

OPTN Data Advisory Committee

Descriptive Data Request

# Committee Data Request Frequency of Organ Non-use Codes in OPTN Data

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## Background/Purpose

At the February 2, 2023, in-person committee meeting, the Data Advisory Committee (DAC) requested additional analysis of the frequency of use of organ non-use codes by Organ Procurement Organizations (OPOs). When an organ or organ segments are procured for the purpose of transplant, but not transplanted, OPOs record a reason for that non-use event in Organ Procurement and Transplantation Network (OPTN) data. Organ non-use rates have increased in recent years, and this work is aligned with aims spelled out by the 2022 National Academies of Science, Engineering and Medicine (NASEM) report: *Realizing the Promise of Equity in the Organ Transplant System*<sup>1</sup>. Among other themes, that report focused attention on increasing equitable access to organ transplant by increasing the number of organ transplants and decreasing organ non-use.

DAC requested these data to support decision-making about potential future projects to refine the list of organ non-use codes available in the OPTN Data System. Refining the list of codes could support the collection and reporting of more actionable information to better understand drivers of organ non-use. This effort could resemble the recent board-approved DAC project, implemented on December 2, 2021, to revise the list of donor refusal codes available to staff at transplant centers when declining a deceased donor organ on behalf of one or more candidates. A summary of those previous organ refusal data collection changes can be found here: Notice of Changes to OPTN Data Collection: Update to Refusal Codes<sup>2</sup>.

## Data Request

DAC requested descriptive analysis of the frequency distribution of non-use codes by organ, to assess the current state of OPO usage of these codes and to determine if changes to the available options for this response field should be revised to be more accurate, descriptive, granular, etc. This report summarizes findings from the complete data request and analyzes the following information from the Deceased Donor Registration (DDR) form, as well as from allocation match run data captured in the OPTN Computer System:

- Frequency and percent distribution of organ non-use codes, broken out by organ type and by DCD status
- Descriptive comparison of organ offer refusal codes (entered by transplant programs) to organ non-use codes to assess general relationships between center-documented donor organ refusal reasons and OPO-documented non-utilization reasons by organ type
- Descriptive comparison of summary measures of time elapsed between donor cross-clamp and the start of last organ offer by non-utilization reason code and organ type
- Analysis of themes/patterns in free text entered in “other, specify” fields for organ non-use by organ type

The current list of available choices for coding this response in the OPTN Computer System and on the DDR is given in **Table 1** below:

**Table 1. Current list of organ non-use reason codes**

<i>Too old on pump</i>	<i>Organ trauma</i>
<i>Too old on ice</i>	<i>Organ not as described</i>
<i>Vascular damage</i>	<i>Biopsy findings</i>
<i>Ureteral damage</i>	<i>Recipient determined to be unsuitable for TX in OR</i>
<i>Inadequate urine output</i>	<i>Poor organ function</i>
<i>Donor medical history</i>	<i>Infection</i>
<i>Donor social history</i>	<i>Diseased organ</i>
<i>Positive CMV</i>	<i>Anatomical abnormalities</i>
<i>Positive HIV</i>	<i>No recipient located – list exhausted</i>
<i>Positive Hepatitis</i>	<i>Other, specify</i>
<i>Warm ischemic time too long</i>	

In the OPTN Data System, the following organs and segments each have their own dedicated fields capturing a

reason for organ non-use for each donor from whom that organ or segment has an organ disposition code that indicates it was procured for the purpose of transplantation but not transplanted (a total of 16 non-use fields, though each donor will only have fields available for data entry where that organ or segment has already been dispositioned as a non-used organ). The total number of fields for non-use reason codes by organ laterality and segment are listed below in **Table 2**:

**Table 2: List of deceased donor organs and organ segments that may have a non-use code on record**

<b>Organ</b>	<b>En Block/Dual Organ</b>	<b>Laterality or Single Organ</b>	<b>Segments</b>
Kidney	Yes (1 field)	Laterality (1 left, 1 right)	No
Liver	No	Single Organ (1 field)	Yes (2 fields)
Heart	No	Single Organ (1 field)	No
Lung	Yes (1 field)	Laterality (1 left, 1 right)	No
Intestine	No	Single Organ (1 field)	Yes (2 fields)
Pancreas	No	Single Organ (1 field)	Yes (2 fields)

## Methods

Across the report, we included analysis of kidneys, pancreata, livers, intestines, hearts and lungs where numbers allowed, but excluded analysis of all vascularized composite allografts (VCAs). Data included in this request represent OPTN data as of 2023-08-18 and are subject to change based on future data submission or correction. Organ segment non-use is included in some sections where noted below, but excluded from other sections where necessary to simplify the analysis.

### Non-use Code Frequency by DCD Status and Organ

To examine data pertaining to the frequency of specific non-use codes, we looked at ten years of data on solid organs and organ segments dispositioned by OPOs in OPTN data as having been procured for the purpose of transplantation but not transplanted, from January 1, 2013 to December 31, 2022. We calculated frequencies and percentages by year, organ type and donation after circulatory death (DCD) status and present these in tables and graphs in each section of the detailed findings. When organs were procured as dual/en bloc, instead of separately (as left and right), their non-use reason code will be captured only once in the data below. Segments and individual organ lateralities procured not as dual/en bloc are counted individually.

### Non-use Code Frequency vs. Organ Refusal Codes Reported on Match

For the parts of the analysis comparing organ non-use codes with donor refusal codes entered by transplant centers on match runs, we only considered data for organ matches for donors procured between December 3, 2021 and April 30, 2023. Fully revised refusal code options were added to OPTN data collection on December 2, 2021 as a component of an earlier DAC-led project, and using a more recent cohort removed the additional complexity of including both old and new refusal codes in the output graphs and tables.

The following considerations also impacted this analysis: 1) non-use codes may be entered for every organ, by laterality (for kidney and lung) and by segment (for liver, intestine and pancreas) for each donor, where segmentation occurred, 2) organs are offered on match runs only by donor and broad organ type (e.g. "Lung", "Heart-Lung", "Kidney"), and not by the laterality or segment (e.g. "Left Lung", "Right Kidney").

Tracking specific refusal codes (by donor and broad organ type) back to organ-specific, laterality-specific or even segment-specific non-use codes, given this difference in granularity of data being collected in two different parts of the system, proved challenging. A number of assumptions had to be made to accommodate this analysis. Since more than one organ segment or organ laterality may be procured but then not transplanted for the same donor for all organs except heart, there is some ambiguity inherent in comparing non-use codes with the reasons transplant centers refused an organ match on behalf of one or more patients.

We therefore elected to exclude all organ segments that were noted as procured for transplant but not ultimately transplanted. We also had to consider whether lung and kidney donors had organs procured ‘en bloc’ or as a dual organ donation for the same recipient, in which case, the non-use code appears in OPTN data for the dual organs as a unit (in one variable), and not the left or right separately. When left and right organs were both procured but not intended as dual/en bloc, and both not transplanted, we also had to account for the fact that two kidneys or lungs from the same donor might have different non-use reason codes. This was the case for many of the kidney donors where both kidneys were procured but not used, but occurred only once in OPTN data in this period for lungs. Given that matches are run for broad organ categories and not “left” or “right” organs generally, it was not possible to distinguish which laterality each refusal could be attributed to when the non-use codes did differ.

In the initial request, DAC had asked for a Sankey chart that tracked each non-use event back to the associated refusal reasons. Upon further investigation, we determined that this type of chart is only suited for tracking one-to-one flows through multiple categories or states, and not a one-to-many or many-to-many matching situation. Furthermore, given the complication noted above about refusal codes not being fully traceable back to specific organs or segments in every case, we modified the chart type to show the overall number of refusals grouped by refusal reason and by non-use code.

Note also that there is a subset of organs that are procured but not transplanted that do have a final acceptor on the match. This is, in fact, a normal occurrence for thoracic organs and livers, as cross-clamp time is often driven by the logistics of procuring those organs. In these instances, while an intended candidate was identified on the match before cross-clamp, and the organ may even have reached the transplant center, it could not be transplanted due to events occurring after cross-clamp and the organ could not be reallocated to a new recipient. In this part of the report, those acceptances are aggregated in one category and clearly labeled as acceptances in the list of refusal codes on the left hand side of the figure, so those responses could be represented.

Data comparing intestine non-use with intestine refusal codes are also not included in this section of the report. In the time period covered by this part of the report (Dec 3, 2021 through Apr 30, 2023), only one intestine was recovered for the purpose of transplantation and not transplanted. There was no refusal code recorded for this organ, and the non-use code provided in this instance indicated that the recipient had been deemed unsuitable for transplant in the operating room. Additionally, we opted to exclude from analysis the very small number of cases in this period of time where left and right lungs from the same donor were marked as not used after procurement for different non-use reasons.

## **Time Elapsed Between Cross-Clamp and Start of Last Offer by Non-use Reason**

To examine data on time elapsed between cross-clamp and start of last offer by non-use code, we looked at ten years of data on solid organs and organ segments dispositioned by OPOs in OPTN data as having been procured for the purpose of transplantation but not transplanted, from January 1, 2013 to December 31, 2022. We encountered similar complications noted in the section above on methods used for the mapping of non-use codes to refusal codes, as match runs are not carried out for specific organs, but for organ types by donor. We therefore dropped organ segments from this analysis, and de-duplicated organ non-use down to the donor and organ category (e.g. “liver”, “pancreas”) level to calculate time between cross-clamp and last offer.

Data on heart-lung and kidney-pancreas match runs are included in both the heart and lung or kidney and pancreas figures, respectively, as match runs may be done for both the single organ type as well as the dual organ in series for the same donor. Capturing a single last response time by organ was necessary to tie back to non-use codes, which do not exist for heart-lung and kidney-pancreas and are instead captured separately with hearts, lungs, kidneys and pancreata. We present summary statistics for this measure (e.g median, interquartile range (IQR), minimum and maximum values by organ), reported in minutes, and present these in both graph and tabular format.

## **Themes in ‘Other, Specify’ Free Text Non-Use Responses**

For the analysis of free text responses provided for organ non-use, where “Other, specify” was chosen as the reason code, free text samples were cleaned and prepared to account for non-standard characters. Vocabularies of repeated words and terms were tabulated from the text strings and used to develop themes, with common filler words (e.g. “a”, “an”, “the”) ignored. Search terms were built to tag non-use organ records as containing

these themes in the free text using regular expressions, which accounted for misspelling, alternate phrasing, and differences in terminology (e.g. 'CIT', 'cold ischemia' and 'cold ischma' would all be counted as a single term). All non-use organ records were tagged with one or more themes, and the number and percent of organ records tagged with each theme were tabulated.

Note that this section of the report does include data on organ non-use for organ segments, as well as for whole organs and en block/dual organ recoveries.

## High-Level Summary

This data request established the following trends and themes pertaining to organ non-use reasons selected by OPOs when an organ is procured for the purposes of transplant but not transplanted:

- Among organs procured for transplant but not transplanted, less than 30% were reported to have been subsequently submitted for research purposes between 2013 and 2022.
- Only a handful (<1%) of organs that were procured for transplant had no reported reason cited for the non-use event in OPTN data in this time period.
- The most frequent non-use reason cited for kidney was “No recipient located - list exhausted”.
- For liver, the most frequent non-use reason cited was “Biopsy findings”.
- Among heart and pancreata, the most frequent non-use reason cited was “Other, specify”.
- For lung, both “Other, specify” and “Poor organ function” were cited most often.
- For intestine, the most commonly-cited reason for organ non-use was “Recipient determined to be unsuitable for TX in OR”.
- For kidneys, hearts, lungs and pancreata, the relative ranking by frequency of non-use reasons was similar for DCD vs. DBD donor organs, though the percent distributions of these reason codes were often different between DCD and DBD organs of the same type.
- The ordering of the top three non-use reasons given for liver differed between DCD vs. DBD. For DBD livers, the most common non-use reason by a large margin was “Biopsy findings”, followed by “Other, specify”. For DCD livers, the most common was “Other, specify”, followed by “Warm ischemic time too long”.
- Even when there were clear points of overlap in refusal code options and non-use code options (e.g. “Biopsy results unacceptable” vs. “Biopsy findings”), variability in the refusal reasons given was apparent. For example, for non-used kidneys, the majority of organs noted as not used for transplant because of “Biopsy findings” had primary refusal codes entered that indicated “Actual cold or projected ischemic time too long”. A large number of refusals were also logged for “Biopsy results unacceptable” and for “Organ anatomical damage or defect”, “Unacceptable organ specific test results, specify”, “Donor medical history, specify”, and “Other, specify” in these cases.
- Liver refusal reasons were most likely to be for “Donor age”, though those same liver donors had their non-use reasons recorded as “Anatomical abnormalities”, “Biopsy findings”, “No recipient located – list exhausted”, “Warm ischemic time too long”.
- Across all organs except intestine and pancreas, “No recipient located – list exhausted” was frequently recorded as the non-use reason. When it was, there were a wide variety of refusal reasons recorded for that donor’s organ type, indicating that in some cases, no clear single driver of the non-use would necessarily be identifiable from refusal reasons alone. This indicates either that non-use reasons and refusal reasons are capturing different enough concepts that a singular non-use reason is not always clear simply by scanning accumulated refusal reasons, or that non-use could best be understood as a result of a process that occurs over a number of hours or days, and refusal reasons alone do not always account for events that prevented the organ from being transplanted, including logistics delays, recipients determined not able to be transplanted in the operating room, and organ and donor information that only becomes available later in the procurement process, after cross-clamp.
- Free text analysis identified several variations in common non-use ‘other, specify’ themes in terms of frequency of use by organ type.
- Some commonly used themes suggest that refinements of non-use reasons, or the data definitions provided, could substantially decrease the use of free text entry, including references to themes such as “CIT”, “WIT”, “cancer”, “travel issue”, “injury”, “serology/pathology”, “biopsy”, “all refused”, “ruled out in OR”, “DCD”, “turndown”, “flush”, “size”, and “pump”.
- Other infrequently used themes also indicate a potential for retooling data entry interfaces to better direct user entry behavior, or enhancing awareness of proper data entry procedures, as “HIV”, “hepatitis”, “pneumonia”, and “infection”, all describe non-use that perhaps should have been more properly coded under the existing options for “Positive Hepatitis”, “Positive HIV”, or “Infection”.
- As expected, median time calculations indicated that most organs with eventual non-use documented, including liver, intestine, heart and lung, have match runs occurring and completing before cross-clamp (i.e. time between cross-clamp and the final offer is negative), regardless of non-use reason.
- Kidney non-use, however, had median time calculations near 0 or slightly positive, indicating that cross-clamp

occurred very near, at or before the start of the last offer regardless of non-use reason. This timing issue is one way in which organ non-use patterns varied by organ type, a consideration that should factor into decisions about how to best interpret and analyze these non-use events.

## Detailed Findings

### All Organs

#### *Organ Disposition Reason Codes Preceding Organ Non-use Reason Code Entry*

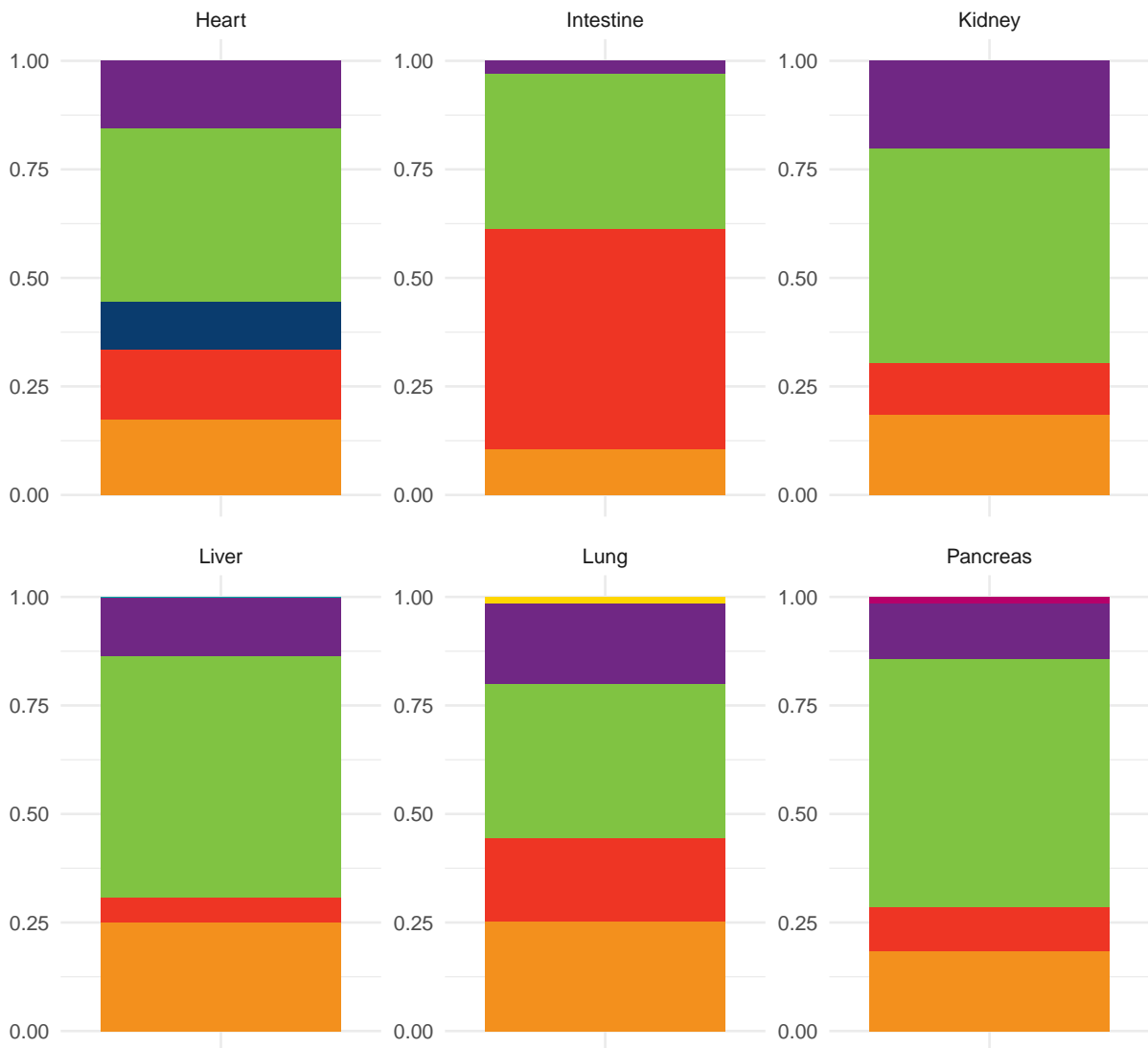
In the OPTN Computer System, organs that are procured for the purpose of transplantation but not transplanted have supplemental information captured about them about their eventual disposition, in addition to the non-use reason codes that are the main focus on this data request. OPOs are additionally asked to classify what happened following the decision by the OPO to no longer continue pursuing placement of the organ.

Before reporting summary statistics on the frequency of non-use reason codes by organ, we will first break out non-use reasons by information OPO has recorded in this supplemental field on the reason for the disposition of “procured for transplant but not transplanted”. This field is referred to as the “disposition reason code”, and these data are summarized in **Table 3** and **Figure 1** below.

Note that this section of the report does include data on organ non-use for organ segments, as well as for whole organs and en block/dual organ recoveries. While the non-use of organ segments, in the absence of the non-use of an entire solid organ, is not typically included in non-use data reported by the OPTN, we include this information here to better understand the types of information recorded on non-use in OPTN data.



**Figure 1. Organ disposition reason code frequency among organs procured for transplant but not transplanted, 2013-2022**



- Exported, not transplanted or transplant unknown
- Recov for tx: sent for hepatoocytes
- Recov for tx: sent for panc. Islet cells
- Recovered for transplant: discarded
- Recovered for transplant: pancreas sent for technical reasons (for dms use only)
- Recovered for tx: discarded locally
- Recovered for tx: sent for heart valves
- Recovered for tx: shared and discarded
- Recovered for tx: submit for research

**Table 2. Organ disposition reason code frequency among organs procured for transplant but not transplanted, 2013-2022**

Organ Disposition Reason	Heart	Intestine	Kidney	Liver	Lung	Pancreas
Exported, not transplanted or transplant unknown	0 (0.0%)	0 (0.0%)	7 (0.0%)	1 (0.0%)	30 (1.5%)	0 (0.0%)
Recov for tx: sent for hepatocytes	0 (0.0%)	0 (0.0%)	0 (0.0%)	11 (0.1%)	0 (0.0%)	0 (0.0%)
Recov for tx: sent for panc. Islet cells	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	51 (1.6%)
Recovered for transplant: discarded	52 (15.6%)	2 (3.0%)	8,464 (20.1%)	1,067 (13.6%)	381 (18.7%)	408 (12.7%)
Recovered for transplant: pancreas sent for technical reasons (for dms use only)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (0.1%)
Recovered for tx: discarded locally	133 (39.9%)	24 (35.8%)	20,791 (49.4%)	4,374 (55.7%)	724 (35.5%)	1,833 (57.2%)
Recovered for tx: sent for heart valves	37 (11.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Recovered for tx: shared and discarded	53 (15.9%)	34 (50.7%)	5,072 (12.1%)	439 (5.6%)	392 (19.2%)	320 (10.0%)
Recovered for tx: submit for research	58 (17.4%)	7 (10.4%)	7,727 (18.4%)	1,961 (25.0%)	515 (25.2%)	590 (18.4%)
<b>Total</b>	<b>333 (100.0%)</b>	<b>67 (100.0%)</b>	<b>42,061 (100.0%)</b>	<b>7,853 (100.0%)</b>	<b>2,042 (100.0%)</b>	<b>3,205 (100.0%)</b>

***Organ Non-use without a Recorded Non-use Reason***

We also assessed the number of candidates with an organ discarded but no non-use code recorded, broken out by organ (with the percentage of all donors with at least one of those organs procured). These figures were very small, with less than 1% of donors with discarded kidneys, livers, hearts, lungs and pancreata having no valid reported non-use code. Furthermore, none of the donors with intestines recorded as procured for the purposes of transplant but not transplanted were missing a recorded non-use code.

In the remainder of this report, this small number of organ non-use cases with no non-use reason recorded will not be included in figures and tables. **Table 4** notes their frequencies over a ten-year period.

