team or transplant facility availability
822 - Exceeded one hour response time 826 - Exceeded 30 minute evaluation time	765 - Exceeded policy defined response time
824 - Distance to travel or ship	712 - Actual or projected cold ischemic time too long
830 - Donor age or quality	700 - Donor age 713 - Warm ischemic time too long 750 - Donor medical history, specify* 751 - Donor instability/high vasopressor usage 752 - Prolonged downtime/CPR 754 - VCA graft appearance or quality, specify**

831 - Donor size/weight	701 - Organ size, specify**
832 - Donor ABO	Removed
833 - Donor social history	740 - PHS risk criteria or social history
834 - Positive serological tests	742 - Donor infection or positive culture 741 - Positive infectious disease screening test: CMV, HBV, HCV, etc.
835 - Organ Preservation	710 - Organ preservation: Unacceptable method or findings
836 - Organ anatomical damage or defect	711 - Organ anatomical damage or defect 715 - Biopsy results unacceptable
837 - Organ-specific donor issue	714 - Biopsy not available 716 - Organ specific test results not available, specify** 717 - Unacceptable organ specific test results, specify* 743 - Malignancy or suspected malignancy
840 - COVID-19: candidate-related reason	725 - Epidemic/Pandemic - Candidate
841 - COVID-19: donor-related reason	744 - Epidemic/Pandemic - Donor
842 - COVID-19: OPO or transplant hospital operational issue	763 - Transplant team or transplant facility availability
860 - Medical urgency of another potential recipient	Removed
880 - Kidney placed with extra-renal	Removed
898 - Other Specify	798 - Other Specify* Note: 799 - Other Specify* is the replacement Other Specify for bypasses. 898 previously served as both the refusal and bypass code.
New Codes	726 - Candidate temporarily ineligible due to insurance or financial issue 753 - DCD donor neurological function/not expected to arrest 761 - Donor family time constraint 764 - Transportation availability 790 - Disaster Emergency Management

Data and Methods

These analyses use OPTN potential transplant recipient (PTR) match run data and include roughly 88 days before and after implementation on December 2, 2021, at 7:59:53 AM. Transplant candidate organ offers between September 05, 2021 and December 02, 2021 (pre) or between December 02, 2021 and February 28, 2022 (post) on matches with at least one final acceptance were used.

Only offers prior to the final acceptor with a refusal were included, organ offers that were bypassed or provisional yes at the close of the match were excluded. Note that offers for candidates on heart-alone organ matches and heart-lung organ matches were combined to heart-lung match organ type, since heart-alone matches are only run if no viable lungs available from the donor.

Figures present top reasons for refusal of organ offers, and associated tables are given either in the Results section or at the end of the report in the Appendix. Figure colors represent the broader category that can describe each type of refusal reason.

Analyses are based on OPTN data as of March 25, 2022 and are subject to change based on any future data submission or correction.

Results

Pre-implementation Review

The most frequently used reason for refusal of an organ offer across all organs, excluding intestine, was '**Donor age or quality**'. This refusal reason accounted for over 60% of refused offers for kidney and liver match runs, over 55% of refused offers for lung and kidney-pancreas, almost 50% of heart-lung, and 15% of intestine match runs. Effective March 25, 2020, three new refusal codes were established to document refusal of an organ offer for a transplant candidate for COVID-19-related reasons:

- 840: COVID-19 candidate-related reason
- 841: COVID-19 donor-related reason
- 842: COVID-19 OPO or transplant hospital operational issue

The second of these has become one of the top 5 reasons for refusal for **kidney, liver, and heart-lung** match offers. Organ preservation, distance to ship, and other organ-specific donor issues were top reasons across organs.

Table 1: Top five reasons for refusal of organ offers for transplant candidates prior to implementation by match organ type, September, 05, 2021 - December, 02, 2021

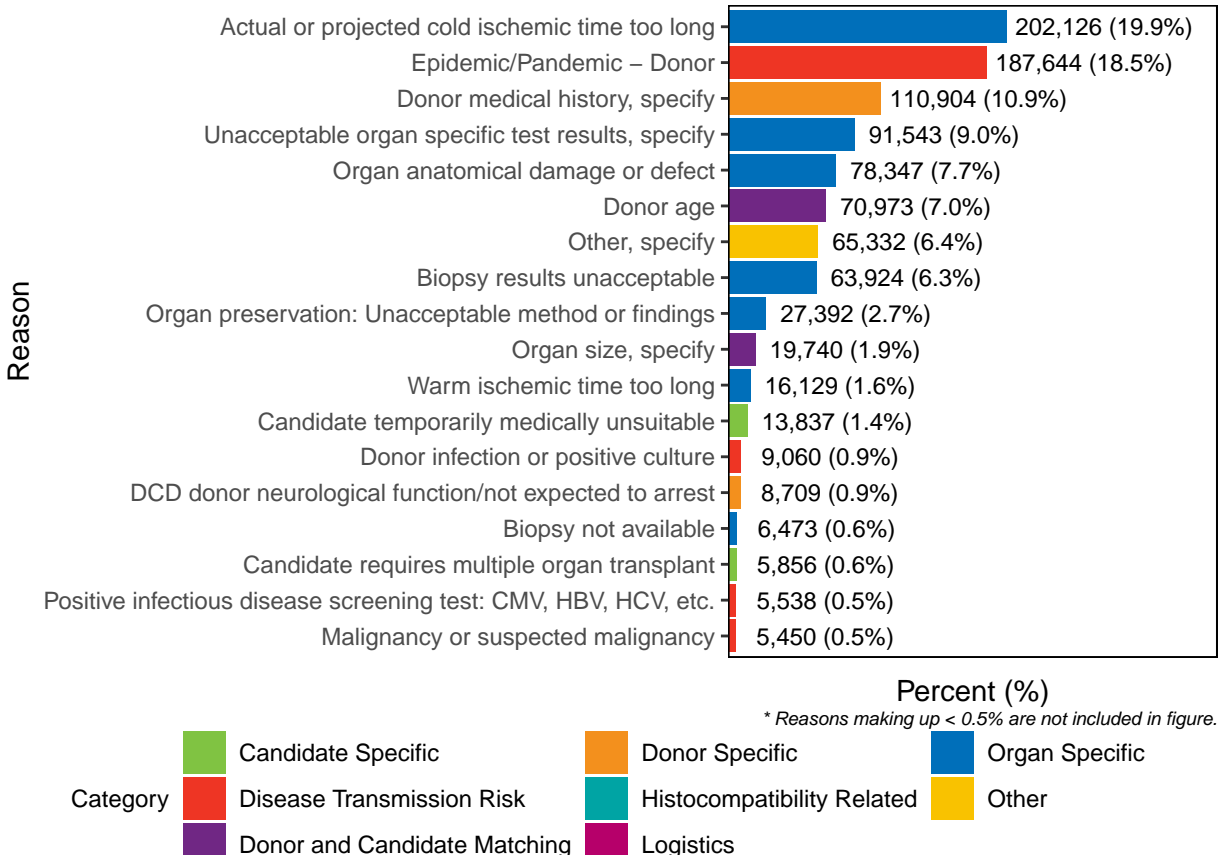
Refusal Reason	N Offers	% Offers per Organ
Kidney match organ		
Donor age or quality	394,483	64.5%
Organ Preservation	54,817	9.0%
COVID-19: donor-related reason	44,002	7.2%
Organ-specific donor issue	38,748	6.3%
Organ anatomical damage or defect	22,006	3.6%
Liver match organ		
Donor age or quality	46,293	62.4%
Donor size/weight	5,660	7.6%
Distance to travel or ship	4,391	5.9%
COVID-19: donor-related reason	4,201	5.7%
Patient ill, unavailable, refused, or temporarily unsuitable	2,680	3.6%
Heart-Lung match organ		
Donor age or quality	7,478	44.7%
Donor size/weight	4,447	26.6%
Distance to travel or ship	809	4.8%
COVID-19: donor-related reason	753	4.5%
Patient txed, tx in progress, or other offer being considered	644	3.9%
Lung match organ		
Donor age or quality	6,505	58.0%
Donor size/weight	1,926	17.2%
Multiple organ transplant or different laterality is required	1,037	9.2%
Other Specify	498	4.4%
Organ-specific donor issue	441	3.9%
Kidney-Pancreas match organ		
Donor age or quality	1,330	55.2%
Multiple organ transplant or different laterality is required	311	12.9%
Patient ill, unavailable, refused, or temporarily unsuitable	197	8.2%
Distance to travel or ship	178	7.4%
Organ Preservation	85	3.5%
Intestine match organ		
Multiple organ transplant or different laterality is required	259	67.8%
Donor age or quality	56	14.7%
Donor size/weight	23	6.0%
Number of HLA mismatches unacceptable	21	5.5%
Patient ill, unavailable, refused, or temporarily unsuitable	14	3.7%

Patient-specific Refusals by Reason

Overall

Since the implementation of the new codes, the most frequently used reason for refusal of an organ offer for a transplant candidate has been 'Actual or projected cold ischemic time too long' (19.9%) followed by 'Epidemic/Pandemic - Donor' (18.5%). Interestingly, the other updated COVID-19 related refusal reasons, 'Epidemic/Pandemic - Candidate' and 'Disaster Emergency Management Consideration' have only been used for refusal of 2338 (0.2%) and 272 (0.03%) organ offers for a transplant candidate overall.

Figure 2: Reasons for refusal of an organ offer for a transplant candidate post-implementation, all match organs, December 02, 2021 - February 28, 2022



By Organ

Figure 3: Top ten reasons for refusal of kidney match organ offers for transplant candidates post implementation, for kidney matches submitted December 02, 2021 - February 28, 2022.

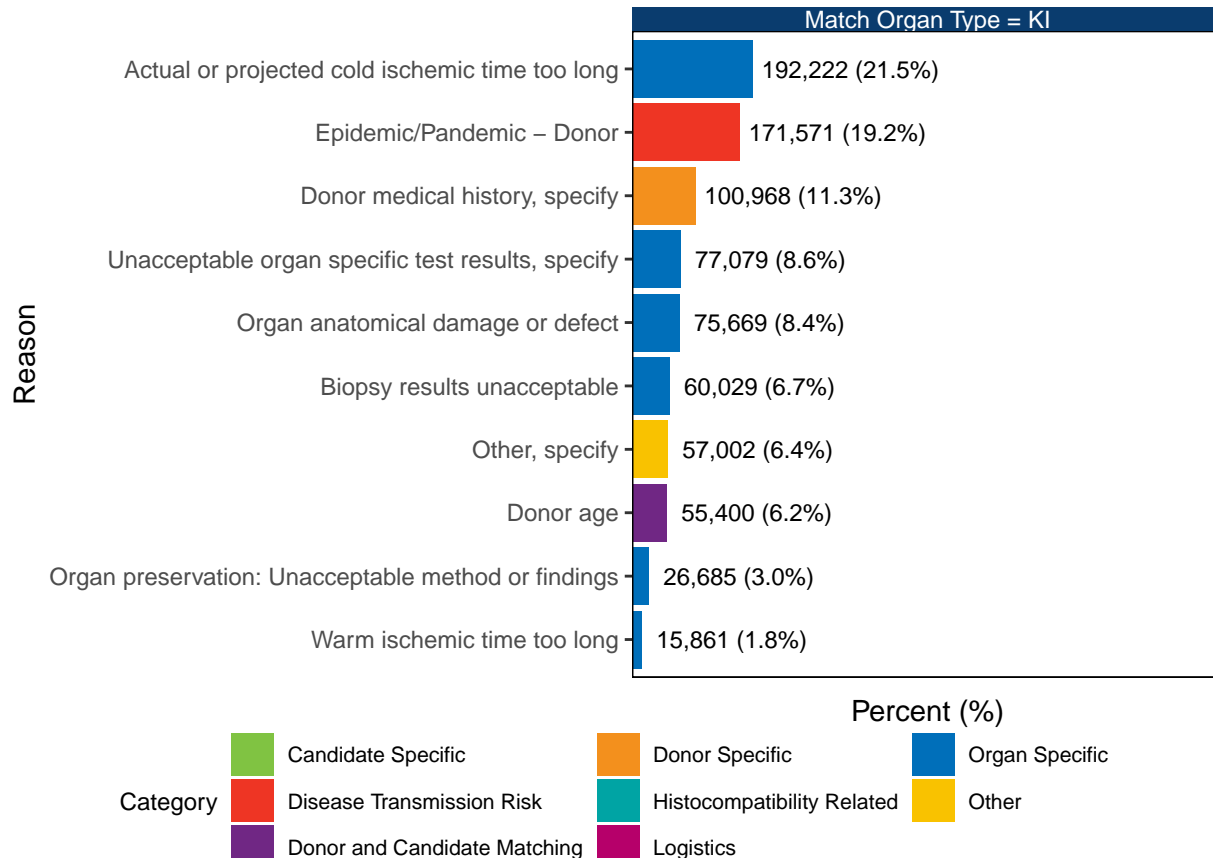


Table 2: Count and percent of reasons for refusal of kidney match organ offers post implementation, for kidney matches submitted December 02, 2021 - February 28, 2022

Category	Description	N	%
Kidney match organ			
Organ Specific	Actual or projected cold ischemic time too long	192,222	21.46%
Disease Transmission Risk	Epidemic/Pandemic - Donor	171,571	19.15%
Donor Specific	Donor medical history, specify	100,968	11.27%
Organ Specific	Unacceptable organ specific test results, specify	77,079	8.61%
Organ Specific	Organ anatomical damage or defect	75,669	8.45%
Organ Specific	Biopsy results unacceptable	60,029	6.70%
Other	Other, specify	57,002	6.36%
Donor and Candidate Matching	Donor age	55,400	6.18%
Organ Specific	Organ preservation: Unacceptable method or findings	26,685	2.98%
Organ Specific	Warm ischemic time too long	15,861	1.77%
Candidate Specific	Candidate temporarily medically unsuitable	10,365	1.16%
Disease Transmission Risk	Donor infection or positive culture	8,361	0.93%
Donor and Candidate Matching	Organ size, specify	7,067	0.79%
Organ Specific	Biopsy not available	6,236	0.70%
Disease Transmission Risk	Positive infectious disease screening test: CMV, HBV, HCV, etc.	4,508	0.50%
Candidate Specific	Candidate requires multiple organ transplant	3,583	0.40%
Disease Transmission Risk	Malignancy or suspected malignancy	3,562	0.40%
Organ Specific	Organ specific test results not available, specify	3,303	0.37%
Donor Specific	DCD donor neurological function/not expected to arrest	2,995	0.33%
Disease Transmission Risk	PHS risk criteria or social history	2,036	0.23%
Candidate Specific	Epidemic/Pandemic - Candidate	1,840	0.21%
Histocompatibility Related	Positive virtual crossmatch/unacceptable antigens	1,298	0.14%
Logistics	Transplant team or transplant facility availability	1,043	0.12%
Candidate Specific	Candidate transplanted or pending transplant	1,030	0.11%
Donor Specific	Donor instability/high vasopressor usage	1,020	0.11%
Candidate Specific	Candidate refused	936	0.10%
Histocompatibility Related	No candidate serum for crossmatching	923	0.10%
Candidate Specific	Candidate unavailable	663	0.07%
Histocompatibility Related	Positive physical crossmatch	512	0.06%
Logistics	Resource time constraint (OPO, TXC, donor hospital, etc.)	424	0.05%
Donor Specific	Prolonged downtime/CPR	300	0.03%
Histocompatibility Related	Number of HLA mismatches unacceptable	262	0.03%
Candidate Specific	Candidate temporarily ineligible due to insurance or financial issue	256	0.03%
Other	Disaster Emergency Management Consideration	240	0.03%
Logistics	Exceeded policy defined response time	210	0.02%
Histocompatibility Related	No donor cells/specimen for crossmatching, or no time for crossmatch	150	0.02%
Candidate Specific	Candidate requires different laterality	89	0.01%
Candidate Specific	Candidate's condition improved, transplant not needed	24	0.00%
Logistics	Transportation availability	15	0.00%
Logistics	Donor family time constraint	1	0.00%

Figure 4: Top ten reasons for refusal of liver match organ offers for transplant candidates post implementation, for liver matches submitted December 02, 2021 - February 28, 2022.

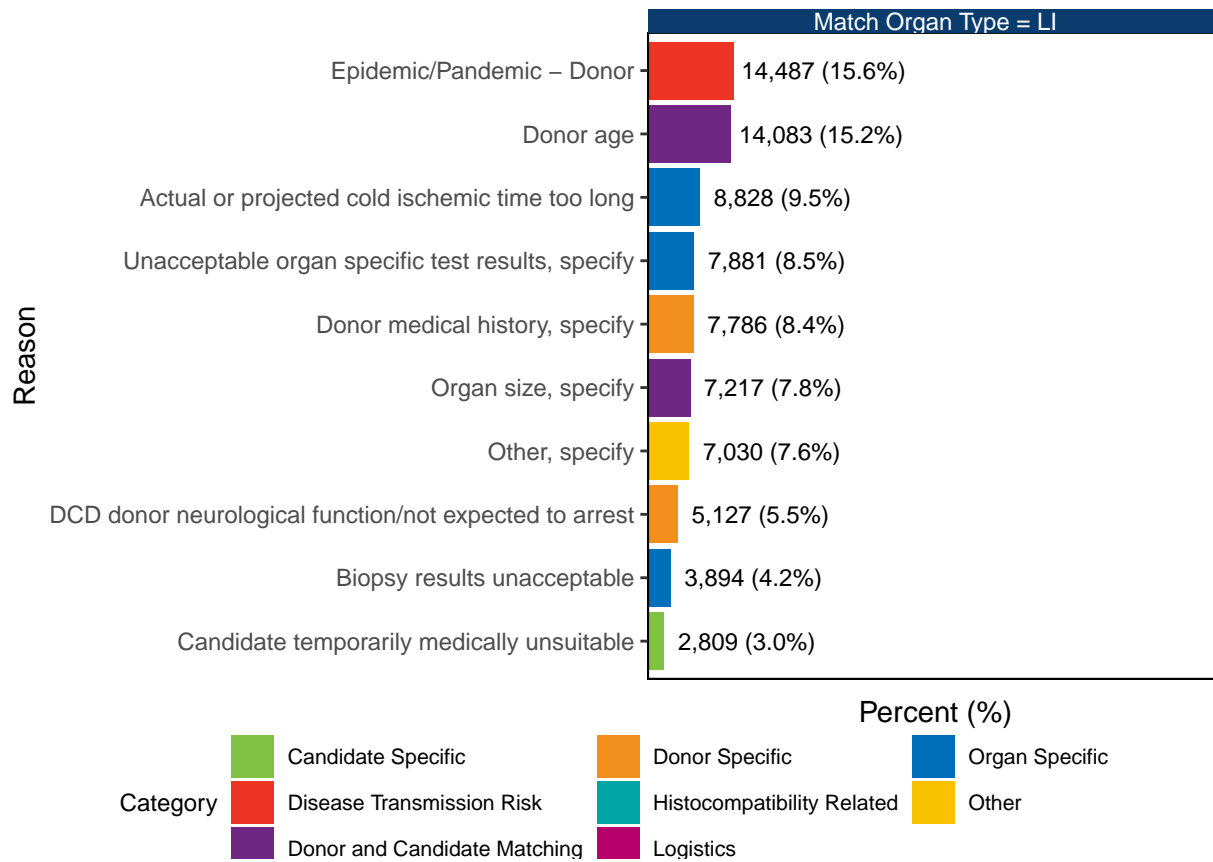


Table 3: Count and percent of reasons for refusal of liver match organ offers post implementation, for liver matches submitted December 02, 2021 - February 28, 2022

Category	Description	N	%
Liver			
Disease Transmission Risk	Epidemic/Pandemic - Donor	14,487	15.63%
Donor and Candidate Matching	Donor age	14,083	15.19%
Organ Specific	Actual or projected cold ischemic time too long	8,828	9.52%
Organ Specific	Unacceptable organ specific test results, specify	7,881	8.50%
Donor Specific	Donor medical history, specify	7,786	8.40%
Donor and Candidate Matching	Organ size, specify	7,217	7.78%
Other	Other, specify	7,030	7.58%
Donor Specific	DCD donor neurological function/not expected to arrest	5,127	5.53%
Organ Specific	Biopsy results unacceptable	3,894	4.20%
Candidate Specific	Candidate temporarily medically unsuitable	2,809	3.03%
Candidate Specific	Candidate transplanted or pending transplant	2,279	2.46%
Disease Transmission Risk	Malignancy or suspected malignancy	1,862	2.01%
Organ Specific	Organ anatomical damage or defect	1,564	1.69%
Candidate Specific	Candidate requires multiple organ transplant	1,169	1.26%
Disease Transmission Risk	Positive infectious disease screening test: CMV, HBV, HCV, etc.	945	1.02%
Organ Specific	Organ specific test results not available, specify	731	0.79%
Candidate Specific	Candidate unavailable	673	0.73%
Organ Specific	Organ preservation: Unacceptable method or findings	584	0.63%
Disease Transmission Risk	Donor infection or positive culture	568	0.61%
Logistics	Resource time constraint (OPO, TXC, donor hospital, etc.)	534	0.58%
Candidate Specific	Epidemic/Pandemic - Candidate	391	0.42%
Donor Specific	Donor instability/high vasopressor usage	341	0.37%
Disease Transmission Risk	PHS risk criteria or social history	235	0.25%
Organ Specific	Biopsy not available	233	0.25%
Organ Specific	Warm ischemic time too long	220	0.24%
Logistics	Exceeded policy defined response time	202	0.22%
Logistics	Donor family time constraint	198	0.21%
Donor Specific	Prolonged downtime/CPR	191	0.21%
Candidate Specific	Candidate's condition improved, transplant not needed	150	0.16%
Logistics	Transplant team or transplant facility availability	140	0.15%
Candidate Specific	Candidate refused	137	0.15%
Candidate Specific	Candidate temporarily ineligible due to insurance or financial issue	44	0.05%
Logistics	Transportation availability	44	0.05%
Logistics	Recovery team availability	37	0.04%
Other	Disaster Emergency Management Consideration	32	0.03%
Histocompatibility Related	Positive virtual crossmatch/unacceptable antigens	28	0.03%
Histocompatibility Related	Number of HLA mismatches unacceptable	21	0.02%
Histocompatibility Related	No donor cells/specimen for crossmatching, or no time for crossmatch	7	0.01%
Histocompatibility Related	Positive physical crossmatch	2	0.00%

Figure 5: Top ten reasons for refusal of heart and heart-lung match organ offers for transplant candidates post implementation, for heart and heart-lung matches submitted December 02, 2021 - February 28, 2022.

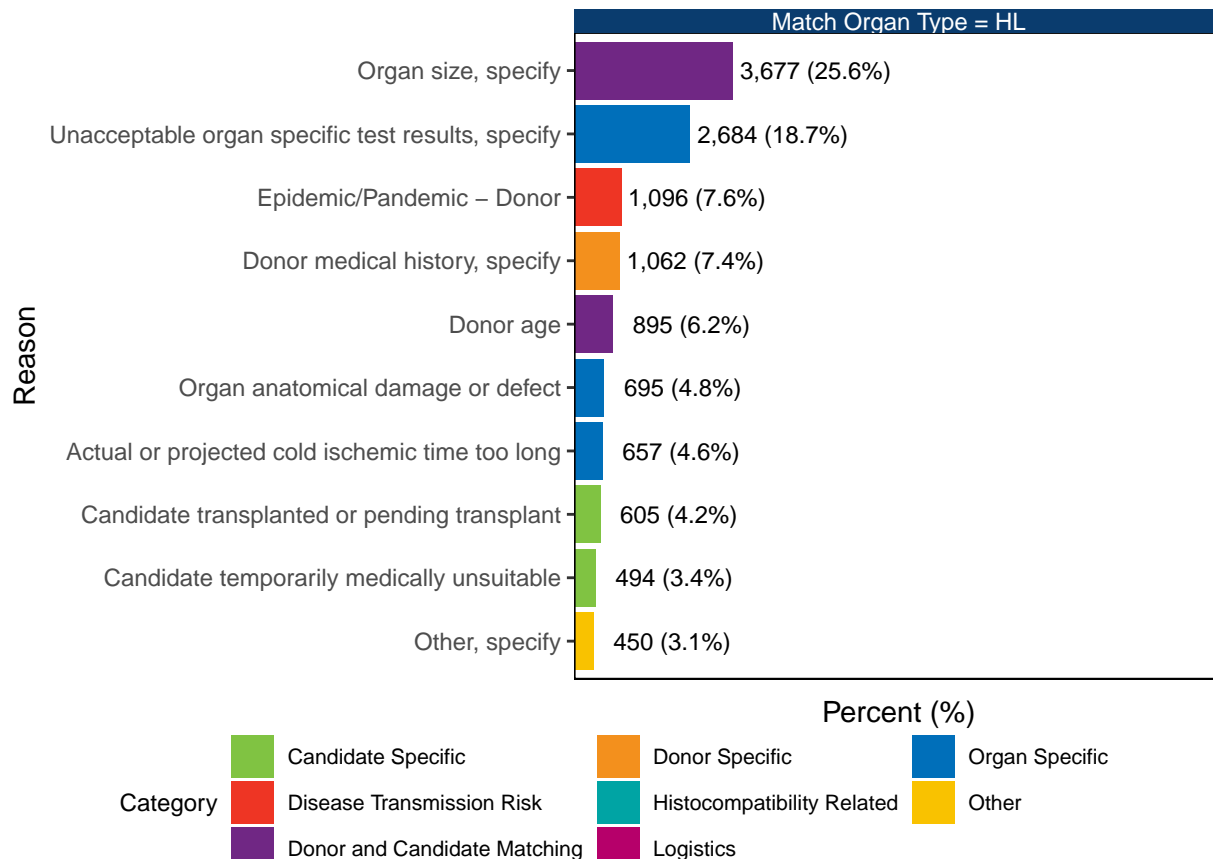


Table 4: Count and percent of reasons for refusal of heart and heart-lung match organ offers post implementation, for heart and heart-lung matches submitted December 02, 2021 - February 28, 2022

Category	Description	N	%
Heart-Lung			
Donor and Candidate Matching	Organ size, specify	3,677	25.64%
Organ Specific	Unacceptable organ specific test results, specify	2,684	18.72%
Disease Transmission Risk	Epidemic/Pandemic - Donor	1,096	7.64%
Donor Specific	Donor medical history, specify	1,062	7.41%
Donor and Candidate Matching	Donor age	895	6.24%
Organ Specific	Organ anatomical damage or defect	695	4.85%
Organ Specific	Actual or projected cold ischemic time too long	657	4.58%
Candidate Specific	Candidate transplanted or pending transplant	605	4.22%
Candidate Specific	Candidate temporarily medically unsuitable	494	3.44%
Other	Other, specify	450	3.14%
Donor Specific	Prolonged downtime/CPR	447	3.12%
Candidate Specific	Candidate requires multiple organ transplant	331	2.31%
Histocompatibility Related	Positive virtual crossmatch/unacceptable antigens	185	1.29%
Donor Specific	DCD donor neurological function/not expected to arrest	153	1.07%
Organ Specific	Organ specific test results not available, specify	137	0.96%
Disease Transmission Risk	PHS risk criteria or social history	93	0.65%
Donor Specific	Donor instability/high vasopressor usage	85	0.59%
Disease Transmission Risk	Donor infection or positive culture	82	0.57%
Histocompatibility Related	No candidate serum for crossmatching	65	0.45%
Disease Transmission Risk	Positive infectious disease screening test: CMV, HBV, HCV, etc.	62	0.43%
Candidate Specific	Epidemic/Pandemic - Candidate	60	0.42%
Organ Specific	Organ preservation: Unacceptable method or findings	60	0.42%
Logistics	Resource time constraint (OPO, TXC, donor hospital, etc.)	37	0.26%
Histocompatibility Related	Number of HLA mismatches unacceptable	36	0.25%
Candidate Specific	Candidate temporarily ineligible due to insurance or financial issue	33	0.23%
Histocompatibility Related	Positive physical crossmatch	30	0.21%
Organ Specific	Warm ischemic time too long	25	0.17%
Histocompatibility Related	No donor cells/specimen for crossmatching, or no time for crossmatch	24	0.17%
Candidate Specific	Candidate's condition improved, transplant not needed	23	0.16%
Disease Transmission Risk	Malignancy or suspected malignancy	22	0.15%
Candidate Specific	Candidate unavailable	8	0.06%
Logistics	Donor family time constraint	7	0.05%
Candidate Specific	Candidate refused	6	0.04%
Logistics	Transplant team or transplant facility availability	5	0.03%
Logistics	Transportation availability	4	0.03%
Logistics	Exceeded policy defined response time	3	0.02%
Logistics	Recovery team availability	2	0.01%
Organ Specific	Biopsy results unacceptable	1	0.01%

Figure 6: Top ten reasons for refusal of lung match organ offers for transplant candidates post implementation, for lung matches submitted December 02, 2021 - February 28, 2022.

