Final Report

OPTN Lung Transplantation Committee | Descriptive Data Request

# Lung Continuous Distribution Six Month Monitoring Report

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## Contents

# Executive Summary

Monitoring began upon implementation of continuous distribution on March 9, 2023. Based on the first 6 months of data collection, compared to the pre policy era (September 06, 2022 - March 08, 2023), in the post policy era (March 09, 2023 - September 08, 2023):

*Overall*

- The number of lung-alone transplants increased by 11.2% (from 1387 to 1543).
- The transplant rate increased from 291 transplants per 100 patient years to 321 transplants per 100 patient years.
- Fewer candidates were removed from the waiting list due to death or being too sick to transplant (a decrease from 111 to 82).
- The waiting list mortality rate decreased from 23 deaths or removals for too sick per 100 patient years to 17 deaths or removals for too sick per 100 patient years.

*Continuous Distribution Attributes*

- The greatest proportion of candidates removed from the waiting list for death or too sick to transplant were those with the highest medical urgency scores, lowest post-transplant survival scores, and highest CAS subscores.
- The number of transplants to pediatric recipients remained similar, though the pediatric donor non-use rate increased (from 5.43% to 10.93%).
- The number of transplants decreased for blood type O recipients (from 646 to 601) and increased for recipients of all other blood types.
- The number of candidates ever waiting with unacceptable antigens entered in the OPTN Waiting List remained small in the post policy era (29.2%).
- The number of transplants increased for recipients across all height groupings; however, the number of candidates removed from the waiting list for death or too sick also increased for adult candidates between >158cm and 165cm (approximately 5'2" to 5'5").
- The median distance between the donor hospital and transplant center increased overall from 195 nautical miles to 353 nautical miles.
- Distances between the donor hospital and transplant center were greatest for recipients with the highest medical urgency scores, lowest post-transplant survival scores, highest CAS subscores, and both the highest and lowest CAS (with lungs for intermediate CAS scores traveling shorter distances).

*Other Noteworthy Results*

- The number of registrations with at least one submitted exception request increased from 87 to 198.
- A larger percent of exception requests were denied (an increase from 17.4% to 32.5%).
- The number of lung/liver transplants increased (from 6 to 16), while the occurrence of other multiorgan transplants decreased slightly.
- The number of transplants decreased for recipients aged 65+ years and increased for all other adult recipient age groups.
- The number of transplants increased for all diagnosis groups; however, the number of candidates removed from the waiting list for death or too sick also increased for candidates in diagnosis group B.
- There was no negative impact on lung utilization (pre: 16.73%, post: 17.90%).
- The median cold ischemic time increased slightly from 6.08 hours to 6.62 hours.
- The median time from first electronic offer to cross clamp increased from 29.66 hours to 32.14 hours.
- The median sequence number of the final acceptor increased from 8 to 15.
- The median number of programs offered up to the final acceptor increased from 4 to 10.

Overall, it is still early post-implementation. Changes such as those to behavior or clinical practice may have an impact on the system. The implications of the policy change will continue to be monitored closely with regular reports to the OPTN Lung Transplantation Committee.

## Background/Purpose

On March 9, 2023 the lung allocation policy switched to a continuous distribution framework. Continuous distribution (CD) uses a composite allocation score to determine the preferential order of candidates on a match run when a medically suitable lung donor becomes available. This point-based system replaces the previous, classification-based system. Under the classification-based system, candidates were first arranged into ordered groups (e.g., "blood type identical, within 250 nautical miles of the donor hospital") and then, within each group, preferentially ordered by Lung Allocation Score (LAS). In contrast, continuous distribution does not use candidate groupings. All candidates are prioritized using a composite allocation score (CAS) that takes into account medical, biological, and other factors permitted by the Final Rule to determine preferential ordering on a match run. These attributes include:

- Medical urgency: a metric that captures the patient's predicted 1-year survival on the waiting list without a transplant (this measure was a component of LAS)
- Post-transplant survival: a metric that captures the patient's predicted 5-year survival were they to receive a transplant (a 1-year version of this measure was a component of LAS)
- Biological disadvantage: a measure of how disadvantaged a candidate is to receive a transplant based on aspects of their biology, including blood type, CPRA (calculated panel reactive antibody), and height
- Patient access: a measure that considers whether the candidate is pediatric or a prior living donor
- Efficiency: a measure that captures the efficiency of the transplant, in terms of both distance from the donor hospital to transplant center and logistical planning

Based on data from the three month monitoring report showing that the number of transplants declined in the first three months of CD for blood type O candidates, a policy change was implemented on September 27, 2023 which altered the blood type rating scale. The data in this report were collected before this policy change went into affect and therefore do not reflect the altered blood type rating scale.

The purpose of this report is to provide early metrics summarizing the impact of the policy change. In an effort to provide data as soon as possible, this report was produced before the 90 day data lag allotted by OPTN policy has fully passed; therefore, data are subject to change. As more data accumulate over time, more extensive analyses will be performed. The OPTN will respond to further requests by the OPTN Lung Transplantation Committee.

## Committee Request

Monitoring reports using pre vs. post comparisons will be presented to the Committee after approximately 3 months, 6 months and then annually for 3 years following the allocation change.

The Committee will consider overall waiting list deaths and post-transplant deaths, as well as variance in waiting list deaths, post-transplant deaths, and distance between donor and candidate transplant hospitals as key metrics to evaluate the effectiveness of the proposal.

Metrics to be evaluated include:

- Waiting List
  - Number of candidates ever waiting, additions, and removals
  - Distribution of WLAUC and PTAUC
  - Population characteristics such as CPRA, prior living donor, height, age group at time of listing, and diagnosis group
  - Number of candidates by OPTN region
  - Candidate waiting time by OPTN region
  - Numbers of patient deaths, overall and by diagnosis group, medical urgency score, post-transplant survival score, and OPTN region
  - Overall waiting list mortality rate and transplant rate by diagnosis group, WLAUC and PTAUC groups, and OPTN region
  - Number of exception requests, overall and by diagnosis group
  - Number of multiorgan candidates

- Transplants
  - Number of recipients
  - Distribution of WLAUC and PTAUC
  - Population characteristics such as CPRA, prior living donor, height, age group at time of listing, and diagnosis group
  - Number of recipients by OPTN region
  - Patient post-transplant survival
  - Number of recipients transplanted with an exception request, overall and by diagnosis group
  - Distance between the donor hospital and transplant center
  - Distance between the donor hospital and transplant center by medical urgency group, post-transplant survival, and by composite allocation score group
  - Transplant rate changes by transplant program size (small, medium, large)
  - Distribution of ischemic time
  - Number of multiorgan recipients
- Utilization
  - Non-use rate by OPTN region and donation after circulatory death (DCD) vs. non-DCD
  - Utilization rate by OPTN region and DCD vs. non-DCD
  - Number & percentage of perfused lungs by OPTN region
  - Number & percentage of DCD lungs transplanted by OPTN region
  - Time from first electronic offer to cross clamp
  - Distribution of sequence number of the final acceptor

Analysis of post-transplant outcomes will be performed after sufficient follow-up data have accrued, which is dependent on submission of follow-up forms. The OPTN and SRTR contractors will work with the committee to define the specific analyses requested for ongoing monitoring for each update. The OPTN equity in access dashboard will also be used to evaluate the impact of this policy on transplant rates by various candidate attributes.

# Methods

**Data Sources:**

Organ Procurement and Transplantation Network (OPTN) data were used for this analysis. The OPTN data system includes data on all donors, waitlisted candidates, and transplant recipients in the US, submitted by members of the OPTN. Continuous distribution was implemented on March 9, 2023. This report compares metrics for the 6 months before and after the implementation date. The dates for the pre and post era were defined such that both eras contain exactly 183 days, with the pre era spanning September 06, 2022 to March 08, 2023 and the post era spanning March 09, 2023 to September 08, 2023. In an effort to provide data as soon as possible, this report was produced with OPTN data as of October 13, 2023 and before the 90 day data lag allotted by OPTN policy has fully passed. Data are subject to change due to future database submission or correction.

All analyses described below compare metrics pre versus post policy change, unless otherwise stated. For categorical variables, counts and frequencies were reported. For continuous variables, medians and ranges were reported. Diagnosis groups utilized in this monitoring report align with those outlined in OPTN lung allocation policy: A-obstructive lung disease, B- pulmonary vascular disease, C- cystic fibrosis and immunodeficiency disorder, and D-restrictive lung disease {OPTN Policies, https://optn.transplant.hrsa.gov/media/1200/optn_policies.pdf Accessed 10/13/2023}.

**Waiting List**

Cohort: Candidates added to the lung waiting list, removed from the waiting list, or ever waiting for a lung-alone transplant from September 06, 2022 through March 08, 2023 (pre) and March 09, 2023 through September 08, 2023 (post) were included. A separate analysis was conducted for candidates listed for a lung-multiorgan transplant, which included all candidates waiting for a lung and at least one other organ from September 06, 2022 through March 08, 2023 (pre) and March 09, 2023 through September 08, 2023 (post).

Analysis: All of the CAS attributes were calculated based on clinical data entered in the OPTN Waiting List. For

all candidates on the waiting list, a CAS subscore was calculated. This subscore summed all the CAS attribute points except for the efficiency points (i.e., medical urgency points, post-transplant survival points, biological disadvantage points, and patient access points). Efficiency points are not known until the time a match is made and the distance between the donor hospital and transplant center is known. For this reason, all analyses in this section used the CAS subscore, rather than the final CAS.

For all CAS attributes (including medical urgency, post-transplant survival, and the CAS subscore), candidates have both a calculated and a match score; these differ when a candidate has an approved exception request, which causes the match score to be higher than the calculated score. For all analyses, the match scores (the same scores used for allocation) were used as reported at the time of removal from the waiting list.

Exceptions in each era were determined based on submissions to the National Lung Review Board. Under the previous allocation system (LAS), a single registration could only have one approved and active exception request at a time (although a registration could submit more than one request if the first request was denied). Under continuous distribution, using the CAS, a single registration can have multiple exception requests. Prior to CD implementation, centers could submit CAS exception requests through an interim process so that those requests, if approved, would be in place at the start of implementation. Twenty-six lung requests and one heart/lung request were submitted through this process and were not included in these analyses. Exceptions were analyzed at the registration level whenever possible (where one registration can have more than one exception request submitted and approved under CD). However, when the metric of interest depended on the outcome of a specific request submission (i.e., request approvals), analyses were performed at the form submission level.

Waiting list mortality rates are reported as the number of deaths or removals for too sick per 100 patient-years. This rate is calculated by dividing the number of individuals who died on the waiting list or were removed from the waiting list for being too sick to transplant by the number of years patients spent waiting. For each policy era, active and inactive waiting time were used for the patient-years calculation. Since some candidates may spend several months or years on the waiting list, a candidate may contribute waiting time to both eras, but a death is attributed only to the era in which it occurred.

**Transplant**

Cohort: Recipients that received a lung-alone transplant from September 06, 2022 through March 08, 2023 (pre) and March 09, 2023 through September 08, 2023 (post) were included. A separate analysis was conducted for lung-multiorgan transplants which included all recipients who received a lung and at least one other organ from September 06, 2022 through March 08, 2023 (pre) and March 09, 2023 through September 08, 2023 (post).

Analysis: For all analyses using CAS attributes, the match score at the time of transplant was used. Transplant rates are reported as the number of transplants per 100 patient-years. This rate is calculated by dividing the number of all deceased donor lung transplants by the number of years patients spent waiting. For each policy era, active and inactive waiting time within the era analyzed were used for the patient-years calculation. Since some candidates may spend several months or years on the waiting list, a candidate may contribute waiting time to both eras, but a transplant is attributed only to the era in which it occurred.

**Utilization**

Cohort: All donors from which at least one organ was recovered for the purposes of transplantation from September 06, 2022 through March 08, 2023 (pre) and March 09, 2023 through September 08, 2023 (post) were included.

Analysis: The utilization rate is defined as the percent of lungs that are transplanted based on all possible lungs from every deceased donor with at least one organ recovered for the purpose of transplant; this assumes that each donor has two possible lungs for donation. The non-use rate is defined as the number of lungs recovered for the purpose of transplant but not transplanted out of all lungs recovered for transplant.

**Median Waiting Time**

Cohort: All registrations added to the waiting list for a lung-alone transplant from September 06, 2022 through March 08, 2023 (pre) and March 09, 2023 through September 08, 2023 (post) were included.

Analysis: We calculated the median waiting time based on a variety of different attributes using a competing risk analysis. Because these analyses were run without the data lag, results may vary slightly as more data accrue.

**Match run analysis**

Cohort: All lung-alone match runs submitted from September 06, 2022 through March 08, 2023 (pre) and March 09, 2023 through September 08, 2023 (post) were included. For most analyses, only matches with an acceptance were included, and offers after the final acceptance were excluded. However, when counting the number of programs offered after the final acceptor, all offers up until the match was closed (which includes offers after the final acceptance) were included.

Analysis: We calculated descriptive metrics for the number of offers sent in the pre and post eras, as well as the sequence number of the final acceptor. We also calculated the cumulative percent of offers received for pediatric candidates up to each sequence number on the match run, using the following equation:

$$\frac{\text{Number of offers received by pediatric candidates up to sequence number i}}{\text{Number of offers sent to all candidates up to sequence number i}}$$

# Results

For this report, the Results are broken into four main subsections:

- The **Overall** subsection focuses on general trends associated with the implementation of Continuous Distribution.
- The **Continuous Distribution Attributes** subsection evaluates trends associated with each of the individual attributes of Continuous Distribution in an effort to determine whether the specific goals of the policy are being met.
- The **Exceptions** subsection tracks trends in exception request submission and approval.
- The **Multiorgan** subsection evaluates trends in multiorgan listings and transplants.

## Overall

There was a slight increase in the number of candidates ever waiting in the post policy era.

**Figure 1: Number of Lung Candidates Ever Waiting by Era**

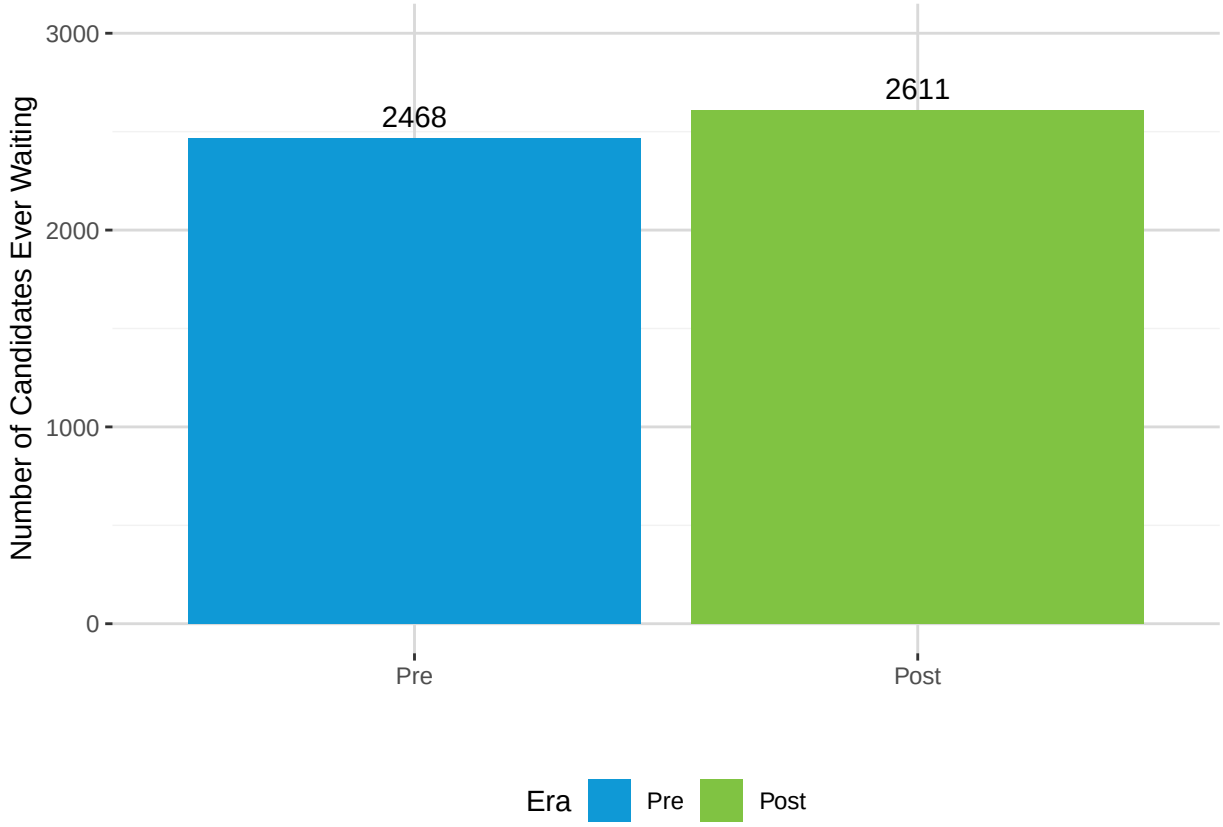



**Table 1: Number of Lung Candidates Ever Waiting by Era**

| Era | N Ever Waiting |
|---|---|
| Pre | 2468 |
| Post | 2611 |

The number of registrations added to the waiting list increased slightly in the post era.

**Figure 2: Number of Registrations Added to the Waiting List by Era**

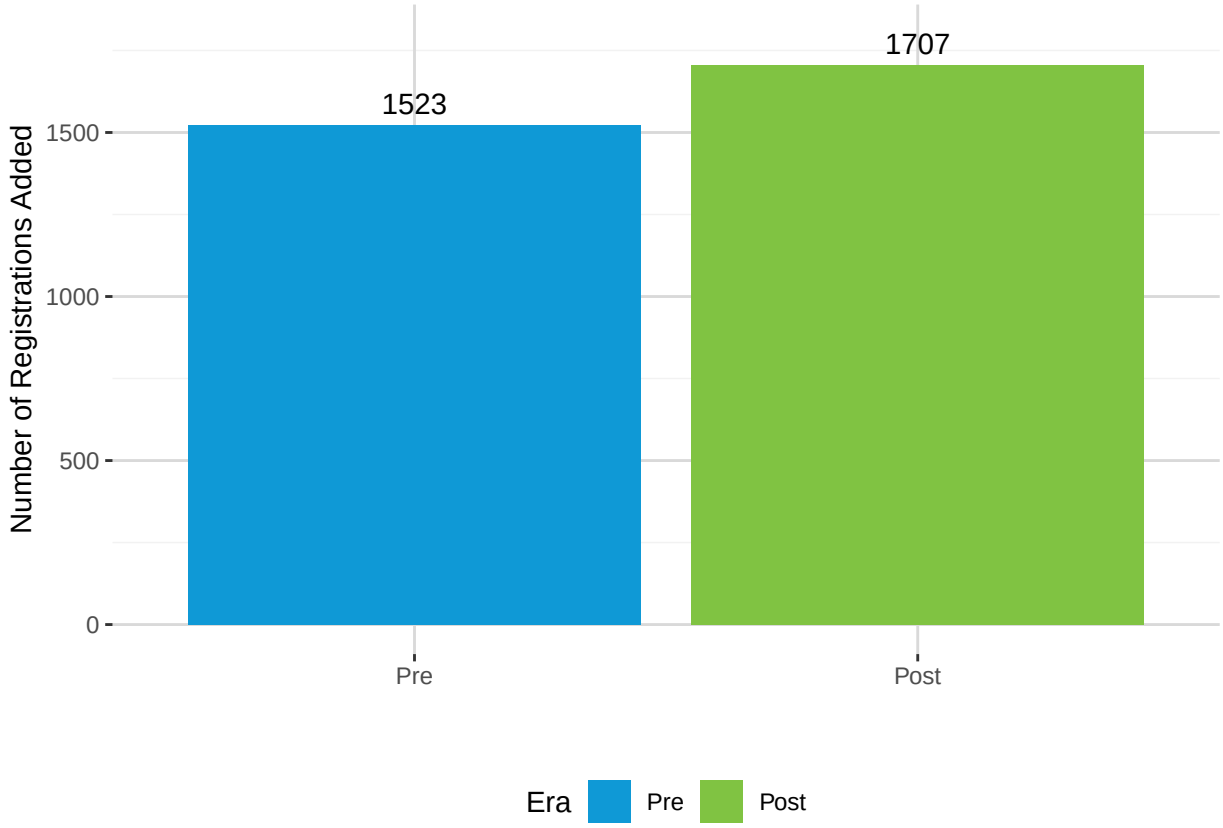



**Table 2: Number of Registrations Added to the Waiting List by Era**

| Era | N Additions |
|---|---|
| Pre | 1523 |
| Post | 1707 |

The number of candidates removed from the waiting list for death or too sick decreased from 111 in the pre era to 82 in the post era.

**Figure 3: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era**

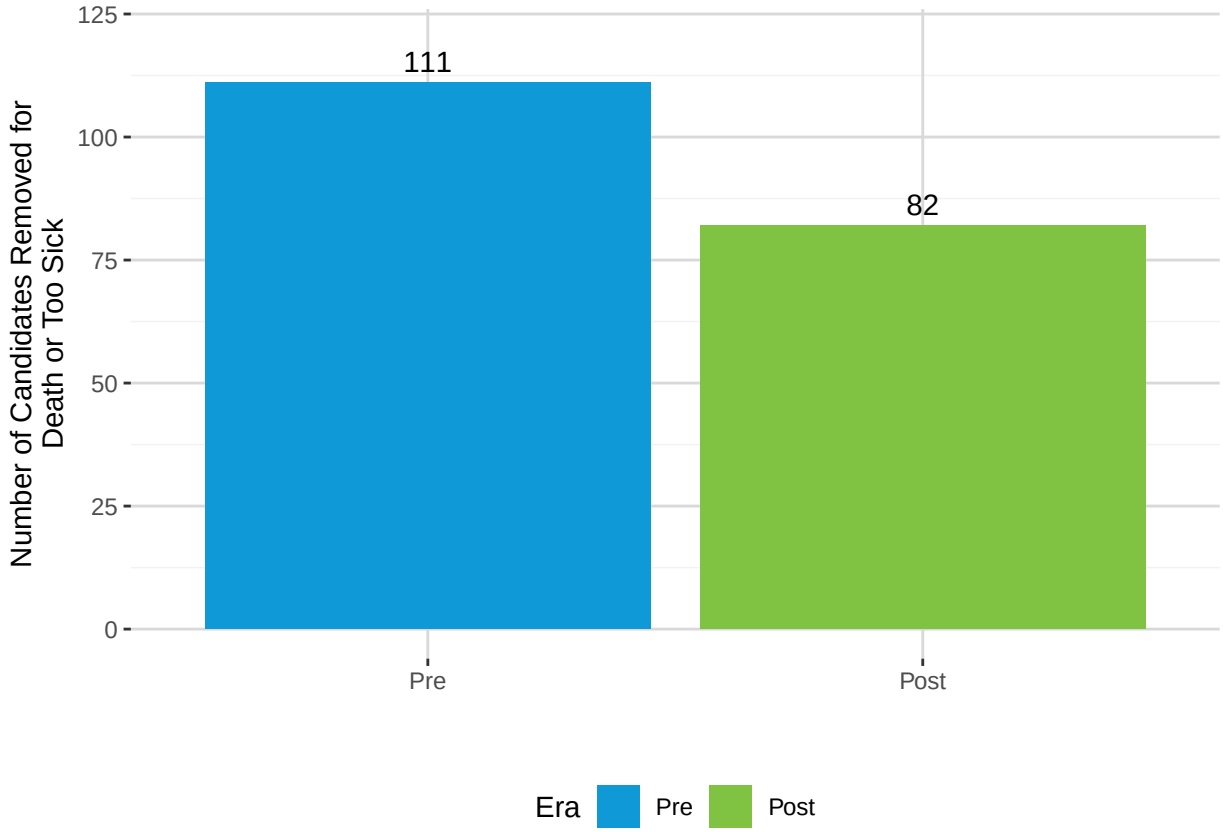
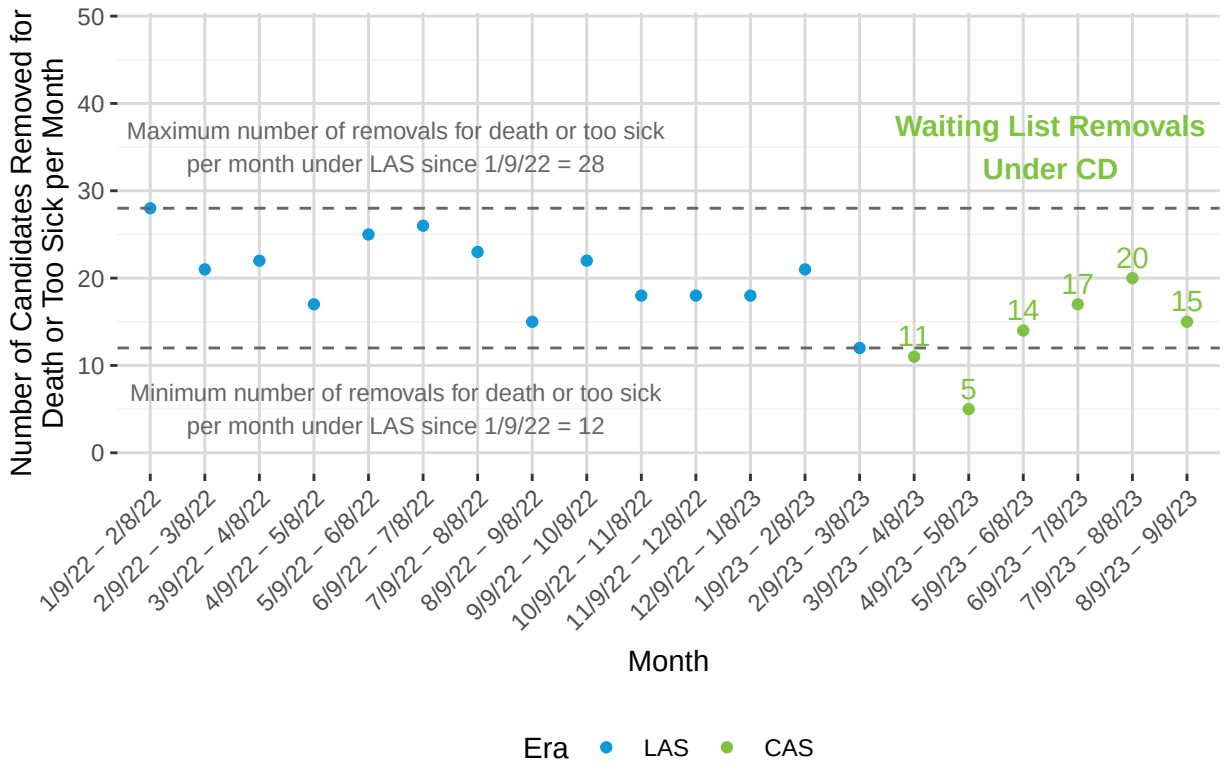



**Table 3: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era**

| Era | N Candidates Removed for Death or Too Sick |
|---|---|
| Pre | 111 |
| Post | 82 |

Since January 9th, 2022 the number of candidates removed from the waiting list per month for death or too sick under LAS ranged from 12 to 28. The number of candidates removed from the waiting list per month for death or too sick under CD ranged from 5 to 20.

**Figure 4: Number of Candidates Removed from the Waiting List for Death or Too Sick Per Month**




Note that all months are defined from the 9th to the 8th; therefore, the last six months under LAS do not perfectly overlap with the defined pre policy era.

**Table 4: Number of Candidates Removed from the Waiting List for Death or Too Sick Per Month**

| Policy Era | Month | N Candidates Removed for Death or Too Sick |
|---|---|---|
| LAS | 1/9/22 - 2/8/22 | 28 |
| | 2/9/22 - 3/8/22 | 21 |
| | 3/9/22 - 4/8/22 | 22 |
| | 4/9/22 - 5/8/22 | 17 |
| | 5/9/22 - 6/8/22 | 25 |
| | 6/9/22 - 7/8/22 | 26 |
| | 7/9/22 - 8/8/22 | 23 |
| | 8/9/22 - 9/8/22 | 15 |
| | 9/9/22 - 10/8/22 | 22 |
| | 10/9/22 - 11/8/22 | 18 |
| | 11/9/22 - 12/8/22 | 18 |
| | 12/9/22 - 1/8/23 | 18 |
| | 1/9/23 - 2/8/23 | 21 |
| | 2/9/23 - 3/8/23 | 12 |
| CAS | 3/9/23 - 4/8/23 | 11 |
| | 4/9/23 - 5/8/23 | 5 |
| | 5/9/23 - 6/8/23 | 14 |
| | 6/9/23 - 7/8/23 | 17 |
| | 7/9/23 - 8/8/23 | 20 |
| | 8/9/23 - 9/8/23 | 15 |

[a] Note that all months are defined from the 9th to the 8th; therefore, the last six months under LAS do not perfectly overlap with the defined pre policy era.

In the post policy era, the majority of candidates removed from the waiting list for death or too sick had a CAS subscore of at least 24 points. CAS subscores are calculated by summing all components of the CAS, except for the efficiency points; this includes the sum of medical urgency points, post-transplant survival points, biological disadvantage points, and patient access points.

**Figure 5: Number of Candidates Removed from the Waiting List for Death or Too Sick by CAS Subscore in the Post Policy Era**

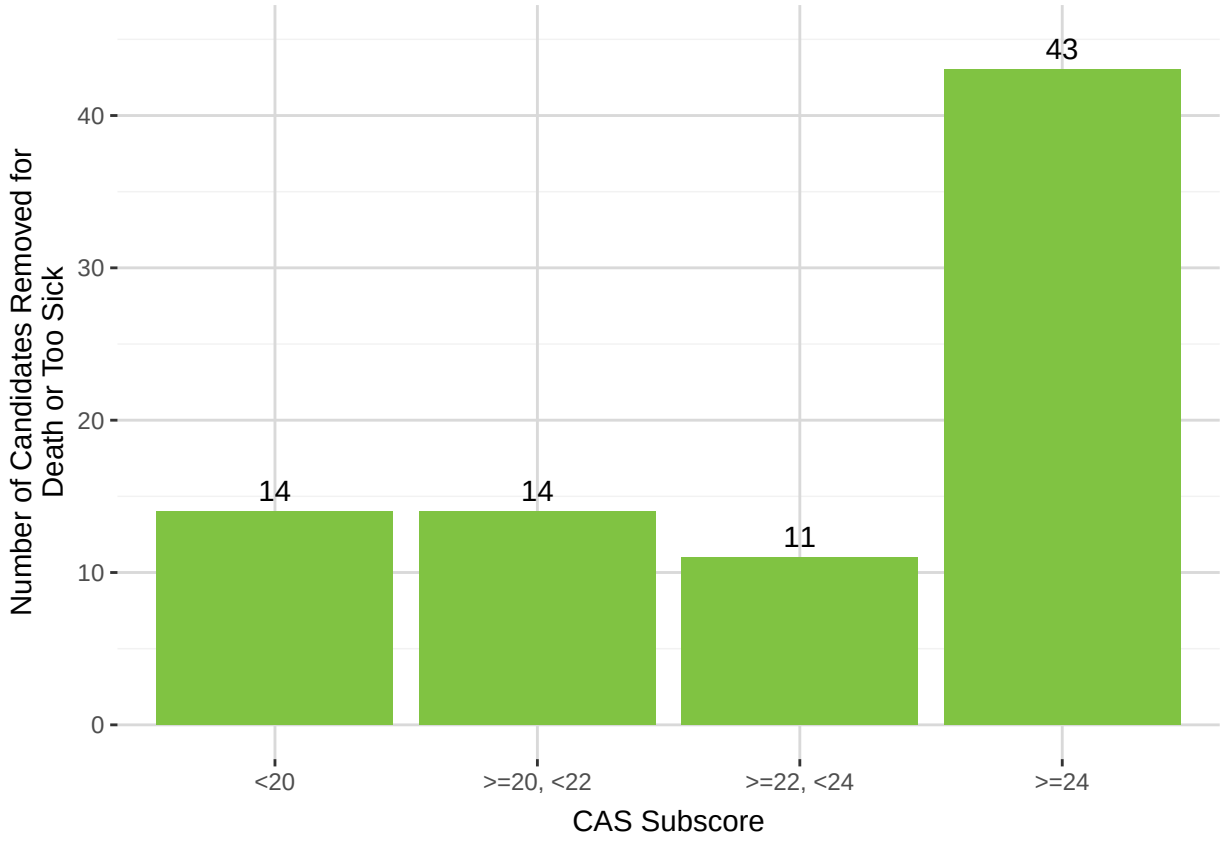



**Table 5: Number of Candidates Removed from the Waiting List for Death or Too Sick by CAS Subscore in the Post Policy Era**

| CAS Subscore | N Candidates Removed for Death or Too Sick |
|---|---|
| <20 | 14 (17.1%) |
| >=20, <22 | 14 (17.1%) |
| >=22, <24 | 11 (13.4%) |
| >=24 | 43 (52.4%) |
| Total | 82 (100.0%) |

The number of deaths or removals for too sick per 100 patient years on the waiting list decreased from 23.35 in the pre era to 16.93 in the post era.

**Figure 6: Deaths or Removals for Too Sick per 100 Patient Years on the Waiting List by Era**

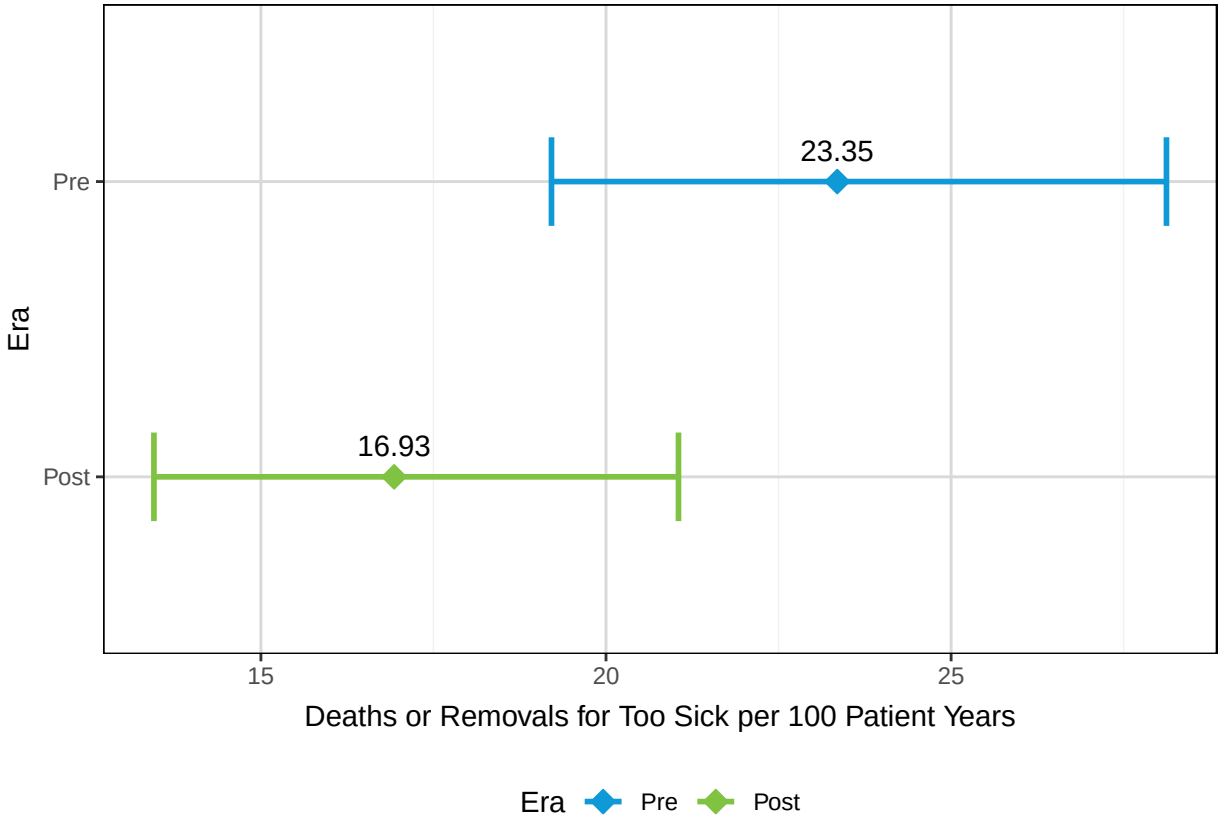



**Table 6: Deaths or Removals for Too Sick per 100 Patient Years on the Waiting List by Era**

| Era | Deaths or Removals for Too Sick per 100 Patient Years | 95% Confidence Interval |
|---|---|---|
| Pre | 23.35 | (19.21, 28.12) |
| Post | 16.93 | (13.45, 21.05) |

The number of transplants per 100 patient years on the waiting list increased from 290.69 in the pre era to 320.5 in the post era.

**Figure 7: Lung Transplants per 100 Patient Years on the Waiting List by Era**

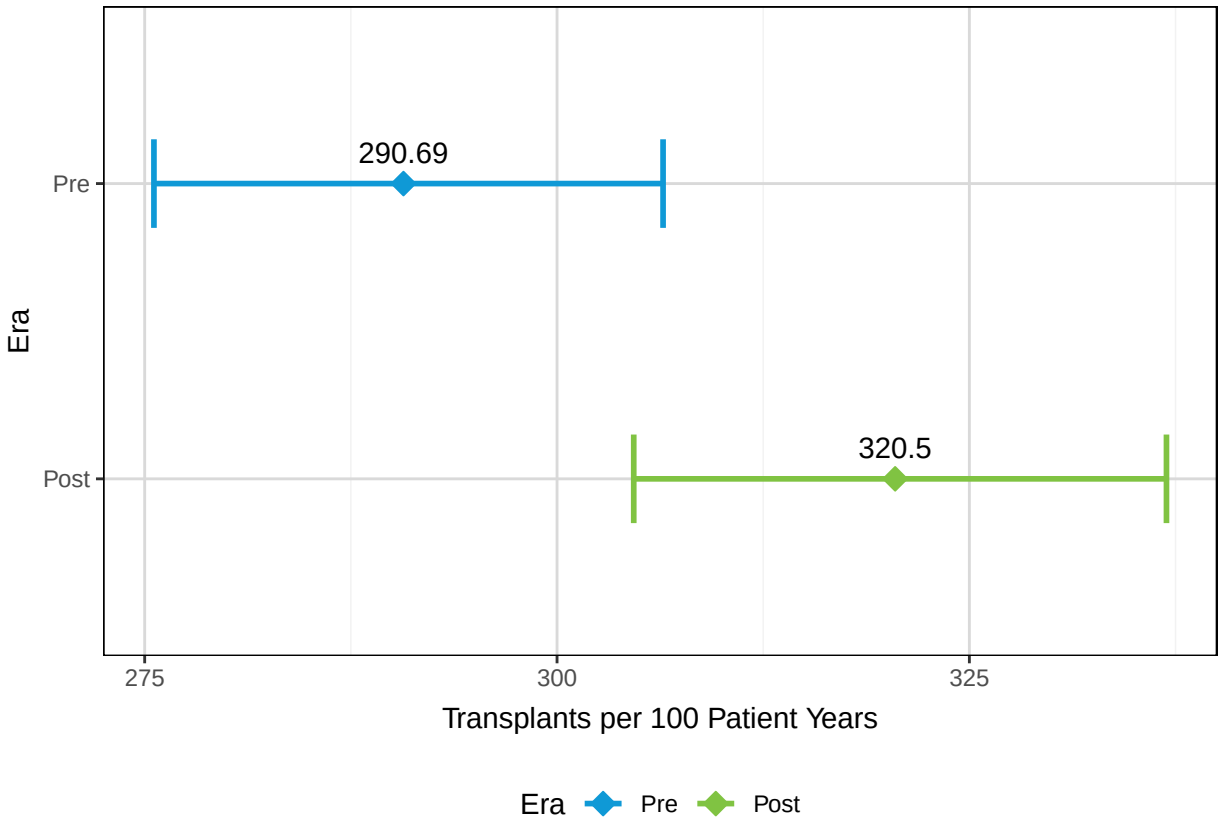



**Table 7: Lung Transplants per 100 Patient Years on the Waiting List by Era**

| Era | Transplants per 100 Patient Years | 95% Confidence Interval |
|---|---|---|
| Pre | 290.69 | (275.56, 306.43) |
| Post | 320.50 | (304.65, 336.95) |

Median time to a transplant was shortest for candidates who had a CAS subscore of at least 24 at the time of listing. CAS subscores are calculated by summing all components of the CAS, except for the efficiency points; this includes the sum of medical urgency points, post-transplant survival points, biological disadvantage points, and patient access points.

**Figure 8: Median Time to Transplant (Days) by CAS Subscore at Listing in the Post Policy Era**

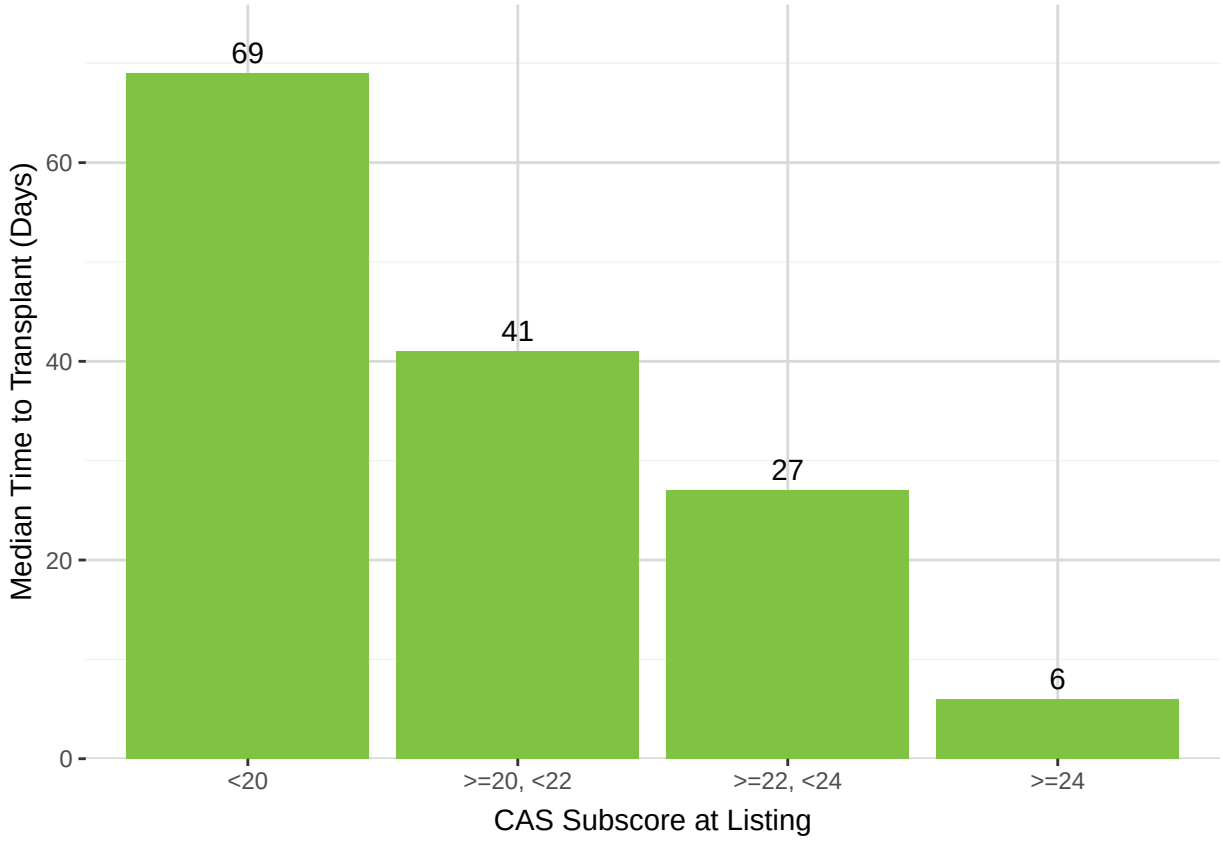



**Table 8: Median Time to Transplant (Days) by CAS Subscore at Listing in the Post Policy Era**

| CAS Subscore at Listing | N Registrations | Median Time to Transplant (Days) |
|---|---|---|
| <20 | 452 | 69 |
| >=20, <22 | 866 | 41 |
| >=22, <24 | 134 | 27 |
| >=24 | 255 | 6 |

There were a total of 1387 lung-alone transplants in the pre era and a total of 1543 lung-alone transplants in the post era; this represents a 11.2% increase in transplants in the post era compared to the pre era.

**Figure 9: Number of Lung Transplants by Era**

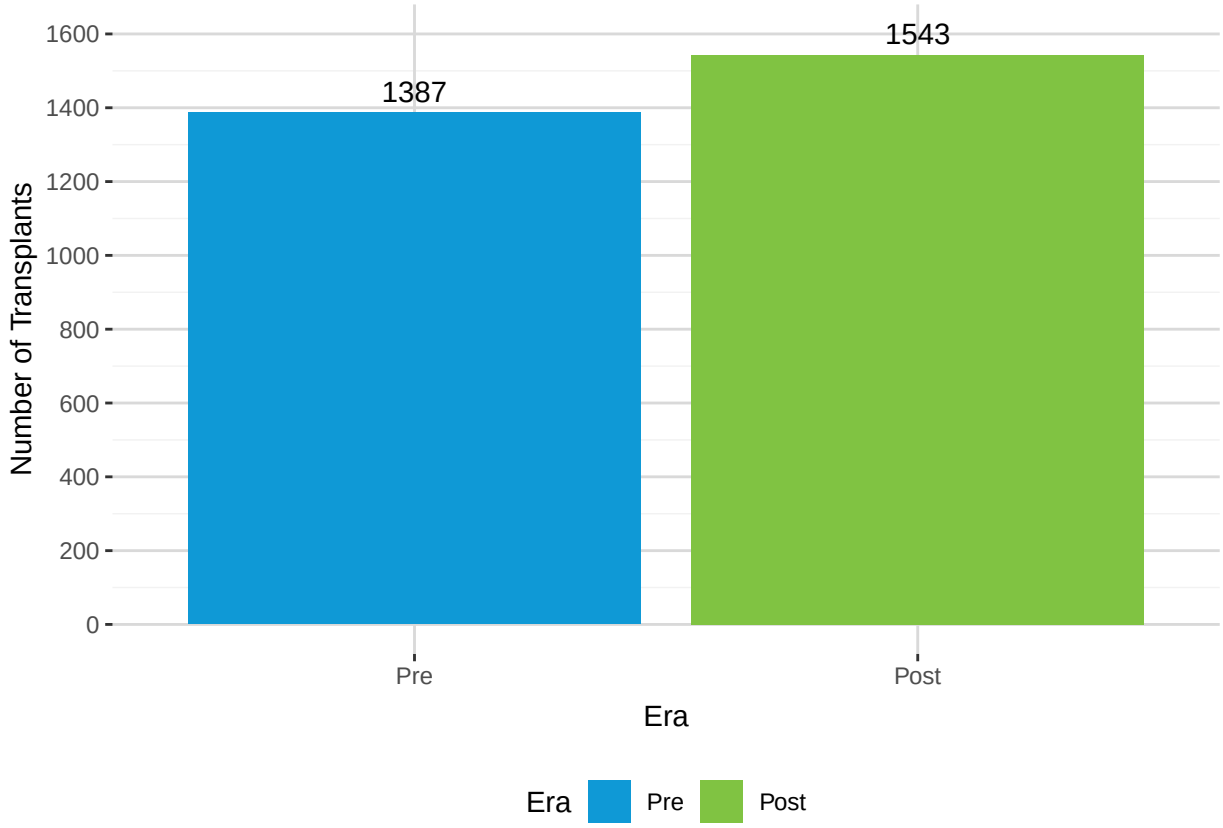
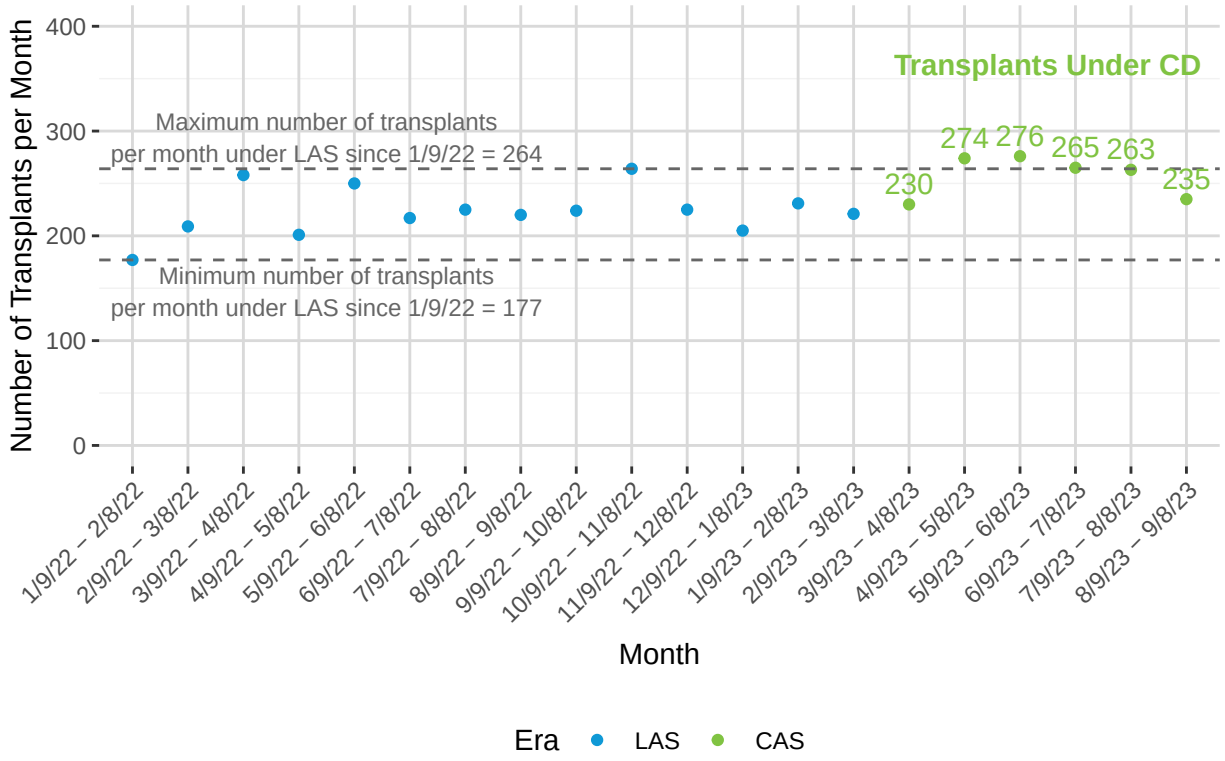



**Table 9: Number of Lung Transplants by Era**

| Era | N Transplants |
|---|---|
| Pre | 1387 |
| Post | 1543 |

The number of lung-alone transplants performed per month vary widely. In 2022, under LAS, the number of transplants performed per month varied from 177 to 264. The number of transplants per month under CAS have been at the upper end of this range and higher, ranging from 230 to 276.

**Figure 10: Number of Lung Transplants Per Month**




Note that all months are defined from the 9th to the 8th; therefore, the last six months under LAS do not perfectly overlap with the defined pre policy era.

**Table 10: Number of Lung Transplants Per Month**

| Policy Era | Month | Number of Lung Transplants |
|---|---|---|
| LAS | 1/9/22 - 2/8/22 | 177 |
| | 2/9/22 - 3/8/22 | 209 |
| | 3/9/22 - 4/8/22 | 258 |
| | 4/9/22 - 5/8/22 | 201 |
| | 5/9/22 - 6/8/22 | 250 |
| | 6/9/22 - 7/8/22 | 217 |
| | 7/9/22 - 8/8/22 | 225 |
| | 8/9/22 - 9/8/22 | 220 |
| | 9/9/22 - 10/8/22 | 224 |
| | 10/9/22 - 11/8/22 | 264 |
| | 11/9/22 - 12/8/22 | 225 |
| | 12/9/22 - 1/8/23 | 205 |
| | 1/9/23 - 2/8/23 | 231 |
| | 2/9/23 - 3/8/23 | 221 |
| CAS | 3/9/23 - 4/8/23 | 230 |
| | 4/9/23 - 5/8/23 | 274 |
| | 5/9/23 - 6/8/23 | 276 |
| | 6/9/23 - 7/8/23 | 265 |
| | 7/9/23 - 8/8/23 | 263 |
| | 8/9/23 - 9/8/23 | 235 |

[a] Note that all months are defined from the 9th to the 8th; therefore, the last six months under LAS do not perfectly overlap with the defined pre policy era.

The majority of candidates who received a lung transplant in the post policy era had a CAS subscore between 20 and <22 or >=24. CAS subscores are calculated by summing all components of the CAS, except for the efficiency points; this includes the sum of medical urgency points, post-transplant survival points, biological disadvantage points, and patient access points.

**Figure 11: Number of Lung Transplants by CAS Subscore in the Post Policy Era**

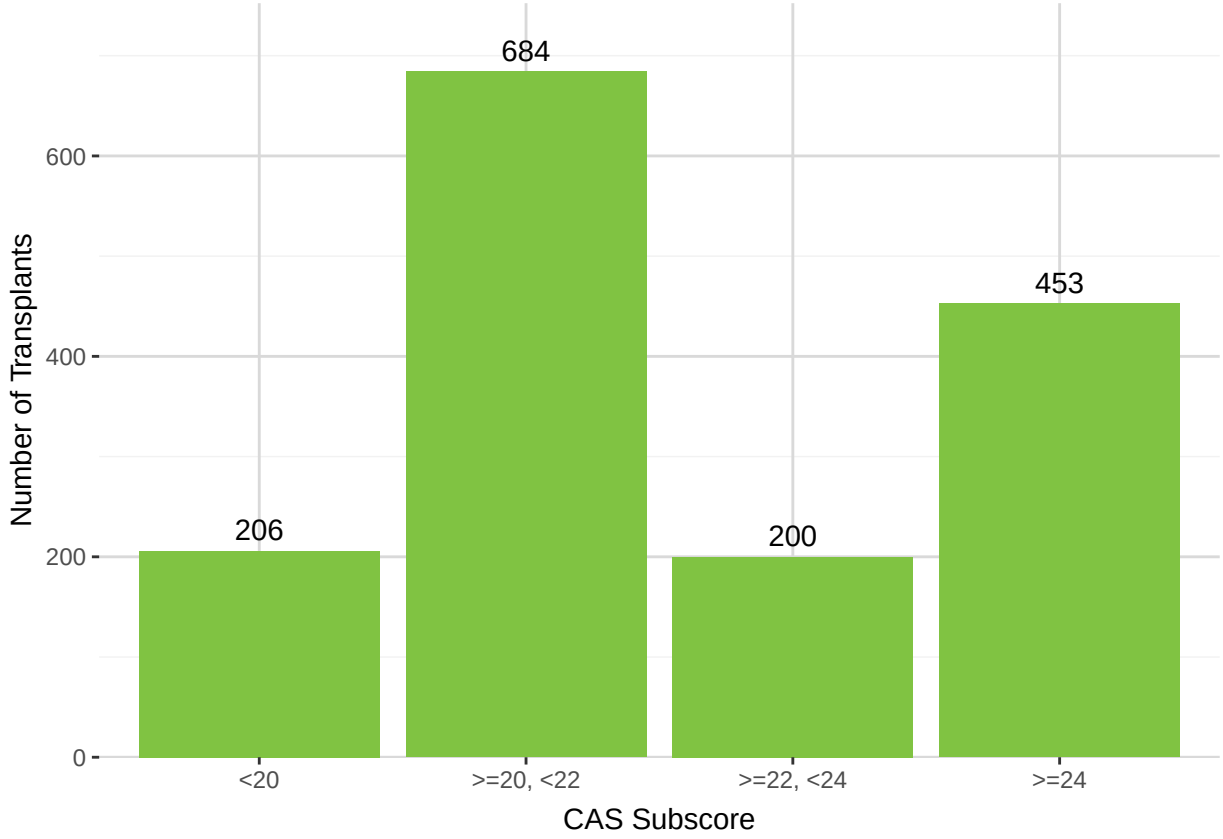



**Table 11: Number of Lung Transplants by CAS Subscore in the Post Policy Era**

| CAS Subscore | N Transplants |
|---|---|
| <20 | 206 (13.4%) |
| >=20, <22 | 684 (44.3%) |
| >=22, <24 | 200 (13.0%) |
| >=24 | 453 (29.4%) |
| Total | 1,543 (100.0%) |

In the post policy era, the median distance from the donor hospital to transplant program (353 Nautical Miles (NM)) was greater compared to the pre era (195 NM). SRTR pre-implementation modeling indicated that travel distance would increase for highly medically urgent candidates.

**Figure 12: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program for Lung Transplants by Era**

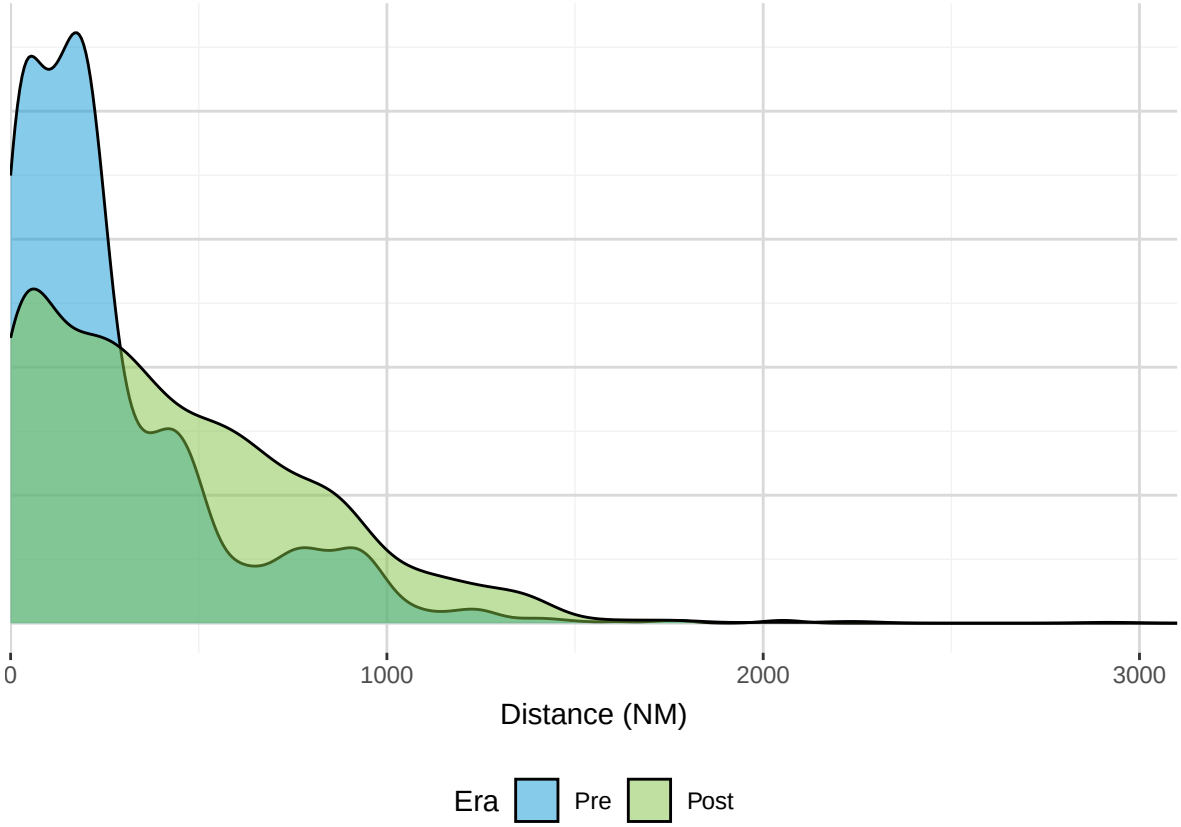



**Table 12: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program for Lung Transplants by Era**

| Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|
| Pre | 1387 | 0 | 0 | 78 | 195 | 279.35 | 391.0 | 2069 |
| Post | 1543 | 0 | 0 | 129 | 353 | 433.55 | 662.5 | 2920 |

## Continuous Distribution Attributes

This subsection evaluates trends associated with each of the individual attributes of Continuous Distribution in an effort to determine whether the specific goals of the policy are being met.

### Medical Urgency

Medical Urgency Points were not calculated in the pre era; thus, all metrics in this section only include data from the post policy era (from March 09, 2023 to September 08, 2023). Points are reported at the time of listing for waiting list additions and median time to transplant, but the most recent value is used for all other analyses.

The majority of candidates ever waiting during the post policy era had less than 0.5 medical urgency points.

**Figure 13: Number of Candidates Ever Waiting by Medical Urgency Points in the Post Policy Era**

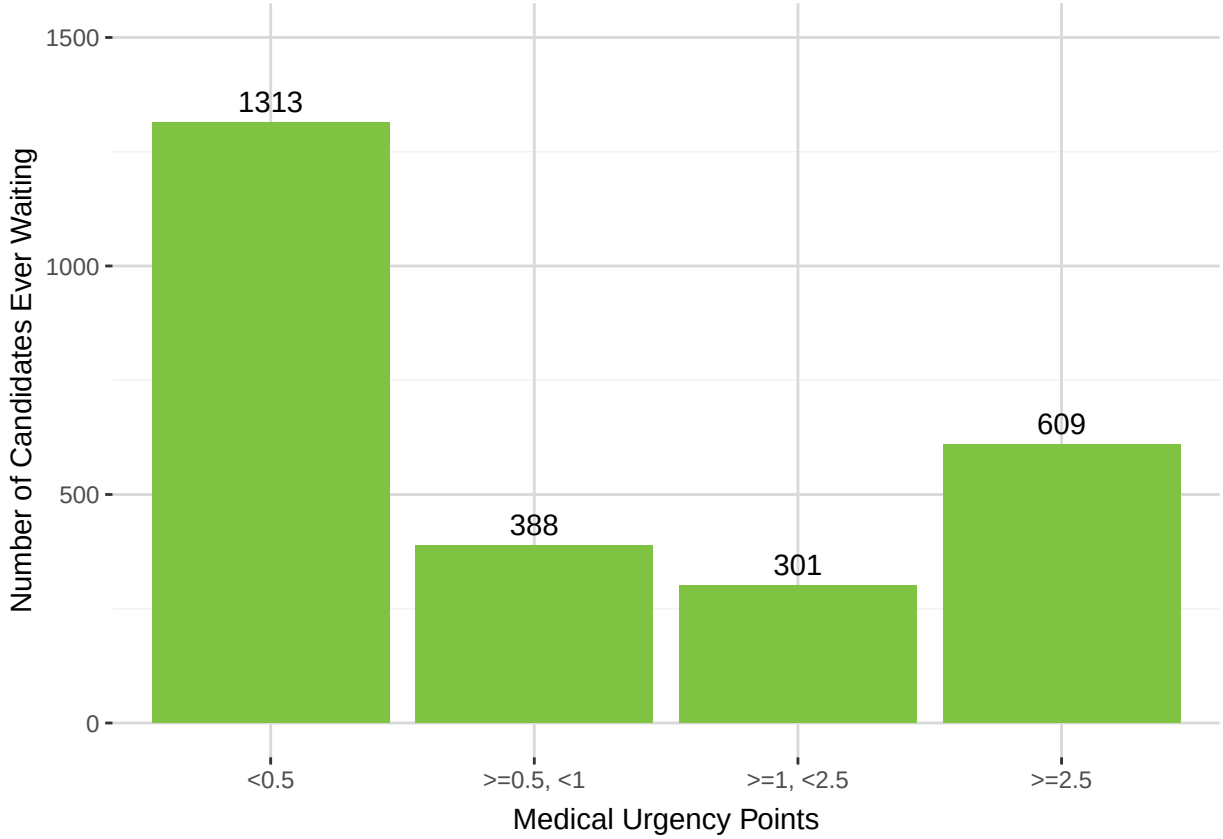



**Table 13: Number of Candidates Ever Waiting by Medical Urgency Points in the Post Policy Era**

| Medical Urgency Points | N Ever Waiting |
|---|---|
| <0.5 | 1,313 (50.3%) |
| >=0.5, <1 | 388 (14.9%) |
| >=1, <2.5 | 301 (11.5%) |
| >=2.5 | 609 (23.3%) |
| Total | 2,611 (100.0%) |

In the post policy era, most registrations added to the waiting list had less than 0.5 medical urgency points at the time of listing.