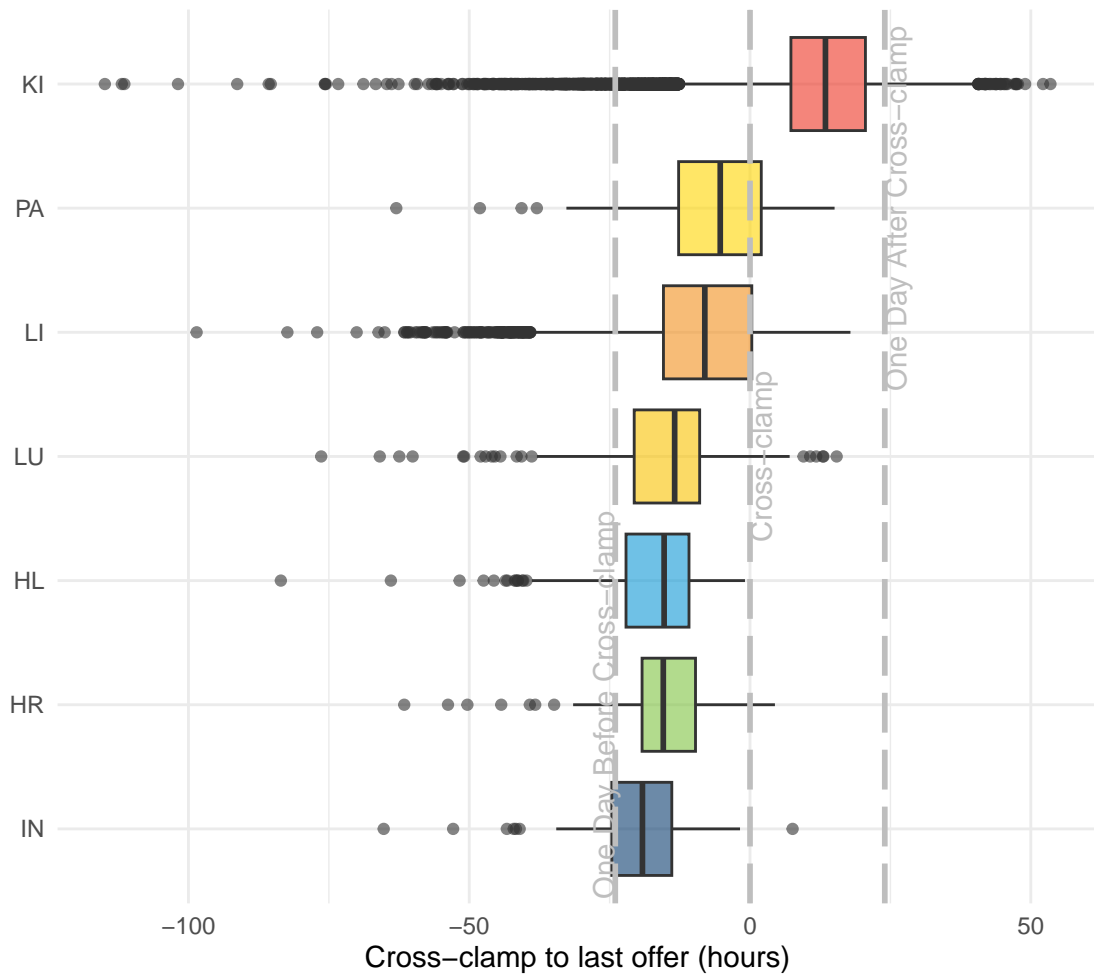
Note that this section of the report does include data on organ non-use for organ segments, as well as for whole organs and en block/dual organ recoveries, as above.

**Table 4. Frequency (%) organs procured for transplant but not used with no non-use reason recorded, by organ, 2013-2022**

Organ Procured but Not Used for Transplant	Number with Completely Missing Non-Use Reason	Percentage of Number Procured but Not Transplanted
Kidney	19	0.07%
Liver	3	0.04%
Heart	1	0.3%
Lung	4	0.22%
Pancreas	8	0.25%

**Time between Cross-clamp and Start of Last Offer**

**Figure 2. Distribution of time between cross-clamp and start of last offer by organ, 2013 and 2022**



When reported times are negative, last offer occurred before crossclamp

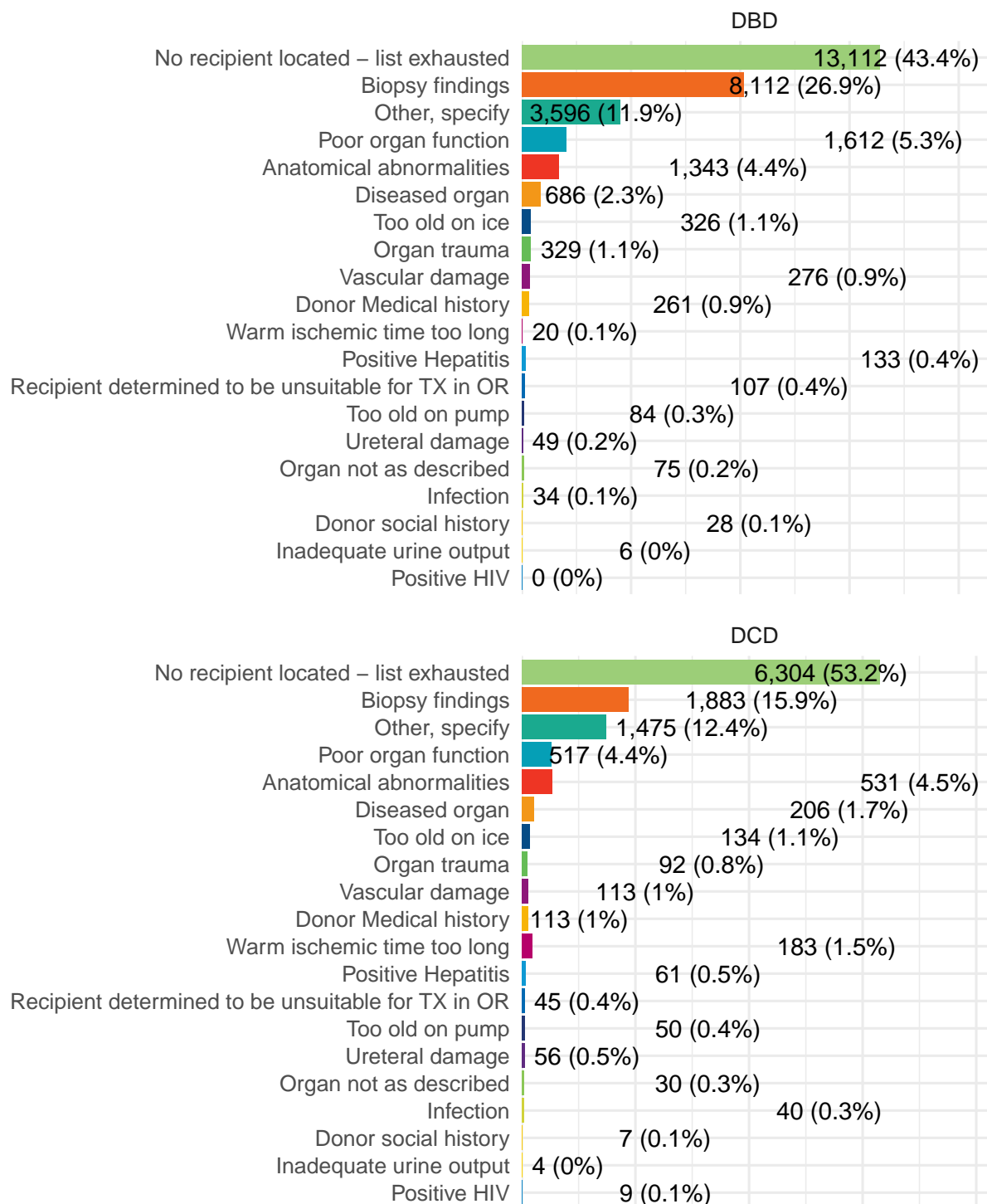
**Table 5. Distribution of time between cross-clamp and start of last offer by organ, 2013 and 2022**

<b>Organ</b>	<b>n Matches</b>	<b>Range</b>	<b>Median</b>	<b>25th, 75th %ile</b>
KI	25651	-114.9, 53.5	13.4	7.3, 20.6
PA	305	-63, 15.1	-5.3	-12.7, 2
LI	7774	-98.6, 17.9	-8.1	-15.4, 0.3
LU	603	-76.4, 15.4	-13.4	-20.6, -9
HL	473	-83.6, -0.9	-15.3	-22.1, -10.9
HR	95	-61.6, 4.4	-15.4	-19.2, -9.7
IN	53	-65.2, 7.6	-19.2	-24.6, -13.9

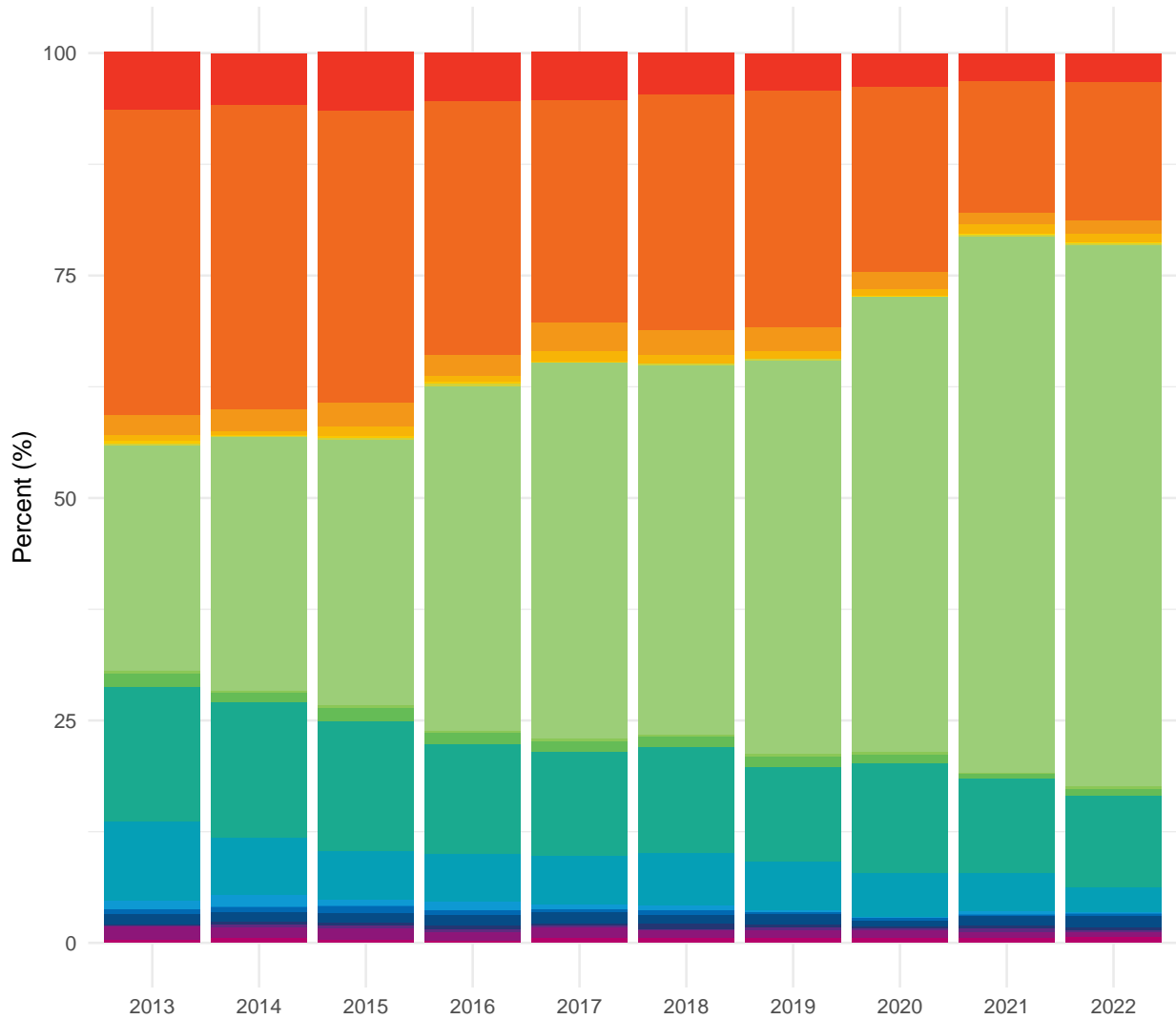
## Kidney

In this section, we summarize kidney-specific findings in **Figures 3 through 8** and **Tables 6 through 8**.

**Figure 3. Frequency (%) of procured kidney non-use reasons by DCD status, 2013-2022**



**Figure 4. Distribution of procured kidney non-use reasons by year, 2013-2022**



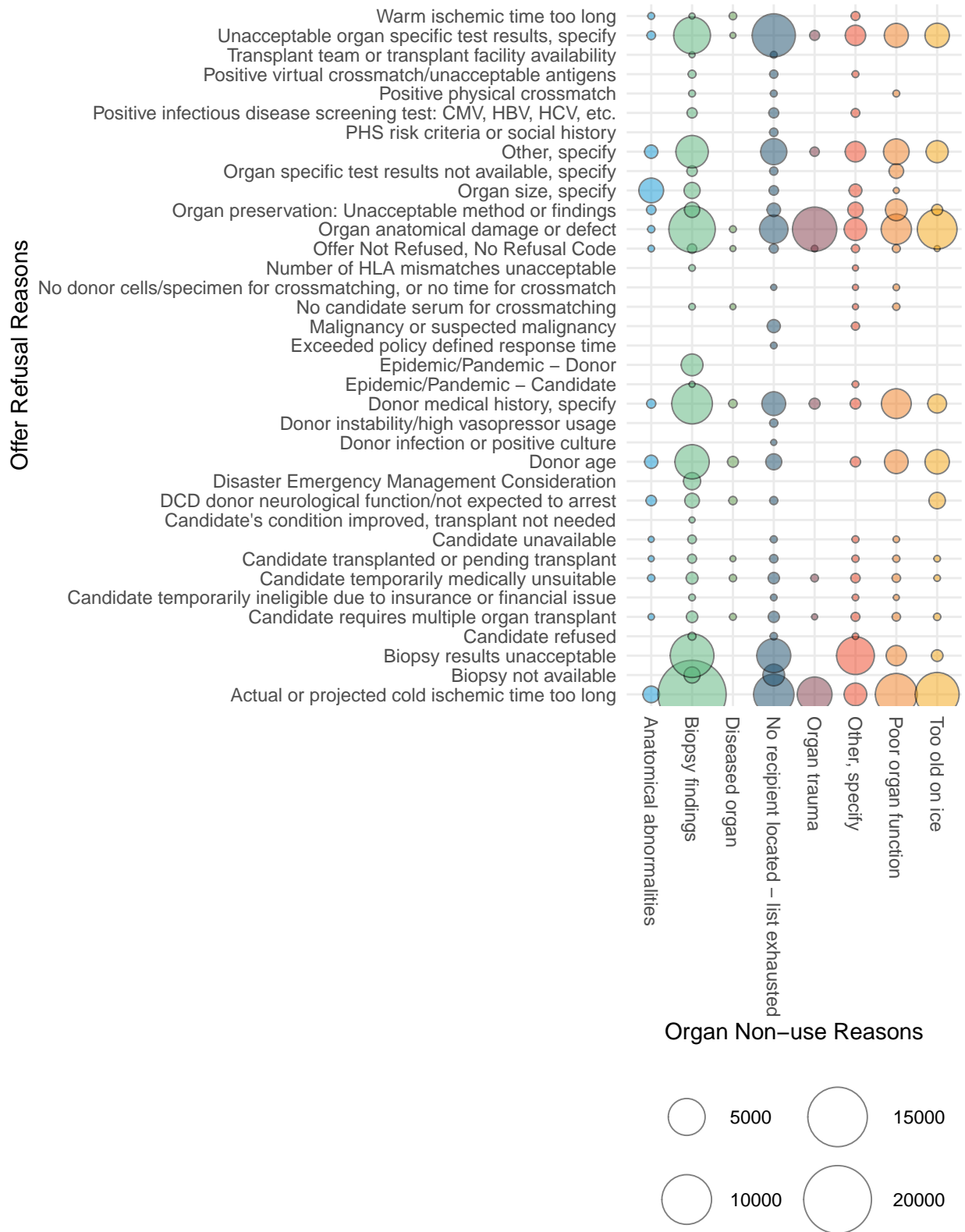
- Anatomical abnormalities
- Biopsy findings
- Diseased organ
- Donor Medical history
- Donor social history
- Inadequate urine output
- Infection
- No recipient located – list exhausted
- Organ not as described
- Organ trauma
- Other, specify
- Poor organ function
- Positive Hepatitis
- Positive HIV
- Recipient determined to be unsuitable for TX in OR
- Too old on ice
- Too old on pump
- Ureteral damage
- Vascular damage
- Warm ischemic time too long

**Table 6. Frequency (%) procured kidney non-use reasons by year, 2013-2022**

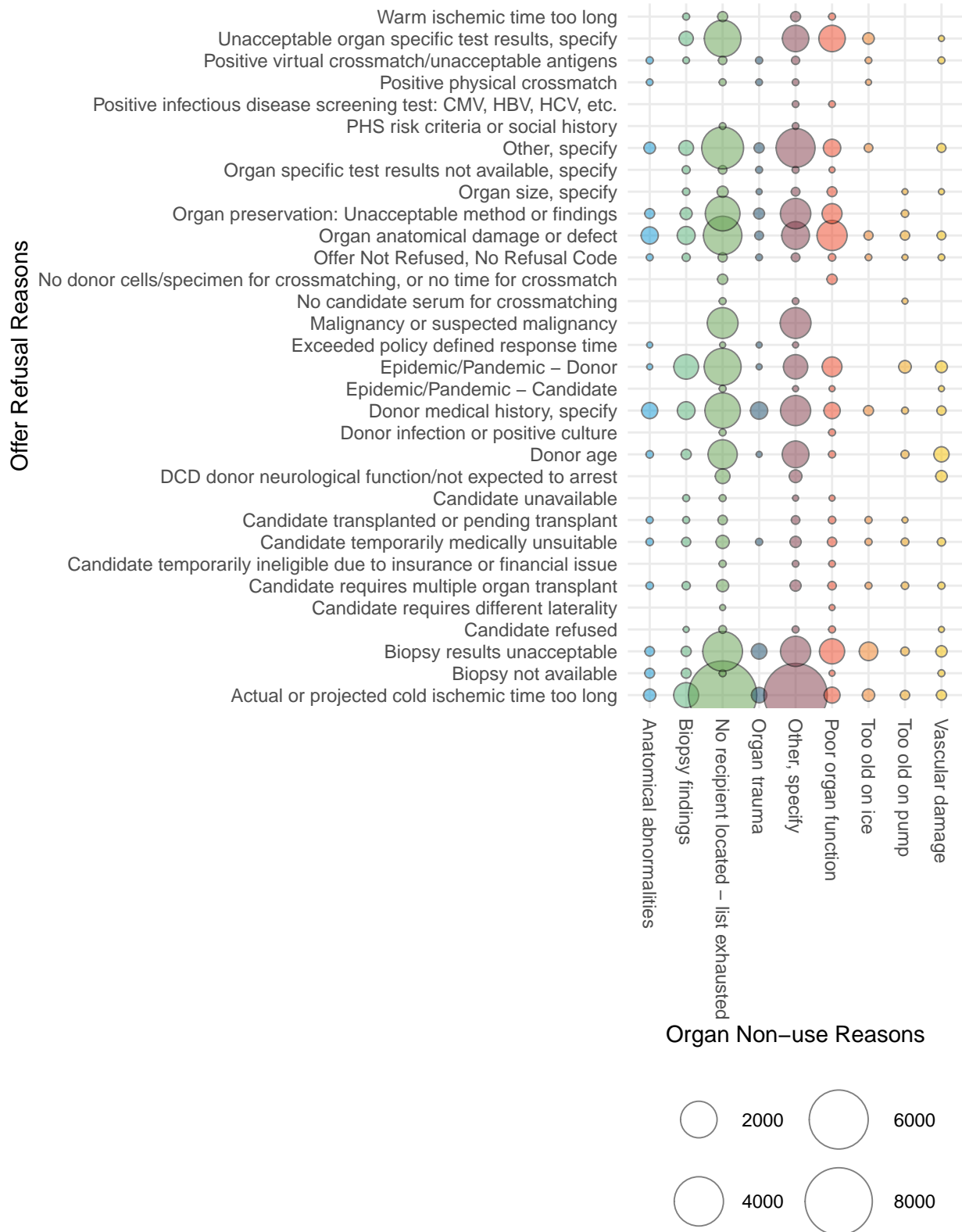
Non-use Reason	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Positive HIV	0 (0.0%)	2 (0.1%)	2 (0.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.0%)	3 (0.0%)	9 (0.0%)
Inadequate urine output	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.0%)	2 (0.0%)	6 (0.1%)	10 (0.0%)
Donor social history	7 (0.3%)	4 (0.1%)	8 (0.3%)	11 (0.3%)	1 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.0%)	2 (0.0%)	0 (0.0%)	35 (0.1%)
Infection	6 (0.2%)	2 (0.1%)	7 (0.2%)	9 (0.3%)	4 (0.1%)	6 (0.2%)	9 (0.2%)	4 (0.1%)	10 (0.2%)	17 (0.2%)	74 (0.2%)
Organ not as described	8 (0.3%)	5 (0.2%)	10 (0.3%)	7 (0.2%)	12 (0.3%)	7 (0.2%)	13 (0.3%)	15 (0.3%)	9 (0.1%)	19 (0.3%)	105 (0.2%)
Ureteral damage	2 (0.1%)	9 (0.3%)	10 (0.3%)	10 (0.3%)	9 (0.3%)	3 (0.1%)	14 (0.3%)	11 (0.2%)	22 (0.4%)	15 (0.2%)	105 (0.2%)
Too old on pump	4 (0.2%)	12 (0.4%)	11 (0.4%)	14 (0.4%)	6 (0.2%)	22 (0.6%)	17 (0.4%)	12 (0.2%)	17 (0.3%)	19 (0.3%)	134 (0.3%)
Recipient determined to be unsuitable for TX in OR	13 (0.5%)	15 (0.5%)	20 (0.7%)	16 (0.5%)	10 (0.3%)	20 (0.5%)	7 (0.2%)	16 (0.3%)	11 (0.2%)	24 (0.3%)	152 (0.4%)
Positive Hepatitis	23 (0.9%)	35 (1.2%)	17 (0.6%)	34 (1.0%)	16 (0.5%)	21 (0.6%)	15 (0.3%)	6 (0.1%)	16 (0.3%)	11 (0.1%)	194 (0.5%)
Warm ischemic time too long	8 (0.3%)	15 (0.5%)	10 (0.3%)	6 (0.2%)	19 (0.5%)	17 (0.5%)	20 (0.5%)	23 (0.5%)	40 (0.6%)	45 (0.6%)	203 (0.5%)
Donor Medical history	15 (0.6%)	12 (0.4%)	30 (1.0%)	23 (0.6%)	40 (1.2%)	32 (0.9%)	38 (0.9%)	37 (0.8%)	72 (1.1%)	75 (1.0%)	374 (0.9%)
Vascular damage	40 (1.5%)	33 (1.2%)	39 (1.3%)	34 (1.0%)	41 (1.2%)	34 (0.9%)	41 (0.9%)	43 (0.9%)	36 (0.6%)	48 (0.6%)	389 (0.9%)
Organ trauma	39 (1.5%)	29 (1.0%)	43 (1.4%)	44 (1.2%)	40 (1.2%)	41 (1.1%)	48 (1.1%)	49 (1.0%)	33 (0.5%)	55 (0.7%)	421 (1.0%)
Too old on ice	31 (1.2%)	31 (1.1%)	33 (1.1%)	42 (1.2%)	45 (1.3%)	35 (1.0%)	48 (1.1%)	34 (0.7%)	67 (1.1%)	94 (1.3%)	460 (1.1%)
Diseased organ	61 (2.3%)	68 (2.4%)	84 (2.7%)	83 (2.3%)	111 (3.2%)	101 (2.8%)	113 (2.6%)	91 (1.9%)	80 (1.3%)	100 (1.4%)	892 (2.1%)
Anatomical abnormalities	172 (6.5%)	161 (5.7%)	204 (6.6%)	193 (5.4%)	186 (5.4%)	173 (4.7%)	176 (4.1%)	181 (3.7%)	195 (3.1%)	233 (3.2%)	1,874 (4.5%)
Poor organ function	235 (8.9%)	181 (6.5%)	168 (5.5%)	191 (5.4%)	192 (5.5%)	215 (5.9%)	234 (5.4%)	240 (4.9%)	268 (4.3%)	205 (2.8%)	2,129 (5.1%)
Other, specify	403 (15.2%)	428 (15.3%)	453 (14.7%)	440 (12.4%)	406 (11.7%)	437 (12.0%)	462 (10.7%)	603 (12.4%)	673 (10.7%)	766 (10.4%)	5,071 (12.1%)
Biopsy findings	911 (34.4%)	962 (34.3%)	1,009 (32.8%)	1,015 (28.6%)	864 (25.0%)	971 (26.6%)	1,155 (26.7%)	1,010 (20.8%)	939 (14.9%)	1,159 (15.7%)	9,995 (23.8%)
No recipient located - list exhausted	670 (25.3%)	801 (28.6%)	914 (29.8%)	1,374 (38.7%)	1,459 (42.2%)	1,513 (41.5%)	1,911 (44.2%)	2,486 (51.1%)	3,791 (60.3%)	4,497 (60.8%)	19,416 (46.2%)
<b>Total</b>	<b>2,648 (100.0%)</b>	<b>2,805 (100.0%)</b>	<b>3,072 (100.0%)</b>	<b>3,546 (100.0%)</b>	<b>3,461 (100.0%)</b>	<b>3,648 (100.0%)</b>	<b>4,321 (100.0%)</b>	<b>4,865 (100.0%)</b>	<b>6,285 (100.0%)</b>	<b>7,391 (100.0%)</b>	<b>42,042 (100.0%)</b>