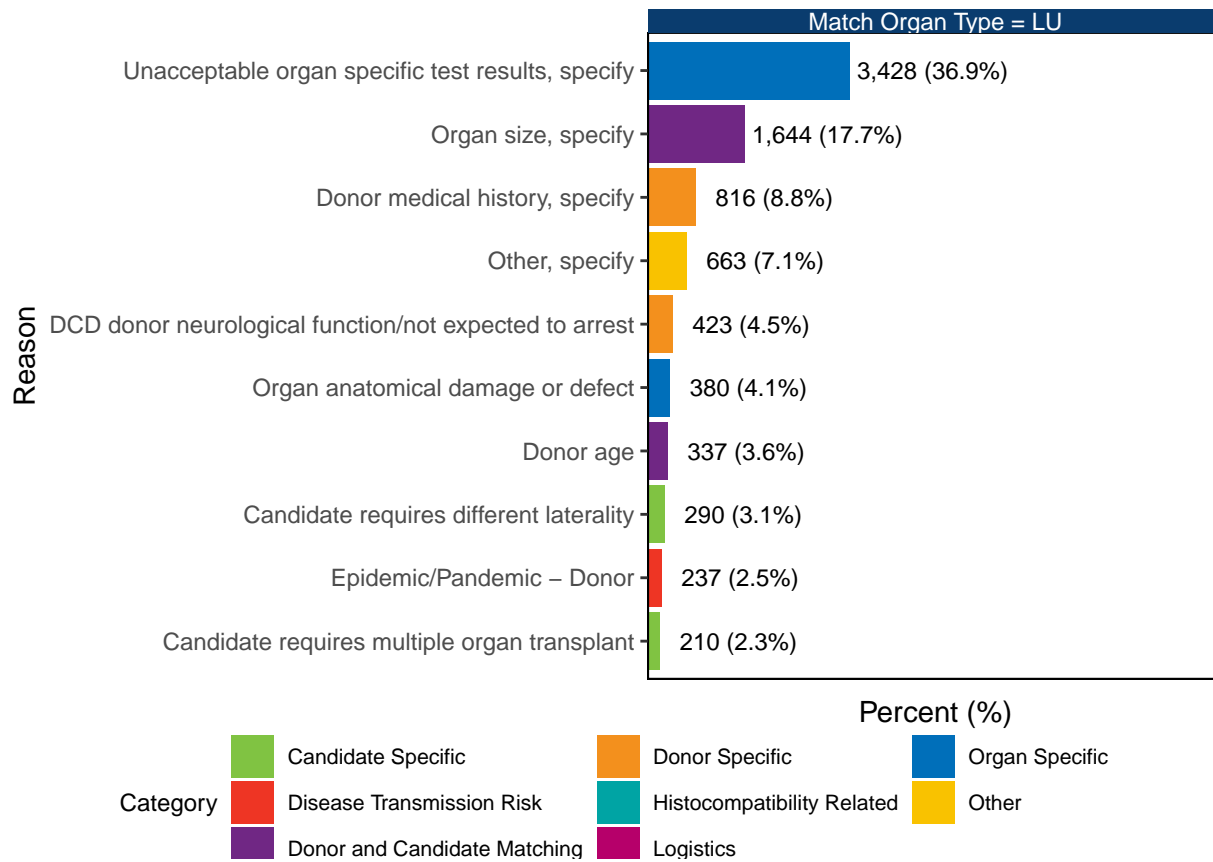


Table 5: Count and percent of reasons for refusal of lung match organ offers post implementation, for lung matches submitted December 02, 2021 - February 28, 2022

Category	Description	N	%
Lung			
Organ Specific	Unacceptable organ specific test results, specify	3,428	36.85%
Donor and Candidate Matching	Organ size, specify	1,644	17.67%
Donor Specific	Donor medical history, specify	816	8.77%
Other	Other, specify	663	7.13%
Donor Specific	DCD donor neurological function/not expected to arrest	423	4.55%
Organ Specific	Organ anatomical damage or defect	380	4.09%
Donor and Candidate Matching	Donor age	337	3.62%
Candidate Specific	Candidate requires different laterality	290	3.12%
Disease Transmission Risk	Epidemic/Pandemic - Donor	237	2.55%
Candidate Specific	Candidate requires multiple organ transplant	210	2.26%
Organ Specific	Organ specific test results not available, specify	143	1.54%
Candidate Specific	Candidate transplanted or pending transplant	138	1.48%
Organ Specific	Actual or projected cold ischemic time too long	135	1.45%
Logistics	Resource time constraint (OPO, TXC, donor hospital, etc.)	102	1.10%
Histocompatibility Related	Positive virtual crossmatch/unacceptable antigens	101	1.09%
Candidate Specific	Candidate temporarily medically unsuitable	57	0.61%
Disease Transmission Risk	Donor infection or positive culture	31	0.33%
Organ Specific	Organ preservation: Unacceptable method or findings	29	0.31%
Histocompatibility Related	Number of HLA mismatches unacceptable	22	0.24%
Logistics	Donor family time constraint	19	0.20%
Disease Transmission Risk	PHS risk criteria or social history	18	0.19%
Disease Transmission Risk	Positive infectious disease screening test: CMV, HBV, HCV, etc.	13	0.14%
Organ Specific	Warm ischemic time too long	12	0.13%
Histocompatibility Related	Positive physical crossmatch	11	0.12%
Candidate Specific	Epidemic/Pandemic - Candidate	10	0.11%
Histocompatibility Related	No candidate serum for crossmatching	5	0.05%
Candidate Specific	Candidate unavailable	4	0.04%
Disease Transmission Risk	Malignancy or suspected malignancy	4	0.04%
Organ Specific	Biopsy not available	4	0.04%
Donor Specific	Donor instability/high vasopressor usage	3	0.03%
Candidate Specific	Candidate refused	2	0.02%
Candidate Specific	Candidate temporarily ineligible due to insurance or financial issue	2	0.02%
Candidate Specific	Candidate's condition improved, transplant not needed	2	0.02%
Donor Specific	Prolonged downtime/CPR	2	0.02%
Logistics	Exceeded policy defined response time	2	0.02%
Logistics	Recovery team availability	1	0.01%
Logistics	Transplant team or transplant facility availability	1	0.01%
Logistics	Transportation availability	1	0.01%

Figure 7: Top ten reasons for refusal of kidney-pancreas match organ offers for transplant candidates post implementation, for kidney-pancreas matches submitted December 02, 2021 - February 28, 2022.

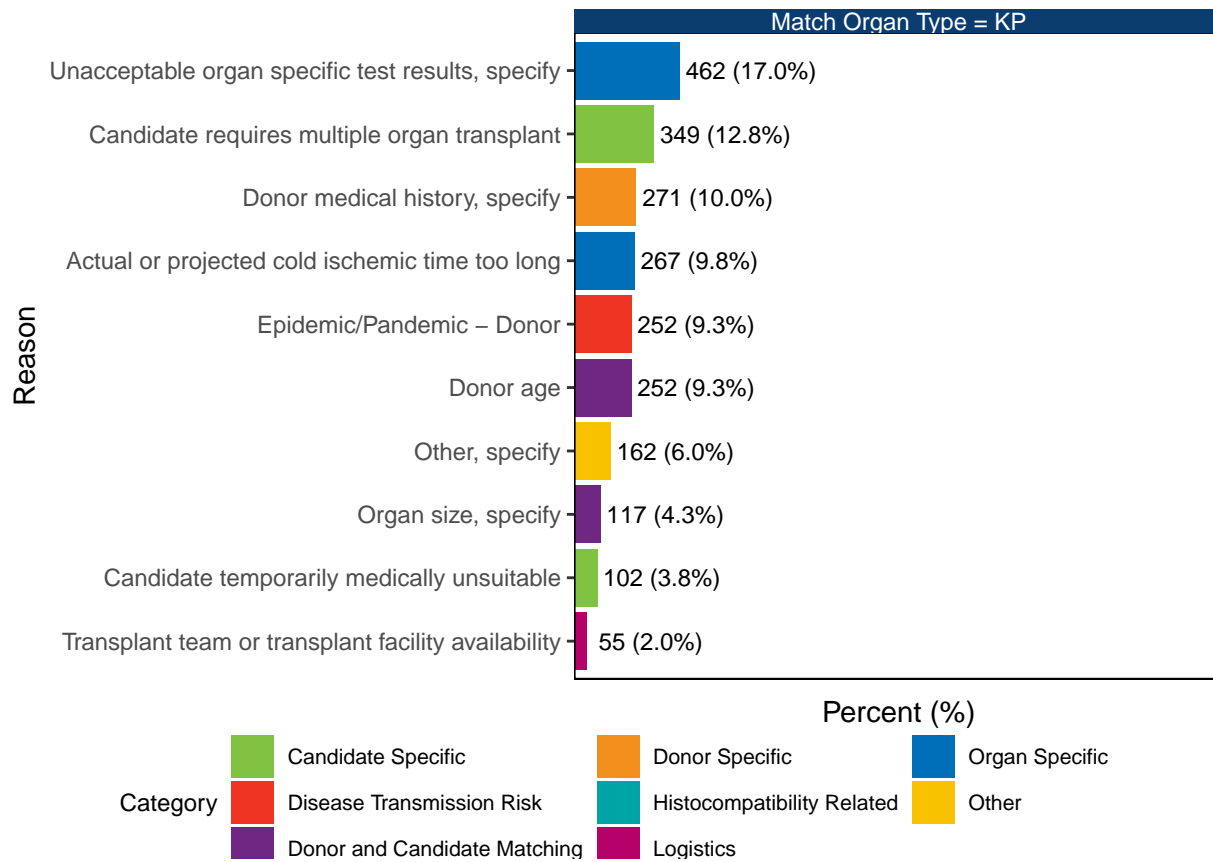


Table 6: Count and percent of reasons for refusal of kidney-pancreas match organ offers post implementation, for kidney-pancreas matches submitted December 02, 2021 - February 28, 2022

Category	Description	N	%
Kidney-Pancreas			
Organ Specific	Unacceptable organ specific test results, specify	462	16.99%
Candidate Specific	Candidate requires multiple organ transplant	349	12.84%
Donor Specific	Donor medical history, specify	271	9.97%
Organ Specific	Actual or projected cold ischemic time too long	267	9.82%
Disease Transmission Risk	Epidemic/Pandemic - Donor	252	9.27%
Donor and Candidate Matching	Donor age	252	9.27%
Other	Other, specify	162	5.96%
Donor and Candidate Matching	Organ size, specify	117	4.30%
Candidate Specific	Candidate temporarily medically unsuitable	102	3.75%
Logistics	Transplant team or transplant facility availability	55	2.02%
Disease Transmission Risk	PHS risk criteria or social history	44	1.62%
Organ Specific	Organ anatomical damage or defect	39	1.43%
Candidate Specific	Epidemic/Pandemic - Candidate	37	1.36%
Donor Specific	Prolonged downtime/CPR	36	1.32%
Organ Specific	Organ preservation: Unacceptable method or findings	34	1.25%
Histocompatibility Related	Positive virtual crossmatch/unacceptable antigens	30	1.10%
Donor Specific	Donor instability/high vasopressor usage	27	0.99%
Organ Specific	Organ specific test results not available, specify	22	0.81%
Logistics	Recovery team availability	20	0.74%
Candidate Specific	Candidate refused	18	0.66%
Candidate Specific	Candidate transplanted or pending transplant	18	0.66%
Histocompatibility Related	Number of HLA mismatches unacceptable	17	0.63%
Logistics	Resource time constraint (OPO, TXC, donor hospital, etc.)	16	0.59%
Disease Transmission Risk	Donor infection or positive culture	15	0.55%
Candidate Specific	Candidate unavailable	11	0.40%
Donor Specific	DCD donor neurological function/not expected to arrest	11	0.40%
Disease Transmission Risk	Positive infectious disease screening test: CMV, HBV, HCV, etc.	8	0.29%
Histocompatibility Related	Positive physical crossmatch	7	0.26%
Candidate Specific	Candidate temporarily ineligible due to insurance or financial issue	5	0.18%
Logistics	Donor family time constraint	5	0.18%
Organ Specific	Warm ischemic time too long	3	0.11%
Candidate Specific	Candidate's condition improved, transplant not needed	2	0.07%
Histocompatibility Related	No donor cells/specimen for crossmatching, or no time for crossmatch	2	0.07%
Histocompatibility Related	No candidate serum for crossmatching	1	0.04%
Logistics	Exceeded policy defined response time	1	0.04%
Logistics	Transportation availability	1	0.04%

Figure 8: Top ten reasons for refusal of intestine match organ offers for transplant candidates post implementation, for intestine matches submitted December 02, 2021 - February 28, 2022.

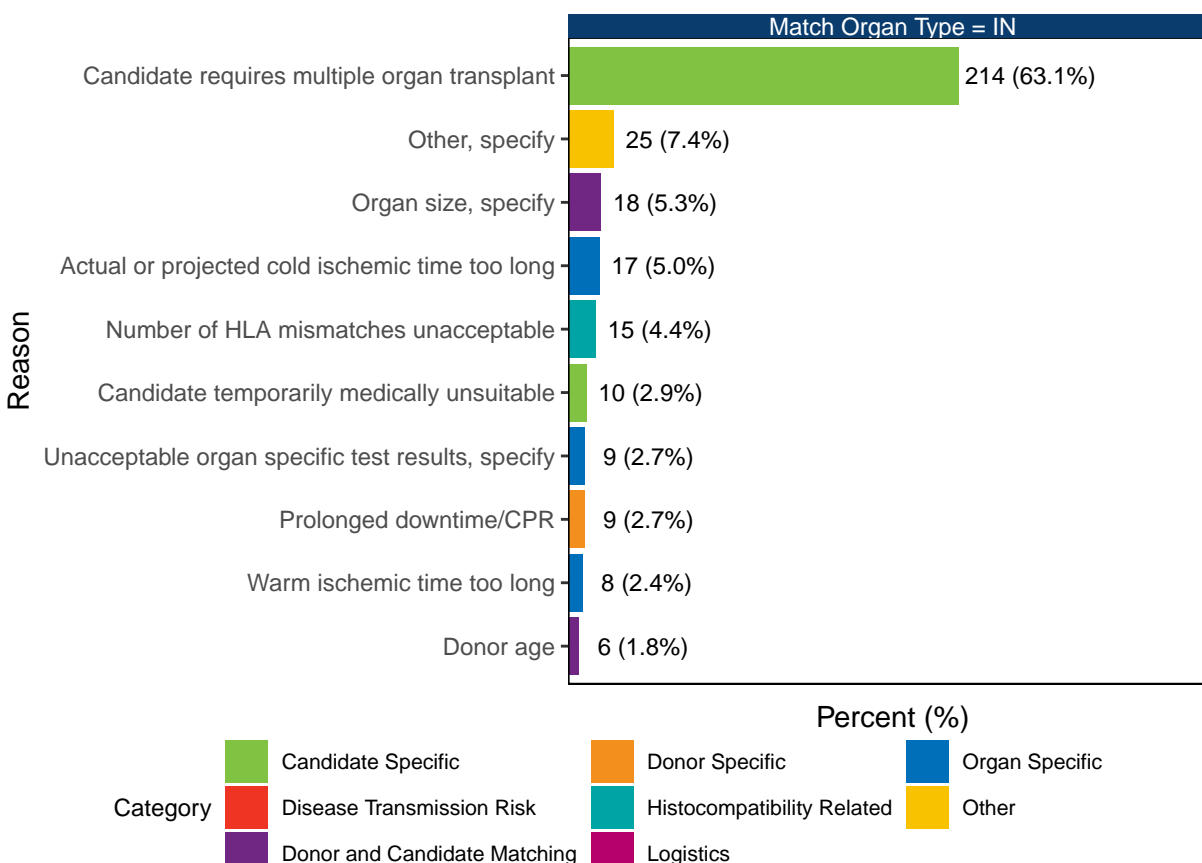


Table 7: Count and percent of reasons for refusal of intestine match organ offers post implementation, for intestine matches submitted December 02, 2021 - February 28, 2022

Category	Description	N	%
Intestine			
Candidate Specific	Candidate requires multiple organ transplant	214	63.13%
Other	Other, specify	25	7.37%
Donor and Candidate Matching	Organ size, specify	18	5.31%
Organ Specific	Actual or projected cold ischemic time too long	17	5.01%
Histocompatibility Related	Number of HLA mismatches unacceptable	15	4.42%
Candidate Specific	Candidate temporarily medically unsuitable	10	2.95%
Donor Specific	Prolonged downtime/CPR	9	2.65%
Organ Specific	Unacceptable organ specific test results, specify	9	2.65%
Organ Specific	Warm ischemic time too long	8	2.36%
Donor and Candidate Matching	Donor age	6	1.77%
Disease Transmission Risk	Donor infection or positive culture	3	0.88%
Disease Transmission Risk	Positive infectious disease screening test: CMV, HBV, HCV, etc.	2	0.59%
Disease Transmission Risk	Epidemic/Pandemic - Donor	1	0.29%
Donor Specific	Donor medical history, specify	1	0.29%
Histocompatibility Related	Positive virtual crossmatch/unacceptable antigens	1	0.29%

Not only is it of interest to enumerate the most frequently used refusal reasons, but also to review reasons that have not yet been used, or have only been used a handful of times. Table 8 lists the refusal reasons by category that have been used for less than 10 organ offers, or not at all, by match organ type.

Table 8: Refusal reasons given for less than 10 organ offers for transplant candidates post implementation by match organ type, matches submitted December 02, 2021 - February 28, 2022

Category	Description	Match Organ Type						
		KI	LI	HL	LU	HR	KP	IN
Candidate Specific	Candidate refused			X	X	X		X
	Candidate requires different laterality		X	X		X	X	X
	Candidate temporarily ineligible due to insurance or financial issue				X		X	X
	Candidate transplanted or pending transplant							X
	Candidate unavailable			X	X	X		X
	Candidate's condition improved, transplant not needed				X	X	X	X
Disease Transmission Risk	Epidemic/Pandemic - Candidate					X		X
	Donor infection or positive culture							X
	Epidemic/Pandemic - Donor							X
	Malignancy or suspected malignancy				X	X	X	X
	PHS risk criteria or social history							X
Donor and Candidate Matching	Positive infectious disease screening test: CMV, HBV, HCV, etc.						X	X
	Donor age							X
Donor Specific	DCD donor neurological function/not expected to arrest							X
	Donor instability/high vasopressor usage				X			X
	Donor medical history, specify							X
	Prolonged downtime/CPR				X			X
	VCA graft appearance or quality, specify	X	X	X	X	X	X	X
	No candidate serum for crossmatching		X		X		X	X
	No donor cells/specimen for crossmatching, or no time for crossmatch		X		X	X	X	X
	Number of HLA mismatches unacceptable					X		

Histocompatibility Related

	Positive physical crossmatch		X				X	X
	Positive virtual crossmatch/unacceptable antigens							X
Logistics	Donor family time constraint	X		X		X	X	X
	Exceeded policy defined response time			X	X	X	X	X
	Recovery team availability	X		X	X	X		X
	Resource time constraint (OPO, TXC, donor hospital, etc.)							X
	Transplant team or transplant facility availability			X	X	X		X
	Transportation availability			X	X	X	X	X
		Biopsy not available			X	X	X	X
Organ Specific	Biopsy results unacceptable			X	X	X	X	X
	Organ anatomical damage or defect							X
	Organ preservation: Unacceptable method or findings							X
	Organ specific test results not available, specify							X
	Unacceptable organ specific test results, specify							X
	Warm ischemic time too long						X	X
Other	Disaster Emergency Management Consideration			X	X	X	X	X

By Program Size

Program size groups were defined based on the following volumes of deceased donor transplants during 2020:

Match Organ Type	Volume Range Definitions			Number of Programs		
	Small	Medium	Large	Small	Medium	Large
KI	[2, 26]	(26, 89]	(89, 455]	79	76	78
LI	[1, 26]	(26, 76]	(76, 181]	48	47	46
HL	[1, 11]	(11, 29]	(29, 148]	49	46	48
LU	[1, 20]	(20, 41]	(41, 142]	23	22	22
KP	[1, 3]	(3, 8]	(8, 30]	38	35	34
IN	[1, 2]	(2, 6]	(6, 18]	6	5	5

Figure 9: Top five reasons for refusal of kidney match organ offers for transplant candidates post implementation stratified by program size, for kidney matches submitted December 02, 2021 - February 28, 2022. Program size defined by volume of deceased donor kidney transplants during 2020.

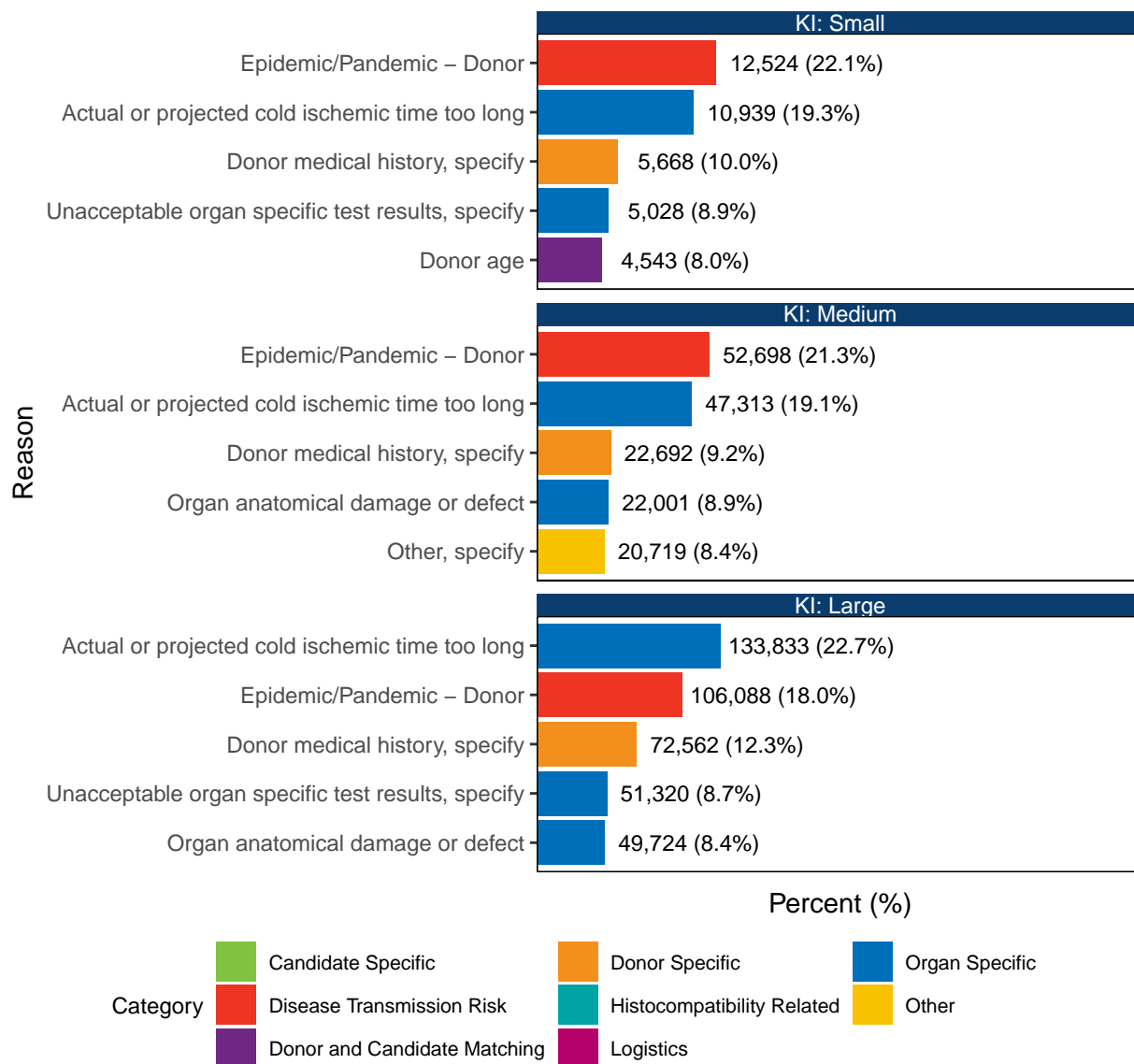


Figure 10: Top five reasons for refusal of liver match organ offers for transplant candidates post implementation stratified by program size, for liver matches submitted December 02, 2021 - February 28, 2022. Program size defined by volume of deceased donor liver transplants during 2020.