**Figure 14: Number of Registrations Added to the Waiting List by Medical Urgency Points at Listing in the Post Policy Era**

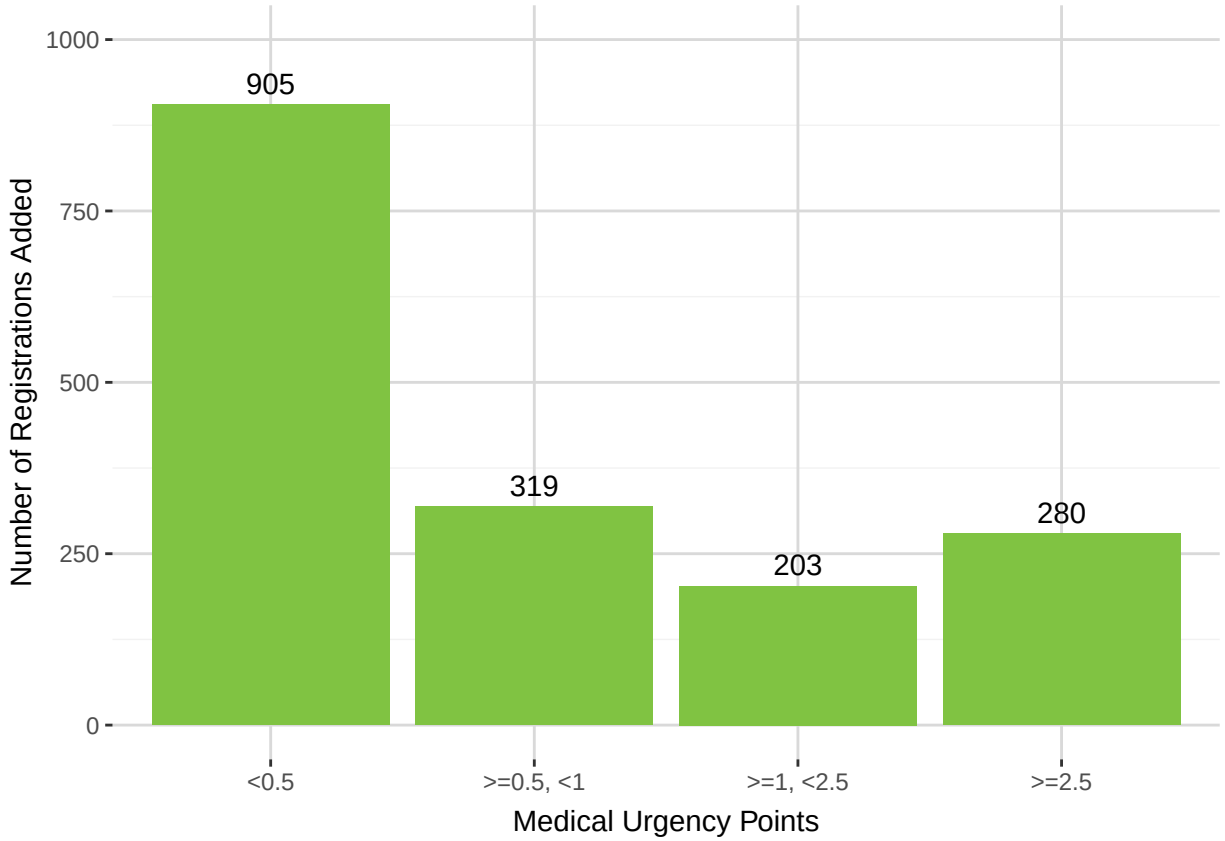



**Table 14: Number of Registrations Added to the Waiting List by Medical Urgency Points at Listing in the Post Policy Era**

| Medical Urgency Points | N Additions |
|---|---|
| <0.5 | 905 (53.0%) |
| >=0.5, <1 | 319 (18.7%) |
| >=1, <2.5 | 203 (11.9%) |
| >=2.5 | 280 (16.4%) |
| Total | 1,707 (100.0%) |

In the post policy era, the majority of candidates removed from the waiting list for death or too sick to transplant had at least 2.5 medical urgency points.

**Figure 15: Number of Candidates Removed from the Waiting List for Death or Too Sick by Medical Urgency Points in the Post Policy Era**

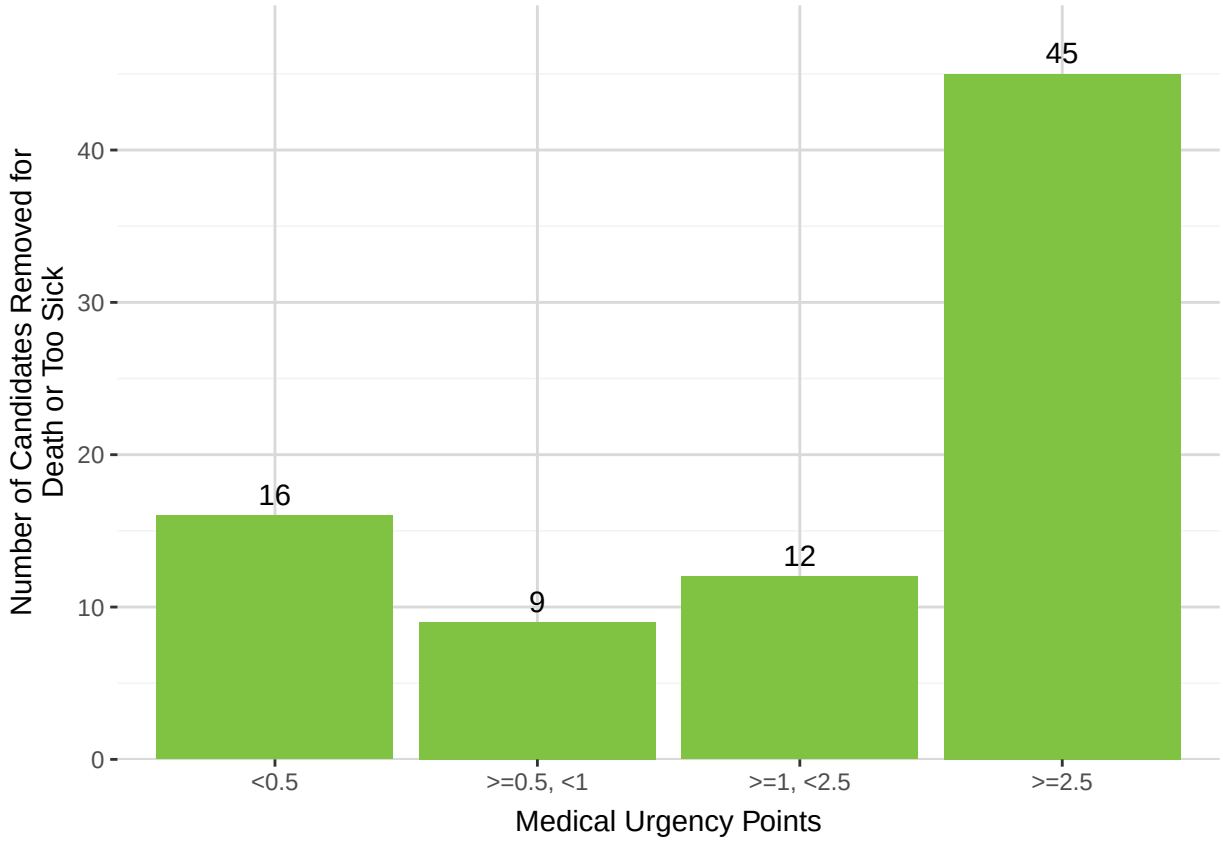



**Table 15: Number of Candidates Removed from the Waiting List for Death or Too Sick by Medical Urgency Points in the Post Policy Era**

| Medical Urgency Points | N Candidates Removed for Death or Too Sick |
|---|---|
| <0.5 | 16 (19.5%) |
| >=0.5, <1 | 9 (11.0%) |
| >=1, <2.5 | 12 (14.6%) |
| >=2.5 | 45 (54.9%) |
| Total | 82 (100.0%) |

Median time to transplant was shortest for the most medically urgent candidates (candidates with at least 2.5 medical urgency points at the time of listing).

**Figure 16: Median Time to Transplant (Days) by Medical Urgency Points at Listing in the Post Policy Era**

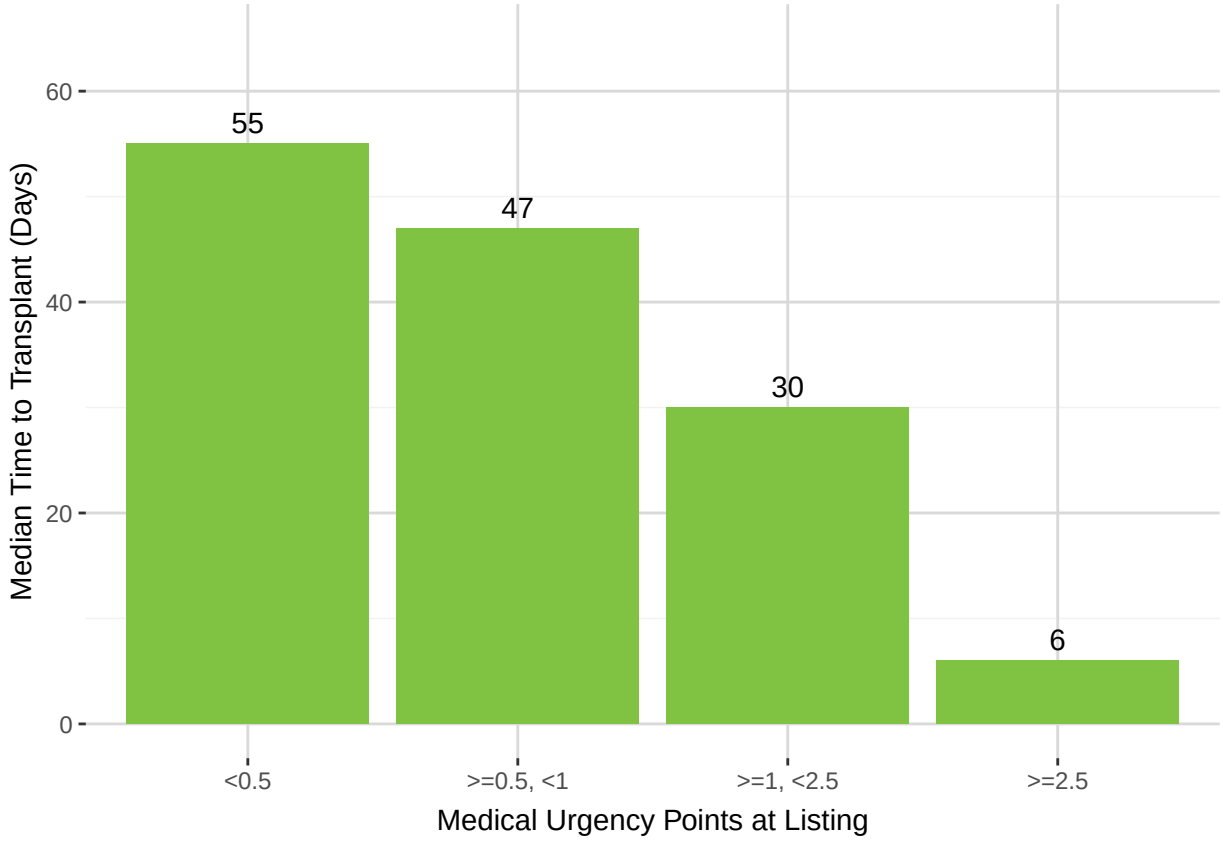



**Table 16: Median Time to Transplant (Days) by Medical Urgency Points at Listing in the Post Policy Era**

| Medical Urgency Points at Listing | N Registrations | Median Time to Transplant (Days) |
|---|---|---|
| <0.5 | 905 | 55 |
| >=0.5, <1 | 319 | 47 |
| >=1, <2.5 | 203 | 30 |
| >=2.5 | 280 | 6 |

In the post policy era, the majority of patients that received a lung transplant had less than 0.5 or at least 2.5 medical urgency points.

**Figure 17: Number of Lung Transplants by Medical Urgency Points in the Post Policy Era**

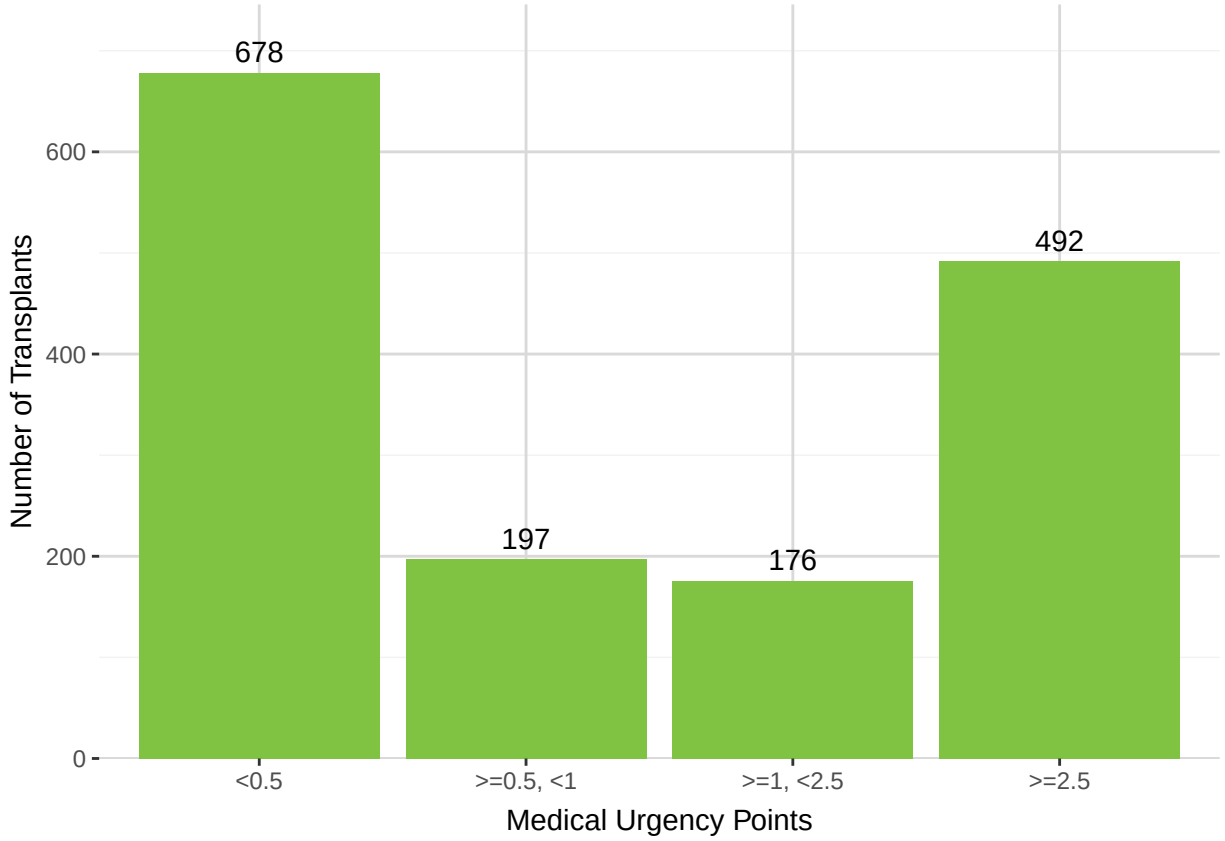



**Table 17: Number of Lung Transplants by Medical Urgency Points in the Post Policy Era**

| Medical Urgency Points | N Transplants |
|---|---|
| <0.5 | 678 (43.9%) |
| >=0.5, <1 | 197 (12.8%) |
| >=1, <2.5 | 176 (11.4%) |
| >=2.5 | 492 (31.9%) |
| Total | 1,543 (100.0%) |

In the post policy era, the median number of medical urgency points at the time of transplant was 0.66.

**Figure 18: Distribution of Medical Urgency Points at Transplant in the Post Policy Era**

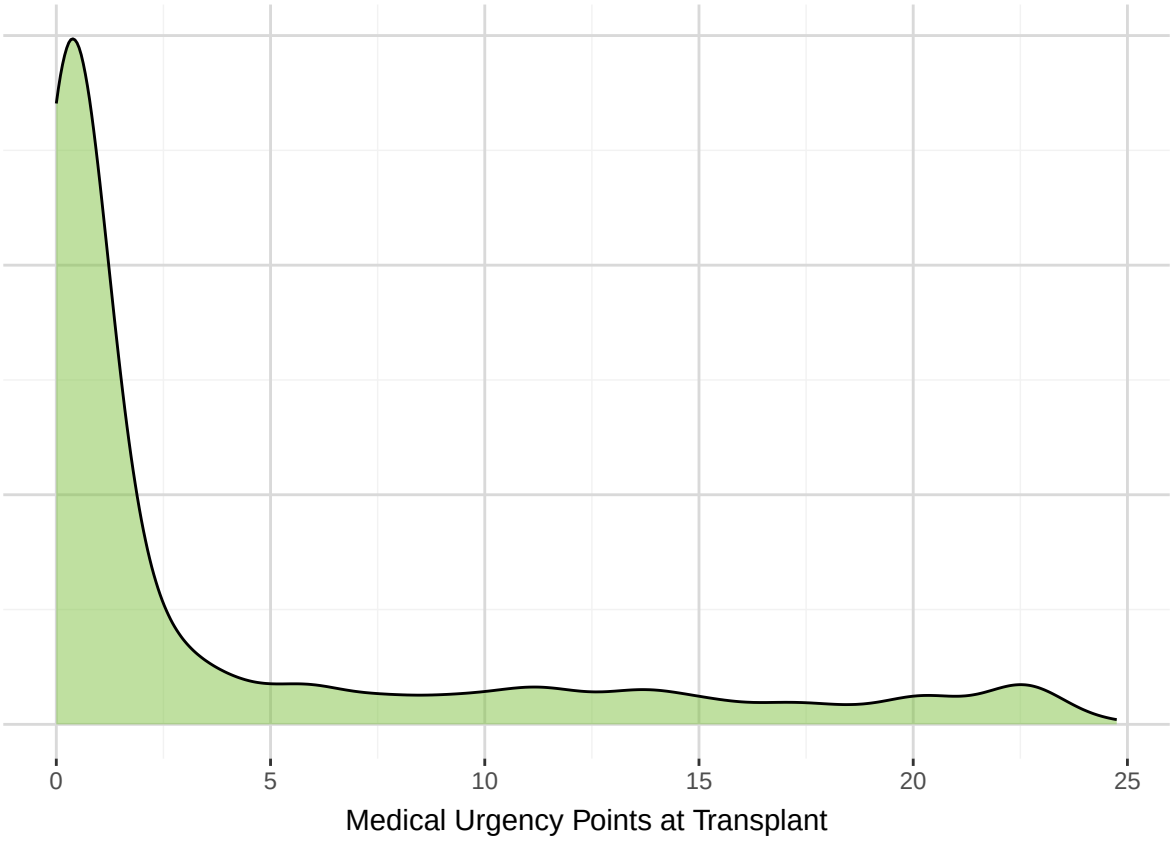



**Table 18: Distribution of Medical Urgency Points at Transplant in the Post Policy Era**

| Era | N Transplants | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|
| Post | 1543 | 0 | 0 | 0.2 | 0.66 | 4.16 | 5.23 | 24.75 |

For candidates added and removed from the waiting list in the post policy era, the median change in medical urgency points from listing to removal was 0. This includes individuals removed from the waiting list for any reason, including deceased donor transplant, death, too sick to transplant, condition improved, etc. A positive value means that the candidate's medical urgency points increased (their condition deteriorated), while a negative value means that the candidate's medical urgency points decreased (their condition improved).

**Figure 19: Distribution of the Change in Medical Urgency Points from Listing to Removal in the Post Policy Era**

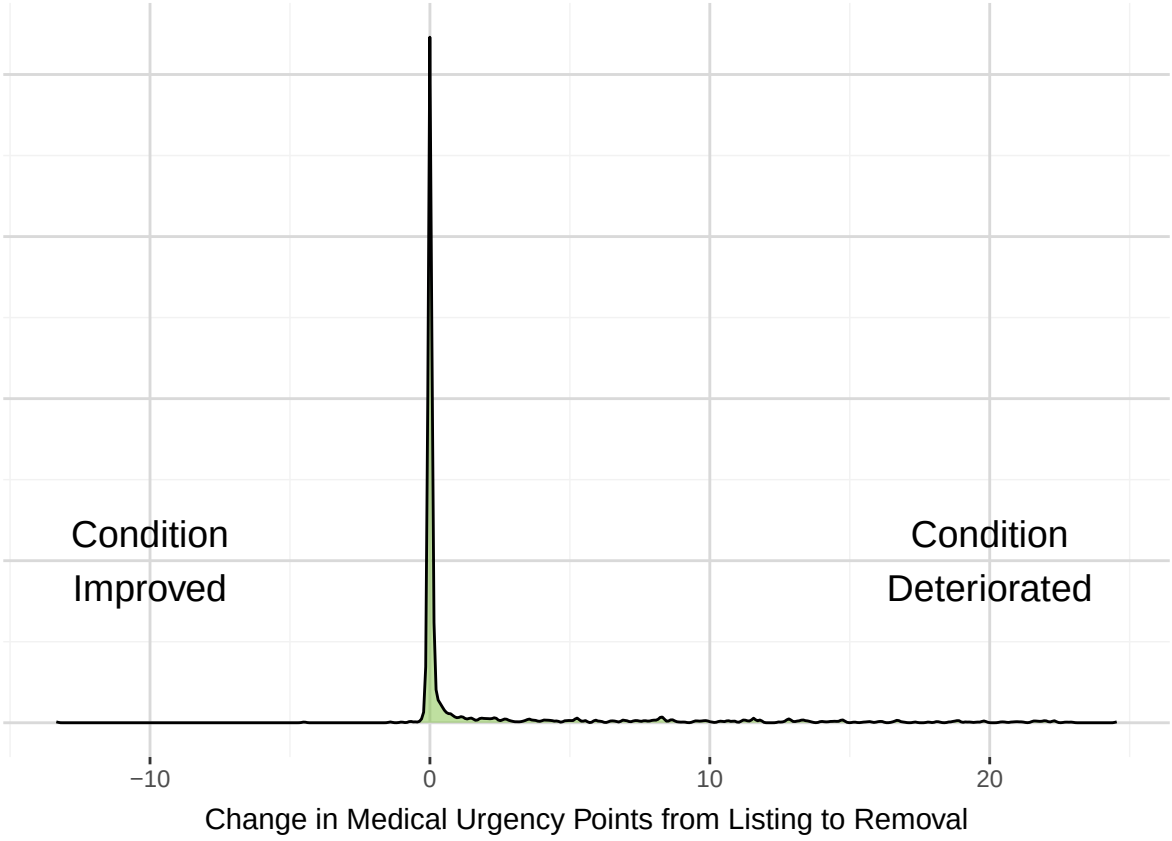
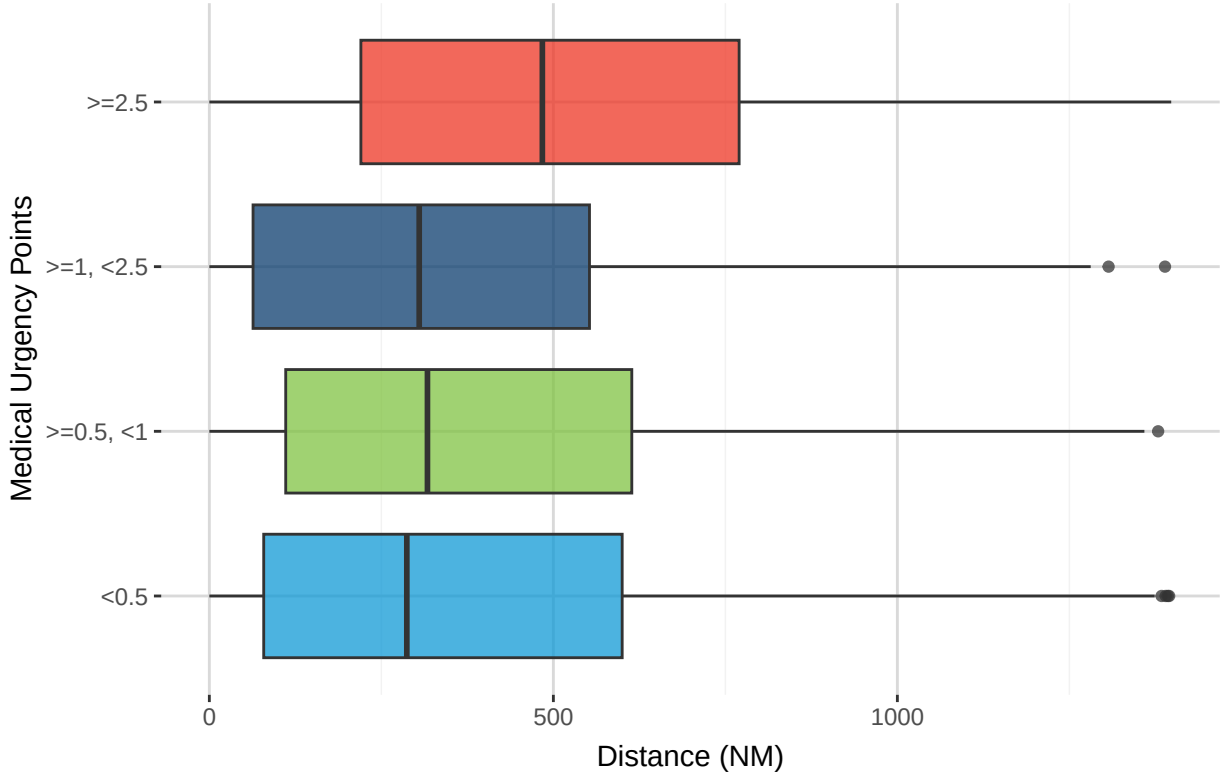



**Table 19: Distribution of the Change in Medical Urgency Points from Listing to Removal in the Post Policy Era**

| Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|
| Post | 1310 | 0 | -13.35 | 0.00 | 0.00 | 1.92 | 0.35 | 24.54 |

In the post era, median distance for the most medically urgent patients (medical urgency points >= 2.5) was greater (489.5 NM) than the median distance for all other recipients. SRTR modeling indicated travel distances would increase for the most medically urgent recipients.

**Figure 20: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Medical Urgency Points in the Post Policy Era**




View is restricted to the 99th percentile of distance (1399 NM). There were 16 cases where lungs traveled further than this distance in the post policy era.

**Table 20: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Medical Urgency Points in the Post Policy Era**

| Medical Urgency Points | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| <0.5 | Post | 678 | 0 | 0 | 82.25 | 289.0 | 381.72 | 607.25 | 2920 |
| >=0.5, <1 | Post | 197 | 0 | 0 | 112.00 | 332.0 | 428.24 | 648.00 | 2021 |
| >=1, <2.5 | Post | 176 | 0 | 0 | 65.25 | 310.5 | 367.22 | 556.50 | 1736 |
| >=2.5 | Post | 492 | 0 | 0 | 221.75 | 489.5 | 530.84 | 789.50 | 2244 |
| Total | Post | 1543 | 0 | 0 | 129.00 | 353.0 | 433.55 | 662.50 | 2920 |

**Post-Transplant Survival**

Post-Transplant Survival Points were not calculated in the pre era; thus, all metrics in this section only include data from the post policy era (from March 09, 2023 to September 08, 2023). Points are reported at the time of listing for waiting list additions and median time to transplant, but the most recent value is used for all other analyses.

The majority of candidates ever waiting during the post policy era had less than 20 post-transplant survival points.

**Figure 21: Number of Candidates Ever Waiting by Post-Transplant Survival Points in the Post Policy Era**

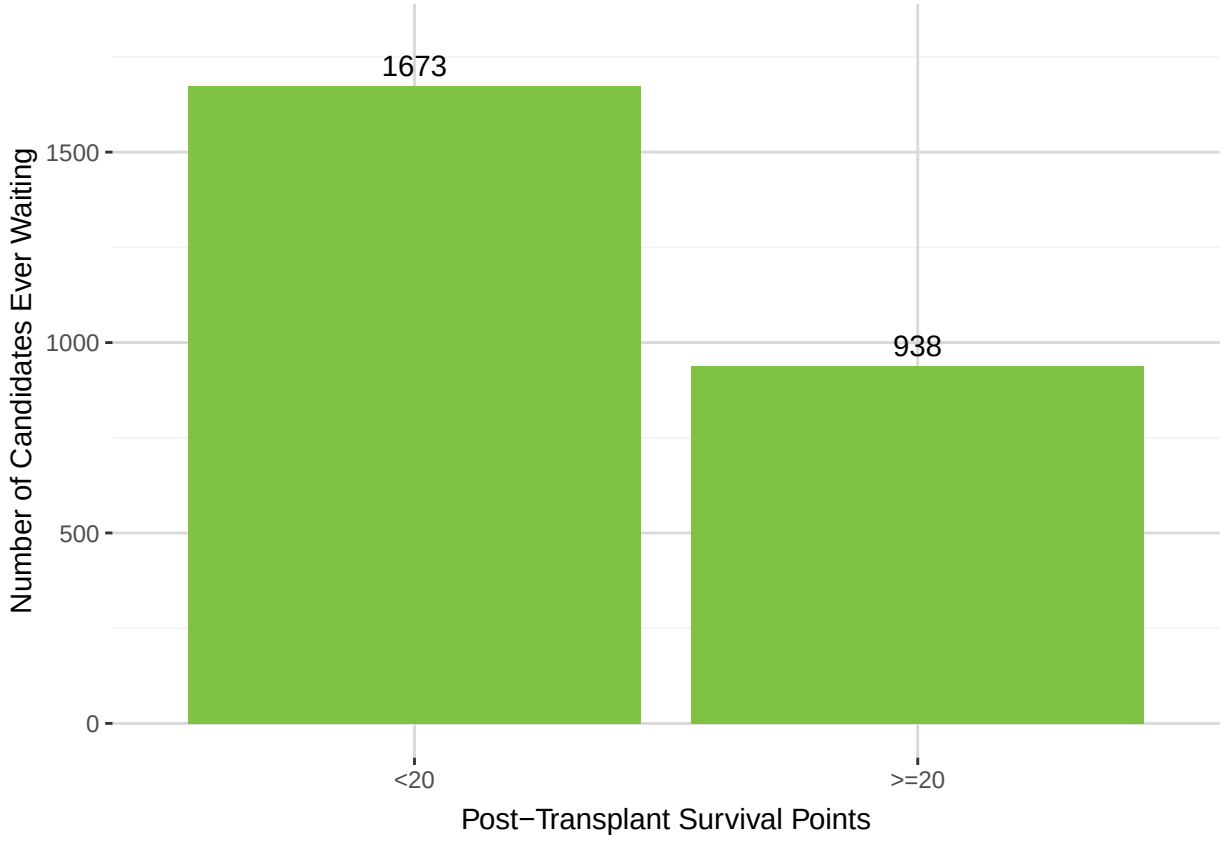



**Table 21: Number of Candidates Ever Waiting by Post-Transplant Survival Points in the Post Policy Era**

| Post-Transplant Survival Points | N Ever Waiting |
|---|---|
| <20 | 1,673 (64.1%) |
| >=20 | 938 (35.9%) |
| Total | 2,611 (100.0%) |

In the post policy era, the majority of registrations added to the waiting list had less than 20 post-transplant survival points at the time of listing.

**Figure 22: Number of Registrations Added to the Waiting List by Post-Transplant Survival Points at Listing in the Post Policy Era**

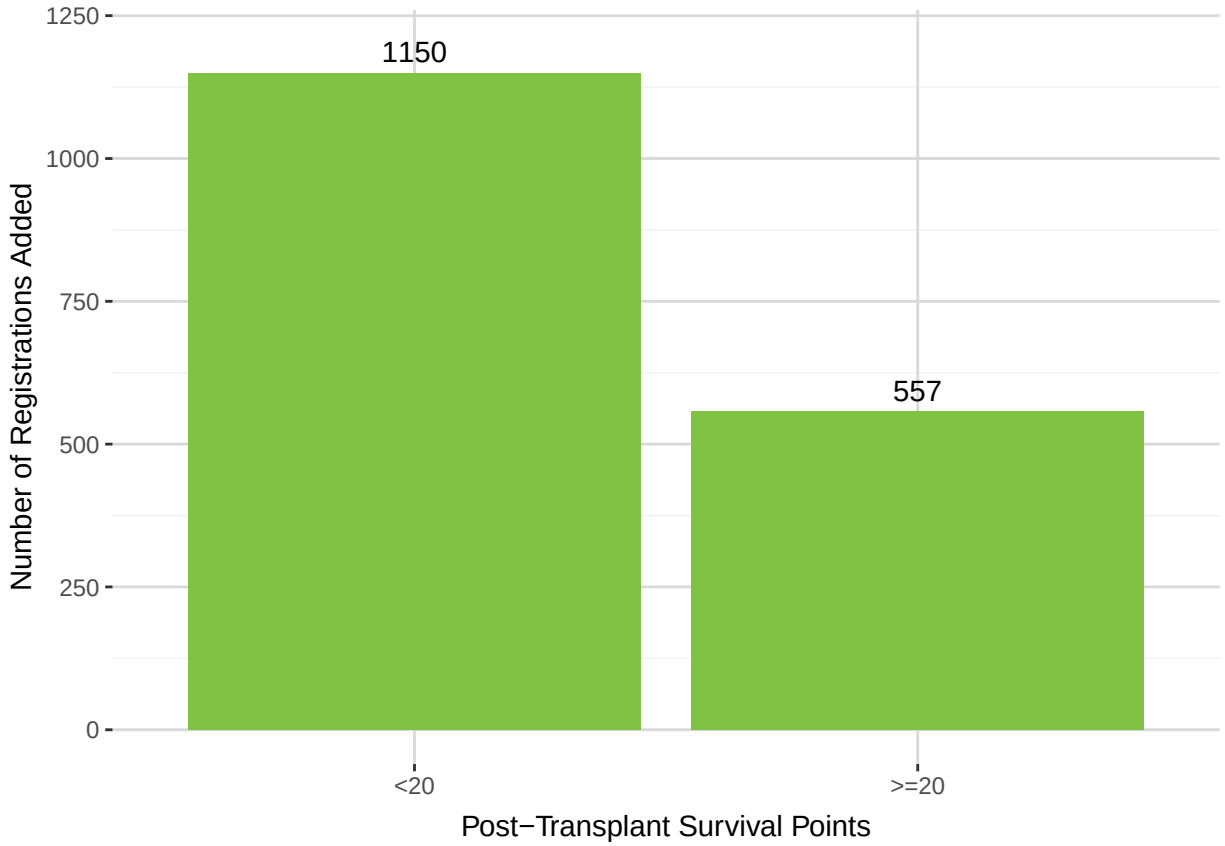



**Table 22: Number of Registrations Added to the Waiting List by Post-Transplant Survival Points at Listing in the Post Policy Era**

| Post-Transplant Survival Points | N Additions |
|---|---|
| <20 | 1,150 (67.4%) |
| >=20 | 557 (32.6%) |
| Total | 1,707 (100.0%) |

In the post policy era, the majority of candidates removed from the waiting list for death or too sick had less than 20 post-transplant survival points.

**Figure 23: Number of Candidates Removed from the Waiting List for Death or Too Sick by Post-Transplant Survival Points in the Post Policy Era**

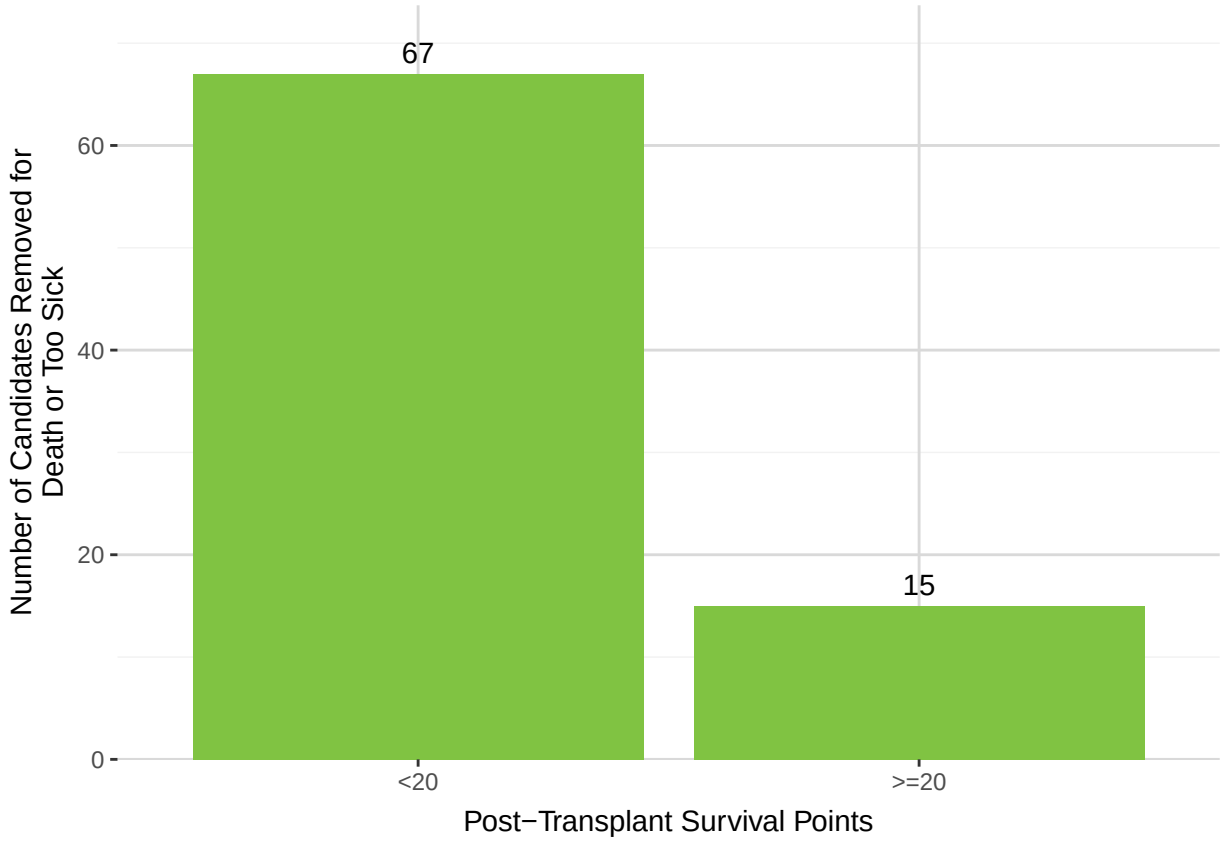



**Table 23: Number of Candidates Removed from the Waiting List for Death or Too Sick by Post-Transplant Survival Points in the Post Policy Era**

| Post-Transplant Survival Points | N Candidates Removed for Death or Too Sick |
|---|---|
| <20 | 67 (81.7%) |
| >=20 | 15 (18.3%) |
| Total | 82 (100.0%) |

Median time to a transplant was similar for patients with <20 and >=20 post-transplant survival points at the time of listing.

**Figure 24: Median Time to Transplant (Days) by Post-Transplant Survival Points at Listing in the Post Policy Era**

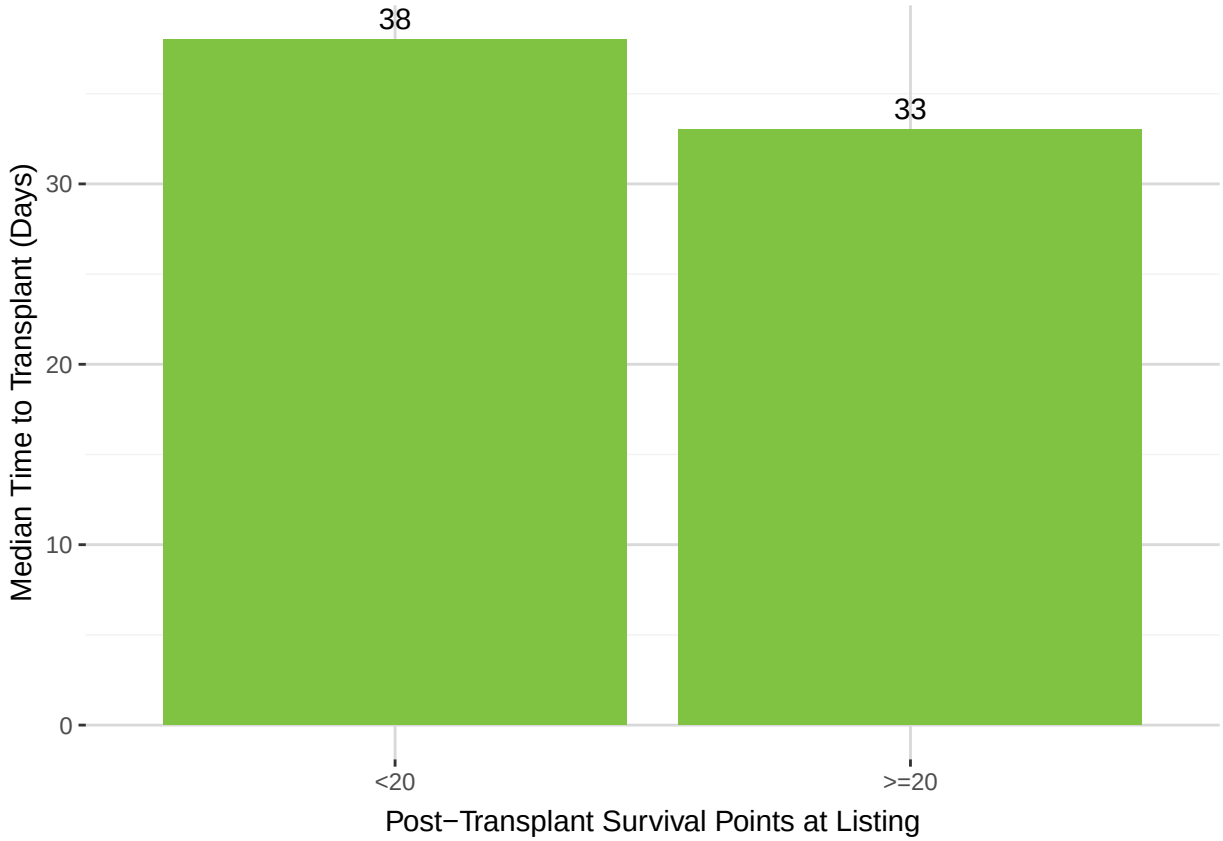



**Table 24: Median Time to Transplant (Days) by Post-Transplant Survival Points at Listing in the Post Policy Era**

| Post-Transplant Survival Points at Listing | N Registrations | Median Time to Transplant (Days) |
|---|---|---|
| <20 | 1150 | 38 |
| >=20 | 557 | 33 |

In the post policy era, the majority of patients that received a lung transplant had less than 20 post-transplant survival points.

**Figure 25: Number of Lung Transplants by Post-Transplant Survival Points in the Post Policy Era**

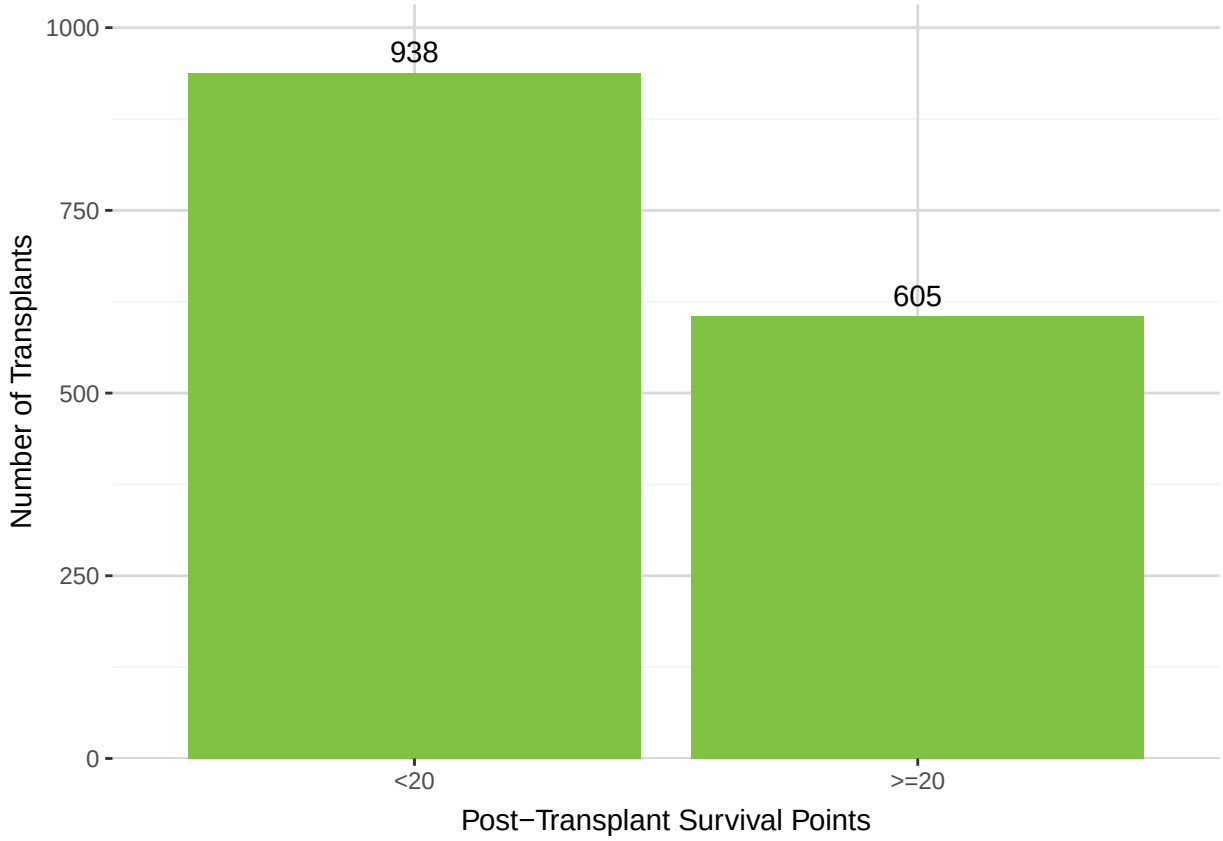



**Table 25: Number of Lung Transplants by Post-Transplant Survival Points in the Post Policy Era**

| Post-Transplant Survival Points | N Transplants |
|---|---|
| <20 | 938 (60.8%) |
| >=20 | 605 (39.2%) |
| Total | 1,543 (100.0%) |

In the post policy era, the median number of post-transplant survival points at the time of transplant was 19.69.

**Figure 26: Distribution of Post-Transplant Survival Points at Transplant in the Post Policy Era**

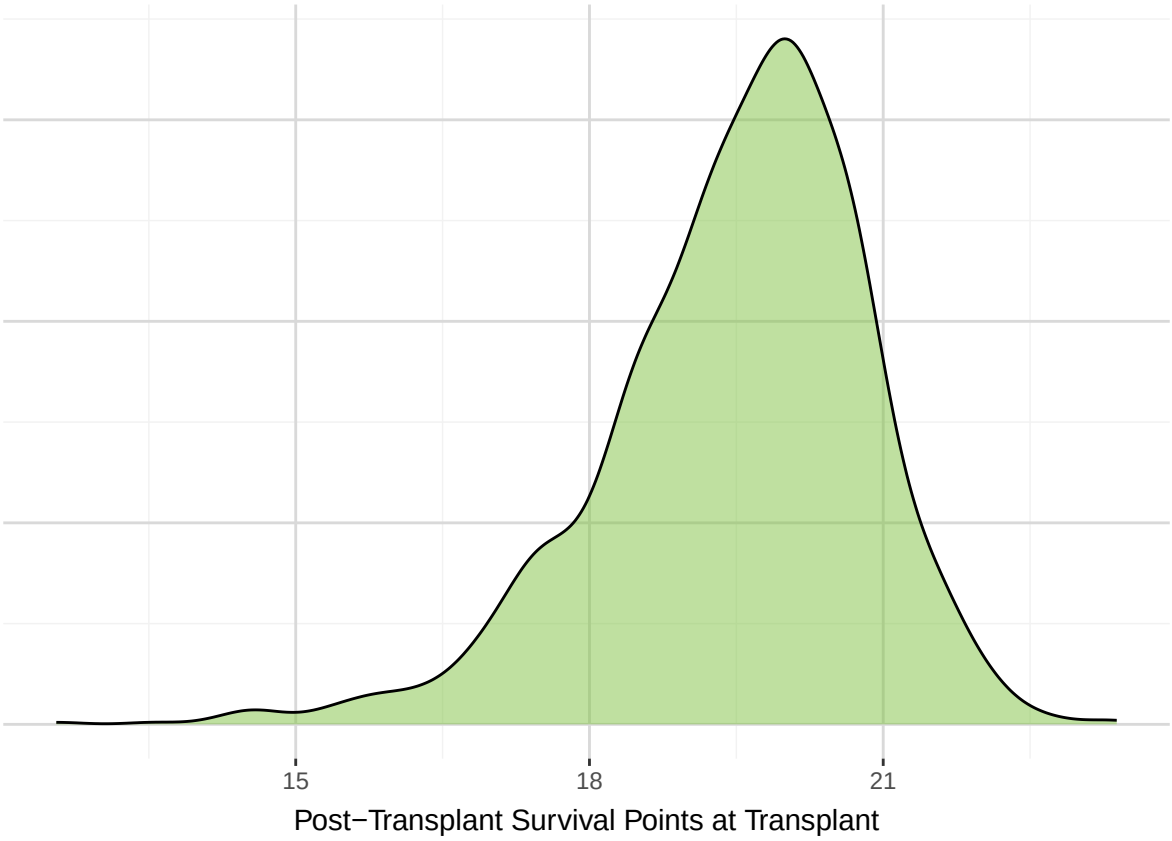
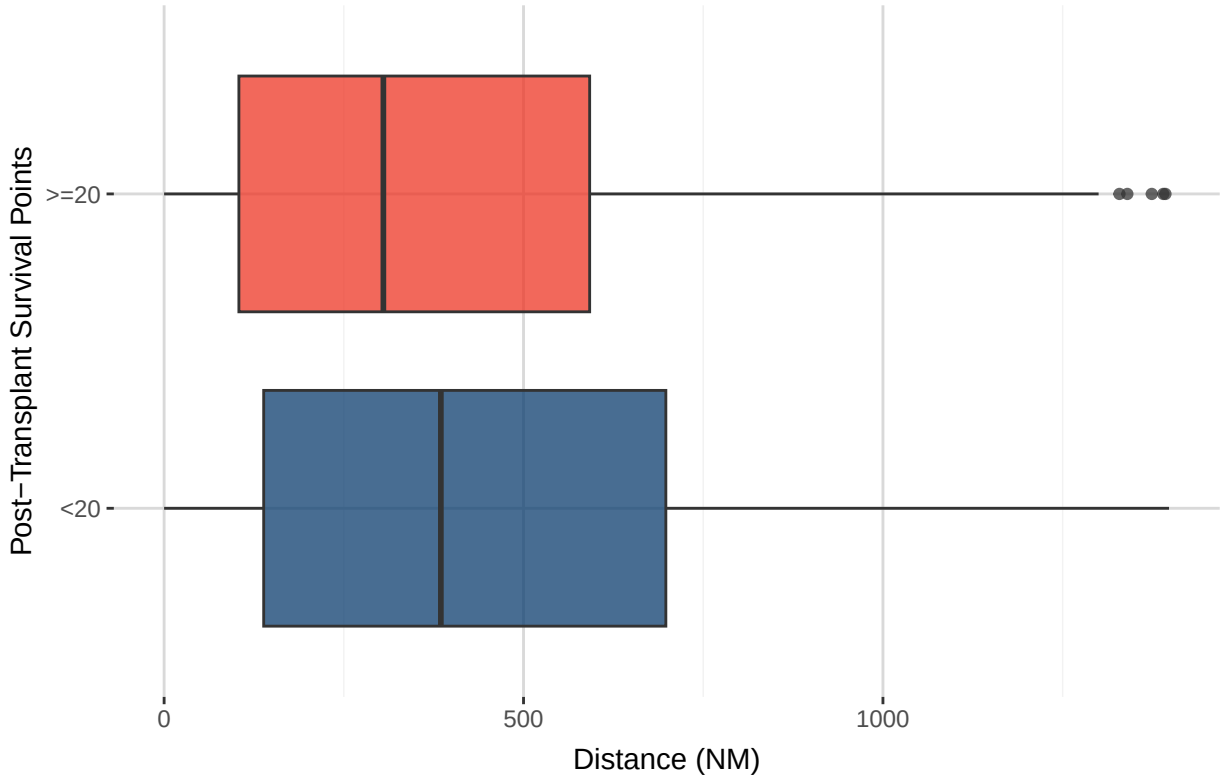



**Table 26: Distribution of Post-Transplant Survival Points at Transplant in the Post Policy Era**

| Era | N Transplants | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|
| Post | 1543 | 0 | 12.55 | 18.73 | 19.69 | 19.49 | 20.41 | 23.39 |

In the post era, median distance for patients with less than 20 post-transplant survival points (392.5 NM) was greater than the median distance for patients with 20 or more post-transplant survival points (305 NM).

**Figure 27: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Post-Transplant Survival Points in the Post Policy Era**




View is restricted to the 99th percentile of distance (1399 NM). There were 16 cases where lungs traveled further than this distance in the post policy era.

**Table 27: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Post-Transplant Survival Points in the Post Policy Era**

| Post-Transplant Survival Points | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| <20 | Post | 938 | 0 | 0 | 140.5 | 392.5 | 460.14 | 707.75 | 2244 |
| >=20 | Post | 605 | 0 | 0 | 105.0 | 305.0 | 392.34 | 599.00 | 2920 |
| Total | Post | 1543 | 0 | 0 | 129.0 | 353.0 | 433.55 | 662.50 | 2920 |

**Pediatric**

Pediatric candidates are defined as those who are less than 18 years old at the time of listing. Additionally, pediatric recipients are defined as those who are less than 18 years old at the time of listing, even if they are 18 years or older at the time of transplant. The sample sizes for pediatrics are currently too small to definitively determine implications of the policy change; however, below we describe trends we are observing so far. We will continue to monitor pediatrics in upcoming monitoring reports as more data become available.

The number of pediatric candidates ever waiting was similar in the pre and post eras.

**Figure 28: Number of Pediatric Candidates Ever Waiting by Era**

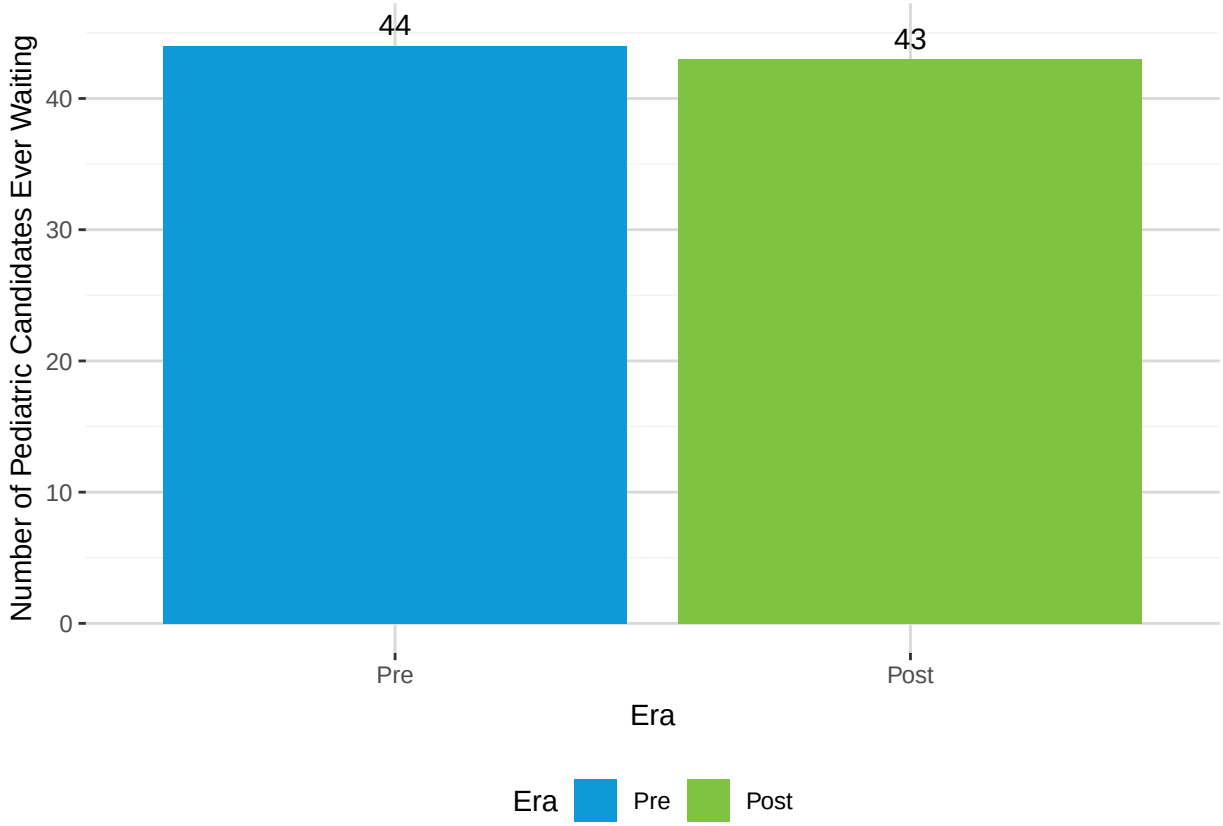



**Table 28: Number of Pediatric Candidates Ever Waiting by Era**

| Era | N Pediatric Candidates Ever Waiting |
|---|---|
| Pre | 44 |
| Post | 43 |

There was a slight decrease in the number of pediatric registrations added to the waiting list in the post policy era.

**Figure 29: Number of Pediatric Registrations Added to the Waiting List by Era**

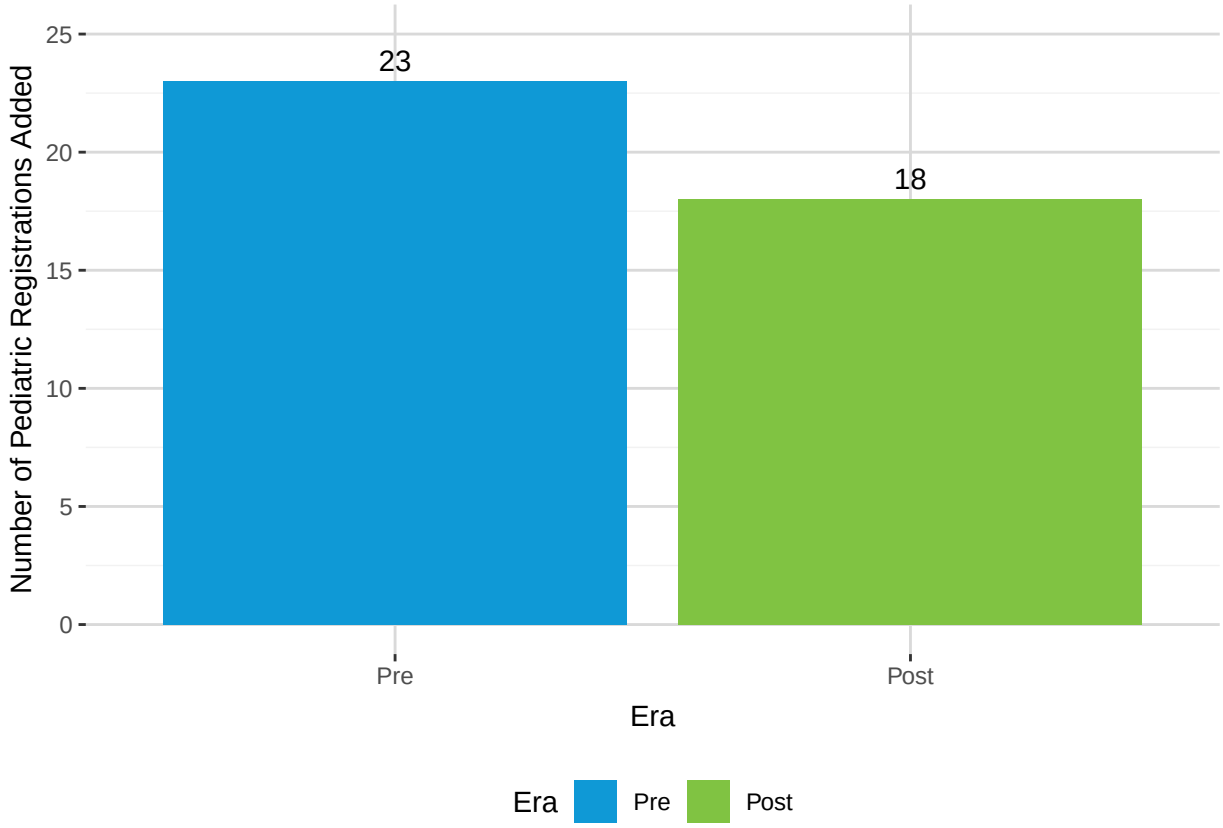



**Table 29: Number of Pediatric Registrations Added to the Waiting List by Era**

| Era | N Pediatric Registrations Added |
|---|---|
| Pre | 23 |
| Post | 18 |

There were 4 pediatric candidates removed from the waiting list for death or being too sick to transplant in the pre era and 3 pediatric candidates removed from the waiting list for death or being too sick to transplant in the post era.