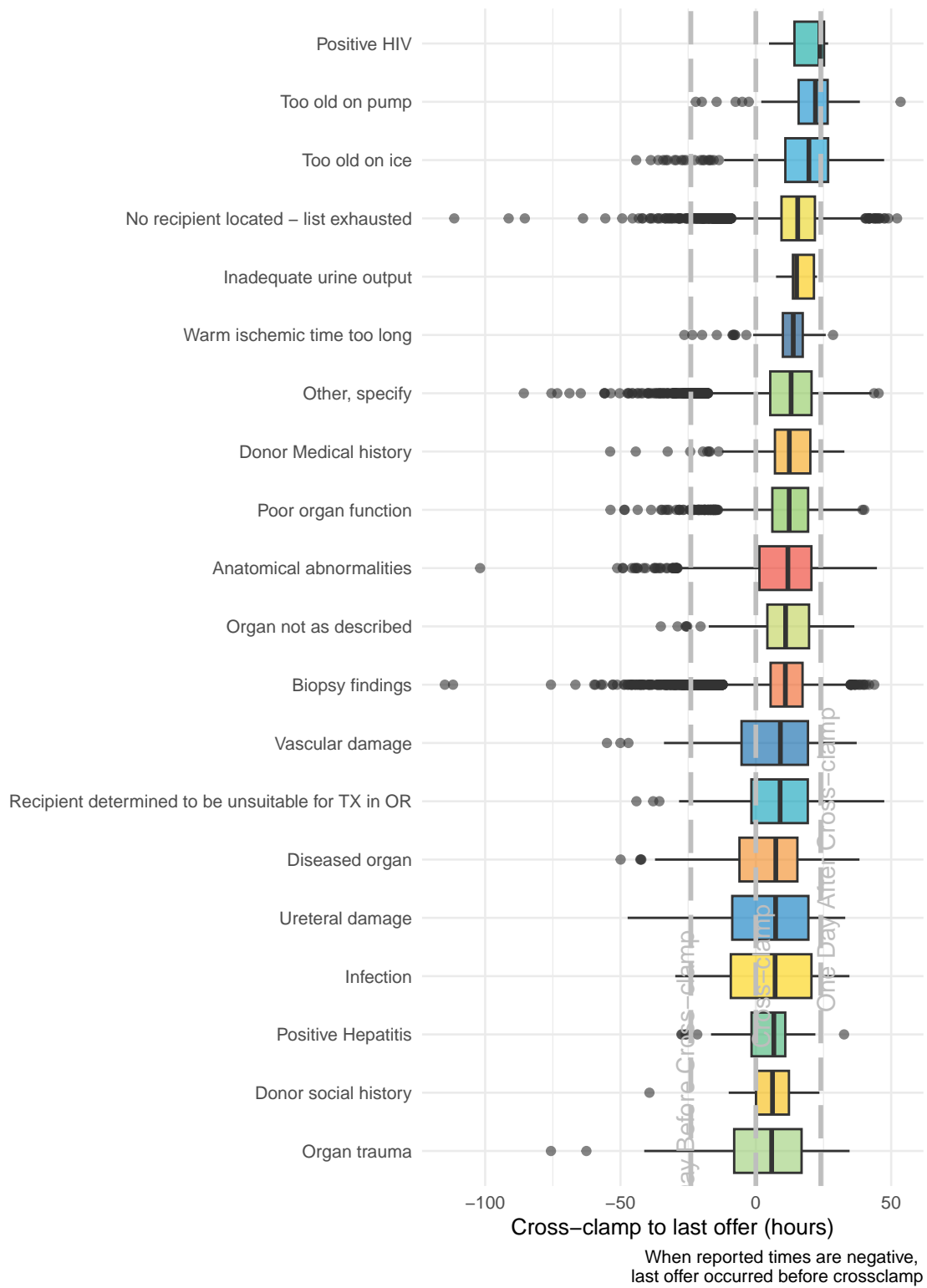
**Figure 5. Kidney non-use reasons vs. kidney refusal codes, for donors where only one kidney was procured or where two were procured and had the same non-use code**



**Figure 6. Kidney non-use reasons vs. kidney refusal codes, for donors where two kidneys were procured and had different non-use codes**



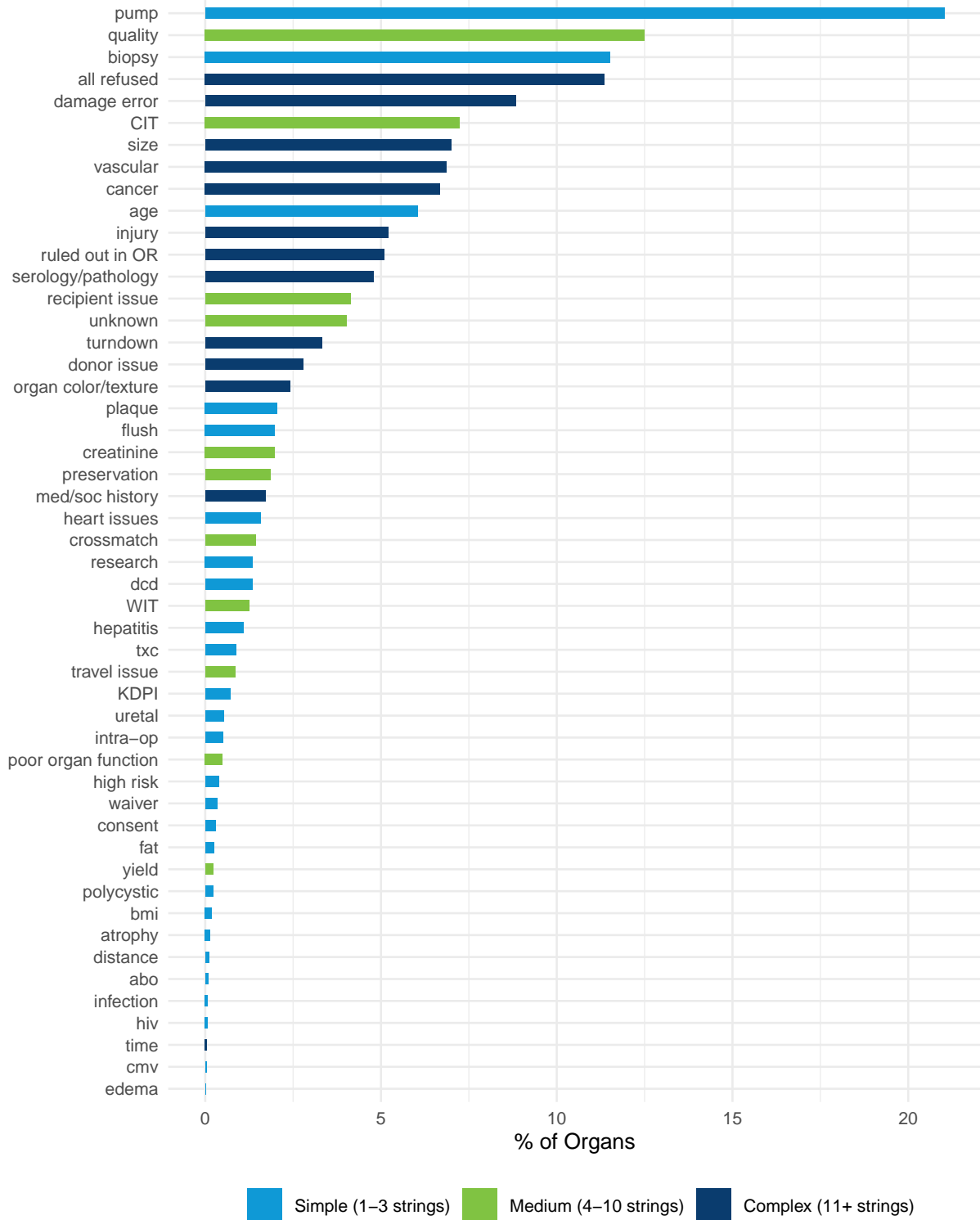
**Figure 7. Distribution of time between cross-clamp and start of last kidney offer by non-use reason, 2013 and 2022**



**Table 7. Time between cross-clamp and start of last kidney offer by non-use reason, 2013-2022**

<b>Non-Use Code</b>	<b>n Matches</b>	<b>Range</b>	<b>Median</b>	<b>25th, 75th %ile</b>
Positive HIV	3	4.9, 26.7	23.7	14.3, 25.2
Too old on pump	102	-22.2, 53.5	22	15.8, 26.5
Too old on ice	355	-44.2, 47.4	19.6	10.9, 26.7
No recipient located - list exhausted	11854	-111.4, 52.2	15.5	9.5, 21.8
Inadequate urine output	5	7.5, 22.6	15.1	13.7, 21.5
Warm ischemic time too long	121	-26.4, 28.5	13.8	10, 17.3
Other, specify	3262	-85.7, 45.4	13	5.3, 20.6
Donor Medical history	217	-53.8, 32.7	12.4	7, 20.1
Poor organ function	1321	-53.7, 40.1	12.3	6.1, 19.3
Anatomical abnormalities	1228	-101.9, 44.7	11.8	1.3, 20.5
Organ not as described	80	-35.1, 36.4	11	4.2, 19.7
Biopsy findings	5650	-114.9, 43.8	10.9	5.5, 17.3
Vascular damage	316	-55, 37.3	9.1	-5.3, 19.3
Recipient determined to be unsuitable for TX in OR	108	-44.1, 47.5	9	-1.6, 19.2
Diseased organ	476	-49.9, 38.3	7.4	-6, 15.4
Ureteral damage	84	-47.4, 33	7.3	-8.7, 19.4
Infection	35	-29.8, 34.6	7.1	-9.2, 20.6
Positive Hepatitis	114	-27.5, 32.6	6.7	-1.6, 10.9
Donor social history	23	-39.3, 23.5	6.2	0.1, 12.2
Organ trauma	297	-75.7, 34.6	5.8	-8, 16.9

**Figure 8. Free text entered in ‘other, specify’ fields for kidney non-use reason**



**Table 8. Free text entered in 'other, specify' fields for kidney non-use reason**

Text Theme	Count	% of Organs	Theme Complexity
pump	1,244	21.03	Simple (1-3 strings)
quality	739	12.50	Medium (4-10 strings)
biopsy	681	11.52	Simple (1-3 strings)
all refused	672	11.36	Complex (11+ strings)
damage error	523	8.84	Complex (11+ strings)
CIT	428	7.24	Medium (4-10 strings)
size	414	7.00	Complex (11+ strings)
vascular	406	6.87	Complex (11+ strings)
cancer	395	6.68	Complex (11+ strings)
age	357	6.04	Simple (1-3 strings)
injury	308	5.21	Complex (11+ strings)
ruled out in OR	301	5.09	Complex (11+ strings)
serology/pathology	283	4.79	Complex (11+ strings)
recipient issue	244	4.13	Medium (4-10 strings)
unknown	238	4.02	Medium (4-10 strings)
turndown	196	3.31	Complex (11+ strings)
donor issue	165	2.79	Complex (11+ strings)
organ color/texture	143	2.42	Complex (11+ strings)
plaque	121	2.05	Simple (1-3 strings)
creatinine	117	1.98	Medium (4-10 strings)
flush	117	1.98	Simple (1-3 strings)
preservation	110	1.86	Medium (4-10 strings)
med/soc history	102	1.72	Complex (11+ strings)
heart issues	93	1.57	Simple (1-3 strings)
crossmatch	85	1.44	Medium (4-10 strings)
research	80	1.35	Simple (1-3 strings)
dcd	79	1.34	Simple (1-3 strings)
WIT	74	1.25	Medium (4-10 strings)
hepatitis	64	1.08	Simple (1-3 strings)
txc	52	0.88	Simple (1-3 strings)
travel issue	50	0.85	Medium (4-10 strings)
KDPI	42	0.71	Simple (1-3 strings)
uretal	31	0.52	Simple (1-3 strings)
intra-op	30	0.51	Simple (1-3 strings)
poor organ function	29	0.49	Medium (4-10 strings)
high risk	23	0.39	Simple (1-3 strings)
waiver	20	0.34	Simple (1-3 strings)
consent	18	0.30	Simple (1-3 strings)
fat	15	0.25	Simple (1-3 strings)
polycystic	13	0.22	Simple (1-3 strings)
yield	13	0.22	Medium (4-10 strings)
bmi	11	0.19	Simple (1-3 strings)
atrophy	8	0.14	Simple (1-3 strings)
distance	6	0.10	Simple (1-3 strings)
abo	5	0.08	Simple (1-3 strings)
hiv	4	0.07	Simple (1-3 strings)
infection	4	0.07	Simple (1-3 strings)

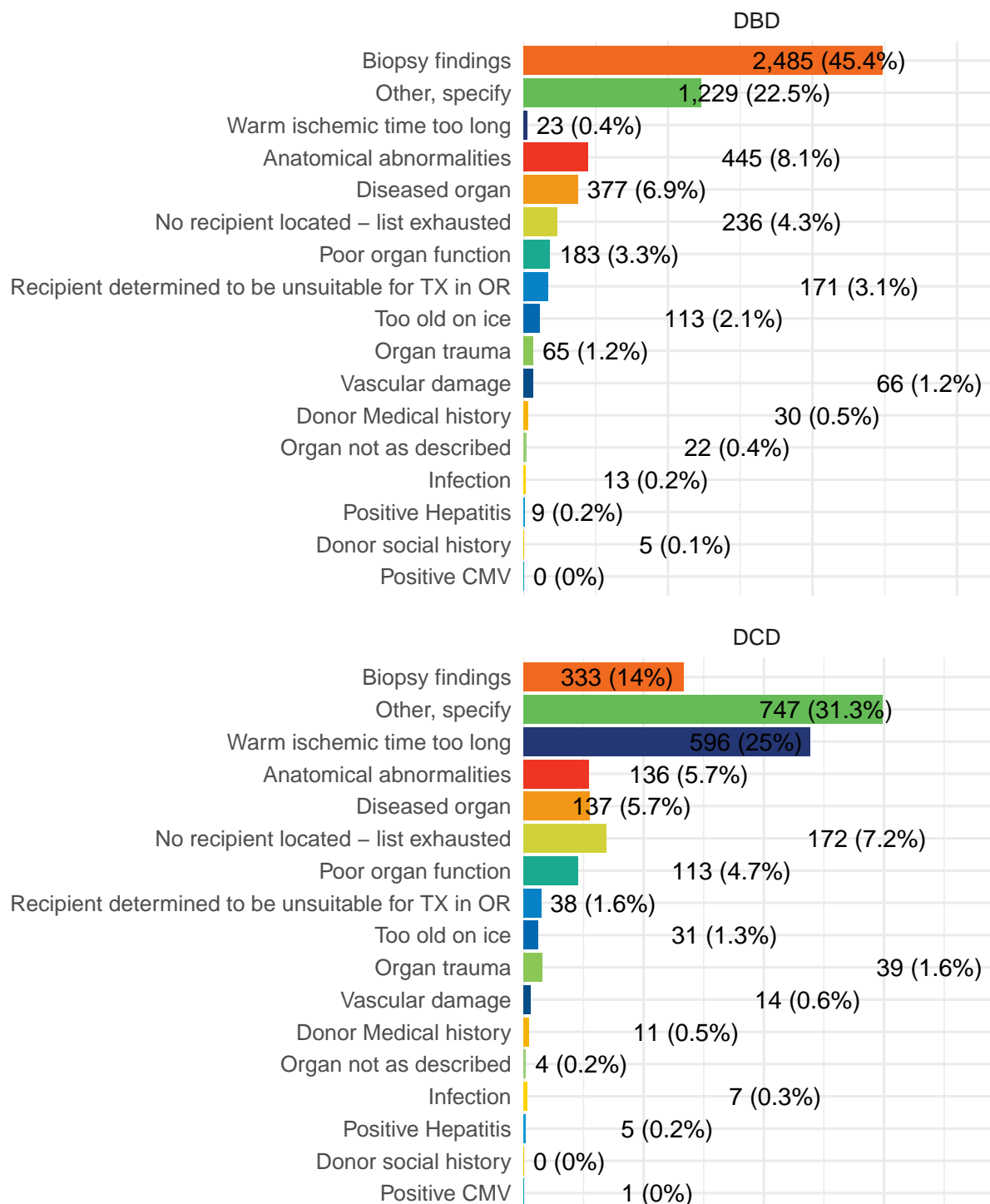
*(continued)*

<b>Text Theme</b>	<b>Count</b>	<b>% of Organs</b>	<b>Theme Complexity</b>
time	3	0.05	Complex (11+ strings)
cmv	2	0.03	Simple (1-3 strings)
edema	1	0.02	Simple (1-3 strings)

## Liver

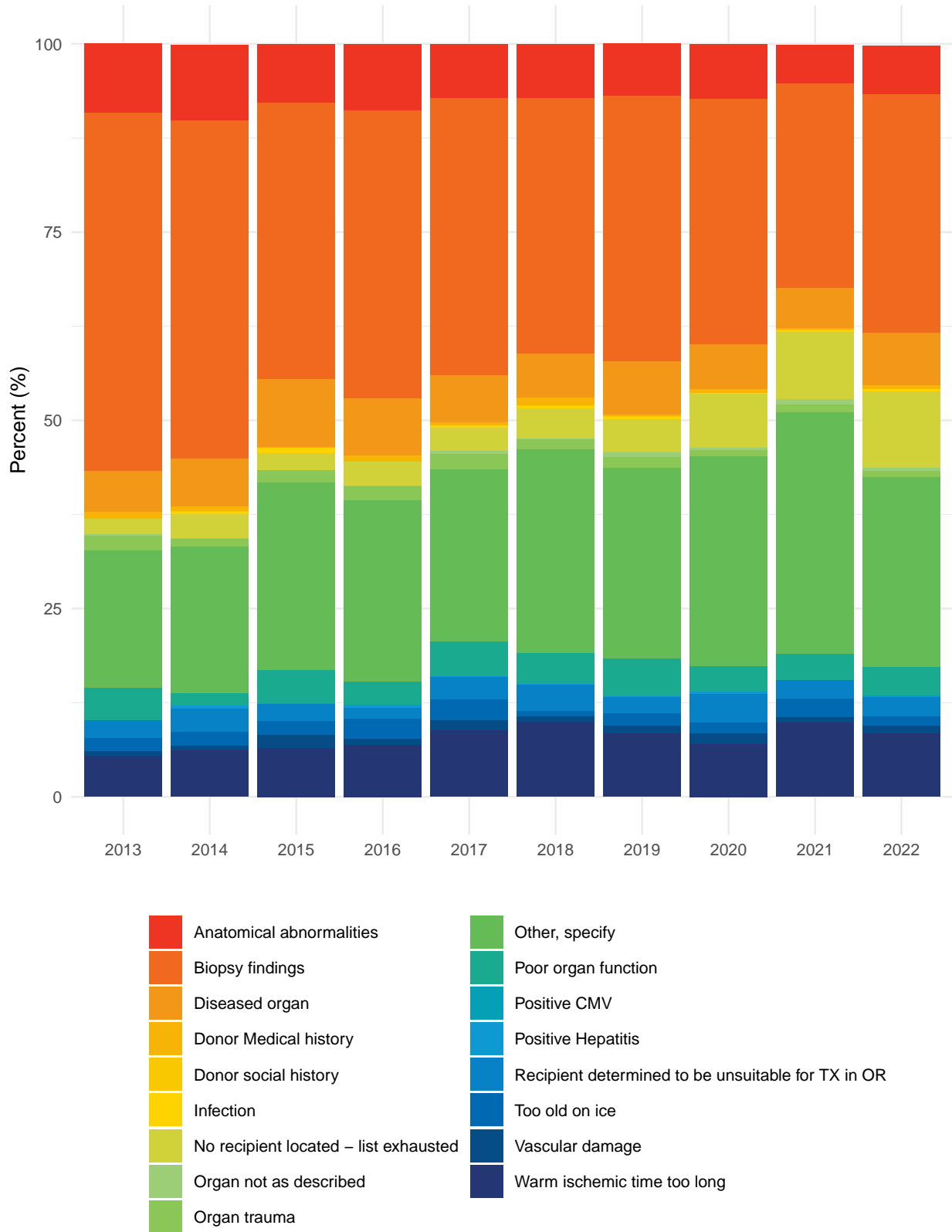
In this section, we summarize liver-specific findings in **Figures 9 through 12** and **Tables 9 through 11**.