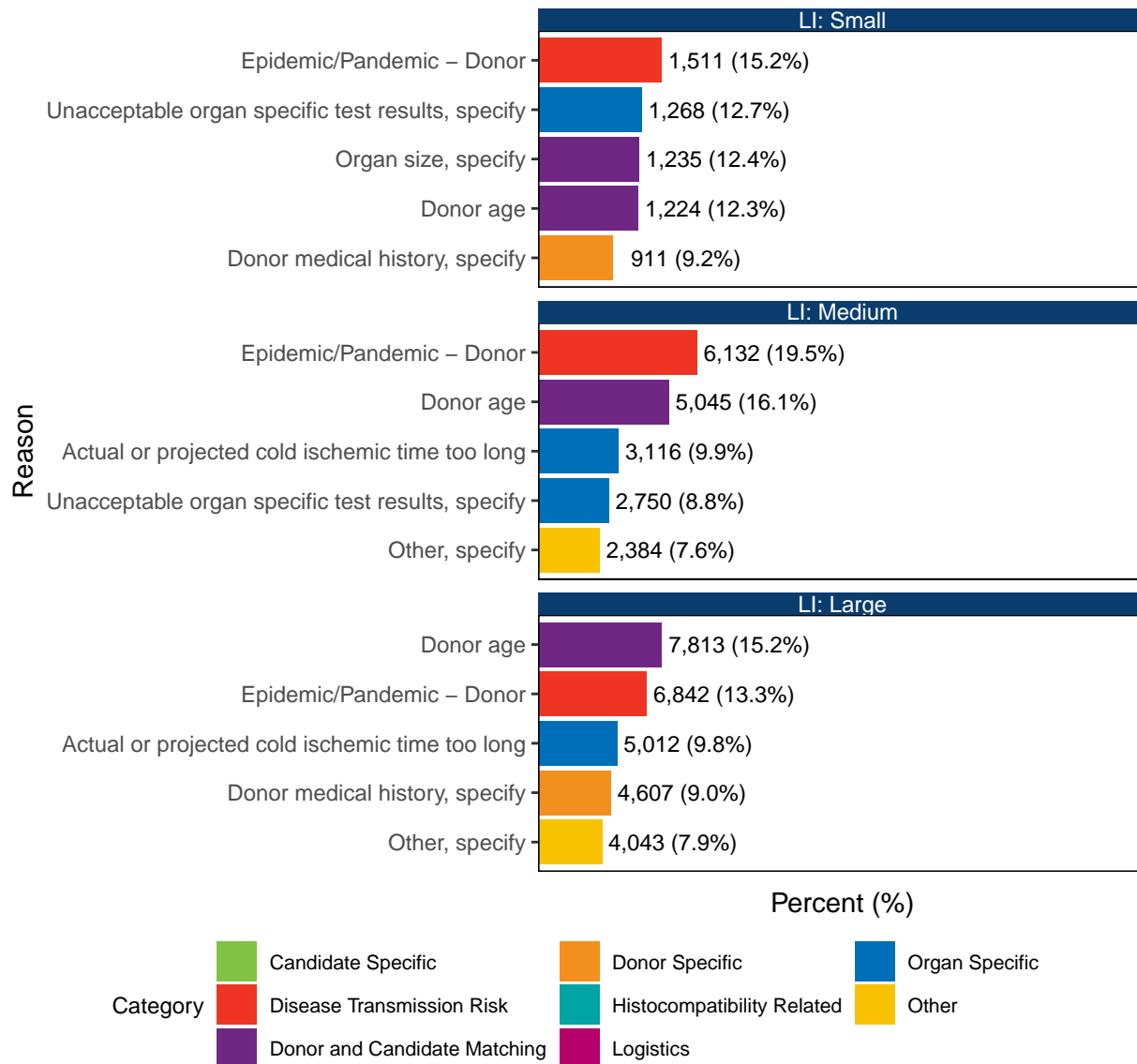


Figure 11: Top five reasons for refusal of heart and heart-lung match organ offers for transplant candidates post implementation stratified by program size, for heart and heart-lung matches submitted December 02, 2021 - February 28, 2022. Program size defined by volume of deceased donor heart and heart-lung transplants during 2020.

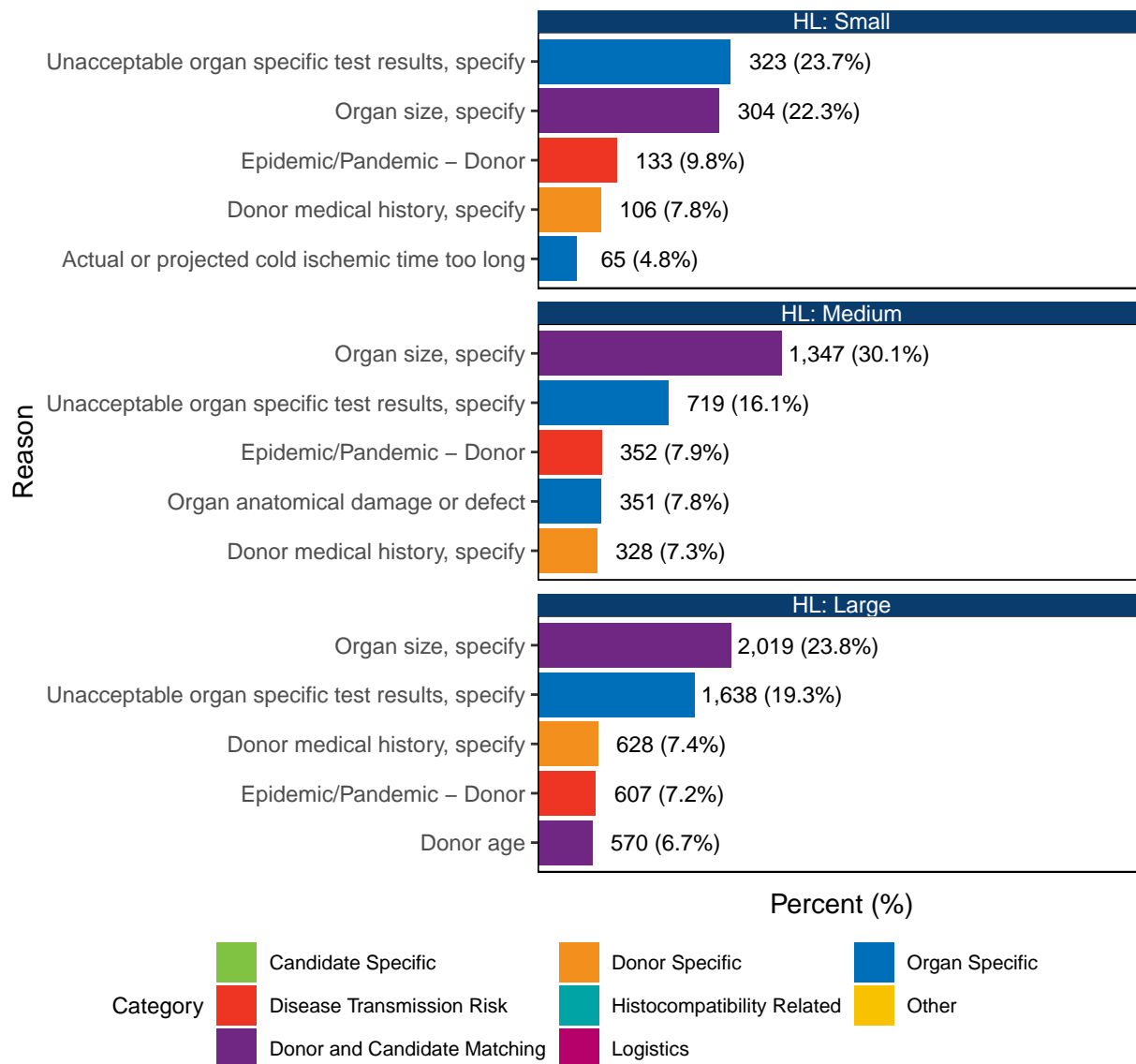


Figure 12: Top five reasons for refusal of lung match organ offers for transplant candidates post implementation stratified by program size, for lung matches submitted December 02, 2021 - February 28, 2022. Program size defined by volume of deceased donor lung transplants during 2020.

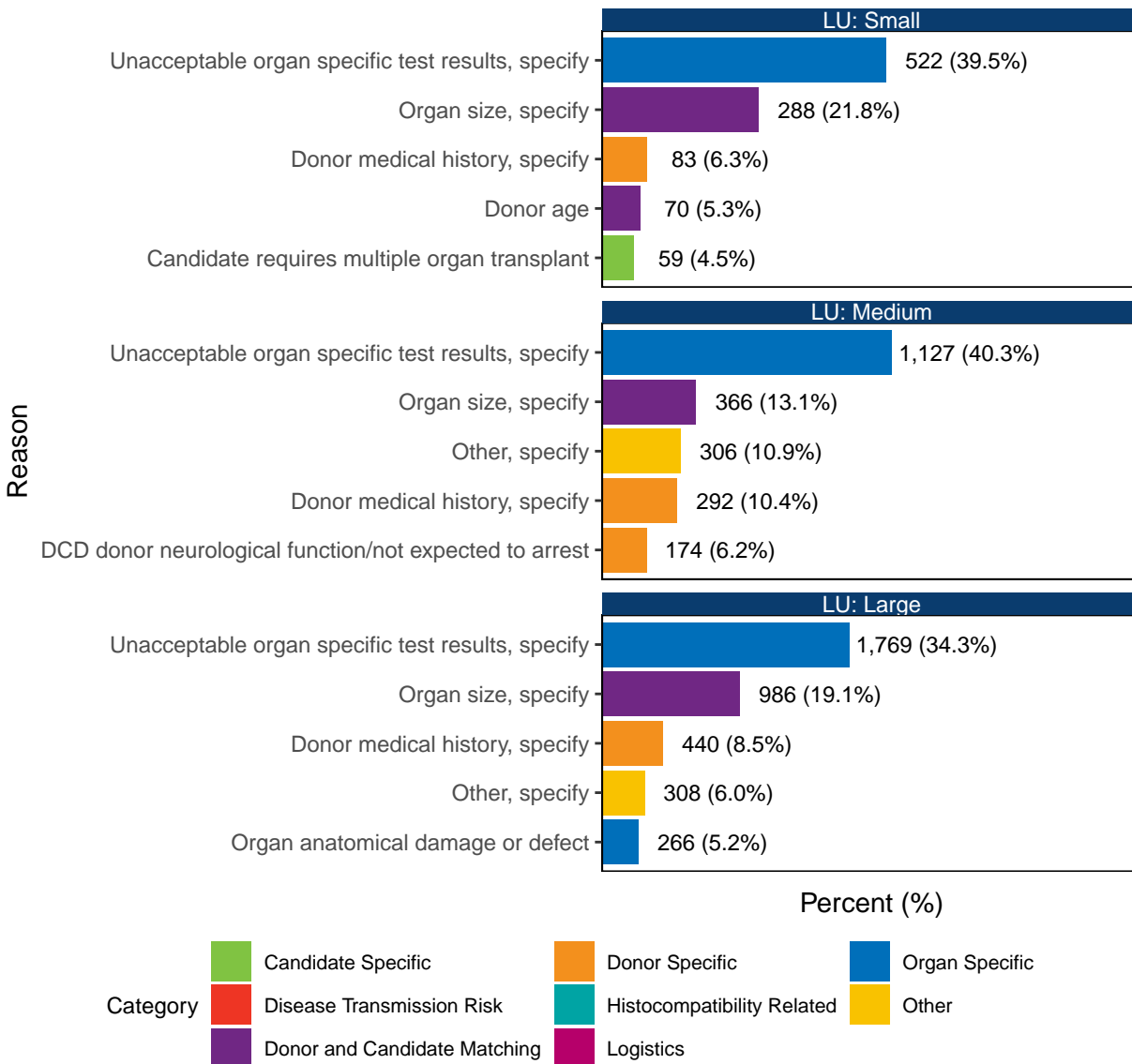
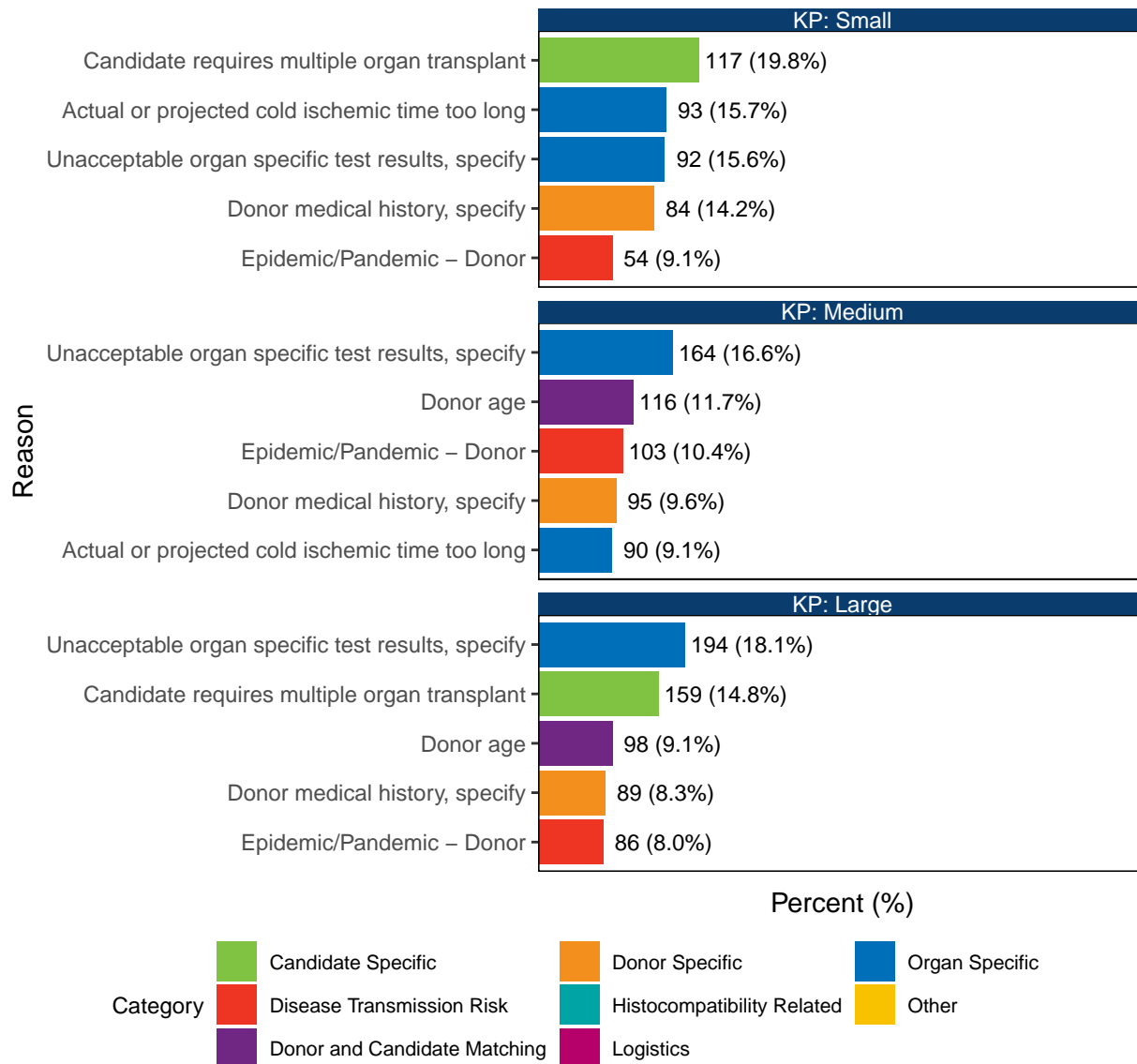


Figure 13: Top five reasons for refusal of kidney-pancreas match organ offers for transplant candidates post implementation stratified by program size, for kidney-pancreas matches submitted December 02, 2021 - February 28, 2022. Program size defined by volume of deceased donor kidney-pancreas transplants during 2020.



By Sequence Number

The following figures group all offers on a match into one category based on the last sequence number of the acceptor on the match. We specify 'last' here as some organs may have more than one final acceptor, e.g. left and right kidney. Sequence number groups were defined by the 90th percentile of sequence numbers for organ acceptors in 2020 as the following:

Match Organ Type	Match Acceptor Sequence Number < 90th Percentile	Match Acceptor Sequence Number ≥ 90th Percentile
KI	[1, 667)	[667, 31425]
LI	[1, 78)	[78, 7555]
HL	[1, 41)	[41, 1396]
LU	[1, 53)	[53, 514]
KP	[1, 29)	[29, 286]
IN	[1, 34)	[34, 59]

Figure 14: Top five reasons for refusal of kidney match organ offers for transplant candidates post implementation stratified by match acceptance number, for kidney matches submitted December 02, 2021 - February 28, 2022. Group was defined by the 90th percentile of sequence numbers for acceptances on kidney matches during 2020.

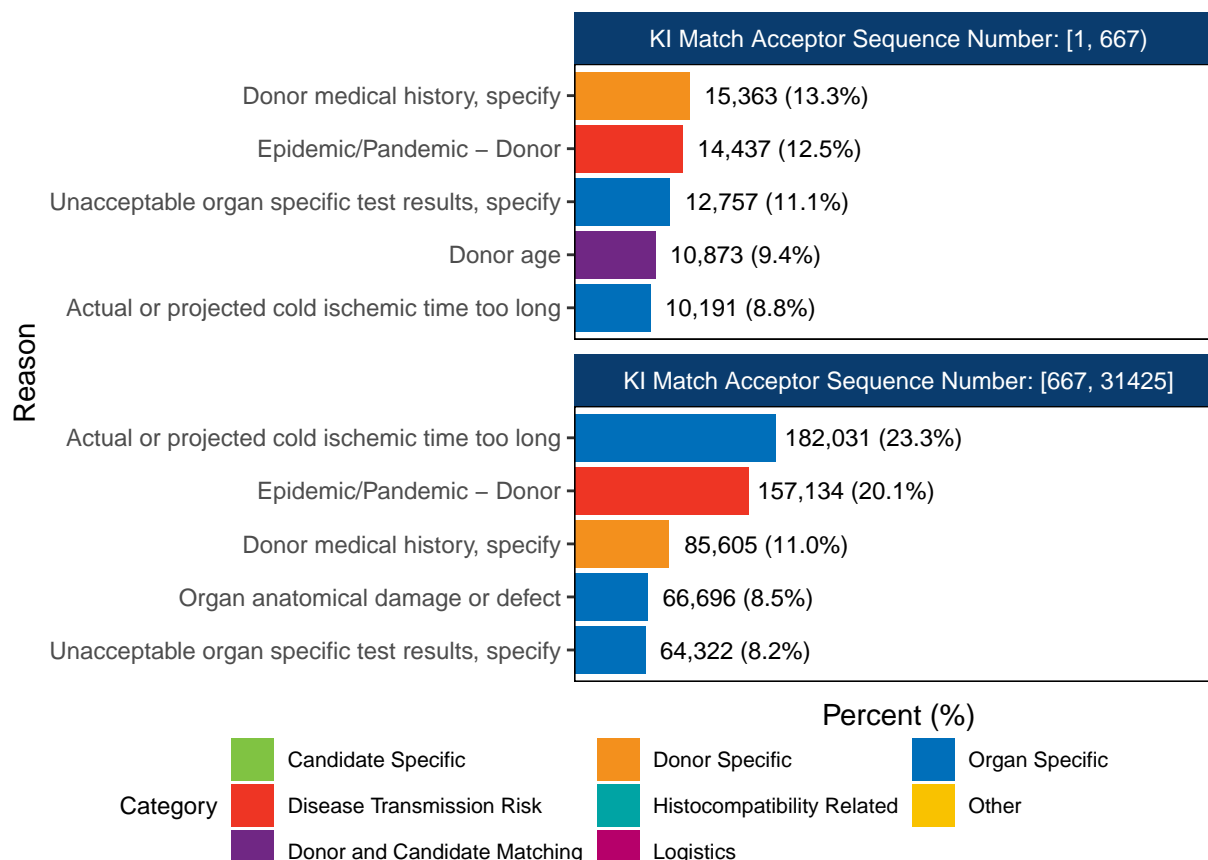


Figure 15: Top five reasons for refusal of liver match organ offers for transplant candidates post implementation stratified by match acceptance number, for liver matches submitted December 02, 2021 - February 28, 2022. Group was defined by the 90th percentile of sequence numbers for acceptances on liver matches during 2020.

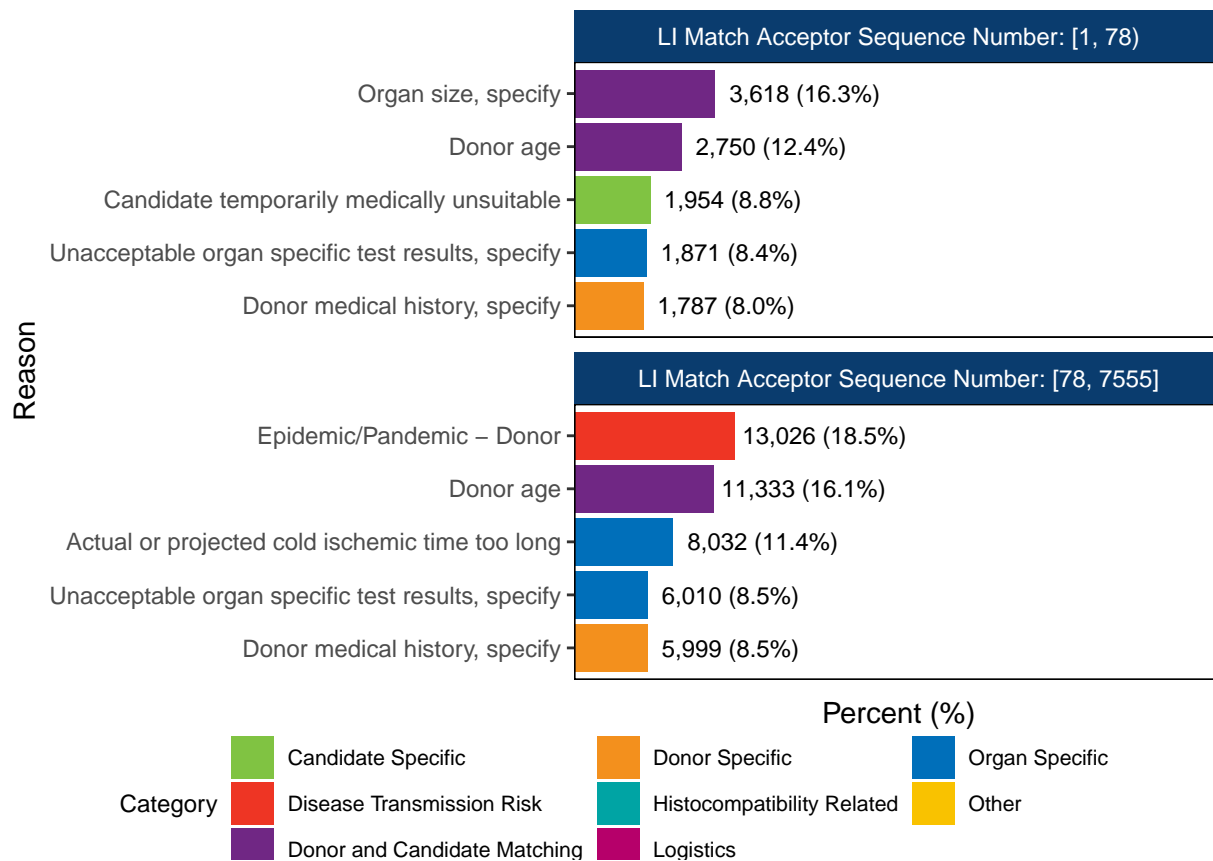


Figure 16: Top five reasons for refusal of heart and heart-lung match organ offers for transplant candidates post implementation stratified by match acceptance number, for heart and heart-lung matches submitted December 02, 2021 - February 28, 2022. Group was defined by the 90th percentile of sequence numbers for acceptances on heart and heart-lung matches during 2020.

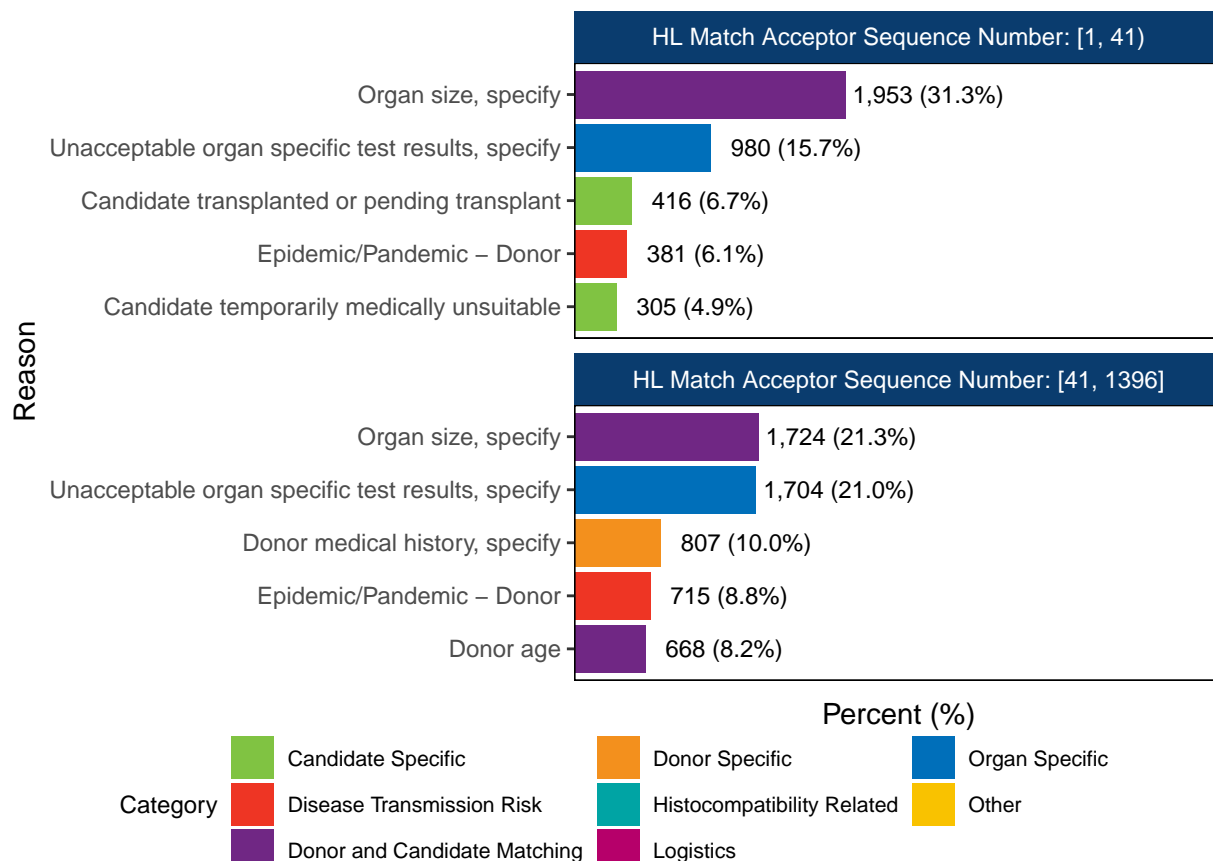


Figure 17: Top five reasons for refusal of lung match organ offers for transplant candidates post implementation stratified by match acceptance number, for lung matches submitted December 02, 2021 - February 28, 2022. Group was defined by the 90th percentile of sequence numbers for acceptances on lung matches during 2020.