**Figure 30: Number of Pediatric Candidates Removed from the Waiting List for Death or Too Sick by Era**

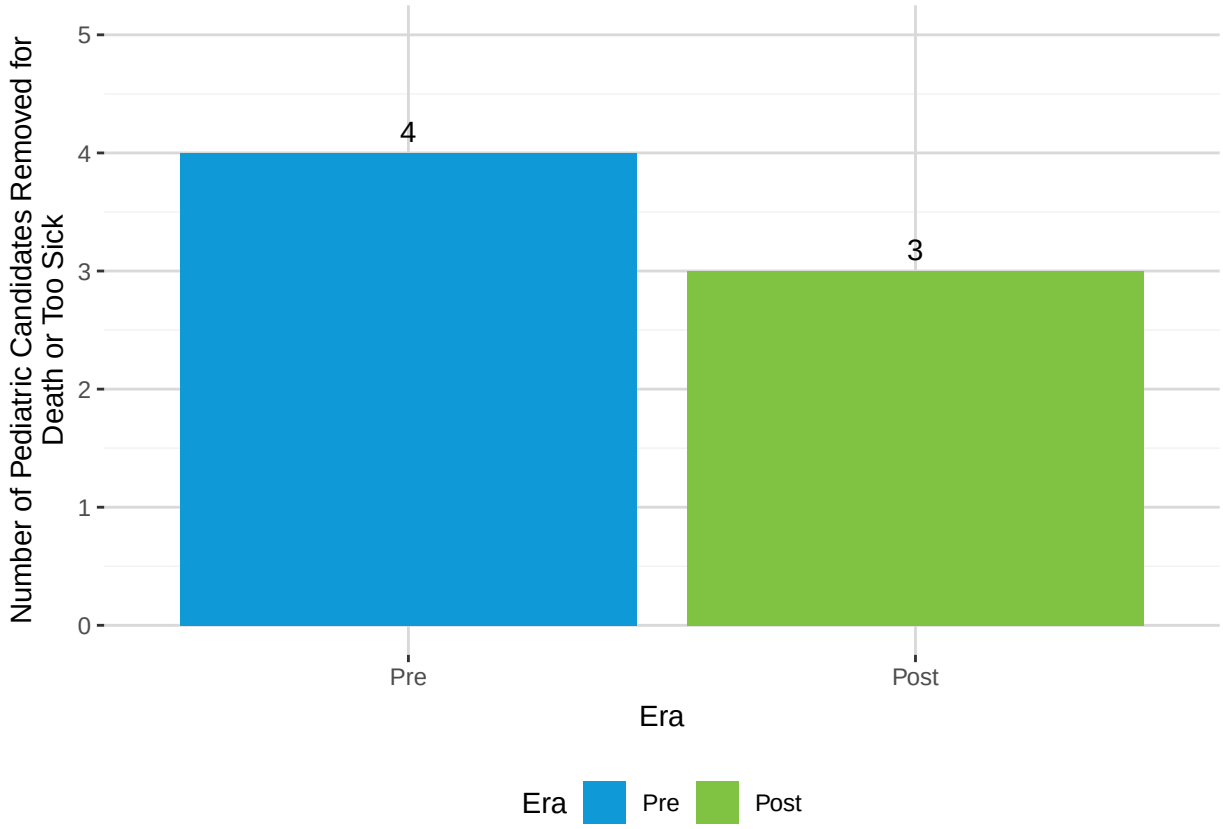
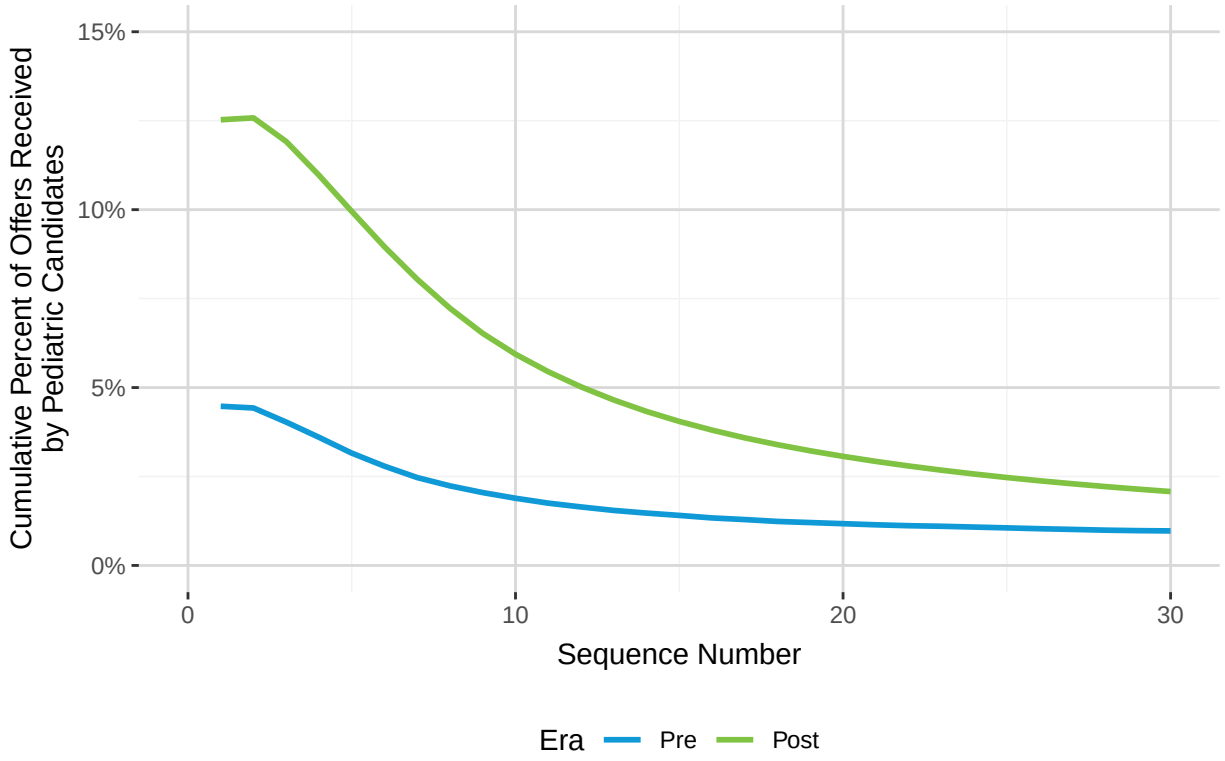



**Table 30: Number of Pediatric Candidates Removed from the Waiting List for Death or Too Sick by Era**

| Era | N Pediatric Candidates Removed for Death or Too Sick |
|---|---|
| Pre | 4 |
| Post | 3 |

The following figure and table describe how pediatric candidates were ranked on the match run in the pre and post policy eras by depicting the cumulative percent of offers received by pediatric candidates at the top of the match run (from sequence numbers 1 to 30). In the post era, pediatric candidates had greater access to transplants and received the first offer on a match run 12.53% of the time, compared to the pre era where they received the first offer on a match run only 4.47% of the time.

**Figure 31: Cumulative Percent of Offers Received by Pediatric Candidates by Era and Sequence Number**




View is restricted to match run sequence numbers 1 through 30 to highlight differences at the top of the match run between the pre and post eras.

**Table 31: Cumulative Percent of Offers Received by Pediatric Candidates by Era and Sequence Number**

| Sequence Number | Pre | Post |
|---|---|---|
| 1 | 4.47% | 12.53% |
| 2 | 4.43% | 12.58% |
| 3 | 4.03% | 11.91% |
| 4 | 3.60% | 10.97% |
| 5 | 3.16% | 9.95% |
| 6 | 2.79% | 8.96% |
| 7 | 2.47% | 8.04% |
| 8 | 2.24% | 7.23% |
| 9 | 2.05% | 6.52% |
| 10 | 1.89% | 5.94% |
| 11 | 1.75% | 5.44% |
| 12 | 1.64% | 5.02% |
| 13 | 1.55% | 4.65% |
| 14 | 1.47% | 4.33% |
| 15 | 1.41% | 4.05% |
| 16 | 1.34% | 3.80% |
| 17 | 1.29% | 3.59% |
| 18 | 1.24% | 3.39% |
| 19 | 1.21% | 3.22% |
| 20 | 1.17% | 3.07% |
| 21 | 1.14% | 2.92% |
| 22 | 1.12% | 2.80% |
| 23 | 1.10% | 2.68% |
| 24 | 1.08% | 2.57% |
| 25 | 1.06% | 2.47% |
| 26 | 1.03% | 2.38% |
| 27 | 1.01% | 2.30% |
| 28 | 0.99% | 2.22% |
| 29 | 0.98% | 2.14% |
| 30 | 0.97% | 2.08% |

[a] Cumulative percent of offers received by pediatric candidates are only listed through match run sequence number 30 to highlight differences in pediatric offers at the top of the match run in the pre and post eras.

The number of transplants was similar for pediatric candidates in the pre and post eras.

**Figure 32: Number of Lung Transplants by Era and Pediatric Age Group**

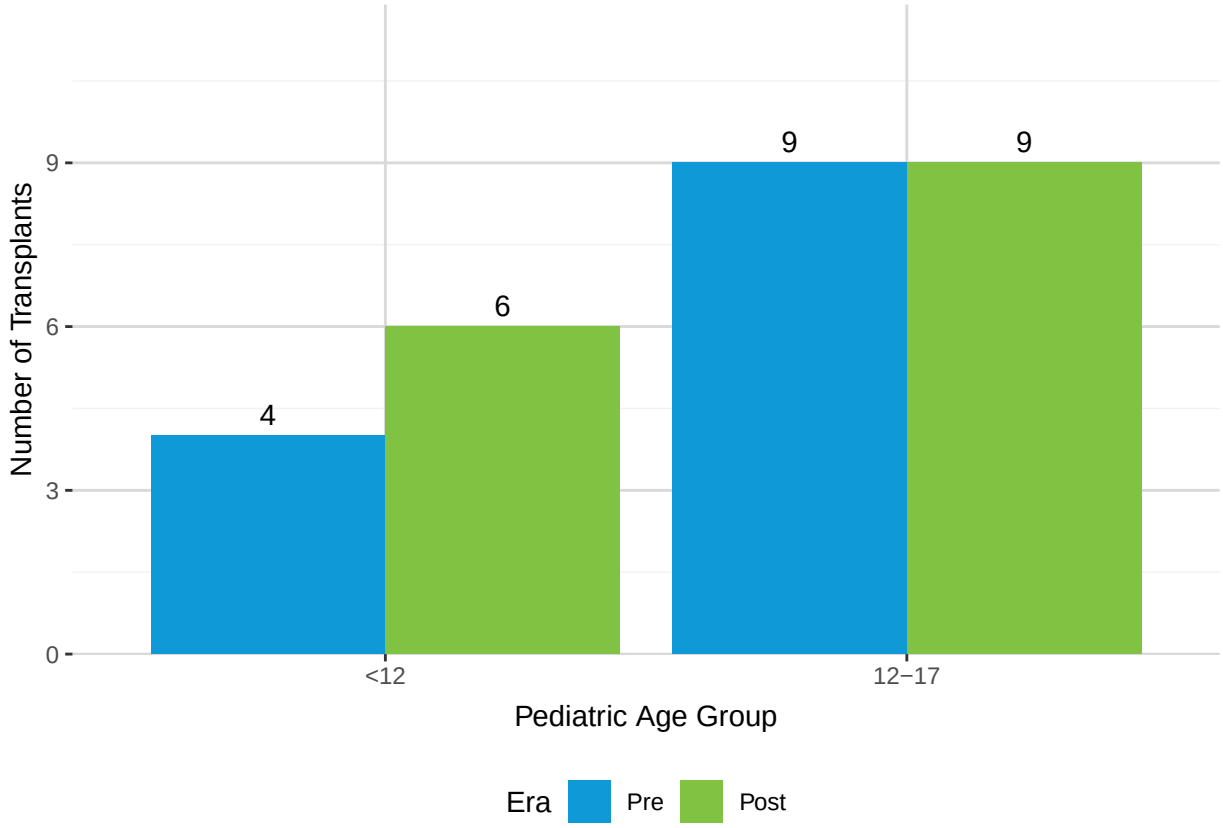



**Table 32: Number of Lung Transplants by Era and Pediatric Age Group**

| Pediatric Age Group | Pre | Post |
|---|---|---|
| <12 | 4 (30.8%) | 6 (40.0%) |
| 12-17 | 9 (69.2%) | 9 (60.0%) |
| Total | 13 (100.0%) | 15 (100.0%) |

In the post era, the number of pediatric lungs transplanted to adult recipients increased slightly and the number transplanted to pediatric recipients decreased slightly. In addition, more adult lungs were transplanted to pediatric recipients in the post era compared to the pre era.

**Figure 33: Number of Lung Transplants by Era, Recipient Age Group, and Donor Age Group**

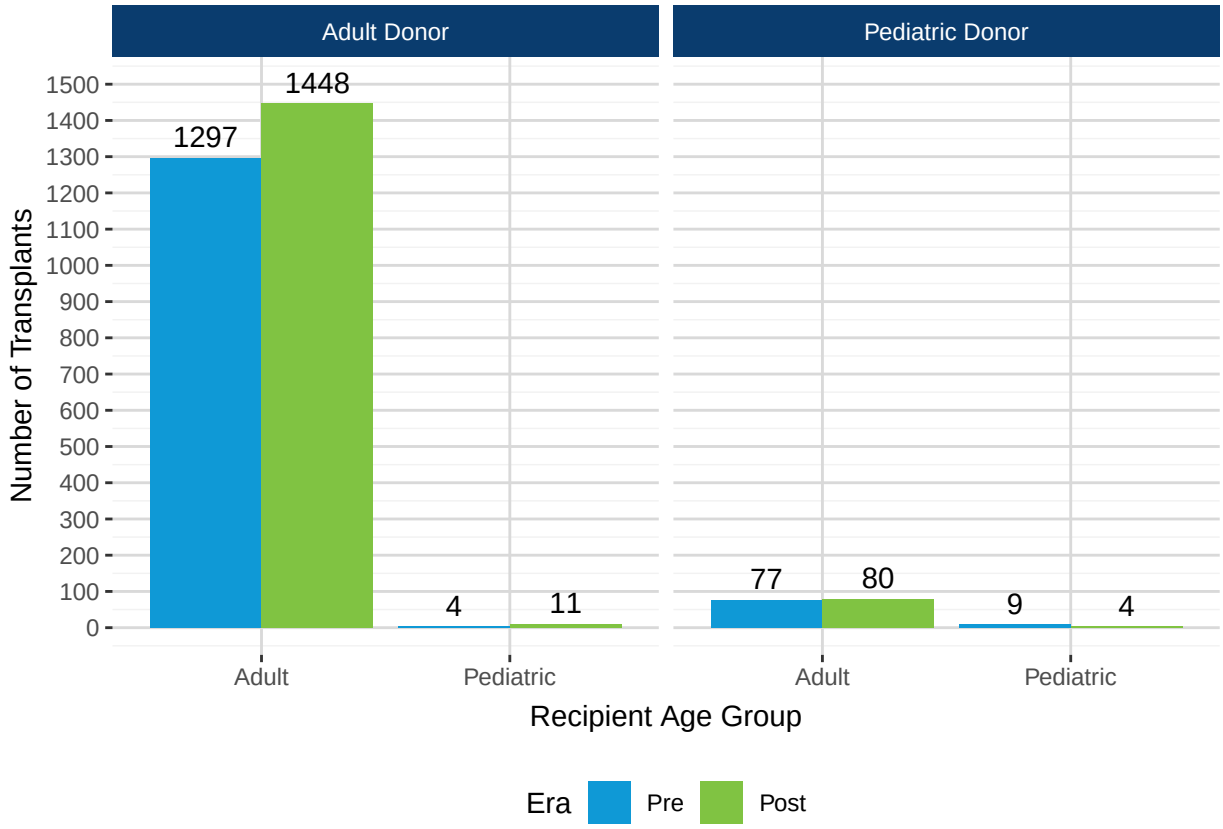



**Table 33: Number of Lung Transplants by Era, Recipient Age Group, and Donor Age Group**

| Era | Recipient Age Group | Adult Donor | Pediatric Donor |
|---|---|---|---|
| Pre | Adult | 1,297 (99.7%) | 77 (89.5%) |
| | Pediatric | 4 (0.3%) | 9 (10.5%) |
| | Total | 1,301 (100.0%) | 86 (100.0%) |
| Post | Adult | 1,448 (99.2%) | 80 (95.2%) |
| | Pediatric | 11 (0.8%) | 4 (4.8%) |
| | Total | 1,459 (100.0%) | 84 (100.0%) |

In the post policy era, median distance from the donor hospital to transplant program decreased for pediatric recipients from 383 NM to 297 NM, though sample sizes were small.

**Figure 34: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program for Pediatric Recipients by Era**

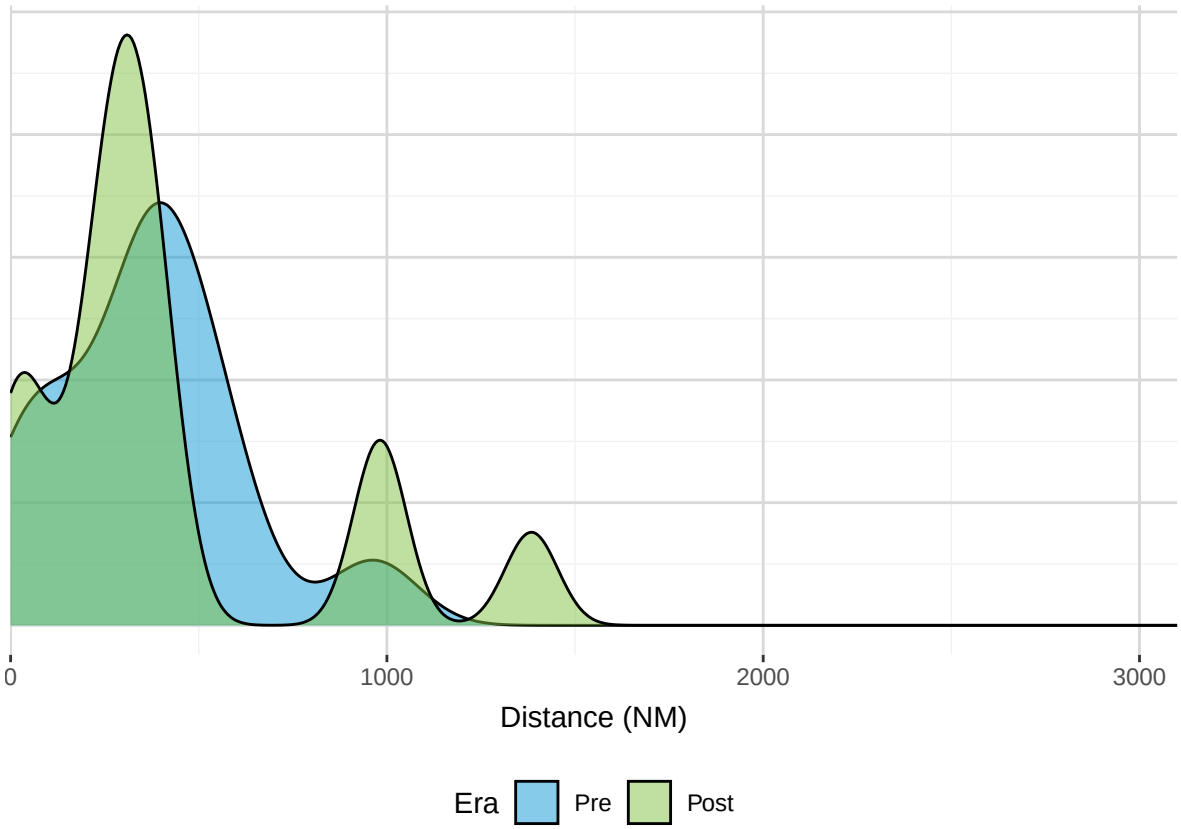



**Table 34: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program for Pediatric Recipients by Era**

| Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|
| Pre | 13 | 0 | 22 | 197 | 383 | 367.38 | 486 | 965 |
| Post | 15 | 0 | 3 | 219 | 297 | 416.00 | 398 | 1384 |

There was a slight decrease in pediatric lung utilization rates in the post era compared to the pre era. The pediatric utilization rate is defined as the percent of lungs that are transplanted based on all possible lungs from every deceased pediatric donor (< 18 years) with at least one organ recovered for the purpose of transplant; this assumes that each donor has two possible lungs for donation.

**Figure 35: Pediatric Lung Donor Utilization Rates by Era**

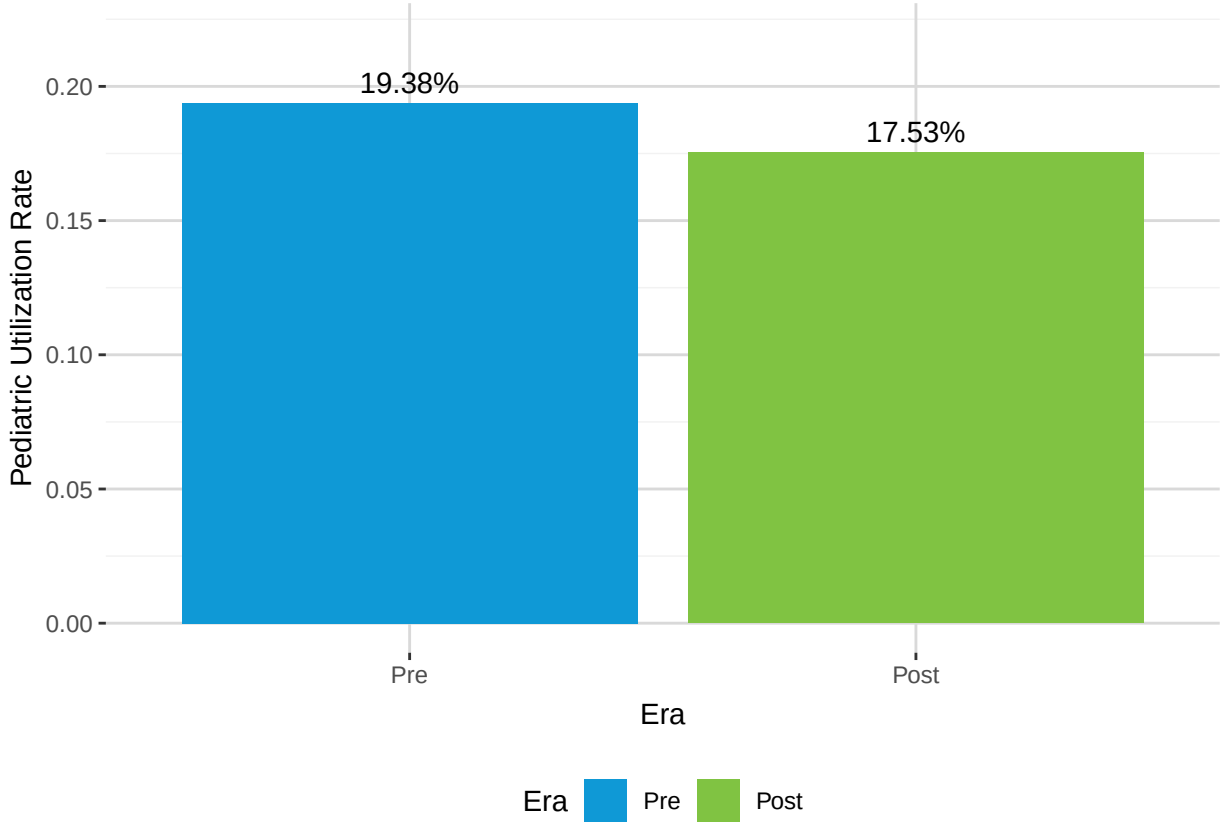



**Table 35: Pediatric Lung Donor Utilization Rates by Era**

| Era | N Donors | N Lungs Transplanted | Pediatric Utilization Rate |
|---|---|---|---|
| Pre | 449 | 174 | 19.38% |
| Post | 465 | 163 | 17.53% |

The pediatric lung utilization rate decreased slightly for both DCD and non-DCD donors.

**Figure 36: Pediatric Lung Donor Utilization Rates by Era and Donor Type**

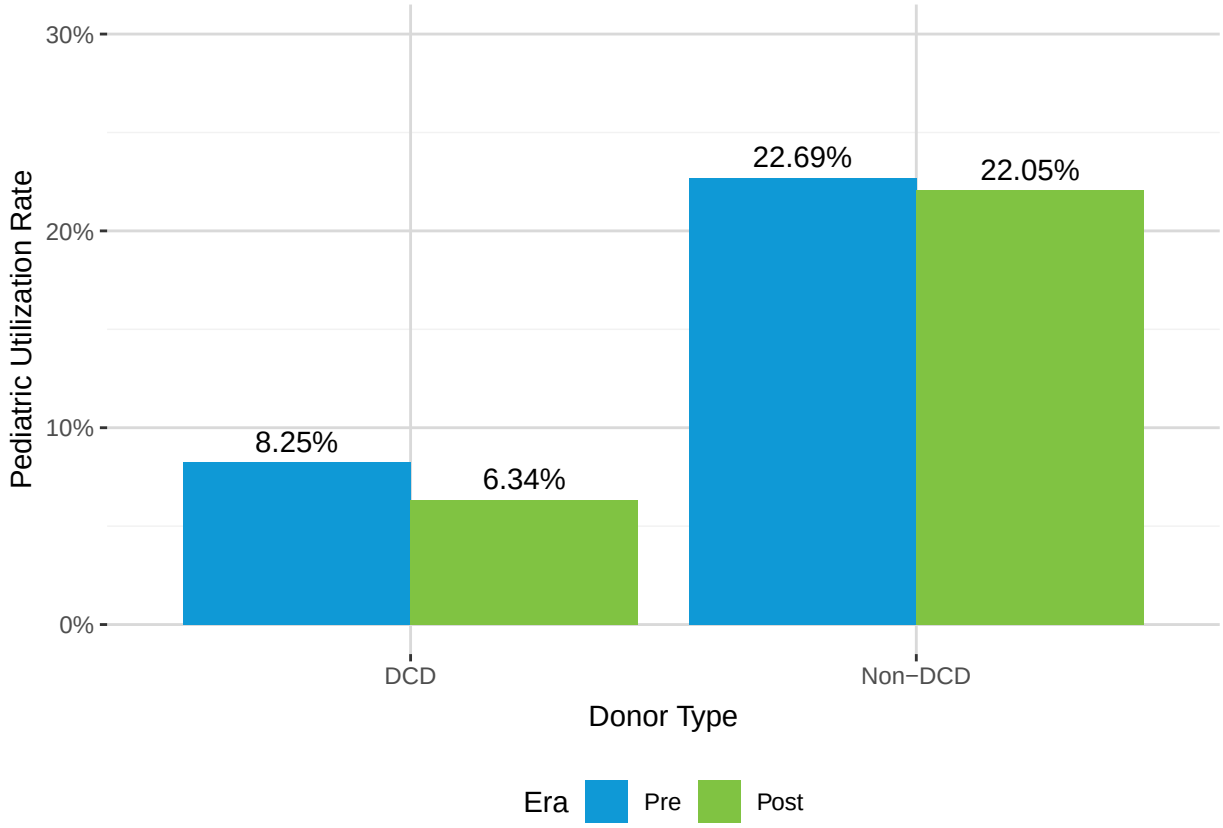



**Table 36: Pediatric Lung Donor Utilization Rates by Era and Donor Type**

| DCD Status | Era | N Donors | N Lungs Transplanted | Pediatric Utilization Rate |
|---|---|---|---|---|
| DCD | Pre | 103 | 17 | 8.25% |
| | Post | 134 | 17 | 6.34% |
| Non-DCD | Pre | 346 | 157 | 22.69% |
| | Post | 331 | 146 | 22.05% |
| All Pediatric Donors | Pre | 449 | 174 | 19.38% |
| | Post | 465 | 163 | 17.53% |

The pediatric lung non-use rate increased in the post era, though sample sizes were small. The pediatric non-use rate is defined as the number of pediatric lungs recovered for the purpose of transplant but not transplanted out of all pediatric lungs recovered for transplant.

**Figure 37: Pediatric Lung Donor Non-Use Rates by Era**

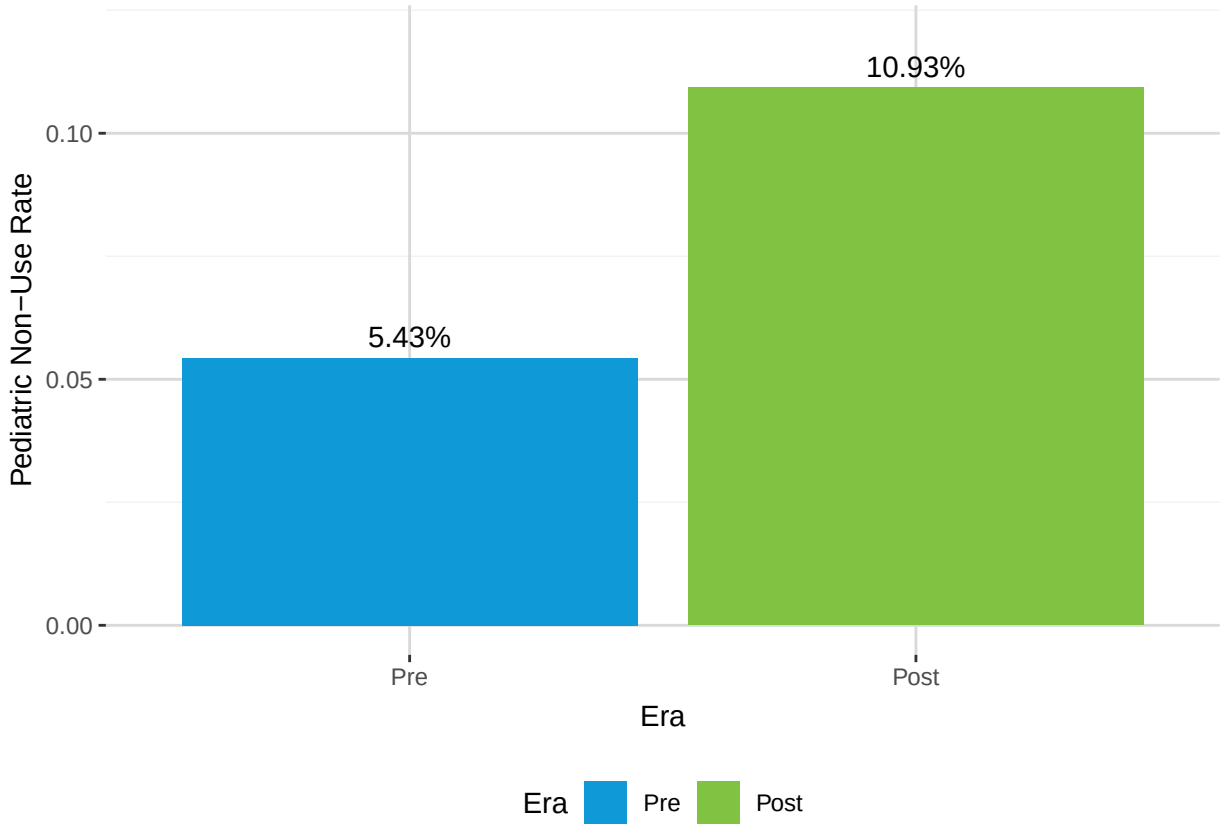



**Table 37: Pediatric Lung Donor Non-Use Rates by Era**

| Era | N Lungs Recovered | N Lungs Transplanted | Pediatric Non-Use Rate |
|---|---|---|---|
| Pre | 184 | 174 | 5.43% |
| Post | 183 | 163 | 10.93% |

The pediatric lung non-use rate increased for both DCD and non-DCD donors in the post era. More DCD lungs were recovered in the post era; however the same number of DCD lungs were transplanted in both the pre and post eras, resulting in an increase in the pediatric DCD non-use rate in the post era.

**Figure 38: Pediatric Lung Donor Non-Use Rates by Era and Donor Type**

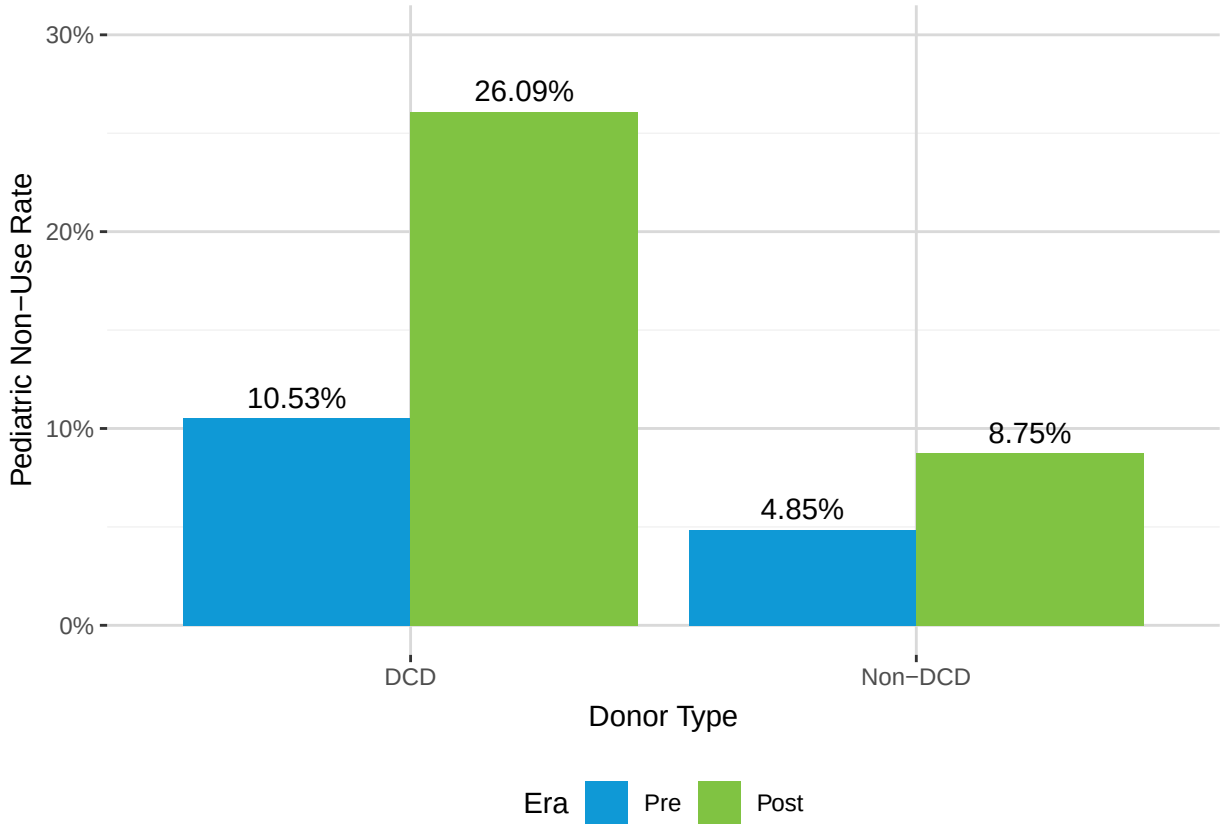



**Table 38: Pediatric Lung Donor Non-Use Rates by Era and Donor Type**

| DCD Status | Era | N Lungs Recovered | N Lungs Transplanted | Pediatric Non-Use Rate |
|---|---|---|---|---|
| DCD | Pre | 19 | 17 | 10.53% |
| | Post | 23 | 17 | 26.09% |
| Non-DCD | Pre | 165 | 157 | 4.85% |
| | Post | 160 | 146 | 8.75% |
| All Pediatric Donors | Pre | 184 | 174 | 5.43% |
| | Post | 183 | 163 | 10.93% |

### Prior Living Donor

In the first six months of Continuous Distribution there have been less than 10 prior living donors on the waiting list. To protect patient privacy, we cannot provide any additional information about these individuals. We will continue to monitor the prior living donor population and will include more information when it is available.

### Blood Type

The number of candidates ever waiting across blood types increased slighly in the post era.

**Figure 39: Number of Candidates Ever Waiting by Era and Blood Type**

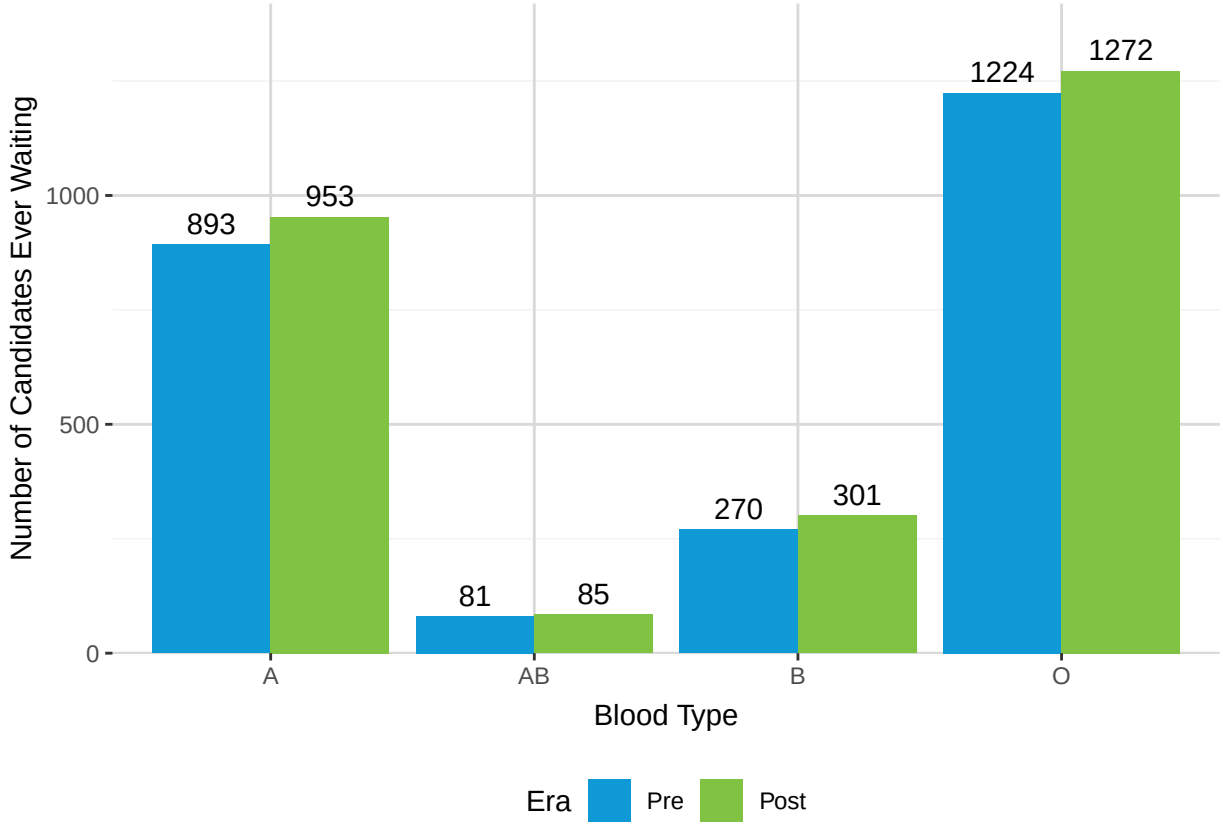



**Table 39: Number of Candidates Ever Waiting by Era and Blood Type**

| Blood Type | Pre | Post |
|---|---|---|
| A | 893 (36.2%) | 953 (36.5%) |
| AB | 81 (3.3%) | 85 (3.3%) |
| B | 270 (10.9%) | 301 (11.5%) |
| O | 1,224 (49.6%) | 1,272 (48.7%) |
| Total | 2,468 (100.0%) | 2,611 (100.0%) |

The number of registrations added to the waiting list increased for blood types A and O in the post era compared to the pre era.

**Figure 40: Number of Registrations Added to the Waiting List by Era and Blood Type**

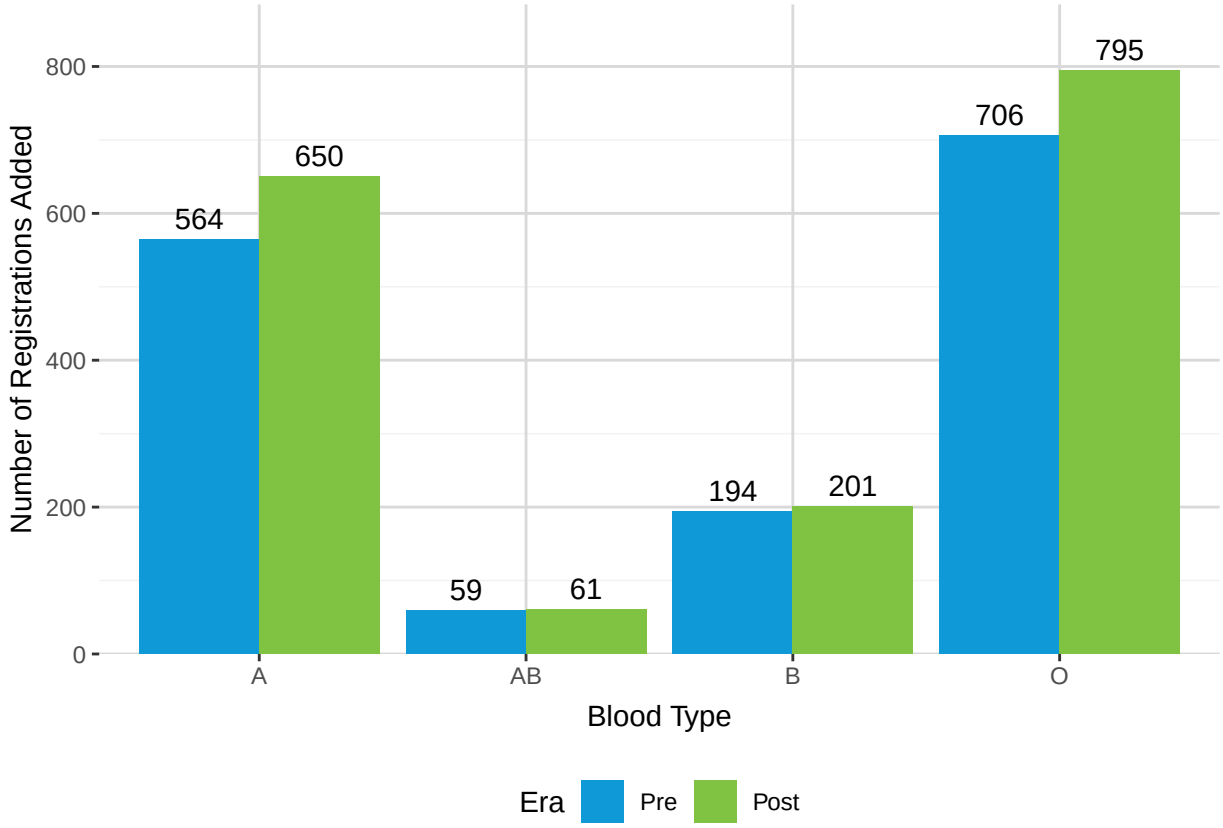



**Table 40: Number of Registrations Added to the Waiting List by Era and Blood Type**

| Blood Type | Pre | Post |
|---|---|---|
| A | 564 (37.0%) | 650 (38.1%) |
| AB | 59 (3.9%) | 61 (3.6%) |
| B | 194 (12.7%) | 201 (11.8%) |
| O | 706 (46.4%) | 795 (46.6%) |
| Total | 1,523 (100.0%) | 1,707 (100.0%) |

The number of candidates removed from the waiting list for death or too sick to transplant decreased or remained similar in the post era for candidates of all blood types.

**Figure 41: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and Blood Type**

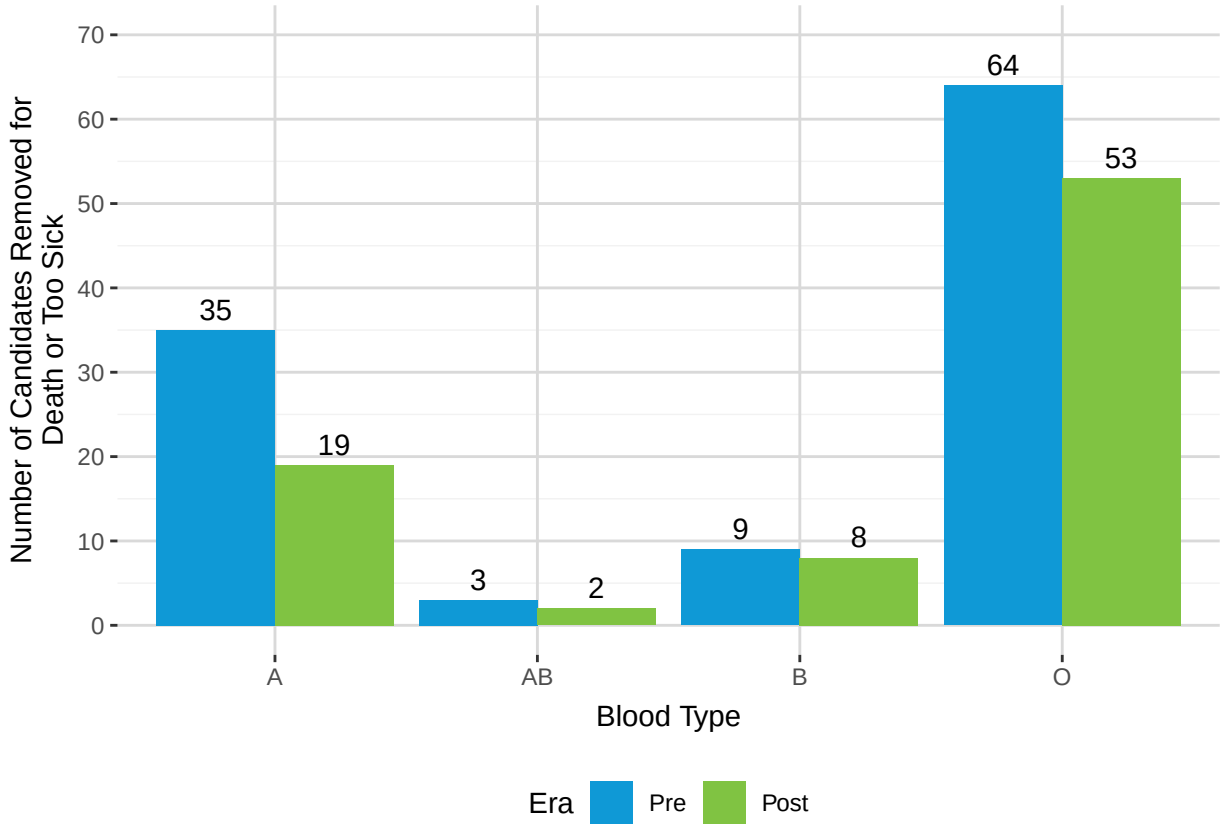



**Table 41: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and Blood Type**

| Blood Type | Pre | Post |
|---|---|---|
| A | 35 (31.5%) | 19 (23.2%) |
| AB | 3 (2.7%) | 2 (2.4%) |
| B | 9 (8.1%) | 8 (9.8%) |
| O | 64 (57.7%) | 53 (64.6%) |
| Total | 111 (100.0%) | 82 (100.0%) |

In the post policy era, median time to transplant increased for candidates with blood type O and decreased for candidates of all other blood types.

**Figure 42: Median Time to Transplant (Days) by Era and Blood Type**

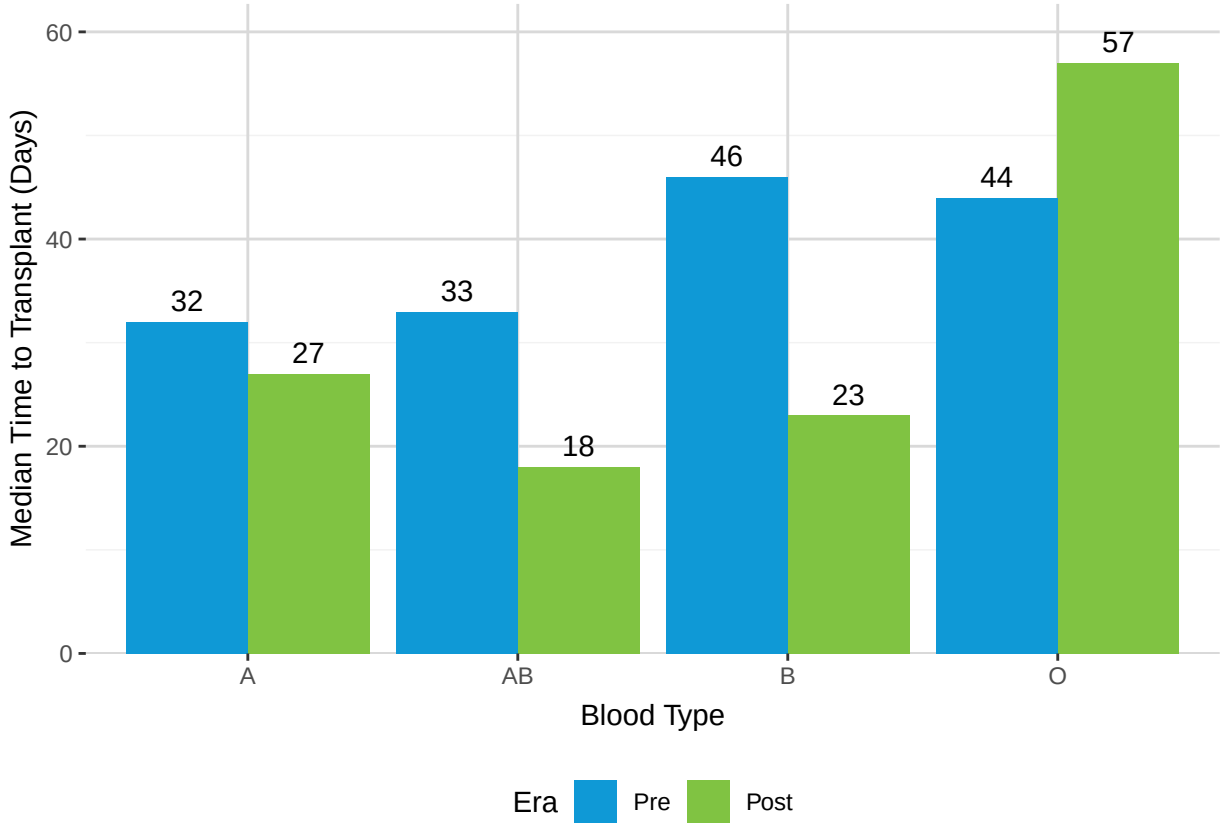



**Table 42: Median Time to Transplant (Days) by Era and Blood Type**

| Blood Type | Era | N Registrations | Median Time to Transplant (Days) |
|---|---|---|---|
| A | Pre | 564 | 32 |
| | Post | 650 | 27 |
| AB | Pre | 59 | 33 |
| | Post | 61 | 18 |
| B | Pre | 194 | 46 |
| | Post | 201 | 23 |
| O | Pre | 706 | 44 |
| | Post | 795 | 57 |

Compared to the pre era, in the post era, the number of lung-alone transplants decreased for blood type O recipients (from 646 to 601) and increased for recipients of all other blood types.

**Figure 43: Number of Lung Transplants by Era and Blood Type**

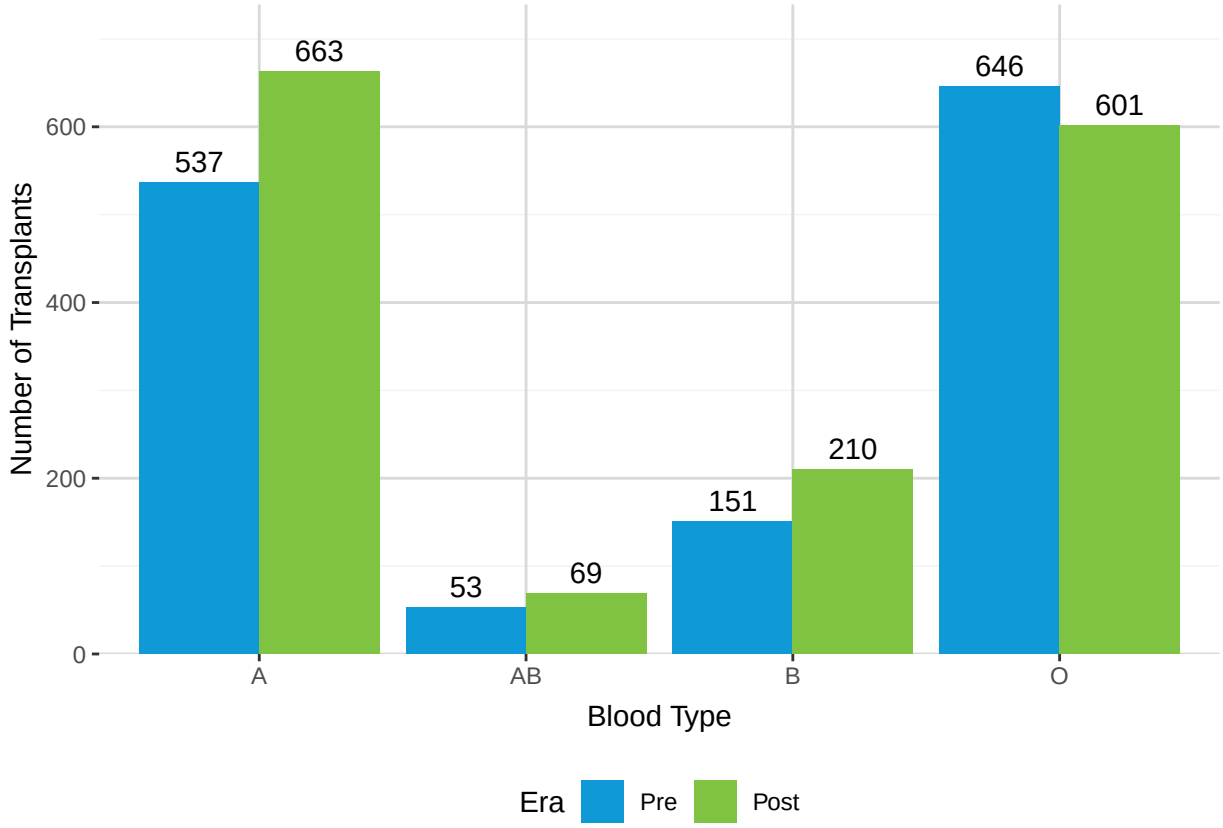



**Table 43: Number of Lung Transplants by Era and Blood Type**

| Blood Type | Pre | Post |
|---|---|---|
| A | 537 (38.7%) | 663 (43.0%) |
| AB | 53 (3.8%) | 69 (4.5%) |
| B | 151 (10.9%) | 210 (13.6%) |
| O | 646 (46.6%) | 601 (39.0%) |
| Total | 1,387 (100.0%) | 1,543 (100.0%) |

In the post era, more lungs from blood type O donors were transplanted to blood type compatible recipients and fewer lungs were transplanted to identical blood type recipients.

**Figure 44: Number of Lung Transplants by Era, Donor Blood Type, and Blood Type Match**

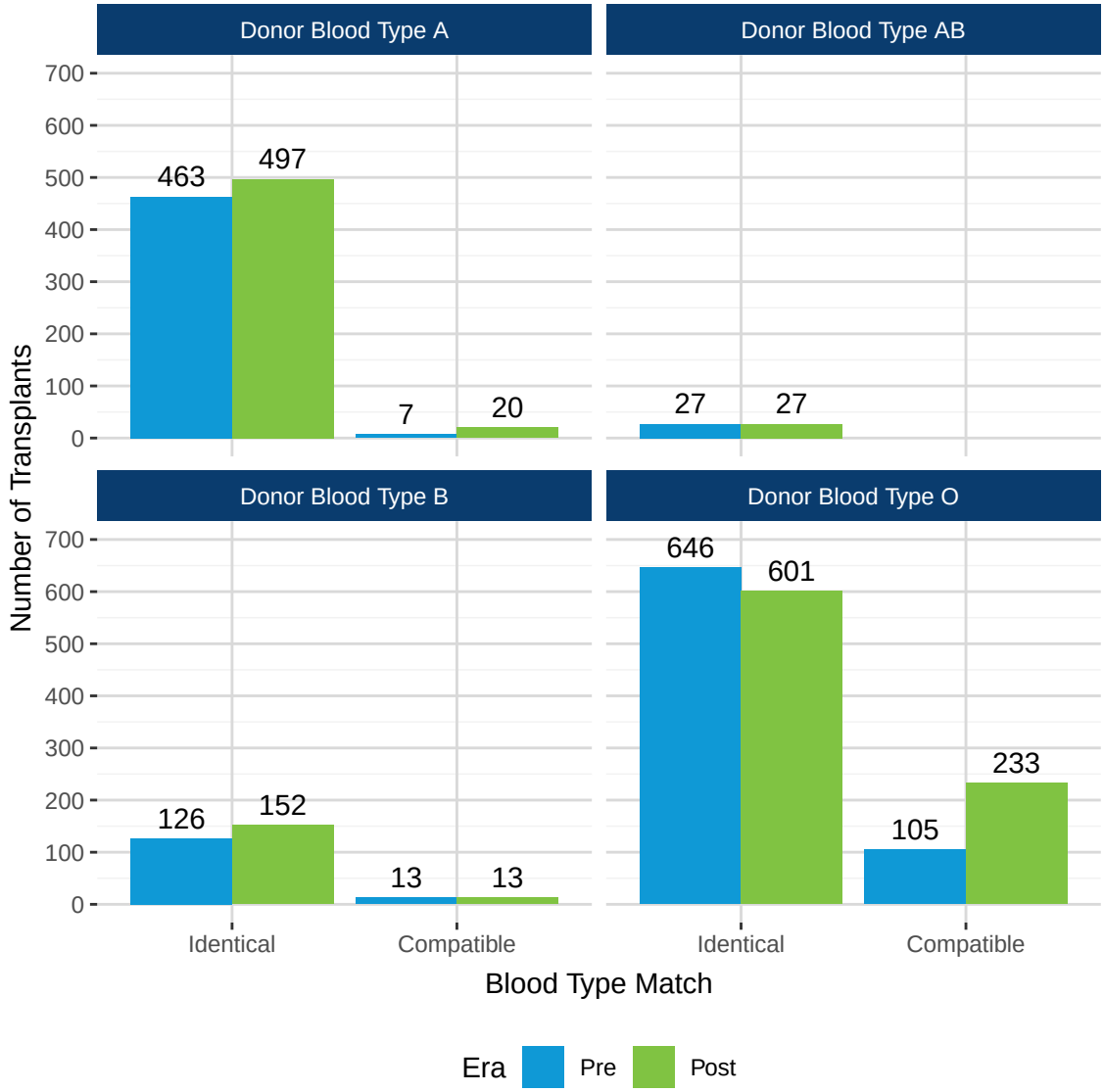



**Table 44: Number of Lung Transplants by Era, Donor Blood Type, and Blood Type Match**

| | | Donor Blood Type | | | |
|---|---|---|---|---|---|
| Era | Blood Type Match | A | B | AB | O |
| Pre | Identical | 463 (98.5%) | 126 (90.6%) | 27 (100.0%) | 646 (86.0%) |
| | Compatible | 7 (1.5%) | 13 (9.4%) | 0 (0.0%) | 105 (14.0%) |
| | Total | 470 (100.0%) | 139 (100.0%) | 27 (100.0%) | 751 (100.0%) |
| Post | Identical | 497 (96.1%) | 152 (92.1%) | 27 (100.0%) | 601 (72.1%) |
| | Compatible | 20 (3.9%) | 13 (7.9%) | 0 (0.0%) | 233 (27.9%) |
| | Total | 517 (100.0%) | 165 (100.0%) | 27 (100.0%) | 834 (100.0%) |

In the post era, the number of transplants increased or remained similar for all blood type and diagnosis group pairings except for individuals with blood type O and diagnosis group A or D.

**Figure 45: Number of Lung Transplants by Era, Recipient Blood Type, and Diagnosis Group**

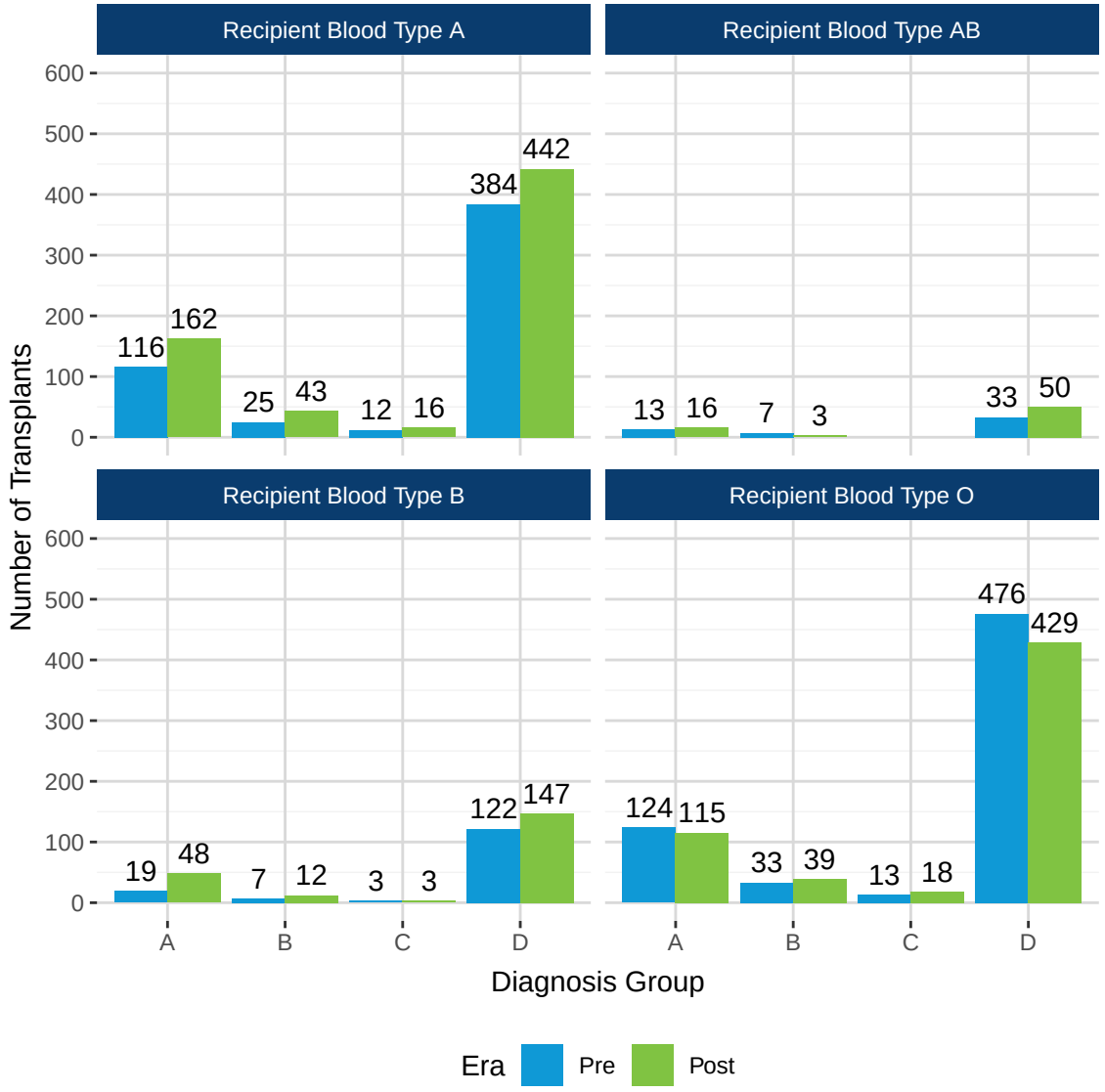


**Table 45: Number of Lung Transplants by Era, Recipient Blood Type, and Diagnosis Group**

| | | Recipient Blood Type | | | |
|---|---|---|---|---|---|
| Era | Diagnosis Group | A | AB | B | O |
| Pre | A | 116 (21.6%) | 13 (24.5%) | 19 (12.6%) | 124 (19.2%) |
| | B | 25 (4.7%) | 7 (13.2%) | 7 (4.6%) | 33 (5.1%) |
| | C | 12 (2.2%) | 0 (0.0%) | 3 (2.0%) | 13 (2.0%) |
| | D | 384 (71.5%) | 33 (62.3%) | 122 (80.8%) | 476 (73.7%) |
| | Total | 537 (100.0%) | 53 (100.0%) | 151 (100.0%) | 646 (100.0%) |
| Post | A | 162 (24.4%) | 16 (23.2%) | 48 (22.9%) | 115 (19.1%) |
| | B | 43 (6.5%) | 3 (4.3%) | 12 (5.7%) | 39 (6.5%) |
| | C | 16 (2.4%) | 0 (0.0%) | 3 (1.4%) | 18 (3.0%) |
| | D | 442 (66.7%) | 50 (72.5%) | 147 (70.0%) | 429 (71.4%) |
| | Total | 663 (100.0%) | 69 (100.0%) | 210 (100.0%) | 601 (100.0%) |

Compared to the pre era, median distance increased for all blood types in the post era.