**Figure 9. Frequency (%) of procured liver non-use reasons by DCD status, 2013-2022**





**Figure 10. Distribution of procured liver non-use reasons by year, 2013-2022**



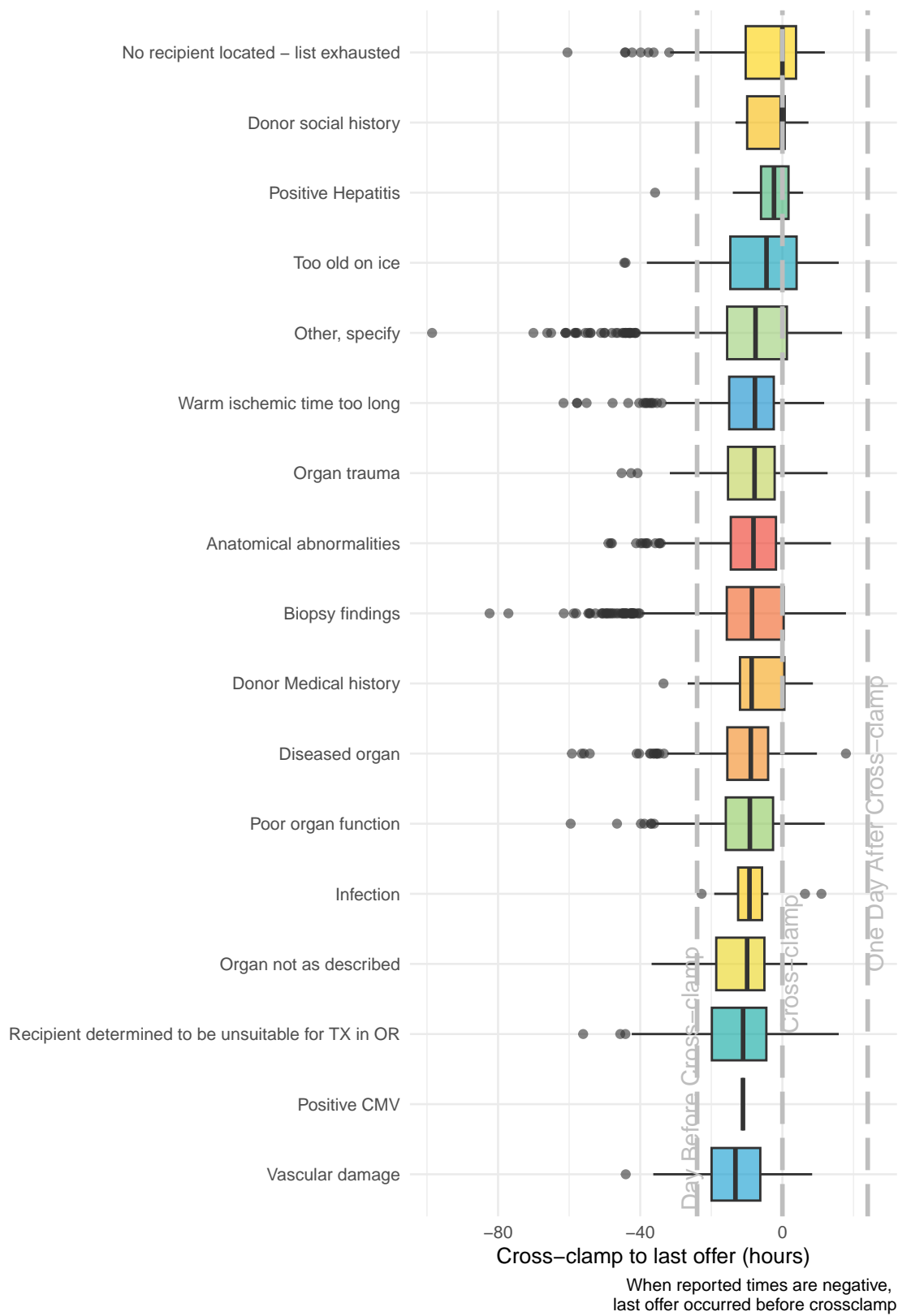
**Table 9. Frequency (%) procured liver non-use reasons by year, 2013-2022**

Non-use Reason	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Positive CMV	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.1%)	1 (0.0%)
Donor social history	0 (0.0%)	1 (0.1%)	1 (0.1%)	0 (0.0%)	0 (0.0%)	1 (0.1%)	1 (0.1%)	0 (0.0%)	1 (0.1%)	0 (0.0%)	5 (0.1%)
Positive Hepatitis	0 (0.0%)	3 (0.4%)	1 (0.1%)	3 (0.4%)	1 (0.1%)	1 (0.1%)	1 (0.1%)	3 (0.3%)	0 (0.0%)	1 (0.1%)	14 (0.2%)
Infection	0 (0.0%)	2 (0.3%)	4 (0.6%)	0 (0.0%)	2 (0.3%)	2 (0.3%)	3 (0.3%)	1 (0.1%)	3 (0.3%)	3 (0.3%)	20 (0.3%)
Organ not as described	1 (0.2%)	1 (0.1%)	0 (0.0%)	1 (0.1%)	3 (0.4%)	1 (0.1%)	5 (0.6%)	3 (0.3%)	7 (0.7%)	4 (0.4%)	26 (0.3%)
Donor Medical history	6 (0.9%)	4 (0.6%)	1 (0.1%)	6 (0.8%)	3 (0.4%)	7 (1.0%)	2 (0.2%)	5 (0.6%)	2 (0.2%)	5 (0.5%)	41 (0.5%)
Vascular damage	4 (0.6%)	4 (0.6%)	12 (1.7%)	6 (0.8%)	10 (1.3%)	5 (0.7%)	9 (1.0%)	13 (1.5%)	7 (0.7%)	10 (1.0%)	80 (1.0%)
Organ trauma	12 (1.9%)	7 (1.0%)	11 (1.6%)	13 (1.8%)	15 (2.0%)	9 (1.3%)	12 (1.4%)	8 (0.9%)	9 (1.0%)	8 (0.8%)	104 (1.3%)
Too old on ice	11 (1.7%)	12 (1.8%)	13 (1.8%)	20 (2.7%)	20 (2.7%)	5 (0.7%)	15 (1.7%)	12 (1.4%)	23 (2.4%)	13 (1.3%)	144 (1.8%)
Recipient determined to be unsuitable for TX in OR	15 (2.3%)	21 (3.1%)	16 (2.3%)	10 (1.4%)	22 (3.0%)	25 (3.5%)	18 (2.1%)	33 (3.8%)	24 (2.5%)	25 (2.6%)	209 (2.7%)
Poor organ function	28 (4.4%)	11 (1.6%)	31 (4.4%)	23 (3.1%)	34 (4.6%)	28 (4.0%)	45 (5.1%)	28 (3.3%)	32 (3.4%)	36 (3.7%)	296 (3.8%)
No recipient located - list exhausted	13 (2.0%)	22 (3.2%)	16 (2.3%)	24 (3.2%)	23 (3.1%)	28 (4.0%)	39 (4.5%)	61 (7.1%)	84 (8.9%)	98 (10.2%)	408 (5.2%)
Diseased organ	35 (5.5%)	43 (6.3%)	63 (9.0%)	56 (7.6%)	47 (6.3%)	42 (5.9%)	61 (7.0%)	51 (5.9%)	50 (5.3%)	66 (6.9%)	514 (6.5%)
Anatomical abnormalities	59 (9.2%)	68 (10.0%)	54 (7.7%)	65 (8.8%)	53 (7.1%)	50 (7.1%)	60 (6.9%)	62 (7.2%)	48 (5.1%)	62 (6.4%)	581 (7.4%)
Warm ischemic time too long	35 (5.5%)	42 (6.2%)	46 (6.5%)	51 (6.9%)	66 (8.9%)	71 (10.0%)	73 (8.4%)	60 (7.0%)	94 (9.9%)	81 (8.4%)	619 (7.9%)
Other, specify	117 (18.3%)	133 (19.6%)	176 (25.0%)	178 (24.1%)	170 (22.9%)	192 (27.2%)	221 (25.3%)	240 (27.9%)	305 (32.2%)	244 (25.3%)	1,976 (25.2%)
Biopsy findings	305 (47.6%)	306 (45.0%)	258 (36.7%)	283 (38.3%)	273 (36.8%)	240 (33.9%)	309 (35.4%)	281 (32.6%)	257 (27.2%)	306 (31.8%)	2,818 (35.9%)
<b>Total</b>	<b>641 (100.0%)</b>	<b>680 (100.0%)</b>	<b>703 (100.0%)</b>	<b>739 (100.0%)</b>	<b>742 (100.0%)</b>	<b>707 (100.0%)</b>	<b>874 (100.0%)</b>	<b>861 (100.0%)</b>	<b>946 (100.0%)</b>	<b>963 (100.0%)</b>	<b>7,856 (100.0%)</b>

**Figure 11. Liver non-use reasons vs. liver refusal codes since Dec 2021 refusal code revision**



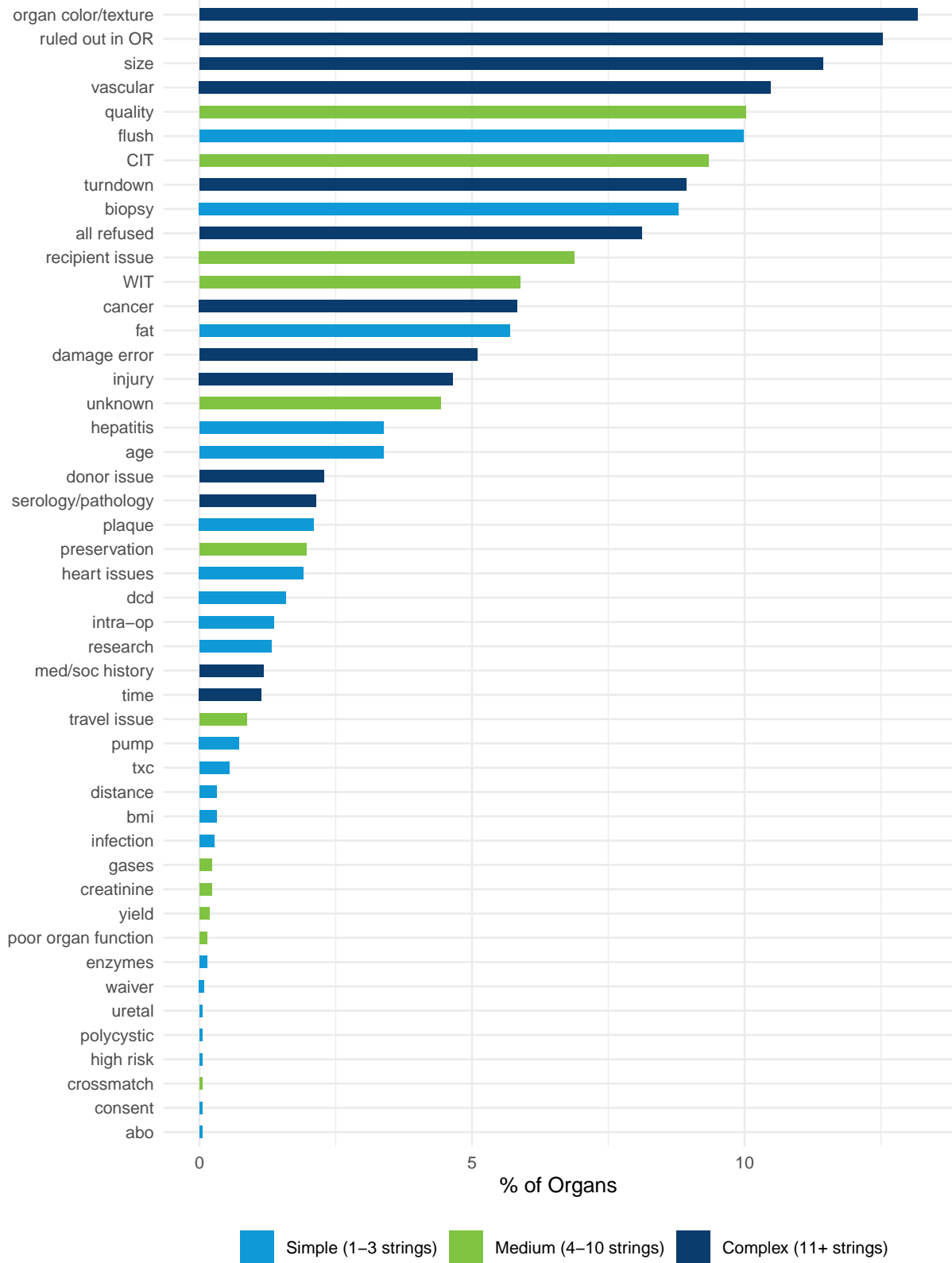
**Figure 12. Distribution of time between cross-clamp and start of last liver offer by non-use reason, 2013 and 2022**



**Table 10. Distribution of time between cross-clamp and start of last liver offer by non-use reason, 2013 and 2022**

<b>Non-Use Code</b>	<b>n Matches</b>	<b>Range</b>	<b>Median</b>	<b>25th, 75th %ile</b>
No recipient located - list exhausted	401	-60.5, 11.9	0	-10.3, 3.8
Donor social history	5	-13.2, 7.3	-0.2	-9.9, 0.7
Positive Hepatitis	13	-35.8, 5.8	-2.4	-6, 1.7
Too old on ice	140	-44.5, 15.8	-4.5	-14.7, 4
Other, specify	1953	-98.6, 16.8	-7.6	-15.6, 1.3
Warm ischemic time too long	608	-61.6, 11.8	-7.7	-15, -2.4
Organ trauma	101	-45.2, 12.7	-7.8	-15.3, -2.2
Anatomical abnormalities	576	-48.9, 13.7	-8.1	-14.5, -1.8
Biopsy findings	2800	-82.4, 17.9	-8.6	-15.7, 0.4
Donor Medical history	41	-33.5, 8.6	-8.7	-11.9, 0.6
Diseased organ	512	-59.2, 17.9	-8.9	-15.5, -4
Poor organ function	291	-59.6, 11.9	-9.2	-15.9, -2.6
Infection	19	-22.7, 11	-9.3	-12.5, -5.7
Organ not as described	26	-36.8, 7	-9.9	-18.6, -5.1
Positive CMV	1	-11.1, -11.1	-11.1	-11.1, -11.1
Recipient determined to be unsuitable for TX in OR	209	-56, 15.8	-11.1	-19.9, -4.5
Vascular damage	78	-44.1, 8.4	-13.2	-19.9, -6.2

**Figure 13. Free text entered in 'other, specify' fields for liver non-use reason**



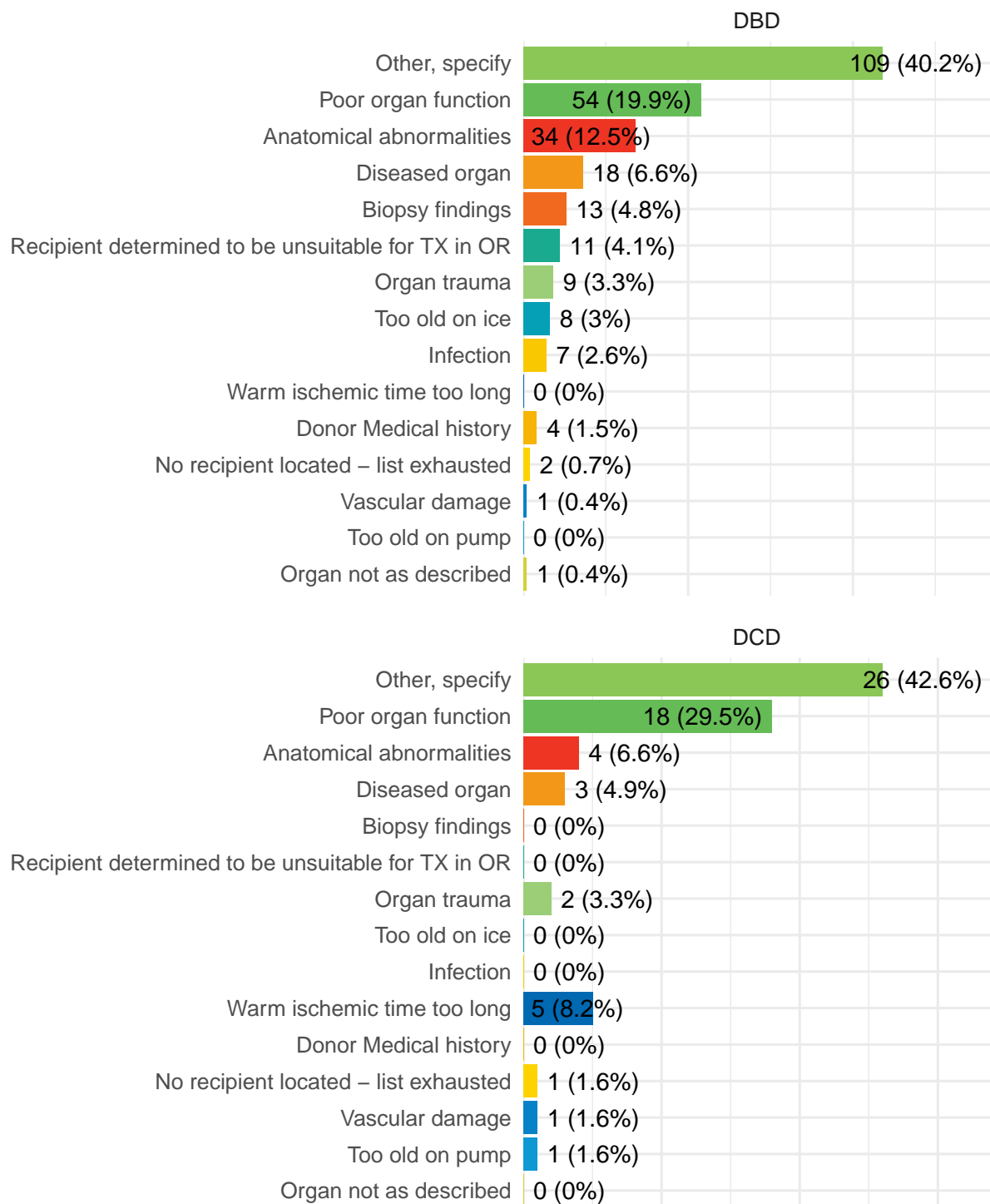
**Table 11. Free text entered in 'other, specify' fields for liver non-use reason**

<b>Text Theme</b>	<b>Count</b>	<b>% of Organs</b>	<b>Theme Complexity</b>
organ color/texture	289	13.17	Complex (11+ strings)
ruled out in OR	275	12.53	Complex (11+ strings)
size	251	11.44	Complex (11+ strings)
vascular	230	10.48	Complex (11+ strings)
quality	220	10.02	Medium (4-10 strings)
flush	219	9.98	Simple (1-3 strings)
CIT	205	9.34	Medium (4-10 strings)
turndown	196	8.93	Complex (11+ strings)
biopsy	193	8.79	Simple (1-3 strings)
all refused	178	8.11	Complex (11+ strings)
recipient issue	151	6.88	Medium (4-10 strings)
WIT	129	5.88	Medium (4-10 strings)
cancer	128	5.83	Complex (11+ strings)
fat	125	5.69	Simple (1-3 strings)
damage error	112	5.1	Complex (11+ strings)
injury	102	4.65	Complex (11+ strings)
unknown	97	4.42	Medium (4-10 strings)
age	74	3.37	Simple (1-3 strings)
hepatitis	74	3.37	Simple (1-3 strings)
donor issue	50	2.28	Complex (11+ strings)
serology/pathology	47	2.14	Complex (11+ strings)
plaque	46	2.1	Simple (1-3 strings)
preservation	43	1.96	Medium (4-10 strings)
heart issues	42	1.91	Simple (1-3 strings)
dcd	35	1.59	Simple (1-3 strings)
intra-op	30	1.37	Simple (1-3 strings)
research	29	1.32	Simple (1-3 strings)
med/soc history	26	1.18	Complex (11+ strings)
time	25	1.14	Complex (11+ strings)
travel issue	19	0.87	Medium (4-10 strings)
pump	16	0.73	Simple (1-3 strings)
txc	12	0.55	Simple (1-3 strings)
bmi	7	0.32	Simple (1-3 strings)
distance	7	0.32	Simple (1-3 strings)
infection	6	0.27	Simple (1-3 strings)
creatinine	5	0.23	Medium (4-10 strings)
gases	5	0.23	Medium (4-10 strings)
yield	4	0.18	Medium (4-10 strings)
enzymes	3	0.14	Simple (1-3 strings)
poor organ function	3	0.14	Medium (4-10 strings)
waiver	2	0.09	Simple (1-3 strings)
abo	1	0.05	Simple (1-3 strings)
consent	1	0.05	Simple (1-3 strings)
crossmatch	1	0.05	Medium (4-10 strings)
high risk	1	0.05	Simple (1-3 strings)
polycystic	1	0.05	Simple (1-3 strings)
uretal	1	0.05	Simple (1-3 strings)

## Heart

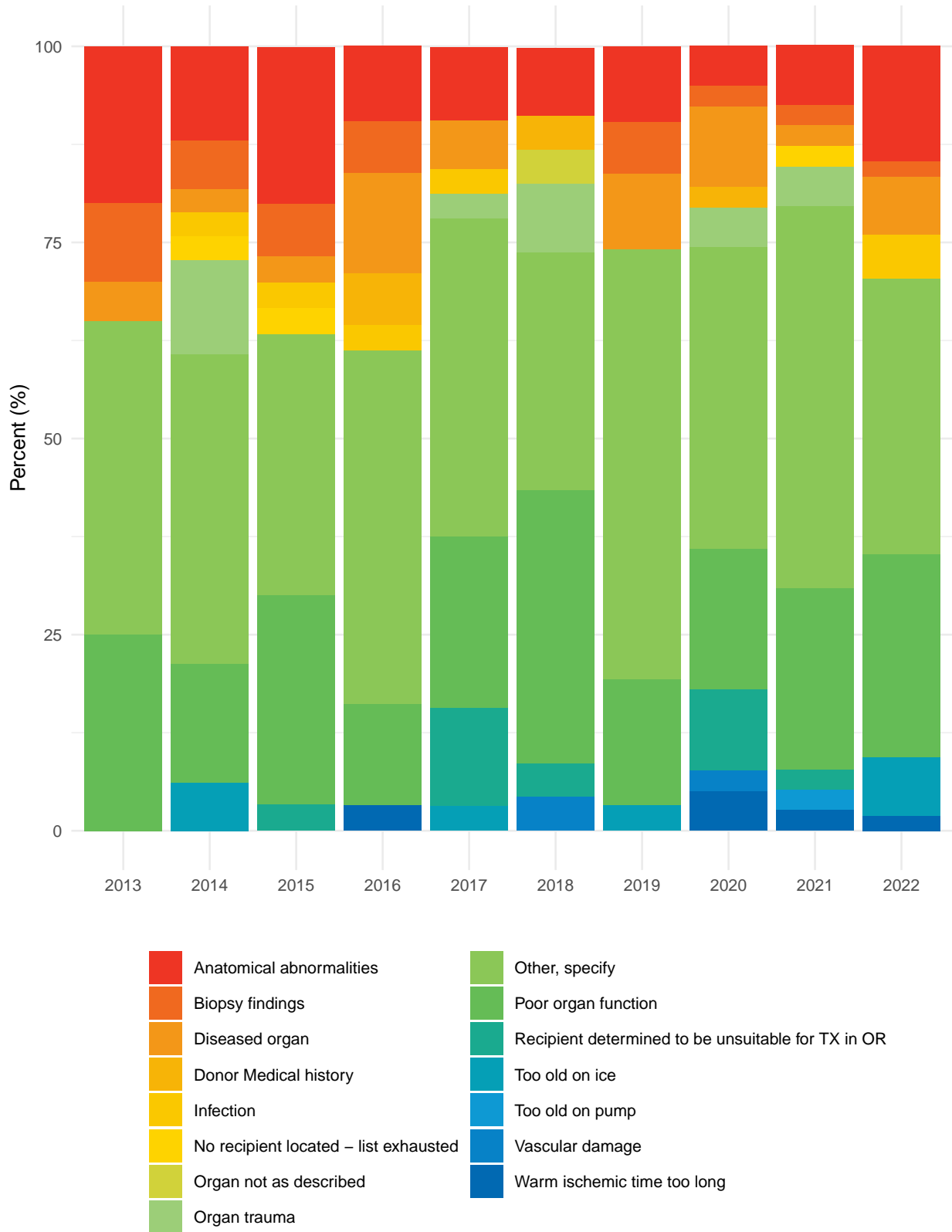
In this section, we summarize heart-specific findings in **Figures 14 through 18** and **Tables 12 through 4**.