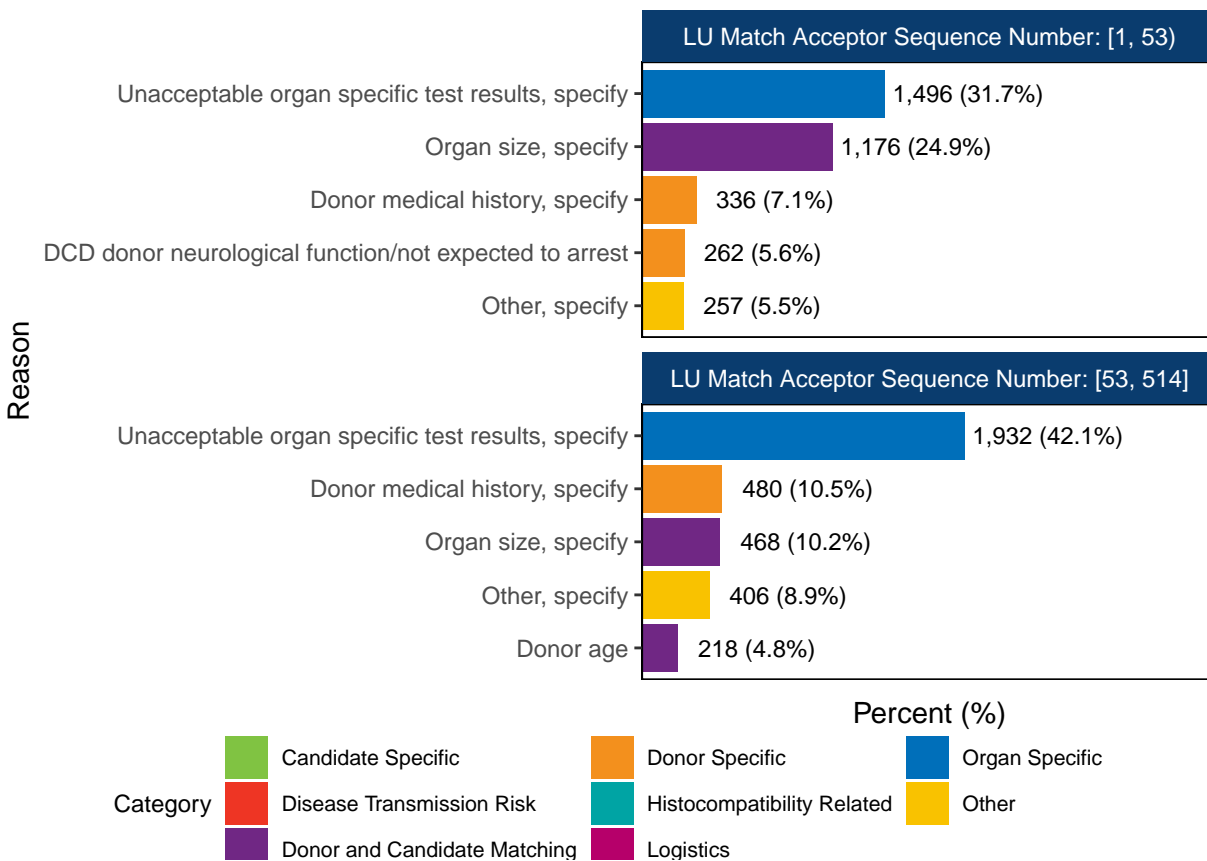
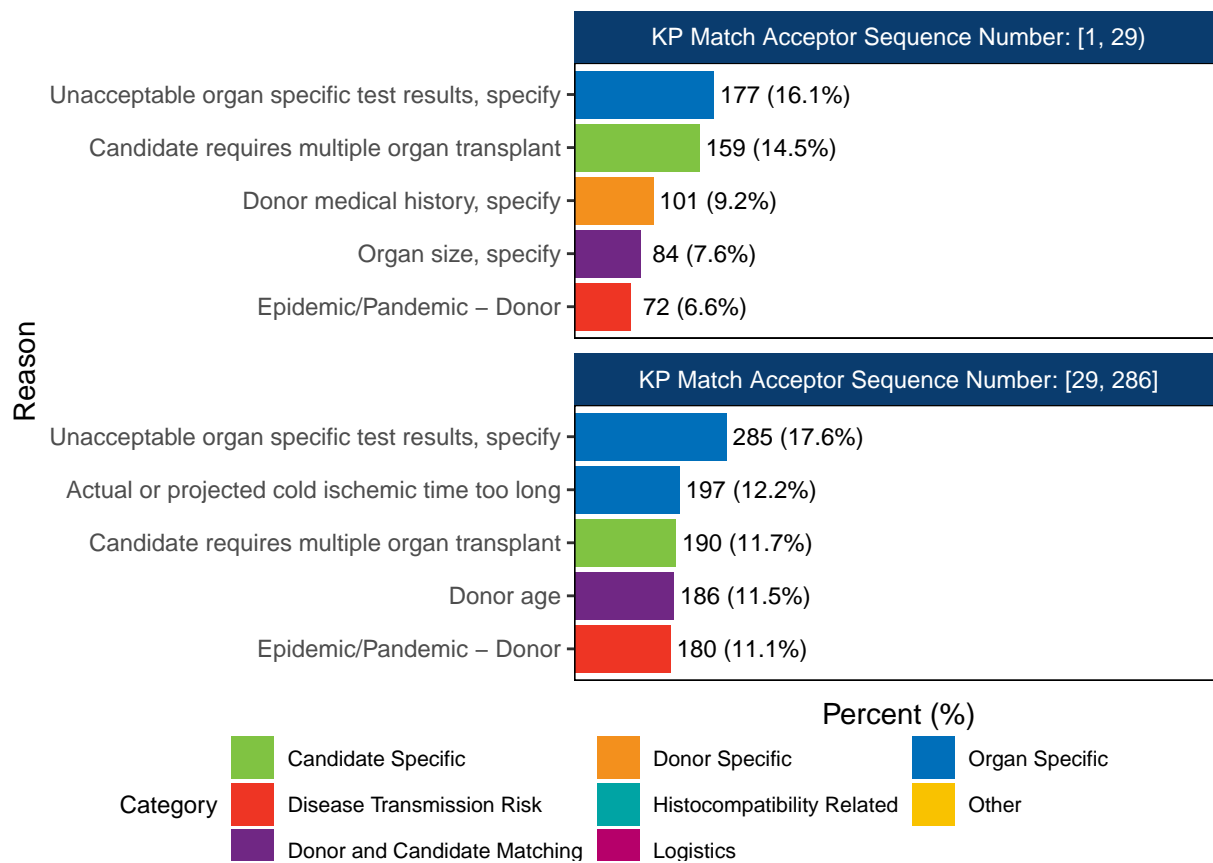


Figure 18: Top five reasons for refusal of kidney-pancreas match organ offers for transplant candidates post implementation stratified by match acceptance number, for kidney-pancreas matches submitted December 02, 2021 - February 28, 2022. Group was defined by the 90th percentile of sequence numbers for acceptances on kidney-pancreas matches during 2020.

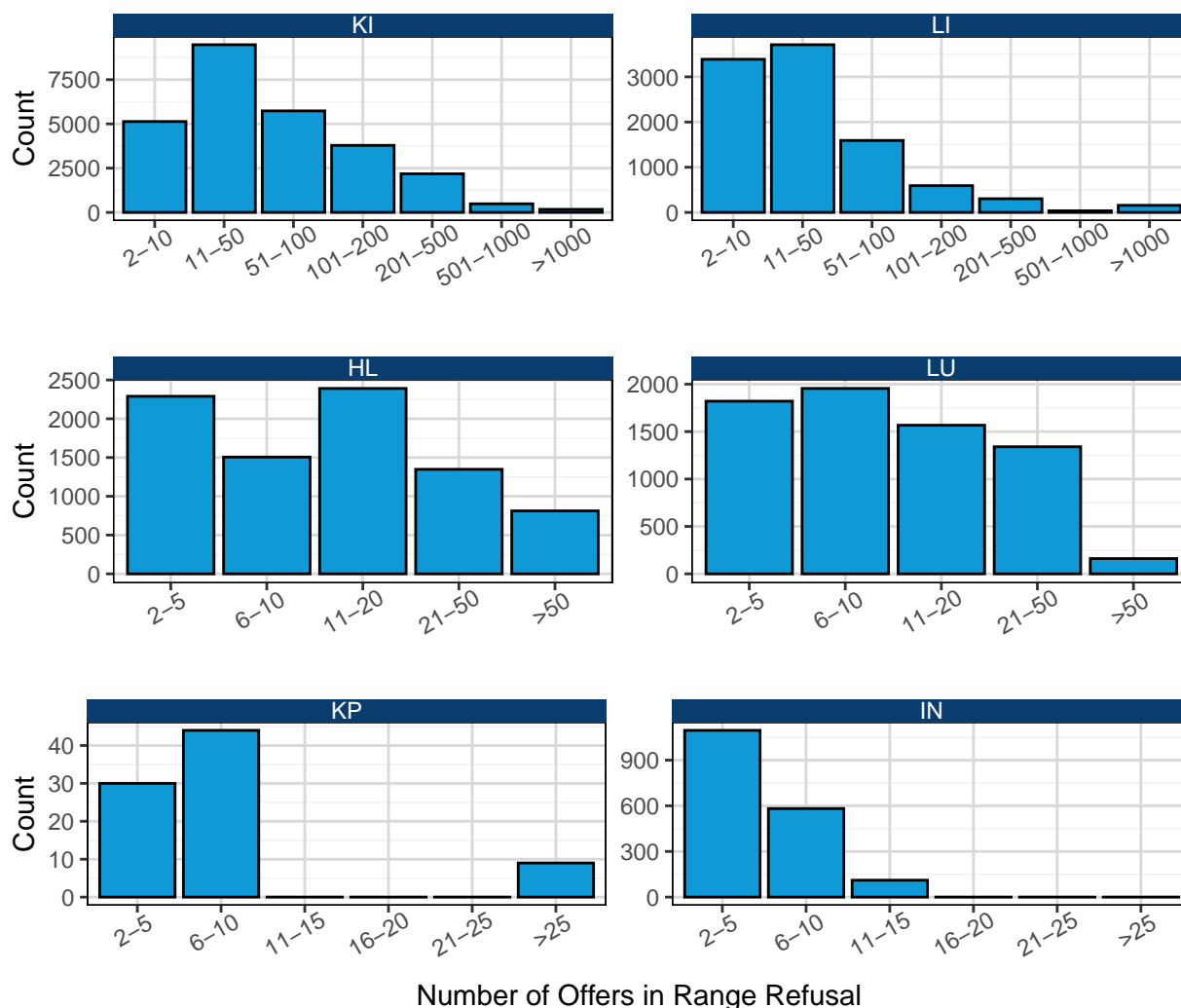


Range Refusals

Transplant centers are not only able to accept or refuse organ offers for an individual transplant candidate, they may also refuse multiple organ offers on a match run for transplant candidates at their center. When this is done, the same reason for refusal is applied for that chunk of organ offers for the transplant candidates. Because the same reason for refusal is used for varying numbers of organ offers in a batch, the following are de-duplicated such that an instance of refusing 15 organ offers for transplant candidates at a center only presents this reason once rather than 15 times. This ensures that the results are not unnecessarily skewed by the number of offers in a range refusal.

Figure 19 indicates how many offers were typically included in a range refusal instance, by match organ type. For kidney and liver matches, there were most often 11-50 offers in a range refusal, though it was possible for there to be upwards of 1,000 offers in a range refusal instance. Heart-lung matches most often included 11-20 offers in a range refusal, though there could be upwards of 50 offers in some. There were most often 2-10 offers in a range refusal for lung matches, 2-5 offers for kidney-pancreas matches, and 6-10 offers for intestine matches.

Figure 19: Number of organ offers in range refusal post implementation by match organ type, December 02, 2021 - February 28, 2022



By Organ

Figure 20: Top ten reasons for refusal of range refused kidney match organ offers for transplant candidates post implementation, for kidney matches submitted December 02, 2021 - February 28, 2022.

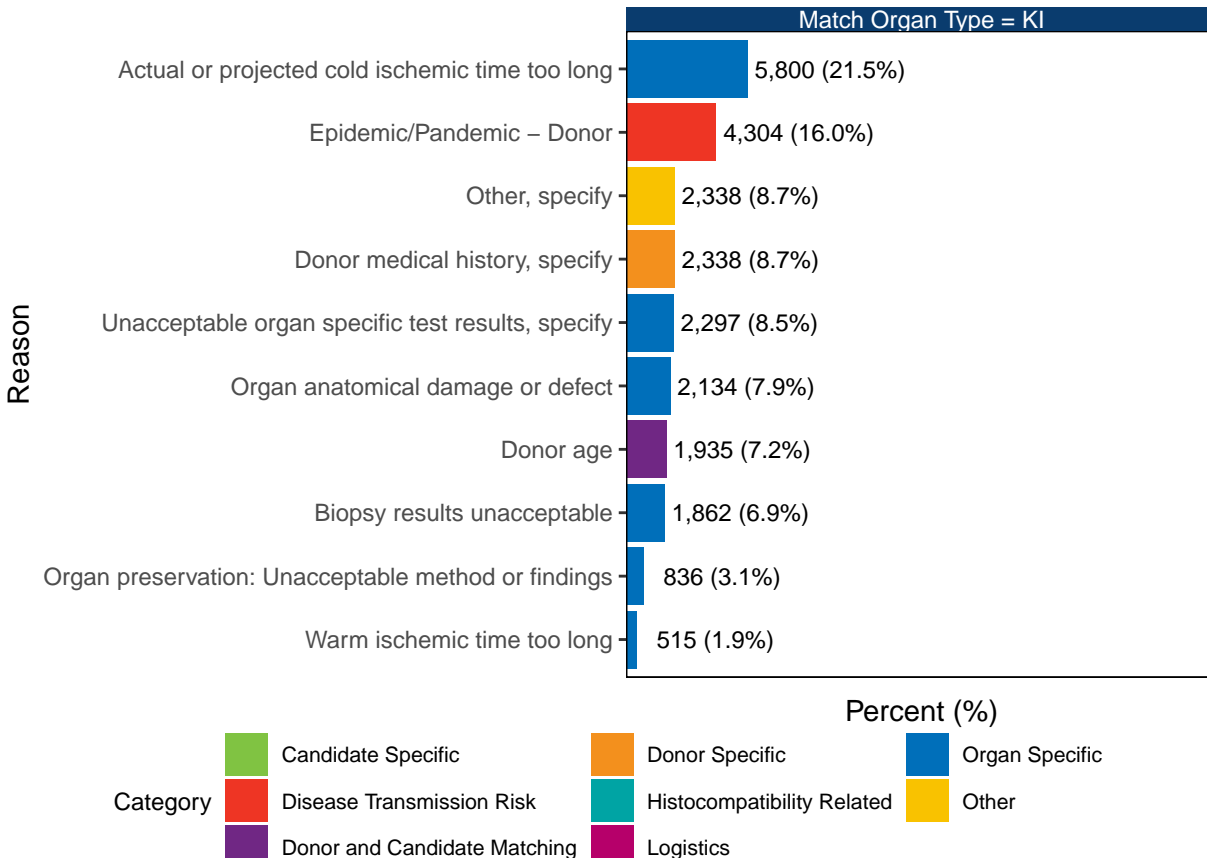


Figure 21: Top ten reasons for refusal of range refused liver match organ offers for transplant candidates post implementation, for liver matches submitted December 02, 2021 - February 28, 2022.

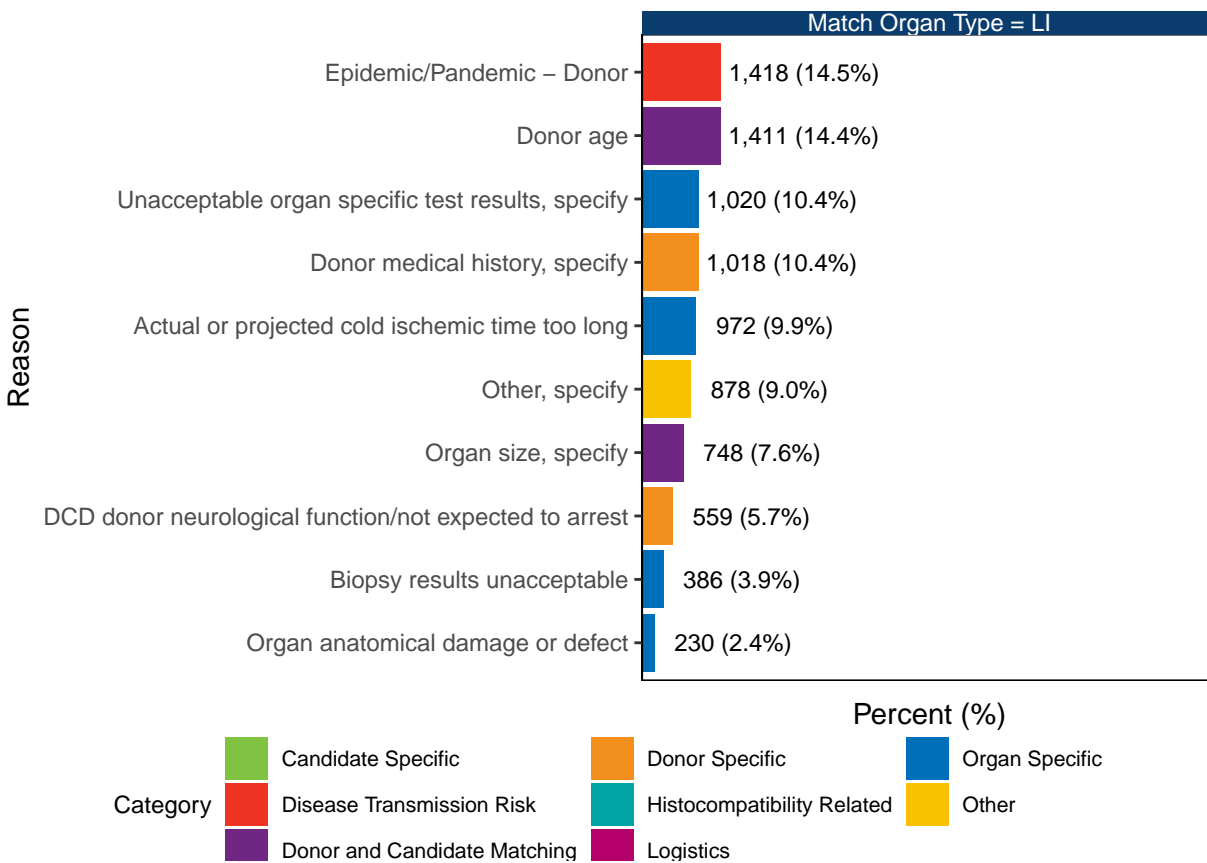


Figure 22: Top ten reasons for refusal of range refused heart and heart-lung match organ offers for transplant candidates post implementation, for heart and heart-lung matches submitted December 02, 2021 - February 28, 2022.

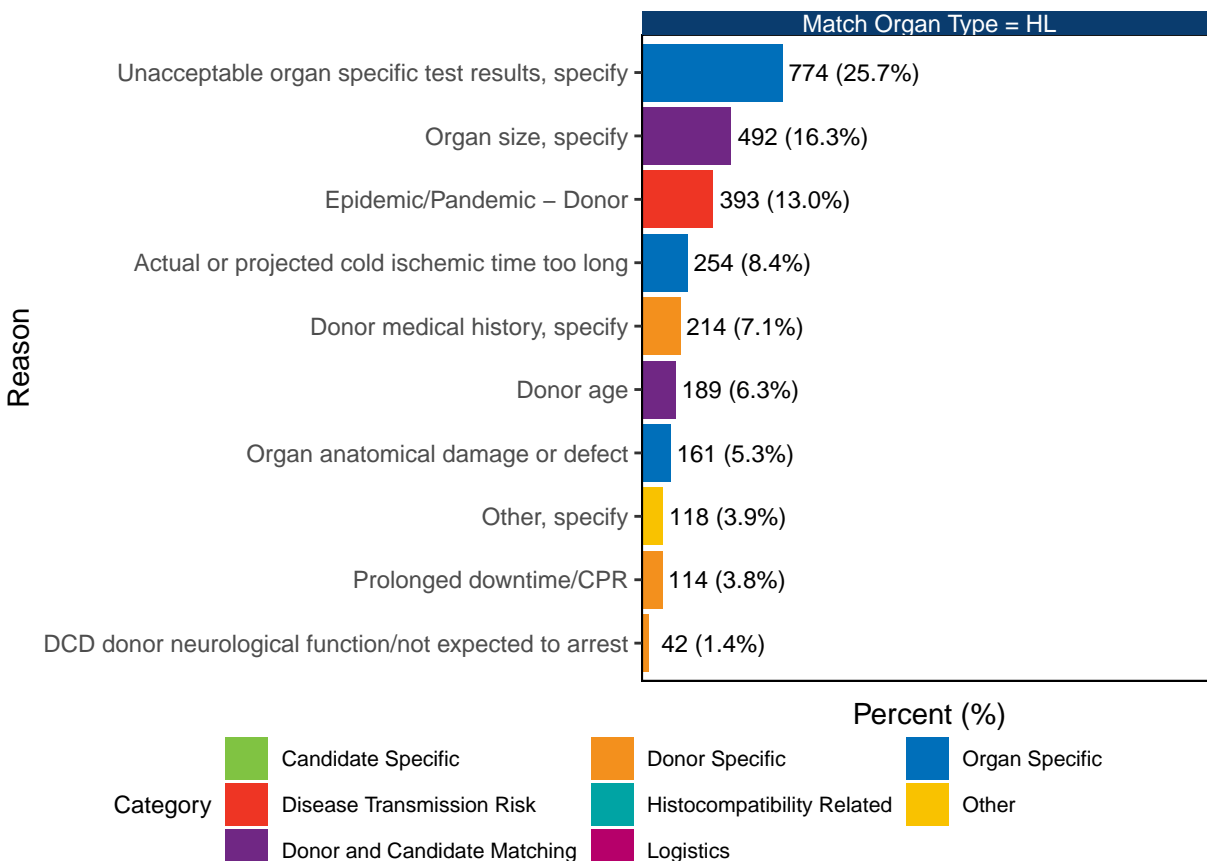


Figure 23: Top ten reasons for refusal of range refused lung match organ offers for transplant candidates post implementation, for lung matches submitted December 02, 2021 - February 28, 2022.

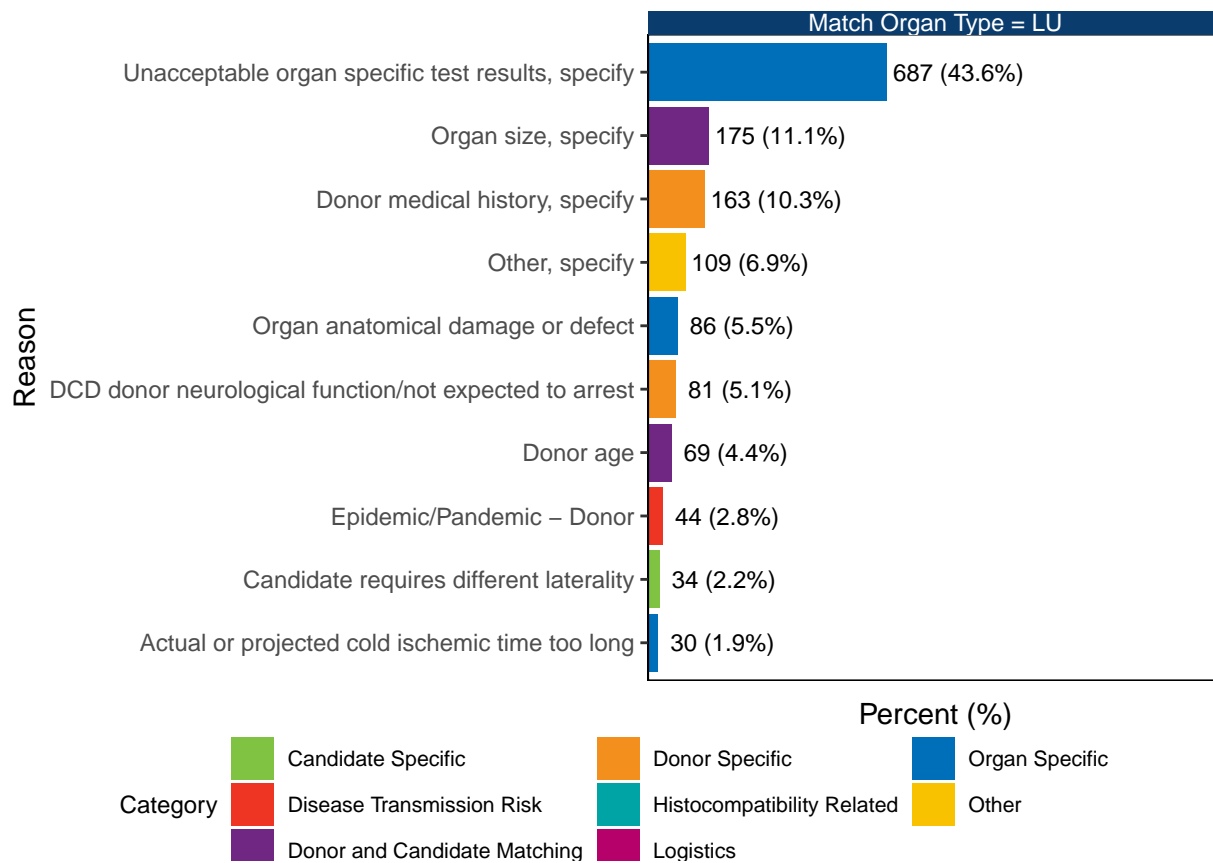


Figure 24: Top ten reasons for refusal of range refused kidney-pancreas match organ offers for transplant candidates post implementation, for kidney-pancreas matches submitted December 02, 2021 - February 28, 2022.