**Figure 46: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Recipient Blood Type**

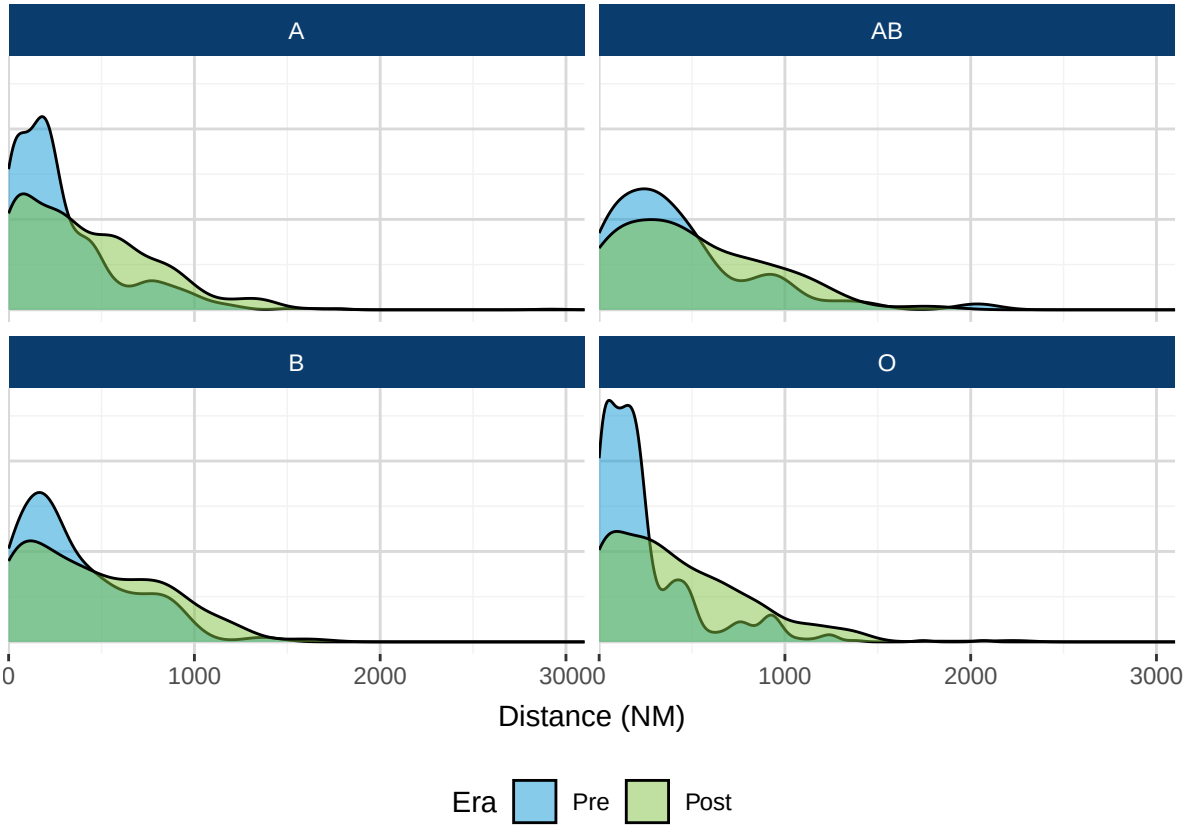



**Table 46: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Recipient Blood Type**

| Blood Type | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| A | Pre | 537 | 0 | 0 | 79.00 | 203.0 | 286.95 | 400.0 | 1777 |
| | Post | 663 | 0 | 0 | 116.00 | 340.0 | 422.04 | 634.5 | 2920 |
| AB | Pre | 53 | 0 | 1 | 148.00 | 325.0 | 429.15 | 531.0 | 2036 |
| | Post | 69 | 0 | 0 | 186.00 | 410.0 | 502.75 | 778.0 | 1769 |
| B | Pre | 151 | 0 | 0 | 128.00 | 235.0 | 352.34 | 528.5 | 1410 |
| | Post | 210 | 0 | 0 | 129.25 | 394.5 | 460.83 | 739.5 | 1652 |
| O | Pre | 646 | 0 | 0 | 67.25 | 160.5 | 243.68 | 299.0 | 2069 |
| | Post | 601 | 0 | 0 | 132.00 | 347.0 | 428.78 | 644.0 | 2244 |
| Total | Pre | 1387 | 0 | 0 | 78.00 | 195.0 | 279.35 | 391.0 | 2069 |
| | Post | 1543 | 0 | 0 | 129.00 | 353.0 | 433.55 | 662.5 | 2920 |

### CPRA

CPRA was not a component of lung allocation prior to the implementation of continuous distribution and was not calculated for lung candidates before January 26th, 2023 (*see news item*). Because CPRA data are unavailable for a majority of the pre policy era, this section only includes data for the post policy era (from March 09, 2023 to September 08, 2023). For all waiting list analyses, we report the most recent CPRA recorded in the system. For transplant analyses, we report the CPRA at the time of transplant, which is collected through the Histocompatibility form that has a three month time frame for submission; thus, all transplant analyses account for this data lag and are limited to three months of data. For all CPRA analyses, NULL and 0 entries are combined because they are treated the same in allocation (amounting to 0 CPRA points). In the post policy era CPRA remains under reported and is missing not at random and should be interpreted accordingly. These analyses were updated using OPTN data as of May 10, 2024.

In the post policy era, the majority of candidates did not have any unacceptable antigens reported in the OPTN Waiting List.

**Figure 47: Number of Candidates Ever Waiting by CPRA in the Post Policy Era**

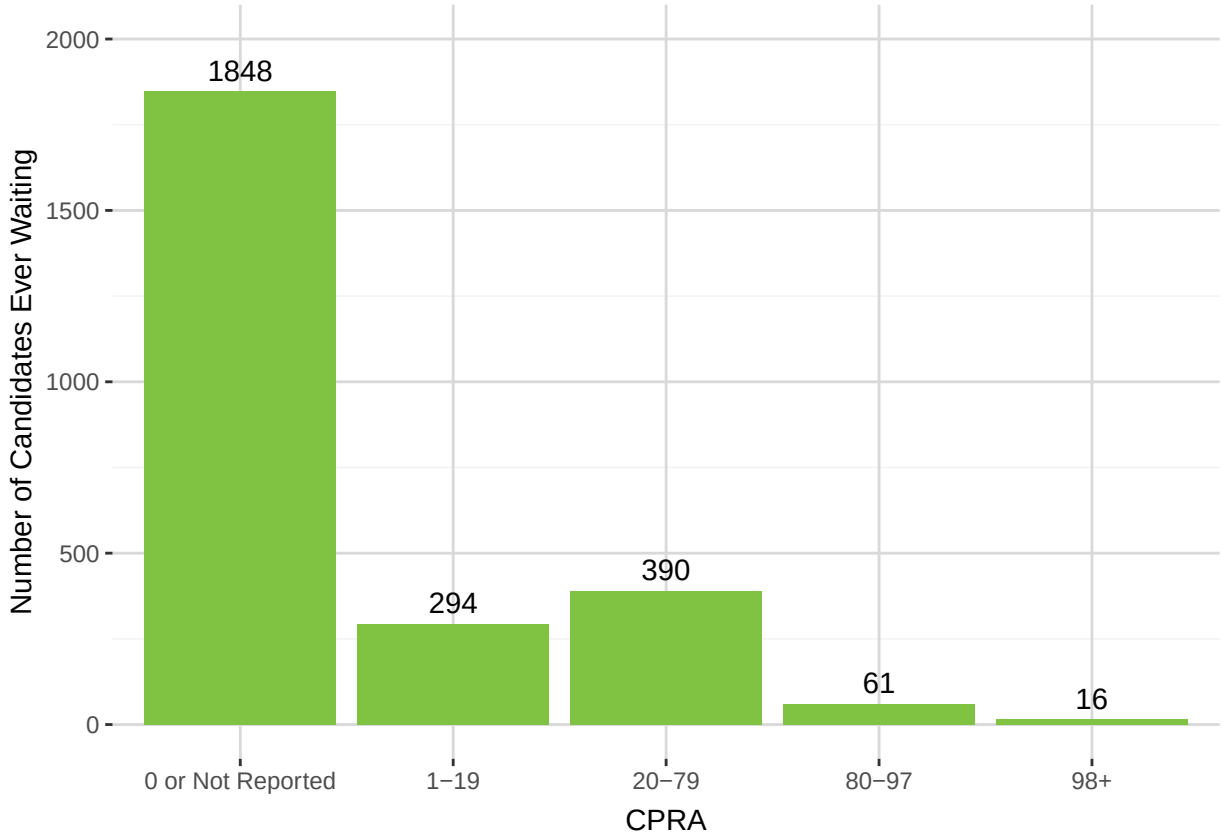



**Table 47: Number of Candidates Ever Waiting by CPRA in the Post Policy Era**

| CPRA | N Ever Waiting |
|---|---|
| 0 or Not Reported | 1,848 (70.8%) |
| 1-19 | 294 (11.3%) |
| 20-79 | 390 (14.9%) |
| 80-97 | 61 (2.3%) |
| 98+ | 16 (0.6%) |
| Total | 2,609 (100.0%) |

In the post policy era, the majority of registrations added to the waiting list did not have any unacceptable antigens reported.

**Figure 48: Number of Registrations Added to the Waiting List by CPRA in the Post Policy Era**

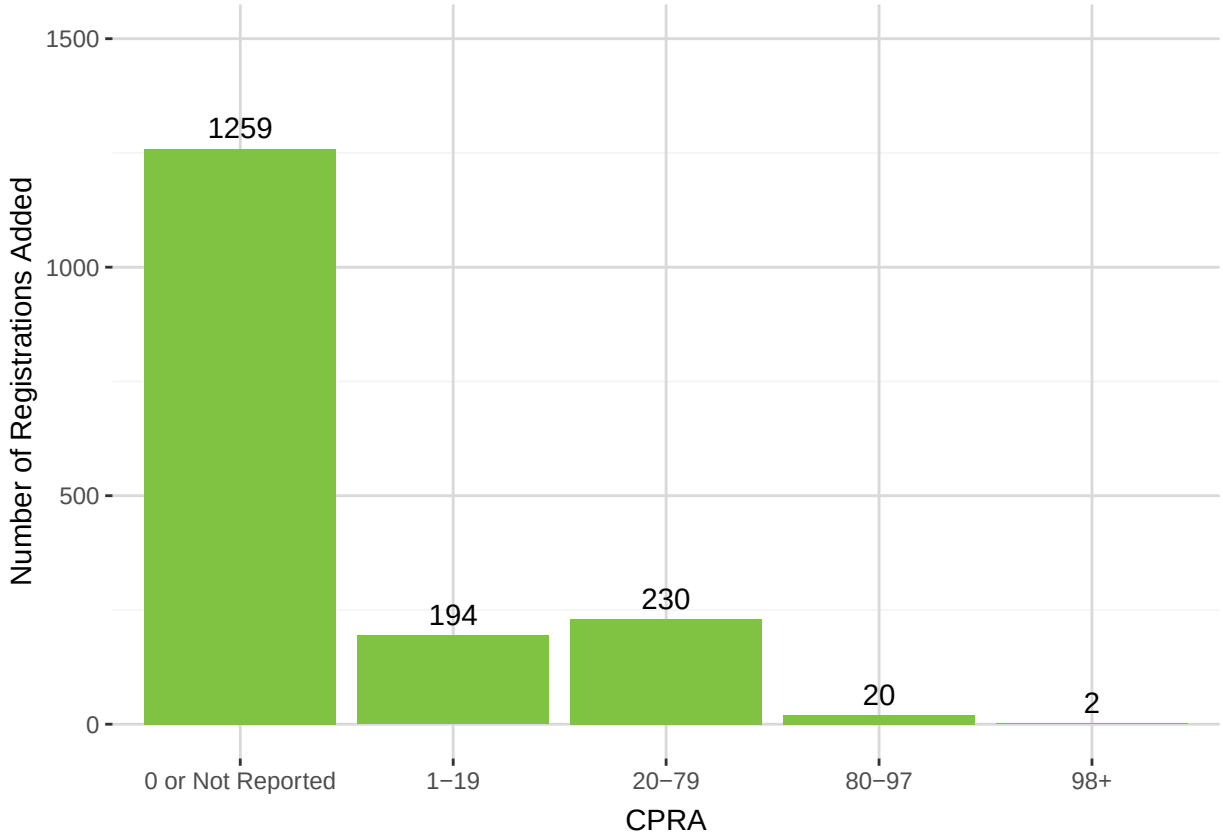



**Table 48: Number of Registrations Added to the Waiting List by CPRA in the Post Policy Era**

| CPRA | N Additions |
|---|---|
| 0 or Not Reported | 1,259 (73.8%) |
| 1-19 | 194 (11.4%) |
| 20-79 | 230 (13.5%) |
| 80-97 | 20 (1.2%) |
| 98+ | 2 (0.1%) |
| Total | 1,705 (100.0%) |

In the post policy era, the majority of candidates removed from the waiting list for death or too sick to transplant did not have unacceptable antigens reported.

**Figure 49: Number of Candidates Removed from the Waiting List for Death or Too Sick by CPRA in the Post Policy Era**

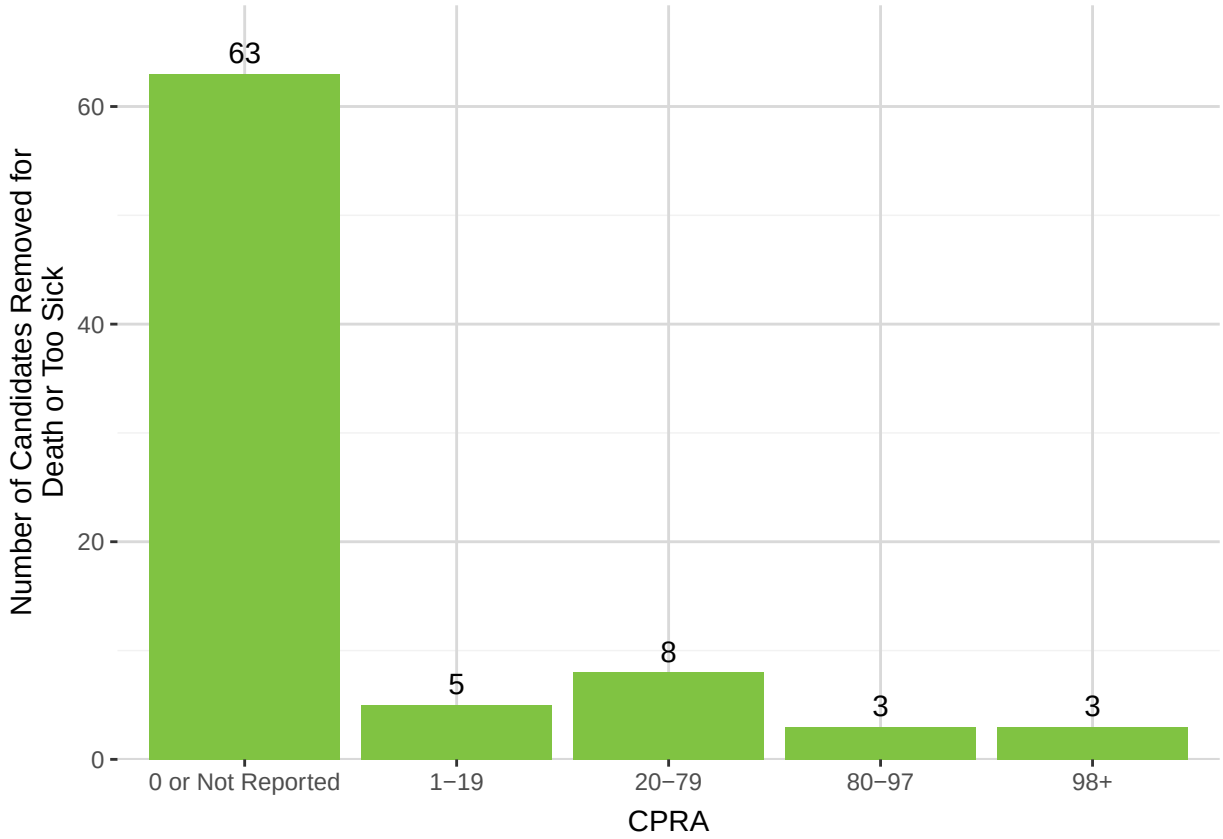



**Table 49: Number of Candidates Removed from the Waiting List for Death or Too Sick by CPRA in the Post Policy Era**

| CPRA | N Candidates Removed for Death or Too Sick |
|---|---|
| 0 or Not Reported | 63 (76.8%) |
| 1-19 | 5 (6.1%) |
| 20-79 | 8 (9.8%) |
| 80-97 | 3 (3.7%) |
| 98+ | 3 (3.7%) |
| Total | 82 (100.0%) |

In the post policy era, median time to transplant was longest for the most sensitized candidates. For this analysis, candidates in the 80-97 and 98+ groups were combined because of the small sample size.

**Figure 50: Median Time to Transplant (Days) by CPRA in the Post Policy Era**

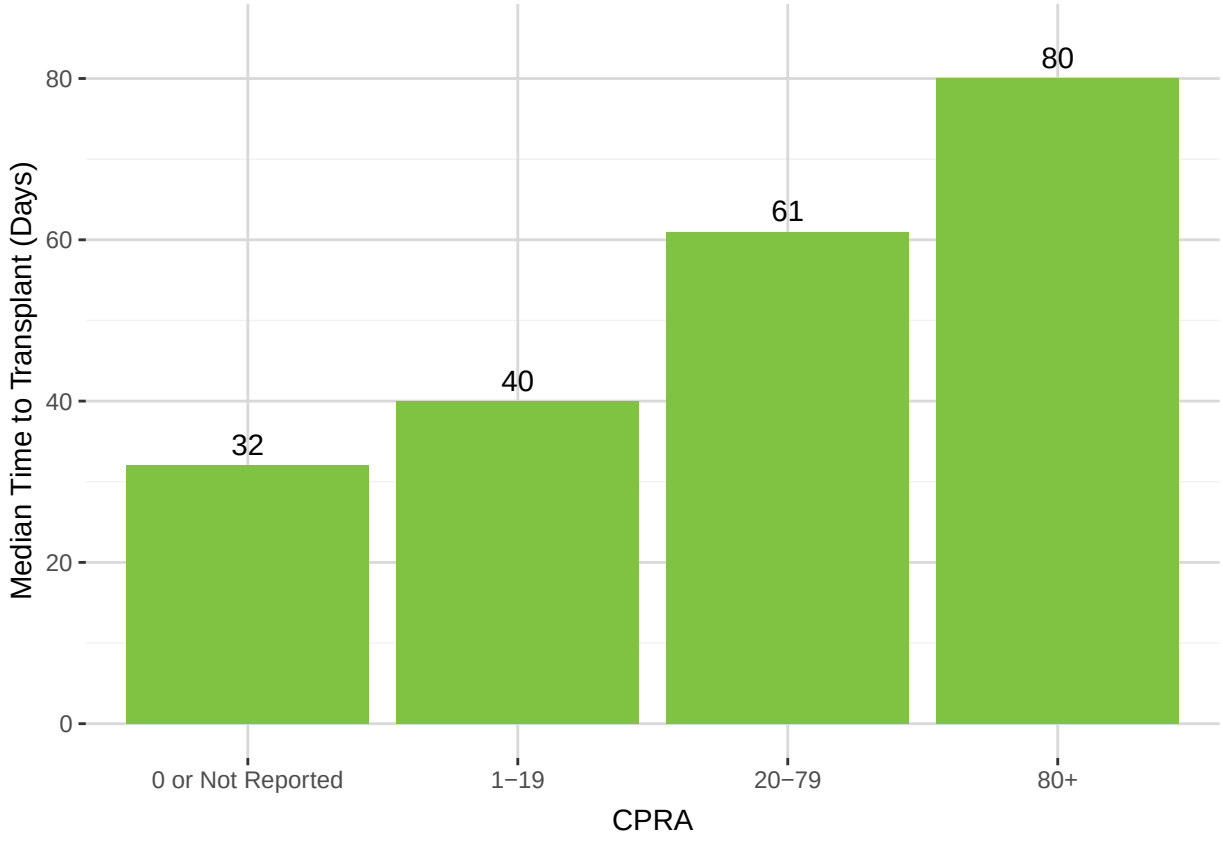



**Table 50: Median Time to Transplant (Days) by CPRA in the Post Policy Era**

| CPRA | N Registrations | Median Time to Transplant (Days) |
|---|---|---|
| 0 or Not Reported | 1259 | 32 |
| 1-19 | 194 | 40 |
| 20-79 | 230 | 61 |
| 80+ | 22 | 80 |

Due to the 90 day data lag for reporting CPRA on the Histocompatibility form at the time of transplant, the below analysis is limited to three months after the implementation of continuous distribution (from March 09, 2023 to June 08, 2023).

In the first three months of the post policy era, the majority of transplants were for candidates with no unacceptable antigens reported.

**Figure 51: Number of Lung Transplants by CPRA in the Post Policy Era (March 9, 2023 through June 8, 2023)**

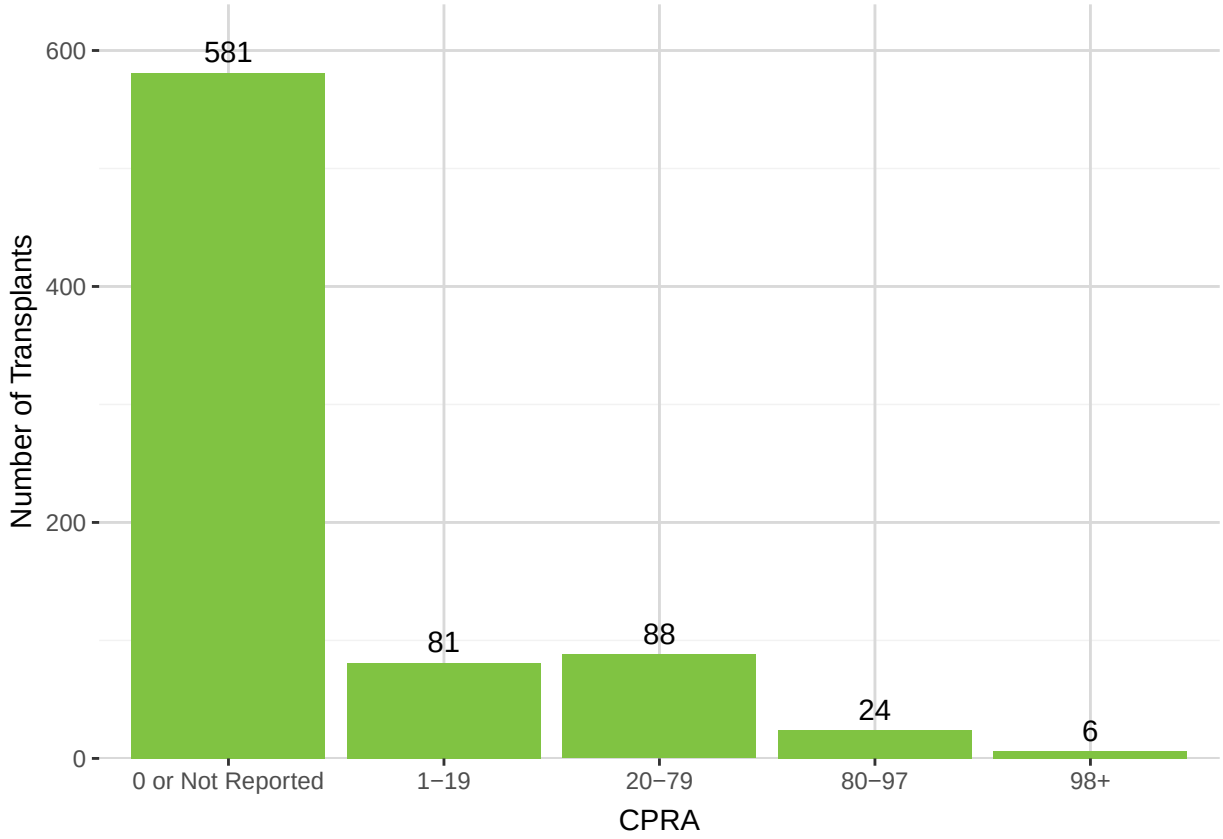


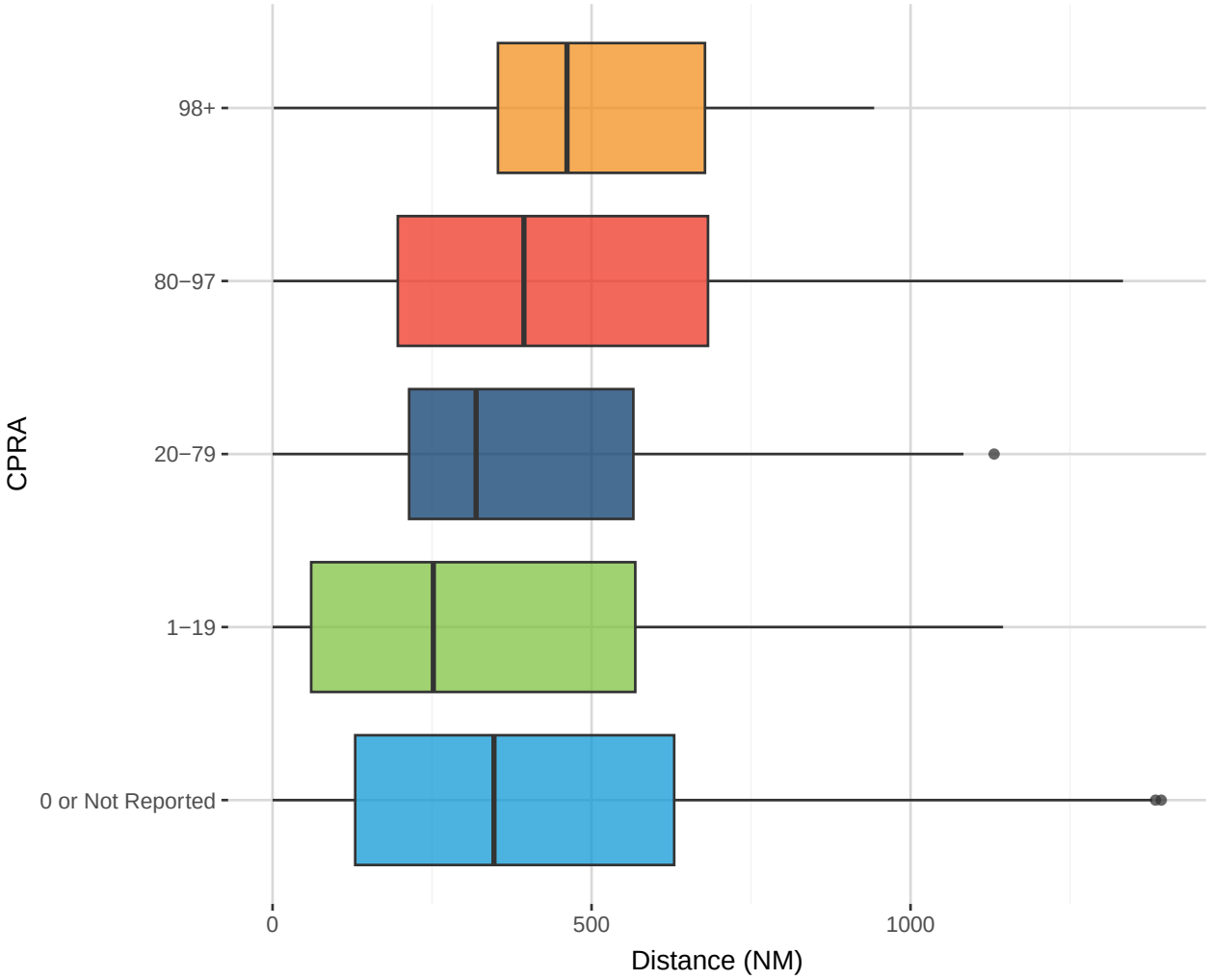

**Table 51: Number of Lung Transplants by CPRA in the Post Policy Era (March 9, 2023 through June 8, 2023)**

| CPRA | N Transplants |
|---|---|
| 0 or Not Reported | 581 (74.5%) |
| 1-19 | 81 (10.4%) |
| 20-79 | 88 (11.3%) |
| 80-97 | 24 (3.1%) |
| 98+ | 6 (0.8%) |
| Total | 780 (100.0%) |

Due to the 90 day data lag for reporting CPRA on the Histocompatibility form at the time of transplant, the below analysis is limited to three months after the implementation of continuous distribution (from March 09, 2023 to June 08, 2023).

In the first three months of the post policy era, median distance was greatest for recipients with a CPRA of 80 or higher.

**Figure 52: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by CPRA in the Post Policy Era (March 9, 2023 through June 8, 2023)**




View is restricted to the 99th percentile of distance (1393 NM). There were 9 cases where lungs traveled further than this distance in the post policy era.

**Table 52: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by CPRA in the Post Policy Era (March 9, 2023 through June 8, 2023)**

| CPRA | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|
| 0 or Not Reported | 581 | 0 | 0 | 132.00 | 350.0 | 426.51 | 637.00 | 2920 |
| 1-19 | 81 | 0 | 0 | 64.00 | 255.0 | 360.84 | 588.00 | 1396 |
| 20-79 | 88 | 0 | 0 | 217.50 | 326.5 | 413.31 | 586.75 | 1405 |
| 80-97 | 24 | 0 | 1 | 196.25 | 394.0 | 495.00 | 682.50 | 1333 |
| 98+ | 6 | 0 | 2 | 353.25 | 461.5 | 489.17 | 677.75 | 943 |
| Total | 780 | 0 | 0 | 138.00 | 343.5 | 420.79 | 633.25 | 2920 |

### Height

In all height analyses, pediatric candidates are grouped separately from adult candidates. Although points for height are assigned in the same manner for pediatric and adult candidates, we report the results this way to closely monitor how short adults are impacted by Continuous Distribution, and to not conflate their data with that of pediatrics, who tend to be shorter and also receive pediatric allocation points.

The number of individuals ever waiting increased slightly for all adult height groupings in the post era compared to the pre era.

**Figure 53: Number of Candidates Ever Waiting by Era and Height**

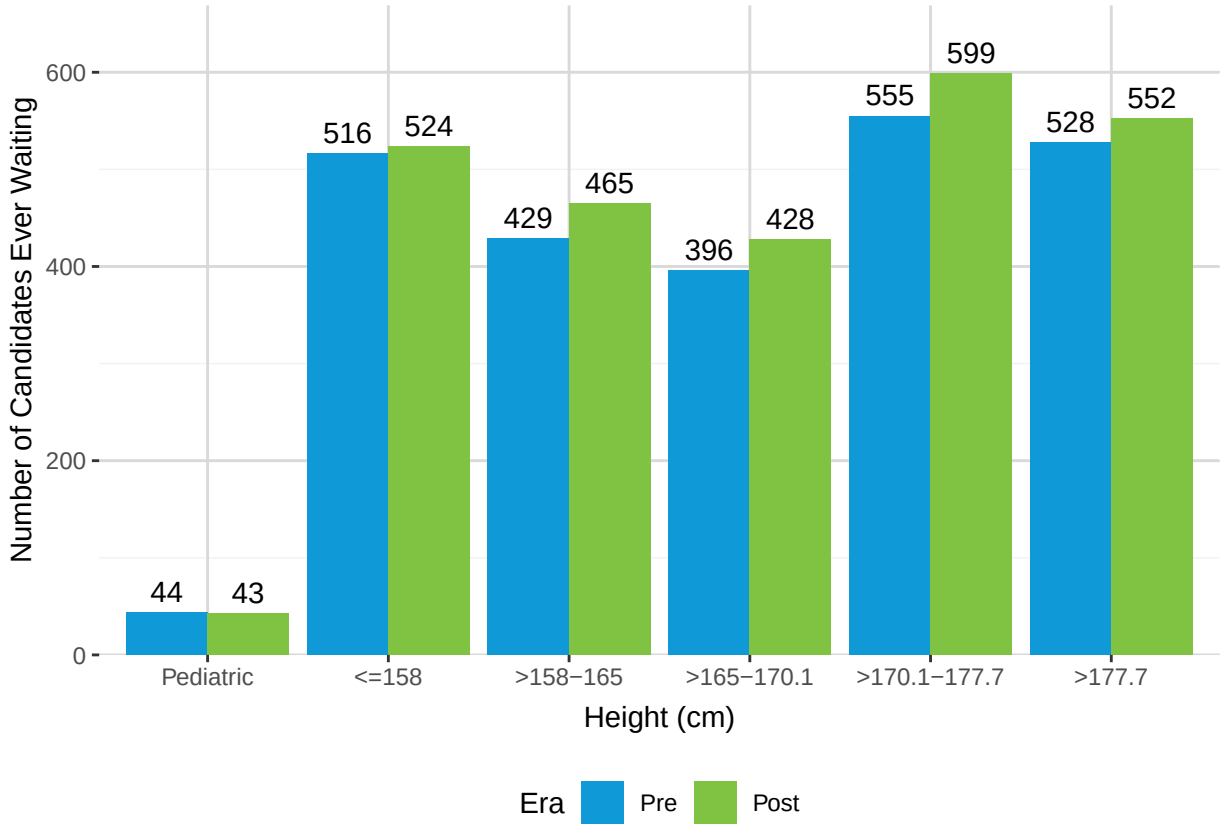



**Table 53: Number of Candidates Ever Waiting by Era and Height**

| Height (cm) | Pre | Post |
|---|---|---|
| Pediatric | 44 (1.8%) | 43 (1.6%) |
| <=158 | 516 (20.9%) | 524 (20.1%) |
| >158-165 | 429 (17.4%) | 465 (17.8%) |
| >165-170.1 | 396 (16.0%) | 428 (16.4%) |
| >170.1-177.7 | 555 (22.5%) | 599 (22.9%) |
| >177.7 | 528 (21.4%) | 552 (21.1%) |
| Total | 2,468 (100.0%) | 2,611 (100.0%) |

Compared to the pre era, in the post era the number of registrations added to the waiting list increased slightly across all adult height groupings.

**Figure 54: Number of Registrations Added to the Waiting List by Era and Height**

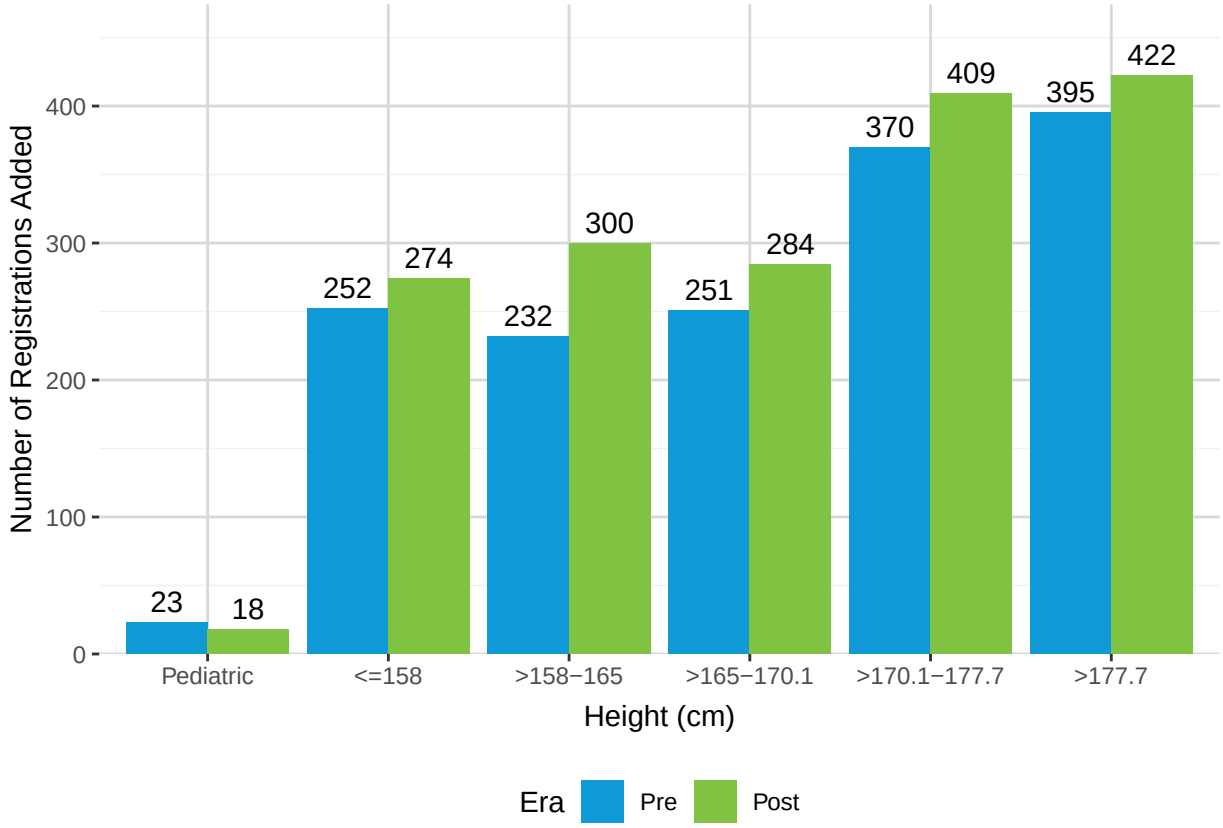



**Table 54: Number of Registrations Added to the Waiting List by Era and Height**

| Height (cm) | Pre | Post |
|---|---|---|
| Pediatric | 23 (1.5%) | 18 (1.1%) |
| <=158 | 252 (16.5%) | 274 (16.1%) |
| >158-165 | 232 (15.2%) | 300 (17.6%) |
| >165-170.1 | 251 (16.5%) | 284 (16.6%) |
| >170.1-177.7 | 370 (24.3%) | 409 (24.0%) |
| >177.7 | 395 (25.9%) | 422 (24.7%) |
| Total | 1,523 (100.0%) | 1,707 (100.0%) |

The number of candidates removed from the waiting list for death or too sick to transplant decreased in the post era for all height groupings except for adult candidates between 158cm and 165cm tall.

**Figure 55: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and Height**

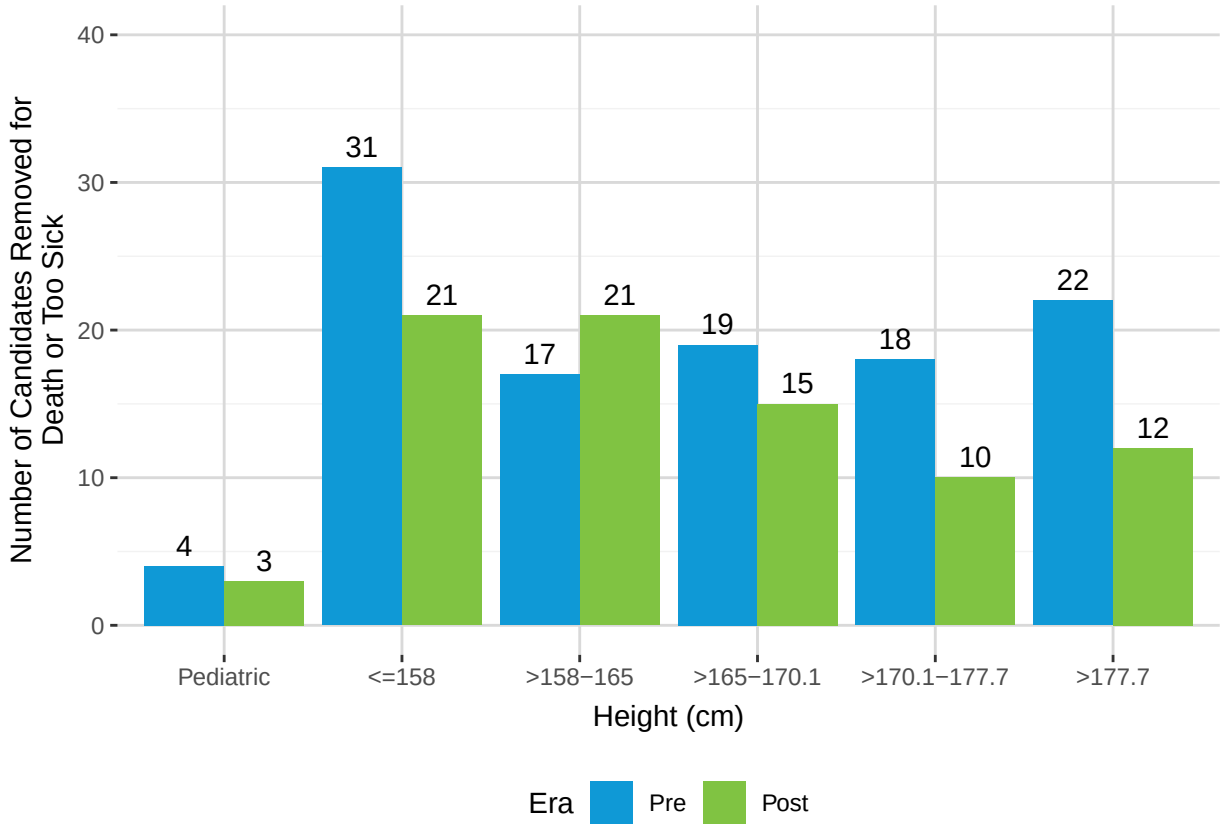



**Table 55: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and Height**

| Height (cm) | Pre | Post |
|---|---|---|
| Pediatric | 4 (3.6%) | 3 (3.7%) |
| <=158 | 31 (27.9%) | 21 (25.6%) |
| >158-165 | 17 (15.3%) | 21 (25.6%) |
| >165-170.1 | 19 (17.1%) | 15 (18.3%) |
| >170.1-177.7 | 18 (16.2%) | 10 (12.2%) |
| >177.7 | 22 (19.8%) | 12 (14.6%) |
| Total | 111 (100.0%) | 82 (100.0%) |

In the post policy era, median time to transplant decreased for the shortest and tallest adult candidates.

**Figure 56: Median Time to Transplant (Days) by Era and Height**

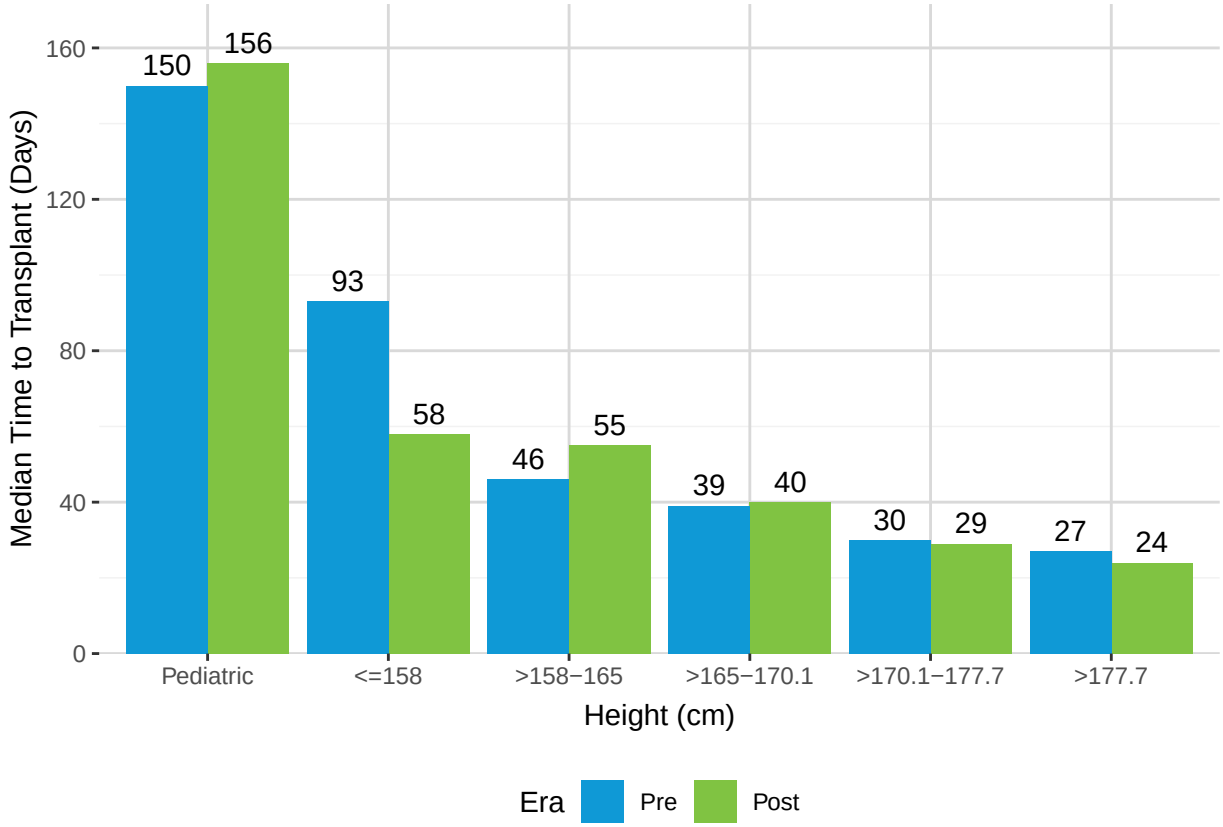



**Table 56: Median Time to Transplant (Days) by Era and Height**

| Height (cm) | Era | N Registrations | Median Time to Transplant (Days) |
|---|---|---|---|
| Pediatric | Pre | 23 | 150 |
| | Post | 18 | 156 |
| <=158 | Pre | 252 | 93 |
| | Post | 274 | 58 |
| >158-165 | Pre | 232 | 46 |
| | Post | 300 | 55 |
| >165-170.1 | Pre | 251 | 39 |
| | Post | 284 | 40 |
| >170.1-177.7 | Pre | 370 | 30 |
| | Post | 409 | 29 |
| >177.7 | Pre | 395 | 27 |
| | Post | 422 | 24 |

Compared to the pre era, in the post era, the number of lung-alone transplants increased for candidates of all height groupings.

**Figure 57: Number of Lung Transplants by Era and Height**

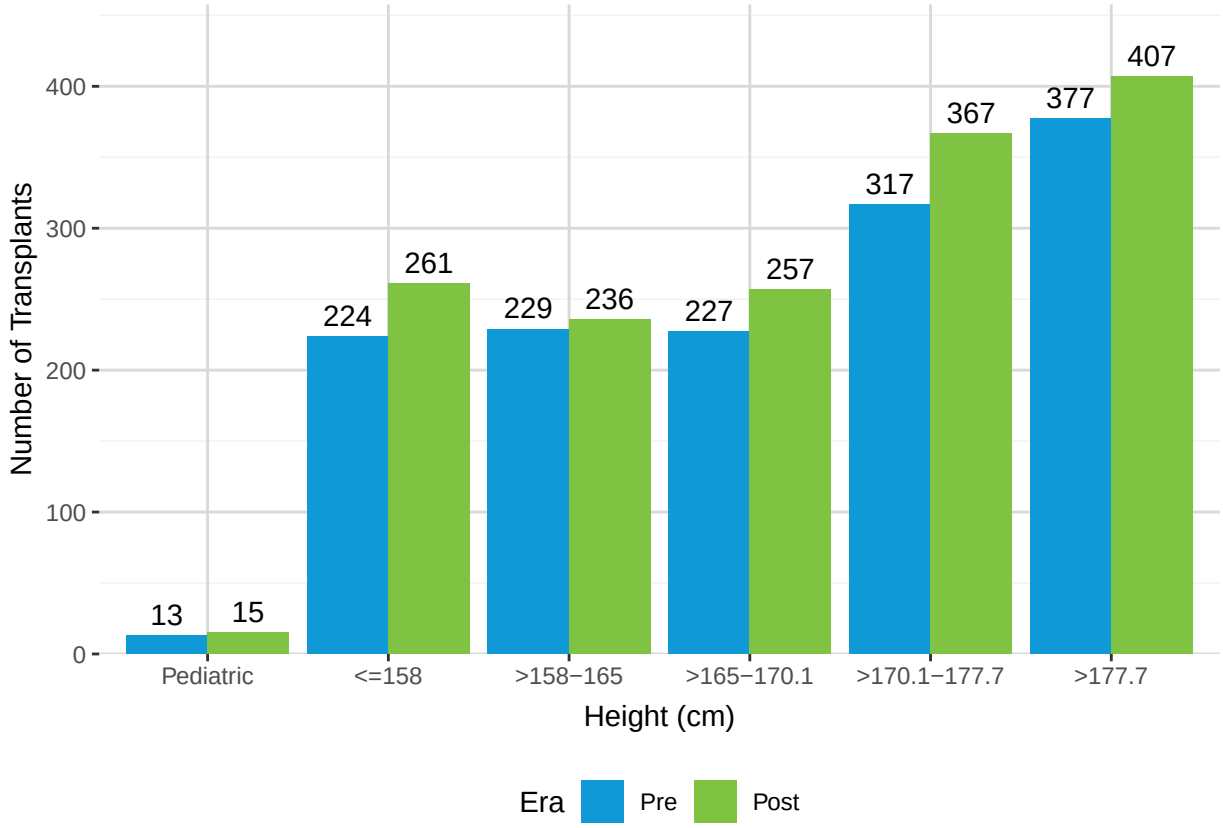



**Table 57: Number of Lung Transplants by Era and Height**

| Height (cm) | Pre | Post |
|---|---|---|
| Pediatric | 13 (0.9%) | 15 (1.0%) |
| <=158 | 224 (16.1%) | 261 (16.9%) |
| >158-165 | 229 (16.5%) | 236 (15.3%) |
| >165-170.1 | 227 (16.4%) | 257 (16.7%) |
| >170.1-177.7 | 317 (22.9%) | 367 (23.8%) |
| >177.7 | 377 (27.2%) | 407 (26.4%) |
| Total | 1,387 (100.0%) | 1,543 (100.0%) |

In the post era, median distance increased for adult recipients of all heights and decreased for pediatric recipients.

**Figure 58: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Height**

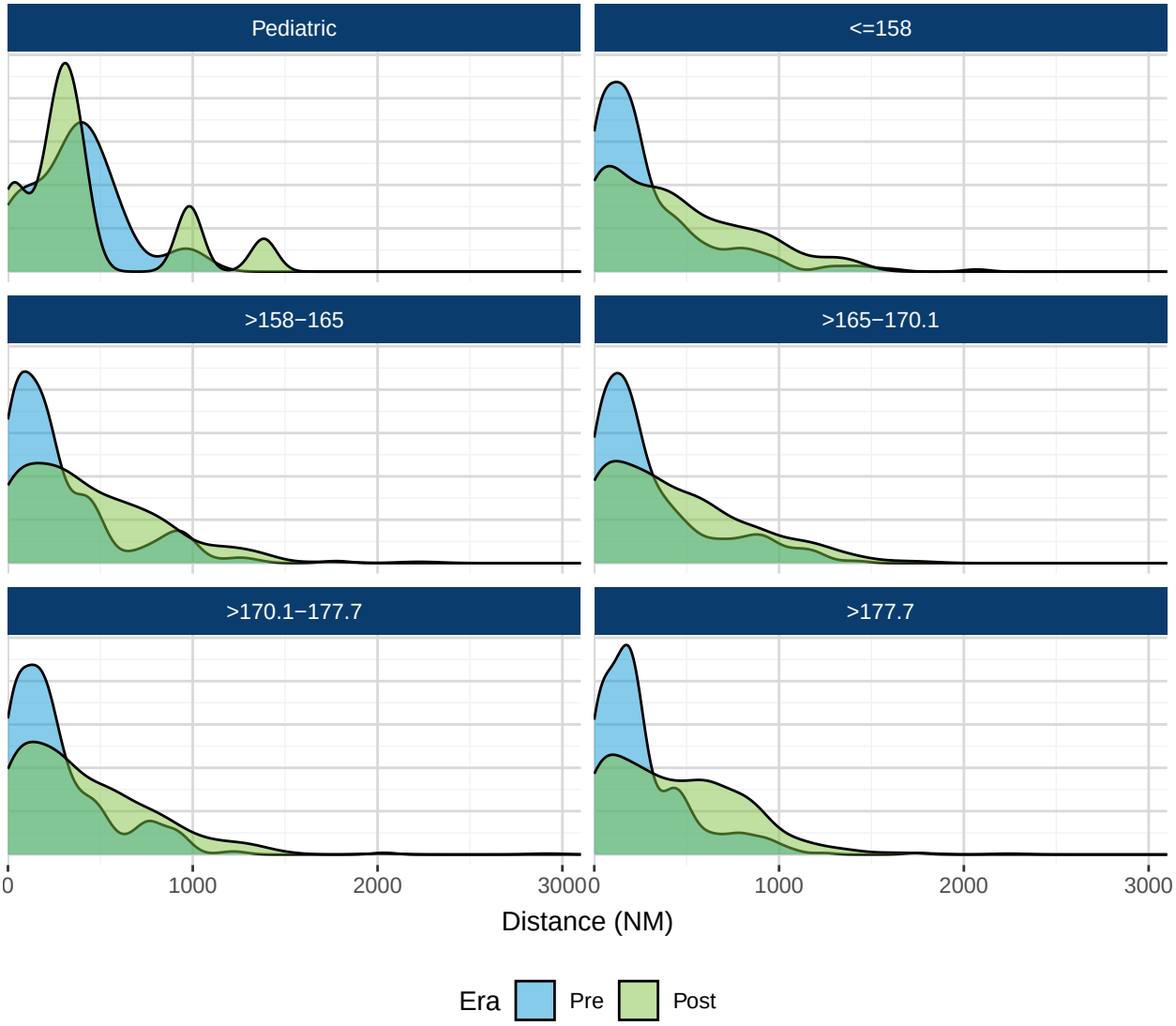


**Table 58: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Height**

| Height (cm) | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| <=158 | Pre | 224 | 0 | 0 | 74.50 | 189.5 | 288.50 | 383.75 | 2069 |
| | Post | 261 | 0 | 0 | 92.00 | 353.0 | 426.45 | 689.00 | 1405 |
| >158-165 | Pre | 229 | 0 | 0 | 67.00 | 190.0 | 281.55 | 395.00 | 1777 |
| | Post | 236 | 0 | 0 | 154.75 | 354.5 | 440.58 | 669.25 | 2227 |
| >165-170.1 | Pre | 227 | 0 | 0 | 83.50 | 194.0 | 303.96 | 401.50 | 1410 |
| | Post | 257 | 0 | 0 | 129.00 | 338.0 | 439.33 | 651.00 | 1769 |
| >170.1-177.7 | Pre | 317 | 0 | 0 | 78.00 | 198.0 | 273.78 | 377.00 | 2036 |
| | Post | 367 | 0 | 0 | 128.00 | 317.0 | 415.49 | 619.00 | 2920 |
| >177.7 | Pre | 377 | 0 | 0 | 86.00 | 198.0 | 259.40 | 379.00 | 1743 |
| | Post | 407 | 0 | 0 | 151.00 | 406.0 | 447.32 | 691.00 | 2244 |
| Pediatric | Pre | 13 | 0 | 22 | 197.00 | 383.0 | 367.38 | 486.00 | 965 |
| | Post | 15 | 0 | 3 | 219.00 | 297.0 | 416.00 | 398.00 | 1384 |
| Total | Pre | 1387 | 0 | 0 | 78.00 | 195.0 | 279.35 | 391.00 | 2069 |
| | Post | 1543 | 0 | 0 | 129.00 | 353.0 | 433.55 | 662.50 | 2920 |

**Efficiency**

**Transplants**

In the post era the number of transplants increased for both DCD and non-DCD donors compared to the pre era.

**Figure 59: Number of Lung Transplants by Era and Donor Type**

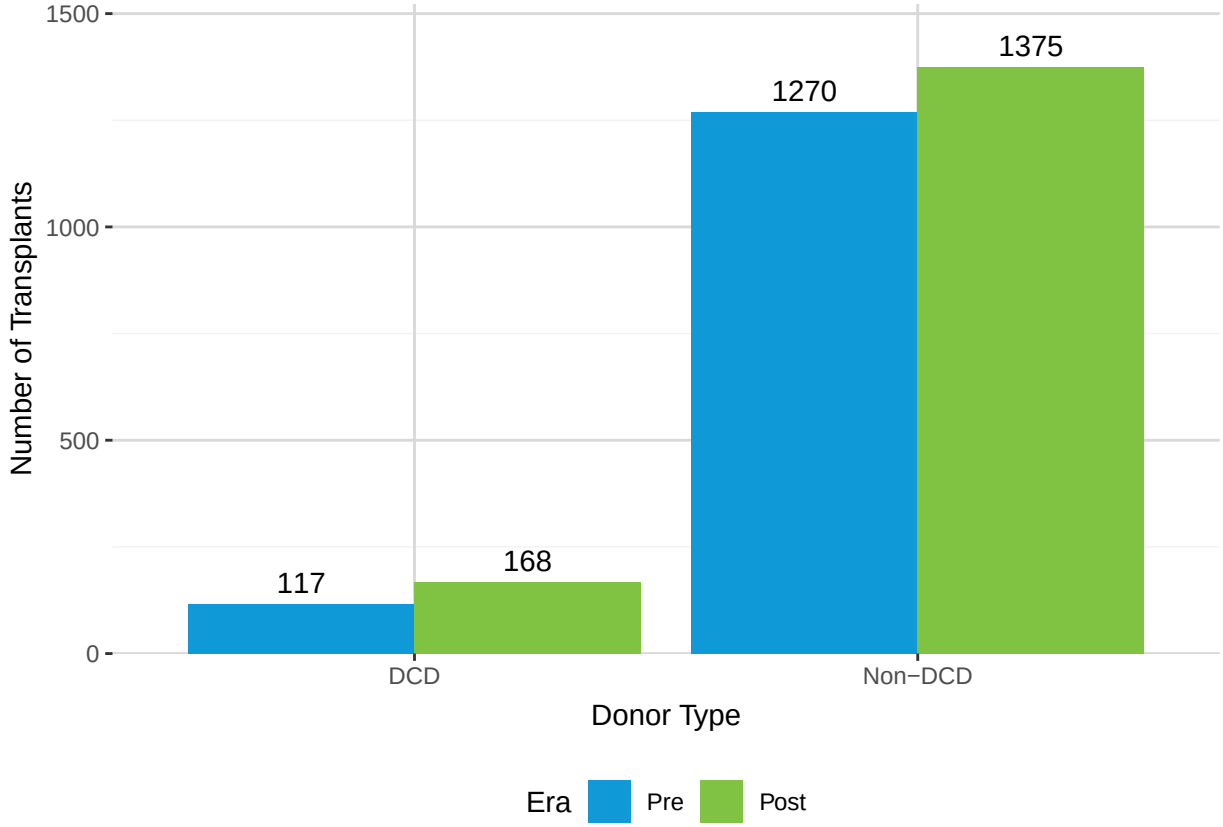



**Table 59: Number of Lung Transplants by Era and Donor Type**

| Donor Type | Pre | Post |
|---|---|---|
| DCD | 117 (8.4%) | 168 (10.9%) |
| Non-DCD | 1,270 (91.6%) | 1,375 (89.1%) |
| Total | 1,387 (100.0%) | 1,543 (100.0%) |

Across most regions, the number of transplants from both DCD and non-DCD donors increased in the post era compared to the pre era.