**Figure 14. Frequency (%) of procured heart non-use reasons by DCD status, 2013-2022**





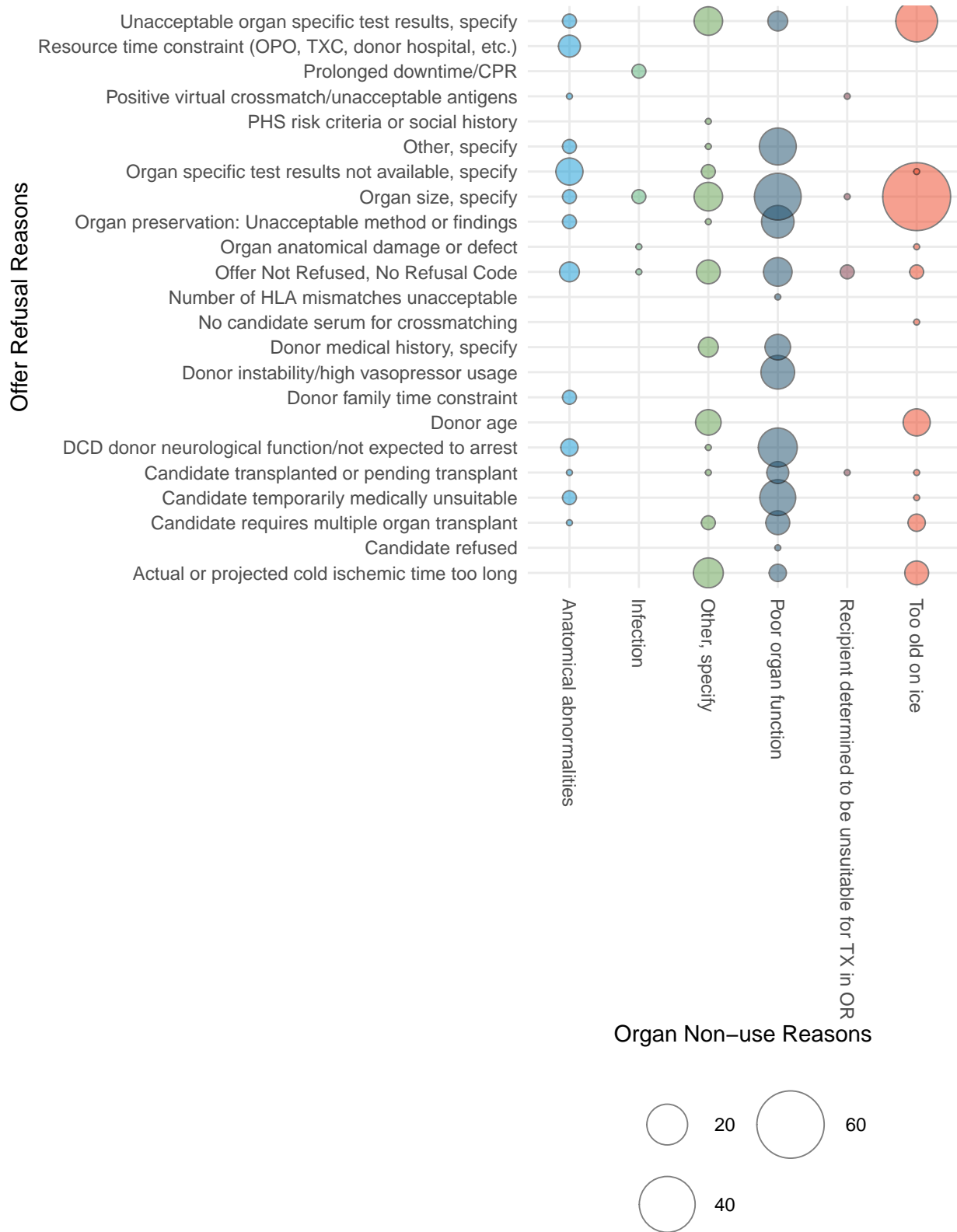
**Figure 15. Distribution of procured heart non-use reasons by year, 2013-2022**



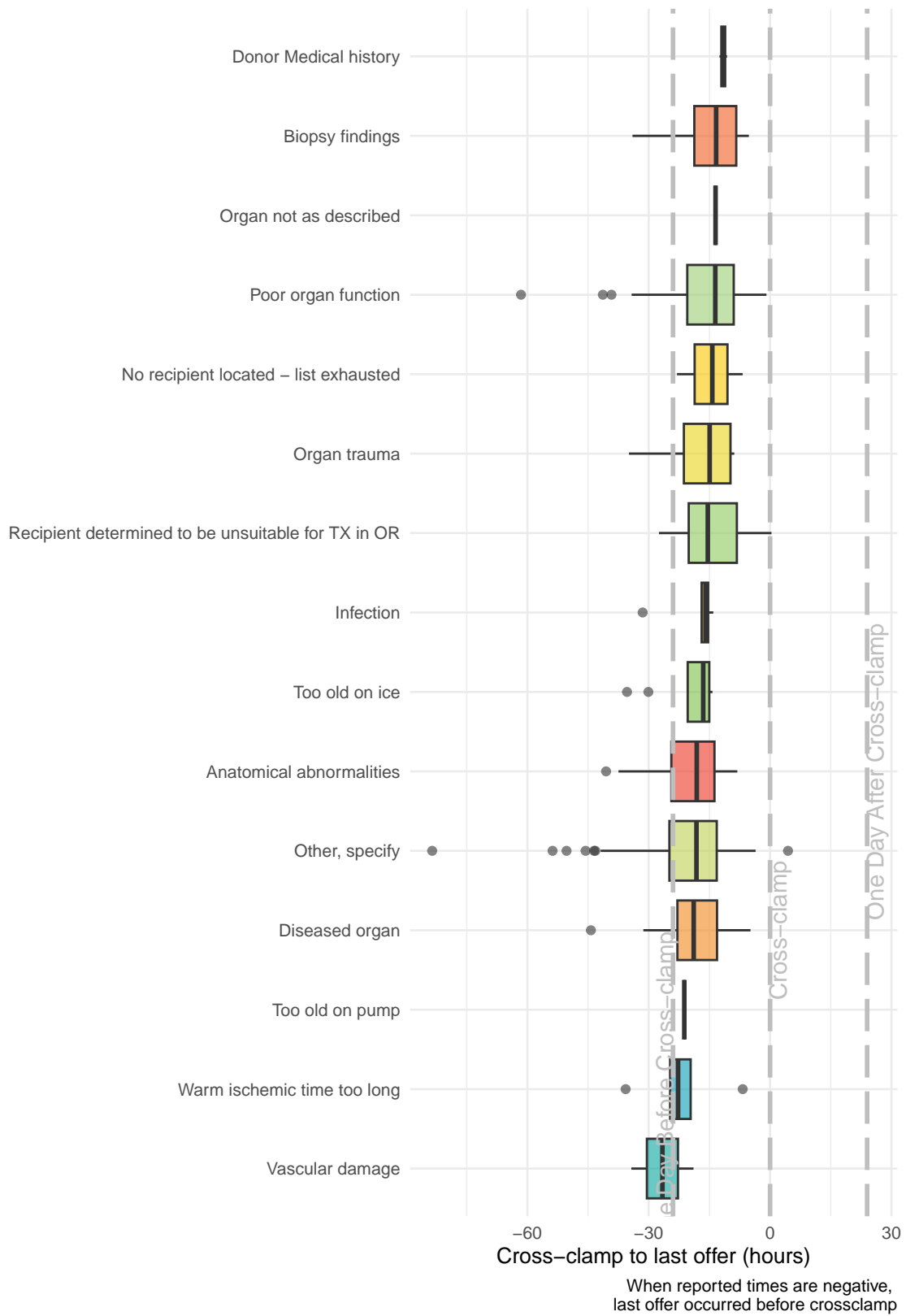
**Table 12. Frequency (%) procured heart non-use reasons by year, 2013-2022**

Non-use Reason	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Organ not as described	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (4.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.3%)
Too old on pump	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (2.6%)	0 (0.0%)	1 (0.3%)
NA	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (3.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.3%)
Vascular damage	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (4.3%)	0 (0.0%)	1 (2.6%)	0 (0.0%)	0 (0.0%)	2 (0.6%)
No recipient located - list exhausted	0 (0.0%)	1 (3.0%)	1 (3.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (2.6%)	0 (0.0%)	3 (0.9%)
Donor Medical history	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (6.5%)	0 (0.0%)	1 (4.3%)	0 (0.0%)	1 (2.6%)	0 (0.0%)	0 (0.0%)	4 (1.2%)
Warm ischemic time too long	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (3.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (5.1%)	1 (2.6%)	1 (1.9%)	5 (1.5%)
Infection	0 (0.0%)	1 (3.0%)	1 (3.3%)	1 (3.2%)	1 (3.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (5.6%)	7 (2.1%)
Too old on ice	0 (0.0%)	2 (6.1%)	0 (0.0%)	0 (0.0%)	1 (3.0%)	0 (0.0%)	1 (3.2%)	0 (0.0%)	0 (0.0%)	4 (7.4%)	8 (2.4%)
Organ trauma	0 (0.0%)	4 (12.1%)	0 (0.0%)	0 (0.0%)	1 (3.0%)	2 (8.7%)	0 (0.0%)	2 (5.1%)	2 (5.1%)	0 (0.0%)	11 (3.3%)
Recipient determined to be unsuitable for TX in OR	0 (0.0%)	0 (0.0%)	1 (3.3%)	0 (0.0%)	4 (12.1%)	1 (4.3%)	0 (0.0%)	4 (10.3%)	1 (2.6%)	0 (0.0%)	11 (3.3%)
Biopsy findings	2 (10.0%)	2 (6.1%)	2 (6.7%)	2 (6.5%)	0 (0.0%)	0 (0.0%)	2 (6.5%)	1 (2.6%)	1 (2.6%)	1 (1.9%)	13 (3.9%)
Diseased organ	1 (5.0%)	1 (3.0%)	1 (3.3%)	4 (12.9%)	2 (6.1%)	0 (0.0%)	3 (9.7%)	4 (10.3%)	1 (2.6%)	4 (7.4%)	21 (6.3%)
Anatomical abnormalities	4 (20.0%)	4 (12.1%)	6 (20.0%)	3 (9.7%)	3 (9.1%)	2 (8.7%)	3 (9.7%)	2 (5.1%)	3 (7.7%)	8 (14.8%)	38 (11.4%)
Poor organ function	5 (25.0%)	5 (15.2%)	8 (26.7%)	4 (12.9%)	7 (21.2%)	8 (34.8%)	5 (16.1%)	7 (17.9%)	9 (23.1%)	14 (25.9%)	72 (21.6%)
Other, specify	8 (40.0%)	13 (39.4%)	10 (33.3%)	14 (45.2%)	13 (39.4%)	7 (30.4%)	17 (54.8%)	15 (38.5%)	19 (48.7%)	19 (35.2%)	135 (40.5%)
<b>Total</b>	<b>20 (100.0%)</b>	<b>33 (100.0%)</b>	<b>30 (100.0%)</b>	<b>31 (100.0%)</b>	<b>33 (100.0%)</b>	<b>23 (100.0%)</b>	<b>31 (100.0%)</b>	<b>39 (100.0%)</b>	<b>39 (100.0%)</b>	<b>54 (100.0%)</b>	<b>333 (100.0%)</b>

**Figure 16. Heart non-use reasons vs. heart refusal codes since Dec 2021 refusal code revision**



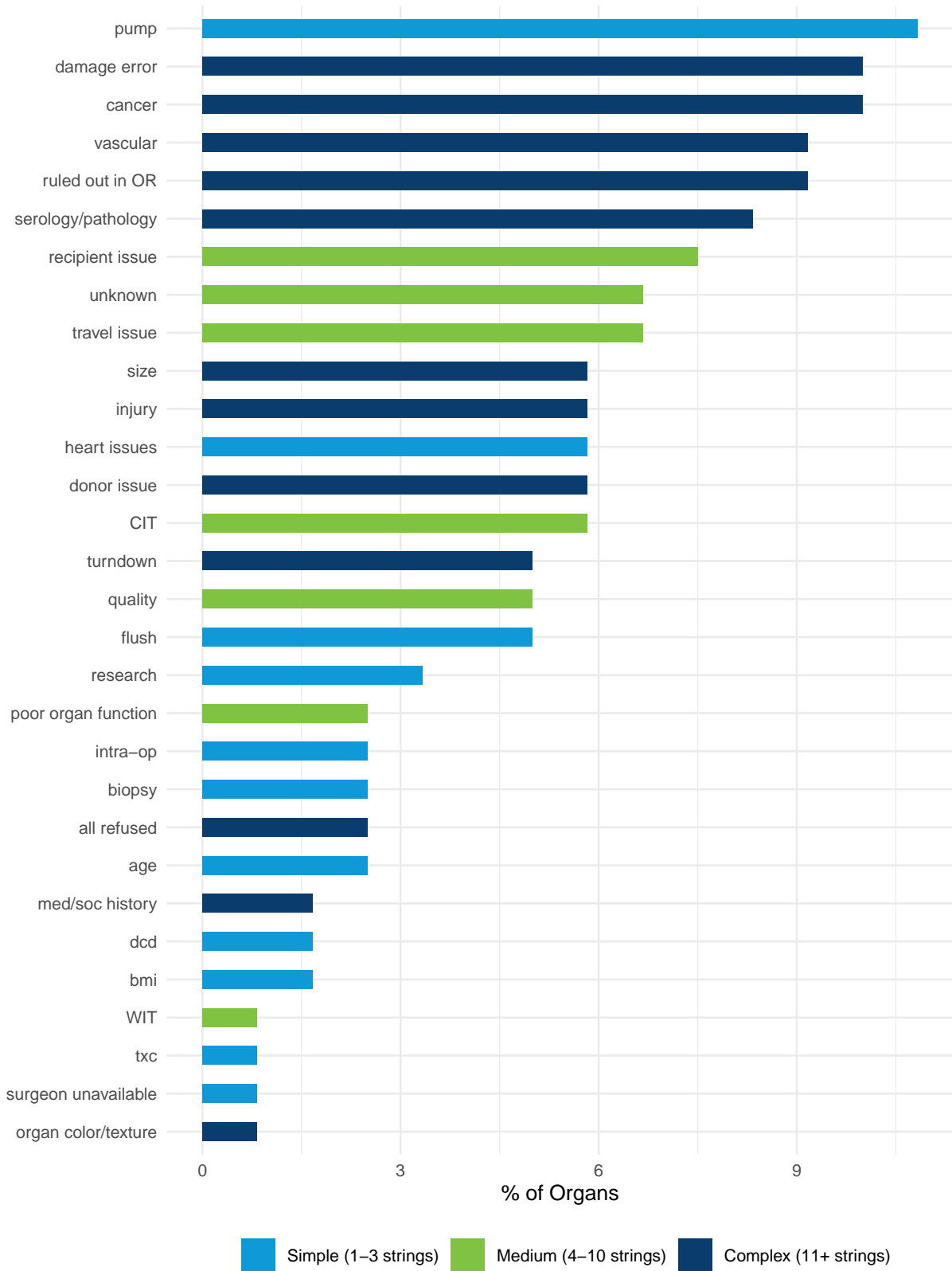
**Figure 17. Distribution of time between cross-clamp and start of last heart offer by non-use reason, 2013 and 2022**



**Table 13. Distribution of time between cross-clamp and start of last heart offer by non-use reason, 2013 and 2022**

<b>Non-Use Code</b>	<b>n Matches</b>	<b>Range</b>	<b>Median</b>	<b>25th, 75th %ile</b>
Donor Medical history	2	-12.5, -10.6	-11.6	-12, -11.1
Biopsy findings	12	-34, -5.2	-13.3	-18.7, -8.4
Organ not as described	1	-13.5, -13.5	-13.5	-13.5, -13.5
Poor organ function	70	-61.6, -0.9	-13.5	-20.5, -9
No recipient located - list exhausted	3	-23, -6.8	-14.3	-18.6, -10.5
Organ trauma	10	-34.9, -8.8	-14.9	-21.3, -9.8
Recipient determined to be unsuitable for TX in OR	11	-27.5, 0.3	-15.4	-20.1, -8.2
Infection	6	-31.5, -14	-16	-16.9, -15.3
Too old on ice	8	-35.4, -14.2	-16.5	-20.4, -15
Anatomical abnormalities	38	-40.5, -8.1	-18.1	-24.4, -13.7
Other, specify	126	-83.6, 4.4	-18.2	-24.9, -13.2
Diseased organ	21	-44.3, -4.8	-18.9	-22.9, -13.1
Too old on pump	1	-21.2, -21.2	-21.2	-21.2, -21.2
Warm ischemic time too long	5	-35.7, -6.8	-22.8	-24.7, -19.6
Vascular damage	2	-34.3, -18.9	-26.6	-30.5, -22.8

**Figure 18. Free text entered in 'other, specify' fields for heart non-use reason**



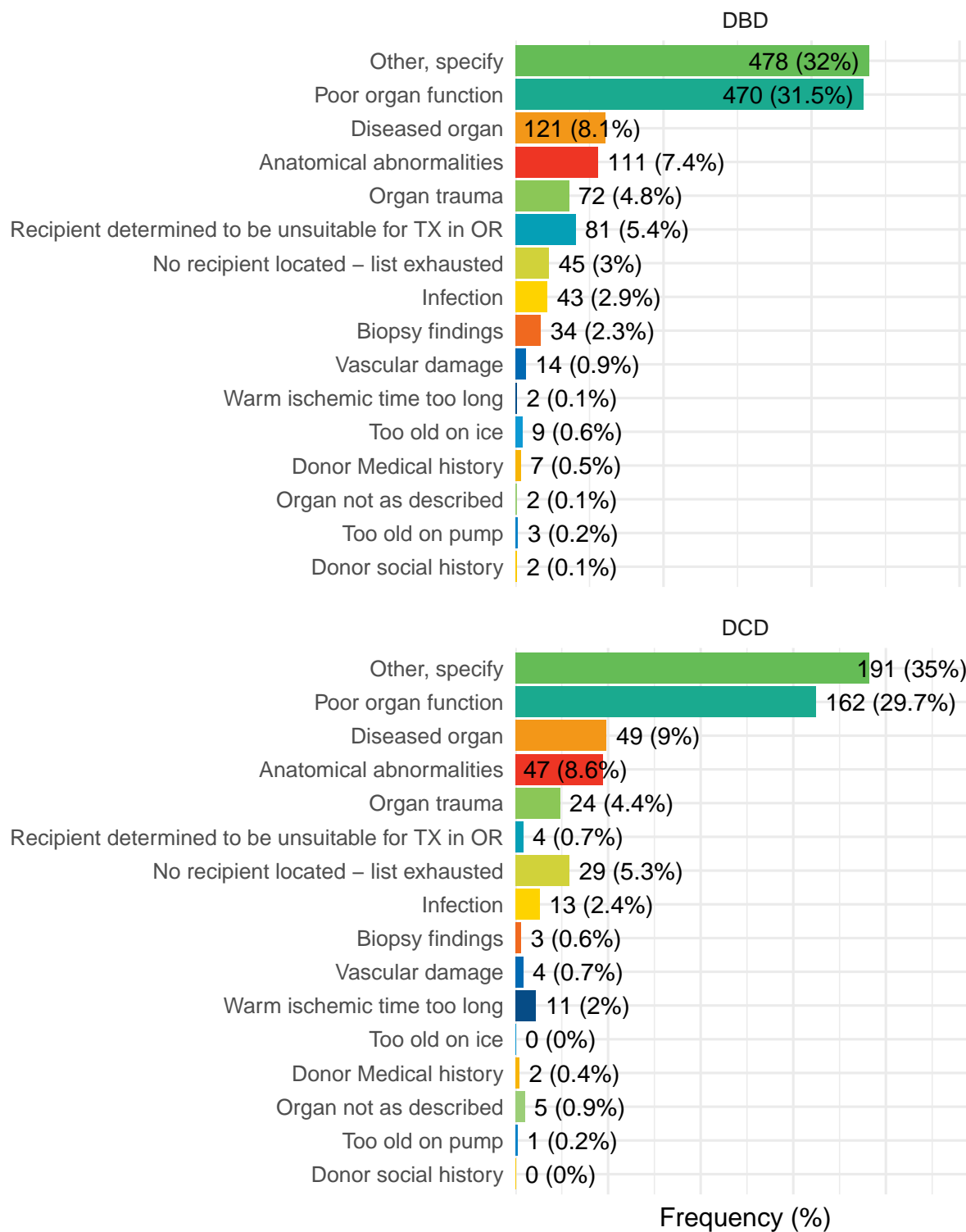
**Table 14. Free text entered in 'other, specify' fields for heart non-use reason**

<b>Text Theme</b>	<b>Count</b>	<b>% of Organs</b>	<b>Theme Complexity</b>
pump	13	10.83	Simple (1-3 strings)
cancer	12	10	Complex (11+ strings)
damage error	12	10	Complex (11+ strings)
ruled out in OR	11	9.17	Complex (11+ strings)
vascular	11	9.17	Complex (11+ strings)
serology/pathology	10	8.33	Complex (11+ strings)
recipient issue	9	7.5	Medium (4-10 strings)
travel issue	8	6.67	Medium (4-10 strings)
unknown	8	6.67	Medium (4-10 strings)
CIT	7	5.83	Medium (4-10 strings)
donor issue	7	5.83	Complex (11+ strings)
heart issues	7	5.83	Simple (1-3 strings)
injury	7	5.83	Complex (11+ strings)
size	7	5.83	Complex (11+ strings)
flush	6	5	Simple (1-3 strings)
quality	6	5	Medium (4-10 strings)
turndown	6	5	Complex (11+ strings)
research	4	3.33	Simple (1-3 strings)
age	3	2.5	Simple (1-3 strings)
all refused	3	2.5	Complex (11+ strings)
biopsy	3	2.5	Simple (1-3 strings)
intra-op	3	2.5	Simple (1-3 strings)
poor organ function	3	2.5	Medium (4-10 strings)
bmi	2	1.67	Simple (1-3 strings)
dcd	2	1.67	Simple (1-3 strings)
med/soc history	2	1.67	Complex (11+ strings)
WIT	1	0.83	Medium (4-10 strings)
organ color/texture	1	0.83	Complex (11+ strings)
surgeon unavailable	1	0.83	Simple (1-3 strings)
txc	1	0.83	Simple (1-3 strings)

## Lung

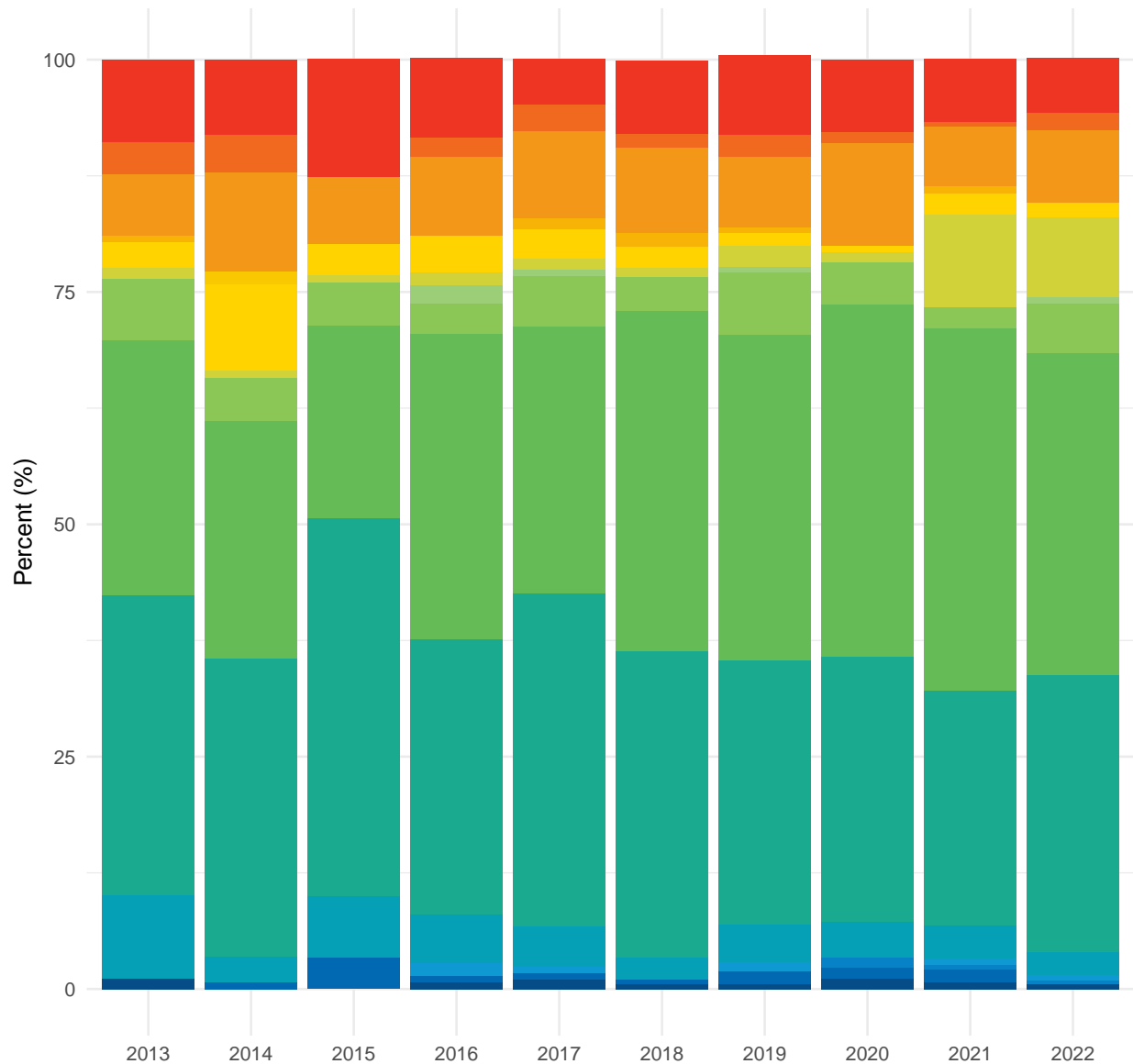
In this section, we summarize lung-specific findings in **Figures 19 through 23** and **Tables 15 through 17**.