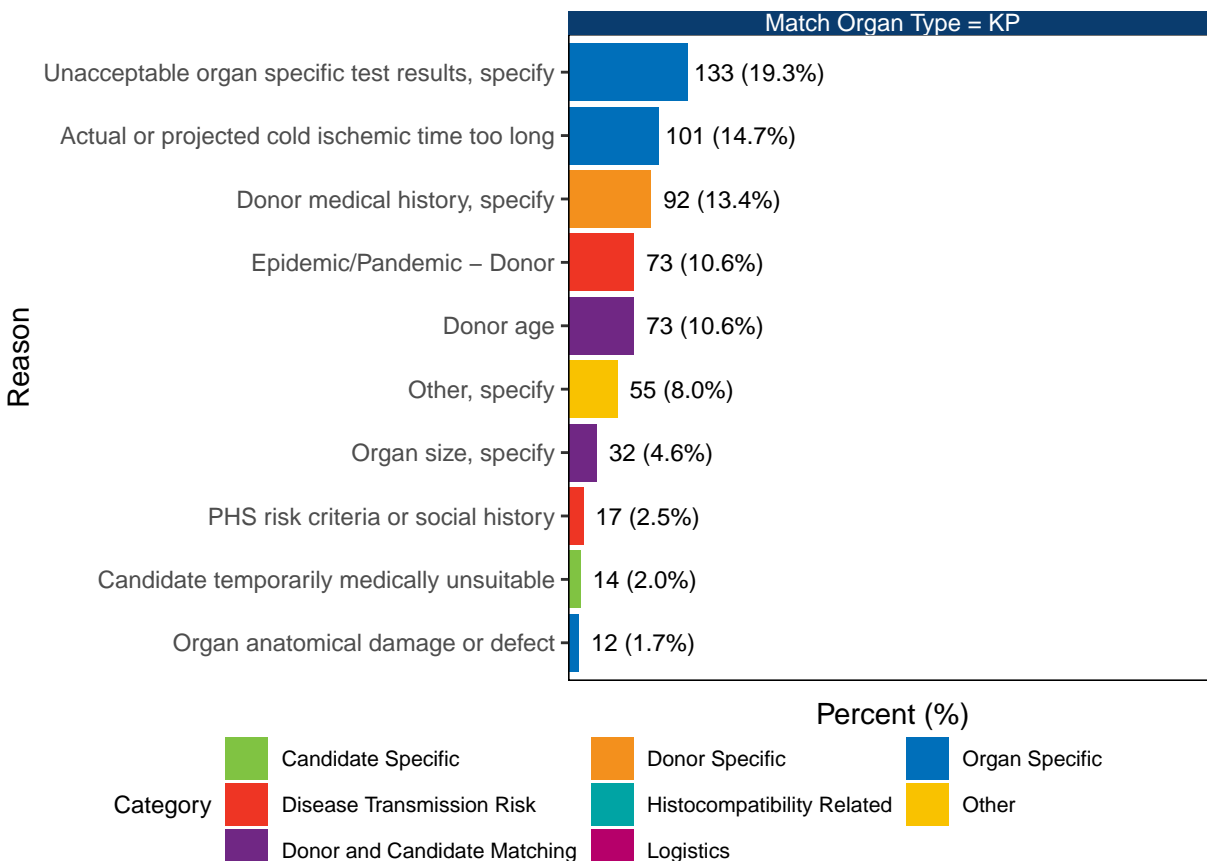
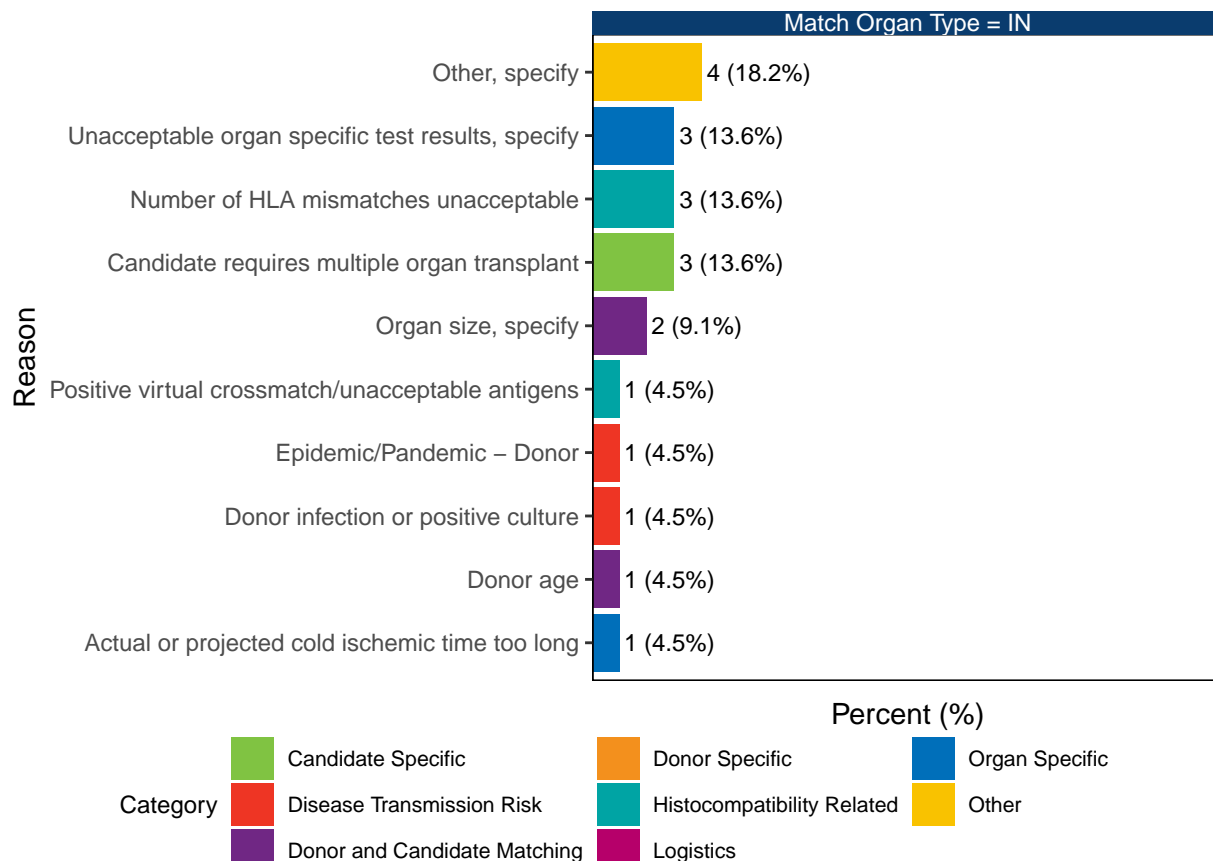


Figure 25: Top ten reasons for refusal of range refused intestine match organ offers for transplant candidates post implementation, for intestine matches submitted December 02, 2021 - February 28, 2022.



By Program Size

Figure 26: Top five reasons for refusal of range refused kidney match organ offers for transplant candidates post implementation stratified by program size, for kidney matches submitted December 02, 2021 - February 28, 2022. Program size defined by volume of deceased donor kidney transplants during 2020.

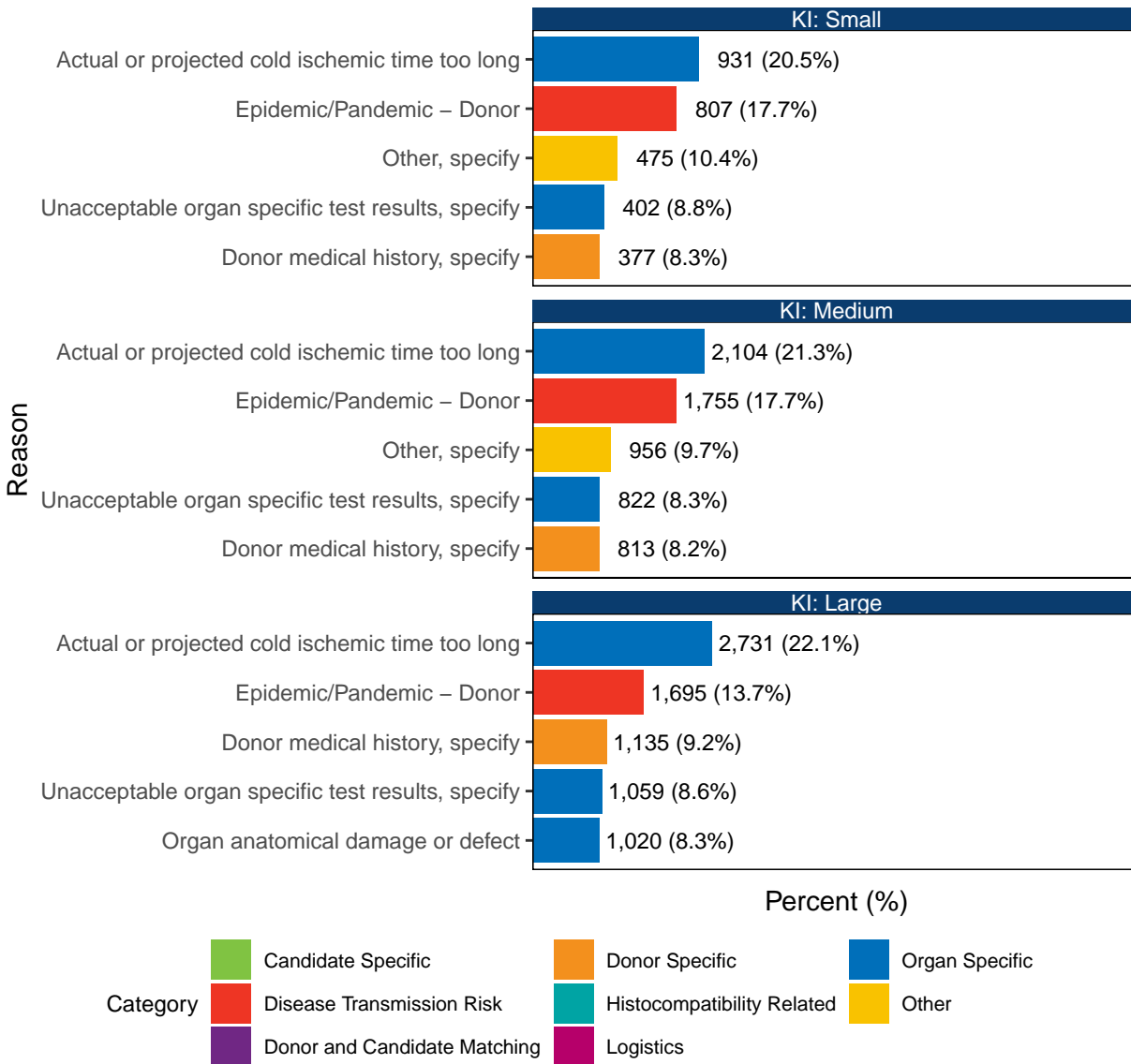


Figure 27: Top five reasons for refusal of range refused liver match organ offers for transplant candidates post implementation stratified by program size, for liver matches submitted December 02, 2021 - February 28, 2022. Program size defined by volume of deceased donor liver transplants during 2020.

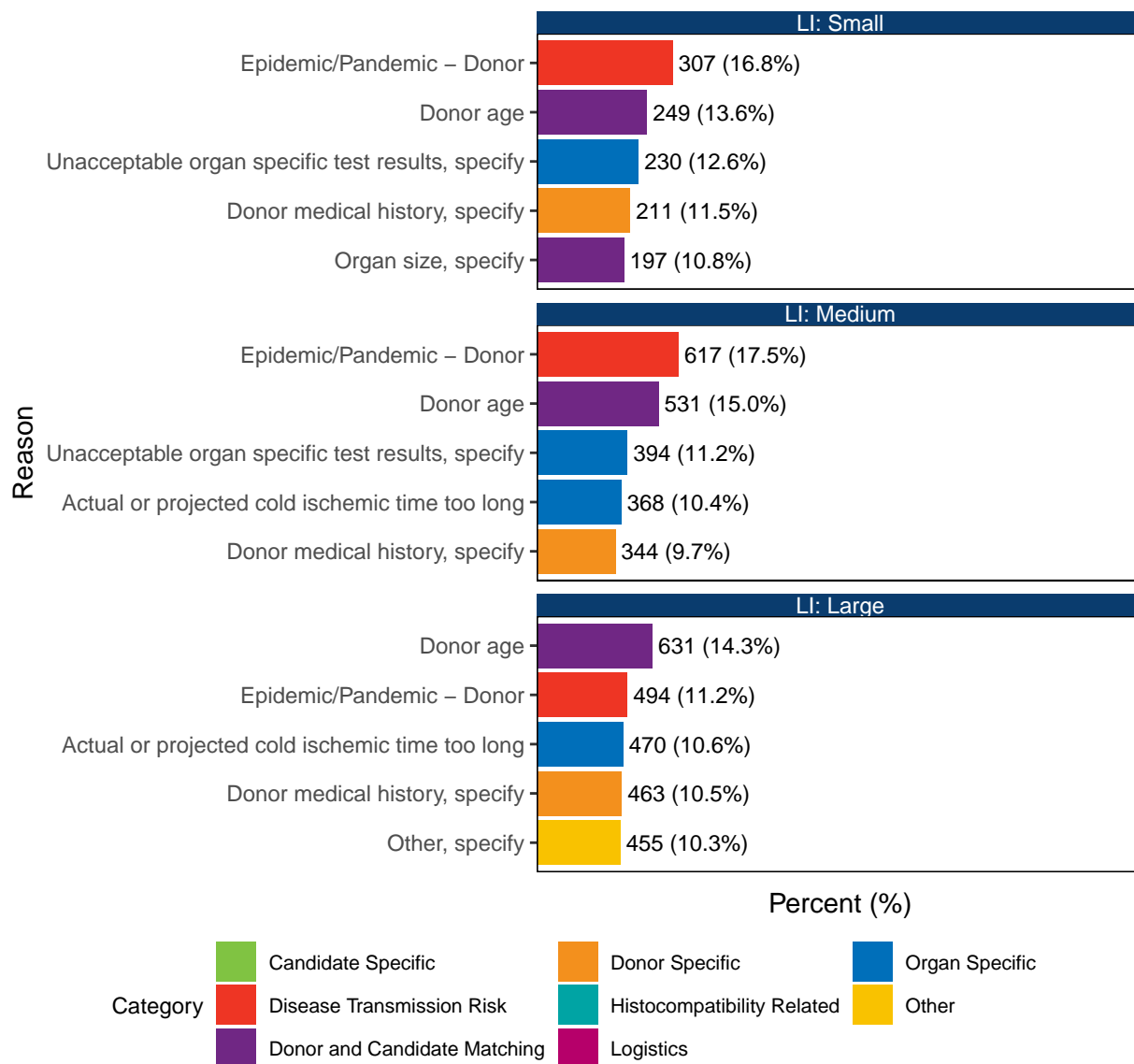


Figure 28: Top five reasons for refusal of range refused heart and heart-lung match organ offers for transplant candidates post implementation stratified by program size, for heart and heart-lung matches submitted December 02, 2021 - February 28, 2022. Program size defined by volume of deceased donor heart and heart-lung transplants during 2020.

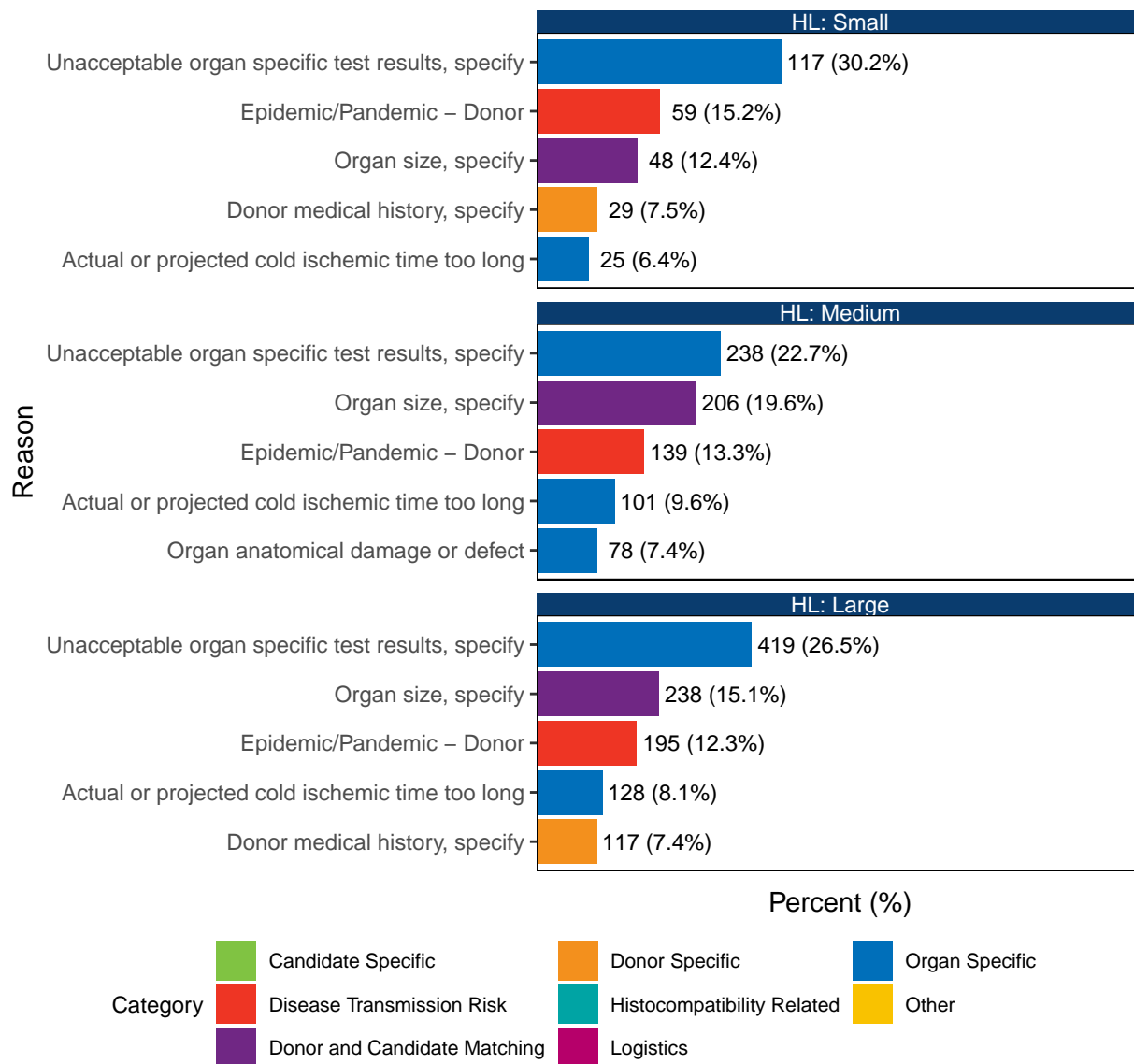
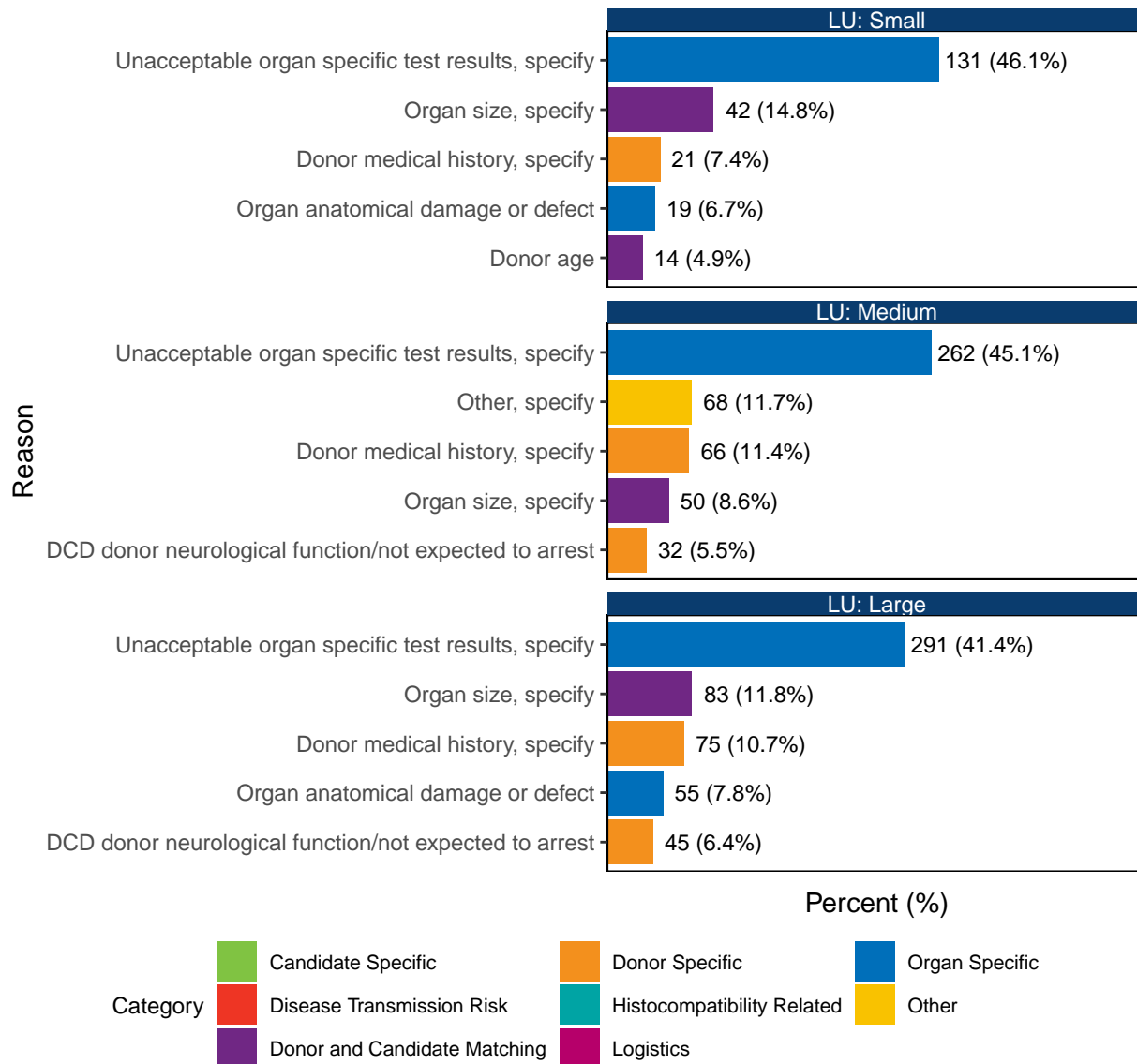


Figure 29: Top five reasons for refusal of range refused lung match organ offers for transplant candidates post implementation stratified by program size, for lung matches submitted December 02, 2021 - February 28, 2022. Program size defined by volume of deceased donor lung transplants during 2020.



By Sequence Number

Figure 30: Top five reasons for refusal of range refused kidney match organ offers for transplant candidates post implementation stratified by match acceptance number, for kidney matches submitted December 02, 2021 - February 28, 2022. Group was defined by the 90th percentile of sequence numbers for acceptances on kidney matches during 2020.

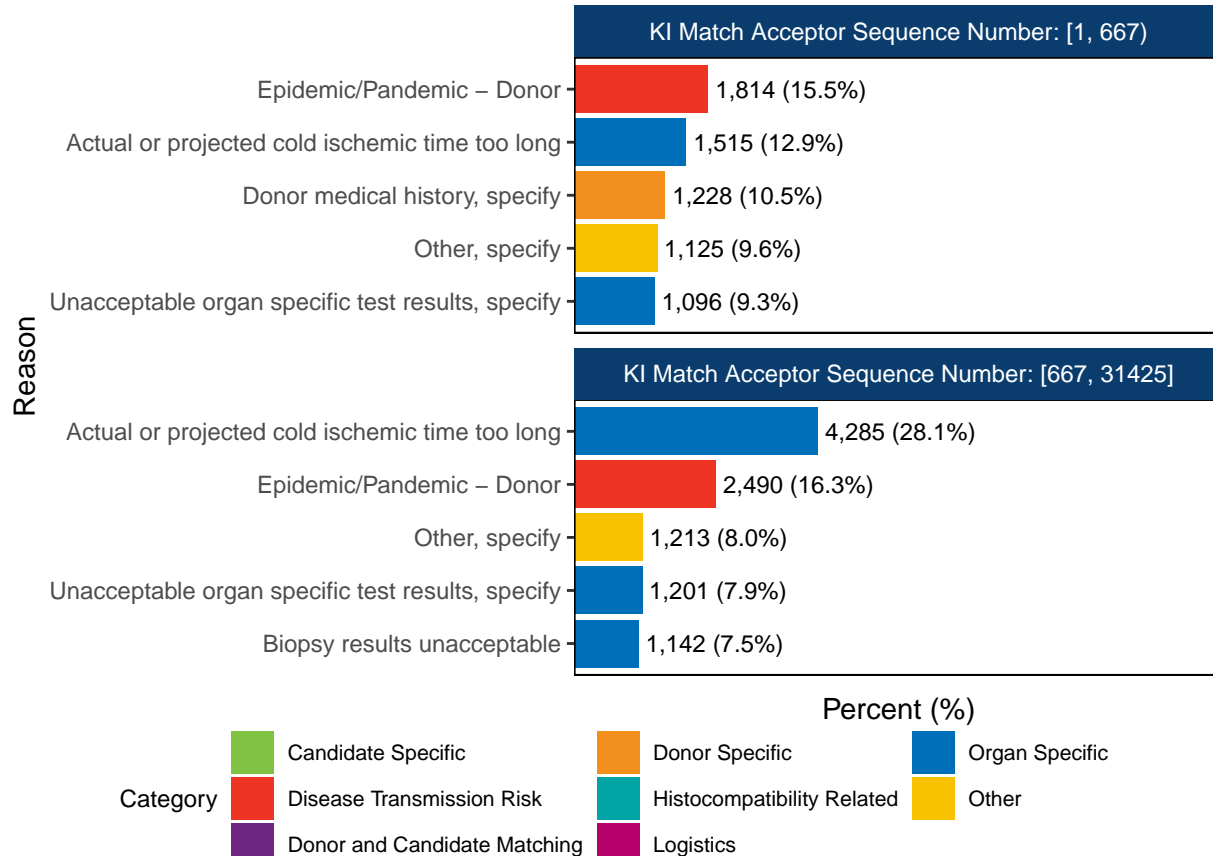


Figure 31: Top five reasons for refusal of range refused liver match organ offers for transplant candidates post implementation stratified by match acceptance number, for liver matches submitted December 02, 2021 - February 28, 2022. Group was defined by the 90th percentile of sequence numbers for acceptances on liver matches during 2020.

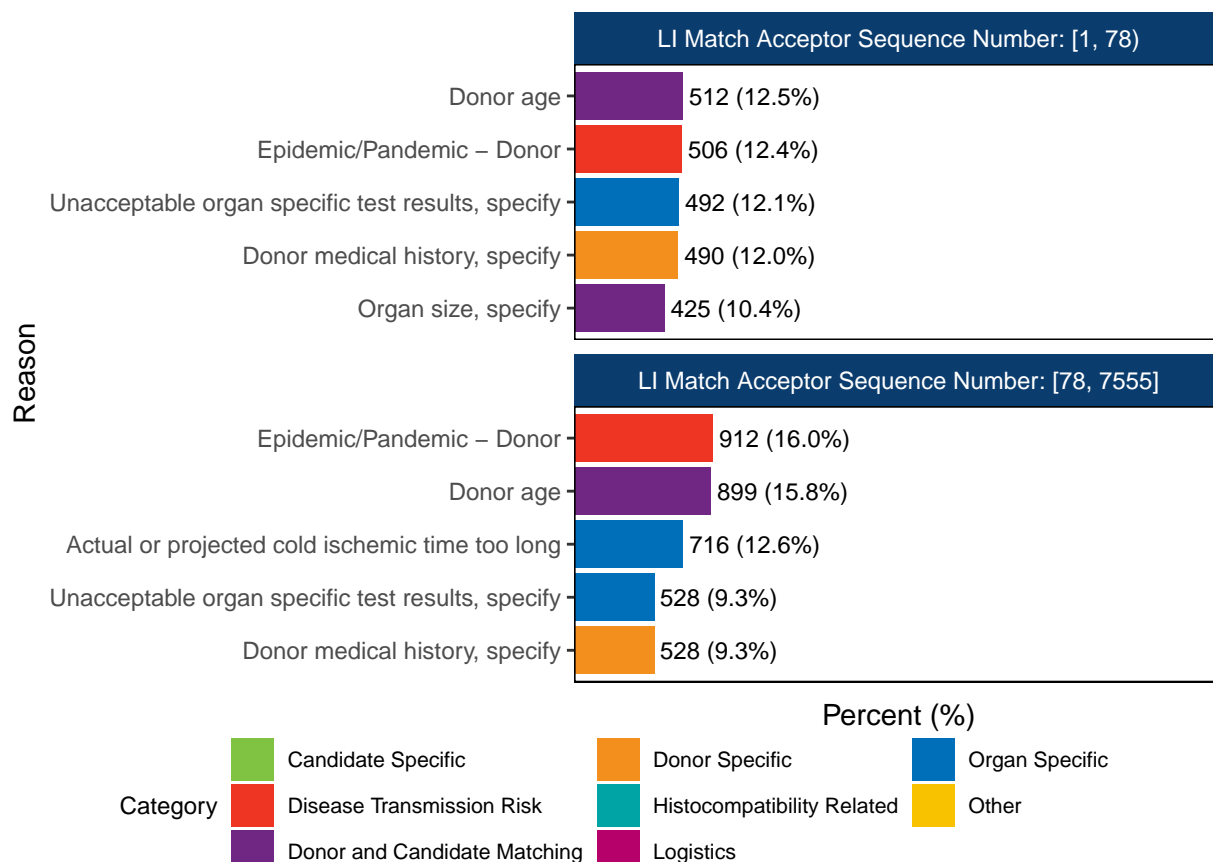


Figure 32: Top five reasons for refusal of range refused heart and heart-lung match organ offers for transplant candidates post implementation stratified by match acceptance number, for heart and heart-lung matches submitted December 02, 2021 - February 28, 2022. Group was defined by the 90th percentile of sequence numbers for acceptances on heart and heart-lung matches during 2020.