**Figure 60: Number of Lung Transplants by Era, OPTN Region, and Donor Type**

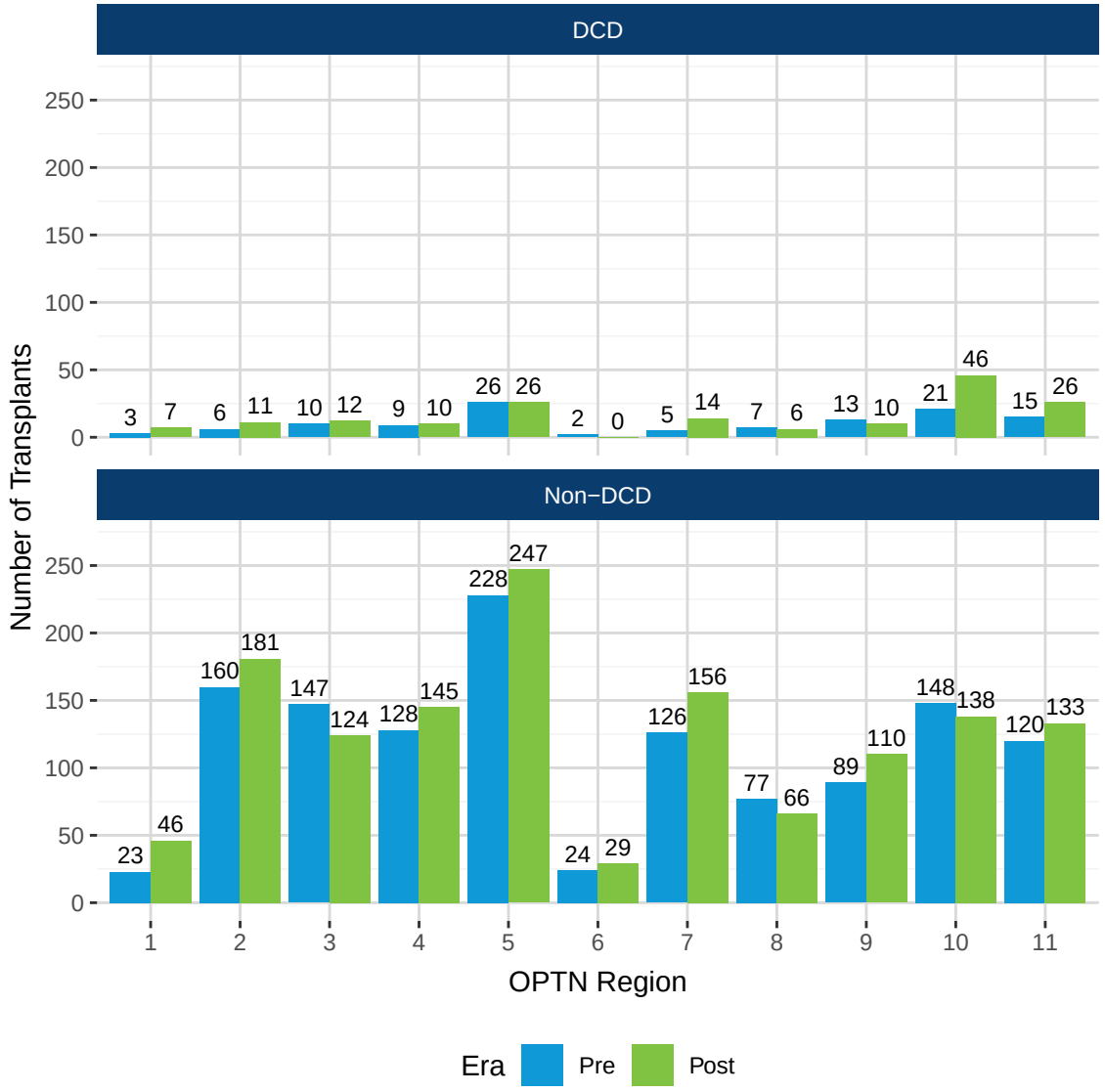


**Table 60: Number of Lung Transplants by Era, OPTN Region, and Donor Type**

| | | Donor Type | | |
|---|---|---|---|---|
| OPTN Region | Era | Non-DCD | DCD | Total |
| 1 | Pre | 23 (88.5%) | 3 (11.5%) | 26 (100.0%) |
| | Post | 46 (86.8%) | 7 (13.2%) | 53 (100.0%) |
| 2 | Pre | 160 (96.4%) | 6 (3.6%) | 166 (100.0%) |
| | Post | 181 (94.3%) | 11 (5.7%) | 192 (100.0%) |
| 3 | Pre | 147 (93.6%) | 10 (6.4%) | 157 (100.0%) |
| | Post | 124 (91.2%) | 12 (8.8%) | 136 (100.0%) |
| 4 | Pre | 128 (93.4%) | 9 (6.6%) | 137 (100.0%) |
| | Post | 145 (93.5%) | 10 (6.5%) | 155 (100.0%) |
| 5 | Pre | 228 (89.8%) | 26 (10.2%) | 254 (100.0%) |
| | Post | 247 (90.5%) | 26 (9.5%) | 273 (100.0%) |
| 6 | Pre | 24 (92.3%) | 2 (7.7%) | 26 (100.0%) |
| | Post | 29 (100.0%) | 0 (0.0%) | 29 (100.0%) |
| 7 | Pre | 126 (96.2%) | 5 (3.8%) | 131 (100.0%) |
| | Post | 156 (91.8%) | 14 (8.2%) | 170 (100.0%) |
| 8 | Pre | 77 (91.7%) | 7 (8.3%) | 84 (100.0%) |
| | Post | 66 (91.7%) | 6 (8.3%) | 72 (100.0%) |
| 9 | Pre | 89 (87.3%) | 13 (12.7%) | 102 (100.0%) |
| | Post | 110 (91.7%) | 10 (8.3%) | 120 (100.0%) |
| 10 | Pre | 148 (87.6%) | 21 (12.4%) | 169 (100.0%) |
| | Post | 138 (75.0%) | 46 (25.0%) | 184 (100.0%) |
| 11 | Pre | 120 (88.9%) | 15 (11.1%) | 135 (100.0%) |
| | Post | 133 (83.6%) | 26 (16.4%) | 159 (100.0%) |

Transplant program size was determined based on the rate of transplants performed in the pre policy era. Small programs performed 1 or fewer transplants per month, medium programs performed between 1 and 4 transplants per month, and large programs performed more than 4 transplants per month.

In the post era we saw an increase in the number of transplants across programs of all sizes.

**Figure 61: Number of Lung Transplants by Era and Transplant Program Size**

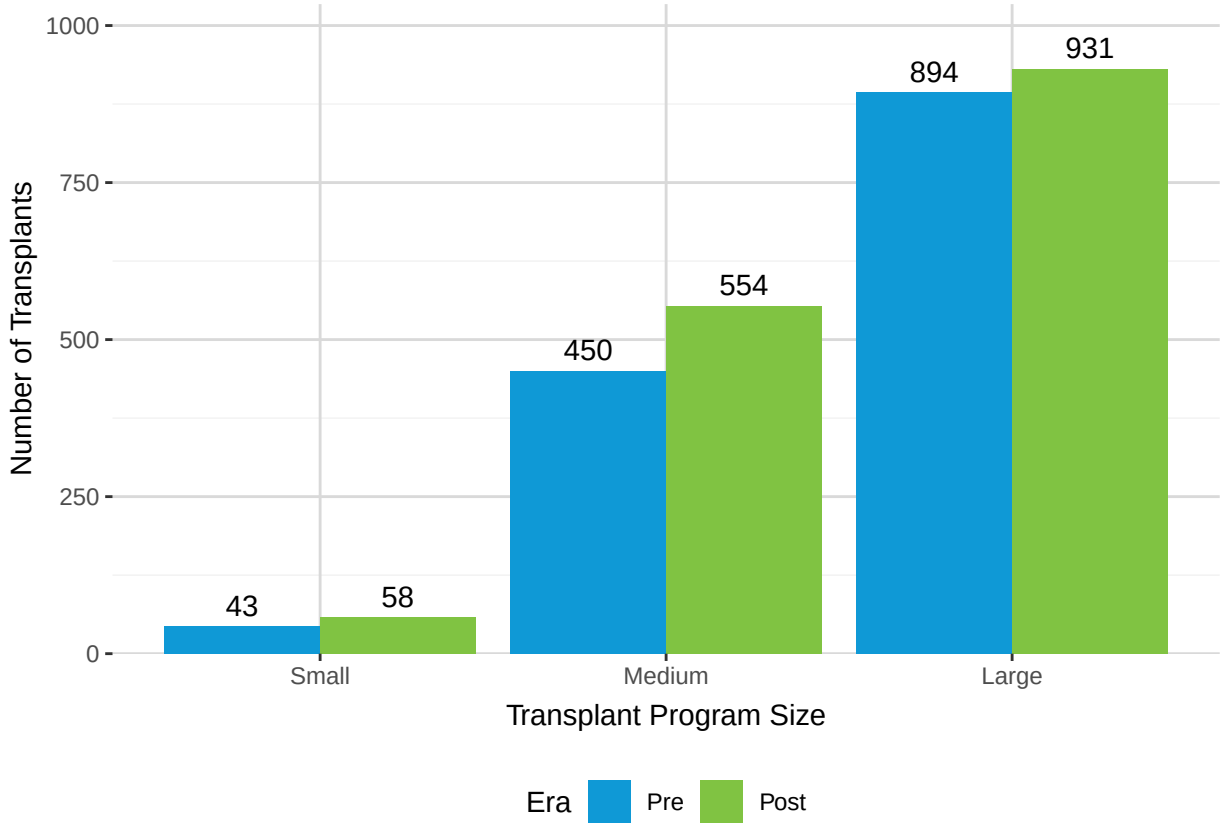



**Table 61: Number of Lung Transplants by Era and Transplant Program Size**

| Transplant Program Size | Pre | Post |
|---|---|---|
| Small | 43 (3.1%) | 58 (3.8%) |
| Medium | 450 (32.4%) | 554 (35.9%) |
| Large | 894 (64.5%) | 931 (60.3%) |
| Total | 1,387 (100.0%) | 1,543 (100.0%) |

In the post era, there was an increase in the number of bilateral sequential lung procedures performed (from 1092 to 1278). The occurrence of other procedure types decreased slightly in the post era.

**Figure 62: Number of Lung Transplants by Era and Procedure Type**

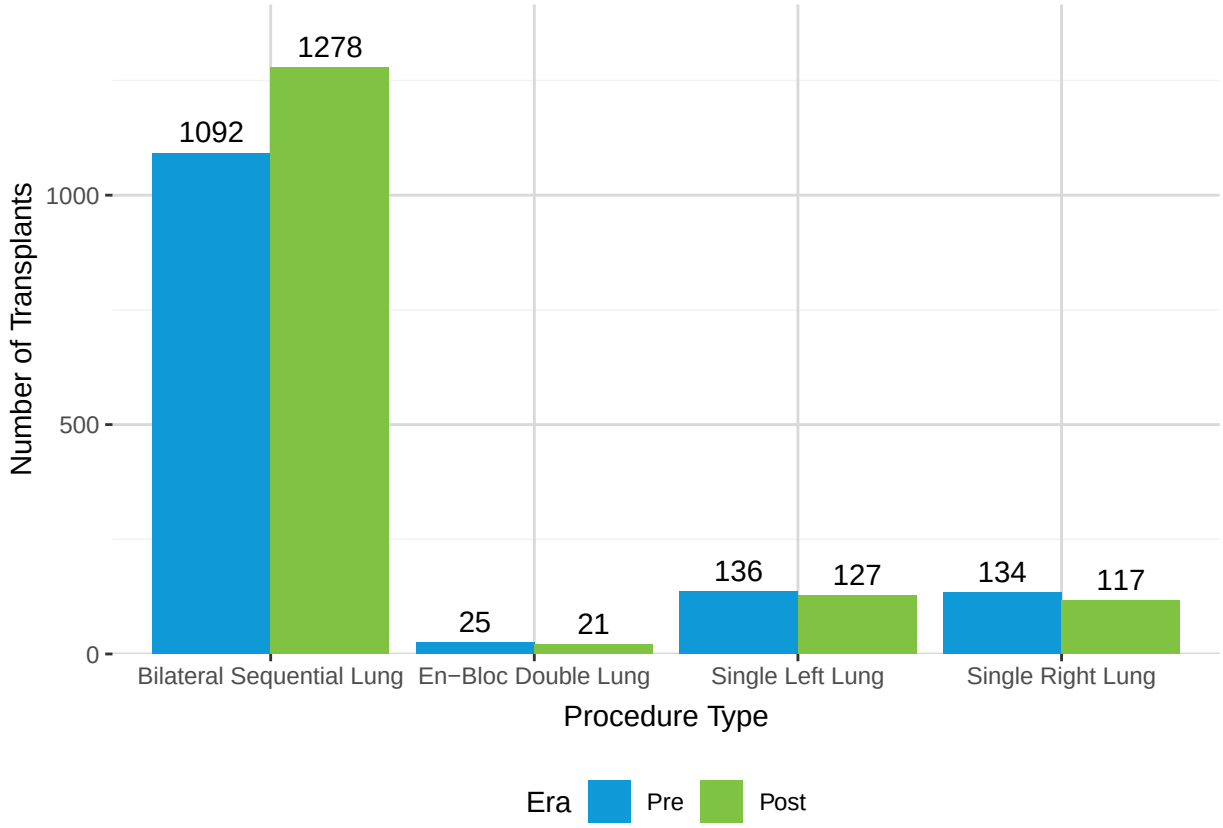



**Table 62: Number of Lung Transplants by Era and Procedure Type**

| Procedure Type | Pre | Post |
|---|---|---|
| Bilateral Sequential Lung | 1,092 (78.7%) | 1,278 (82.8%) |
| En-Bloc Double Lung | 25 (1.8%) | 21 (1.4%) |
| Single Left Lung | 136 (9.8%) | 127 (8.2%) |
| Single Right Lung | 134 (9.7%) | 117 (7.6%) |
| Total | 1,387 (100.0%) | 1,543 (100.0%) |

The percent of machine perfused lungs increased or remained similar in the post era in 8 OPTN regions and decreased in the remaining 3 OPTN regions.

**Figure 63: Percent of Machine Perfused Lungs by Era and OPTN Region Out of All Lungs Recovered for Transplant**

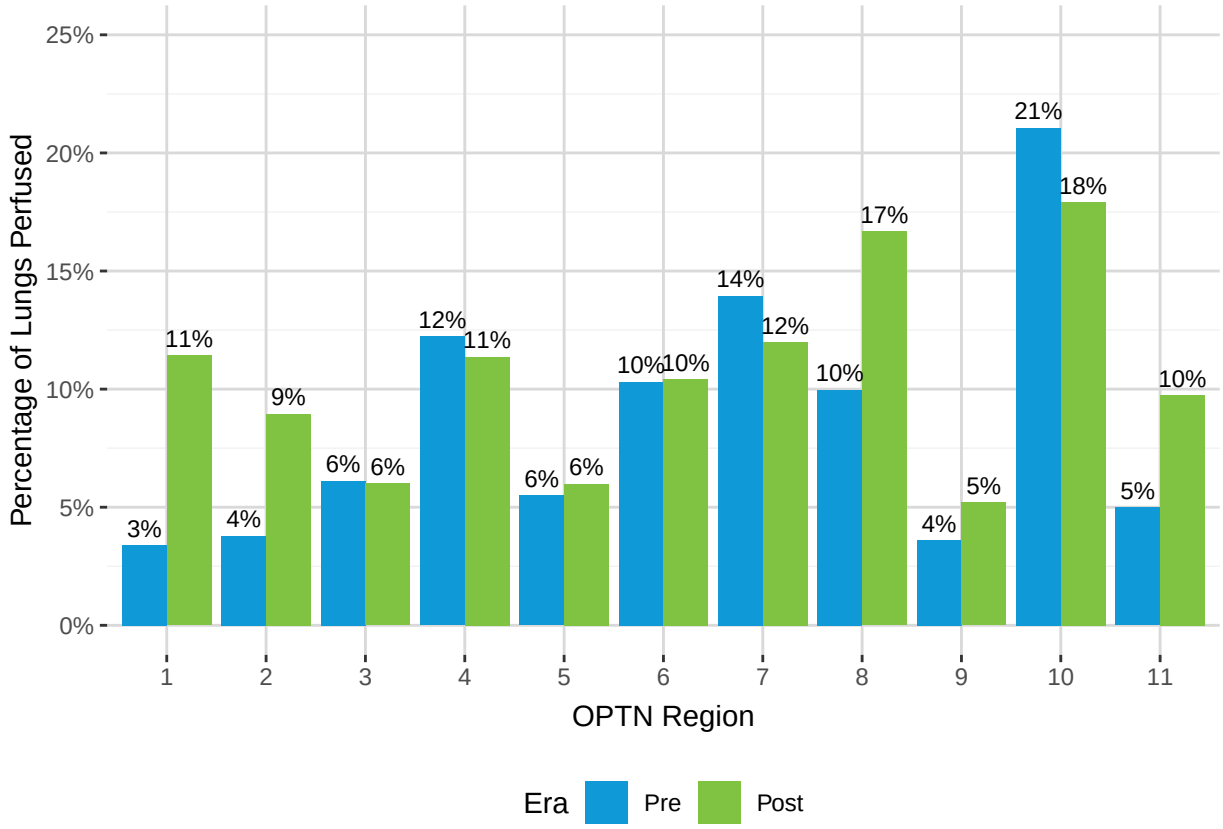


**Table 63: Percent of Machine Perfused Lungs by Era and OPTN Region Out of All Lungs Recovered for Transplant**

| OPTN Region | Era | N Lungs Recovered | N Lungs Perfused | Percent Lungs Perfused |
|---|---|---|---|---|
| 1 | Pre | 59 | 2 | 3.39% |
| | Post | 70 | 8 | 11.43% |
| 2 | Pre | 238 | 9 | 3.78% |
| | Post | 257 | 23 | 8.95% |
| 3 | Pre | 490 | 30 | 6.12% |
| | Post | 516 | 31 | 6.01% |
| 4 | Pre | 425 | 52 | 12.24% |
| | Post | 405 | 46 | 11.36% |
| 5 | Pre | 418 | 23 | 5.50% |
| | Post | 484 | 29 | 5.99% |
| 6 | Pre | 97 | 10 | 10.31% |
| | Post | 144 | 15 | 10.42% |
| 7 | Pre | 251 | 35 | 13.94% |
| | Post | 242 | 29 | 11.98% |
| 8 | Pre | 251 | 25 | 9.96% |
| | Post | 276 | 46 | 16.67% |
| 9 | Pre | 111 | 4 | 3.60% |
| | Post | 154 | 8 | 5.19% |
| 10 | Pre | 266 | 56 | 21.05% |
| | Post | 374 | 67 | 17.91% |
| 11 | Pre | 281 | 14 | 4.98% |
| | Post | 349 | 34 | 9.74% |
| All Regions | Pre | 2887 | 260 | 9.01% |
| | Post | 3271 | 336 | 10.27% |

In the post policy era, median distance from the donor hospital to transplant program increased for both DCD organs and non-DCD organs.

**Figure 64: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Donor Type**

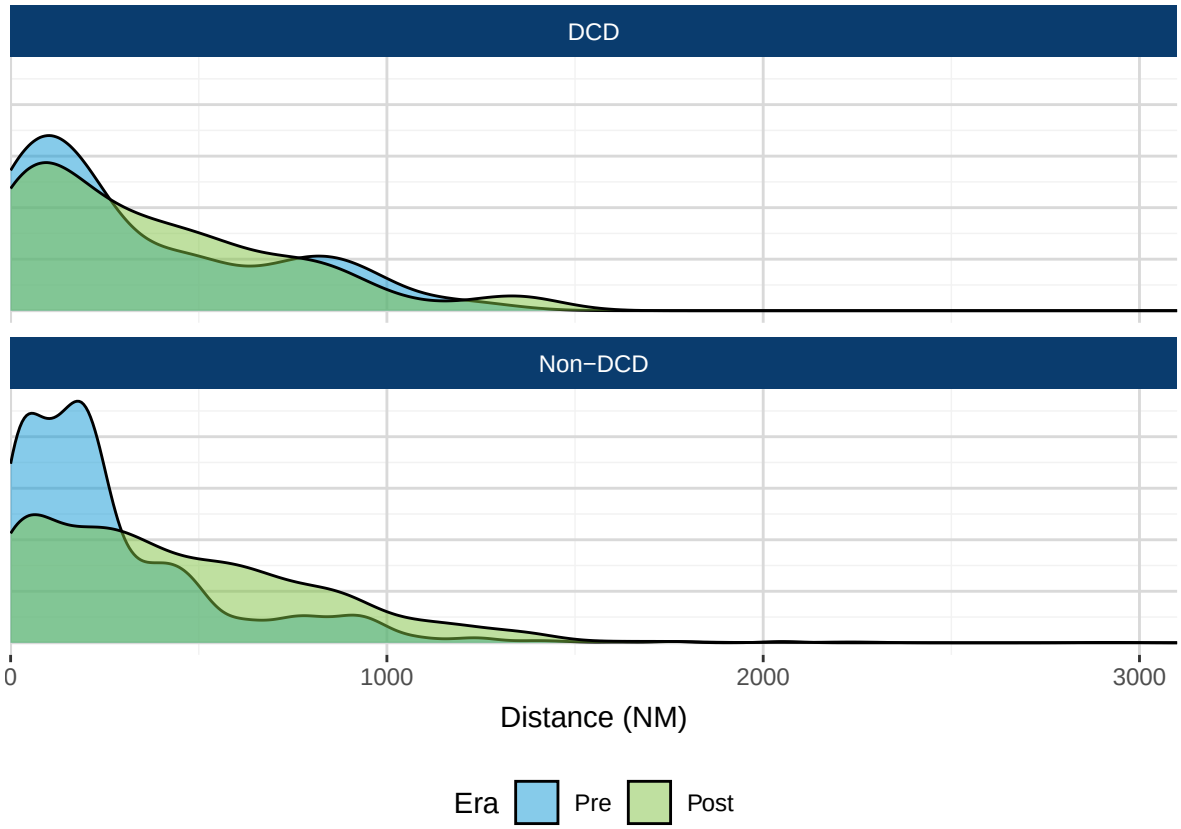
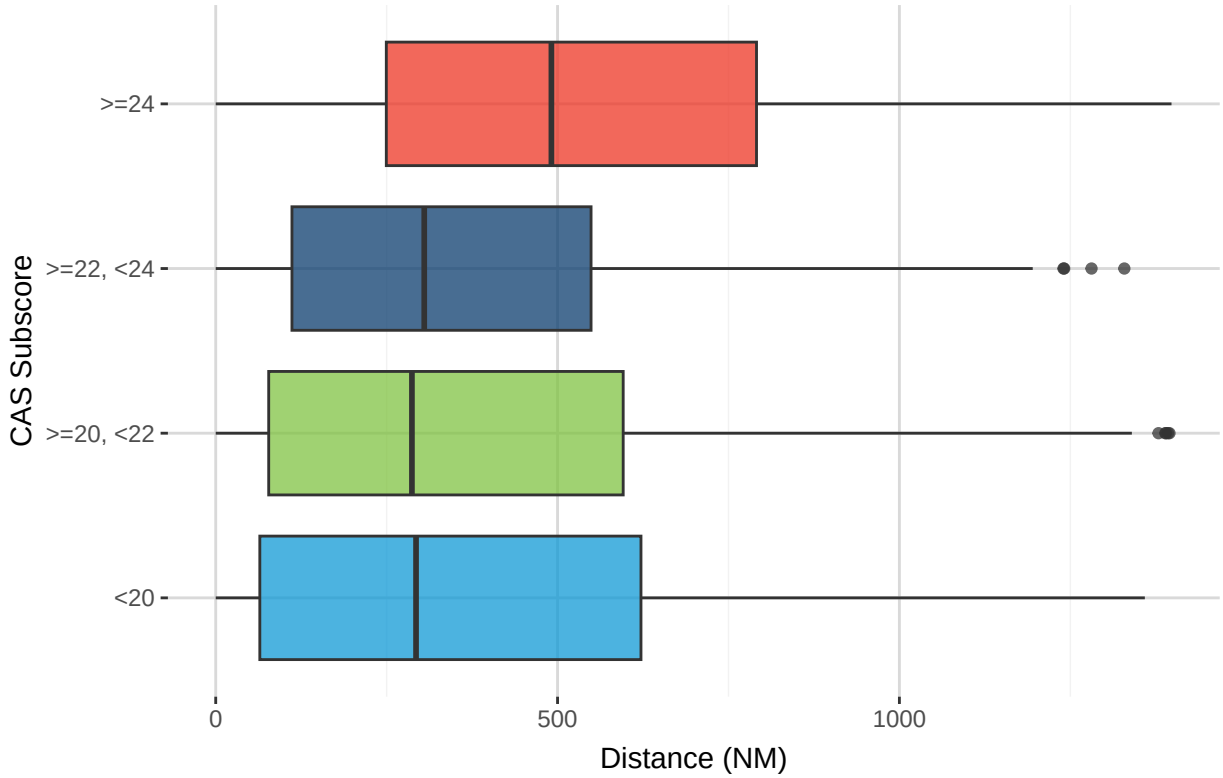



**Table 64: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Donor Type**

| Donor Type | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| DCD | Pre | 117 | 0 | 0 | 54.00 | 184.0 | 332.85 | 510.00 | 1268 |
| | Post | 168 | 0 | 0 | 78.75 | 280.5 | 372.64 | 574.25 | 1400 |
| Non-DCD | Pre | 1270 | 0 | 0 | 78.25 | 196.5 | 274.42 | 380.50 | 2069 |
| | Post | 1375 | 0 | 0 | 141.00 | 362.0 | 441.00 | 676.50 | 2920 |
| Total | Pre | 1387 | 0 | 0 | 78.00 | 195.0 | 279.35 | 391.00 | 2069 |
| | Post | 1543 | 0 | 0 | 129.00 | 353.0 | 433.55 | 662.50 | 2920 |

In the post era, median distance from the donor hospital to transplant program was greatest for patients with the highest CAS subscores (subscore >=24; distance = 502 NM). CAS subscores are calculated by summing all components of CAS, except for the efficiency points; this includes the sum of medical urgency points, post-transplant survival points, biological disadvantage points, and patient access points.

**Figure 65: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by CAS Subscore in the Post Policy Era**



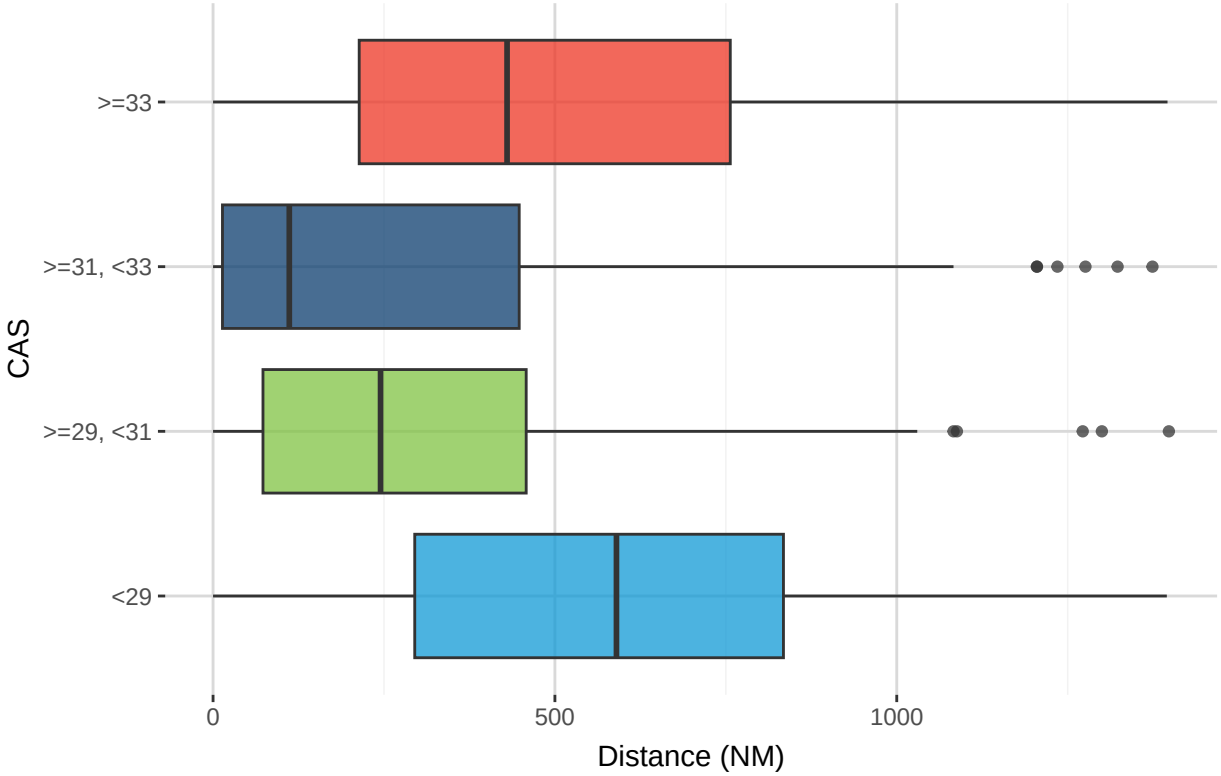

View is restricted to the 99th percentile of distance (1399 NM). There were 16 cases where lungs traveled further than this distance in the post policy era.

**Table 65: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by CAS Subscore in the Post Policy Era**

| CAS Subscore | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| <20 | Post | 206 | 0 | 0 | 69.00 | 297 | 406.59 | 633.25 | 2021 |
| >=20, <22 | Post | 684 | 0 | 0 | 78.75 | 290 | 377.51 | 602.50 | 2920 |
| >=22, <24 | Post | 200 | 0 | 0 | 113.25 | 305 | 384.14 | 550.25 | 1405 |
| >=24 | Post | 453 | 0 | 0 | 258.00 | 502 | 552.26 | 806.00 | 2244 |
| Total | Post | 1543 | 0 | 0 | 129.00 | 353 | 433.55 | 662.50 | 2920 |

In the post era, median distance for patients with the highest (>=33) and lowest (<29) CAS scores was greater than the median distance for patients with intermediate CAS scores (>=29 and <33). CAS scores are calculated by adding efficiency points to the CAS subscore.

**Figure 66: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by CAS in the Post Policy Era**




View is restricted to the 99th percentile of distance (1399 NM). There were 16 cases where lungs traveled further than this distance in the post policy era.

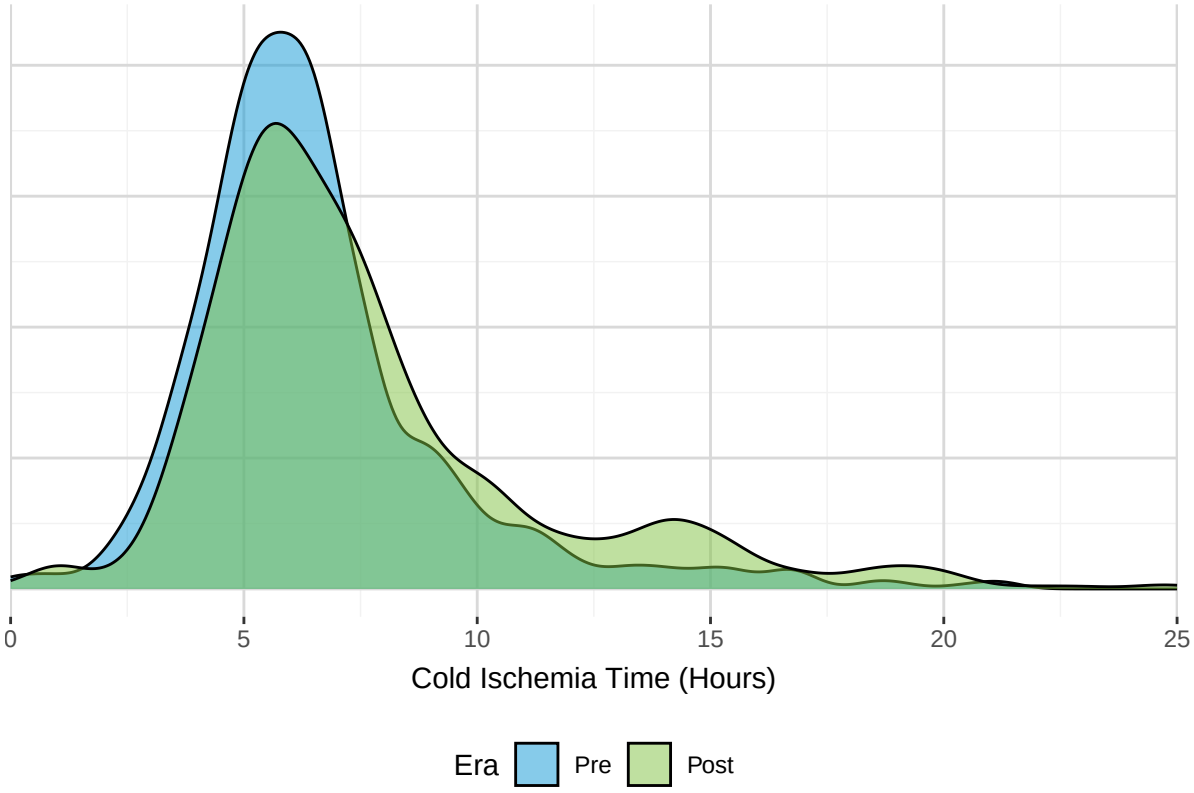
**Table 66: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by CAS In the Post Policy Era**

| CAS | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| <29 | Post | 383 | 0 | 0 | 300.5 | 602.0 | 619.93 | 853.0 | 2920 |
| >=29, <31 | Post | 530 | 0 | 0 | 73.5 | 245.5 | 299.51 | 461.0 | 1399 |
| >=31, <33 | Post | 201 | 0 | 0 | 14.0 | 115.0 | 260.03 | 450.0 | 2244 |
| >=33 | Post | 429 | 0 | 0 | 219.0 | 445.0 | 514.07 | 765.0 | 2227 |
| Total | Post | 1543 | 0 | 0 | 129.0 | 353.0 | 433.55 | 662.5 | 2920 |

Due to the 90 day data lag for reporting cold ischemia time, the below analysis is limited to three months before and after the implementation of continuous distribution (Pre: December 07, 2022 to March 08, 2023; Post: March 09, 2023 to June 08, 2023).

The median cold ischemia time for lung transplants in the post policy era (6.62 hours) was slightly longer than the median cold ischemia time in the pre policy era (6.08 hours).

**Figure 67: Distribution of Cold Ischemia Time for Lung Transplants by Era (December 7, 2022 to June 8, 2023)**




Cold ischemia time was missing for 7 transplants.

**Table 67: Distribution of Cold Ischemia Time for Lung Transplants by Era (December 7, 2022 to June 8, 2023)**

| Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|
| Pre | 672 | 1 | 0.04 | 4.88 | 6.08 | 6.59 | 7.46 | 21.21 |
| Post | 780 | 6 | 0.08 | 5.23 | 6.62 | 7.62 | 8.71 | 25.00 |

**Utilization Rate**

Utilization rate is defined as the percent of lungs that are transplanted based on all possible lungs from every deceased donor with at least one organ recovered for the purpose of transplant; this definition assumes that each donor has two possible lungs for donation.

Utilization rates increased or remained stable in 8 OPTN regions and decreased in 3 OPTN regions. At the national level, utilization rates did not change substantially between the pre and post policy eras.

**Figure 68: Utilization Rates by Era and OPTN Region**

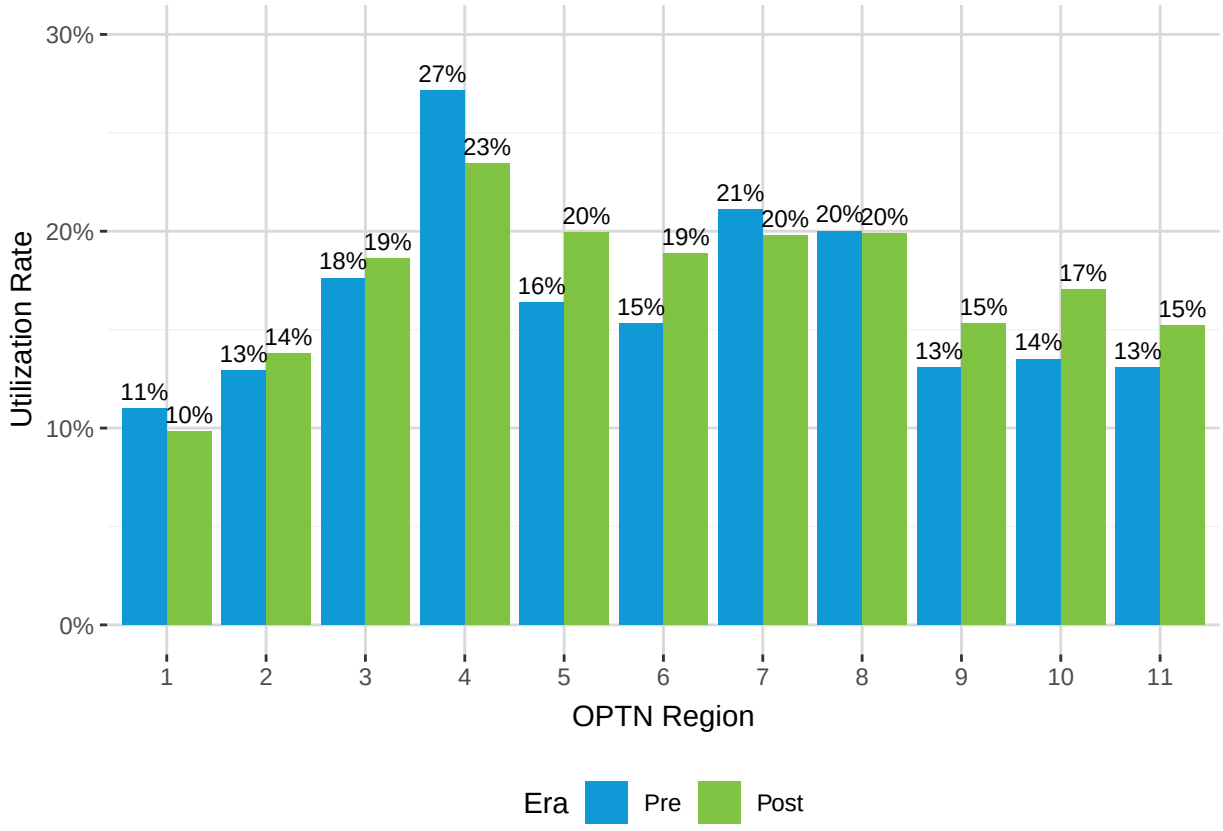


**Table 68: Utilization Rates by Era and OPTN Region**

| OPTN Region | Era | N Donors | N Lungs Transplanted | Utilization Rate |
|---|---|---|---|---|
| 1 | Pre | 250 | 55 | 11.00% |
| | Post | 285 | 56 | 9.82% |
| 2 | Pre | 828 | 214 | 12.92% |
| | Post | 823 | 227 | 13.79% |
| 3 | Pre | 1237 | 436 | 17.62% |
| | Post | 1286 | 479 | 18.62% |
| 4 | Pre | 727 | 395 | 27.17% |
| | Post | 774 | 363 | 23.45% |
| 5 | Pre | 1233 | 404 | 16.38% |
| | Post | 1181 | 471 | 19.94% |
| 6 | Pre | 317 | 97 | 15.30% |
| | Post | 371 | 140 | 18.87% |
| 7 | Pre | 550 | 232 | 21.09% |
| | Post | 576 | 228 | 19.79% |
| 8 | Pre | 577 | 231 | 20.02% |
| | Post | 628 | 250 | 19.90% |
| 9 | Pre | 378 | 99 | 13.10% |
| | Post | 424 | 130 | 15.33% |
| 10 | Pre | 822 | 222 | 13.50% |
| | Post | 941 | 321 | 17.06% |
| 11 | Pre | 957 | 250 | 13.06% |
| | Post | 1017 | 309 | 15.19% |
| All Regions | Pre | 7876 | 2635 | 16.73% |
| | Post | 8306 | 2974 | 17.90% |

Utilization rates increased slightly for both DCD and non-DCD donors

**Figure 69: Utilization Rates by Era and Donor Type**

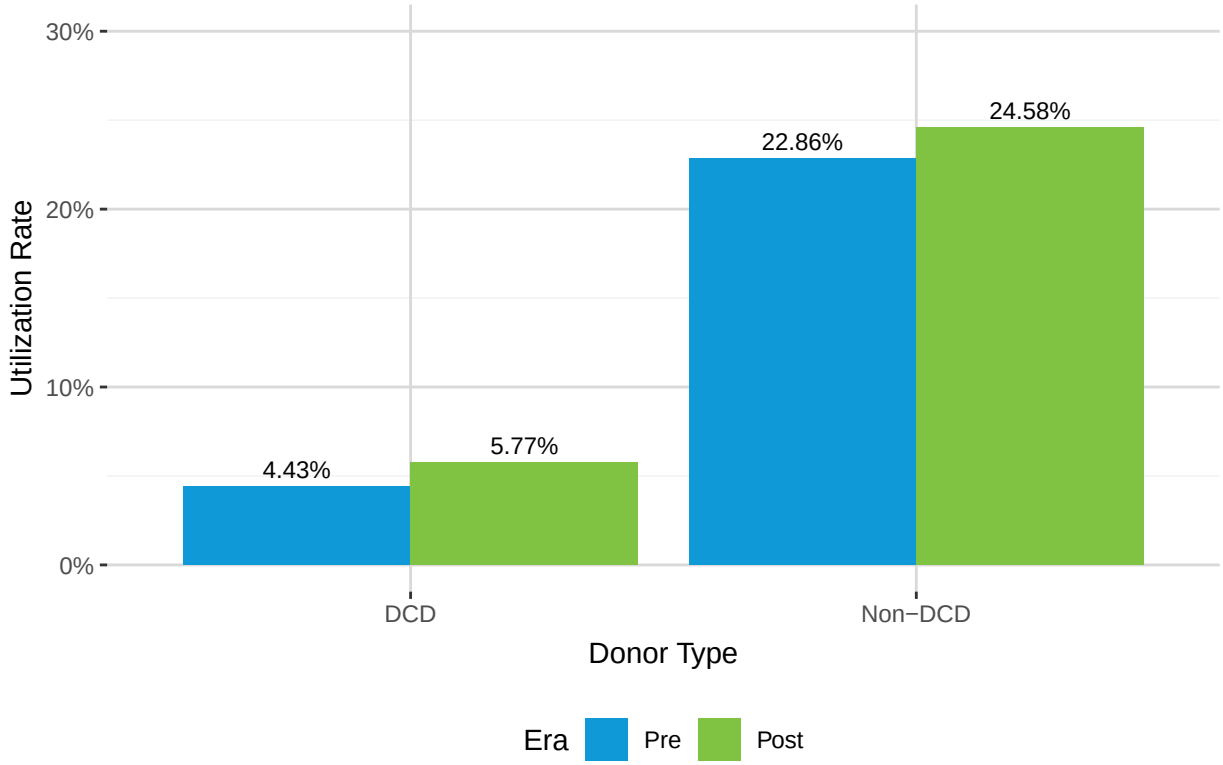



Chart does not include the 1 donor for whom DCD status was not yet reported at the time of this report's production.

**Table 69: Utilization Rates by Era and Donor Type**

| DCD Status | Era | N Donors | N Lungs Transplanted | Utilization Rate |
|---|---|---|---|---|
| DCD | Pre | 2621 | 232 | 4.43% |
| | Post | 2947 | 340 | 5.77% |
| Non-DCD | Pre | 5255 | 2403 | 22.86% |
| | Post | 5358 | 2634 | 24.58% |
| Not Reported | Post | 1 | 0 | 0.00% |
| All Donors | Pre | 7876 | 2635 | 16.73% |
| | Post | 8306 | 2974 | 17.90% |

For DCD donors utilization rates increased or remained stable in 8 OPTN regions and for non-DCD donors utilization rates increased or remained stable for 9 OPTN regions.

**Figure 70: Utilization Rates by Era, OPTN Region, and Donor Type**

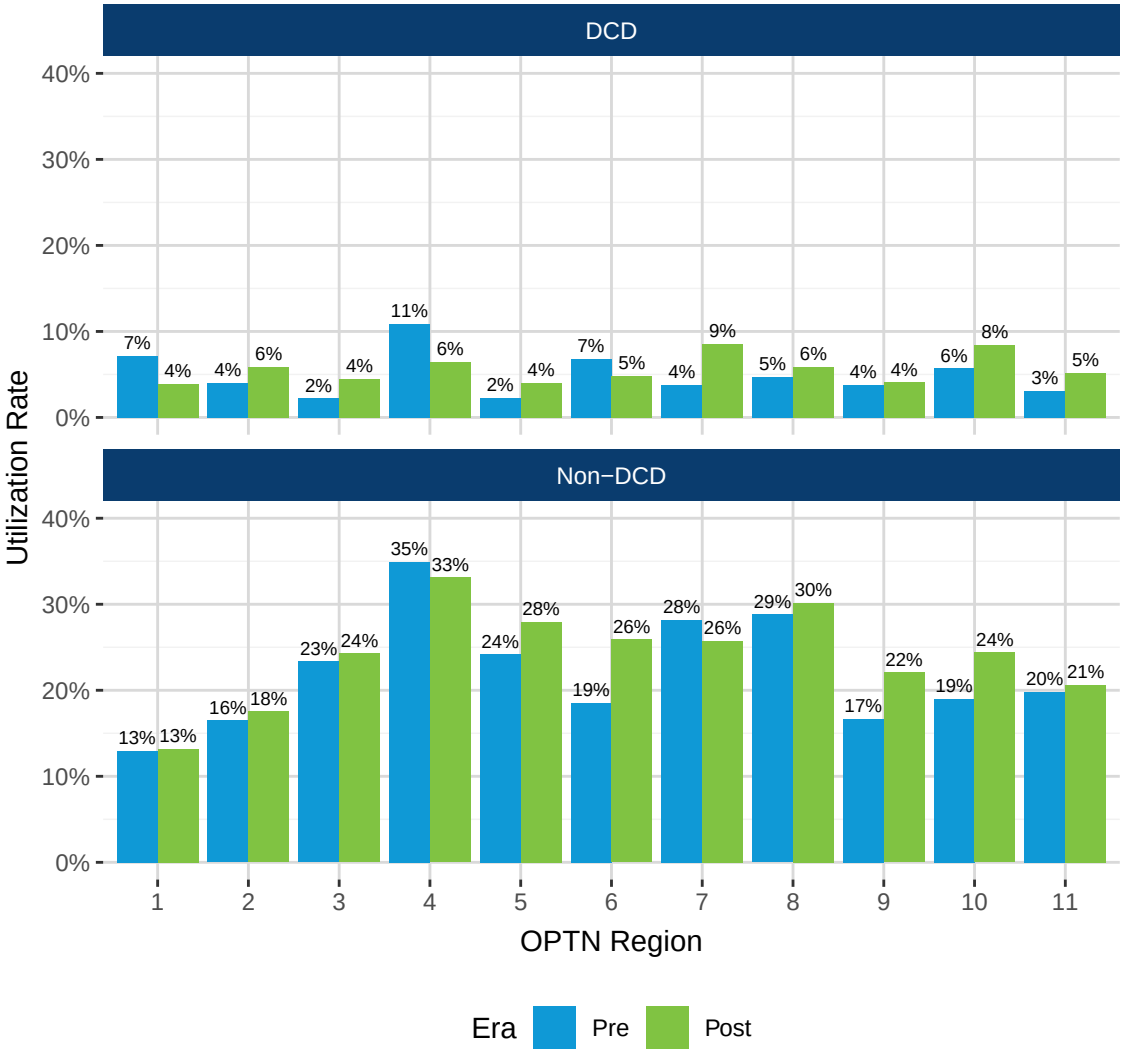



Chart does not include the 1 donor for whom DCD status was not yet reported at the time of this report's production.

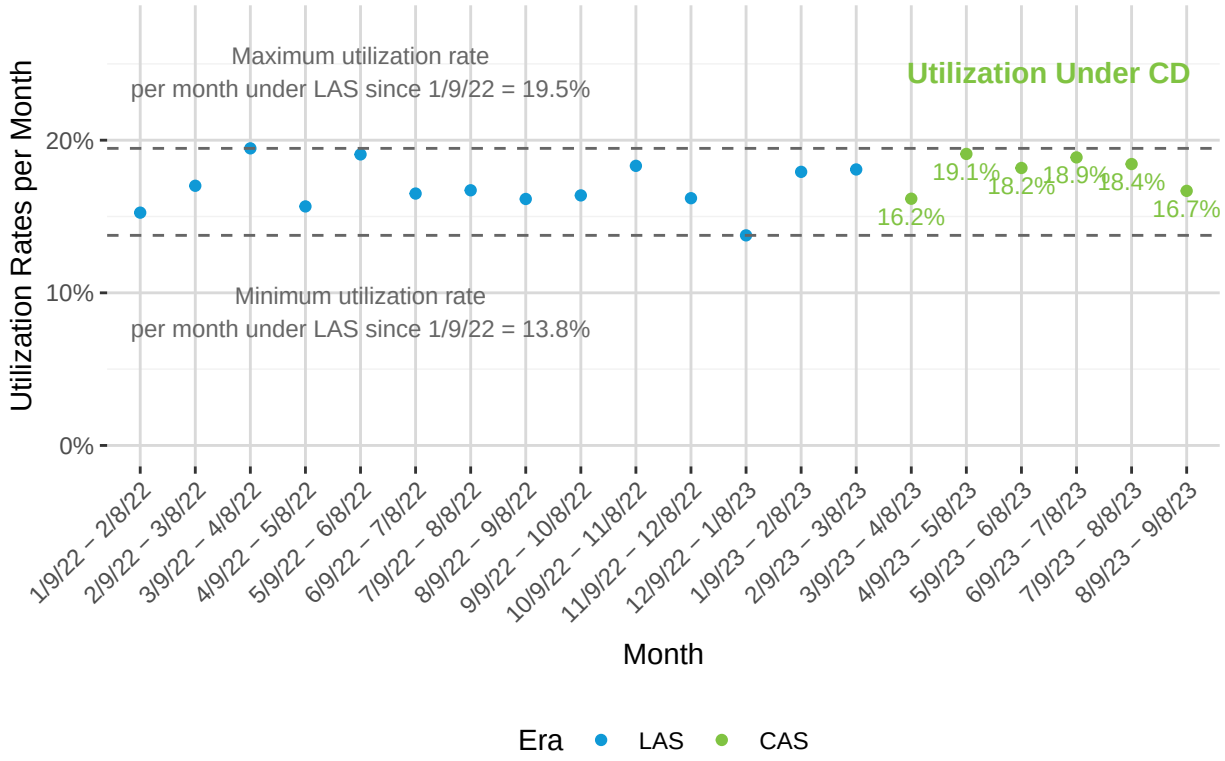
**Table 70: Utilization Rates by Era, OPTN Region, and Donor Type**

| Donor Type | OPTN Region | Era | N Donors | N Lungs Transplanted | Utilization Rate |
|---|---|---|---|---|---|
| DCD | 1 | Pre | 84 | 12 | 7.14% |
| | | Post | 103 | 8 | 3.88% |
| | 2 | Pre | 237 | 19 | 4.01% |
| | | Post | 264 | 31 | 5.87% |
| | 3 | Pre | 336 | 15 | 2.23% |
| | | Post | 368 | 33 | 4.48% |
| | 4 | Pre | 234 | 51 | 10.90% |
| | | Post | 280 | 36 | 6.43% |
| | 5 | Pre | 439 | 20 | 2.28% |
| | | Post | 395 | 32 | 4.05% |
| | 6 | Pre | 88 | 12 | 6.82% |
| | | Post | 124 | 12 | 4.84% |
| | 7 | Pre | 160 | 12 | 3.75% |
| | | Post | 199 | 34 | 8.54% |
| | 8 | Pre | 211 | 20 | 4.74% |
| | | Post | 265 | 31 | 5.85% |
| | 9 | Pre | 105 | 8 | 3.81% |
| | | Post | 159 | 13 | 4.09% |
| | 10 | Pre | 341 | 39 | 5.72% |
| | | Post | 433 | 73 | 8.43% |
| | 11 | Pre | 386 | 24 | 3.11% |
| | | Post | 357 | 37 | 5.18% |
| | All Regions | Pre | 2621 | 232 | 4.43% |
| | | Post | 2947 | 340 | 5.77% |
| | 1 | Pre | 166 | 43 | 12.95% |
| | | Post | 182 | 48 | 13.19% |
| | 2 | Pre | 591 | 195 | 16.50% |
| | | Post | 559 | 196 | 17.53% |
| | 3 | Pre | 901 | 421 | 23.36% |
| | | Post | 918 | 446 | 24.29% |
| | 4 | Pre | 493 | 344 | 34.89% |
| | | Post | 494 | 327 | 33.10% |
| | 5 | Pre | 794 | 384 | 24.18% |
| | | Post | 785 | 439 | 27.96% |
| | 6 | Pre | 229 | 85 | 18.56% |
| | | Post | 247 | 128 | 25.91% |

| | | | | | |
|---|---|---|---|---|---|
| Non-DCD | 7 | Pre | 390 | 220 | 28.21% |
| | | Post | 377 | 194 | 25.73% |
| | 8 | Pre | 366 | 211 | 28.83% |
| | | Post | 363 | 219 | 30.17% |
| | 9 | Pre | 273 | 91 | 16.67% |
| | | Post | 265 | 117 | 22.08% |
| | 10 | Pre | 481 | 183 | 19.02% |
| | | Post | 508 | 248 | 24.41% |
| | 11 | Pre | 571 | 226 | 19.79% |
| | | Post | 660 | 272 | 20.61% |
| | All Regions | Pre | 5255 | 2403 | 22.86% |
| | | Post | 5358 | 2634 | 24.58% |

The utilization rate per month varied widely. In 2022, under LAS, the utilization rate per month varied from 13.76% to 19.46%. The utilization rates in the first 6 months of continuous distribution were within the range of utilization rates per month in 2022.

**Figure 71: Utilization Rates Per Month**




Note that all months are defined from the 9th to the 8th; therefore, the last six months under LAS do not perfectly overlap with the defined pre policy era.

**Table 71: Utilization Rates Per Month**

| Policy Era | Month | N Donors | N Lungs Transplanted | Utilization Rate |
|---|---|---|---|---|
| LAS | 1/9/22 - 2/8/22 | 1131 | 345 | 15.3% |
| | 2/9/22 - 3/8/22 | 1155 | 393 | 17.0% |
| | 3/9/22 - 4/8/22 | 1233 | 480 | 19.5% |
| | 4/9/22 - 5/8/22 | 1226 | 384 | 15.7% |
| | 5/9/22 - 6/8/22 | 1201 | 458 | 19.1% |
| | 6/9/22 - 7/8/22 | 1224 | 404 | 16.5% |
| | 7/9/22 - 8/8/22 | 1286 | 430 | 16.7% |
| | 8/9/22 - 9/8/22 | 1254 | 405 | 16.1% |
| | 9/9/22 - 10/8/22 | 1233 | 404 | 16.4% |
| | 10/9/22 - 11/8/22 | 1332 | 488 | 18.3% |
| | 11/9/22 - 12/8/22 | 1321 | 428 | 16.2% |
| | 12/9/22 - 1/8/23 | 1384 | 381 | 13.8% |
| | 1/9/23 - 2/8/23 | 1297 | 465 | 17.9% |
| | 2/9/23 - 3/8/23 | 1200 | 434 | 18.1% |
| CAS | 3/9/23 - 4/8/23 | 1392 | 450 | 16.2% |
| | 4/9/23 - 5/8/23 | 1377 | 526 | 19.1% |
| | 5/9/23 - 6/8/23 | 1466 | 533 | 18.2% |
| | 6/9/23 - 7/8/23 | 1330 | 502 | 18.9% |
| | 7/9/23 - 8/8/23 | 1383 | 510 | 18.4% |
| | 8/9/23 - 9/8/23 | 1358 | 453 | 16.7% |

[a] Note that all months are defined from the 9th to the 8th; therefore, the last six months under LAS do not perfectly overlap with the defined pre policy era.

**Non-Use Rate**

Non-use rate is defined as the number of lungs recovered for the purpose of transplant but not transplanted out of all lungs recovered for transplant.

Non-use rates remained stable or decreased in the post policy era in 5 out of 11 OPTN regions and remained relatively stable at the national level. In OPTN region 1, the non-use rate increased from 7% in the pre era to 20% in the post era. This is a result of 11 more lungs being recovered in OPTN region 1 in the post era with only 1 more lung being transplanted.

**Figure 72: Non-Use Rates by Era and OPTN Region**

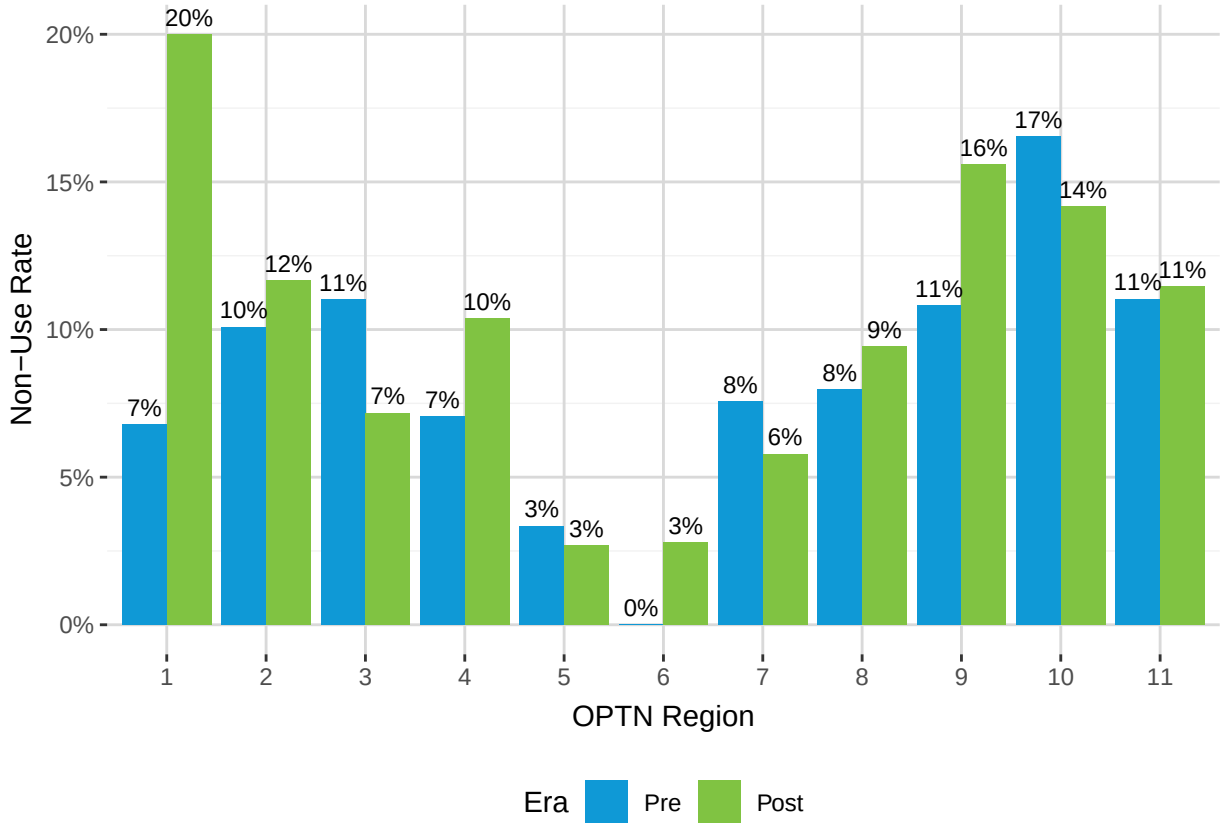


**Table 72: Non-Use Rates by Era and OPTN Region**

| OPTN Region | Era | N Lungs Recovered | N Lungs Transplanted | Non-Use Rate |
|---|---|---|---|---|
| 1 | Pre | 59 | 55 | 6.78% |
| | Post | 70 | 56 | 20.00% |
| 2 | Pre | 238 | 214 | 10.08% |
| | Post | 257 | 227 | 11.67% |
| 3 | Pre | 490 | 436 | 11.02% |
| | Post | 516 | 479 | 7.17% |
| 4 | Pre | 425 | 395 | 7.06% |
| | Post | 405 | 363 | 10.37% |
| 5 | Pre | 418 | 404 | 3.35% |
| | Post | 484 | 471 | 2.69% |
| 6 | Pre | 97 | 97 | 0.00% |
| | Post | 144 | 140 | 2.78% |
| 7 | Pre | 251 | 232 | 7.57% |
| | Post | 242 | 228 | 5.79% |
| 8 | Pre | 251 | 231 | 7.97% |
| | Post | 276 | 250 | 9.42% |
| 9 | Pre | 111 | 99 | 10.81% |
| | Post | 154 | 130 | 15.58% |
| 10 | Pre | 266 | 222 | 16.54% |
| | Post | 374 | 321 | 14.17% |
| 11 | Pre | 281 | 250 | 11.03% |
| | Post | 349 | 309 | 11.46% |
| All Regions | Pre | 2887 | 2635 | 8.73% |
| | Post | 3271 | 2974 | 9.08% |

Non-use rates remained similar for both DCD and non-DCD donors.

**Figure 73: Non-Use Rates by Era and Donor Type**

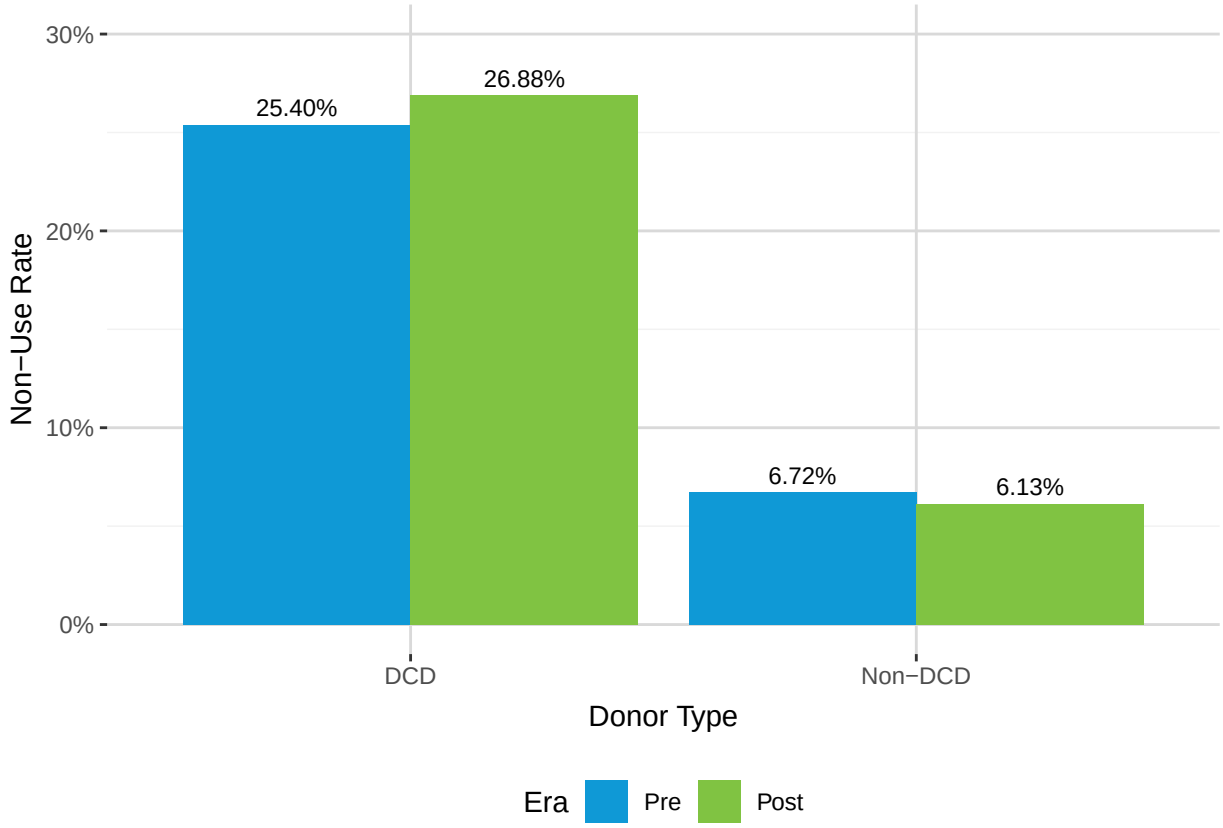



**Table 73: Non-Use Rates by Era and Donor Type**

| DCD Status | Era | N Lungs Recovered | N Lungs Transplanted | Non-Use Rate |
|---|---|---|---|---|
| DCD | Pre | 311 | 232 | 25.40% |
| | Post | 465 | 340 | 26.88% |
| Non-DCD | Pre | 2576 | 2403 | 6.72% |
| | Post | 2806 | 2634 | 6.13% |
| All Donors | Pre | 2887 | 2635 | 8.73% |
| | Post | 3271 | 2974 | 9.08% |

For DCD donors non-use rates decreased or remained stable in 4 OPTN regions and for non-DCD donors non-use rates decreased or remained stable in 6 OPTN regions.