**Figure 19. Frequency (%) of procured lung non-use reasons by DCD status, 2013-2022**





**Figure 20. Distribution of procured lung non-use reasons by year, 2013-2022**

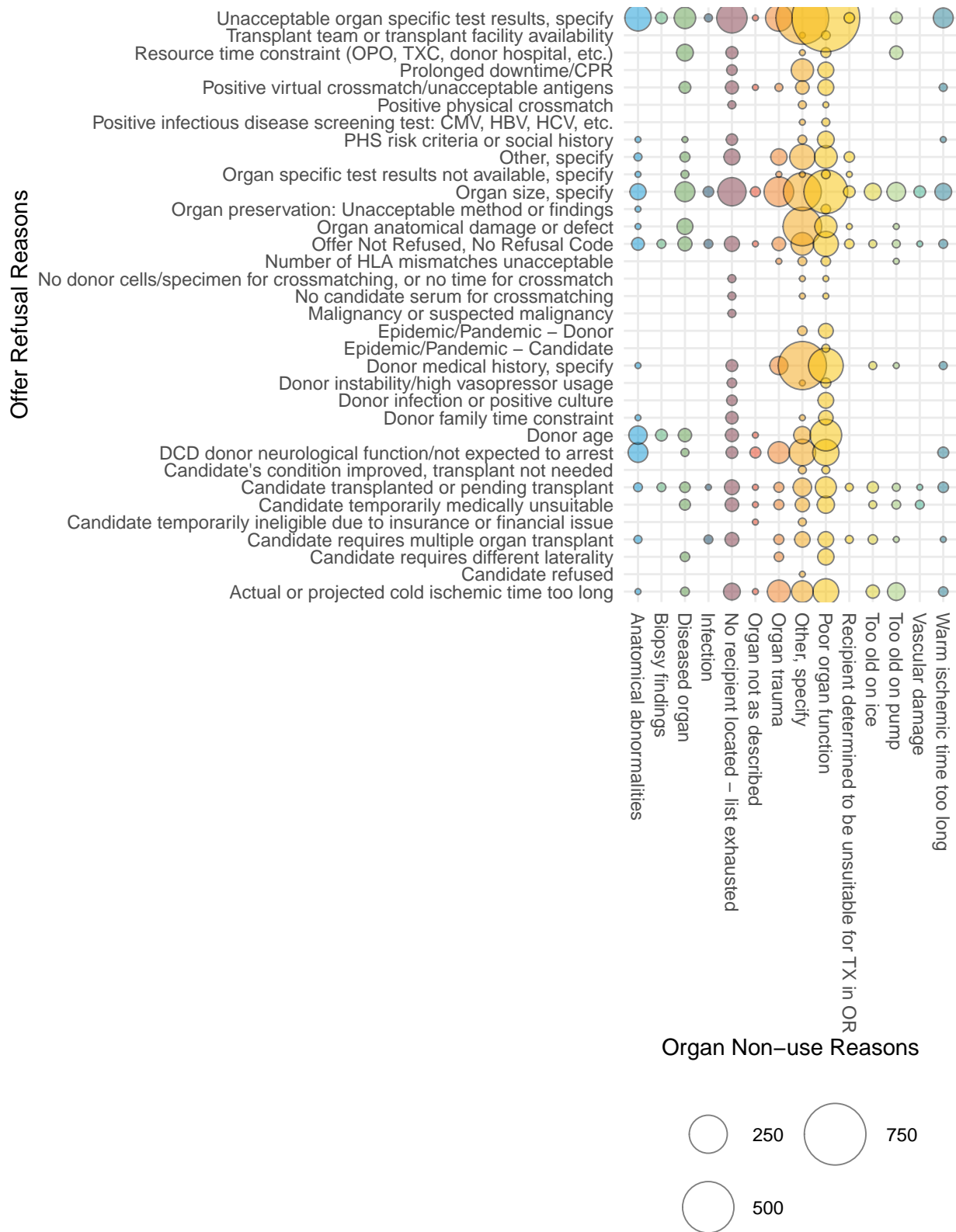


- Anatomical abnormalities
- Biopsy findings
- Diseased organ
- Donor Medical history
- Donor social history
- Infection
- No recipient located – list exhausted
- Organ not as described
- Organ trauma
- Other, specify
- Poor organ function
- Recipient determined to be unsuitable for TX in OR
- Too old on ice
- Too old on pump
- Vascular damage
- Warm ischemic time too long

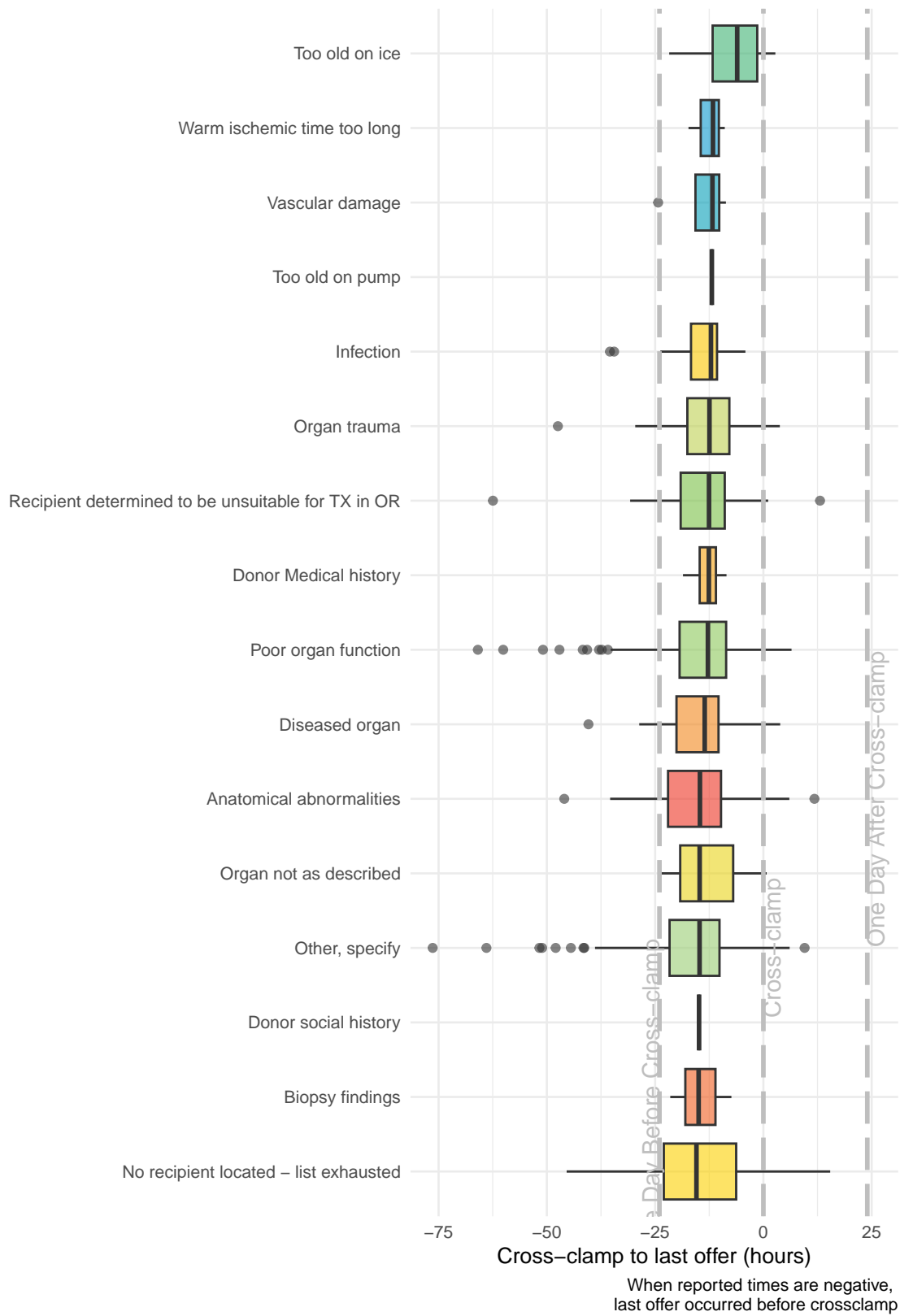
Table 15. Frequency (%) procured lung non-use reasons by year, 2013-2022

Non-use Reason	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Donor social history	0 (0.0%)	2 (1.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.1%)
Too old on pump	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (1.1%)	1 (0.4%)	1 (0.3%)	4 (0.2%)
Organ not as described	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (2.0%)	1 (0.6%)	0 (0.0%)	1 (0.5%)	0 (0.0%)	0 (0.0%)	2 (0.6%)	7 (0.3%)
Donor Medical history	1 (0.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (1.1%)	3 (1.4%)	1 (0.5%)	0 (0.0%)	2 (0.7%)	0 (0.0%)	9 (0.4%)
Too old on ice	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (1.3%)	1 (0.6%)	0 (0.0%)	2 (0.9%)	0 (0.0%)	2 (0.7%)	2 (0.6%)	9 (0.4%)
Warm ischemic time too long	2 (1.1%)	0 (0.0%)	0 (0.0%)	1 (0.7%)	2 (1.1%)	1 (0.5%)	1 (0.5%)	2 (1.1%)	2 (0.7%)	2 (0.6%)	13 (0.6%)
Vascular damage	0 (0.0%)	1 (0.7%)	5 (3.3%)	1 (0.7%)	1 (0.6%)	1 (0.5%)	3 (1.4%)	2 (1.1%)	4 (1.4%)	0 (0.0%)	18 (0.9%)
Biopsy findings	6 (3.4%)	6 (4.0%)	0 (0.0%)	3 (2.0%)	5 (2.8%)	3 (1.4%)	5 (2.3%)	2 (1.1%)	1 (0.4%)	6 (1.8%)	37 (1.8%)
Infection	5 (2.8%)	14 (9.4%)	5 (3.3%)	6 (3.9%)	6 (3.3%)	5 (2.3%)	3 (1.4%)	1 (0.6%)	6 (2.2%)	5 (1.5%)	56 (2.7%)
No recipient located - list exhausted	2 (1.1%)	1 (0.7%)	1 (0.7%)	2 (1.3%)	2 (1.1%)	2 (0.9%)	5 (2.3%)	2 (1.1%)	28 (10.1%)	29 (8.7%)	74 (3.6%)
Recipient determined to be unsuitable for TX in OR	16 (8.9%)	4 (2.7%)	10 (6.7%)	8 (5.3%)	8 (4.4%)	5 (2.3%)	9 (4.1%)	7 (3.9%)	10 (3.6%)	8 (2.4%)	85 (4.2%)
Organ trauma	12 (6.7%)	7 (4.7%)	7 (4.7%)	5 (3.3%)	10 (5.5%)	8 (3.7%)	15 (6.8%)	8 (4.5%)	6 (2.2%)	18 (5.4%)	96 (4.7%)
Anatomical abnormalities	16 (8.9%)	12 (8.1%)	19 (12.7%)	13 (8.6%)	9 (5.0%)	17 (7.9%)	19 (8.6%)	14 (7.8%)	19 (6.9%)	20 (6.0%)	158 (7.7%)
Diseased organ	12 (6.7%)	16 (10.7%)	11 (7.3%)	13 (8.6%)	17 (9.4%)	20 (9.3%)	17 (7.7%)	20 (11.2%)	18 (6.5%)	26 (7.8%)	170 (8.3%)
Poor organ function	58 (32.4%)	48 (32.2%)	61 (40.7%)	45 (29.6%)	65 (35.9%)	71 (33.0%)	63 (28.4%)	51 (28.5%)	70 (25.3%)	100 (29.9%)	632 (31.0%)
Other, specify	49 (27.4%)	38 (25.5%)	31 (20.7%)	50 (32.9%)	52 (28.7%)	79 (36.7%)	78 (35.1%)	68 (38.0%)	108 (39.0%)	116 (34.6%)	669 (32.8%)
<b>Total</b>	<b>179 (100.0%)</b>	<b>149 (100.0%)</b>	<b>150 (100.0%)</b>	<b>152 (100.0%)</b>	<b>181 (100.0%)</b>	<b>215 (100.0%)</b>	<b>222 (100.0%)</b>	<b>179 (100.0%)</b>	<b>277 (100.0%)</b>	<b>335 (100.0%)</b>	<b>2,039 (100.0%)</b>

**Figure 21. Lung non-use reasons vs. lung refusal codes, for donors where only one lung was procured or where two were procured and had the same non-use code**



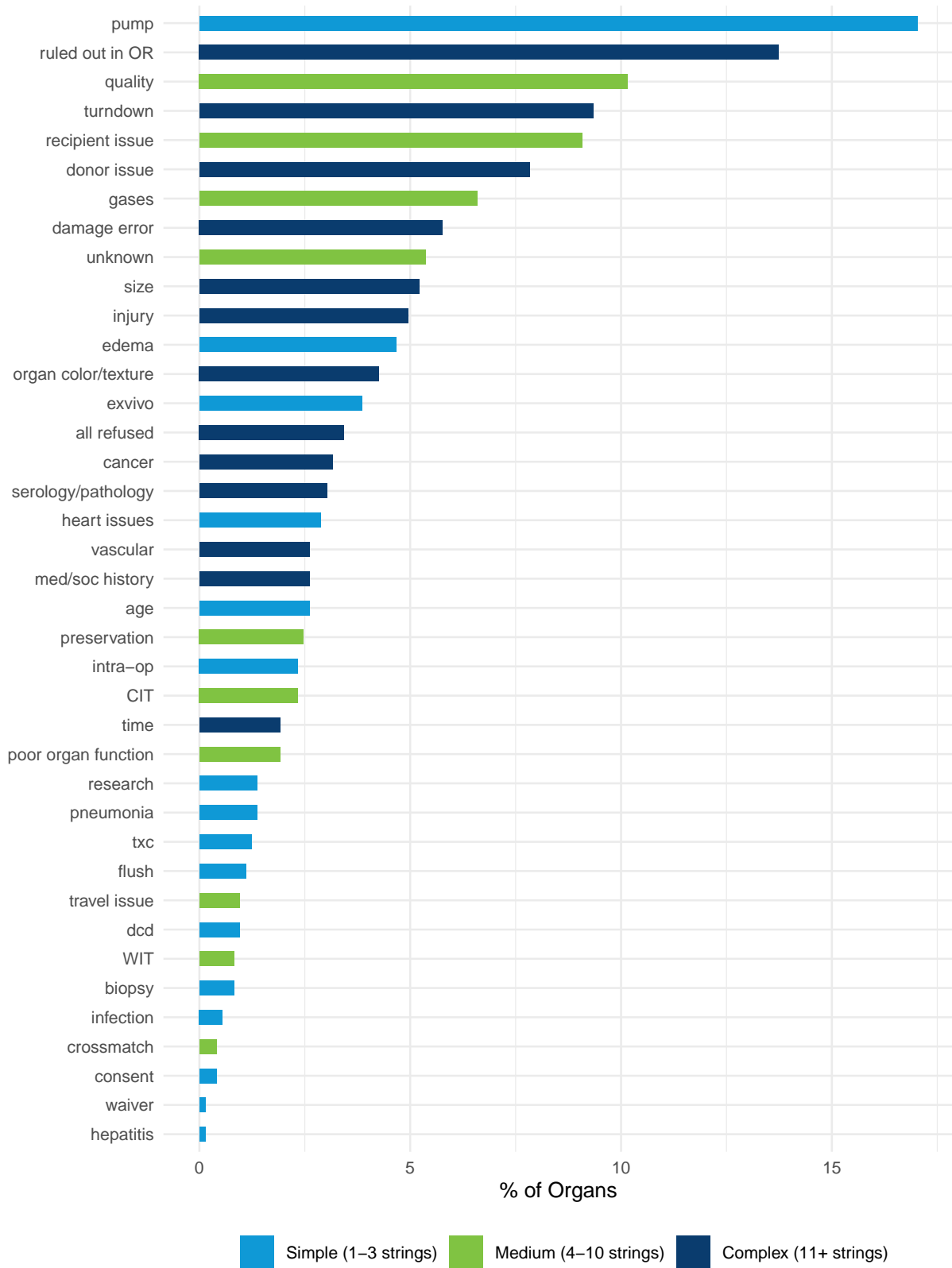
**Figure 22. Distribution of time between cross-clamp and start of last lung offer by non-use reason, 2013 and 2022**



**Table 16. Distribution of time between cross-clamp and start of last lung offer by non-use reason, 2013 and 2022**

<b>Non-Use Code</b>	<b>n Matches</b>	<b>Range</b>	<b>Median</b>	<b>25th, 75th %ile</b>
Too old on ice	7	-21.8, 2.8	-6	-11.7, -1.4
Warm ischemic time too long	3	-17.3, -8.9	-11.6	-14.5, -10.3
Vascular damage	4	-24.3, -8.7	-11.8	-15.7, -10.2
Too old on pump	1	-11.9, -11.9	-11.9	-11.9, -11.9
Infection	22	-35.4, -4.2	-12.1	-16.7, -10.7
Organ trauma	55	-47.5, 3.8	-12.4	-17.6, -7.9
Donor Medical history	4	-18.6, -8.5	-12.6	-14.7, -11
Recipient determined to be unsuitable for TX in OR	59	-62.5, 13.1	-12.6	-19.1, -8.9
Poor organ function	216	-65.9, 6.5	-12.8	-19.4, -8.6
Diseased organ	71	-40.4, 3.9	-13.6	-20.1, -10.4
Anatomical abnormalities	81	-46, 11.8	-14.7	-22, -9.8
Organ not as described	3	-23.7, 0.8	-14.7	-19.2, -7
Other, specify	283	-76.4, 9.5	-14.7	-21.7, -10.1
Donor social history	1	-14.8, -14.8	-14.8	-14.8, -14.8
Biopsy findings	11	-21.5, -7.4	-14.9	-18, -11.1
No recipient located - list exhausted	34	-45.4, 15.4	-15.5	-23, -6.3

**Figure 23. Free text entered in 'other, specify' fields for lung non-use reason**



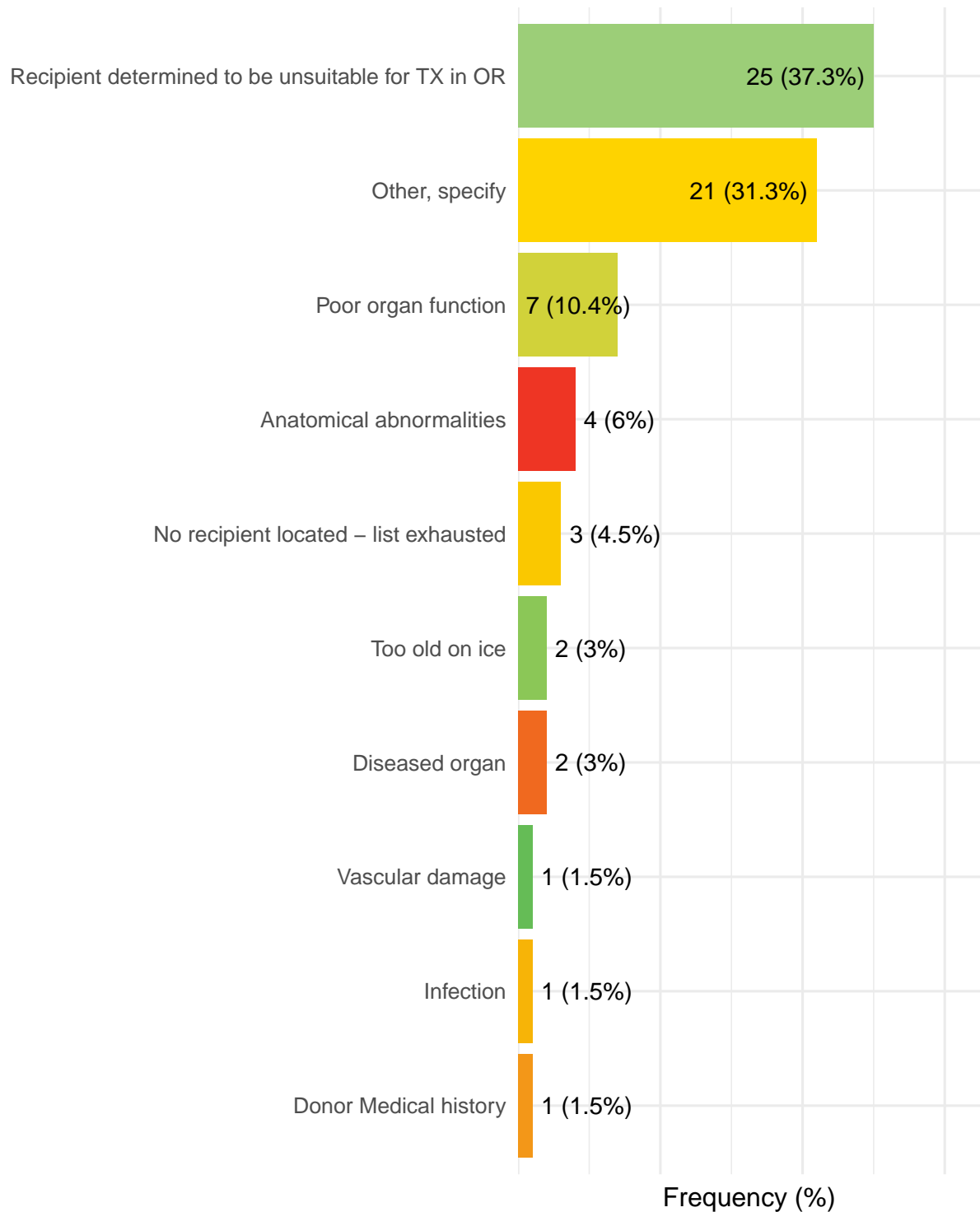
**Table 17. Free text entered in 'other, specify' fields for lung non-use reason**

<b>Text Theme</b>	<b>Count</b>	<b>% of Organs</b>	<b>Theme Complexity</b>
pump	124	17.03	Simple (1-3 strings)
ruled out in OR	100	13.74	Complex (11+ strings)
quality	74	10.16	Medium (4-10 strings)
turndown	68	9.34	Complex (11+ strings)
recipient issue	66	9.07	Medium (4-10 strings)
donor issue	57	7.83	Complex (11+ strings)
gases	48	6.59	Medium (4-10 strings)
damage error	42	5.77	Complex (11+ strings)
unknown	39	5.36	Medium (4-10 strings)
size	38	5.22	Complex (11+ strings)
injury	36	4.95	Complex (11+ strings)
edema	34	4.67	Simple (1-3 strings)
organ color/texture	31	4.26	Complex (11+ strings)
exvivo	28	3.85	Simple (1-3 strings)
all refused	25	3.43	Complex (11+ strings)
cancer	23	3.16	Complex (11+ strings)
serology/pathology	22	3.02	Complex (11+ strings)
heart issues	21	2.88	Simple (1-3 strings)
age	19	2.61	Simple (1-3 strings)
med/soc history	19	2.61	Complex (11+ strings)
vascular	19	2.61	Complex (11+ strings)
preservation	18	2.47	Medium (4-10 strings)
CIT	17	2.34	Medium (4-10 strings)
intra-op	17	2.34	Simple (1-3 strings)
poor organ function	14	1.92	Medium (4-10 strings)
time	14	1.92	Complex (11+ strings)
pneumonia	10	1.37	Simple (1-3 strings)
research	10	1.37	Simple (1-3 strings)
txc	9	1.24	Simple (1-3 strings)
flush	8	1.1	Simple (1-3 strings)
dcd	7	0.96	Simple (1-3 strings)
travel issue	7	0.96	Medium (4-10 strings)
WIT	6	0.82	Medium (4-10 strings)
biopsy	6	0.82	Simple (1-3 strings)
infection	4	0.55	Simple (1-3 strings)
consent	3	0.41	Simple (1-3 strings)
crossmatch	3	0.41	Medium (4-10 strings)
hepatitis	1	0.14	Simple (1-3 strings)
waiver	1	0.14	Simple (1-3 strings)

## Intestine

In this section, we summarize intestine-specific findings in **Figures 24 through 27** and **Tables 18 through 20**.