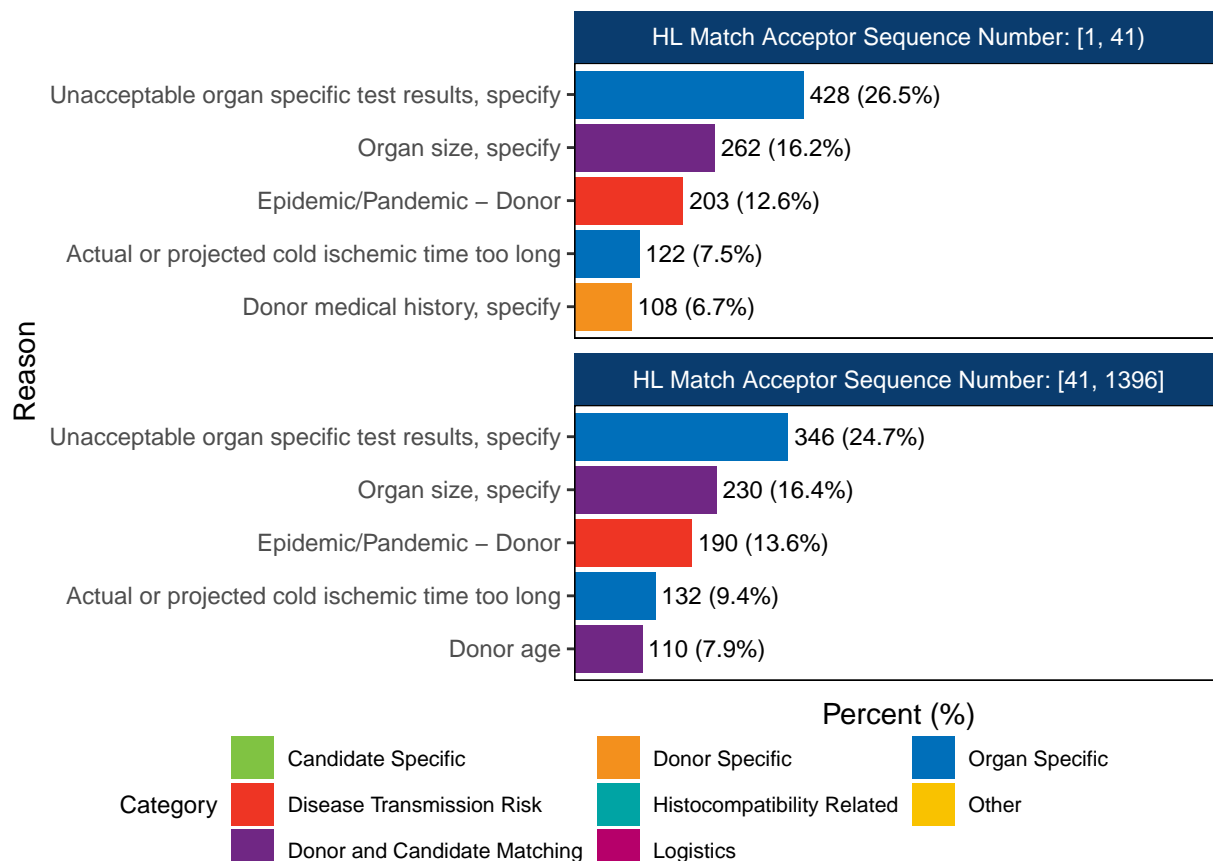
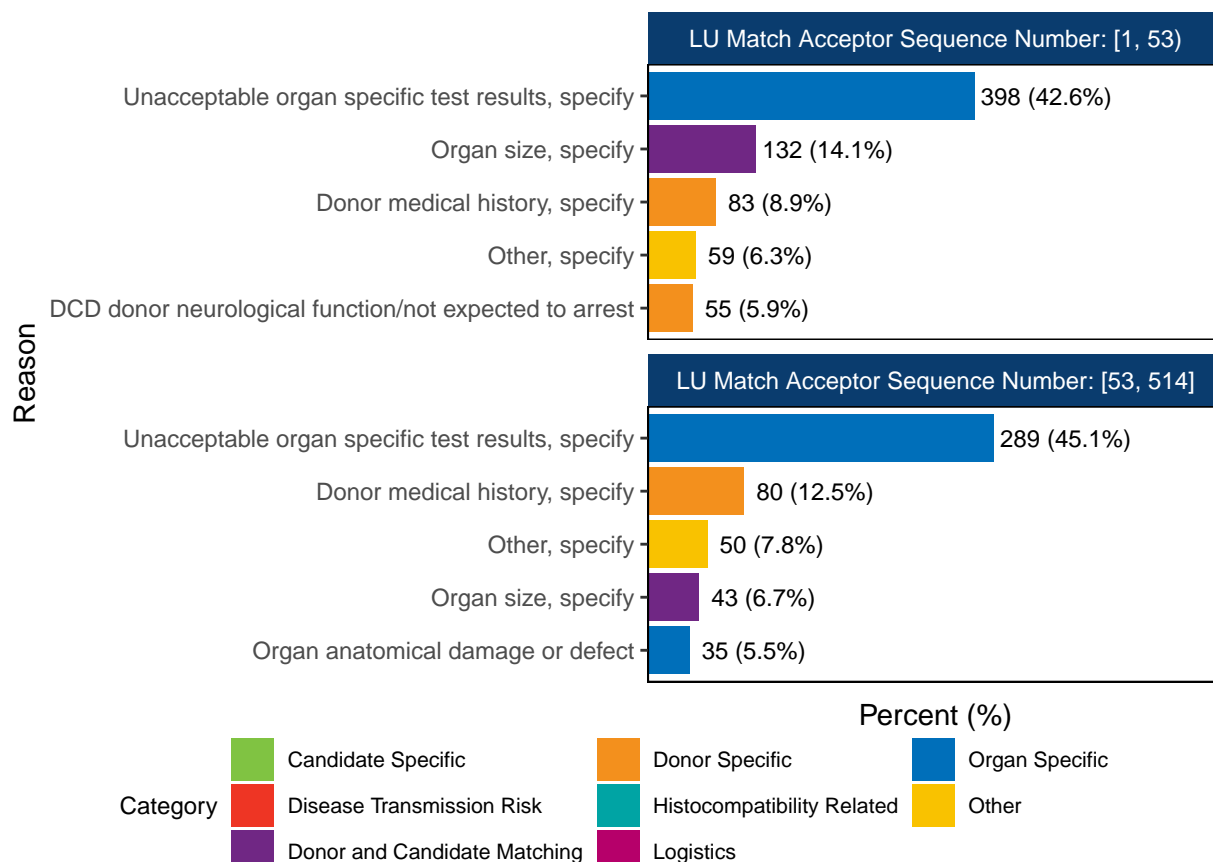


Figure 33: Top five reasons for refusal of range refused lung match organ offers for transplant candidates post implementation stratified by match acceptance number, for lung matches submitted December 02, 2021 - February 28, 2022. Group was defined by the 90th percentile of sequence numbers for acceptances on lung matches during 2020.



Summary

Thus far, it does not appear that any one code has replaced the previously popular “860: Donor age and quality” code. However, for most organs the “Epidemic/Pandemic - Donor” reason for organ offer refusal is one of the top used codes. This will need additional follow-up and monitoring to understand the implications to other refusal reason usage as this code is hopefully used less frequently over time. There are some differences in the most frequently used reasons for refusal by organ, program size, and whether the last acceptor on a match is within the 90th percentile or not. This also holds true for range refusals.

Upcoming monitoring and evaluation reports will include further analysis of the refusal reasons that require or allow additional text explanation. This will be important to understand if any reasons for refusal are seemingly absent or revisions are needed.

Thus far, the implementation of these new refusal reasons has accomplished its goal of providing more relevant, discrete, and mutually exclusive information and promoting the collection of more actionable data.

Appendix

Table 9: Count and percent of reasons for refusal of kidney match organ offers post implementation stratified by program size, for kidney matches submitted December 02, 2021 - February 28, 2022. Program size is defined by volume of deceased donor kidney transplants during 2020.

Description	Large		Medium		Small		No Transplants in 2020	
	N	%	N	%	N	%	N	%
Actual or projected cold ischemic time too long	133,833	22.7%	47,313	19.1%	10,939	19.3%	137	17.5%
Epidemic/Pandemic - Donor	106,088	18.0%	52,698	21.3%	12,524	22.1%	261	33.3%
Donor medical history, specify	72,562	12.3%	22,692	9.2%	5,668	10.0%	46	5.9%
Unacceptable organ specific test results, specify	51,320	8.7%	20,644	8.3%	5,028	8.9%	87	11.1%
Organ anatomical damage or defect	49,724	8.4%	22,001	8.9%	3,872	6.8%	72	9.2%
Biopsy results unacceptable	41,700	7.1%	15,355	6.2%	2,924	5.2%	50	6.4%
Donor age	33,245	5.6%	17,577	7.1%	4,543	8.0%	35	4.5%
Other, specify	31,897	5.4%	20,719	8.4%	4,378	7.7%	8	1.0%
Organ preservation: Unacceptable method or findings	18,269	3.1%	6,885	2.8%	1,517	2.7%	14	1.8%
Warm ischemic time too long	9,402	1.6%	5,318	2.1%	1,141	2.0%	0	0.0%
Candidate temporarily medically unsuitable	6,561	1.1%	2,987	1.2%	809	1.4%	8	1.0%
Biopsy not available	5,405	0.9%	694	0.3%	110	0.2%	27	3.4%
Donor infection or positive culture	5,385	0.9%	2,564	1.0%	400	0.7%	12	1.5%
Organ size, specify	5,018	0.8%	1,471	0.6%	577	1.0%	1	0.1%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	3,045	0.5%	1,258	0.5%	185	0.3%	20	2.6%
Candidate requires multiple organ transplant	2,605	0.4%	798	0.3%	180	0.3%	0	0.0%
Malignancy or suspected malignancy	2,484	0.4%	943	0.4%	134	0.2%	1	0.1%
DCD donor neurological function/not expected to arrest	2,195	0.4%	517	0.2%	283	0.5%	0	0.0%
Organ specific test results not available, specify	2,028	0.3%	1,121	0.5%	152	0.3%	2	0.3%
PHS risk criteria or social history	1,497	0.3%	358	0.1%	181	0.3%	0	0.0%
Positive virtual crossmatch/unacceptable antigens	828	0.1%	376	0.2%	94	0.2%	0	0.0%
Epidemic/Pandemic - Candidate	712	0.1%	933	0.4%	195	0.3%	0	0.0%
Transplant team or transplant facility availability	681	0.1%	209	0.1%	153	0.3%	0	0.0%
Donor instability/high vasopressor usage	677	0.1%	310	0.1%	33	0.1%	0	0.0%
Candidate transplanted or pending transplant	653	0.1%	288	0.1%	87	0.2%	2	0.3%
Candidate refused	627	0.1%	217	0.1%	92	0.2%	0	0.0%
No candidate serum for crossmatching	501	0.1%	318	0.1%	104	0.2%	0	0.0%
Candidate unavailable	391	0.1%	244	0.1%	27	0.0%	1	0.1%
Positive physical crossmatch	303	0.1%	154	0.1%	55	0.1%	0	0.0%
Resource time constraint (OPO, TXC, donor hospital, etc.)	237	0.0%	185	0.1%	2	0.0%	0	0.0%
Exceeded policy defined response time	163	0.0%	36	0.0%	11	0.0%	0	0.0%
Candidate temporarily ineligible due to insurance or financial issue	159	0.0%	69	0.0%	28	0.0%	0	0.0%
Number of HLA mismatches unacceptable	152	0.0%	64	0.0%	46	0.1%	0	0.0%
Prolonged downtime/CPR	56	0.0%	208	0.1%	36	0.1%	0	0.0%
Candidate requires different laterality	55	0.0%	30	0.0%	4	0.0%	0	0.0%
No donor cells/specimen for crossmatching, or no time for crossmatch	43	0.0%	46	0.0%	61	0.1%	0	0.0%
Disaster Emergency Management Consideration	32	0.0%	208	0.1%	0	0.0%	0	0.0%
Candidate's condition improved, transplant not needed	18	0.0%	5	0.0%	1	0.0%	0	0.0%
Transportation availability	7	0.0%	8	0.0%	0	0.0%	0	0.0%
Donor family time constraint	1	0.0%	0	0.0%	0	0.0%	0	0.0%

Table 10: Count and percent of reasons for refusal of liver match organ offers post implementation stratified by program size, for liver matches submitted December 02, 2021 - February 28, 2022. Program size is defined by volume of deceased donor liver transplants during 2020.

Description	Large		Medium		Small		No Transplants in 2020	
	N	%	N	%	N	%	N	%
Donor age	7,813	15.2%	5,045	16.1%	1,224	12.3%	1	5.3%
Epidemic/Pandemic - Donor	6,842	13.3%	6,132	19.5%	1,511	15.2%	2	10.5%
Actual or projected cold ischemic time too long	5,012	9.8%	3,116	9.9%	699	7.0%	1	5.3%
Donor medical history, specify	4,607	9.0%	2,268	7.2%	911	9.2%	0	0.0%
Other, specify	4,043	7.9%	2,384	7.6%	603	6.1%	0	0.0%
Unacceptable organ specific test results, specify	3,859	7.5%	2,750	8.8%	1,268	12.7%	4	21.1%
Organ size, specify	3,622	7.1%	2,352	7.5%	1,235	12.4%	8	42.1%
DCD donor neurological function/not expected to arrest	3,326	6.5%	1,593	5.1%	208	2.1%	0	0.0%
Biopsy results unacceptable	2,115	4.1%	1,413	4.5%	366	3.7%	0	0.0%
Candidate temporarily medically unsuitable	1,528	3.0%	1,028	3.3%	253	2.5%	0	0.0%
Candidate transplanted or pending transplant	1,470	2.9%	640	2.0%	168	1.7%	1	5.3%
Malignancy or suspected malignancy	1,166	2.3%	532	1.7%	164	1.6%	0	0.0%
Organ anatomical damage or defect	976	1.9%	342	1.1%	246	2.5%	0	0.0%
Candidate requires multiple organ transplant	795	1.5%	250	0.8%	124	1.2%	0	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	679	1.3%	186	0.6%	80	0.8%	0	0.0%
Organ specific test results not available, specify	585	1.1%	100	0.3%	46	0.5%	0	0.0%
Candidate unavailable	518	1.0%	94	0.3%	61	0.6%	0	0.0%
Donor infection or positive culture	394	0.8%	118	0.4%	56	0.6%	0	0.0%
Resource time constraint (OPO, TXC, donor hospital, etc.)	357	0.7%	110	0.4%	67	0.7%	0	0.0%
Organ preservation: Unacceptable method or findings	310	0.6%	50	0.2%	224	2.3%	0	0.0%
Epidemic/Pandemic - Candidate	250	0.5%	83	0.3%	58	0.6%	0	0.0%
Exceeded policy defined response time	140	0.3%	40	0.1%	22	0.2%	0	0.0%
Donor family time constraint	126	0.2%	31	0.1%	41	0.4%	0	0.0%
Donor instability/high vasopressor usage	121	0.2%	195	0.6%	25	0.3%	0	0.0%
Transplant team or transplant facility availability	119	0.2%	20	0.1%	1	0.0%	0	0.0%
Biopsy not available	107	0.2%	122	0.4%	4	0.0%	0	0.0%
Candidate's condition improved, transplant not needed	107	0.2%	28	0.1%	15	0.2%	0	0.0%
PHS risk criteria or social history	105	0.2%	85	0.3%	44	0.4%	1	5.3%
Candidate refused	96	0.2%	29	0.1%	12	0.1%	0	0.0%
Warm ischemic time too long	74	0.1%	124	0.4%	22	0.2%	0	0.0%
Prolonged downtime/CPR	33	0.1%	59	0.2%	98	1.0%	1	5.3%
Candidate temporarily ineligible due to insurance or financial issue	27	0.1%	16	0.1%	1	0.0%	0	0.0%
Recovery team availability	10	0.0%	27	0.1%	0	0.0%	0	0.0%
Transportation availability	9	0.0%	3	0.0%	32	0.3%	0	0.0%
No donor cells/specimen for crossmatching, or no time for crossmatch	7	0.0%	0	0.0%	0	0.0%	0	0.0%
Positive virtual crossmatch/unacceptable antigens	6	0.0%	7	0.0%	15	0.2%	0	0.0%
Number of HLA mismatches unacceptable	2	0.0%	0	0.0%	19	0.2%	0	0.0%
Positive physical crossmatch	1	0.0%	1	0.0%	0	0.0%	0	0.0%
Disaster Emergency Management Consideration	0	0.0%	0	0.0%	32	0.3%	0	0.0%

Table 11: Count and percent of reasons for refusal of heart and heart-lung match organ offers post implementation stratified by program size, for heart and heart-lung matches submitted December 02, 2021 - February 28, 2022. Program size is defined by volume of deceased donor heart and heart-lung transplants during 2020.

Description	Large		Medium		Small		No Transplants in 2020	
	N	%	N	%	N	%	N	%
Organ size, specify	2,019	23.8%	1,347	30.1%	304	22.3%	7	36.8%
Unacceptable organ specific test results, specify	1,638	19.3%	719	16.1%	323	23.7%	4	21.1%
Donor medical history, specify	628	7.4%	328	7.3%	106	7.8%	0	0.0%
Epidemic/Pandemic - Donor	607	7.2%	352	7.9%	133	9.8%	4	21.1%
Donor age	570	6.7%	282	6.3%	42	3.1%	1	5.3%
Candidate temporarily medically unsuitable	417	4.9%	45	1.0%	31	2.3%	1	5.3%
Candidate transplanted or pending transplant	405	4.8%	169	3.8%	29	2.1%	2	10.5%
Actual or projected cold ischemic time too long	324	3.8%	268	6.0%	65	4.8%	0	0.0%
Organ anatomical damage or defect	296	3.5%	351	7.8%	48	3.5%	0	0.0%
Prolonged downtime/CPR	271	3.2%	114	2.5%	62	4.6%	0	0.0%
Other, specify	250	2.9%	146	3.3%	54	4.0%	0	0.0%
Candidate requires multiple organ transplant	212	2.5%	109	2.4%	10	0.7%	0	0.0%
DCD donor neurological function/not expected to arrest	146	1.7%	7	0.2%	0	0.0%	0	0.0%
Positive virtual crossmatch/unacceptable antigens	144	1.7%	22	0.5%	19	1.4%	0	0.0%
Organ specific test results not available, specify	83	1.0%	38	0.8%	16	1.2%	0	0.0%
No candidate serum for crossmatching	60	0.7%	2	0.0%	3	0.2%	0	0.0%
Organ preservation: Unacceptable method or findings	47	0.6%	10	0.2%	3	0.2%	0	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	47	0.6%	7	0.2%	8	0.6%	0	0.0%
Donor infection or positive culture	40	0.5%	28	0.6%	14	1.0%	0	0.0%
Epidemic/Pandemic - Candidate	35	0.4%	16	0.4%	9	0.7%	0	0.0%
Candidate temporarily ineligible due to insurance or financial issue	33	0.4%	0	0.0%	0	0.0%	0	0.0%
Number of HLA mismatches unacceptable	25	0.3%	6	0.1%	5	0.4%	0	0.0%
Resource time constraint (OPO, TXC, donor hospital, etc.)	25	0.3%	7	0.2%	5	0.4%	0	0.0%
Positive physical crossmatch	24	0.3%	5	0.1%	1	0.1%	0	0.0%
No donor cells/specimen for crossmatching, or no time for crossmatch	22	0.3%	2	0.0%	0	0.0%	0	0.0%
Candidate's condition improved, transplant not needed	20	0.2%	0	0.0%	3	0.2%	0	0.0%
PHS risk criteria or social history	20	0.2%	40	0.9%	33	2.4%	0	0.0%
Donor instability/high vasopressor usage	19	0.2%	38	0.8%	28	2.1%	0	0.0%
Warm ischemic time too long	16	0.2%	7	0.2%	2	0.1%	0	0.0%
Malignancy or suspected malignancy	15	0.2%	5	0.1%	2	0.1%	0	0.0%
Candidate unavailable	8	0.1%	0	0.0%	0	0.0%	0	0.0%
Candidate refused	5	0.1%	0	0.0%	1	0.1%	0	0.0%
Donor family time constraint	5	0.1%	1	0.0%	1	0.1%	0	0.0%
Transportation availability	4	0.0%	0	0.0%	0	0.0%	0	0.0%
Biopsy results unacceptable	1	0.0%	0	0.0%	0	0.0%	0	0.0%
Exceeded policy defined response time	1	0.0%	2	0.0%	0	0.0%	0	0.0%
Transplant team or transplant facility availability	1	0.0%	2	0.0%	2	0.1%	0	0.0%
Recovery team availability	0	0.0%	2	0.0%	0	0.0%	0	0.0%

Table 12: Count and percent of reasons for refusal of lung match organ offers post implementation stratified by program size, for lung matches submitted December 02, 2021 - February 28, 2022. Program size is defined by volume of deceased donor lung transplants during 2020.

Description	Large		Medium		Small		No Transplants in 2020	
	N	%	N	%	N	%	N	%
Unacceptable organ specific test results, specify	1,769	34.3%	1,127	40.3%	522	39.5%	10	30.3%
Organ size, specify	986	19.1%	366	13.1%	288	21.8%	4	12.1%
Donor medical history, specify	440	8.5%	292	10.4%	83	6.3%	1	3.0%
Other, specify	308	6.0%	306	10.9%	38	2.9%	11	33.3%
Organ anatomical damage or defect	266	5.2%	61	2.2%	52	3.9%	1	3.0%
DCD donor neurological function/not expected to arrest	236	4.6%	174	6.2%	13	1.0%	0	0.0%
Candidate requires different laterality	177	3.4%	74	2.6%	38	2.9%	1	3.0%
Epidemic/Pandemic - Donor	174	3.4%	47	1.7%	16	1.2%	0	0.0%
Donor age	164	3.2%	102	3.6%	70	5.3%	1	3.0%
Candidate requires multiple organ transplant	128	2.5%	22	0.8%	59	4.5%	1	3.0%
Organ specific test results not available, specify	101	2.0%	23	0.8%	19	1.4%	0	0.0%
Candidate transplanted or pending transplant	75	1.5%	55	2.0%	8	0.6%	0	0.0%
Positive virtual crossmatch/unacceptable antigens	73	1.4%	22	0.8%	6	0.5%	0	0.0%
Actual or projected cold ischemic time too long	51	1.0%	31	1.1%	51	3.9%	2	6.1%
Resource time constraint (OPO, TXC, donor hospital, etc.)	51	1.0%	44	1.6%	7	0.5%	0	0.0%
Candidate temporarily medically unsuitable	42	0.8%	5	0.2%	10	0.8%	0	0.0%
Number of HLA mismatches unacceptable	21	0.4%	1	0.0%	0	0.0%	0	0.0%
PHS risk criteria or social history	14	0.3%	3	0.1%	1	0.1%	0	0.0%
Donor family time constraint	12	0.2%	4	0.1%	3	0.2%	0	0.0%
Warm ischemic time too long	12	0.2%	0	0.0%	0	0.0%	0	0.0%
Organ preservation: Unacceptable method or findings	10	0.2%	0	0.0%	19	1.4%	0	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	10	0.2%	0	0.0%	2	0.2%	1	3.0%
Epidemic/Pandemic - Candidate	7	0.1%	1	0.0%	2	0.2%	0	0.0%
Positive physical crossmatch	7	0.1%	4	0.1%	0	0.0%	0	0.0%
Donor infection or positive culture	5	0.1%	22	0.8%	4	0.3%	0	0.0%
Candidate unavailable	4	0.1%	0	0.0%	0	0.0%	0	0.0%
Donor instability/high vasopressor usage	2	0.0%	0	0.0%	1	0.1%	0	0.0%
No candidate serum for crossmatching	2	0.0%	2	0.1%	1	0.1%	0	0.0%
Candidate temporarily ineligible due to insurance or financial issue	1	0.0%	1	0.0%	0	0.0%	0	0.0%
Candidate's condition improved, transplant not needed	1	0.0%	1	0.0%	0	0.0%	0	0.0%
Malignancy or suspected malignancy	1	0.0%	2	0.1%	1	0.1%	0	0.0%
Transportation availability	1	0.0%	0	0.0%	0	0.0%	0	0.0%
Biopsy not available	0	0.0%	4	0.1%	0	0.0%	0	0.0%
Transplant team or transplant facility availability	0	0.0%	1	0.0%	0	0.0%	0	0.0%
Candidate refused	0	0.0%	0	0.0%	2	0.2%	0	0.0%
Exceeded policy defined response time	0	0.0%	0	0.0%	2	0.2%	0	0.0%
Prolonged downtime/CPR	0	0.0%	0	0.0%	2	0.2%	0	0.0%
Recovery team availability	0	0.0%	0	0.0%	1	0.1%	0	0.0%

Table 13: Count and percent of reasons for refusal of kidney-pancreas match organ offers post implementation stratified by program size, for kidney-pancreas matches submitted December 02, 2021 - February 28, 2022. Program size is defined by volume of deceased donor kidney-pancreas transplants during 2020.