**Figure 74: Non-Use Rates by Era, OPTN Region, and Donor Type**

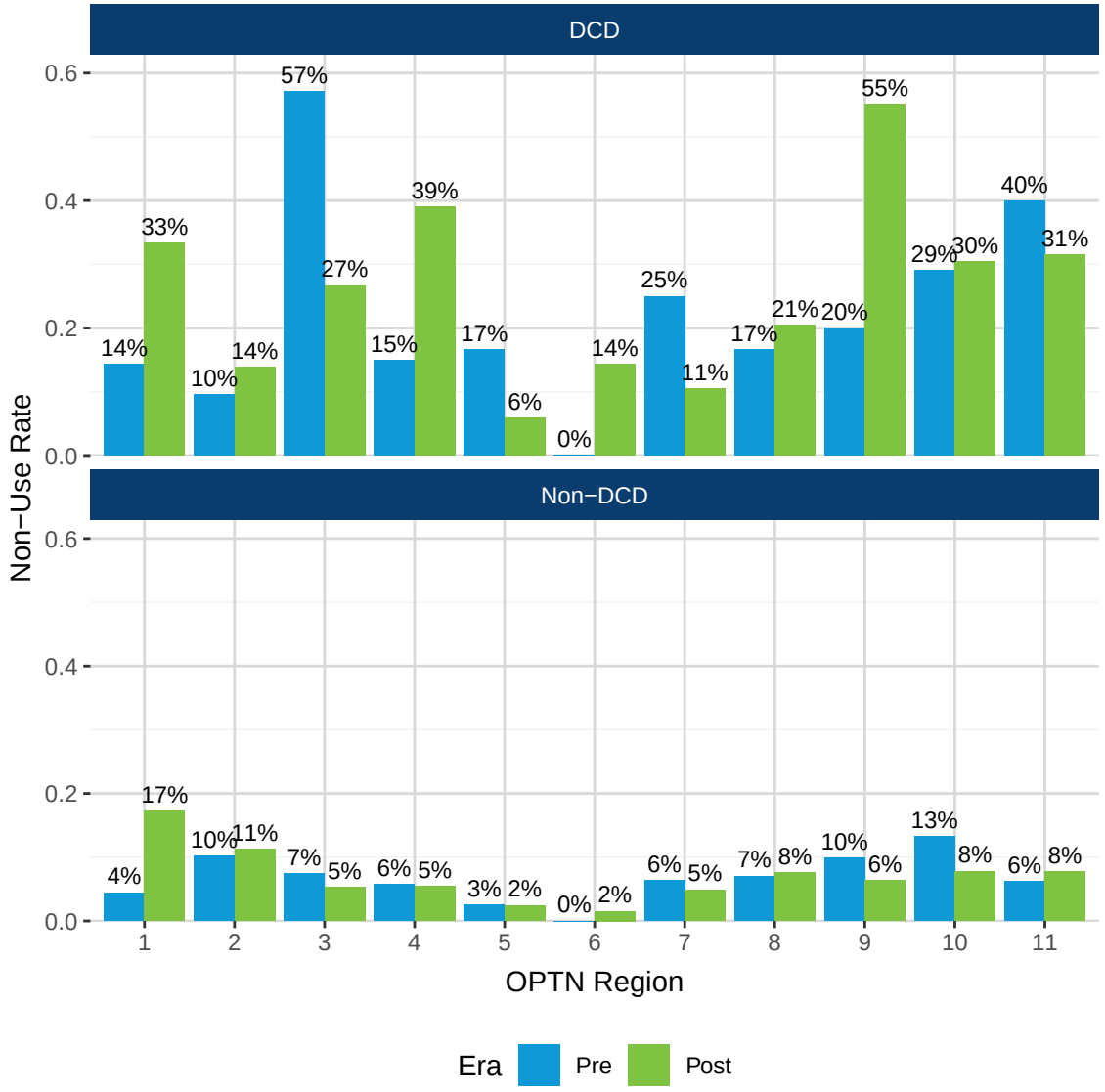


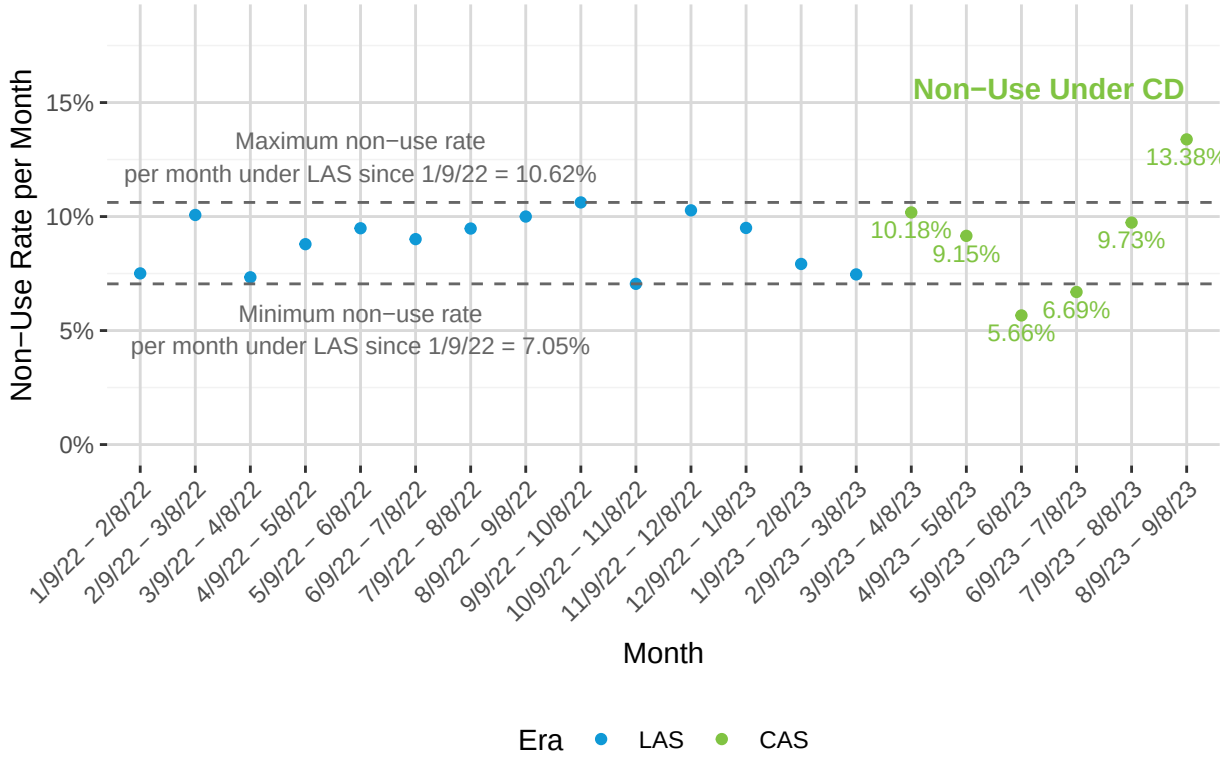
**Table 74: Non-Use Rates by Era, OPTN Region, and Donor Type**

| Donor Type | OPTN Region | Era | N Lungs Recovered | N Lungs Transplanted | Non-Use Rate |
|---|---|---|---|---|---|
| DCD | 1 | Pre | 14 | 12 | 14.29% |
| | | Post | 12 | 8 | 33.33% |
| | 2 | Pre | 21 | 19 | 9.52% |
| | | Post | 36 | 31 | 13.89% |
| | 3 | Pre | 35 | 15 | 57.14% |
| | | Post | 45 | 33 | 26.67% |
| | 4 | Pre | 60 | 51 | 15.00% |
| | | Post | 59 | 36 | 38.98% |
| | 5 | Pre | 24 | 20 | 16.67% |
| | | Post | 34 | 32 | 5.88% |
| | 6 | Pre | 12 | 12 | 0.00% |
| | | Post | 14 | 12 | 14.29% |
| | 7 | Pre | 16 | 12 | 25.00% |
| | | Post | 38 | 34 | 10.53% |
| | 8 | Pre | 24 | 20 | 16.67% |
| | | Post | 39 | 31 | 20.51% |
| | 9 | Pre | 10 | 8 | 20.00% |
| | | Post | 29 | 13 | 55.17% |
| | 10 | Pre | 55 | 39 | 29.09% |
| | | Post | 105 | 73 | 30.48% |
| | 11 | Pre | 40 | 24 | 40.00% |
| | | Post | 54 | 37 | 31.48% |
| | All Regions | Pre | 311 | 232 | 25.40% |
| | | Post | 465 | 340 | 26.88% |
| | 1 | Pre | 45 | 43 | 4.44% |
| | | Post | 58 | 48 | 17.24% |
| | 2 | Pre | 217 | 195 | 10.14% |
| | | Post | 221 | 196 | 11.31% |
| | 3 | Pre | 455 | 421 | 7.47% |
| | | Post | 471 | 446 | 5.31% |
| | 4 | Pre | 365 | 344 | 5.75% |
| | | Post | 346 | 327 | 5.49% |
| | 5 | Pre | 394 | 384 | 2.54% |
| | | Post | 450 | 439 | 2.44% |
| | 6 | Pre | 85 | 85 | 0.00% |
| | | Post | 130 | 128 | 1.54% |

| | | | | | |
|---|---|---|---|---|---|
| Non-DCD | 7 | Pre | 235 | 220 | 6.38% |
| | | Post | 204 | 194 | 4.90% |
| | 8 | Pre | 227 | 211 | 7.05% |
| | | Post | 237 | 219 | 7.59% |
| | 9 | Pre | 101 | 91 | 9.90% |
| | | Post | 125 | 117 | 6.40% |
| | 10 | Pre | 211 | 183 | 13.27% |
| | | Post | 269 | 248 | 7.81% |
| | 11 | Pre | 241 | 226 | 6.22% |
| | | Post | 295 | 272 | 7.80% |
| | All Regions | Pre | 2576 | 2403 | 6.72% |
| | | Post | 2806 | 2634 | 6.13% |

The non-use rates per month varied widely. In 2022, under LAS, the non-use rate per month varied from 7.05% to 10.62%. The non-use rates in the first 6 months of continuous distribution ranged from 5.66% to 13.38%.

**Figure 75: Non-Use Rates Per Month**




Note that all months are defined from the 9th to the 8th; therefore, the last six months under LAS do not perfectly overlap with the defined pre policy era.

**Table 75: Non-Use Rate Per Month**

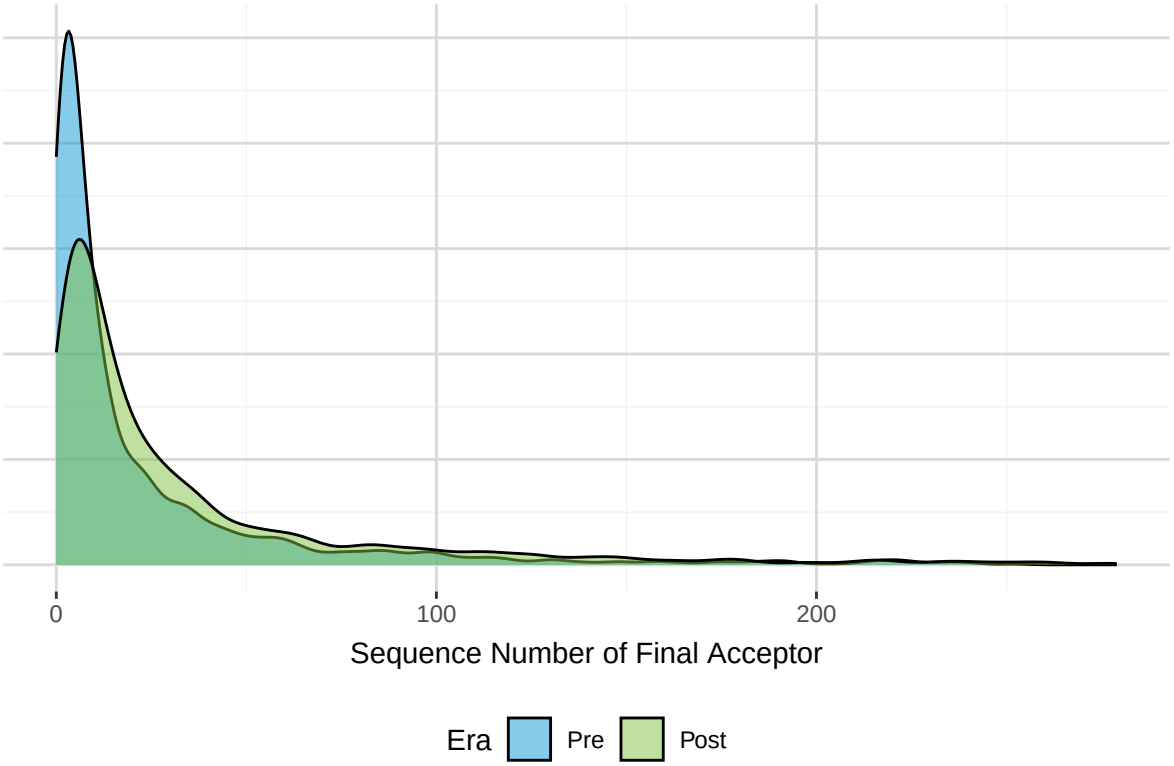
| Era | Month | N Lungs Recovered | N Lungs Transplanted | Non-Use Rate |
|---|---|---|---|---|
| LAS | 1/9/22 - 2/8/22 | 373 | 345 | 7.51% |
| | 2/9/22 - 3/8/22 | 437 | 393 | 10.07% |
| | 3/9/22 - 4/8/22 | 518 | 480 | 7.34% |
| | 4/9/22 - 5/8/22 | 421 | 384 | 8.79% |
| | 5/9/22 - 6/8/22 | 506 | 458 | 9.49% |
| | 6/9/22 - 7/8/22 | 444 | 404 | 9.01% |
| | 7/9/22 - 8/8/22 | 475 | 430 | 9.47% |
| | 8/9/22 - 9/8/22 | 450 | 405 | 10.00% |
| | 9/9/22 - 10/8/22 | 452 | 404 | 10.62% |
| | 10/9/22 - 11/8/22 | 525 | 488 | 7.05% |
| | 11/9/22 - 12/8/22 | 477 | 428 | 10.27% |
| | 12/9/22 - 1/8/23 | 421 | 381 | 9.50% |
| | 1/9/23 - 2/8/23 | 505 | 465 | 7.92% |
| | 2/9/23 - 3/8/23 | 469 | 434 | 7.46% |
| CAS | 3/9/23 - 4/8/23 | 501 | 450 | 10.18% |
| | 4/9/23 - 5/8/23 | 579 | 526 | 9.15% |
| | 5/9/23 - 6/8/23 | 565 | 533 | 5.66% |
| | 6/9/23 - 7/8/23 | 538 | 502 | 6.69% |
| | 7/9/23 - 8/8/23 | 565 | 510 | 9.73% |
| | 8/9/23 - 9/8/23 | 523 | 453 | 13.38% |

[a] Note that all months are defined from the 9th to the 8th; therefore, the last six months under LAS do not perfectly overlap with the defined pre policy era.

**Match Run Efficiency**

The median sequence number of the final acceptor increased from 8 in the pre era to 15 in the post era.

**Figure 76: Distribution of the Sequence Number of the Final Acceptor on Lung Match Run by Era**




View is restricted to the 99th percentile of sequence number (279). There were 32 instances where the sequence number of the final acceptor was greater than 279.

**Table 76: Distribution of the Sequence Number of the Final Acceptor on Lung Match Run by Era**

| Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|
| Pre | 1506 | 0 | 1 | 2.25 | 8 | 24.28 | 25 | 359 |
| Post | 1676 | 0 | 1 | 6.00 | 15 | 39.73 | 41 | 550 |

[a] Note there are more recorded final acceptors than transplants performed in each era. Being the final acceptor of an organ does not necessarily mean that the organ was ultimately transplanted.

In the post era, more programs received organ offers on a match run. The median number of unique programs offered up to the final acceptor increased from 4 to 10.

**Figure 77: Distribution of the Number of Unique Programs Offered Up To the Final Acceptor on Lung Match Run by Era**

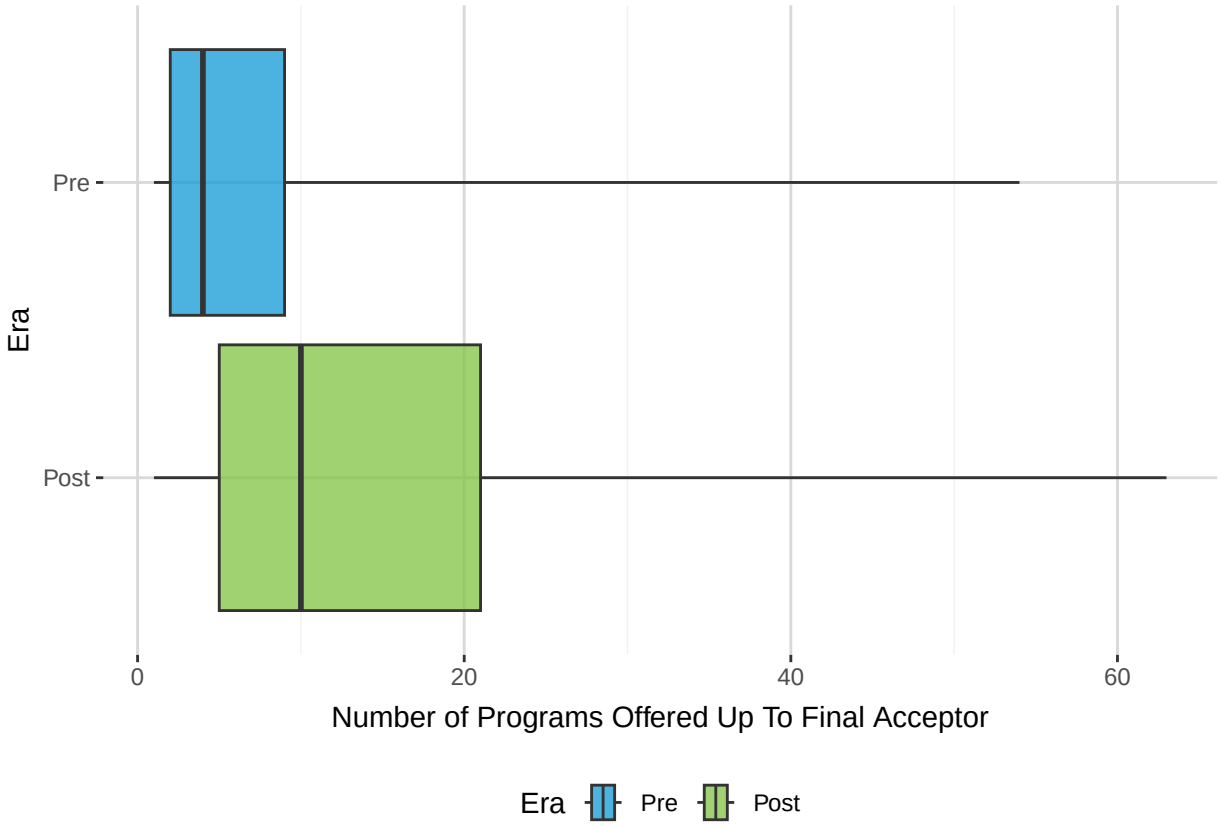



**Table 77: Distribution of the Number of Unique Programs Offered Up To the Final Acceptor on Lung Match Run by Era**

| Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|
| Pre | 1506 | 0 | 1 | 2 | 4 | 7.02 | 9 | 54 |
| Post | 1676 | 0 | 1 | 5 | 10 | 14.69 | 21 | 63 |

In the post era, more programs received their first organ offers after the final acceptance. The median number of programs that received their first organ offer after the sequence number of the final acceptor increased from 8 to 11.

**Figure 78: Distribution of the Number of Unique Programs Offered Only After the Final Acceptor on Lung Match Run by Era**

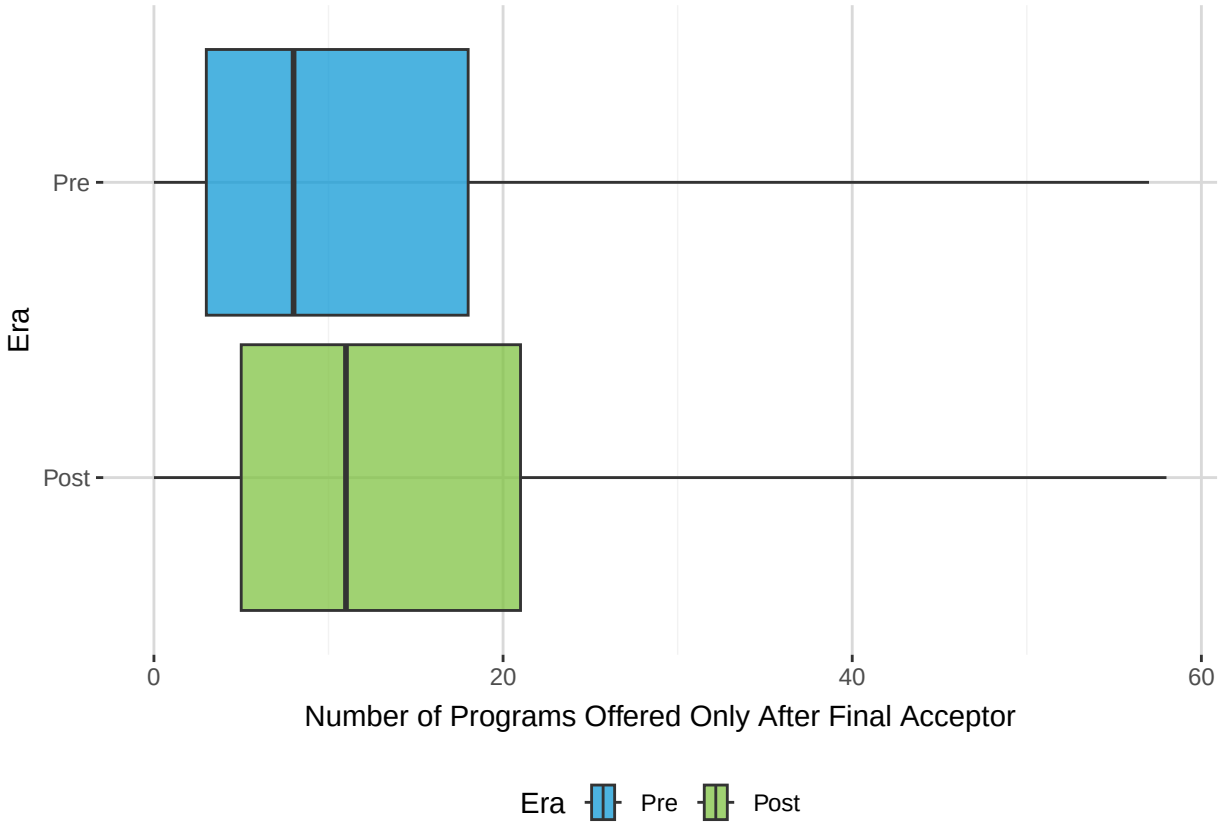
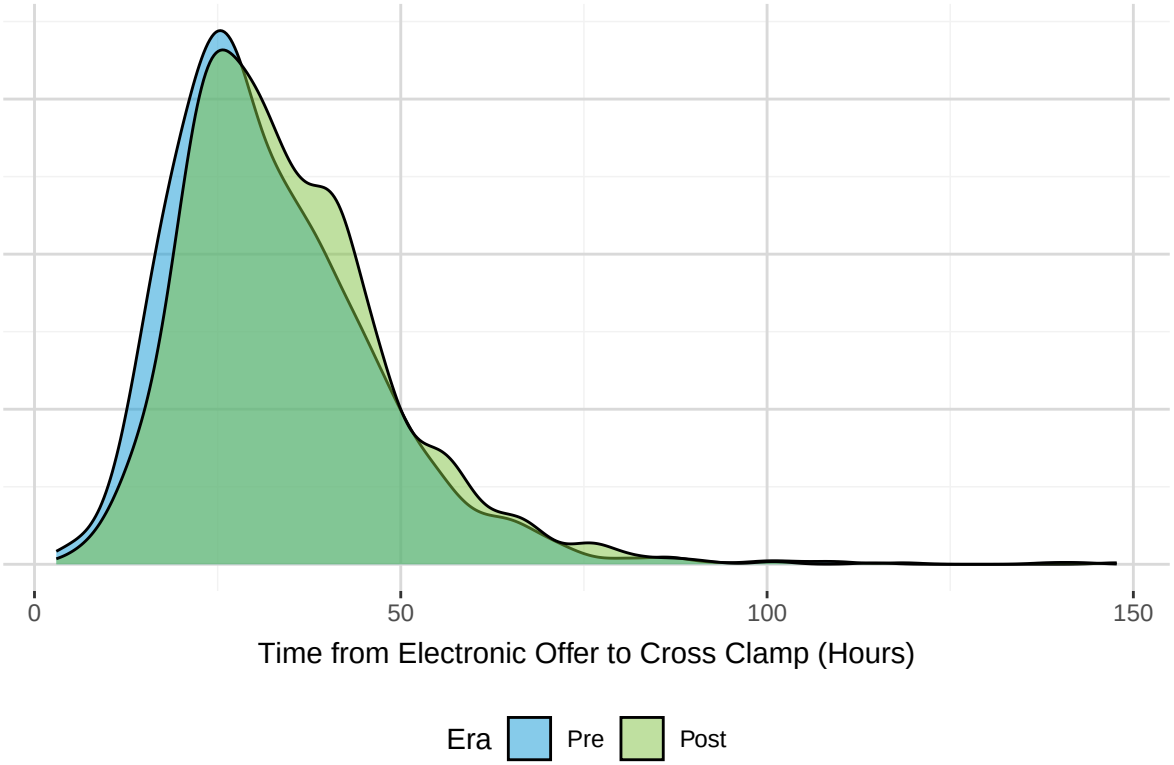



**Table 78: Distribution of the Number of Unique Programs Offered Only After the Final Acceptor on Lung Match Run by Era**

| Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|
| Pre | 1506 | 0 | 0 | 3 | 8 | 12.37 | 18 | 57 |
| Post | 1676 | 0 | 0 | 5 | 11 | 14.13 | 21 | 58 |

The distribution of time from first electronic offer to cross clamp for lungs recovered increased from a median of 29.66 hours in the pre era to 32.14 hours in the post era.

**Figure 79: Time from First Electronic Offer to Cross Clamp (Hours) for All Lungs Recovered by Era**




There were 5 values not yet reported at the time of this report's creation. This report was created before the 90 day data lag allowed by the OPTN had passed.

**Table 79: Time from First Electronic Offer to Cross Clamp (Hours) for All Lungs Recovered by Era**

| Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|
| Pre | 1559 | 1 | 2.98 | 22.67 | 29.66 | 32.53 | 39.92 | 147.73 |
| Post | 1740 | 4 | 3.42 | 24.42 | 32.14 | 34.56 | 41.88 | 143.01 |

[a] There were 5 values not yet reported at the time of this report's creation. This report was created before the 90 day data lag allowed by the OPTN had passed.

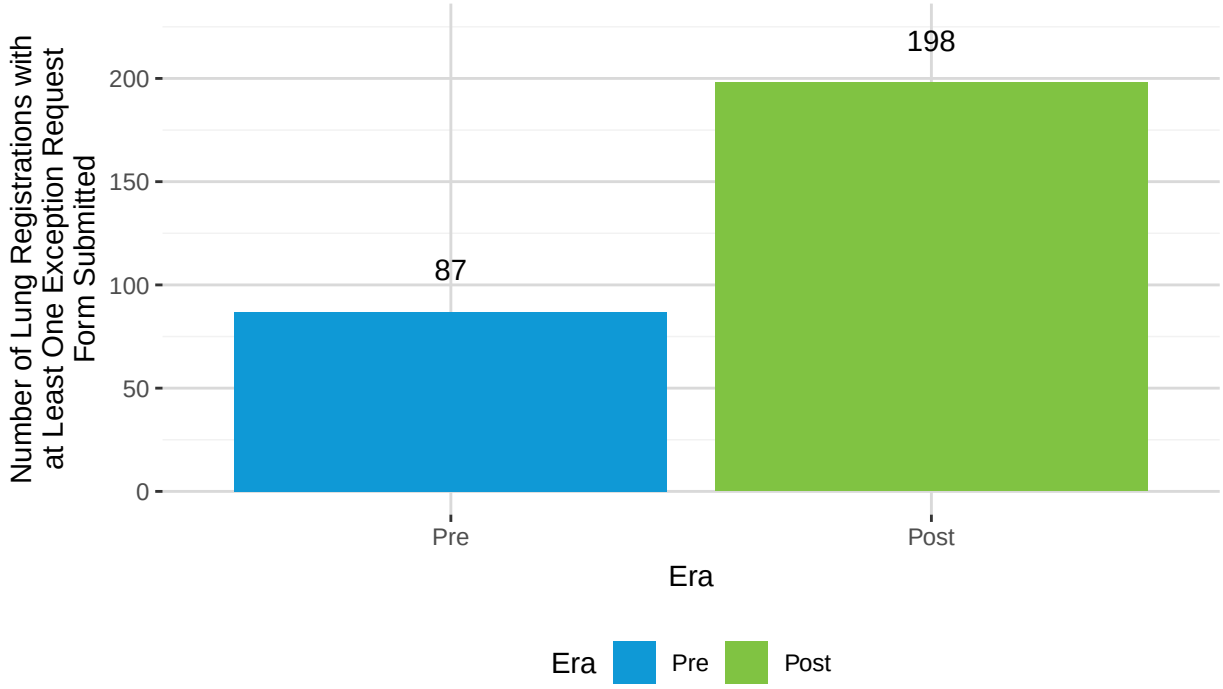
## Exceptions

The National Lung Review Board experienced a large increase in the quantity of exception forms submitted. This trend may be a bolus effect and may stabilize over time. The number of exceptions submitted will be included in future monitoring. Under LAS, a single registration could only have one exception request associated with it. Under continuous distribution (CD), a single registration can have multiple exception requests, provided the exception requests are under different goals.

Prior to implementation, programs could submit CAS exception requests through an interim process so that those requests, if approved, would be in place at the start of implementation. 26 requests were submitted through this process and were not included in the below charts. In the charts below, all LAS requests were submitted prior to lung CD implementation and all CAS requests were submitted after CD implementation.

The figure and table below show the number of registrations with exception requests submitted. Multiple exception requests can be submitted for a single registration. There were more registrations with submitted exception requests in the post policy era than in the pre policy era.

**Figure 80: Number of Lung Waiting List Registrations with at Least One Submitted Exception Request Form by Era**




This chart does not include the 26 exceptions that were submitted to the National Lung Review Board prior to the implementation of Lung Continuous Distribution on 3/9/23. Under LAS, a single registration could only have one exception but under CD, a single registration can have multiple exceptions. Results include exceptions for multiorgan candidates but exclude exceptions on heart/lung (HL) registrations. Exceptions submitted on the lung registration of a HL candidate are included.

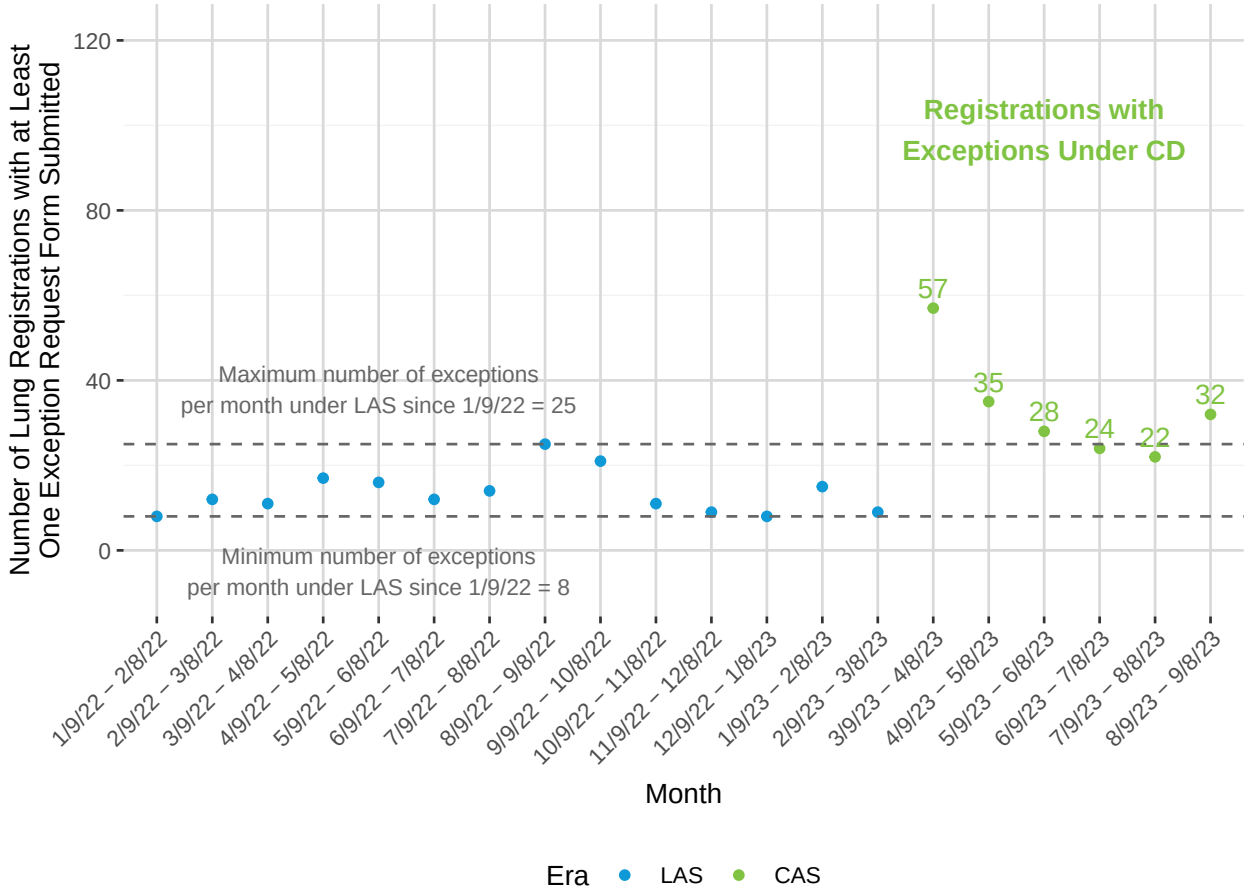
**Table 80: Number of Lung Waiting List Registrations with at Least One Submitted Exception Request Form by Era**

| Era | Number of Lung Waiting List Registrations with at Least One Submitted Exception Request |
|---|---|
| Pre | 87 |
| Post | 198 |

[a] This table does not include the 26 exceptions that were submitted to the National Lung Review Board prior to the implementation of Lung Continuous Distribution on 3/9/23.
[b] Under LAS, a single registration could only have one exception but under CD, a single registration can have multiple exceptions.
[c] Results include exceptions for multiorgan candidates but exclude exceptions on heart/lung (HL) registrations. Exceptions submitted on the lung registration of a HL candidate are included.

Since January 9th, 2022, the number of LAS exception requests submitted in a month ranged from 8 to 25. In four of the first six months of CD implementation the number of submitted exception requests exceeded this range.

**Figure 81: Number of Lung Registrations with at Least One Exception Request Form Submitted Per Month**




This chart does not include the 26 exceptions that were submitted to the National Lung Review Board prior to the implementation of Lung Continuous Distribution on 3/9/23. Under LAS, a single registration could only have one exception but under CD, a single registration can have multiple exceptions. Results include exceptions for multiorgan candidates but exclude exceptions on heart/lung (HL) registrations. Exceptions submitted on the lung registration of a HL candidate are included. Note that all months are defined from the 9th to the 8th; therefore, the last six months under LAS do not perfectly overlap with the defined pre policy era.

**Table 81: Number of Lung Registrations with at Least One Exception Request Form Submitted Per Month**

| Policy Era | Month | Number of LAS or CAS exceptions requests submitted |
|---|---|---|
| LAS | 1/9/22 - 2/8/22 | 8 |
| | 2/9/22 - 3/8/22 | 12 |
| | 3/9/22 - 4/8/22 | 11 |
| | 4/9/22 - 5/8/22 | 17 |
| | 5/9/22 - 6/8/22 | 16 |
| | 6/9/22 - 7/8/22 | 12 |
| | 7/9/22 - 8/8/22 | 14 |
| | 8/9/22 - 9/8/22 | 25 |
| | 9/9/22 - 10/8/22 | 21 |
| | 10/9/22 - 11/8/22 | 11 |
| | 11/9/22 - 12/8/22 | 9 |
| | 12/9/22 - 1/8/23 | 8 |
| | 1/9/23 - 2/8/23 | 15 |
| | 2/9/23 - 3/8/23 | 9 |
| CAS | 3/9/23 - 4/8/23 | 57 |
| | 4/9/23 - 5/8/23 | 35 |
| | 5/9/23 - 6/8/23 | 28 |
| | 6/9/23 - 7/8/23 | 24 |
| | 7/9/23 - 8/8/23 | 22 |
| | 8/9/23 - 9/8/23 | 32 |

[a] This table does not include the 26 exceptions that were submitted to the National Lung Review Board prior to the implementation of Lung Continuous Distribution on 3/9/23.
[b] Under LAS, a single registration could only have one exception but under CD, a single registration can have multiple exceptions.
[c] Results include exceptions for multiorgan candidates but exclude exceptions on heart/lung (HL) registrations. Exceptions submitted on the lung registration of a HL candidate are included.
[d] Note that all months are defined from the 9th to the 8th; therefore, the last six months under LAS do not perfectly overlap with the defined pre policy era.

The number of lung registrations with at least one exception request form submitted increased in all diagnosis groups.

**Figure 82: Number of Lung Registrations with at Least One Exception Request Form Submitted by Era and Diagnosis Group**

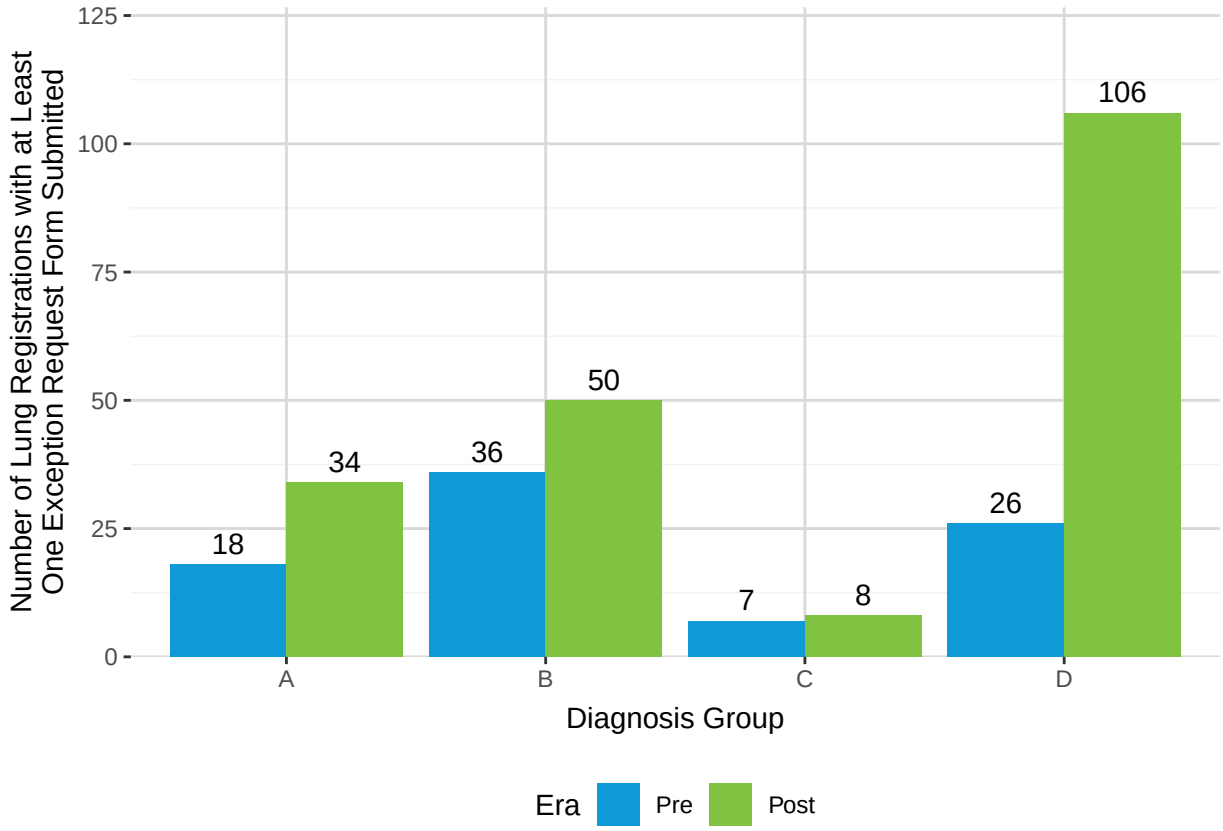



**Table 82: Number of Lung Registrations with at Least One Exception Request Form Submitted by Era and Diagnosis Group**

| Diagnosis Group | Pre | Post |
|---|---|---|
| A | 18 (20.7%) | 34 (17.2%) |
| B | 36 (41.4%) | 50 (25.3%) |
| C | 7 (8.0%) | 8 (4.0%) |
| D | 26 (29.9%) | 106 (53.5%) |
| Total | 87 (100.0%) | 198 (100.0%) |

The following figures and tables examine data at the exception form level.

Although more exception requests were submitted in the post implementation era, a greater proportion of these exception requests were denied.

**Figure 83: Number of Lung Exception Request Forms Submitted by Era and Exception Status**


This chart does not include the 26 exceptions that were submitted to the National Lung Review Board prior to the implementation of Lung Continuous Distribution on 3/9/23. Under LAS, a single registration could only have one exception but under CD, a single registration can have multiple exceptions. Results include exceptions for multiorgan candidates but exclude exceptions on heart/lung (HL) registrations. Exceptions submitted on the lung registration of a HL candidate are included.

**Table 83: Number of Lung Exception Request Forms Submitted by Era and Exception Status**

| Exception Status | Pre | Post |
|---|---|---|
| Exception Approved | 76 (82.6%) | 214 (67.5%) |
| Exception Denied | 16 (17.4%) | 103 (32.5%) |
| Total | 92 (100.0%) | 317 (100.0%) |

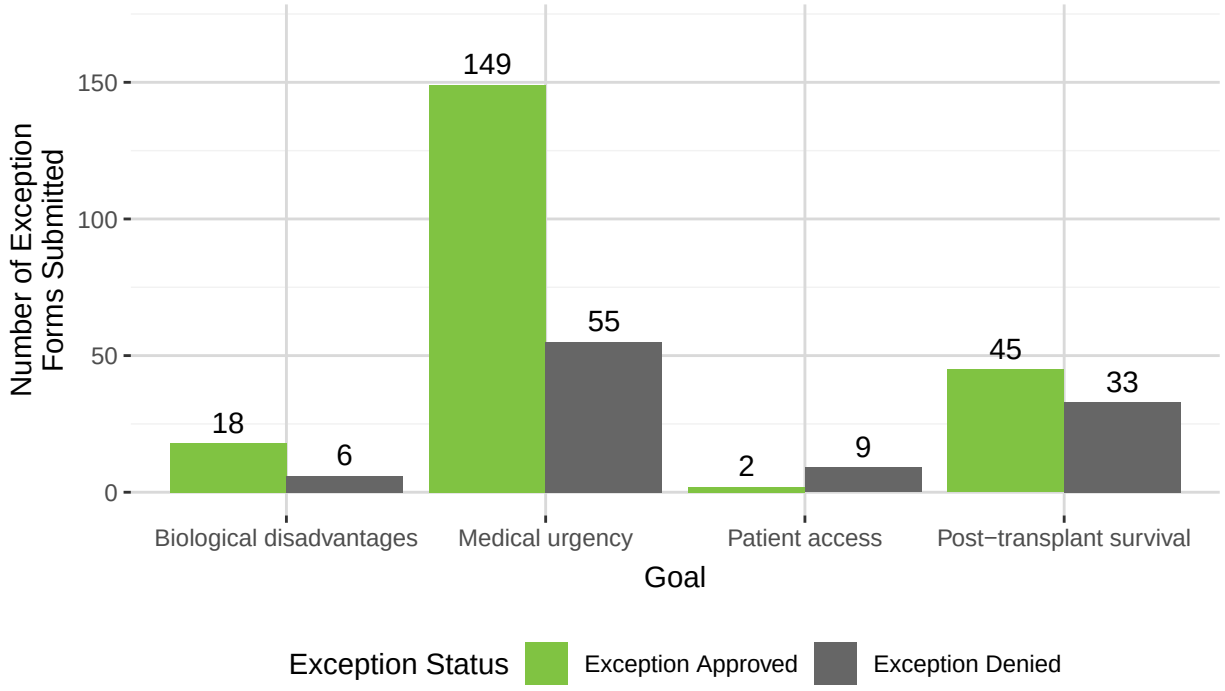
[a] This table does not include the 26 exceptions that were submitted to the National Lung Review Board prior to the implementation of Lung Continuous Distribution on 3/9/23.

[b] Under LAS, a single registration could only have one exception but under CD, a single registration can have multiple exceptions.

[c] Results include exceptions for multiorgan candidates but exclude exceptions on heart/lung (HL) registrations. Exceptions submitted on the lung registration of a HL candidate are included.

The majority of exception requests were submitted for the medical urgency goal.

**Figure 84: Number of Lung CAS Exception Request Forms Submitted by Exception Status and Goal in the Post Policy Era**




This chart does not include the 26 exceptions that were submitted to the National Lung Review Board prior to the implementation of Lung Continuous Distribution on 3/9/23. Under LAS, a single registration could only have one exception but under CD, a single registration can have multiple exceptions. Results include exceptions for multiorgan candidates but exclude exceptions on heart/lung (HL) registrations. Exceptions submitted on the lung registration of a HL candidate are included.

**Table 84: Number of Lung CAS Exception Request Forms Submitted by Exception Status and Goal in the Post Policy Era**

| Goal | Exception Approved | Exception Denied |
|---|---|---|
| Biological disadvantages | 18 (8.4%) | 6 (5.8%) |
| Medical urgency | 149 (69.6%) | 55 (53.4%) |
| Patient access | 2 (0.9%) | 9 (8.7%) |
| Post-transplant survival | 45 (21.0%) | 33 (32.0%) |
| Total | 214 (100.0%) | 103 (100.0%) |

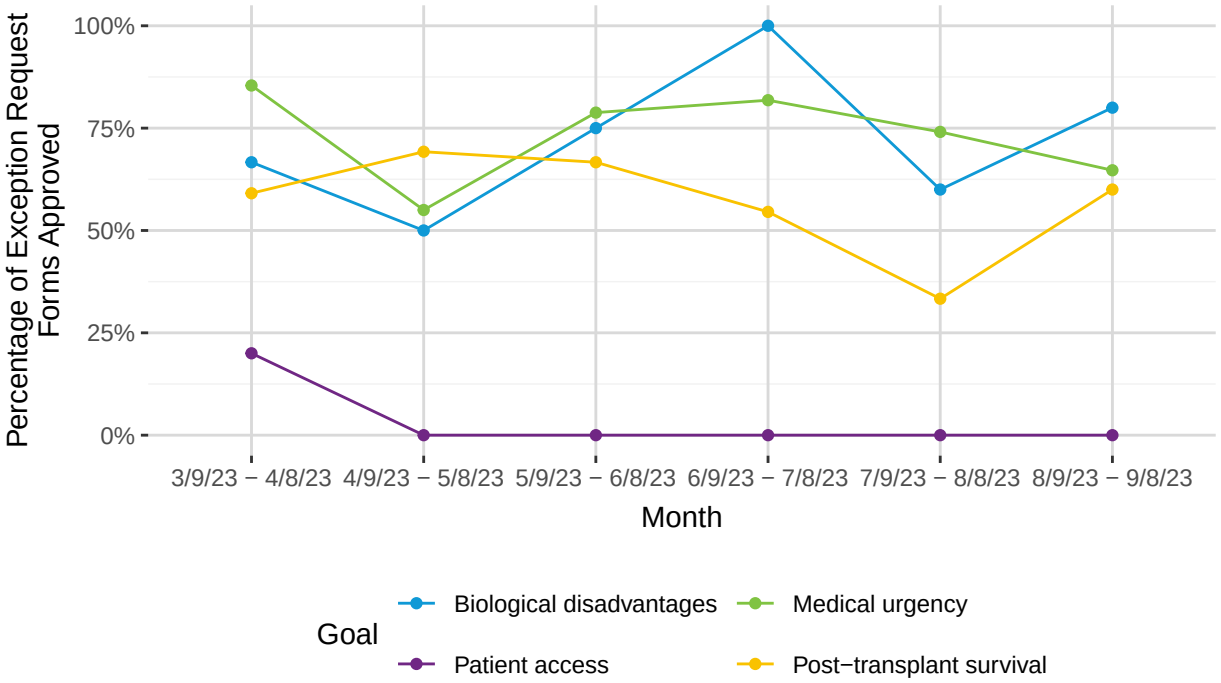
[a] This table does not include the 26 exceptions that were submitted to the National Lung Review Board prior to the implementation of Lung Continuous Distribution on 3/9/23.

[b] Under LAS, a single registration could only have one exception but under CD, a single registration can have multiple exceptions.

[c] Results include exceptions for multiorgan candidates but exclude exceptions on heart/lung (HL) registrations. Exceptions submitted on the lung registration of a HL candidate are included.

Approval rates for CAS exception forms submitted under the biological disadvantage, medical urgency, and post-transplant survival goals remained relatively stable across months. However, there were no CAS exception forms approved under the patient access goal after the first month of Continuous Distribution.

**Figure 85: Percentage of CAS Exception Request Forms Approved by Month of Submission and Goal**




This chart does not include the 26 exceptions that were submitted to the National Lung Review Board prior to the implementation of Lung Continuous Distribution on 3/9/23. Under LAS, a single registration could only have one exception but under CD, a single registration can have multiple exceptions. Results include exceptions for multiorgan candidates but exclude exceptions on heart/lung (HL) registrations. Exceptions submitted on the lung registration of a HL candidate are included.

**Table 85: Percentage of CAS Exception Request Forms Approved by Month of Submission and Goal**

| Goal | Month | Exception Approved | Exception Denied | Total |
|---|---|---|---|---|
| Biological disadvantages | 3/9/23 - 4/8/23 | 2 (66.7%) | 1 (33.3%) | 3 (100.0%) |
| | 4/9/23 - 5/8/23 | 1 (50.0%) | 1 (50.0%) | 2 (100.0%) |
| | 5/9/23 - 6/8/23 | 3 (75.0%) | 1 (25.0%) | 4 (100.0%) |
| | 6/9/23 - 7/8/23 | 5 (100.0%) | 0 (0.0%) | 5 (100.0%) |
| | 7/9/23 - 8/8/23 | 3 (60.0%) | 2 (40.0%) | 5 (100.0%) |
| | 8/9/23 - 9/8/23 | 4 (80.0%) | 1 (20.0%) | 5 (100.0%) |
| Medical urgency | 3/9/23 - 4/8/23 | 41 (85.4%) | 7 (14.6%) | 48 (100.0%) |
| | 4/9/23 - 5/8/23 | 22 (55.0%) | 18 (45.0%) | 40 (100.0%) |
| | 5/9/23 - 6/8/23 | 26 (78.8%) | 7 (21.2%) | 33 (100.0%) |
| | 6/9/23 - 7/8/23 | 18 (81.8%) | 4 (18.2%) | 22 (100.0%) |
| | 7/9/23 - 8/8/23 | 20 (74.1%) | 7 (25.9%) | 27 (100.0%) |
| | 8/9/23 - 9/8/23 | 22 (64.7%) | 12 (35.3%) | 34 (100.0%) |
| Patient access | 3/9/23 - 4/8/23 | 2 (20.0%) | 8 (80.0%) | 10 (100.0%) |
| | 4/9/23 - 5/8/23 | 0 (0.0%) | 1 (100.0%) | 1 (100.0%) |
| | 5/9/23 - 6/8/23 | 0 (-) | 0 (-) | 0 (100.0%) |
| | 6/9/23 - 7/8/23 | 0 (-) | 0 (-) | 0 (100.0%) |
| | 7/9/23 - 8/8/23 | 0 (-) | 0 (-) | 0 (100.0%) |
| | 8/9/23 - 9/8/23 | 0 (-) | 0 (-) | 0 (100.0%) |
| Post-transplant survival | 3/9/23 - 4/8/23 | 13 (59.1%) | 9 (40.9%) | 22 (100.0%) |
| | 4/9/23 - 5/8/23 | 9 (69.2%) | 4 (30.8%) | 13 (100.0%) |
| | 5/9/23 - 6/8/23 | 2 (66.7%) | 1 (33.3%) | 3 (100.0%) |
| | 6/9/23 - 7/8/23 | 6 (54.5%) | 5 (45.5%) | 11 (100.0%) |
| | 7/9/23 - 8/8/23 | 3 (33.3%) | 6 (66.7%) | 9 (100.0%) |
| | 8/9/23 - 9/8/23 | 12 (60.0%) | 8 (40.0%) | 20 (100.0%) |

[a] This table does not include the 26 exceptions that were submitted to the National Lung Review Board prior to the implementation of Lung Continuous Distribution on 3/9/23.

[b] Under LAS, a single registration could only have one exception but under CD, a single registration can have multiple exceptions.

[c] Results include exceptions for multiorgan candidates but exclude exceptions on heart/lung (HL) registrations. Exceptions submitted on the lung registration of a HL candidate are included.

A greater proportion of candidates in the post era with approved exception requests were removed from the waiting list for death or too sick to transplant compared to the pre era.

**Figure 86: Number of Waiting List Candidates Removed for Death or Too Sick by Era and Exception Status**

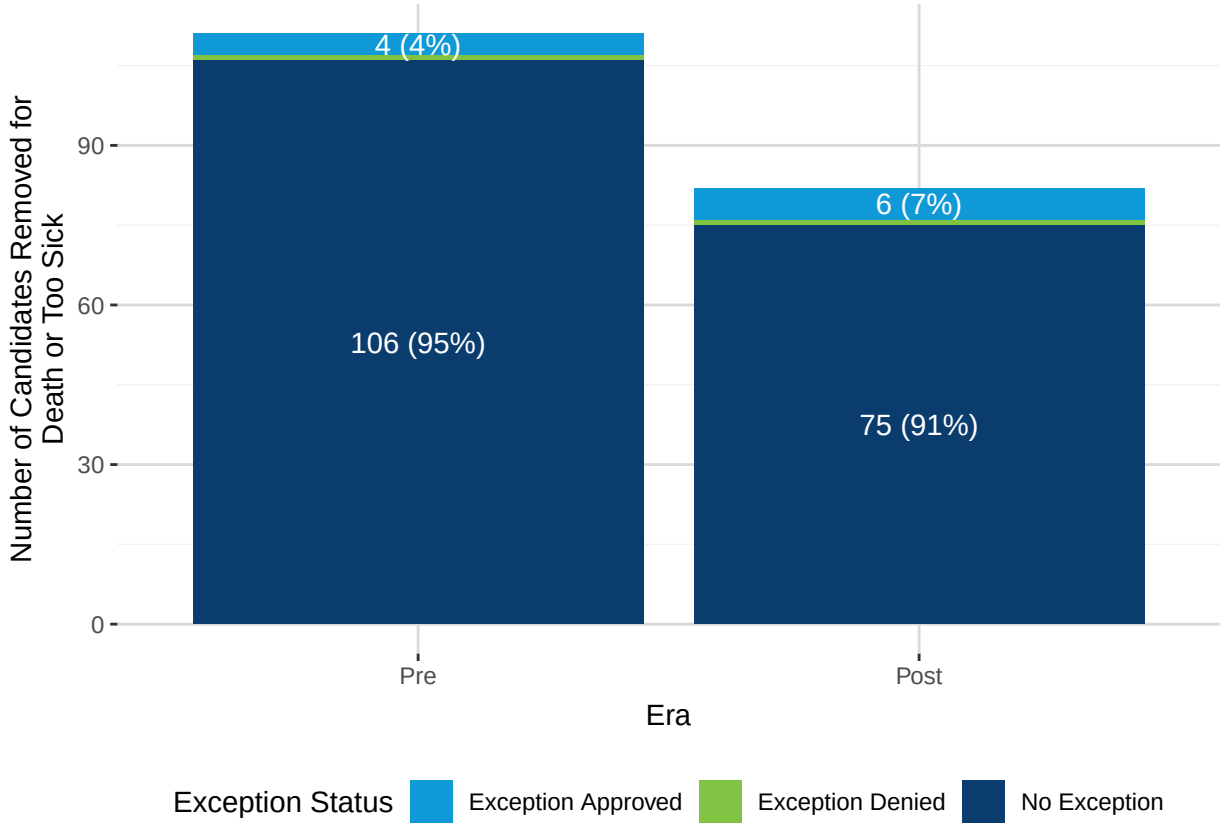
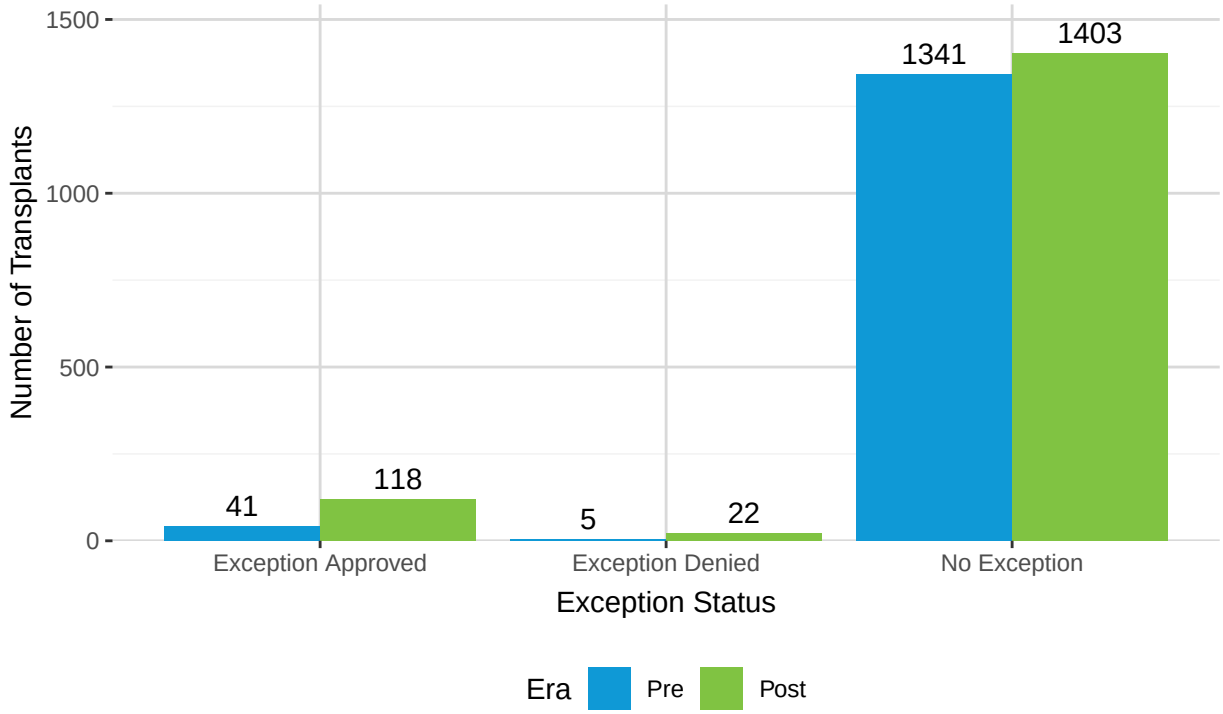



**Table 86: Number of Waiting List Candidates Removed for Death or Too Sick by Era and Exception Status**

| Exception Status | Pre | Post |
|---|---|---|
| Exception Approved | 4 (3.6%) | 6 (7.3%) |
| Exception Denied | 1 (0.9%) | 1 (1.2%) |
| No Exception | 106 (95.5%) | 75 (91.5%) |
| Total | 111 (100.0%) | 82 (100.0%) |

In the post era, a greater number of individuals who received a transplant had an approved exception request compared to the pre era.

**Figure 87: Number of Lung Transplants by Era and Exception Status**




Recipients may have multiple exceptions with different decisions. If a candidate was transplanted with at least one approved exception, then that transplant appears in the 'Exception Approved' column, even if that candidate had additional exception requests that were denied.

**Table 87: Number of Lung Transplants by Era and Exception Status**

| Exception Status | Pre | Post |
|---|---|---|
| Exception Approved | 41 (3.0%) | 118 (7.6%) |
| Exception Denied | 5 (0.4%) | 22 (1.4%) |
| No Exception | 1,341 (96.7%) | 1,403 (90.9%) |
| Total | 1,387 (100.0%) | 1,543 (100.0%) |

In the post era, across all diagnosis groups, a greater proportion of individuals who received a transplant had an approved exception request compared to the pre era.