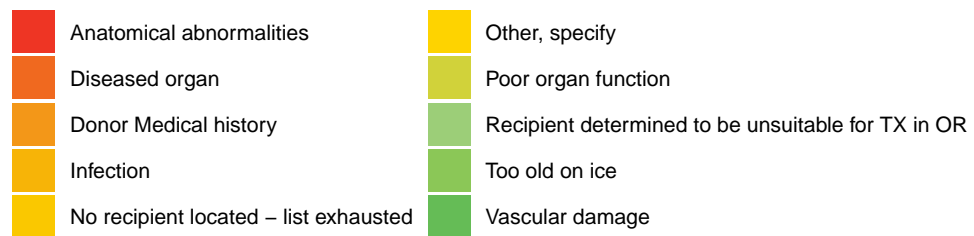
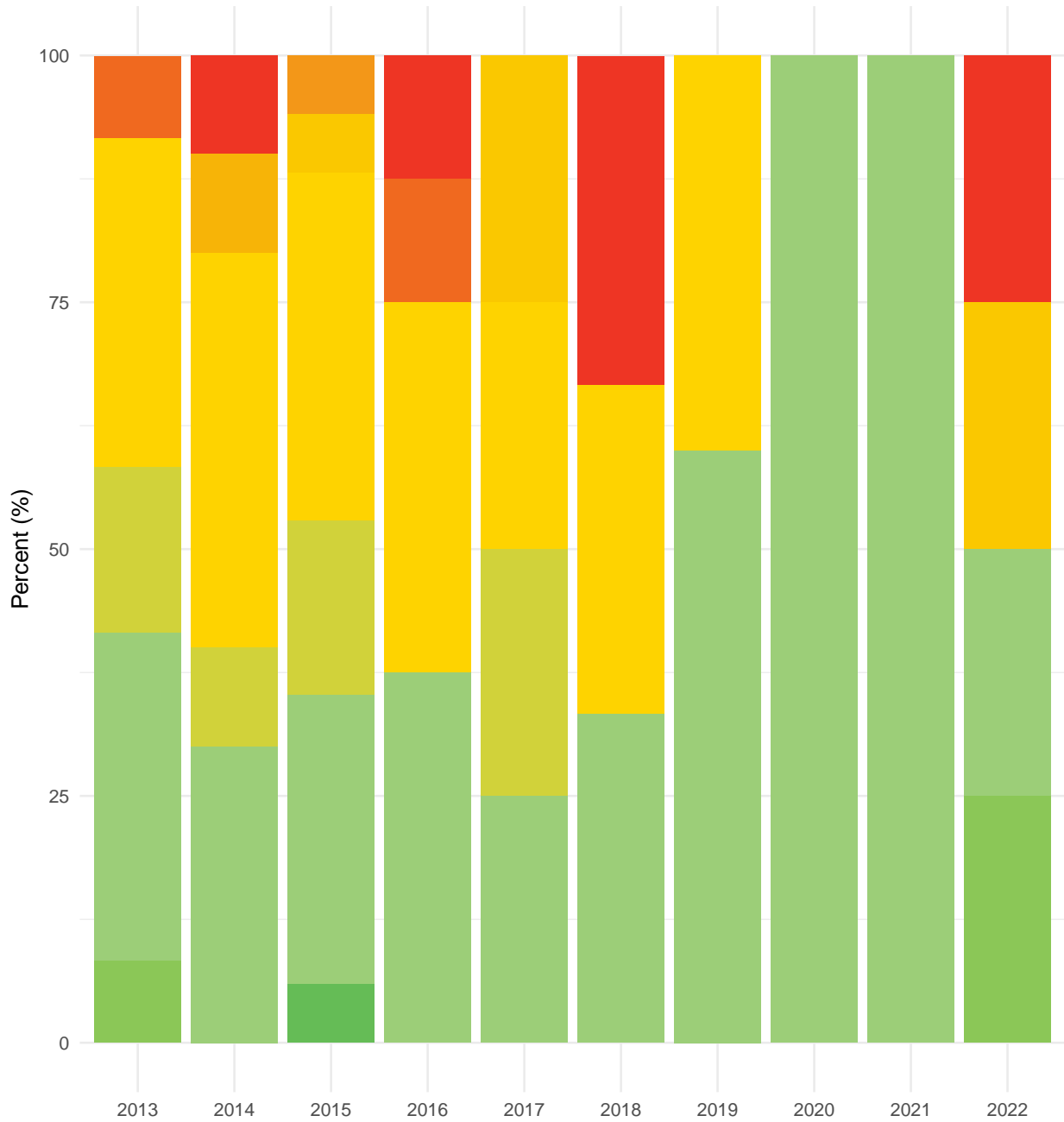
**Figure 24. Frequency (%) of procured intestine non-use reasons, 2013-2022**



Note: No DCD intestines were procured but not used for transplant in this period

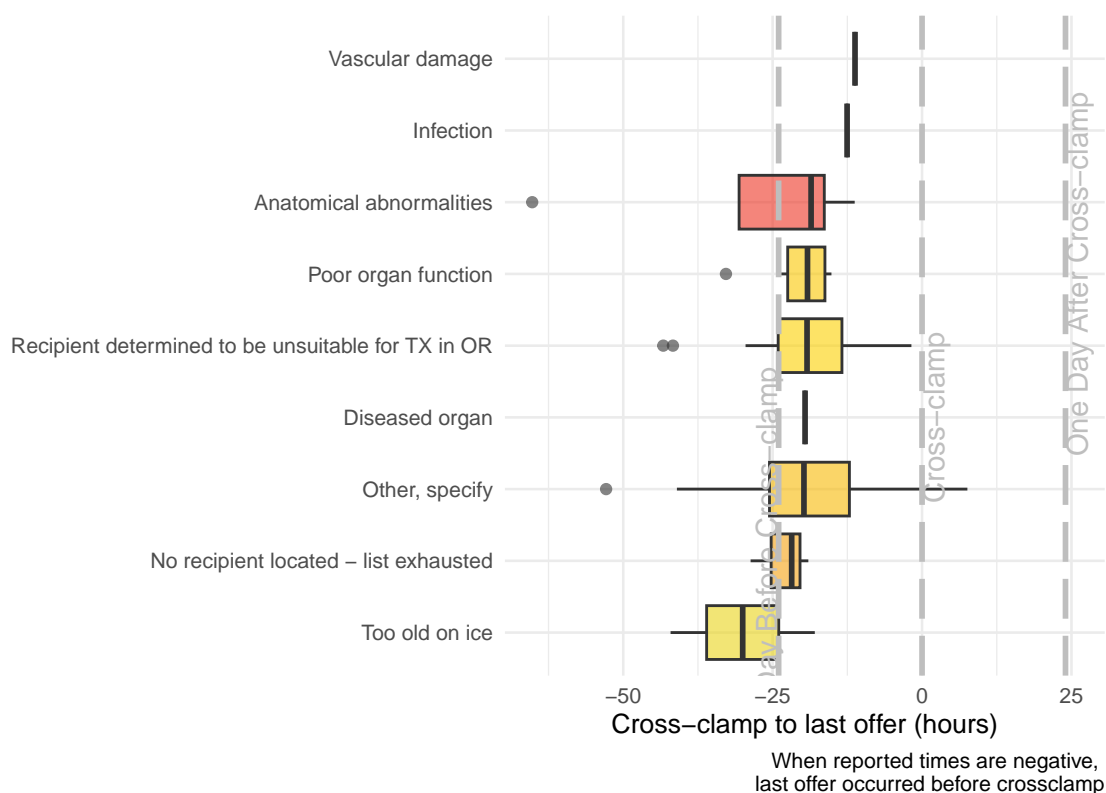


**Figure 25. Distribution of procured intestine non-use reasons by year, 2013-2022**

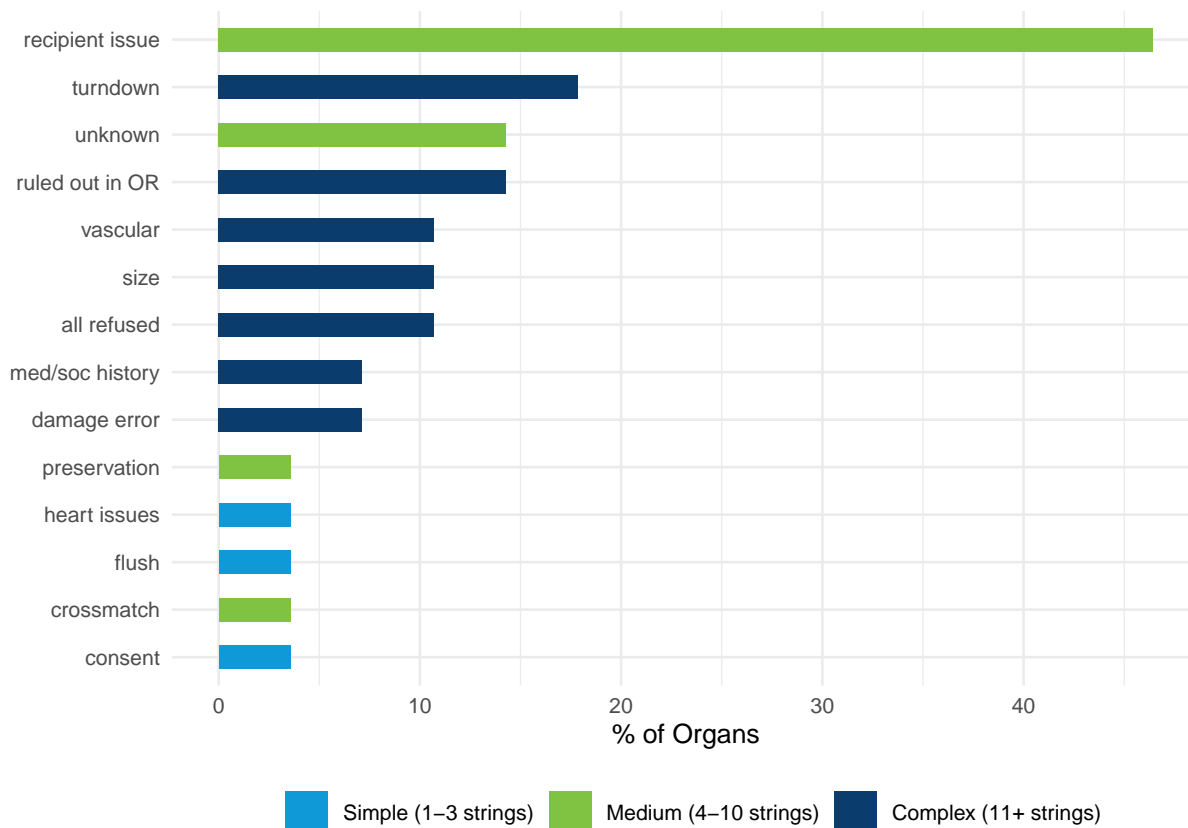


**Table 18. Frequency (%) procured intestine non-use reasons by year, 2013-2022**

<b>Non-use Reason</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>Total</b>
Donor Medical history	0 (0.0%)	0 (0.0%)	1 (5.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.5%)
Infection	0 (0.0%)	1 (10.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.5%)
Vascular damage	0 (0.0%)	0 (0.0%)	1 (5.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.5%)
Diseased organ	1 (8.3%)	0 (0.0%)	0 (0.0%)	1 (12.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (3.0%)
Too old on ice	1 (8.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (25.0%)	2 (3.0%)
No recipient located - list exhausted	0 (0.0%)	0 (0.0%)	1 (5.9%)	0 (0.0%)	1 (25.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (25.0%)	3 (4.5%)
Anatomical abnormalities	0 (0.0%)	1 (10.0%)	0 (0.0%)	1 (12.5%)	0 (0.0%)	1 (33.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (25.0%)	4 (6.0%)
Poor organ function	2 (16.7%)	1 (10.0%)	3 (17.6%)	0 (0.0%)	1 (25.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	7 (10.4%)
Other, specify	4 (33.3%)	4 (40.0%)	6 (35.3%)	3 (37.5%)	1 (25.0%)	1 (33.3%)	2 (40.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	21 (31.3%)
Recipient determined to be unsuitable for TX in OR	4 (33.3%)	3 (30.0%)	5 (29.4%)	3 (37.5%)	1 (25.0%)	1 (33.3%)	3 (60.0%)	3 (100.0%)	1 (100.0%)	1 (25.0%)	25 (37.3%)
<b>Total</b>	<b>12 (100.0%)</b>	<b>10 (100.0%)</b>	<b>17 (100.0%)</b>	<b>8 (100.0%)</b>	<b>4 (100.0%)</b>	<b>3 (100.0%)</b>	<b>5 (100.0%)</b>	<b>3 (100.0%)</b>	<b>1 (100.0%)</b>	<b>4 (100.0%)</b>	<b>67 (100.0%)</b>

**Figure 26. Distribution of time between cross-clamp and start of last intestine offer by non-use reason, 2013 and 2022****Table 19. Distribution of time between cross-clamp and start of last intestine offer by non-use reason, 2013 and 2022**

Non-Use Code	n Matches	Range	Median	25th, 75th %ile
Vascular damage	1	-11.2, -11.2	-11.2	-11.2, -11.2
Infection	1	-12.6, -12.6	-12.6	-12.6, -12.6
Anatomical abnormalities	4	-65.2, -11.3	-18.6	-30.6, -16.4
Poor organ function	6	-32.8, -15.2	-19.2	-22.5, -16.3
Recipient determined to be unsuitable for TX in OR	18	-43.3, -1.8	-19.2	-24.1, -13.4
Diseased organ	1	-19.6, -19.6	-19.6	-19.6, -19.6
Other, specify	17	-52.9, 7.6	-19.8	-25.5, -12.2
No recipient located - list exhausted	3	-28.7, -19	-21.8	-25.2, -20.4
Too old on ice	2	-42.1, -18	-30	-36, -24

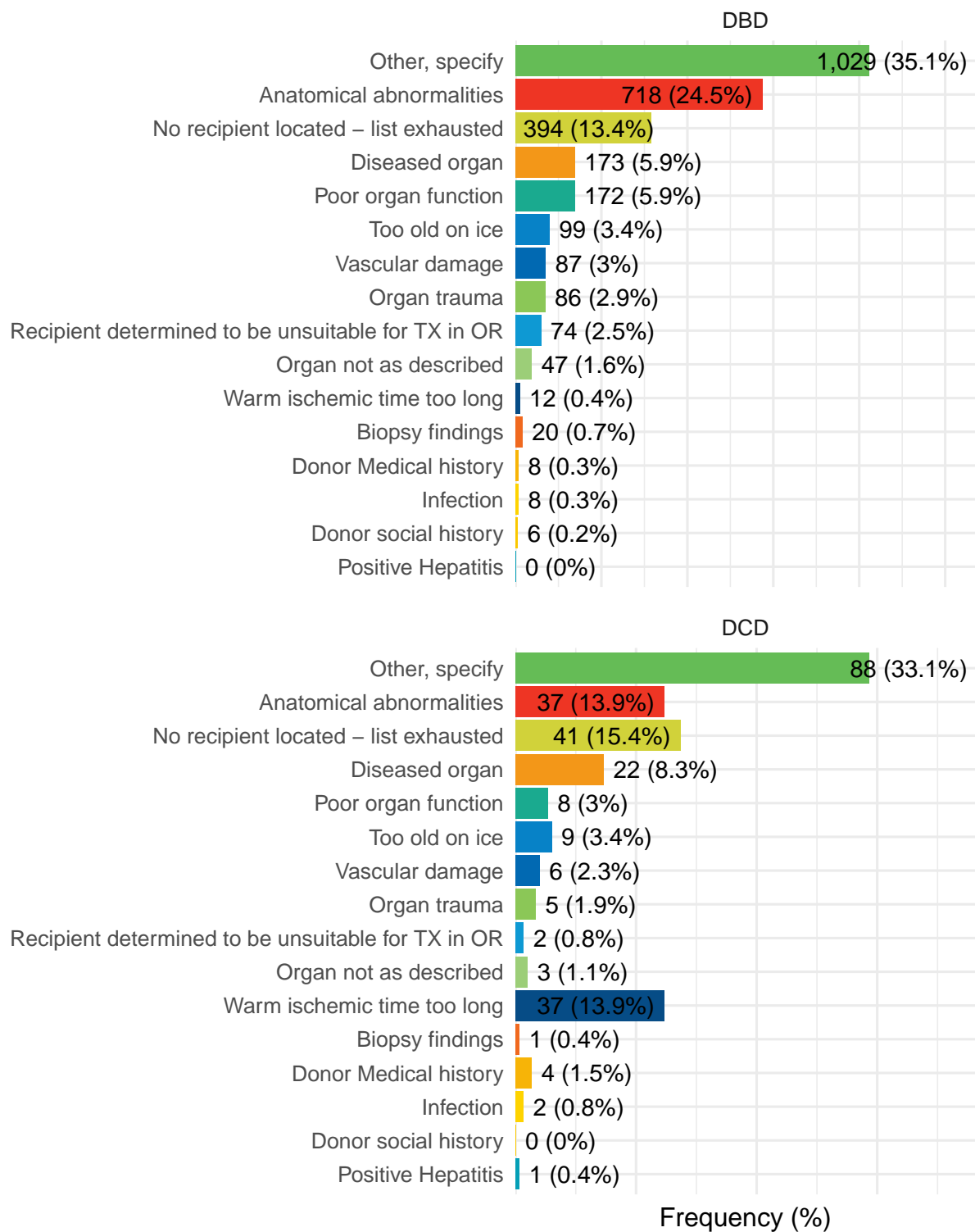
**Figure 27. Free text entered in 'other, specify' fields for intestine non-use reason****Table 20. Free text entered in 'other, specify' fields for intestine non-use reason**

Text Theme	Count	% of Organs	Theme Complexity
recipient issue	13	46.43	Medium (4-10 strings)
turndown	5	17.86	Complex (11+ strings)
ruled out in OR	4	14.29	Complex (11+ strings)
unknown	4	14.29	Medium (4-10 strings)
all refused	3	10.71	Complex (11+ strings)
size	3	10.71	Complex (11+ strings)
vascular	3	10.71	Complex (11+ strings)
damage error	2	7.14	Complex (11+ strings)
med/soc history	2	7.14	Complex (11+ strings)
consent	1	3.57	Simple (1-3 strings)
crossmatch	1	3.57	Medium (4-10 strings)
flush	1	3.57	Simple (1-3 strings)
heart issues	1	3.57	Simple (1-3 strings)
preservation	1	3.57	Medium (4-10 strings)

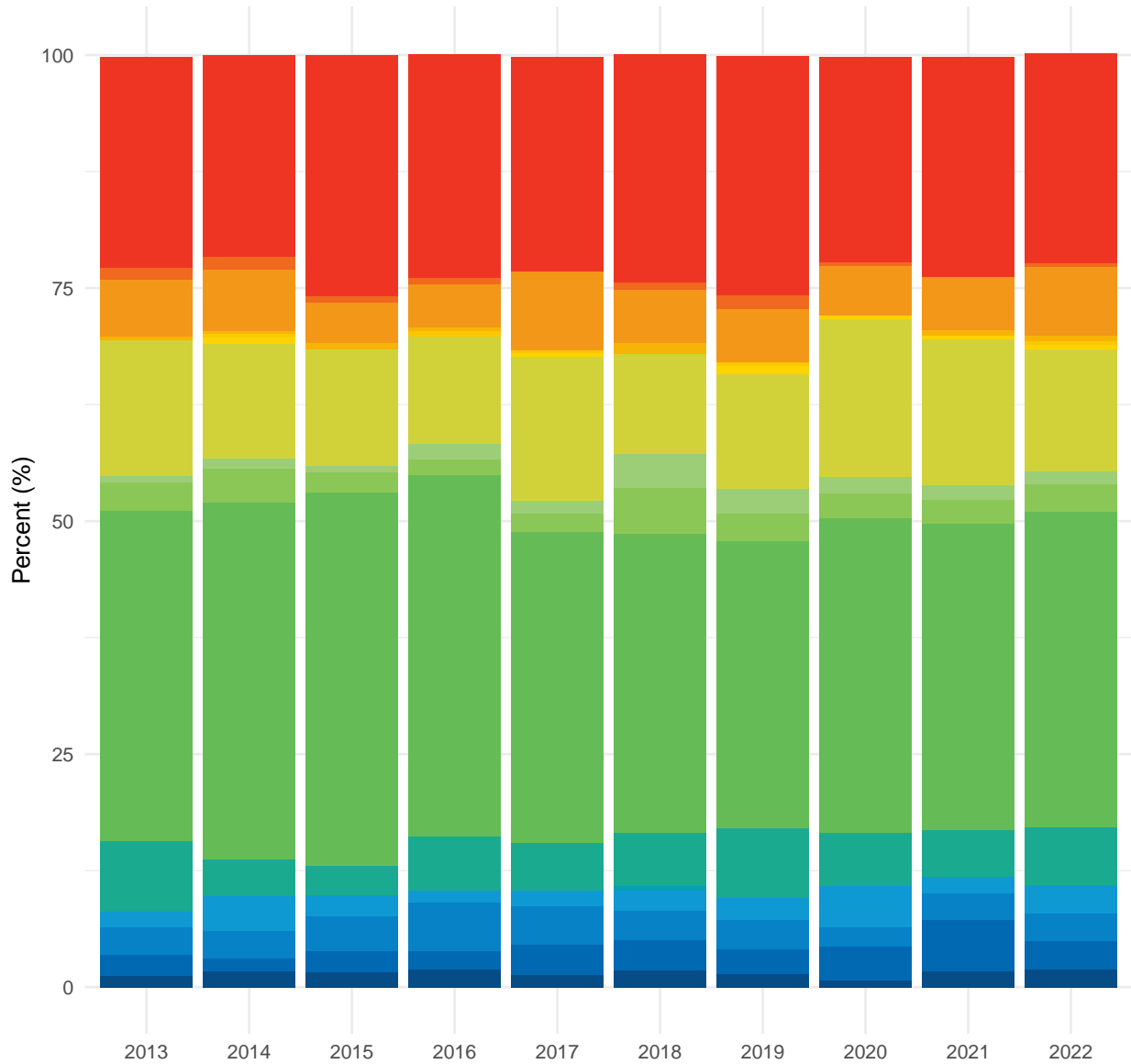
## Pancreas

In this section, we summarize pancreas-specific findings in **Figures 28 through 32** and **Tables 21 through 23**.