Description	Large		Medium		Small		No Transplants in 2020	
	N	%	N	%	N	%	N	%
Unacceptable organ specific test results, specify	194	18.1%	164	16.6%	92	15.6%	12	18.2%
Candidate requires multiple organ transplant	159	14.8%	71	7.2%	117	19.8%	2	3.0%
Donor age	98	9.1%	116	11.7%	27	4.6%	11	16.7%
Donor medical history, specify	89	8.3%	95	9.6%	84	14.2%	3	4.5%
Epidemic/Pandemic - Donor	86	8.0%	103	10.4%	54	9.1%	9	13.6%
Actual or projected cold ischemic time too long	81	7.5%	90	9.1%	93	15.7%	3	4.5%
Organ size, specify	64	6.0%	45	4.6%	7	1.2%	1	1.5%
Other, specify	61	5.7%	69	7.0%	26	4.4%	6	9.1%
Transplant team or transplant facility availability	43	4.0%	0	0.0%	12	2.0%	0	0.0%
Candidate temporarily medically unsuitable	31	2.9%	63	6.4%	8	1.4%	0	0.0%
Organ preservation: Unacceptable method or findings	19	1.8%	10	1.0%	5	0.8%	0	0.0%
Prolonged downtime/CPR	18	1.7%	9	0.9%	4	0.7%	5	7.6%
Epidemic/Pandemic - Candidate	14	1.3%	15	1.5%	8	1.4%	0	0.0%
PHS risk criteria or social history	13	1.2%	15	1.5%	8	1.4%	8	12.1%
Positive virtual crossmatch/unacceptable antigens	13	1.2%	12	1.2%	5	0.8%	0	0.0%
Candidate transplanted or pending transplant	12	1.1%	3	0.3%	3	0.5%	0	0.0%
Donor instability/high vasopressor usage	11	1.0%	13	1.3%	0	0.0%	3	4.5%
Organ anatomical damage or defect	11	1.0%	17	1.7%	9	1.5%	2	3.0%
Candidate refused	9	0.8%	9	0.9%	0	0.0%	0	0.0%
Candidate unavailable	8	0.7%	3	0.3%	0	0.0%	0	0.0%
Recovery team availability	7	0.7%	2	0.2%	11	1.9%	0	0.0%
Donor infection or positive culture	6	0.6%	3	0.3%	6	1.0%	0	0.0%
Donor family time constraint	5	0.5%	0	0.0%	0	0.0%	0	0.0%
Number of HLA mismatches unacceptable	5	0.5%	11	1.1%	1	0.2%	0	0.0%
Organ specific test results not available, specify	5	0.5%	12	1.2%	5	0.8%	0	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	4	0.4%	1	0.1%	3	0.5%	0	0.0%
Resource time constraint (OPO, TXC, donor hospital, etc.)	3	0.3%	12	1.2%	1	0.2%	0	0.0%
Positive physical crossmatch	2	0.2%	4	0.4%	0	0.0%	1	1.5%
Candidate temporarily ineligible due to insurance or financial issue	1	0.1%	4	0.4%	0	0.0%	0	0.0%
Transportation availability	1	0.1%	0	0.0%	0	0.0%	0	0.0%
DCD donor neurological function/not expected to arrest	0	0.0%	10	1.0%	1	0.2%	0	0.0%
Candidate's condition improved, transplant not needed	0	0.0%	2	0.2%	0	0.0%	0	0.0%
No donor cells/specimen for crossmatching, or no time for crossmatch	0	0.0%	2	0.2%	0	0.0%	0	0.0%
Warm ischemic time too long	0	0.0%	2	0.2%	1	0.2%	0	0.0%
Exceeded policy defined response time	0	0.0%	1	0.1%	0	0.0%	0	0.0%
No candidate serum for crossmatching	0	0.0%	1	0.1%	0	0.0%	0	0.0%

Table 14: Count and percent of reasons for refusal of intestine match organ offers post implementation stratified by program size, for intestine matches submitted December 02, 2021 - February 28, 2022. Program size is defined by volume of deceased donor intestine transplants during 2020.

Description	Large		Medium		Small		No Transplants in 2020	
	N	%	N	%	N	%	N	%
Candidate requires multiple organ transplant	126	71.6%	70	57.4%	17	44.7%	1	33.3%
Number of HLA mismatches unacceptable	15	8.5%	0	0.0%	0	0.0%	0	0.0%
Actual or projected cold ischemic time too long	10	5.7%	4	3.3%	3	7.9%	0	0.0%
Warm ischemic time too long	8	4.5%	0	0.0%	0	0.0%	0	0.0%
Organ size, specify	5	2.8%	13	10.7%	0	0.0%	0	0.0%
Candidate temporarily medically unsuitable	4	2.3%	1	0.8%	5	13.2%	0	0.0%
Unacceptable organ specific test results, specify	4	2.3%	0	0.0%	3	7.9%	2	66.7%
Donor infection or positive culture	1	0.6%	2	1.6%	0	0.0%	0	0.0%
Donor medical history, specify	1	0.6%	0	0.0%	0	0.0%	0	0.0%
Other, specify	1	0.6%	18	14.8%	6	15.8%	0	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	1	0.6%	0	0.0%	1	2.6%	0	0.0%
Prolonged downtime/CPR	0	0.0%	8	6.6%	1	2.6%	0	0.0%
Donor age	0	0.0%	5	4.1%	1	2.6%	0	0.0%
Epidemic/Pandemic - Donor	0	0.0%	1	0.8%	0	0.0%	0	0.0%
Positive virtual crossmatch/unacceptable antigens	0	0.0%	0	0.0%	1	2.6%	0	0.0%

Table 15: Count and percent of reasons for refusal of kidney match organ offers post implementation stratified by match acceptance number, for kidney matches submitted December 02, 2021 - February 28, 2022. Group is defined by the 90th percentile of sequence numbers for acceptances on kidney matches during 2020.

Description	Acceptor Sequence Number: [1, 667)		Acceptor Sequence Number: [667, 31425]	
	N	%	N	%
Donor medical history, specify	15,363	13.3%	85,605	11.0%
Epidemic/Pandemic - Donor	14,437	12.5%	157,134	20.1%
Unacceptable organ specific test results, specify	12,757	11.1%	64,322	8.2%
Donor age	10,873	9.4%	44,527	5.7%
Actual or projected cold ischemic time too long	10,191	8.8%	182,031	23.3%
Organ anatomical damage or defect	8,973	7.8%	66,696	8.5%
Biopsy results unacceptable	7,687	6.7%	52,342	6.7%
Other, specify	7,406	6.4%	49,596	6.4%
Candidate temporarily medically unsuitable	6,477	5.6%	3,888	0.5%
Warm ischemic time too long	3,357	2.9%	12,504	1.6%
Organ preservation: Unacceptable method or findings	2,735	2.4%	23,950	3.1%
Organ size, specify	2,358	2.0%	4,709	0.6%
Candidate requires multiple organ transplant	2,095	1.8%	1,488	0.2%
Positive virtual crossmatch/unacceptable antigens	1,025	0.9%	273	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	788	0.7%	3,720	0.5%
DCD donor neurological function/not expected to arrest	784	0.7%	2,211	0.3%
Biopsy not available	760	0.7%	5,476	0.7%
Candidate transplanted or pending transplant	687	0.6%	343	0.0%
Candidate refused	674	0.6%	262	0.0%
Organ specific test results not available, specify	670	0.6%	2,633	0.3%
Donor infection or positive culture	662	0.6%	7,699	1.0%
No candidate serum for crossmatching	629	0.5%	294	0.0%
Epidemic/Pandemic - Candidate	593	0.5%	1,247	0.2%
PHS risk criteria or social history	549	0.5%	1,487	0.2%
Malignancy or suspected malignancy	500	0.4%	3,062	0.4%
Candidate unavailable	437	0.4%	226	0.0%
Positive physical crossmatch	412	0.4%	100	0.0%
Transplant team or transplant facility availability	392	0.3%	651	0.1%
Donor instability/high vasopressor usage	313	0.3%	707	0.1%
Number of HLA mismatches unacceptable	214	0.2%	48	0.0%
Candidate temporarily ineligible due to insurance or financial issue	160	0.1%	96	0.0%
Resource time constraint (OPO, TXC, donor hospital, etc.)	146	0.1%	278	0.0%
Prolonged downtime/CPR	107	0.1%	193	0.0%
Disaster Emergency Management Consideration	65	0.1%	175	0.0%
Candidate requires different laterality	61	0.1%	28	0.0%
No donor cells/specimen for crossmatching, or no time for crossmatch	38	0.0%	112	0.0%
Exceeded policy defined response time	26	0.0%	184	0.0%
Candidate's condition improved, transplant not needed	15	0.0%	9	0.0%
Transportation availability	6	0.0%	9	0.0%
Donor family time constraint	0	0.0%	1	0.0%

Table 16: Count and percent of reasons for refusal of liver match organ offers post implementation stratified by match acceptance number, for liver matches submitted December 02, 2021 - February 28, 2022. Group is defined by the 90th percentile of sequence numbers for acceptances on liver matches during 2020.

Description	Acceptor Sequence Number: [1, 78]		Acceptor Sequence Number: [78, 7555]	
	N	%	N	%
Organ size, specify	3,618	16.3%	3,599	5.1%
Donor age	2,750	12.4%	11,333	16.1%
Candidate temporarily medically unsuitable	1,954	8.8%	855	1.2%
Unacceptable organ specific test results, specify	1,871	8.4%	6,010	8.5%
Donor medical history, specify	1,787	8.0%	5,999	8.5%
Candidate transplanted or pending transplant	1,722	7.7%	557	0.8%
Other, specify	1,714	7.7%	5,316	7.5%
Epidemic/Pandemic - Donor	1,461	6.6%	13,026	18.5%
DCD donor neurological function/not expected to arrest	939	4.2%	4,188	5.9%
Actual or projected cold ischemic time too long	796	3.6%	8,032	11.4%
Candidate requires multiple organ transplant	773	3.5%	396	0.6%
Biopsy results unacceptable	401	1.8%	3,493	5.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	298	1.3%	647	0.9%
Organ anatomical damage or defect	286	1.3%	1,278	1.8%
Candidate unavailable	267	1.2%	406	0.6%
Epidemic/Pandemic - Candidate	157	0.7%	234	0.3%
Organ specific test results not available, specify	144	0.6%	587	0.8%
Resource time constraint (OPO, TXC, donor hospital, etc.)	142	0.6%	392	0.6%
Candidate's condition improved, transplant not needed	115	0.5%	35	0.0%
PHS risk criteria or social history	113	0.5%	122	0.2%
Prolonged downtime/CPR	111	0.5%	80	0.1%
Organ preservation: Unacceptable method or findings	108	0.5%	476	0.7%
Donor instability/high vasopressor usage	105	0.5%	236	0.3%
Malignancy or suspected malignancy	91	0.4%	1,771	2.5%
Candidate refused	84	0.4%	53	0.1%
Biopsy not available	80	0.4%	153	0.2%
Donor infection or positive culture	68	0.3%	500	0.7%
Warm ischemic time too long	64	0.3%	156	0.2%
Donor family time constraint	47	0.2%	151	0.2%
Candidate temporarily ineligible due to insurance or financial issue	37	0.2%	7	0.0%
Transplant team or transplant facility availability	34	0.2%	106	0.2%
Exceeded policy defined response time	24	0.1%	178	0.3%
Positive virtual crossmatch/unacceptable antigens	22	0.1%	6	0.0%
Disaster Emergency Management Consideration	19	0.1%	13	0.0%
Number of HLA mismatches unacceptable	17	0.1%	4	0.0%
Recovery team availability	13	0.1%	24	0.0%
Transportation availability	11	0.0%	33	0.0%
Positive physical crossmatch	2	0.0%	0	0.0%
No donor cells/specimen for crossmatching, or no time for crossmatch	1	0.0%	6	0.0%

Table 17: Count and percent of reasons for refusal of heart and heart-lung match organ offers post implementation stratified by match acceptance number, for heart and heart-lung matches submitted December 02, 2021 - February 28, 2022. Group is defined by the 90th percentile of sequence numbers for acceptances on heart and heart-lung matches during 2020.

Description	Acceptor Sequence Number: [1, 41)		Acceptor Sequence Number: [41, 1396]	
	N	%	N	%
Organ size, specify	1,953	31.3%	1,724	21.3%
Unacceptable organ specific test results, specify	980	15.7%	1,704	21.0%
Candidate transplanted or pending transplant	416	6.7%	189	2.3%
Epidemic/Pandemic - Donor	381	6.1%	715	8.8%
Candidate temporarily medically unsuitable	305	4.9%	189	2.3%
Actual or projected cold ischemic time too long	278	4.5%	379	4.7%
Donor medical history, specify	255	4.1%	807	10.0%
Candidate requires multiple organ transplant	234	3.8%	97	1.2%
Donor age	227	3.6%	668	8.2%
Other, specify	206	3.3%	244	3.0%
Organ anatomical damage or defect	176	2.8%	519	6.4%
Prolonged downtime/CPR	144	2.3%	303	3.7%
Positive virtual crossmatch/unacceptable antigens	134	2.1%	51	0.6%
DCD donor neurological function/not expected to arrest	83	1.3%	70	0.9%
Organ specific test results not available, specify	57	0.9%	80	1.0%
PHS risk criteria or social history	55	0.9%	38	0.5%
No candidate serum for crossmatching	39	0.6%	26	0.3%
Donor instability/high vasopressor usage	35	0.6%	50	0.6%
Donor infection or positive culture	29	0.5%	53	0.7%
Positive physical crossmatch	27	0.4%	3	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	26	0.4%	36	0.4%
Epidemic/Pandemic - Candidate	24	0.4%	36	0.4%
Resource time constraint (OPO, TXC, donor hospital, etc.)	23	0.4%	14	0.2%
Malignancy or suspected malignancy	22	0.4%	0	0.0%
Number of HLA mismatches unacceptable	22	0.4%	14	0.2%
Warm ischemic time too long	21	0.3%	4	0.0%
Organ preservation: Unacceptable method or findings	20	0.3%	40	0.5%
Candidate temporarily ineligible due to insurance or financial issue	15	0.2%	18	0.2%
Candidate's condition improved, transplant not needed	12	0.2%	11	0.1%
No donor cells/specimen for crossmatching, or no time for crossmatch	12	0.2%	12	0.1%
Donor family time constraint	5	0.1%	2	0.0%
Transplant team or transplant facility availability	5	0.1%	0	0.0%
Candidate refused	4	0.1%	2	0.0%
Candidate unavailable	4	0.1%	4	0.0%
Exceeded policy defined response time	2	0.0%	1	0.0%
Recovery team availability	2	0.0%	0	0.0%
Transportation availability	0	0.0%	4	0.0%
Biopsy results unacceptable	0	0.0%	1	0.0%

Table 18: Count and percent of reasons for refusal of lung match organ offers post implementation stratified by match acceptance number, for lung matches submitted December 02, 2021 - February 28, 2022. Group is defined by the 90th percentile of sequence numbers for acceptances on lung matches during 2020.

Description	Acceptor Sequence Number: [1, 53]		Acceptor Sequence Number: [53, 514]	
	N	%	N	%
Unacceptable organ specific test results, specify	1,496	31.7%	1,932	42.1%
Organ size, specify	1,176	24.9%	468	10.2%
Donor medical history, specify	336	7.1%	480	10.5%
DCD donor neurological function/not expected to arrest	262	5.6%	161	3.5%
Other, specify	257	5.5%	406	8.9%
Organ anatomical damage or defect	178	3.8%	202	4.4%
Candidate requires multiple organ transplant	160	3.4%	50	1.1%
Candidate requires different laterality	133	2.8%	157	3.4%
Donor age	119	2.5%	218	4.8%
Organ specific test results not available, specify	110	2.3%	33	0.7%
Candidate transplanted or pending transplant	97	2.1%	41	0.9%
Positive virtual crossmatch/unacceptable antigens	85	1.8%	16	0.3%
Actual or projected cold ischemic time too long	64	1.4%	71	1.5%
Epidemic/Pandemic - Donor	52	1.1%	185	4.0%
Candidate temporarily medically unsuitable	42	0.9%	15	0.3%
Number of HLA mismatches unacceptable	18	0.4%	4	0.1%
Donor infection or positive culture	17	0.4%	14	0.3%
Resource time constraint (OPO, TXC, donor hospital, etc.)	14	0.3%	88	1.9%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	13	0.3%	0	0.0%
Warm ischemic time too long	12	0.3%	0	0.0%
Epidemic/Pandemic - Candidate	10	0.2%	0	0.0%
Organ preservation: Unacceptable method or findings	10	0.2%	19	0.4%
Positive physical crossmatch	10	0.2%	1	0.0%
PHS risk criteria or social history	9	0.2%	9	0.2%
Donor family time constraint	6	0.1%	13	0.3%
Biopsy not available	4	0.1%	0	0.0%
Candidate unavailable	4	0.1%	0	0.0%
Malignancy or suspected malignancy	4	0.1%	0	0.0%
Donor instability/high vasopressor usage	3	0.1%	0	0.0%
No candidate serum for crossmatching	3	0.1%	2	0.0%
Candidate temporarily ineligible due to insurance or financial issue	2	0.0%	0	0.0%
Exceeded policy defined response time	2	0.0%	0	0.0%
Prolonged downtime/CPR	2	0.0%	0	0.0%
Candidate refused	1	0.0%	1	0.0%
Candidate's condition improved, transplant not needed	1	0.0%	1	0.0%
Recovery team availability	1	0.0%	0	0.0%
Transplant team or transplant facility availability	1	0.0%	0	0.0%
Transportation availability	1	0.0%	0	0.0%

Table 19: Count and percent of reasons for refusal of kidney-pancreas match organ offers post implementation stratified by match acceptance number, for kidney-pancreas matches submitted December 02, 2021 - February 28, 2022. Group is defined by the 90th percentile of sequence numbers for acceptances on kidney-pancreas matches during 2020.

Description	Acceptor Sequence Number: [1, 29]		Acceptor Sequence Number: [29, 286]	
	N	%	N	%
Unacceptable organ specific test results, specify	177	16.1%	285	17.6%
Candidate requires multiple organ transplant	159	14.5%	190	11.7%
Donor medical history, specify	101	9.2%	170	10.5%
Organ size, specify	84	7.6%	33	2.0%
Epidemic/Pandemic - Donor	72	6.6%	180	11.1%
Candidate temporarily medically unsuitable	71	6.5%	31	1.9%
Actual or projected cold ischemic time too long	70	6.4%	197	12.2%
Other, specify	67	6.1%	95	5.9%
Donor age	66	6.0%	186	11.5%
Transplant team or transplant facility availability	27	2.5%	28	1.7%
PHS risk criteria or social history	21	1.9%	23	1.4%
Positive virtual crossmatch/unacceptable antigens	21	1.9%	9	0.6%
Epidemic/Pandemic - Candidate	20	1.8%	17	1.0%
Organ anatomical damage or defect	15	1.4%	24	1.5%
Organ preservation: Unacceptable method or findings	14	1.3%	20	1.2%
Number of HLA mismatches unacceptable	13	1.2%	4	0.2%
Prolonged downtime/CPR	12	1.1%	24	1.5%
Candidate refused	11	1.0%	7	0.4%
Candidate transplanted or pending transplant	11	1.0%	7	0.4%
DCD donor neurological function/not expected to arrest	11	1.0%	0	0.0%
Recovery team availability	9	0.8%	11	0.7%
Candidate unavailable	6	0.5%	5	0.3%
Donor infection or positive culture	5	0.5%	10	0.6%
Donor instability/high vasopressor usage	5	0.5%	22	1.4%
Organ specific test results not available, specify	5	0.5%	17	1.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	5	0.5%	3	0.2%
Positive physical crossmatch	5	0.5%	2	0.1%
Resource time constraint (OPO, TXC, donor hospital, etc.)	5	0.5%	11	0.7%
Candidate temporarily ineligible due to insurance or financial issue	3	0.3%	2	0.1%
Warm ischemic time too long	3	0.3%	0	0.0%
Candidate's condition improved, transplant not needed	1	0.1%	1	0.1%
Exceeded policy defined response time	1	0.1%	0	0.0%
No candidate serum for crossmatching	1	0.1%	0	0.0%
No donor cells/specimen for crossmatching, or no time for crossmatch	1	0.1%	1	0.1%
Transportation availability	1	0.1%	0	0.0%
Donor family time constraint	0	0.0%	5	0.3%

Table 20: Count and percent of reasons for refusal of intestine match organ offers post implementation stratified by match acceptance number, for intestine matches submitted December 02, 2021 - February 28, 2022. Group is defined by the 90th percentile of sequence numbers for acceptances on intestine matches during 2020.

Description	Acceptor Sequence Number: [1, 34)		Acceptor Sequence Number: [34, 59]	
	N	%	N	%
Candidate requires multiple organ transplant	147	70.3%	67	51.5%
Organ size, specify	18	8.6%	0	0.0%
Number of HLA mismatches unacceptable	12	5.7%	3	2.3%
Prolonged downtime/CPR	8	3.8%	1	0.8%
Other, specify	6	2.9%	19	14.6%
Candidate temporarily medically unsuitable	5	2.4%	5	3.8%
Unacceptable organ specific test results, specify	5	2.4%	4	3.1%
Donor infection or positive culture	3	1.4%	0	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	2	1.0%	0	0.0%
Actual or projected cold ischemic time too long	1	0.5%	16	12.3%
Donor medical history, specify	1	0.5%	0	0.0%
Epidemic/Pandemic - Donor	1	0.5%	0	0.0%
Warm ischemic time too long	0	0.0%	8	6.2%
Donor age	0	0.0%	6	4.6%
Positive virtual crossmatch/unacceptable antigens	0	0.0%	1	0.8%

Table 21: Count and percent of reasons for refusal of range refused kidney match organ offers post implementation stratified by program size, for kidney matches submitted December 02, 2021 - February 28, 2022. Program size is defined by volume of deceased donor kidney transplants during 2020.

Description	Large		Medium		Small		No Transplants in 2020	
	N	%	N	%	N	%	N	%
Actual or projected cold ischemic time too long	2,731	22.1%	2,104	21.3%	931	20.5%	34	22.2%
Epidemic/Pandemic - Donor	1,695	13.7%	1,755	17.7%	807	17.7%	47	30.7%
Donor medical history, specify	1,135	9.2%	813	8.2%	377	8.3%	13	8.5%
Unacceptable organ specific test results, specify	1,059	8.6%	822	8.3%	402	8.8%	14	9.2%
Organ anatomical damage or defect	1,020	8.3%	789	8.0%	314	6.9%	11	7.2%
Biopsy results unacceptable	955	7.7%	643	6.5%	255	5.6%	9	5.9%
Other, specify	905	7.3%	956	9.7%	475	10.4%	2	1.3%
Donor age	884	7.2%	677	6.8%	365	8.0%	9	5.9%
Organ preservation: Unacceptable method or findings	402	3.3%	284	2.9%	147	3.2%	3	2.0%
Warm ischemic time too long	214	1.7%	212	2.1%	89	2.0%	0	0.0%
No candidate serum for crossmatching	208	1.7%	144	1.5%	46	1.0%	0	0.0%
Organ size, specify	197	1.6%	98	1.0%	67	1.5%	0	0.0%
Candidate temporarily medically unsuitable	141	1.1%	43	0.4%	17	0.4%	0	0.0%
Biopsy not available	101	0.8%	41	0.4%	24	0.5%	3	2.0%
Donor infection or positive culture	91	0.7%	88	0.9%	34	0.7%	3	2.0%
Candidate requires multiple organ transplant	67	0.5%	7	0.1%	11	0.2%	0	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	67	0.5%	71	0.7%	24	0.5%	4	2.6%
DCD donor neurological function/not expected to arrest	55	0.4%	34	0.3%	22	0.5%	0	0.0%
Epidemic/Pandemic - Candidate	53	0.4%	47	0.5%	11	0.2%	0	0.0%
Organ specific test results not available, specify	53	0.4%	47	0.5%	25	0.5%	1	0.7%
Malignancy or suspected malignancy	43	0.3%	36	0.4%	15	0.3%	0	0.0%
Positive physical crossmatch	38	0.3%	26	0.3%	9	0.2%	0	0.0%
PHS risk criteria or social history	37	0.3%	24	0.2%	34	0.7%	0	0.0%
Candidate refused	33	0.3%	12	0.1%	4	0.1%	0	0.0%
Transplant team or transplant facility availability	26	0.2%	10	0.1%	12	0.3%	0	0.0%
Positive virtual crossmatch/unacceptable antigens	25	0.2%	10	0.1%	8	0.2%	0	0.0%
Candidate unavailable	22	0.2%	15	0.2%	0	0.0%	0	0.0%
Donor instability/high vasopressor usage	21	0.2%	10	0.1%	3	0.1%	0	0.0%
Candidate transplanted or pending transplant	15	0.1%	16	0.2%	1	0.0%	0	0.0%
Exceeded policy defined response time	14	0.1%	13	0.1%	11	0.2%	0	0.0%
Resource time constraint (OPO, TXC, donor hospital, etc.)	11	0.1%	11	0.1%	0	0.0%	0	0.0%
No donor cells/specimen for crossmatching, or no time for crossmatch	8	0.1%	2	0.0%	3	0.1%	0	0.0%
Disaster Emergency Management Consideration	7	0.1%	14	0.1%	0	0.0%	0	0.0%
Number of HLA mismatches unacceptable	5	0.0%	2	0.0%	2	0.0%	0	0.0%
Transportation availability	5	0.0%	5	0.1%	0	0.0%	0	0.0%
Candidate temporarily ineligible due to insurance or financial issue	4	0.0%	1	0.0%	0	0.0%	0	0.0%
Prolonged downtime/CPR	4	0.0%	19	0.2%	7	0.2%	0	0.0%
Candidate requires different laterality	2	0.0%	0	0.0%	0	0.0%	0	0.0%
Candidate's condition improved, transplant not needed	1	0.0%	0	0.0%	0	0.0%	0	0.0%
Donor family time constraint	1	0.0%	0	0.0%	0	0.0%	0	0.0%

Table 22: Count and percent of reasons for refusal of range refused liver match organ offers post implementation stratified by program size, for liver matches submitted December 02, 2021 - February 28, 2022. Program size is defined by volume of deceased donor liver transplants during 2020.

Description	Large		Medium		Small	
	N	%	N	%	N	%
Donor age	631	14.3%	531	15.0%	249	13.6%
Epidemic/Pandemic - Donor	494	11.2%	617	17.5%	307	16.8%
Actual or projected cold ischemic time too long	470	10.6%	368	10.4%	134	7.3%
Donor medical history, specify	463	10.5%	344	9.7%	211	11.5%
Other, specify	455	10.3%	288	8.2%	135	7.4%
Unacceptable organ specific test results, specify	396	9.0%	394	11.2%	230	12.6%
DCD donor neurological function/not expected to arrest	336	7.6%	177	5.0%	46	2.5%
Organ size, specify	280	6.3%	271	7.7%	197	10.8%
Biopsy results unacceptable	188	4.3%	131	3.7%	67	3.7%
Organ anatomical damage or defect	108	2.4%	71	2.0%	51	2.8%
Candidate temporarily medically unsuitable	86	1.9%	32	0.9%	4	0.2%
Candidate transplanted or pending transplant	58	1.3%	21	0.6%	9	0.5%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	51	1.2%	38	1.1%	19	1.0%
Resource time constraint (OPO, TXC, donor hospital, etc.)	49	1.1%	30	0.9%	22	1.2%
Candidate requires multiple organ transplant	40	0.9%	10	0.3%	3	0.2%
Candidate unavailable	37	0.8%	8	0.2%	5	0.3%
Malignancy or suspected malignancy	32	0.7%	31	0.9%	14	0.8%
Organ specific test results not available, specify	31	0.7%	22	0.6%	13	0.7%
Transplant team or transplant facility availability	29	0.7%	5	0.1%	1	0.1%
Donor infection or positive culture	27	0.6%	23	0.7%	9	0.5%
Epidemic/Pandemic - Candidate	23	0.5%	8	0.2%	4	0.2%
Exceeded policy defined response time	18	0.4%	8	0.2%	9	0.5%
Organ preservation: Unacceptable method or findings	18	0.4%	10	0.3%	25	1.4%
PHS risk criteria or social history	16	0.4%	15	0.4%	15	0.8%
Biopsy not available	15	0.3%	13	0.4%	2	0.1%
Donor family time constraint	14	0.3%	3	0.1%	5	0.3%
Donor instability/high vasopressor usage	13	0.3%	17	0.5%	7	0.4%
Warm ischemic time too long	13	0.3%	15	0.4%	4	0.2%
Candidate refused	9	0.2%	6	0.2%	1	0.1%
Transportation availability	6	0.1%	2	0.1%	3	0.2%
Candidate temporarily ineligible due to insurance or financial issue	3	0.1%	0	0.0%	0	0.0%
Prolonged downtime/CPR	3	0.1%	15	0.4%	21	1.1%
Recovery team availability	3	0.1%	2	0.1%	0	0.0%
Candidate's condition improved, transplant not needed	2	0.0%	1	0.0%	4	0.2%
No donor cells/specimen for crossmatching, or no time for crossmatch	1	0.0%	0	0.0%	0	0.0%
Number of HLA mismatches unacceptable	1	0.0%	0	0.0%	0	0.0%
Positive physical crossmatch	0	0.0%	1	0.0%	0	0.0%
Positive virtual crossmatch/unacceptable antigens	0	0.0%	1	0.0%	0	0.0%
Disaster Emergency Management Consideration	0	0.0%	0	0.0%	5	0.3%

Table 23: Count and percent of reasons for refusal of range refused heart and heart-lung match organ offers post implementation stratified by program size, for heart and heart-lung matches submitted December 02, 2021 - February 28, 2022. Program size is defined by volume of deceased donor heart and heart-lung transplants during 2020.