**Figure 88: Number of Lung Transplants by Era, Exception Status, and Diagnosis Group**

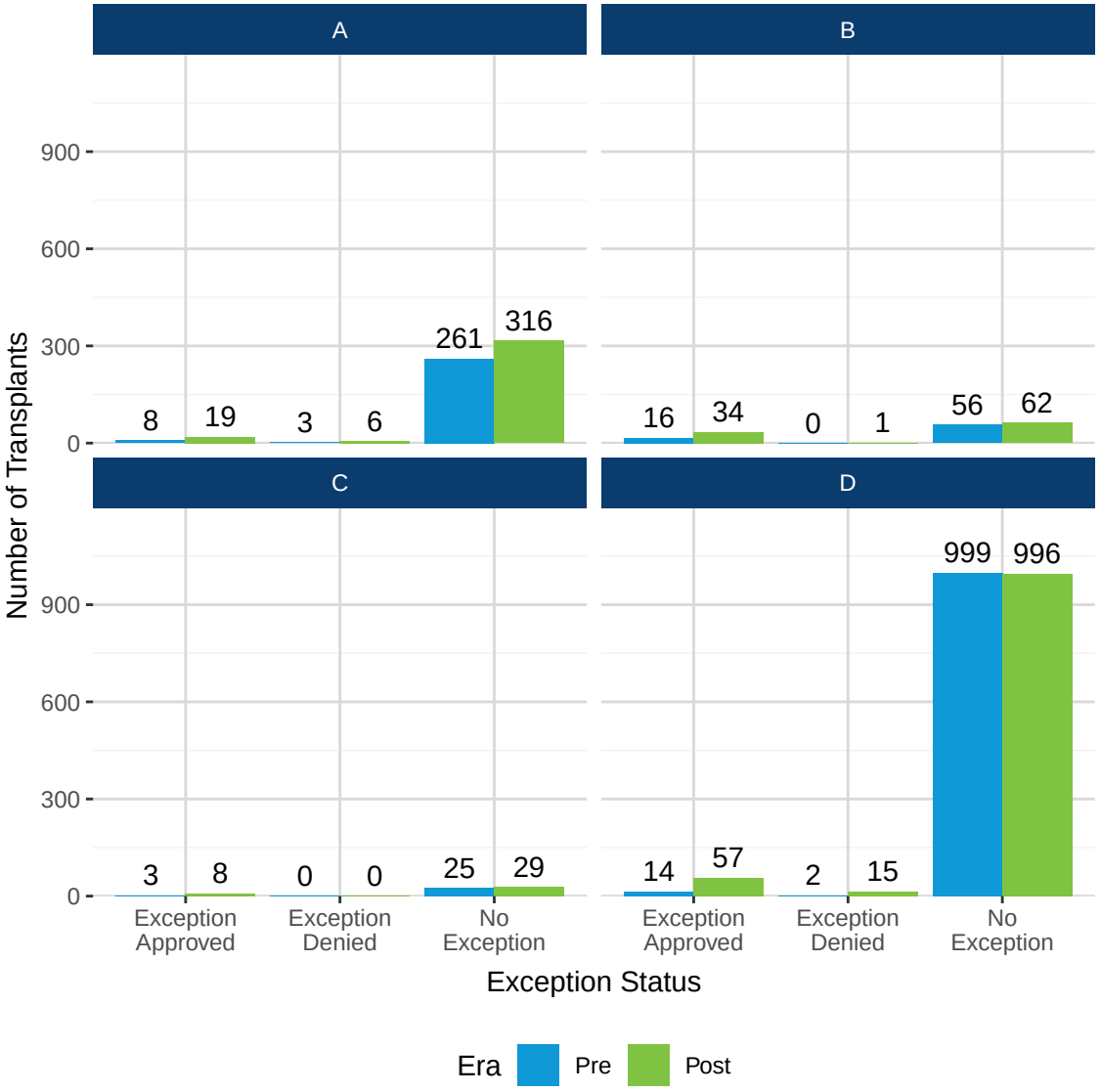



**Table 88: Number of Lung Transplants by Era, Exception Status, and Diagnosis Group**

| | | Diagnosis Group | | | |
|---|---|---|---|---|---|
| Era | Exception Status | A | B | C | D |
| Pre | Exception Approved | 8 (2.9%) | 16 (22.2%) | 3 (10.7%) | 14 (1.4%) |
| | Exception Denied | 3 (1.1%) | 0 (0.0%) | 0 (0.0%) | 2 (0.2%) |
| | No Exception | 261 (96.0%) | 56 (77.8%) | 25 (89.3%) | 999 (98.4%) |
| | Total | 272 (100.0%) | 72 (100.0%) | 28 (100.0%) | 1,015 (100.0%) |
| Post | Exception Approved | 19 (5.6%) | 34 (35.1%) | 8 (21.6%) | 57 (5.3%) |
| | Exception Denied | 6 (1.8%) | 1 (1.0%) | 0 (0.0%) | 15 (1.4%) |
| | No Exception | 316 (92.7%) | 62 (63.9%) | 29 (78.4%) | 996 (93.3%) |
| | Total | 341 (100.0%) | 97 (100.0%) | 37 (100.0%) | 1,068 (100.0%) |

## Multiorgan

The sample sizes for lung-multiorgan candidates and recipients are currently too small to definitively determine implications of the policy change; however, below we describe trends we are observing so far.

There were slightly more lung/liver candidates and slightly fewer candidates of all other multiorgan types ever waiting in the post policy era.

**Figure 89: Number of Lung-Multiorgan Candidates Ever Waiting by Era and Multiorgan Type**

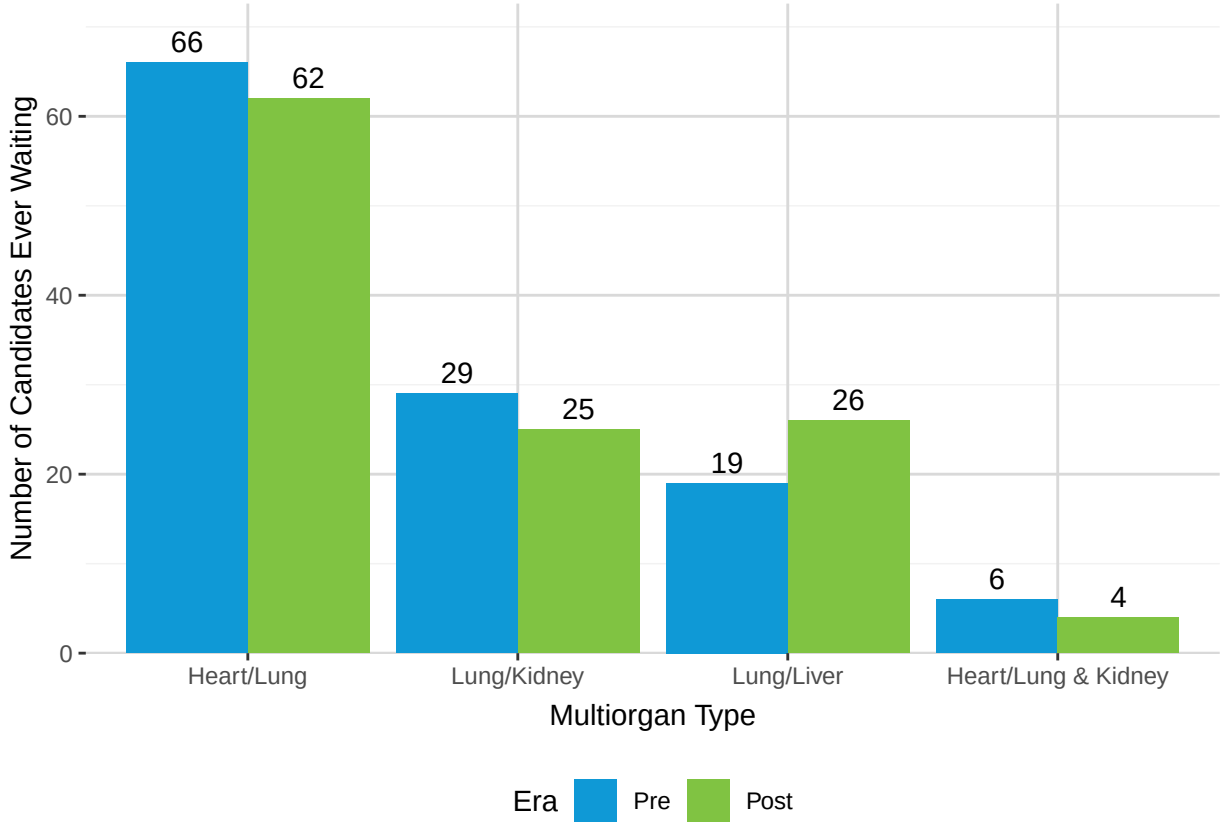



**Table 89: Number of Lung-Multiorgan Candidates Ever Waiting by Era and Multiorgan Type**

| Multiorgan Type | Pre | Post |
|---|---|---|
| Heart/Lung | 66 (55.0%) | 62 (53.0%) |
| Lung/Kidney | 29 (24.2%) | 25 (21.4%) |
| Lung/Liver | 19 (15.8%) | 26 (22.2%) |
| Heart/Lung & Kidney | 6 (5.0%) | 4 (3.4%) |
| Total | 120 (100.0%) | 117 (100.0%) |

There were more lung/liver multorgan candidates added to the waiting list in the post era.

**Figure 90: Number of Lung-Multiorgan Registrations Added to the Waiting List by Era and Multiorgan Type**

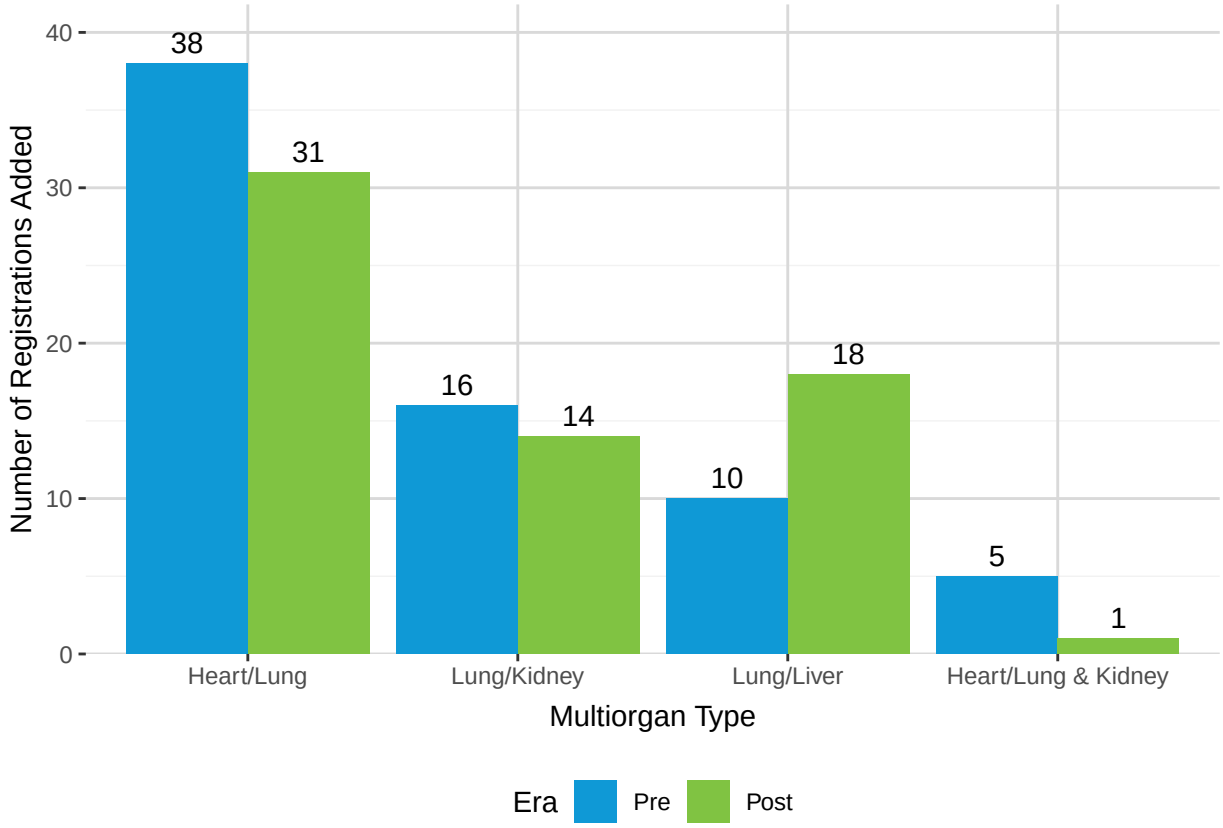



**Table 90: Number of Lung-Multiorgan Registrations Added to the Waiting List by Era and Multiorgan Type**

| Multiorgan Type | Pre | Post |
|---|---|---|
| Heart/Lung | 38 (55.1%) | 31 (48.4%) |
| Lung/Kidney | 16 (23.2%) | 14 (21.9%) |
| Lung/Liver | 10 (14.5%) | 18 (28.1%) |
| Heart/Lung & Kidney | 5 (7.2%) | 1 (1.6%) |
| Total | 69 (100.0%) | 64 (100.0%) |

The number of multiorgan candidates removed from the waiting list for death or too sick was too small to draw definitive conclusions on trends by organ type.

**Figure 91: Number of Lung-Multiorgan Candidates Removed from the Waiting List for Death or Too Sick by Era and Multiorgan Type**

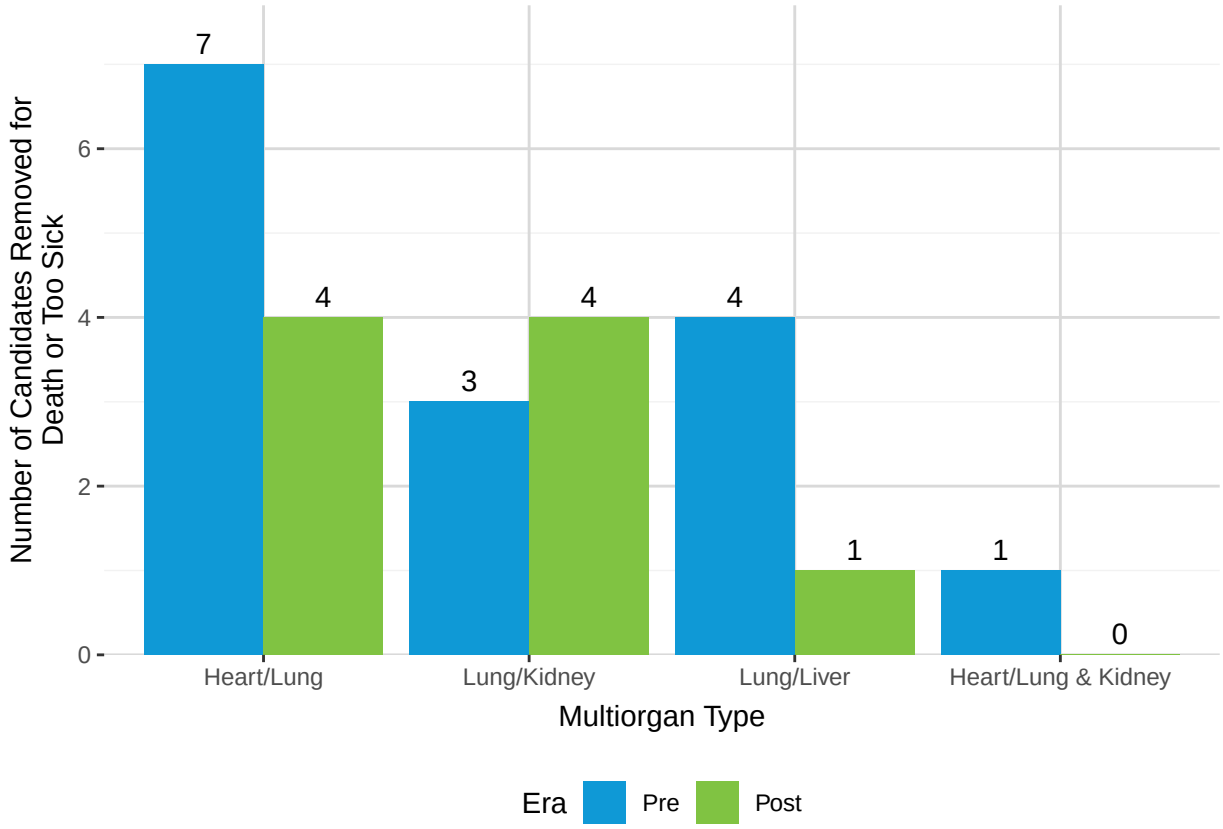



**Table 91: Number of Lung-Multiorgan Candidates Removed from the Waiting List for Death or Too Sick by Era and Multiorgan Type**

| Multiorgan Type | Pre | Post |
|---|---|---|
| Heart/Lung | 7 (46.7%) | 4 (44.4%) |
| Lung/Kidney | 3 (20.0%) | 4 (44.4%) |
| Lung/Liver | 4 (26.7%) | 1 (11.1%) |
| Heart/Lung & Kidney | 1 (6.7%) | 0 (0.0%) |
| Total | 15 (100.0%) | 9 (100.0%) |

In the post-policy era, the number of lung/liver transplants increased (from 6 to 16). The occurrence of other multiorgan transplants decreased slightly in the post era.

**Figure 92: Number of Lung-Multiorgan Transplants by Era and Multiorgan Type**

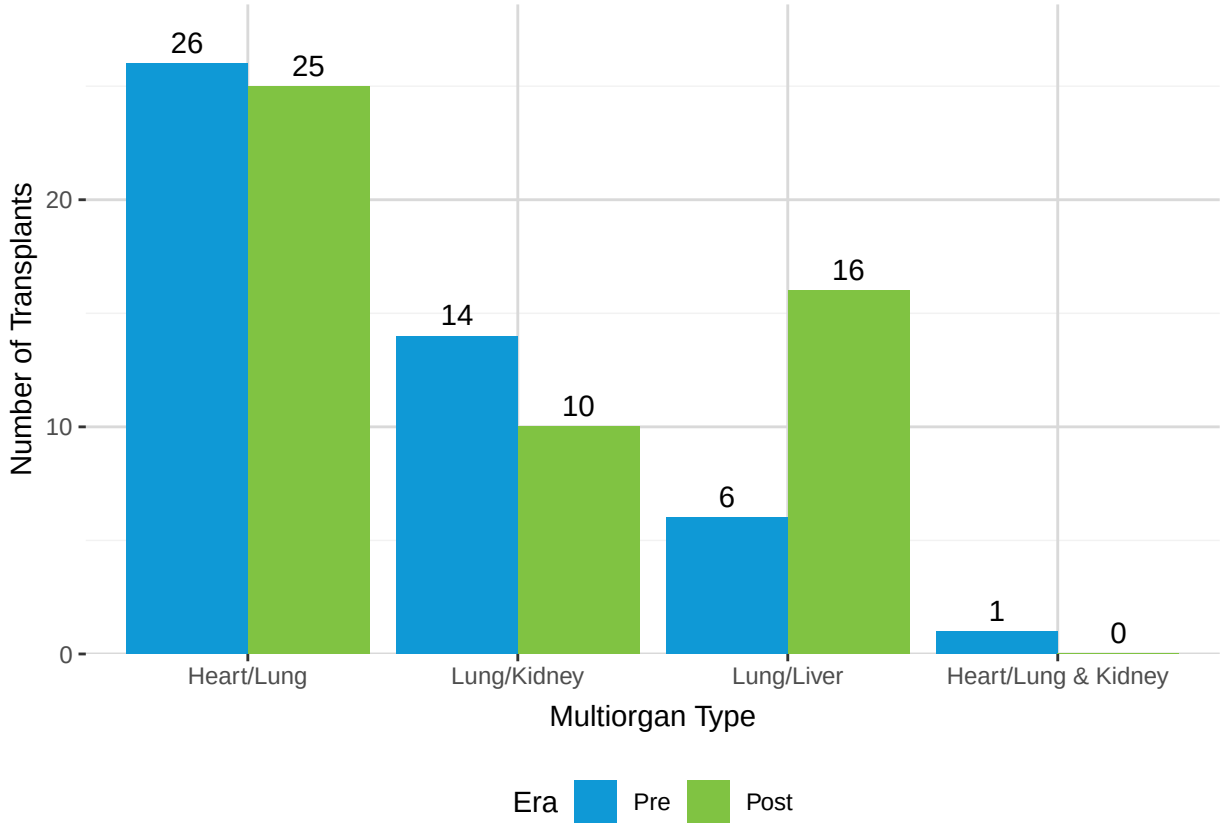
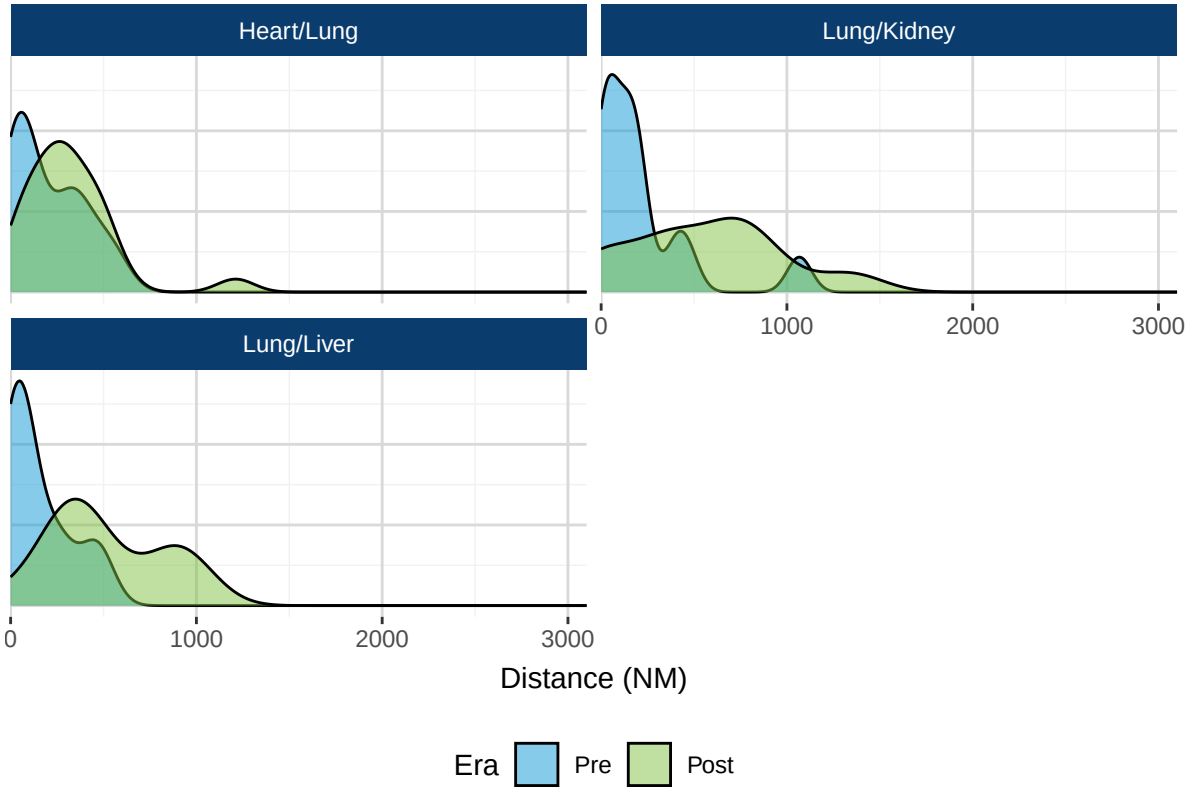



**Table 92: Number of Lung-Multiorgan Transplants by Era and Multiorgan Type**

| Multiorgan Type | Pre | Post |
|---|---|---|
| Heart/Lung | 26 (55.3%) | 25 (49.0%) |
| Lung/Kidney | 14 (29.8%) | 10 (19.6%) |
| Lung/Liver | 6 (12.8%) | 16 (31.4%) |
| Heart/Lung & Kidney | 1 (2.1%) | 0 (0.0%) |
| Total | 47 (100.0%) | 51 (100.0%) |

Compared to the pre era, median distance increased for all multiorgan types in the post era.

**Figure 93: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Multiorgan Type**




Heart/Lung & Kidney transplants were excluded from this analysis due to small sample sizes.

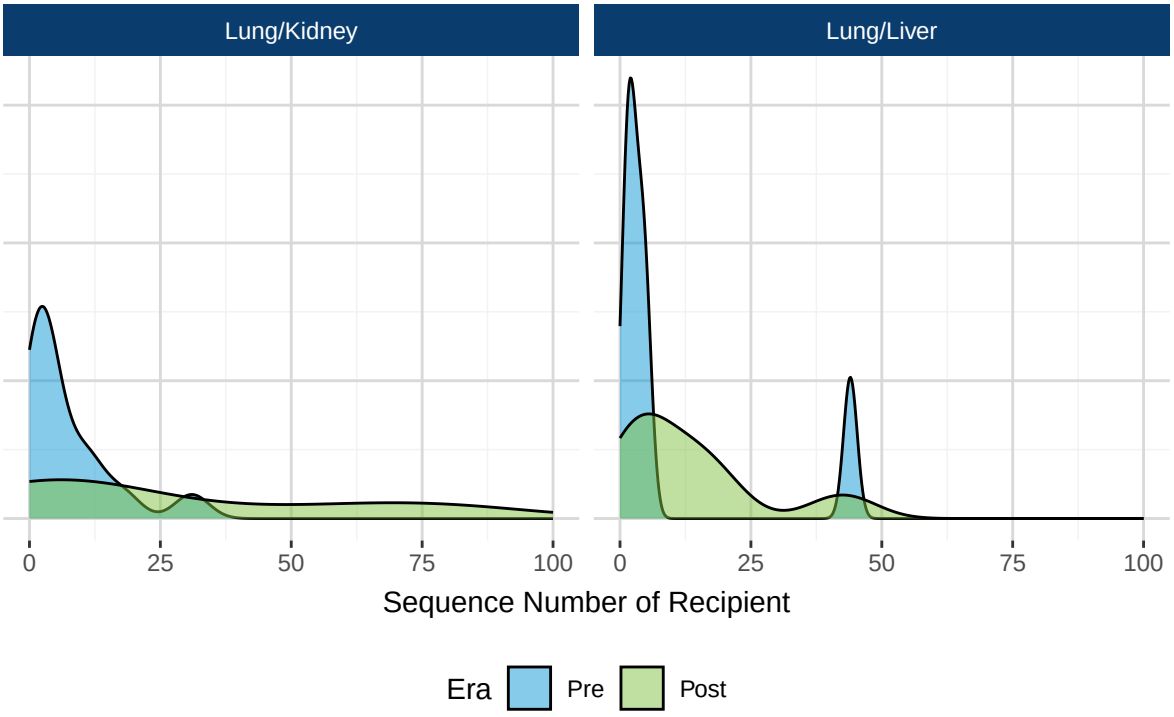
**Table 93: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Multiorgan Type**

| Multiorgan Type | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| Heart/Lung | Pre | 26 | 0 | 2 | 35.75 | 144.5 | 204.12 | 351.00 | 589 |
| | Post | 25 | 0 | 10 | 168.00 | 280.0 | 314.96 | 449.00 | 1211 |
| Lung/Kidney | Pre | 14 | 0 | 0 | 36.75 | 148.5 | 213.86 | 202.25 | 1067 |
| | Post | 10 | 0 | 0 | 322.00 | 586.5 | 559.70 | 738.25 | 1341 |
| Lung/Liver | Pre | 6 | 0 | 3 | 26.25 | 80.0 | 149.33 | 215.50 | 464 |
| | Post | 16 | 0 | 6 | 298.25 | 405.0 | 514.25 | 826.50 | 1039 |
| Total | Pre | 46 | 0 | 0 | 28.25 | 128.5 | 199.93 | 327.75 | 1067 |
| | Post | 51 | 0 | 0 | 225.50 | 366.0 | 425.47 | 543.50 | 1341 |

[a] Heart/Lung & Kidney transplants were excluded from this analysis due to small sample sizes.

The median sequence number increased for both lung/kidney and lung/liver recipients. Heart/lungs are pulled by the heart match run and were therefore excluded from this analysis.

**Figure 94: Distribution of the Sequence Number of Multiorgan Recipients on the Lung Match Run by Era**




View is restricted to sequence number 100. There was one instance where the sequence number for a lung/kidney recipient in the post era was greater than 100. In addition, one lung/liver in the post era was pulled by the liver match run and was therefore excluded from this figure.

**Table 94: Distribution of the Sequence Number of Multiorgan Recipients on the Lung Match Run by Era**

| Multiorgan Type | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| Lung/Kidney | Pre | 14 | 0 | 1 | 2 | 3 | 7.14 | 10.25 | 31 |
| | Post | 10 | 0 | 1 | 3 | 11 | 78.50 | 67.00 | 550 |
| Lung/Liver | Pre | 6 | 0 | 1 | 2 | 3 | 9.67 | 4.75 | 44 |
| | Post | 16 | 1 | 1 | 3 | 9 | 13.13 | 17.50 | 45 |

[a] Heart/Lung and Heart/Lung & Kidney transplants are excluded from this analysis because they are pulled by the heart match run. In addition, one lung/liver transplant was excluded because it was pulled by the liver match run.

# Appendix

## Age

The number of candidates ever waiting increased for candidates over 50 years old.

**Figure 95: Number of Candidates Ever Waiting by Era and Age at Listing**

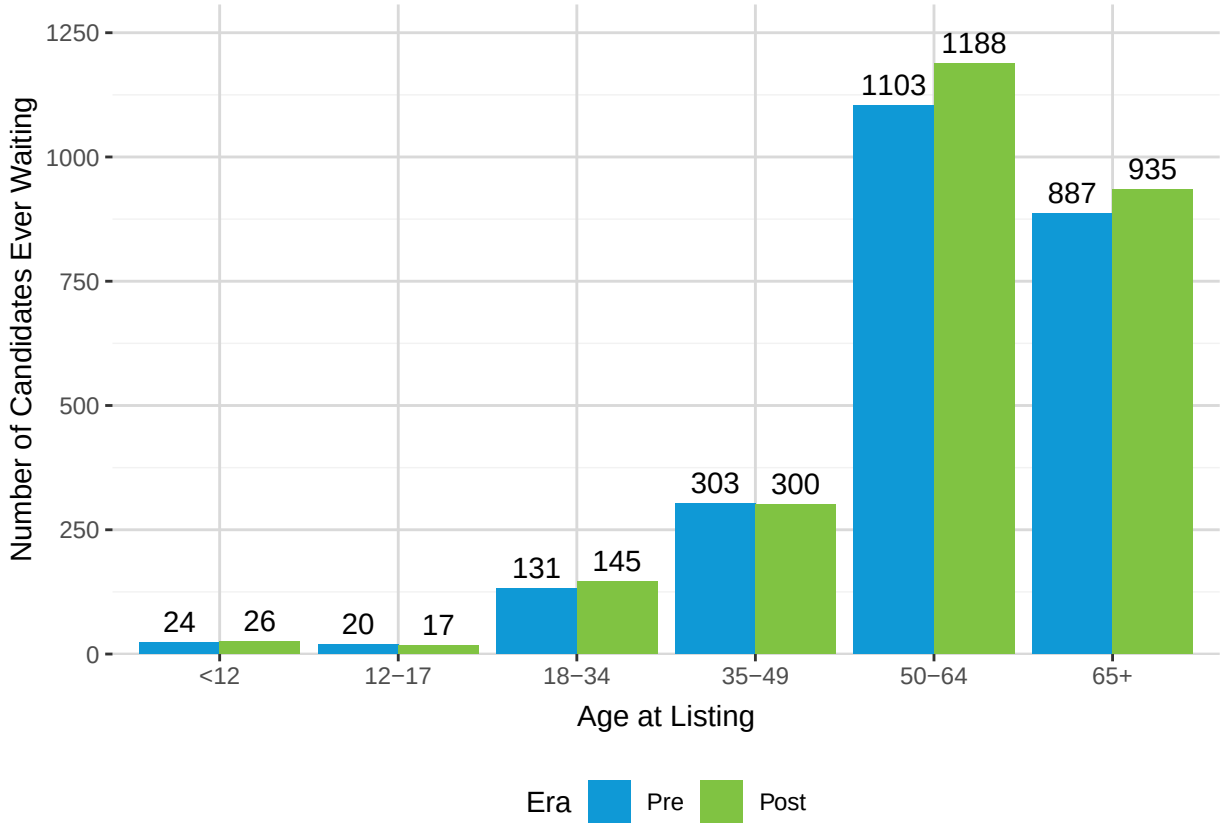



**Table 95: Number of Candidates Ever Waiting by Era and Age at Listing**

| Age at Listing | Pre | Post |
|---|---|---|
| <12 | 24 (1.0%) | 26 (1.0%) |
| 12-17 | 20 (0.8%) | 17 (0.7%) |
| 18-34 | 131 (5.3%) | 145 (5.6%) |
| 35-49 | 303 (12.3%) | 300 (11.5%) |
| 50-64 | 1,103 (44.7%) | 1,188 (45.5%) |
| 65+ | 887 (35.9%) | 935 (35.8%) |
| Total | 2,468 (100.0%) | 2,611 (100.0%) |

The number of registrations added to the waiting list increased for all adult age groups in the post policy era.

**Figure 96: Number of Registrations Added to the Waiting List by Era and Age at Listing**

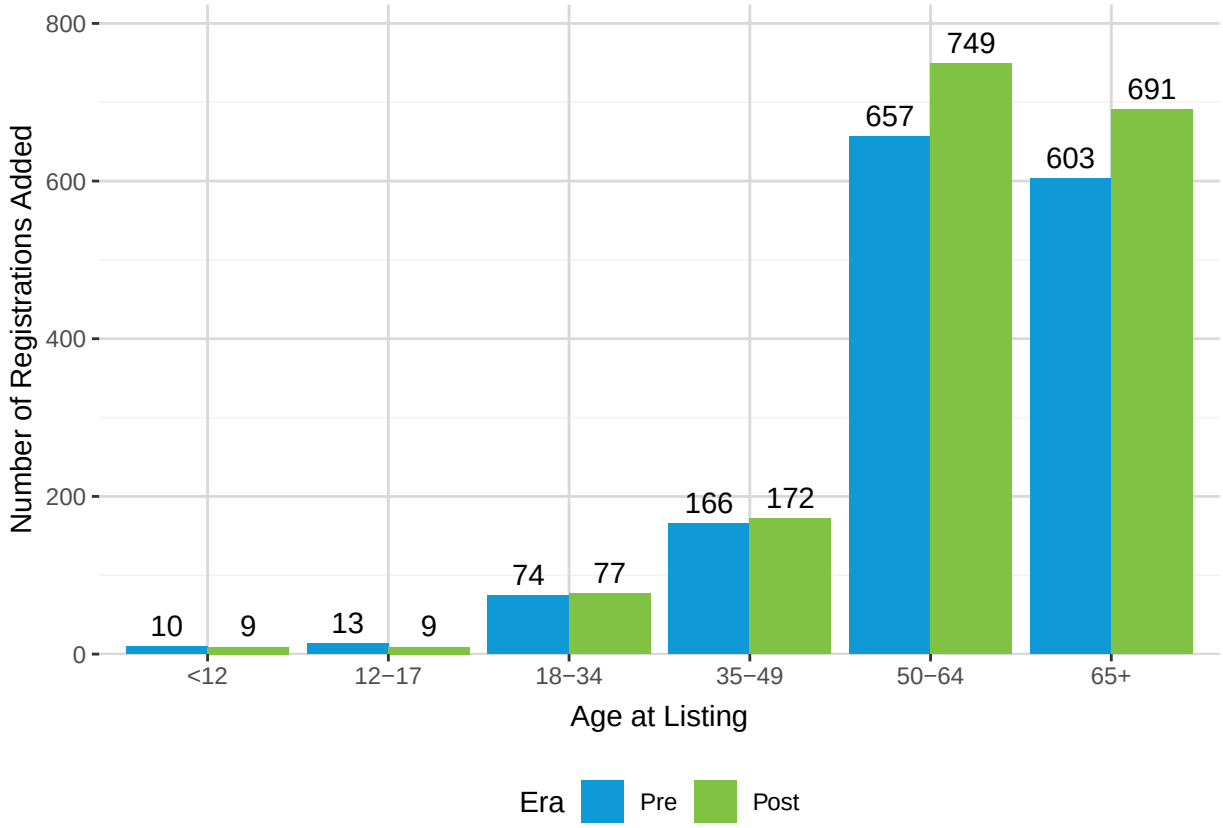



**Table 96: Number of Registrations Added to the Waiting List by Era and Age at Listing**

| Age at Listing | Pre | Post |
|---|---|---|
| <12 | 10 (0.7%) | 9 (0.5%) |
| 12-17 | 13 (0.9%) | 9 (0.5%) |
| 18-34 | 74 (4.9%) | 77 (4.5%) |
| 35-49 | 166 (10.9%) | 172 (10.1%) |
| 50-64 | 657 (43.1%) | 749 (43.9%) |
| 65+ | 603 (39.6%) | 691 (40.5%) |
| Total | 1,523 (100.0%) | 1,707 (100.0%) |

The number of candidates removed from the waiting list for death or too sick decreased in the post policy era for all age groups 35 years or older. The number of candidates removed for death or too sick for age groups less than 35 years old was too small to draw definitive conclusions on trends.

**Figure 97: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and Age at Removal**

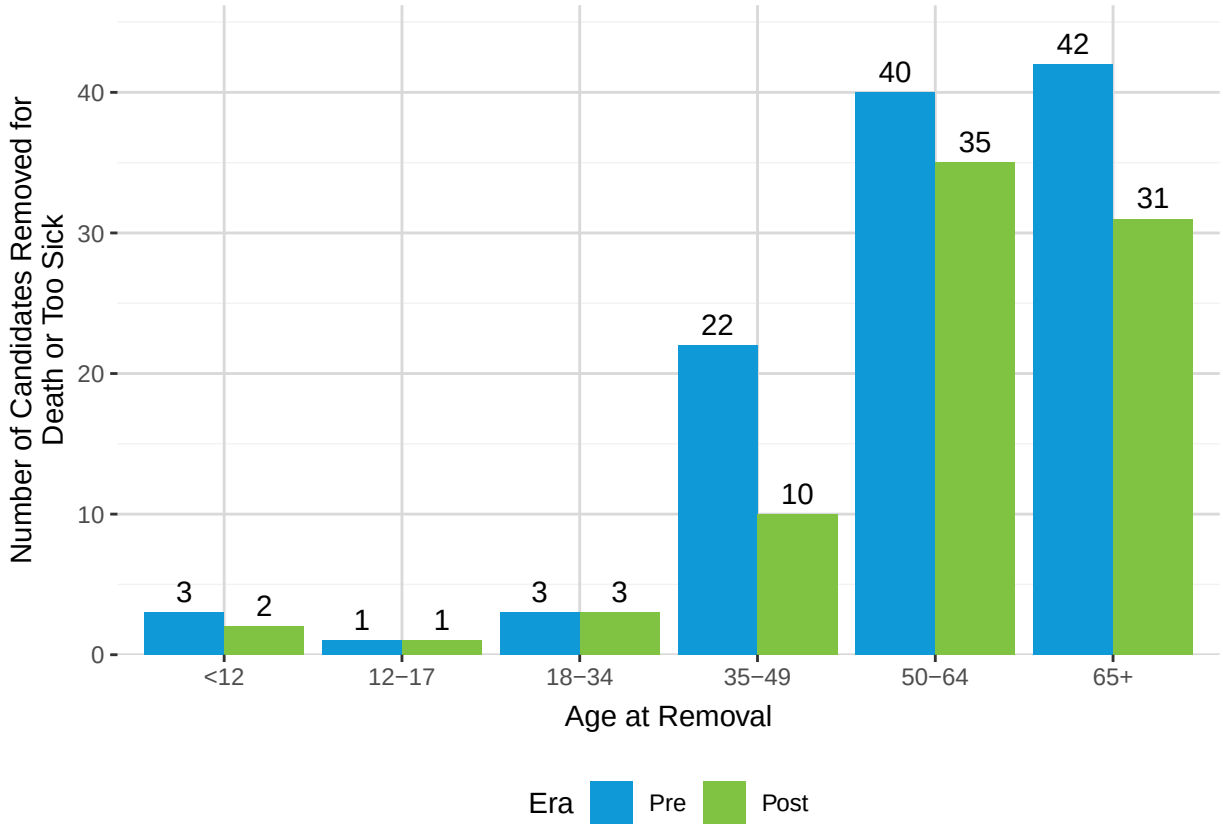
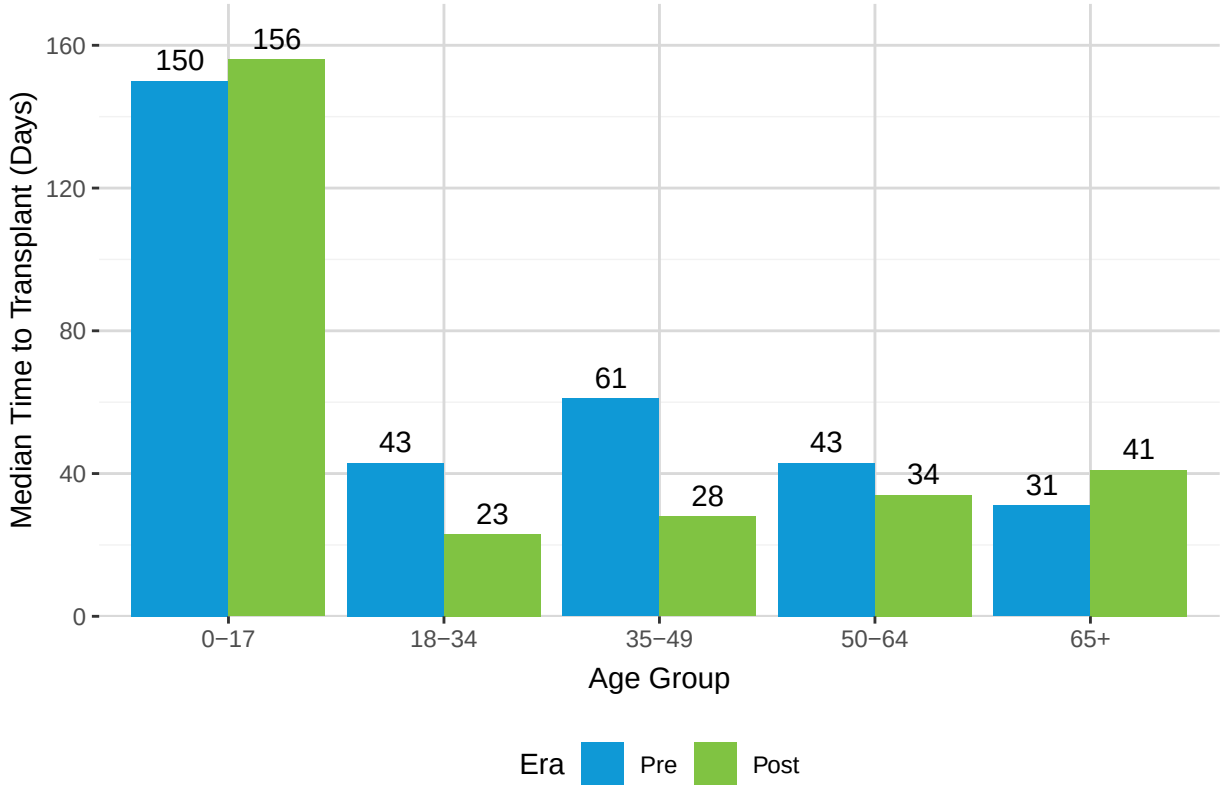



**Table 97: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and Age at Removal**

| Age at Removal | Pre | Post |
|---|---|---|
| <12 | 3 (2.7%) | 2 (2.4%) |
| 12-17 | 1 (0.9%) | 1 (1.2%) |
| 18-34 | 3 (2.7%) | 3 (3.7%) |
| 35-49 | 22 (19.8%) | 10 (12.2%) |
| 50-64 | 40 (36.0%) | 35 (42.7%) |
| 65+ | 42 (37.8%) | 31 (37.8%) |
| Total | 111 (100.0%) | 82 (100.0%) |

Median time to transplant decreased in the post policy era for all age groups except for pediatric candidates and candidates 65 years and older.

**Figure 98: Median Time to Transplant (Days) by Era and Age at Listing**




For this analysis, all pediatric candidates were grouped together due to the small sample size.

**Table 98: Median Time to Transplant (Days) by Era and Age at Listing**

| Age at Listing | Era | N Registrations | Median Time to Transplant (Days) |
|---|---|---|---|
| 0-17 | Pre | 23 | 150 |
| | Post | 18 | 156 |
| 18-34 | Pre | 74 | 43 |
| | Post | 77 | 23 |
| 35-49 | Pre | 166 | 61 |
| | Post | 172 | 28 |
| 50-64 | Pre | 657 | 43 |
| | Post | 749 | 34 |
| 65+ | Pre | 603 | 31 |
| | Post | 691 | 41 |

[a] For this analysis, all pediatric candidates were grouped together due to the small sample size.

The number of transplants increased in the post era for all adult age groups except for recipients 65 years and older. The number of transplants by pediatric age group are too small to draw definitive conclusions on trends.

**Figure 99: Number of Lung Transplants by Era and Age at Transplant**

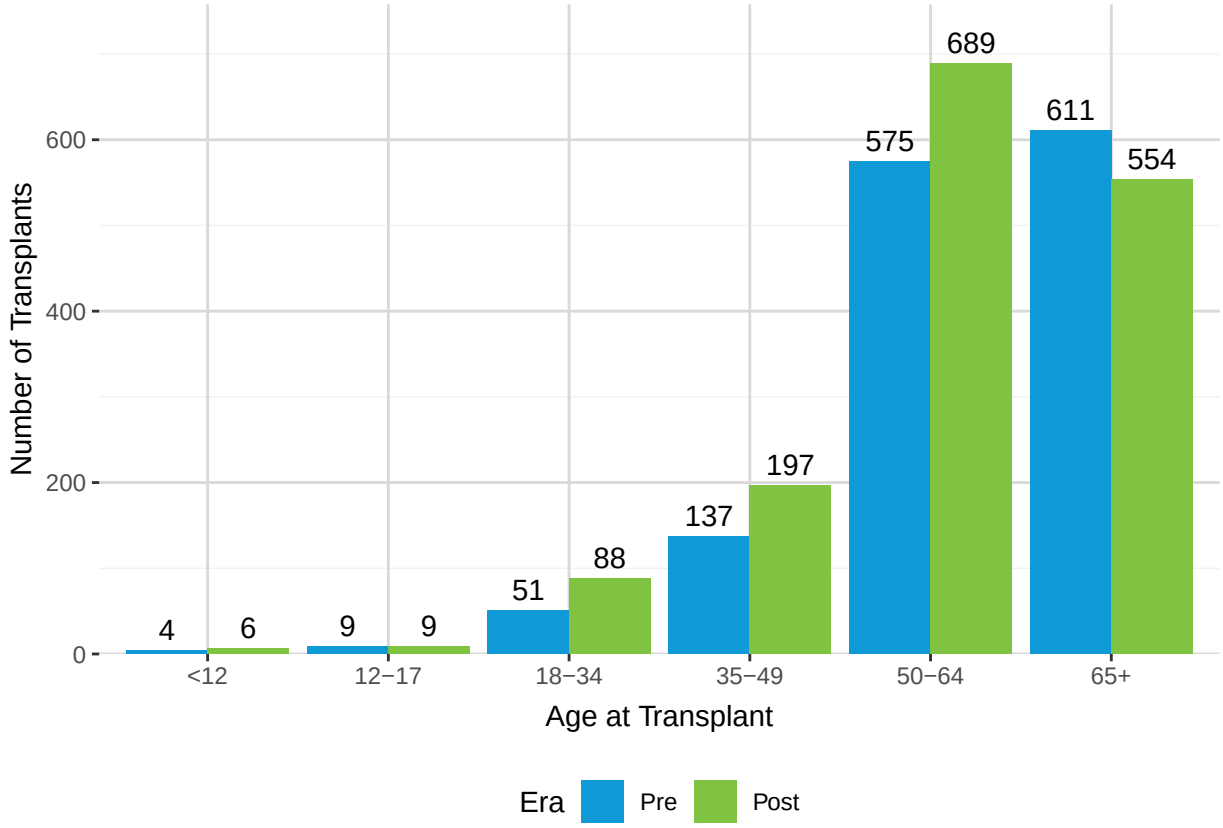
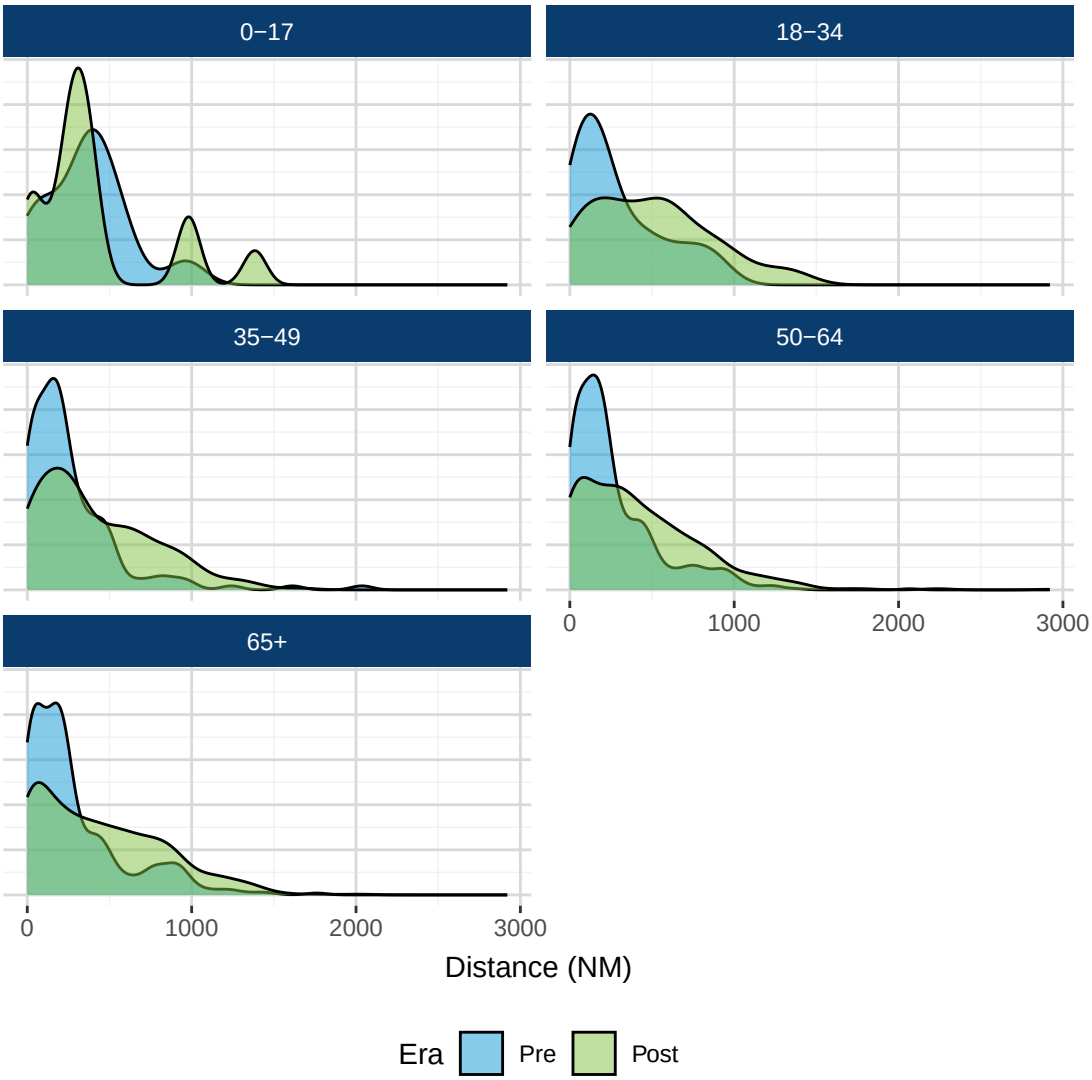



**Table 99: Number of Lung Transplants by Era and Age at Transplant**

| Age at Transplant | Pre | Post |
|---|---|---|
| <12 | 4 (0.3%) | 6 (0.4%) |
| 12-17 | 9 (0.6%) | 9 (0.6%) |
| 18-34 | 51 (3.7%) | 88 (5.7%) |
| 35-49 | 137 (9.9%) | 197 (12.8%) |
| 50-64 | 575 (41.5%) | 689 (44.7%) |
| 65+ | 611 (44.1%) | 554 (35.9%) |
| Total | 1,387 (100.0%) | 1,543 (100.0%) |

Distance from the donor hospital to transplant program increased for recipients of all adult age groups and decreased slightly for pediatric recipients, though sample sizes were small.

**Figure 100: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Age at Transplant**




For this analysis, all pediatric candidates were grouped together due to the small sample size.

**Table 100: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Age at Transplant**

| Age Group | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| 0-17 | Pre | 13 | 0 | 22 | 197.00 | 383 | 367.38 | 486.00 | 965 |
| | Post | 15 | 0 | 3 | 219.00 | 297 | 416.00 | 398.00 | 1384 |
| 18-34 | Pre | 51 | 0 | 0 | 91.50 | 187 | 289.65 | 450.00 | 950 |
| | Post | 88 | 0 | 0 | 204.75 | 486 | 500.33 | 714.50 | 1390 |
| 35-49 | Pre | 137 | 0 | 0 | 75.00 | 184 | 259.83 | 336.00 | 2036 |
| | Post | 197 | 0 | 0 | 157.00 | 306 | 418.31 | 659.00 | 1652 |
| 50-64 | Pre | 575 | 0 | 0 | 86.00 | 192 | 271.19 | 381.50 | 2069 |
| | Post | 689 | 0 | 0 | 129.00 | 343 | 421.08 | 623.00 | 2920 |
| 65+ | Pre | 611 | 0 | 0 | 71.00 | 199 | 288.67 | 397.00 | 1777 |
| | Post | 554 | 0 | 0 | 102.75 | 381 | 444.36 | 714.75 | 2021 |
| Total | Pre | 1387 | 0 | 0 | 78.00 | 195 | 279.35 | 391.00 | 2069 |
| | Post | 1543 | 0 | 0 | 129.00 | 353 | 433.55 | 662.50 | 2920 |

[a] For this analysis, all pediatric candidates were grouped together due to the small sample size.

## Diagnosis Group

In the following section, diagnosis groups are defined as follows:

- Group A = Obstructive lung disease (e.g. emphysema)
- Group B = Pulmonary vascular disease (e.g. primary pulmonary hypertension)
- Group C = Cystic fibrosis or immunodeficiency disorder
- Group D = Restrictive lung disease (e.g. idiopathic pulmonary fibrosis)

The number of candidates ever waiting increased in the post era for diagnosis groups A, B, and D but decreased for group C.

**Figure 101: Number of Candidates Ever Waiting by Era and Diagnosis Group**

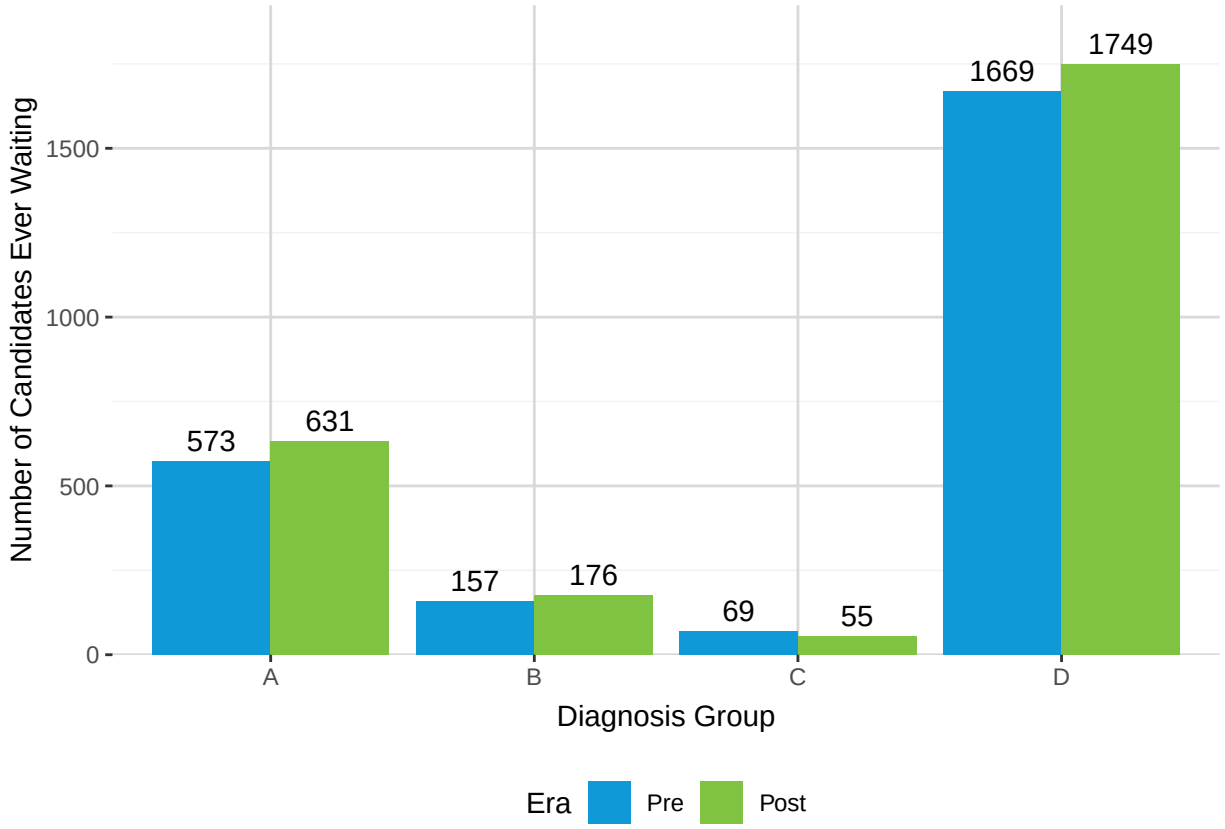



**Table 101: Number of Candidates Ever Waiting by Era and Diagnosis Group**

| Diagnosis Group | Pre | Post |
|---|---|---|
| A | 573 (23.2%) | 631 (24.2%) |
| B | 157 (6.4%) | 176 (6.7%) |
| C | 69 (2.8%) | 55 (2.1%) |
| D | 1,669 (67.6%) | 1,749 (67.0%) |
| Total | 2,468 (100.0%) | 2,611 (100.0%) |

The number of registrations added to the waiting list increased in the post era for diagnosis groups A, B, and D but decreased for diagnosis group C.

**Figure 102: Number of Registrations Added to the Waiting List by Era and Diagnosis Group**

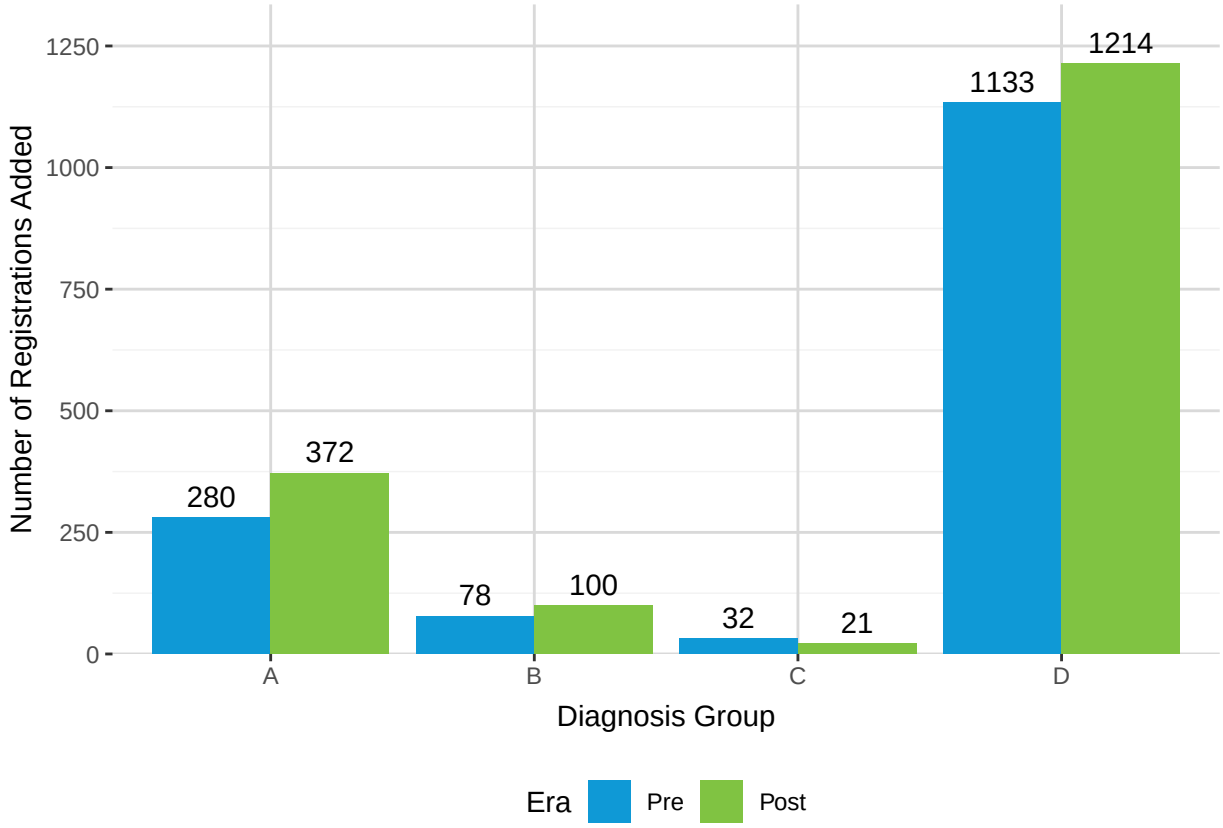



**Table 102: Number of Registrations Added to the Waiting List by Era and Diagnosis Group**

| Diagnosis Group | Pre | Post |
|---|---|---|
| A | 280 (18.4%) | 372 (21.8%) |
| B | 78 (5.1%) | 100 (5.9%) |
| C | 32 (2.1%) | 21 (1.2%) |
| D | 1,133 (74.4%) | 1,214 (71.1%) |
| Total | 1,523 (100.0%) | 1,707 (100.0%) |

The number of candidates removed from the waiting list for death or too sick decreased in the post era for diagnosis groups A, C, and D but increased slightly for diagnosis group B.

**Figure 103: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and Diagnosis Group**

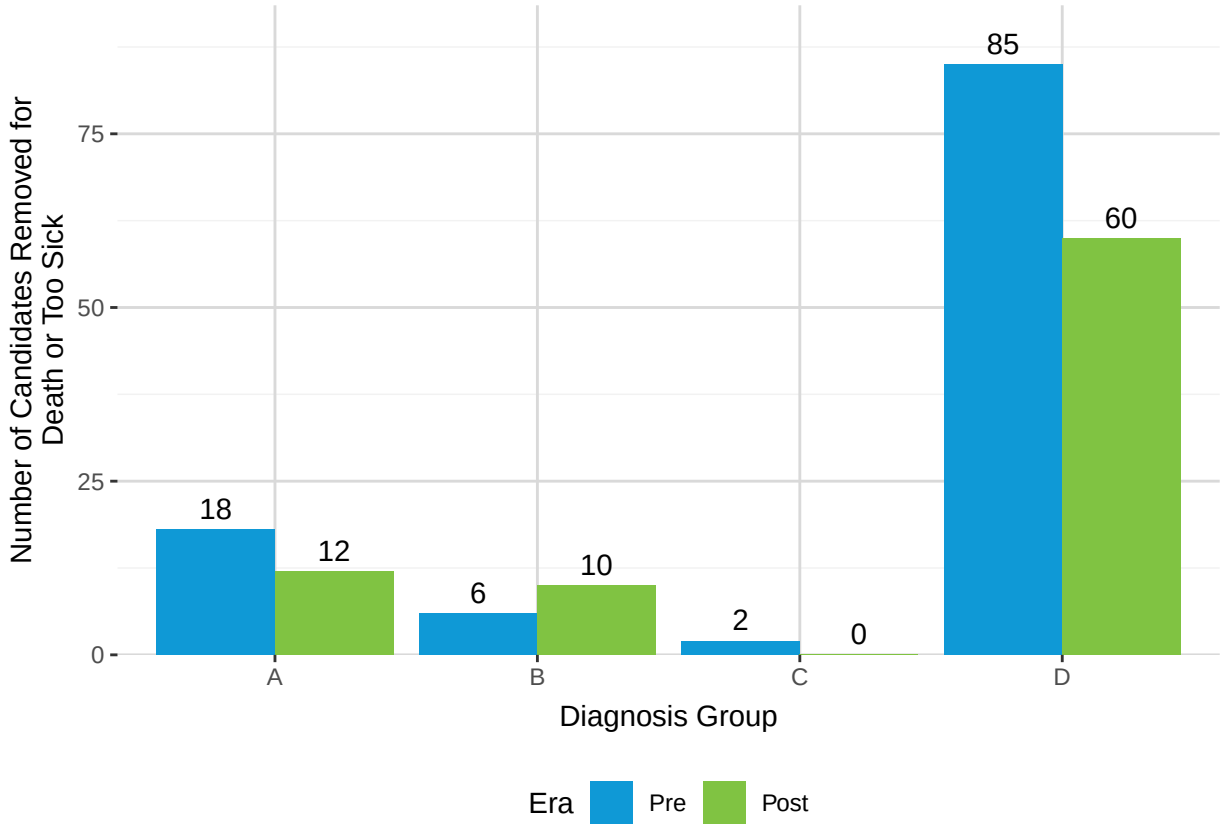



**Table 103: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and Diagnosis Group**

| Diagnosis Group | Pre | Post |
|---|---|---|
| A | 18 (16.2%) | 12 (14.6%) |
| B | 6 (5.4%) | 10 (12.2%) |
| C | 2 (1.8%) | 0 (0.0%) |
| D | 85 (76.6%) | 60 (73.2%) |
| Total | 111 (100.0%) | 82 (100.0%) |

Median time to transplant decreased for diagnosis groups A, B, and C but remained the same for diagnosis group D.