**Figure 28. Frequency (%) of procured pancreata non-use reasons by DCD status, 2013-2022**



**Figure 29. Distribution of procured pancreata non-use reasons by year, 2013-2022**

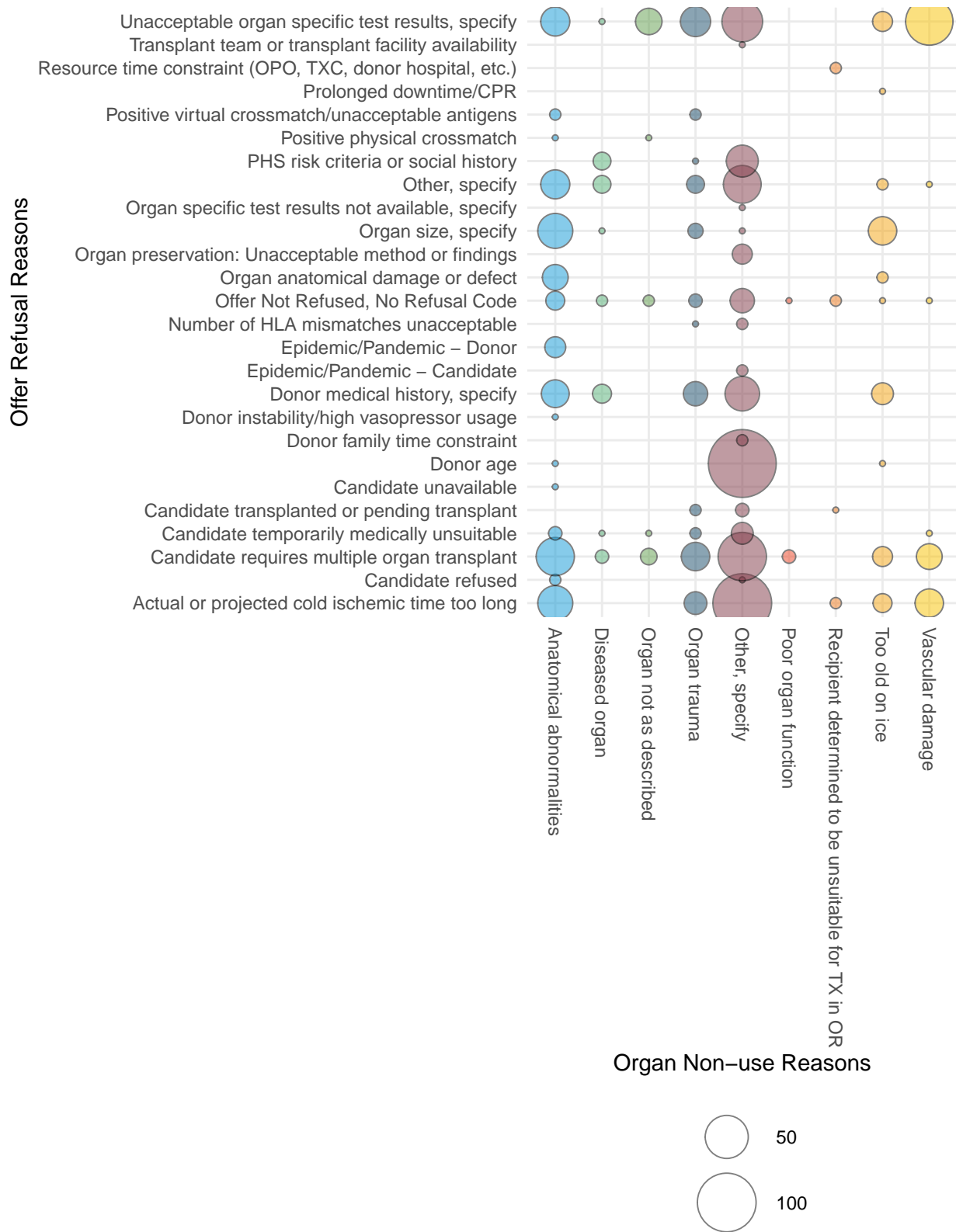


- Anatomical abnormalities
- Organ trauma
- Biopsy findings
- Other, specify
- Diseased organ
- Poor organ function
- Donor Medical history
- Positive Hepatitis
- Donor social history
- Recipient determined to be unsuitable for TX in OR
- Infection
- Too old on ice
- No recipient located – list exhausted
- Vascular damage
- Organ not as described
- Warm ischemic time too long

**Table 21. Frequency (%) procured pancreata non-use reasons by year, 2013-2022**

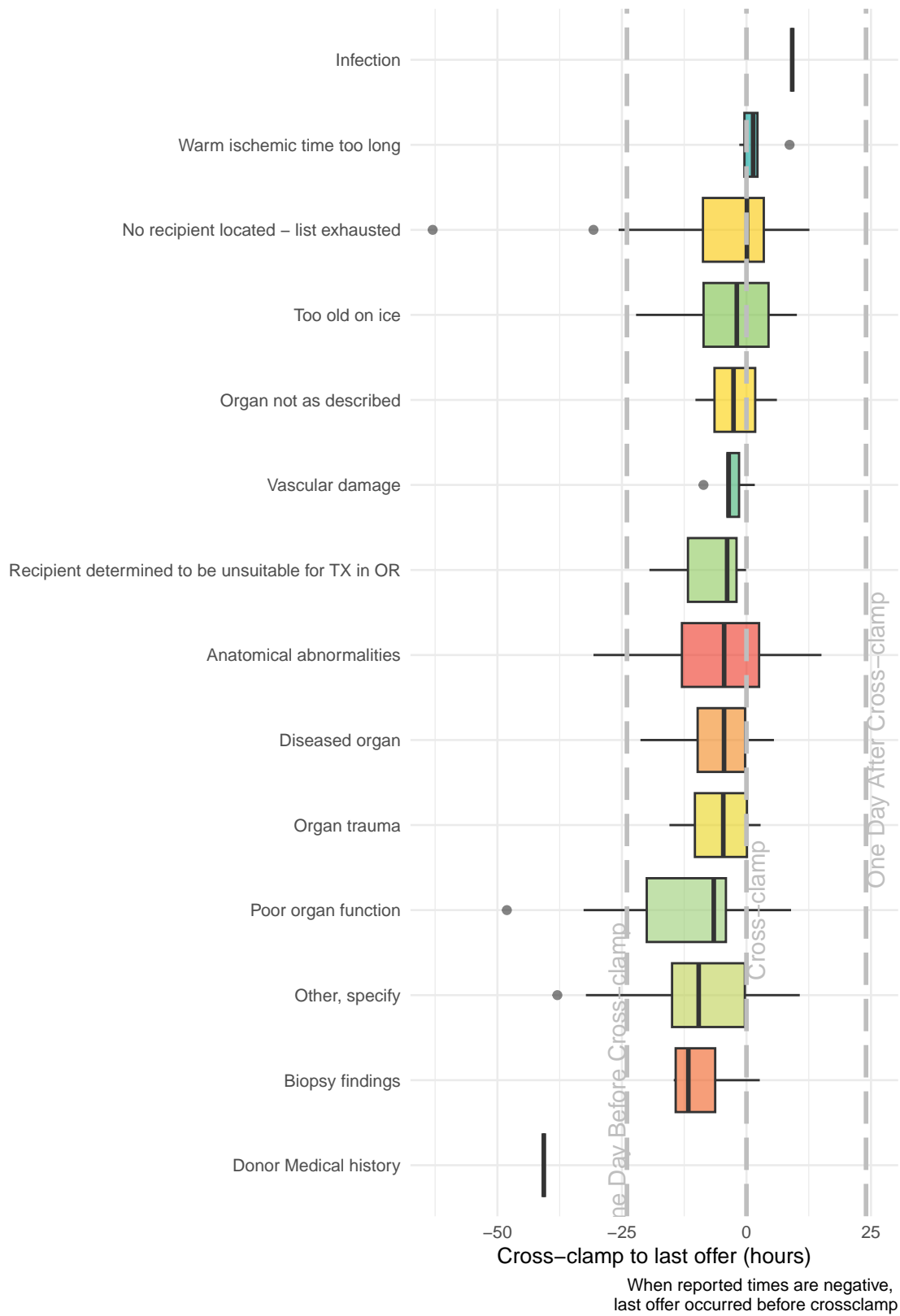
Non-use Reason	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Positive Hepatitis	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.0%)
Donor social history	0 (0.0%)	1 (0.3%)	0 (0.0%)	2 (0.6%)	1 (0.3%)	0 (0.0%)	1 (0.3%)	0 (0.0%)	0 (0.0%)	1 (0.3%)	6 (0.2%)
Infection	0 (0.0%)	2 (0.7%)	0 (0.0%)	0 (0.0%)	1 (0.3%)	0 (0.0%)	3 (0.9%)	1 (0.3%)	1 (0.3%)	2 (0.5%)	10 (0.3%)
Donor Medical history	1 (0.3%)	1 (0.3%)	2 (0.6%)	1 (0.3%)	0 (0.0%)	3 (1.1%)	0 (0.0%)	0 (0.0%)	2 (0.6%)	2 (0.5%)	12 (0.4%)
Biopsy findings	4 (1.2%)	4 (1.3%)	2 (0.6%)	2 (0.6%)	0 (0.0%)	2 (0.7%)	5 (1.4%)	1 (0.3%)	0 (0.0%)	1 (0.3%)	21 (0.7%)
Warm ischemic time too long	4 (1.2%)	5 (1.7%)	5 (1.6%)	6 (1.9%)	4 (1.3%)	5 (1.8%)	5 (1.4%)	2 (0.7%)	6 (1.7%)	7 (1.9%)	49 (1.5%)
Organ not as described	2 (0.6%)	3 (1.0%)	2 (0.6%)	5 (1.6%)	4 (1.3%)	10 (3.6%)	9 (2.6%)	5 (1.7%)	5 (1.5%)	5 (1.3%)	50 (1.6%)
Recipient determined to be unsuitable for TX in OR	5 (1.6%)	11 (3.7%)	7 (2.2%)	4 (1.2%)	5 (1.6%)	6 (2.2%)	8 (2.3%)	13 (4.4%)	6 (1.7%)	11 (3.0%)	76 (2.4%)
Organ trauma	10 (3.1%)	11 (3.7%)	7 (2.2%)	5 (1.6%)	6 (1.9%)	14 (5.0%)	10 (2.9%)	8 (2.7%)	9 (2.6%)	11 (3.0%)	91 (2.8%)
Vascular damage	7 (2.2%)	4 (1.3%)	7 (2.2%)	6 (1.9%)	10 (3.2%)	9 (3.2%)	9 (2.6%)	11 (3.7%)	19 (5.5%)	11 (3.0%)	93 (2.9%)
Too old on ice	10 (3.1%)	9 (3.0%)	12 (3.8%)	17 (5.3%)	13 (4.2%)	9 (3.2%)	11 (3.2%)	6 (2.0%)	10 (2.9%)	11 (3.0%)	108 (3.4%)
Poor organ function	24 (7.5%)	12 (4.0%)	10 (3.2%)	19 (5.9%)	16 (5.2%)	16 (5.8%)	26 (7.5%)	17 (5.8%)	17 (5.0%)	23 (6.2%)	180 (5.6%)
Diseased organ	20 (6.2%)	20 (6.7%)	14 (4.4%)	15 (4.7%)	26 (8.4%)	16 (5.8%)	20 (5.8%)	16 (5.4%)	20 (5.8%)	28 (7.5%)	195 (6.1%)
No recipient located - list exhausted	47 (14.6%)	37 (12.3%)	40 (12.6%)	37 (11.6%)	48 (15.6%)	30 (10.8%)	43 (12.4%)	50 (17.0%)	54 (15.7%)	49 (13.2%)	435 (13.6%)
Anatomical abnormalities	73 (22.7%)	65 (21.7%)	82 (25.9%)	77 (24.1%)	71 (23.1%)	68 (24.5%)	89 (25.7%)	65 (22.1%)	81 (23.6%)	84 (22.6%)	755 (23.6%)
Other, specify	114 (35.5%)	115 (38.3%)	127 (40.1%)	124 (38.8%)	103 (33.4%)	89 (32.0%)	107 (30.9%)	99 (33.7%)	113 (32.9%)	126 (33.9%)	1,117 (34.9%)
<b>Total</b>	<b>321 (100.0%)</b>	<b>300 (100.0%)</b>	<b>317 (100.0%)</b>	<b>320 (100.0%)</b>	<b>308 (100.0%)</b>	<b>278 (100.0%)</b>	<b>346 (100.0%)</b>	<b>294 (100.0%)</b>	<b>343 (100.0%)</b>	<b>372 (100.0%)</b>	<b>3,199 (100.0%)</b>

**Figure 30. Pancreas non-use reasons vs. Pancreas refusal codes since Dec 2021 refusal code revision**





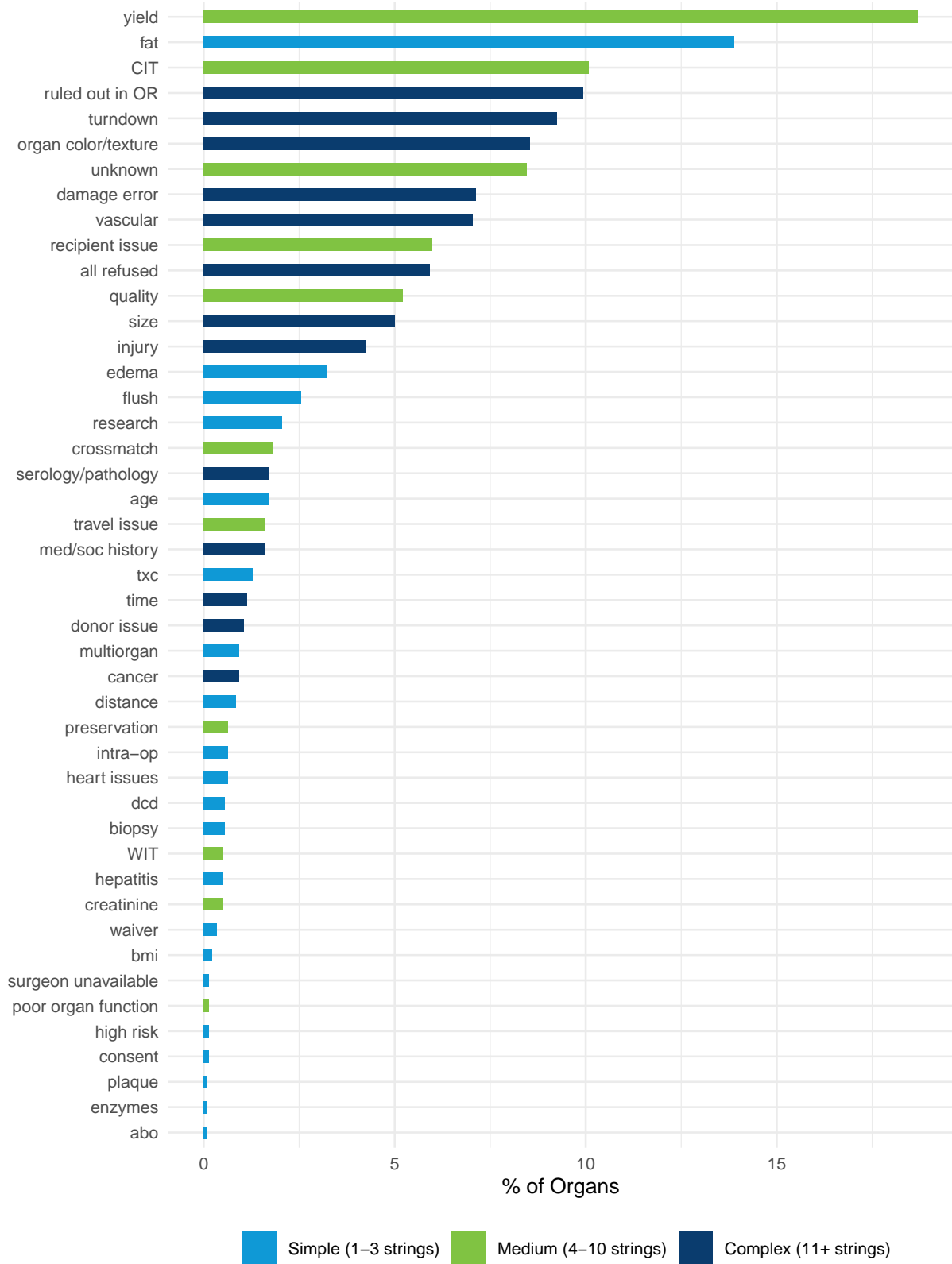
**Figure 31. Distribution of time between cross-clamp and start of last pancreas offer by non-use reason, 2013 and 2022**



**Table 22. Distribution of time between cross-clamp and start of last pancreas offer by non-use reason, 2013 and 2022**

<b>Non-Use Code</b>	<b>n Matches</b>	<b>Range</b>	<b>Median</b>	<b>25th, 75th %ile</b>
Infection	1	9.2, 9.2	9.2	9.2, 9.2
Warm ischemic time too long	6	-1.4, 8.7	1.3	-0.4, 2.2
No recipient located - list exhausted	51	-63, 12.6	0.1	-8.7, 3.5
Too old on ice	14	-22.2, 10.1	-1.9	-8.6, 4.4
Organ not as described	3	-10.2, 6.1	-2.6	-6.4, 1.8
Vascular damage	5	-8.6, 1.7	-3.6	-3.8, -1.5
Recipient determined to be unsuitable for TX in OR	9	-19.5, -0.1	-3.9	-11.8, -2
Anatomical abnormalities	56	-30.7, 15.1	-4.5	-13, 2.5
Diseased organ	20	-21.3, 5.5	-4.5	-9.8, -0.3
Organ trauma	8	-15.5, 2.8	-4.7	-10.4, 0.1
Poor organ function	19	-48.1, 8.9	-6.6	-20, -4.1
Other, specify	108	-38, 10.7	-9.6	-14.9, -0.3
Biopsy findings	4	-14.6, 2.7	-11.7	-14.2, -6.3
Donor Medical history	1	-40.7, -40.7	-40.7	-40.7, -40.7

**Figure 32. Free text entered in 'other, specify' fields for pancreas non-use reason**



**Table 23. Free text entered in 'other, specify' fields for pancreas non-use reason**

<b>Text Theme</b>	<b>Count</b>	<b>% of Organs</b>	<b>Theme Complexity</b>
yield	265	18.69	Medium (4-10 strings)
fat	197	13.89	Simple (1-3 strings)
CIT	143	10.08	Medium (4-10 strings)
ruled out in OR	141	9.94	Complex (11+ strings)
turndown	131	9.24	Complex (11+ strings)
organ color/texture	121	8.53	Complex (11+ strings)
unknown	120	8.46	Medium (4-10 strings)
damage error	101	7.12	Complex (11+ strings)
vascular	100	7.05	Complex (11+ strings)
recipient issue	85	5.99	Medium (4-10 strings)
all refused	84	5.92	Complex (11+ strings)
quality	74	5.22	Medium (4-10 strings)
size	71	5.01	Complex (11+ strings)
injury	60	4.23	Complex (11+ strings)
edema	46	3.24	Simple (1-3 strings)
flush	36	2.54	Simple (1-3 strings)
research	29	2.05	Simple (1-3 strings)
crossmatch	26	1.83	Medium (4-10 strings)
age	24	1.69	Simple (1-3 strings)
serology/pathology	24	1.69	Complex (11+ strings)
med/soc history	23	1.62	Complex (11+ strings)
travel issue	23	1.62	Medium (4-10 strings)
txc	18	1.27	Simple (1-3 strings)
time	16	1.13	Complex (11+ strings)
donor issue	15	1.06	Complex (11+ strings)
cancer	13	0.92	Complex (11+ strings)
multiorgan	13	0.92	Simple (1-3 strings)
distance	12	0.85	Simple (1-3 strings)
heart issues	9	0.63	Simple (1-3 strings)
intra-op	9	0.63	Simple (1-3 strings)
preservation	9	0.63	Medium (4-10 strings)
biopsy	8	0.56	Simple (1-3 strings)
dcd	8	0.56	Simple (1-3 strings)
WIT	7	0.49	Medium (4-10 strings)
creatinine	7	0.49	Medium (4-10 strings)
hepatitis	7	0.49	Simple (1-3 strings)
waiver	5	0.35	Simple (1-3 strings)
bmi	3	0.21	Simple (1-3 strings)
consent	2	0.14	Simple (1-3 strings)
high risk	2	0.14	Simple (1-3 strings)
poor organ function	2	0.14	Medium (4-10 strings)
surgeon unavailable	2	0.14	Simple (1-3 strings)
abo	1	0.07	Simple (1-3 strings)
enzymes	1	0.07	Simple (1-3 strings)
plaque	1	0.07	Simple (1-3 strings)

## Summary & Conclusion

DAC intended this data request to support future committee efforts potentially revising the available options in the OPTN Data System for coding organ non-use by OPOs. This analysis determined that patterns in non-use code frequencies vary by organ type, as well as by DCD status. The over-reliance on other, specify non-use reasons further indicates an opportunity to better fine-tune the available options for coding organ non-use, which would permit more detailed assessments of the issue of organ non-use in the national transplant and donation system. Additionally, timing of the end of match runs relative to cross-clamp does vary by organ, which is consistent with prior information available to the DAC that suggested that the timeline of procurement differs for hearts and lungs vs. kidneys. These differences reflect likely differences in the resources and logistics of organ-specific allocation policies, travel distances and modes, and professional practices specific to organ procurement and transplantation.

## References

1. *Realizing the Promise of Equity in the Organ Transplantation System*. National Research Council (NRC); National Academies Press; 2022:1-278. doi:10.17226/26364
2. *Notice of Changes to OPTN Data Collection: Update to Refusal Codes*. Organ Procurement and Transplantation Network (OPTN); 2021:1-4. [https://optn.transplant.hrsa.gov/media/3015/201906\\_spc\\_boardreport.pdf](https://optn.transplant.hrsa.gov/media/3015/201906_spc_boardreport.pdf)