Description	Large		Medium		Small	
	N	%	N	%	N	%
Unacceptable organ specific test results, specify	419	26.5%	238	22.7%	117	30.2%
Organ size, specify	238	15.1%	206	19.6%	48	12.4%
Epidemic/Pandemic - Donor	195	12.3%	139	13.3%	59	15.2%
Actual or projected cold ischemic time too long	128	8.1%	101	9.6%	25	6.4%
Donor medical history, specify	117	7.4%	68	6.5%	29	7.5%
Donor age	109	6.9%	66	6.3%	14	3.6%
Organ anatomical damage or defect	72	4.6%	78	7.4%	11	2.8%
Prolonged downtime/CPR	71	4.5%	24	2.3%	19	4.9%
Other, specify	57	3.6%	46	4.4%	15	3.9%
DCD donor neurological function/not expected to arrest	37	2.3%	5	0.5%	0	0.0%
Organ specific test results not available, specify	23	1.5%	11	1.0%	7	1.8%
Donor infection or positive culture	18	1.1%	8	0.8%	5	1.3%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	17	1.1%	2	0.2%	3	0.8%
Resource time constraint (OPO, TXC, donor hospital, etc.)	13	0.8%	5	0.5%	4	1.0%
Organ preservation: Unacceptable method or findings	12	0.8%	6	0.6%	1	0.3%
Candidate temporarily medically unsuitable	7	0.4%	2	0.2%	2	0.5%
Malignancy or suspected malignancy	6	0.4%	0	0.0%	1	0.3%
PHS risk criteria or social history	6	0.4%	15	1.4%	15	3.9%
Candidate requires multiple organ transplant	5	0.3%	1	0.1%	0	0.0%
Donor instability/high vasopressor usage	5	0.3%	11	1.0%	6	1.5%
Warm ischemic time too long	5	0.3%	5	0.5%	1	0.3%
Candidate transplanted or pending transplant	3	0.2%	2	0.2%	1	0.3%
Donor family time constraint	3	0.2%	1	0.1%	0	0.0%
Epidemic/Pandemic - Candidate	3	0.2%	1	0.1%	4	1.0%
Transportation availability	3	0.2%	0	0.0%	0	0.0%
Candidate refused	2	0.1%	0	0.0%	0	0.0%
Positive virtual crossmatch/unacceptable antigens	2	0.1%	3	0.3%	0	0.0%
Exceeded policy defined response time	1	0.1%	2	0.2%	0	0.0%
No donor cells/specimen for crossmatching, or no time for crossmatch	1	0.1%	0	0.0%	0	0.0%
Transplant team or transplant facility availability	1	0.1%	1	0.1%	1	0.3%
Recovery team availability	0	0.0%	2	0.2%	0	0.0%

Table 24: Count and percent of reasons for refusal of range refused lung match organ offers post implementation stratified by program size, for lung matches submitted December 02, 2021 - February 28, 2022. Program size is defined by volume of deceased donor lung transplants during 2020.

Description	Large		Medium		Small		No Transplants in 2020	
	N	%	N	%	N	%	N	%
Unacceptable organ specific test results, specify	291	41.4%	262	45.1%	131	46.1%	3	37.5%
Organ size, specify	83	11.8%	50	8.6%	42	14.8%	0	0.0%
Donor medical history, specify	75	10.7%	66	11.4%	21	7.4%	1	12.5%
Organ anatomical damage or defect	55	7.8%	12	2.1%	19	6.7%	0	0.0%
DCD donor neurological function/not expected to arrest	45	6.4%	32	5.5%	4	1.4%	0	0.0%
Donor age	29	4.1%	26	4.5%	14	4.9%	0	0.0%
Other, specify	28	4.0%	68	11.7%	9	3.2%	4	50.0%
Epidemic/Pandemic - Donor	25	3.6%	15	2.6%	4	1.4%	0	0.0%
Organ specific test results not available, specify	20	2.8%	5	0.9%	4	1.4%	0	0.0%
Candidate requires different laterality	16	2.3%	14	2.4%	4	1.4%	0	0.0%
Actual or projected cold ischemic time too long	7	1.0%	10	1.7%	13	4.6%	0	0.0%
Resource time constraint (OPO, TXC, donor hospital, etc.)	5	0.7%	3	0.5%	1	0.4%	0	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	3	0.4%	0	0.0%	0	0.0%	0	0.0%
Positive physical crossmatch	3	0.4%	2	0.3%	0	0.0%	0	0.0%
Candidate transplanted or pending transplant	2	0.3%	2	0.3%	0	0.0%	0	0.0%
Donor family time constraint	2	0.3%	2	0.3%	1	0.4%	0	0.0%
Donor infection or positive culture	2	0.3%	3	0.5%	1	0.4%	0	0.0%
PHS risk criteria or social history	2	0.3%	1	0.2%	0	0.0%	0	0.0%
Warm ischemic time too long	2	0.3%	0	0.0%	0	0.0%	0	0.0%
Candidate requires multiple organ transplant	1	0.1%	2	0.3%	7	2.5%	0	0.0%
Candidate temporarily medically unsuitable	1	0.1%	1	0.2%	0	0.0%	0	0.0%
Donor instability/high vasopressor usage	1	0.1%	0	0.0%	0	0.0%	0	0.0%
Epidemic/Pandemic - Candidate	1	0.1%	0	0.0%	0	0.0%	0	0.0%
No candidate serum for crossmatching	1	0.1%	0	0.0%	0	0.0%	0	0.0%
Number of HLA mismatches unacceptable	1	0.1%	0	0.0%	0	0.0%	0	0.0%
Organ preservation: Unacceptable method or findings	1	0.1%	0	0.0%	4	1.4%	0	0.0%
Positive virtual crossmatch/unacceptable antigens	1	0.1%	1	0.2%	1	0.4%	0	0.0%
Biopsy not available	0	0.0%	2	0.3%	0	0.0%	0	0.0%
Malignancy or suspected malignancy	0	0.0%	1	0.2%	0	0.0%	0	0.0%
Transplant team or transplant facility availability	0	0.0%	1	0.2%	0	0.0%	0	0.0%
Candidate refused	0	0.0%	0	0.0%	1	0.4%	0	0.0%
Exceeded policy defined response time	0	0.0%	0	0.0%	1	0.4%	0	0.0%
Prolonged downtime/CPR	0	0.0%	0	0.0%	1	0.4%	0	0.0%
Recovery team availability	0	0.0%	0	0.0%	1	0.4%	0	0.0%

Table 25: Count and percent of reasons for refusal of range refused kidney-pancreas match organ offers post implementation stratified by program size, for kidney-pancreas matches submitted December 02, 2021 - February 28, 2022. Program size is defined by volume of deceased donor kidney-pancreas transplants during 2020.

Description	Large		Medium		Small		No Transplants in 2020	
	N	%	N	%	N	%	N	%
Unacceptable organ specific test results, specify	59	21.7%	35	14.3%	33	22.0%	6	27.3%
Actual or projected cold ischemic time too long	36	13.2%	35	14.3%	30	20.0%	0	0.0%
Donor medical history, specify	35	12.9%	29	11.8%	26	17.3%	2	9.1%
Epidemic/Pandemic - Donor	25	9.2%	28	11.4%	18	12.0%	2	9.1%
Donor age	23	8.5%	36	14.7%	10	6.7%	4	18.2%
Organ size, specify	21	7.7%	8	3.3%	2	1.3%	1	4.5%
Other, specify	17	6.2%	28	11.4%	9	6.0%	1	4.5%
Transplant team or transplant facility availability	8	2.9%	0	0.0%	2	1.3%	0	0.0%
Candidate temporarily medically unsuitable	6	2.2%	7	2.9%	1	0.7%	0	0.0%
Organ preservation: Unacceptable method or findings	6	2.2%	3	1.2%	1	0.7%	0	0.0%
PHS risk criteria or social history	6	2.2%	6	2.4%	2	1.3%	3	13.6%
Organ anatomical damage or defect	5	1.8%	4	1.6%	3	2.0%	0	0.0%
Donor instability/high vasopressor usage	4	1.5%	3	1.2%	0	0.0%	2	9.1%
Prolonged downtime/CPR	4	1.5%	5	2.0%	2	1.3%	0	0.0%
Candidate transplanted or pending transplant	3	1.1%	0	0.0%	1	0.7%	0	0.0%
Donor infection or positive culture	2	0.7%	0	0.0%	1	0.7%	0	0.0%
Epidemic/Pandemic - Candidate	2	0.7%	3	1.2%	1	0.7%	0	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	2	0.7%	1	0.4%	1	0.7%	0	0.0%
Recovery team availability	2	0.7%	2	0.8%	2	1.3%	0	0.0%
Candidate refused	1	0.4%	0	0.0%	0	0.0%	0	0.0%
Candidate requires multiple organ transplant	1	0.4%	0	0.0%	1	0.7%	1	4.5%
Candidate unavailable	1	0.4%	0	0.0%	0	0.0%	0	0.0%
Donor family time constraint	1	0.4%	0	0.0%	0	0.0%	0	0.0%
Organ specific test results not available, specify	1	0.4%	4	1.6%	1	0.7%	0	0.0%
Resource time constraint (OPO, TXC, donor hospital, etc.)	1	0.4%	3	1.2%	0	0.0%	0	0.0%
DCD donor neurological function/not expected to arrest	0	0.0%	2	0.8%	1	0.7%	0	0.0%
Number of HLA mismatches unacceptable	0	0.0%	2	0.8%	0	0.0%	0	0.0%
Warm ischemic time too long	0	0.0%	1	0.4%	1	0.7%	0	0.0%
Positive virtual crossmatch/unacceptable antigens	0	0.0%	0	0.0%	1	0.7%	0	0.0%

Table 26: Count and percent of reasons for refusal of range refused intestine match organ offers post implementation stratified by program size, for intestine matches submitted December 02, 2021 - February 28, 2022. Program size is defined by volume of deceased donor intestine transplants during 2020.

Description	Large		Medium		Small		No Transplants in 2020	
	N	%	N	%	N	%	N	%
Number of HLA mismatches unacceptable	3	33.3%	0	0.0%	0	0.0%	0	0.0%
Actual or projected cold ischemic time too long	1	11.1%	0	0.0%	0	0.0%	0	0.0%
Candidate requires multiple organ transplant	1	11.1%	1	12.5%	1	25.0%	0	0.0%
Donor infection or positive culture	1	11.1%	0	0.0%	0	0.0%	0	0.0%
Organ size, specify	1	11.1%	1	12.5%	0	0.0%	0	0.0%
Unacceptable organ specific test results, specify	1	11.1%	0	0.0%	1	25.0%	1	100.0%
Warm ischemic time too long	1	11.1%	0	0.0%	0	0.0%	0	0.0%
Other, specify	0	0.0%	3	37.5%	1	25.0%	0	0.0%
Donor age	0	0.0%	1	12.5%	0	0.0%	0	0.0%
Epidemic/Pandemic - Donor	0	0.0%	1	12.5%	0	0.0%	0	0.0%
Prolonged downtime/CPR	0	0.0%	1	12.5%	0	0.0%	0	0.0%
Positive virtual crossmatch/unacceptable antigens	0	0.0%	0	0.0%	1	25.0%	0	0.0%

Table 27: Count and percent of reasons for refusal of range refused kidney match organ offers post implementation stratified by match acceptance number, for kidney matches submitted December 02, 2021 - February 28, 2022. Group is defined by the 90th percentile of sequence numbers for acceptances on kidney matches during 2020.

Description	Acceptor Sequence Number: [1, 667]		Acceptor Sequence Number: [667, 31425]	
	N	%	N	%
Epidemic/Pandemic - Donor	1,814	15.5%	2,490	16.3%
Actual or projected cold ischemic time too long	1,515	12.9%	4,285	28.1%
Donor medical history, specify	1,228	10.5%	1,110	7.3%
Other, specify	1,125	9.6%	1,213	8.0%
Unacceptable organ specific test results, specify	1,096	9.3%	1,201	7.9%
Organ anatomical damage or defect	1,000	8.5%	1,134	7.4%
Donor age	938	8.0%	997	6.5%
Biopsy results unacceptable	720	6.1%	1,142	7.5%
Organ preservation: Unacceptable method or findings	325	2.8%	511	3.4%
No candidate serum for crossmatching	310	2.6%	88	0.6%
Warm ischemic time too long	286	2.4%	229	1.5%
Organ size, specify	237	2.0%	125	0.8%
Candidate temporarily medically unsuitable	153	1.3%	48	0.3%
Biopsy not available	106	0.9%	63	0.4%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	95	0.8%	71	0.5%
PHS risk criteria or social history	77	0.7%	18	0.1%
Donor infection or positive culture	72	0.6%	144	0.9%
Epidemic/Pandemic - Candidate	70	0.6%	41	0.3%
Candidate requires multiple organ transplant	69	0.6%	16	0.1%
DCD donor neurological function/not expected to arrest	67	0.6%	44	0.3%
Organ specific test results not available, specify	64	0.5%	62	0.4%
Positive physical crossmatch	55	0.5%	18	0.1%
Malignancy or suspected malignancy	48	0.4%	46	0.3%
Candidate refused	39	0.3%	10	0.1%
Transplant team or transplant facility availability	31	0.3%	17	0.1%
Candidate unavailable	29	0.2%	8	0.1%
Positive virtual crossmatch/unacceptable antigens	27	0.2%	16	0.1%
Candidate transplanted or pending transplant	23	0.2%	9	0.1%
Donor instability/high vasopressor usage	23	0.2%	11	0.1%
Prolonged downtime/CPR	22	0.2%	8	0.1%
Exceeded policy defined response time	21	0.2%	17	0.1%
Disaster Emergency Management Consideration	12	0.1%	9	0.1%
Resource time constraint (OPO, TXC, donor hospital, etc.)	12	0.1%	10	0.1%
Number of HLA mismatches unacceptable	7	0.1%	2	0.0%
No donor cells/specimen for crossmatching, or no time for crossmatch	6	0.1%	7	0.0%
Candidate requires different laterality	2	0.0%	0	0.0%
Candidate temporarily ineligible due to insurance or financial issue	2	0.0%	3	0.0%
Transportation availability	2	0.0%	8	0.1%
Candidate's condition improved, transplant not needed	1	0.0%	0	0.0%
Donor family time constraint	0	0.0%	1	0.0%

Table 28: Count and percent of reasons for refusal of range refused liver match organ offers post implementation stratified by match acceptance number, for liver matches submitted December 02, 2021 - February 28, 2022. Group is defined by the 90th percentile of sequence numbers for acceptances on liver matches during 2020.

Description	Acceptor Sequence Number: [1, 78)		Acceptor Sequence Number: [78, 7555]	
	N	%	N	%
Donor age	512	12.5%	899	15.8%
Epidemic/Pandemic - Donor	506	12.4%	912	16.0%
Unacceptable organ specific test results, specify	492	12.1%	528	9.3%
Donor medical history, specify	490	12.0%	528	9.3%
Organ size, specify	425	10.4%	323	5.7%
Other, specify	362	8.9%	516	9.1%
Actual or projected cold ischemic time too long	256	6.3%	716	12.6%
DCD donor neurological function/not expected to arrest	185	4.5%	374	6.6%
Biopsy results unacceptable	106	2.6%	280	4.9%
Organ anatomical damage or defect	106	2.6%	124	2.2%
Candidate temporarily medically unsuitable	96	2.4%	26	0.5%
Candidate transplanted or pending transplant	72	1.8%	16	0.3%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	62	1.5%	46	0.8%
Resource time constraint (OPO, TXC, donor hospital, etc.)	42	1.0%	59	1.0%
Candidate unavailable	32	0.8%	18	0.3%
PHS risk criteria or social history	32	0.8%	14	0.2%
Candidate requires multiple organ transplant	28	0.7%	25	0.4%
Organ specific test results not available, specify	27	0.7%	39	0.7%
Donor instability/high vasopressor usage	26	0.6%	11	0.2%
Prolonged downtime/CPR	26	0.6%	13	0.2%
Malignancy or suspected malignancy	25	0.6%	52	0.9%
Organ preservation: Unacceptable method or findings	24	0.6%	29	0.5%
Donor infection or positive culture	23	0.6%	36	0.6%
Transplant team or transplant facility availability	20	0.5%	15	0.3%
Biopsy not available	19	0.5%	11	0.2%
Exceeded policy defined response time	19	0.5%	16	0.3%
Epidemic/Pandemic - Candidate	14	0.3%	21	0.4%
Warm ischemic time too long	14	0.3%	18	0.3%
Candidate refused	9	0.2%	7	0.1%
Donor family time constraint	8	0.2%	14	0.2%
Transportation availability	7	0.2%	4	0.1%
Candidate's condition improved, transplant not needed	6	0.1%	1	0.0%
Recovery team availability	4	0.1%	1	0.0%
Candidate temporarily ineligible due to insurance or financial issue	3	0.1%	0	0.0%
Disaster Emergency Management Consideration	3	0.1%	2	0.0%
Positive physical crossmatch	1	0.0%	0	0.0%
No donor cells/specimen for crossmatching, or no time for crossmatch	0	0.0%	1	0.0%
Number of HLA mismatches unacceptable	0	0.0%	1	0.0%
Positive virtual crossmatch/unacceptable antigens	0	0.0%	1	0.0%

Table 29: Count and percent of reasons for refusal of range refused heart and heart-lung match organ offers post implementation stratified by match acceptance number, for heart and heart-lung matches submitted December 02, 2021 - February 28, 2022. Group is defined by the 90th percentile of sequence numbers for acceptances on heart and heart-lung matches during 2020.

Description	Acceptor Sequence Number: [1, 41]		Acceptor Sequence Number: [41, 1396]	
	N	%	N	%
Unacceptable organ specific test results, specify	428	26.5%	346	24.7%
Organ size, specify	262	16.2%	230	16.4%
Epidemic/Pandemic - Donor	203	12.6%	190	13.6%
Actual or projected cold ischemic time too long	122	7.5%	132	9.4%
Donor medical history, specify	108	6.7%	106	7.6%
Organ anatomical damage or defect	81	5.0%	80	5.7%
Donor age	79	4.9%	110	7.9%
Prolonged downtime/CPR	70	4.3%	44	3.1%
Other, specify	67	4.1%	51	3.6%
DCD donor neurological function/not expected to arrest	36	2.2%	6	0.4%
Organ specific test results not available, specify	25	1.5%	16	1.1%
PHS risk criteria or social history	22	1.4%	14	1.0%
Donor infection or positive culture	17	1.1%	14	1.0%
Resource time constraint (OPO, TXC, donor hospital, etc.)	15	0.9%	7	0.5%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	12	0.7%	10	0.7%
Donor instability/high vasopressor usage	11	0.7%	11	0.8%
Organ preservation: Unacceptable method or findings	9	0.6%	10	0.7%
Candidate temporarily medically unsuitable	8	0.5%	3	0.2%
Warm ischemic time too long	8	0.5%	3	0.2%
Malignancy or suspected malignancy	7	0.4%	0	0.0%
Candidate requires multiple organ transplant	4	0.2%	2	0.1%
Candidate transplanted or pending transplant	4	0.2%	2	0.1%
Donor family time constraint	3	0.2%	1	0.1%
Epidemic/Pandemic - Candidate	3	0.2%	5	0.4%
Positive virtual crossmatch/unacceptable antigens	3	0.2%	2	0.1%
Transplant team or transplant facility availability	3	0.2%	0	0.0%
Candidate refused	2	0.1%	0	0.0%
Exceeded policy defined response time	2	0.1%	1	0.1%
Recovery team availability	2	0.1%	0	0.0%
Transportation availability	0	0.0%	3	0.2%
No donor cells/specimen for crossmatching, or no time for crossmatch	0	0.0%	1	0.1%

Table 30: Count and percent of reasons for refusal of range refused lung match organ offers post implementation stratified by match acceptance number, for lung matches submitted December 02, 2021 - February 28, 2022. Group is defined by the 90th percentile of sequence numbers for acceptances on lung matches during 2020.

Description	Acceptor Sequence Number: [1, 53)		Acceptor Sequence Number: [53, 514]	
	N	%	N	%
Unacceptable organ specific test results, specify	398	42.6%	289	45.1%
Organ size, specify	132	14.1%	43	6.7%
Donor medical history, specify	83	8.9%	80	12.5%
Other, specify	59	6.3%	50	7.8%
DCD donor neurological function/not expected to arrest	55	5.9%	26	4.1%
Organ anatomical damage or defect	51	5.5%	35	5.5%
Donor age	36	3.9%	33	5.1%
Organ specific test results not available, specify	23	2.5%	6	0.9%
Actual or projected cold ischemic time too long	18	1.9%	12	1.9%
Candidate requires different laterality	18	1.9%	16	2.5%
Epidemic/Pandemic - Donor	16	1.7%	28	4.4%
Candidate requires multiple organ transplant	6	0.6%	4	0.6%
Positive physical crossmatch	5	0.5%	0	0.0%
Candidate transplanted or pending transplant	4	0.4%	0	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	3	0.3%	0	0.0%
Resource time constraint (OPO, TXC, donor hospital, etc.)	3	0.3%	6	0.9%
Biopsy not available	2	0.2%	0	0.0%
Candidate temporarily medically unsuitable	2	0.2%	0	0.0%
Donor family time constraint	2	0.2%	3	0.5%
Donor infection or positive culture	2	0.2%	4	0.6%
Organ preservation: Unacceptable method or findings	2	0.2%	3	0.5%
PHS risk criteria or social history	2	0.2%	1	0.2%
Positive virtual crossmatch/unacceptable antigens	2	0.2%	1	0.2%
Warm ischemic time too long	2	0.2%	0	0.0%
Candidate refused	1	0.1%	0	0.0%
Donor instability/high vasopressor usage	1	0.1%	0	0.0%
Epidemic/Pandemic - Candidate	1	0.1%	0	0.0%
Exceeded policy defined response time	1	0.1%	0	0.0%
Malignancy or suspected malignancy	1	0.1%	0	0.0%
Number of HLA mismatches unacceptable	1	0.1%	0	0.0%
Prolonged downtime/CPR	1	0.1%	0	0.0%
Recovery team availability	1	0.1%	0	0.0%
Transplant team or transplant facility availability	1	0.1%	0	0.0%
No candidate serum for crossmatching	0	0.0%	1	0.2%

Table 31: Count and percent of reasons for refusal of range refused kidney-pancreas match organ offers post implementation stratified by match acceptance number, for kidney-pancreas matches submitted December 02, 2021 - February 28, 2022. Group is defined by the 90th percentile of sequence numbers for acceptances on kidney-pancreas matches during 2020.

Description	Acceptor Sequence Number: [1, 29)		Acceptor Sequence Number: [29, 286]	
	N	%	N	%
Unacceptable organ specific test results, specify	62	19.9%	71	18.8%
Donor medical history, specify	42	13.5%	50	13.2%
Actual or projected cold ischemic time too long	32	10.3%	69	18.3%
Other, specify	29	9.3%	26	6.9%
Epidemic/Pandemic - Donor	26	8.4%	47	12.4%
Donor age	25	8.0%	48	12.7%
Organ size, specify	24	7.7%	8	2.1%
Candidate temporarily medically unsuitable	14	4.5%	0	0.0%
PHS risk criteria or social history	10	3.2%	7	1.9%
Organ anatomical damage or defect	5	1.6%	7	1.9%
Organ preservation: Unacceptable method or findings	5	1.6%	5	1.3%
Prolonged downtime/CPR	5	1.6%	6	1.6%
Transplant team or transplant facility availability	5	1.6%	5	1.3%
Recovery team availability	4	1.3%	2	0.5%
DCD donor neurological function/not expected to arrest	3	1.0%	0	0.0%
Donor instability/high vasopressor usage	3	1.0%	6	1.6%
Candidate transplanted or pending transplant	2	0.6%	2	0.5%
Number of HLA mismatches unacceptable	2	0.6%	0	0.0%
Positive infectious disease screening test: CMV, HBV, HCV, etc.	2	0.6%	2	0.5%
Resource time constraint (OPO, TXC, donor hospital, etc.)	2	0.6%	2	0.5%
Warm ischemic time too long	2	0.6%	0	0.0%
Candidate refused	1	0.3%	0	0.0%
Candidate requires multiple organ transplant	1	0.3%	2	0.5%
Candidate unavailable	1	0.3%	0	0.0%
Donor infection or positive culture	1	0.3%	2	0.5%
Epidemic/Pandemic - Candidate	1	0.3%	5	1.3%
Organ specific test results not available, specify	1	0.3%	5	1.3%
Positive virtual crossmatch/unacceptable antigens	1	0.3%	0	0.0%
Donor family time constraint	0	0.0%	1	0.3%

Table 32: Count and percent of reasons for refusal of range refused intestine match organ offers post implementation stratified by match acceptance number, for intestine matches submitted December 02, 2021 - February 28, 2022. Group is defined by the 90th percentile of sequence numbers for acceptances on intestine matches during 2020.

Description	Acceptor Sequence Number: [1, 34]		Acceptor Sequence Number: [34, 59]	
	N	%	N	%
Number of HLA mismatches unacceptable	3	25.0%	0	0.0%
Organ size, specify	2	16.7%	0	0.0%
Unacceptable organ specific test results, specify	2	16.7%	1	10.0%
Candidate requires multiple organ transplant	1	8.3%	2	20.0%
Donor infection or positive culture	1	8.3%	0	0.0%
Epidemic/Pandemic - Donor	1	8.3%	0	0.0%
Other, specify	1	8.3%	3	30.0%
Prolonged downtime/CPR	1	8.3%	0	0.0%
Actual or projected cold ischemic time too long	0	0.0%	1	10.0%
Donor age	0	0.0%	1	10.0%
Positive virtual crossmatch/unacceptable antigens	0	0.0%	1	10.0%
Warm ischemic time too long	0	0.0%	1	10.0%