**Figure 104: Median Time to Transplant (Days) by Era and Diagnosis Group**

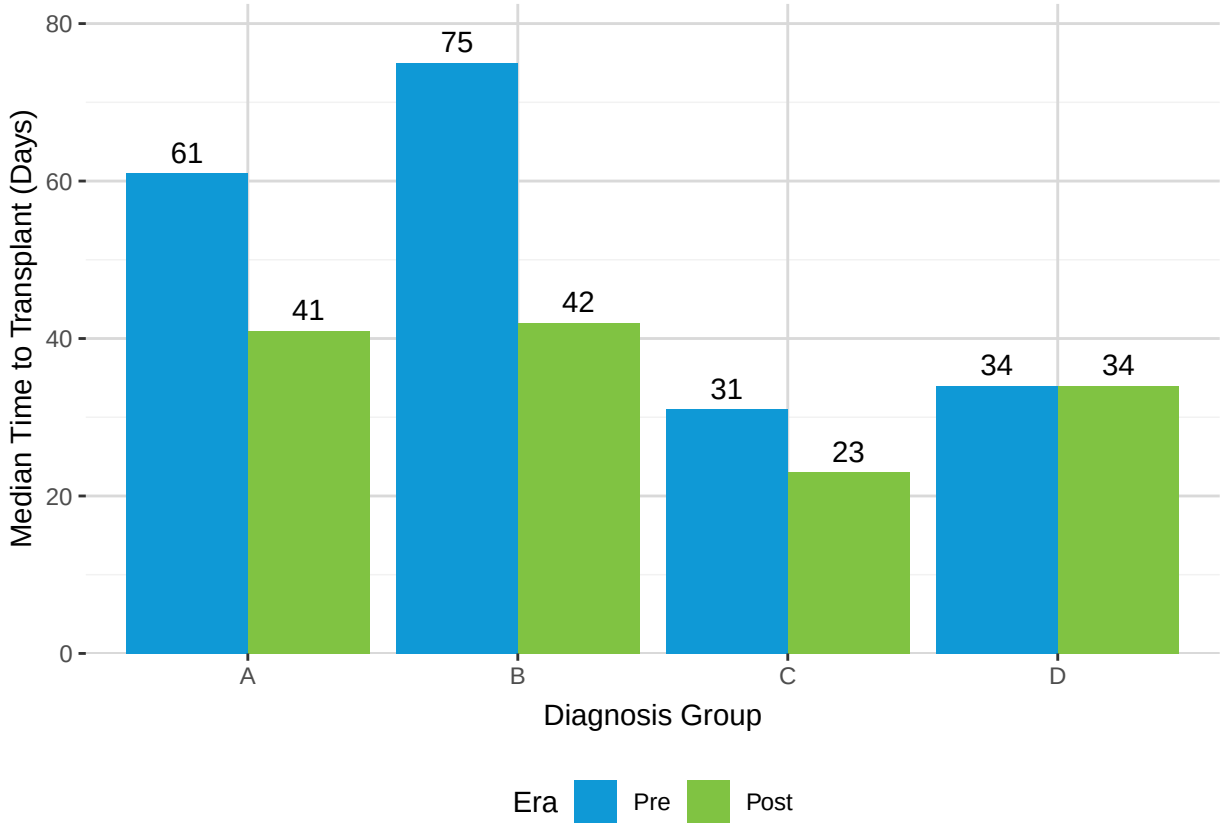



**Table 104: Median Time to Transplant (Days) by Era and Diagnosis Group**

| Diagnosis Group | Era | N Registrations | Median Time to Transplant (Days) |
|---|---|---|---|
| A | Pre | 280 | 61 |
| | Post | 372 | 41 |
| B | Pre | 78 | 75 |
| | Post | 100 | 42 |
| C | Pre | 32 | 31 |
| | Post | 21 | 23 |
| D | Pre | 1133 | 34 |
| | Post | 1214 | 34 |

The number of transplants increased across all diagnosis groups in the post era.

**Figure 105: Number of Lung Transplants by Era and Diagnosis Group**

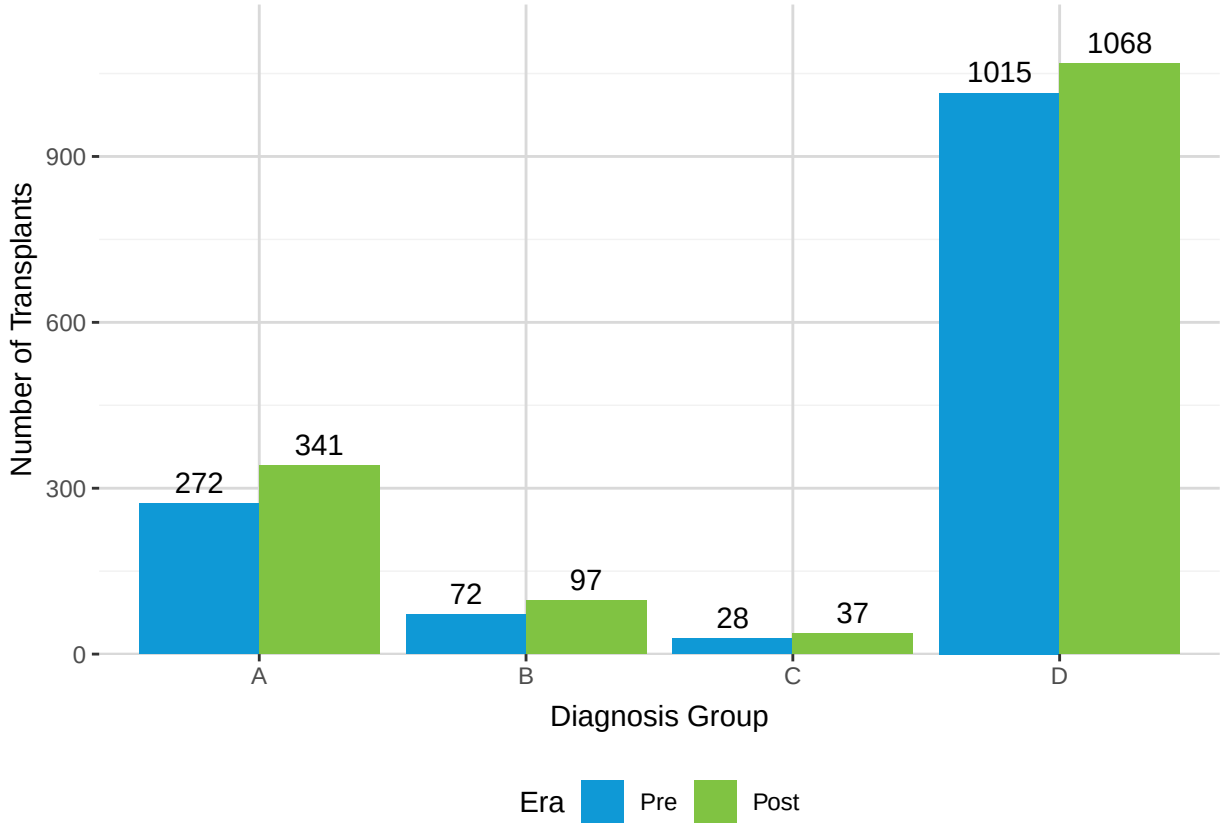



**Table 105: Number of Lung Transplants by Era and Diagnosis Group**

| Diagnosis Group | Pre | Post |
|---|---|---|
| A | 272 (19.6%) | 341 (22.1%) |
| B | 72 (5.2%) | 97 (6.3%) |
| C | 28 (2.0%) | 37 (2.4%) |
| D | 1,015 (73.2%) | 1,068 (69.2%) |
| Total | 1,387 (100.0%) | 1,543 (100.0%) |

Median distance between the donor hospital and transplant program increased across all diagnosis groups.

**Figure 106: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Diagnosis Group**

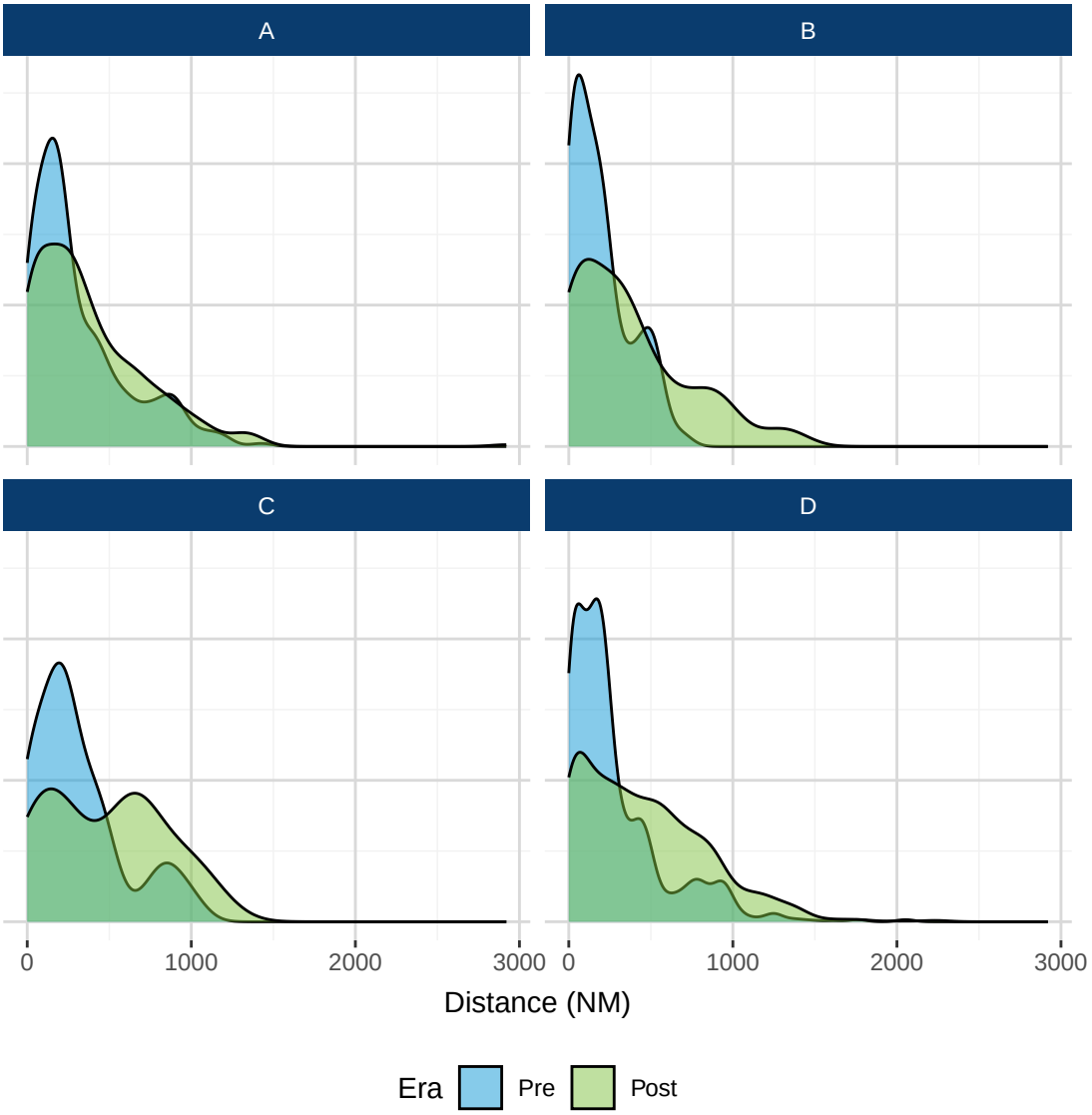


**Table 106: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Diagnosis Group**

| Age Group | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| A | Pre | 272 | 0 | 0 | 103.50 | 202.0 | 306.61 | 418.00 | 1427 |
| | Post | 341 | 0 | 0 | 110.00 | 278.0 | 374.77 | 560.00 | 2920 |
| B | Pre | 72 | 0 | 0 | 39.50 | 152.5 | 189.83 | 269.25 | 686 |
| | Post | 97 | 0 | 0 | 79.00 | 297.0 | 371.18 | 543.00 | 1369 |
| C | Pre | 28 | 0 | 9 | 129.25 | 225.5 | 305.07 | 410.00 | 999 |
| | Post | 37 | 0 | 6 | 157.00 | 549.0 | 480.11 | 686.00 | 1175 |
| D | Pre | 1015 | 0 | 0 | 75.00 | 194.0 | 277.68 | 381.50 | 2069 |
| | Post | 1068 | 0 | 0 | 141.50 | 394.5 | 456.38 | 700.25 | 2244 |
| Total | Pre | 1387 | 0 | 0 | 78.00 | 195.0 | 279.35 | 391.00 | 2069 |
| | Post | 1543 | 0 | 0 | 129.00 | 353.0 | 433.55 | 662.50 | 2920 |

## Geography

The number of candidates ever waiting decreased in OPTN region 3 in the post era but increased or remained stable in the remaining 10 OPTN regions.

**Figure 107: Number of Candidates Ever Waiting by Era and OPTN Region at Listing**

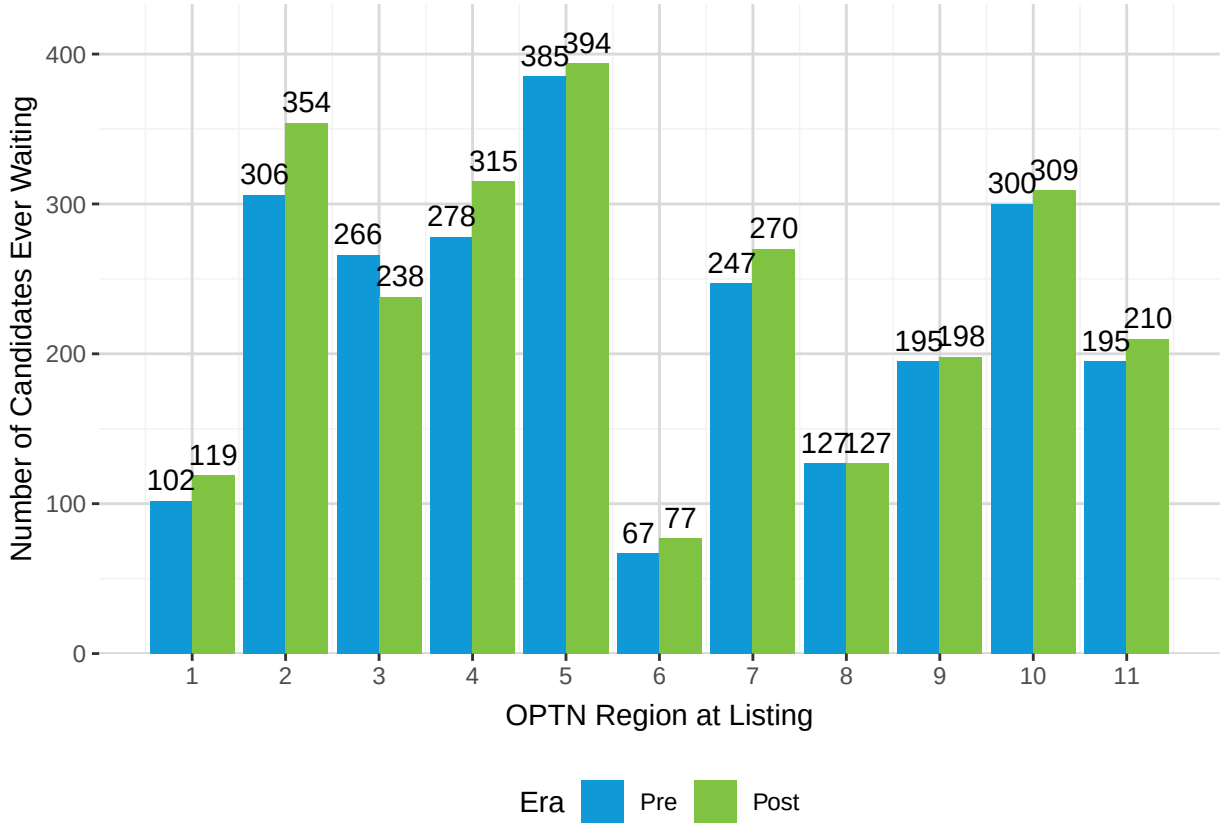



**Table 107: Number of Candidates Ever Waiting by Era and OPTN Region at Listing**

| OPTN Region at Listing | Pre | Post |
|---|---|---|
| 1 | 102 (4.1%) | 119 (4.6%) |
| 2 | 306 (12.4%) | 354 (13.6%) |
| 3 | 266 (10.8%) | 238 (9.1%) |
| 4 | 278 (11.3%) | 315 (12.1%) |
| 5 | 385 (15.6%) | 394 (15.1%) |
| 6 | 67 (2.7%) | 77 (2.9%) |
| 7 | 247 (10.0%) | 270 (10.3%) |
| 8 | 127 (5.1%) | 127 (4.9%) |
| 9 | 195 (7.9%) | 198 (7.6%) |
| 10 | 300 (12.2%) | 309 (11.8%) |
| 11 | 195 (7.9%) | 210 (8.0%) |
| Total | 2,468 (100.0%) | 2,611 (100.0%) |

The number of registrations added to the waiting list decreased in the post era in OPTN regions 3 and 10 but increased in the remaining 9 OPTN regions.

**Figure 108: Number of Registrations Added to the Waiting List by Era and OPTN Region at Listing**

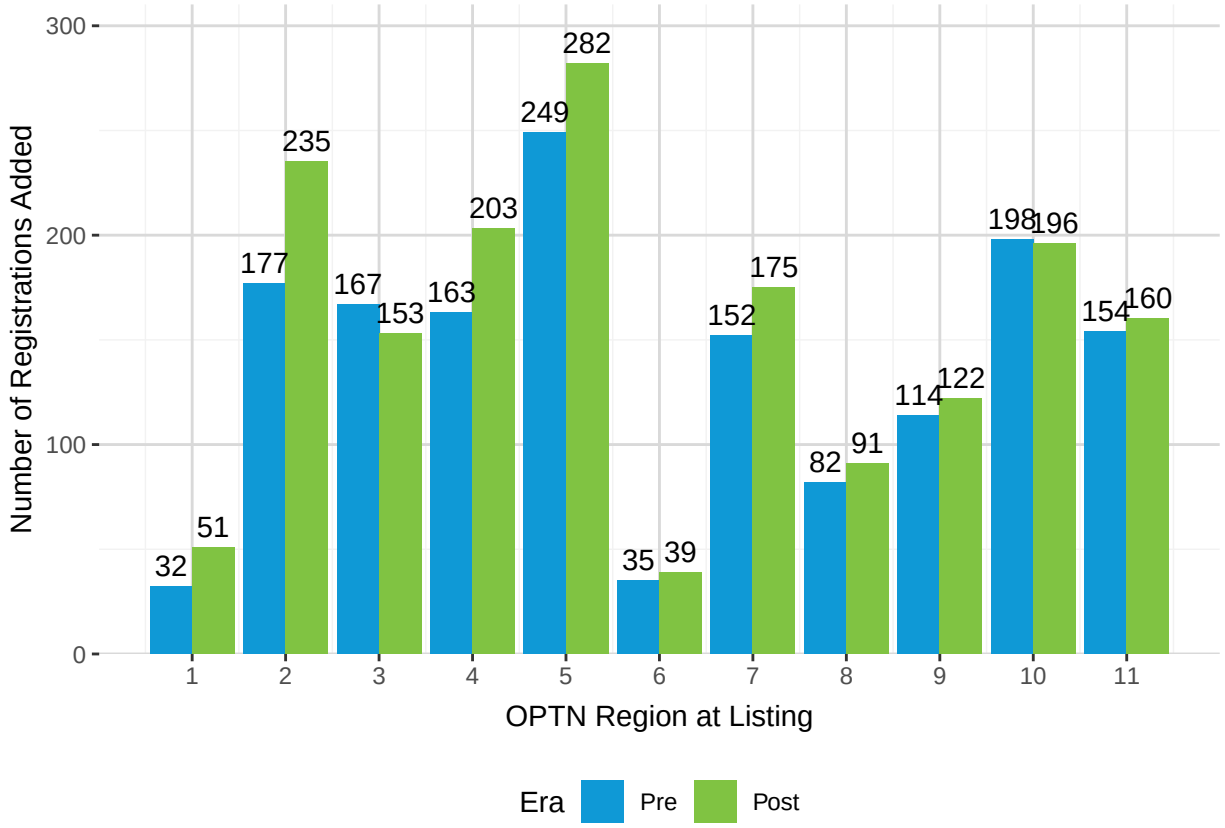



**Table 108: Number of Registrations Added to the Waiting List by Era and OPTN Region at Listing**

| OPTN Region at Listing | Pre | Post |
|---|---|---|
| 1 | 32 (2.1%) | 51 (3.0%) |
| 2 | 177 (11.6%) | 235 (13.8%) |
| 3 | 167 (11.0%) | 153 (9.0%) |
| 4 | 163 (10.7%) | 203 (11.9%) |
| 5 | 249 (16.3%) | 282 (16.5%) |
| 6 | 35 (2.3%) | 39 (2.3%) |
| 7 | 152 (10.0%) | 175 (10.3%) |
| 8 | 82 (5.4%) | 91 (5.3%) |
| 9 | 114 (7.5%) | 122 (7.1%) |
| 10 | 198 (13.0%) | 196 (11.5%) |
| 11 | 154 (10.1%) | 160 (9.4%) |
| Total | 1,523 (100.0%) | 1,707 (100.0%) |

The number of candidates removed from the waiting list for death or too sick to transplant by OPTN region were too small to determine definitive regional trends.

**Figure 109: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and OPTN Region at Removal**

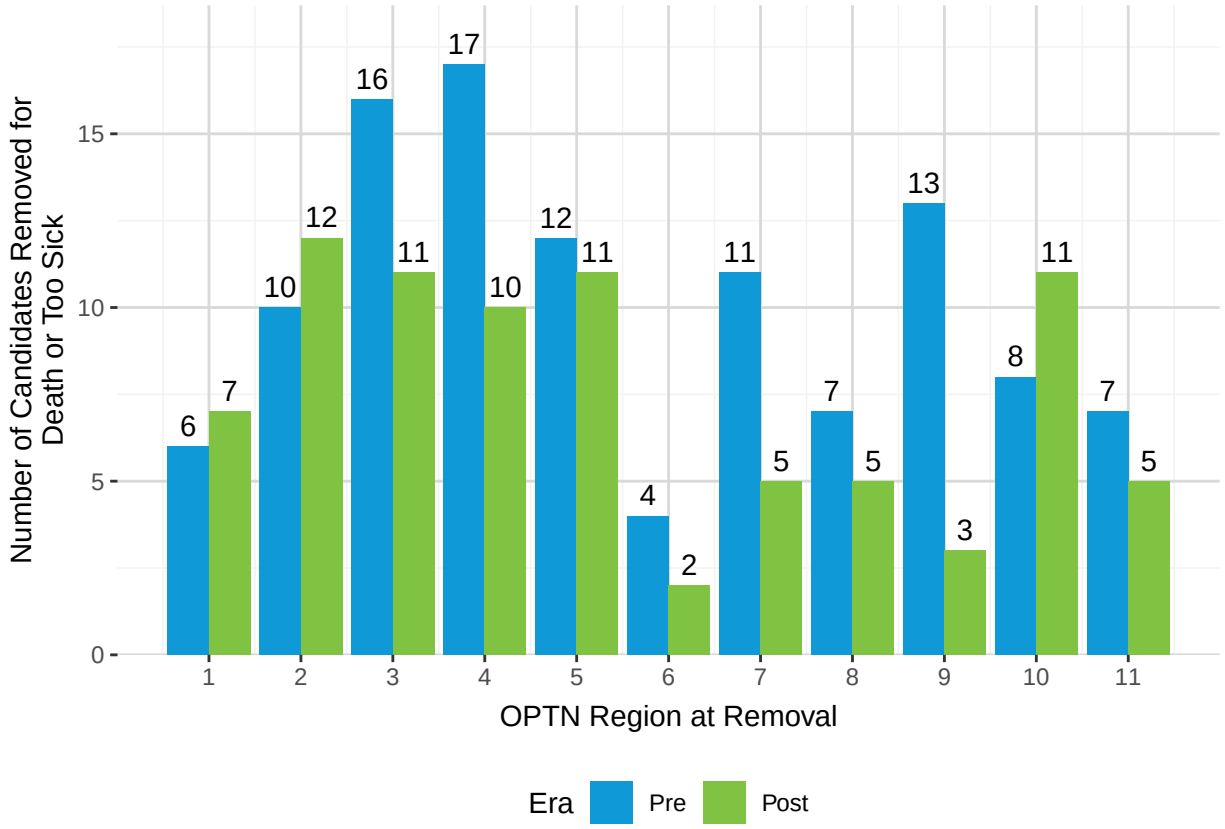



**Table 109: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and OPTN Region at Removal**

| OPTN Region at Removal | Pre | Post |
|---|---|---|
| 1 | 6 (5.4%) | 7 (8.5%) |
| 2 | 10 (9.0%) | 12 (14.6%) |
| 3 | 16 (14.4%) | 11 (13.4%) |
| 4 | 17 (15.3%) | 10 (12.2%) |
| 5 | 12 (10.8%) | 11 (13.4%) |
| 6 | 4 (3.6%) | 2 (2.4%) |
| 7 | 11 (9.9%) | 5 (6.1%) |
| 8 | 7 (6.3%) | 5 (6.1%) |
| 9 | 13 (11.7%) | 3 (3.7%) |
| 10 | 8 (7.2%) | 11 (13.4%) |
| 11 | 7 (6.3%) | 5 (6.1%) |
| Total | 111 (100.0%) | 82 (100.0%) |

The median waiting time to transplant decreased or remained similar in 8 OPTN regions in the post era and increased in the remaining 3 OPTN regions.

**Figure 110: Median Time to Transplant (Days) by Era and OPTN Region at Listing**

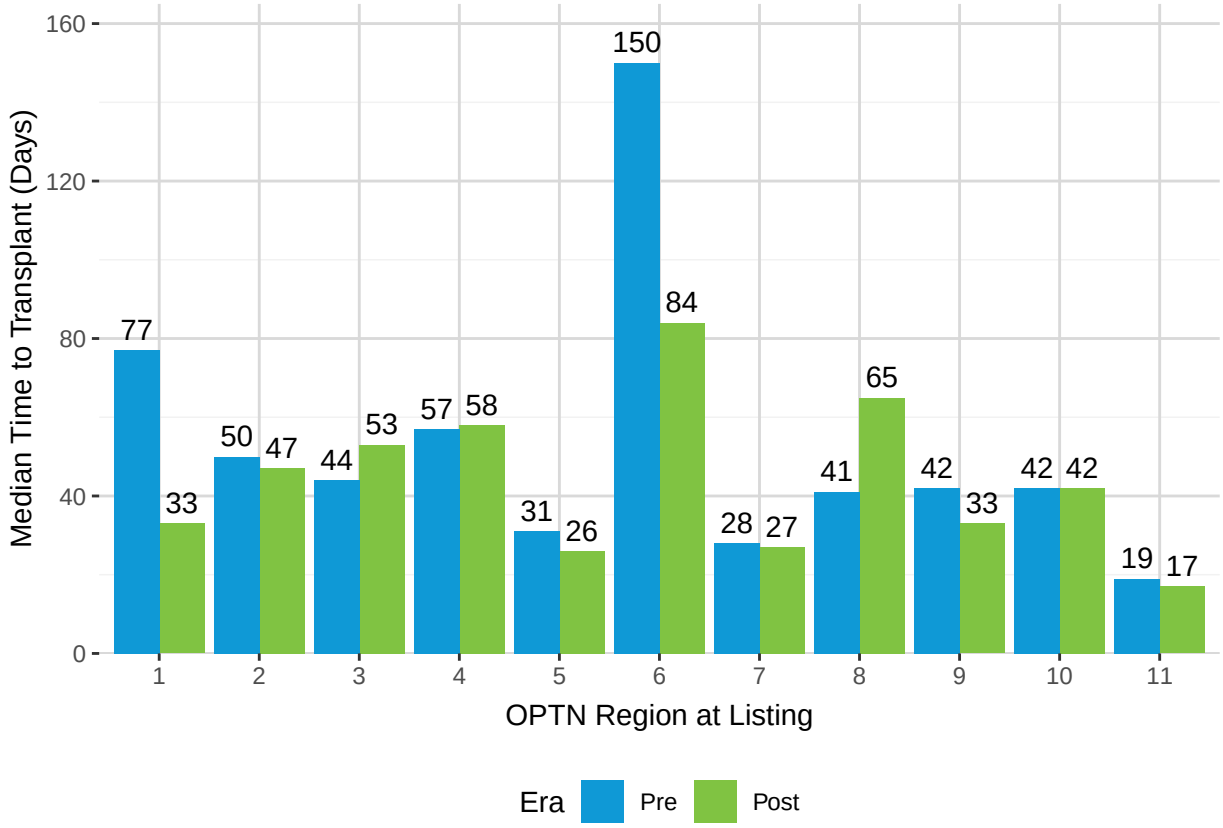


**Table 110: Median Time to Transplant (Days) by Era and OPTN Region at Listing**

| OPTN Region at Listing | Era | N Registrations | Median Time to Transplant (Days) |
|---|---|---|---|
| 1 | Pre | 32 | 77 |
| | Post | 51 | 33 |
| 2 | Pre | 177 | 50 |
| | Post | 235 | 47 |
| 3 | Pre | 167 | 44 |
| | Post | 153 | 53 |
| 4 | Pre | 163 | 57 |
| | Post | 203 | 58 |
| 5 | Pre | 249 | 31 |
| | Post | 282 | 26 |
| 6 | Pre | 35 | 150 |
| | Post | 39 | 84 |
| 7 | Pre | 152 | 28 |
| | Post | 175 | 27 |
| 8 | Pre | 82 | 41 |
| | Post | 91 | 65 |
| 9 | Pre | 114 | 42 |
| | Post | 122 | 33 |
| 10 | Pre | 198 | 42 |
| | Post | 196 | 42 |
| 11 | Pre | 154 | 19 |
| | Post | 160 | 17 |

The number of transplants decreased in the post era in OPTN regions 3 and 8 but increased in the remaining 9 OPTN regions.

**Figure 111: Number of Lung Transplants by Era and OPTN Region**

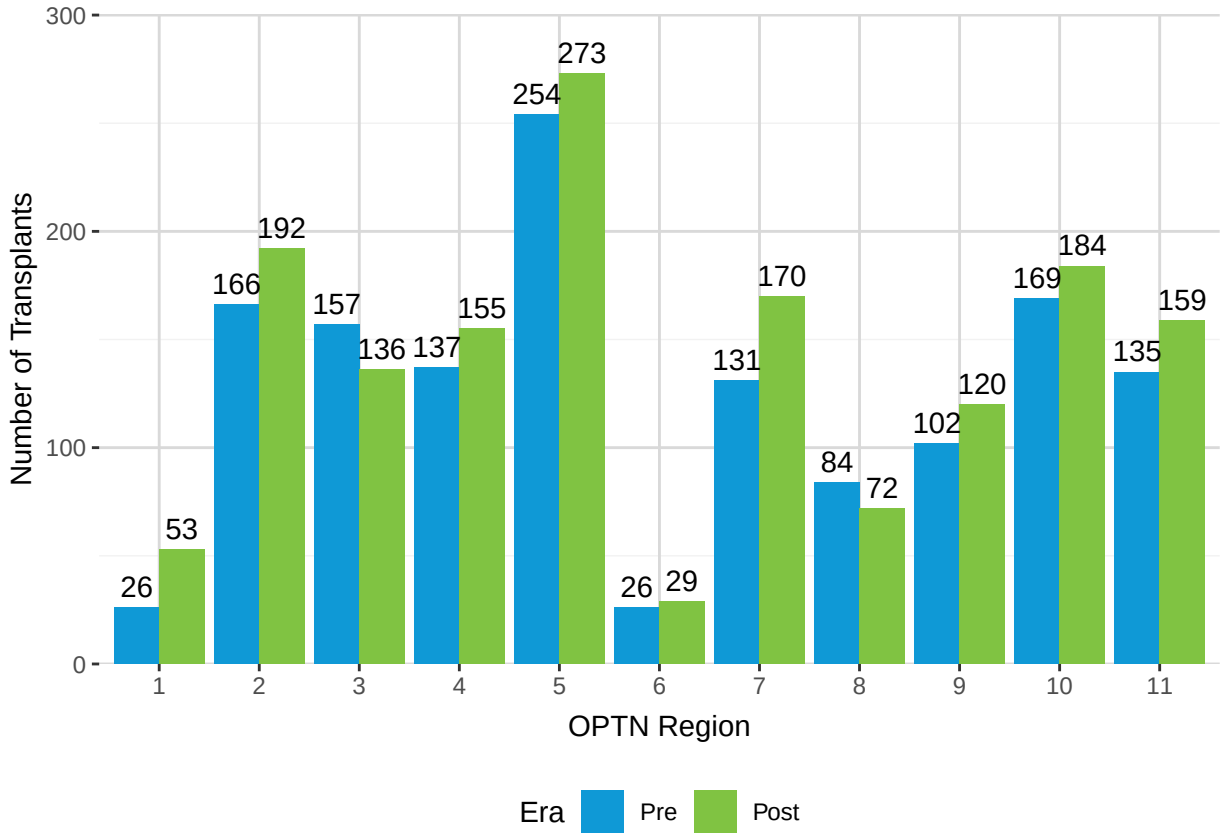



**Table 111: Number of Lung Transplants by Era and OPTN Region**

| OPTN Region | Pre | Post |
|---|---|---|
| 1 | 26 (1.9%) | 53 (3.4%) |
| 2 | 166 (12.0%) | 192 (12.4%) |
| 3 | 157 (11.3%) | 136 (8.8%) |
| 4 | 137 (9.9%) | 155 (10.0%) |
| 5 | 254 (18.3%) | 273 (17.7%) |
| 6 | 26 (1.9%) | 29 (1.9%) |
| 7 | 131 (9.4%) | 170 (11.0%) |
| 8 | 84 (6.1%) | 72 (4.7%) |
| 9 | 102 (7.4%) | 120 (7.8%) |
| 10 | 169 (12.2%) | 184 (11.9%) |
| 11 | 135 (9.7%) | 159 (10.3%) |
| Total | 1,387 (100.0%) | 1,543 (100.0%) |

Median distance from the donor hospital to transplant program increased across all OPTN regions.

**Figure 112: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and OPTN Region**

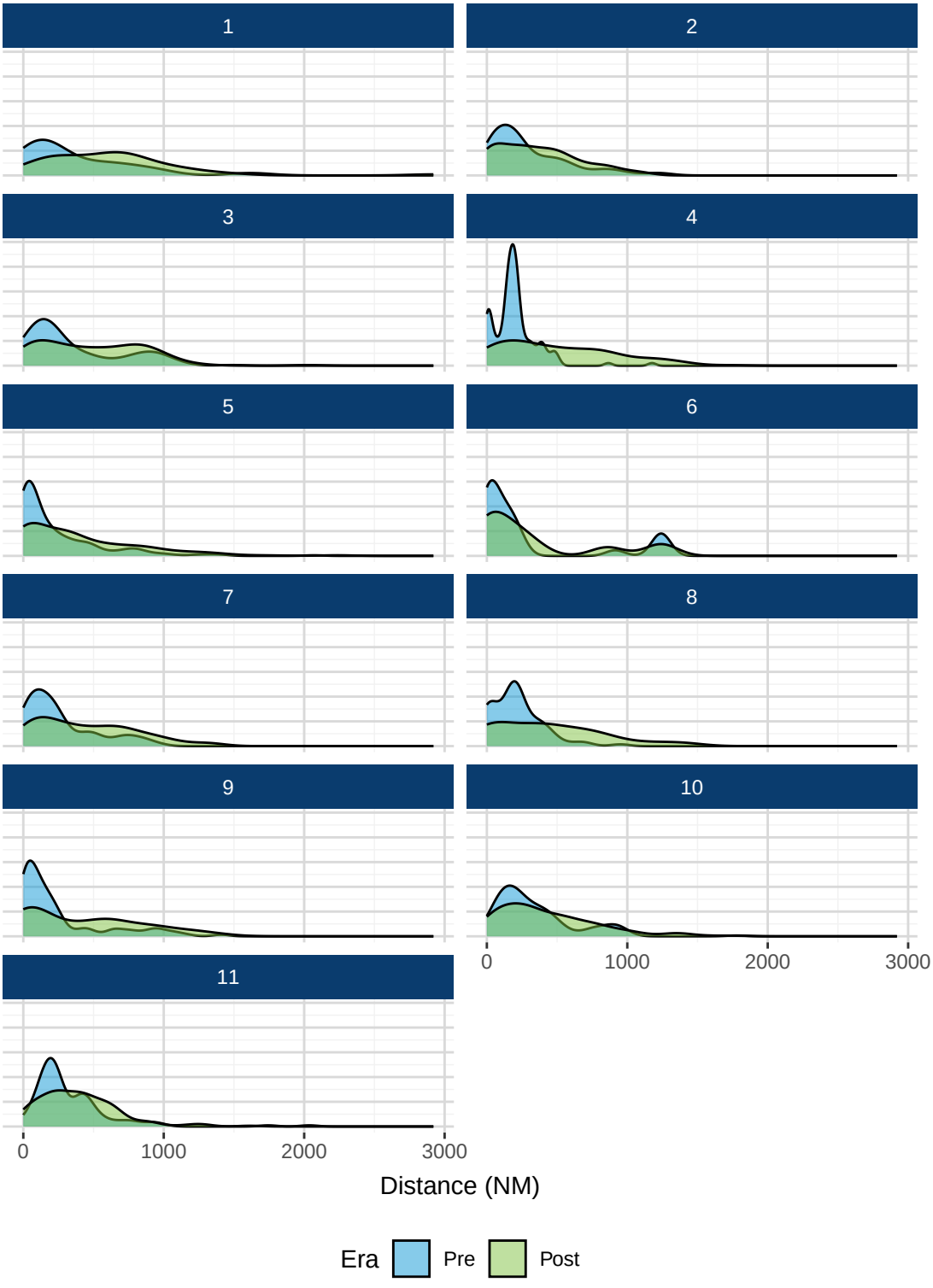


**Table 112: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Region**

| OPTN Region | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Pre | 26 | 0 | 2 | 89.00 | 223.0 | 361.46 | 533.25 | 1613 |
| | Post | 53 | 0 | 2 | 234.00 | 626.0 | 618.06 | 804.00 | 2920 |
| 2 | Pre | 166 | 0 | 0 | 80.75 | 198.5 | 296.35 | 446.25 | 1267 |
| | Post | 192 | 0 | 0 | 111.25 | 317.0 | 365.31 | 545.25 | 1129 |
| 3 | Pre | 157 | 0 | 0 | 104.00 | 208.0 | 356.01 | 519.00 | 1491 |
| | Post | 136 | 0 | 0 | 172.00 | 475.0 | 490.59 | 789.50 | 2021 |
| 4 | Pre | 137 | 0 | 0 | 129.00 | 178.0 | 200.11 | 239.00 | 1176 |
| | Post | 155 | 0 | 0 | 192.50 | 438.0 | 505.74 | 791.00 | 1736 |
| 5 | Pre | 254 | 0 | 0 | 22.00 | 93.0 | 232.51 | 321.50 | 2069 |
| | Post | 273 | 0 | 0 | 46.00 | 295.0 | 399.12 | 610.00 | 2244 |
| 6 | Pre | 26 | 0 | 1 | 22.00 | 111.5 | 291.19 | 216.00 | 1241 |
| | Post | 29 | 0 | 3 | 12.00 | 149.0 | 346.86 | 350.00 | 1241 |
| 7 | Pre | 131 | 0 | 0 | 75.00 | 192.0 | 260.69 | 386.50 | 965 |
| | Post | 170 | 0 | 0 | 155.00 | 406.0 | 453.15 | 690.00 | 1369 |
| 8 | Pre | 84 | 0 | 0 | 41.00 | 201.0 | 209.54 | 295.75 | 950 |
| | Post | 72 | 0 | 0 | 54.00 | 391.0 | 440.61 | 699.00 | 1399 |
| 9 | Pre | 102 | 0 | 0 | 32.25 | 118.0 | 247.52 | 256.50 | 1410 |
| | Post | 120 | 0 | 0 | 36.75 | 364.0 | 433.82 | 687.00 | 1415 |
| 10 | Pre | 169 | 0 | 1 | 137.00 | 245.0 | 340.22 | 441.00 | 1777 |
| | Post | 184 | 0 | 0 | 159.75 | 333.5 | 429.16 | 606.50 | 1769 |
| 11 | Pre | 135 | 0 | 0 | 169.50 | 238.0 | 329.10 | 417.50 | 2036 |
| | Post | 159 | 0 | 0 | 205.50 | 378.0 | 390.99 | 544.00 | 1614 |
| Total | Pre | 1387 | 0 | 0 | 78.00 | 195.0 | 279.35 | 391.00 | 2069 |
| | Post | 1543 | 0 | 0 | 129.00 | 353.0 | 433.55 | 662.50 | 2920 |

## Race/Ethnicity

In the following charts, NH stands for Non-Hispanic. Due to small sample sizes and to protect patient privacy, American Indian/Alaskan Native, NH; Native Hawaiian/Other Pacific Islander, NH; and Multiracial, NH categories were combined into a single category named "Other, NH". These race/ethnicity groups may be broken out in future monitoring reports as sample size allows.

The number of Black Non-Hispanic, Hispanic/Latino, and White Non-Hispanic candidates ever waiting increased in the post era.

**Figure 113: Number of Candidates Ever Waiting by Era and Race/Ethnicity**

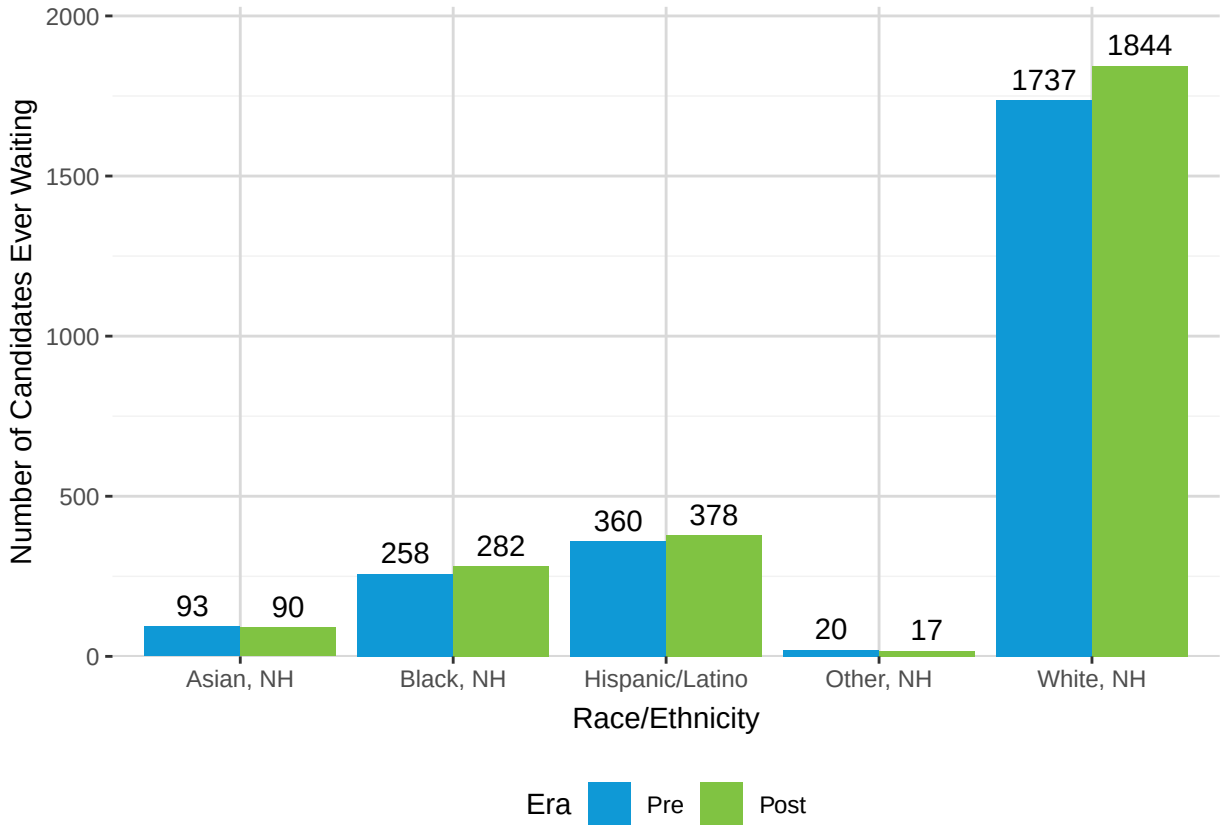



**Table 113: Number of Candidates Ever Waiting by Era and Race/Ethnicity**

| Race/Ethnicity | Pre | Post |
|---|---|---|
| Asian, NH | 93 (3.8%) | 90 (3.4%) |
| Black, NH | 258 (10.5%) | 282 (10.8%) |
| Hispanic/Latino | 360 (14.6%) | 378 (14.5%) |
| Other, NH | 20 (0.8%) | 17 (0.7%) |
| White, NH | 1,737 (70.4%) | 1,844 (70.6%) |
| Total | 2,468 (100.0%) | 2,611 (100.0%) |

Compared to the pre era, in the post era the number of registrations added to the waiting list increased or remained the same across all race/ethnicity groups.

**Figure 114: Number of Registrations Added to the Waiting List by Era and Race/Ethnicity**

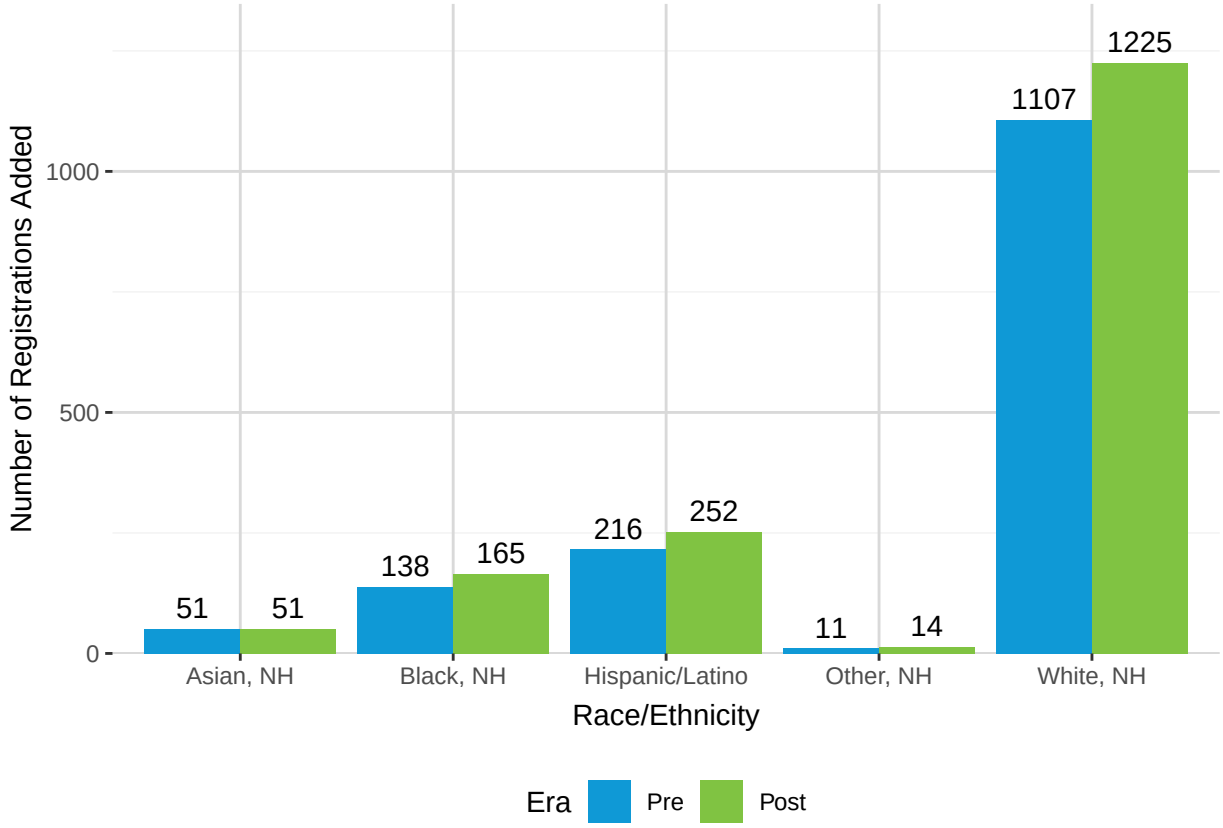



**Table 114: Number of Registrations Added to the Waiting List by Era and Race/Ethnicity**

| Race/Ethnicity | Pre | Post |
|---|---|---|
| Asian, NH | 51 (3.3%) | 51 (3.0%) |
| Black, NH | 138 (9.1%) | 165 (9.7%) |
| Hispanic/Latino | 216 (14.2%) | 252 (14.8%) |
| Other, NH | 11 (0.7%) | 14 (0.8%) |
| White, NH | 1,107 (72.7%) | 1,225 (71.8%) |
| Total | 1,523 (100.0%) | 1,707 (100.0%) |

The number of candidates removed from the waiting list for death or too sick remained approximately stable in the post policy era for Asian Non-Hispanic candidates and decreased for the remaining race/ethnicity groups.

**Figure 115: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and Race/Ethnicity**

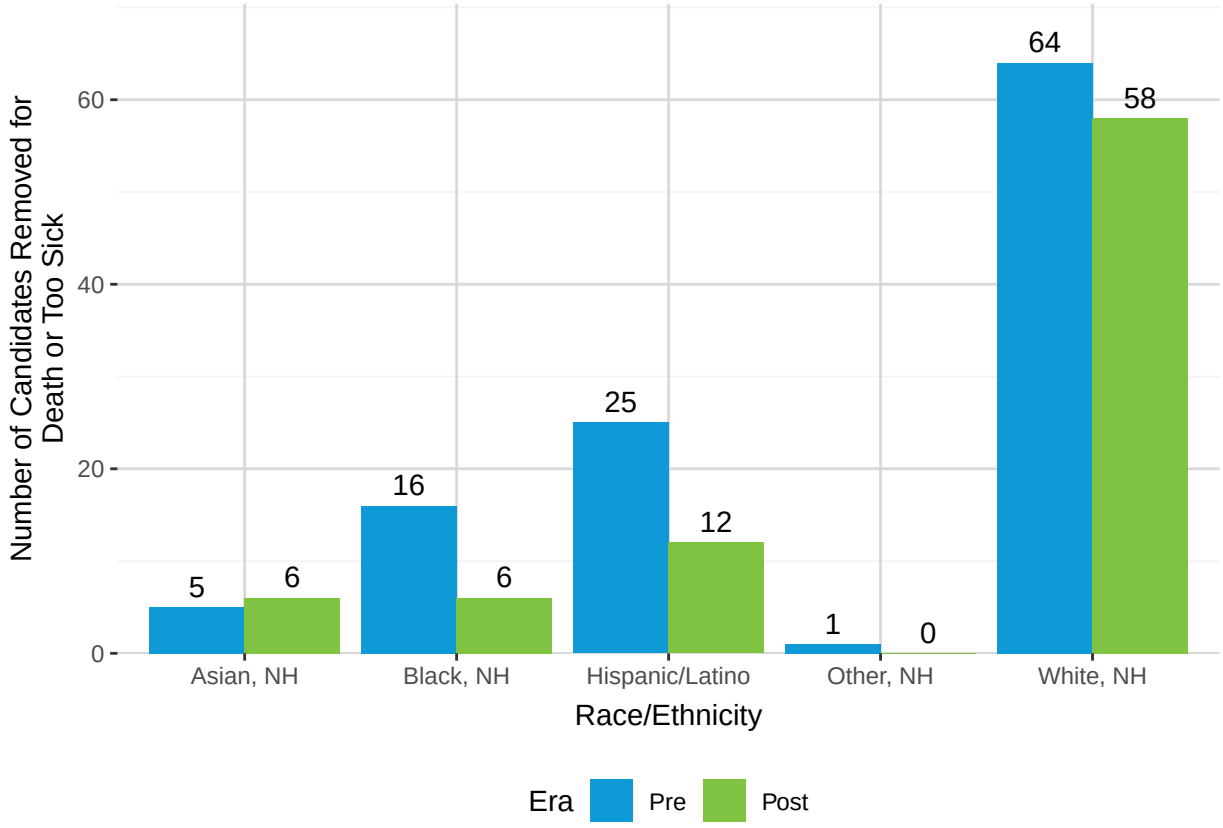



**Table 115: : Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and Race/Ethnicity**

| Race/Ethnicity | Pre | Post |
|---|---|---|
| Asian, NH | 5 (4.5%) | 6 (7.3%) |
| Black, NH | 16 (14.4%) | 6 (7.3%) |
| Hispanic/Latino | 25 (22.5%) | 12 (14.6%) |
| Other, NH | 1 (0.9%) | 0 (0.0%) |
| White, NH | 64 (57.7%) | 58 (70.7%) |
| Total | 111 (100.0%) | 82 (100.0%) |

The median time to transplant increased in the post era for Asian Non-Hispanic candidates and decreased for all other race/ethnicity groups.

**Figure 116: Median Time to Transplant (Days) by Era and Race/Ethnicity**

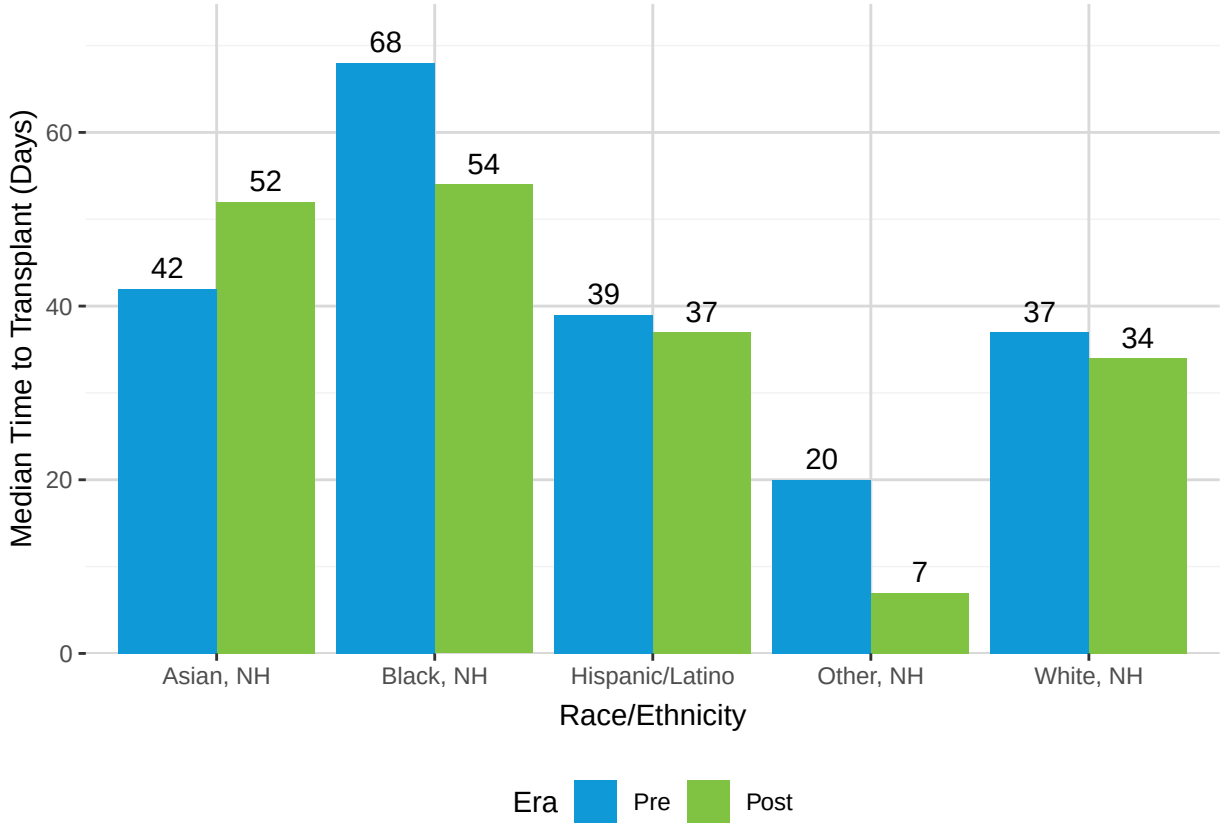



**Table 116: Median Time to Transplant (Days) by Era and Race/Ethnicity**

| Race/Ethnicity | Era | N Registrations | Median Time to Transplant (Days) |
|---|---|---|---|
| Asian, NH | Pre | 51 | 42 |
| | Post | 51 | 52 |
| Black, NH | Pre | 138 | 68 |
| | Post | 165 | 54 |
| Hispanic/Latino | Pre | 216 | 39 |
| | Post | 252 | 37 |
| Other, NH | Pre | 11 | 20 |
| | Post | 14 | 7 |
| White, NH | Pre | 1107 | 37 |
| | Post | 1225 | 34 |

The number of transplants increased in the post policy era for Asian Non-Hispanic, Black Non-Hispanic, Hispanic/Latino, and White Non-Hispanic recipients.

**Figure 117: Number of Lung Transplants by Era and Race/Ethnicity**

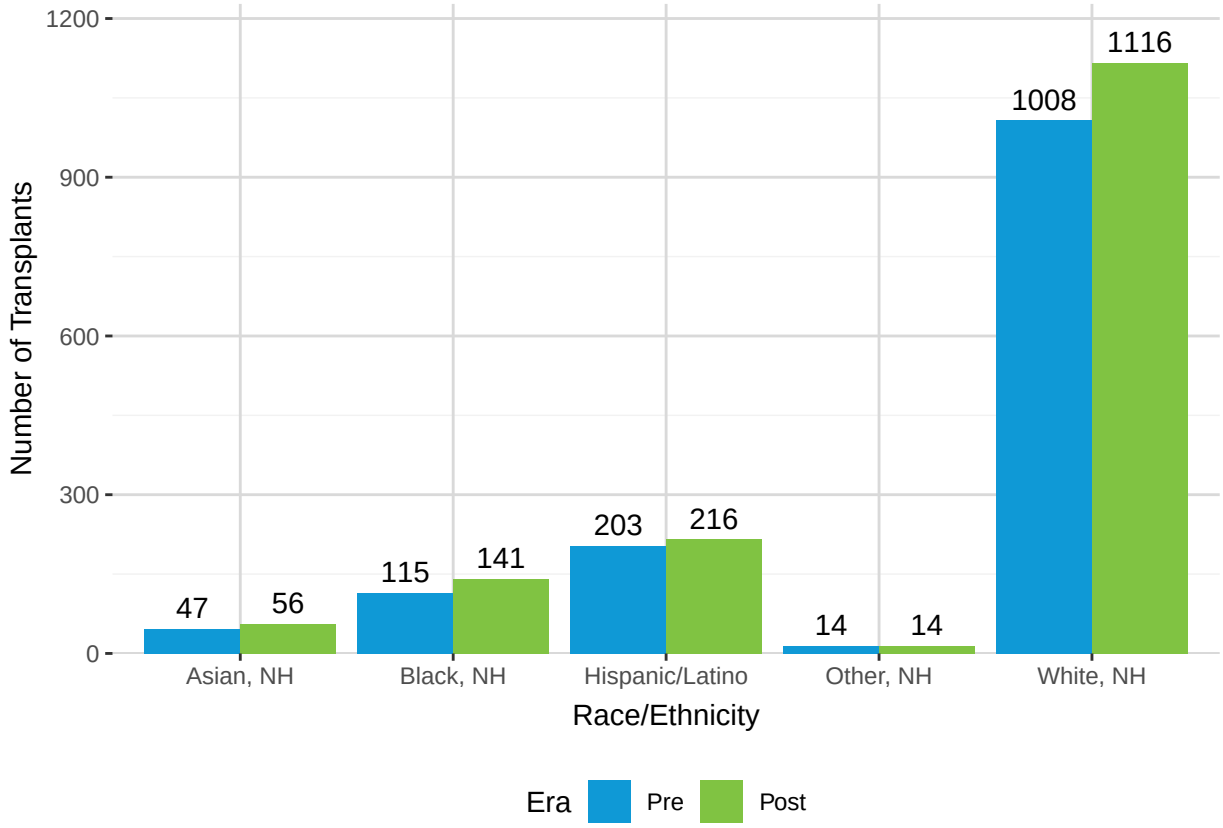



**Table 117: Number of Lung Transplants by Era and Race/Ethnicity**

| Race/Ethnicity | Pre | Post |
|---|---|---|
| Asian, NH | 47 (3.4%) | 56 (3.6%) |
| Black, NH | 115 (8.3%) | 141 (9.1%) |
| Hispanic/Latino | 203 (14.6%) | 216 (14.0%) |
| Other, NH | 14 (1.0%) | 14 (0.9%) |
| White, NH | 1,008 (72.7%) | 1,116 (72.3%) |
| Total | 1,387 (100.0%) | 1,543 (100.0%) |

Median distance from the donor hospital to transplant program increased across all race/ethnicity groups.

**Figure 118: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Race/Ethnicity**

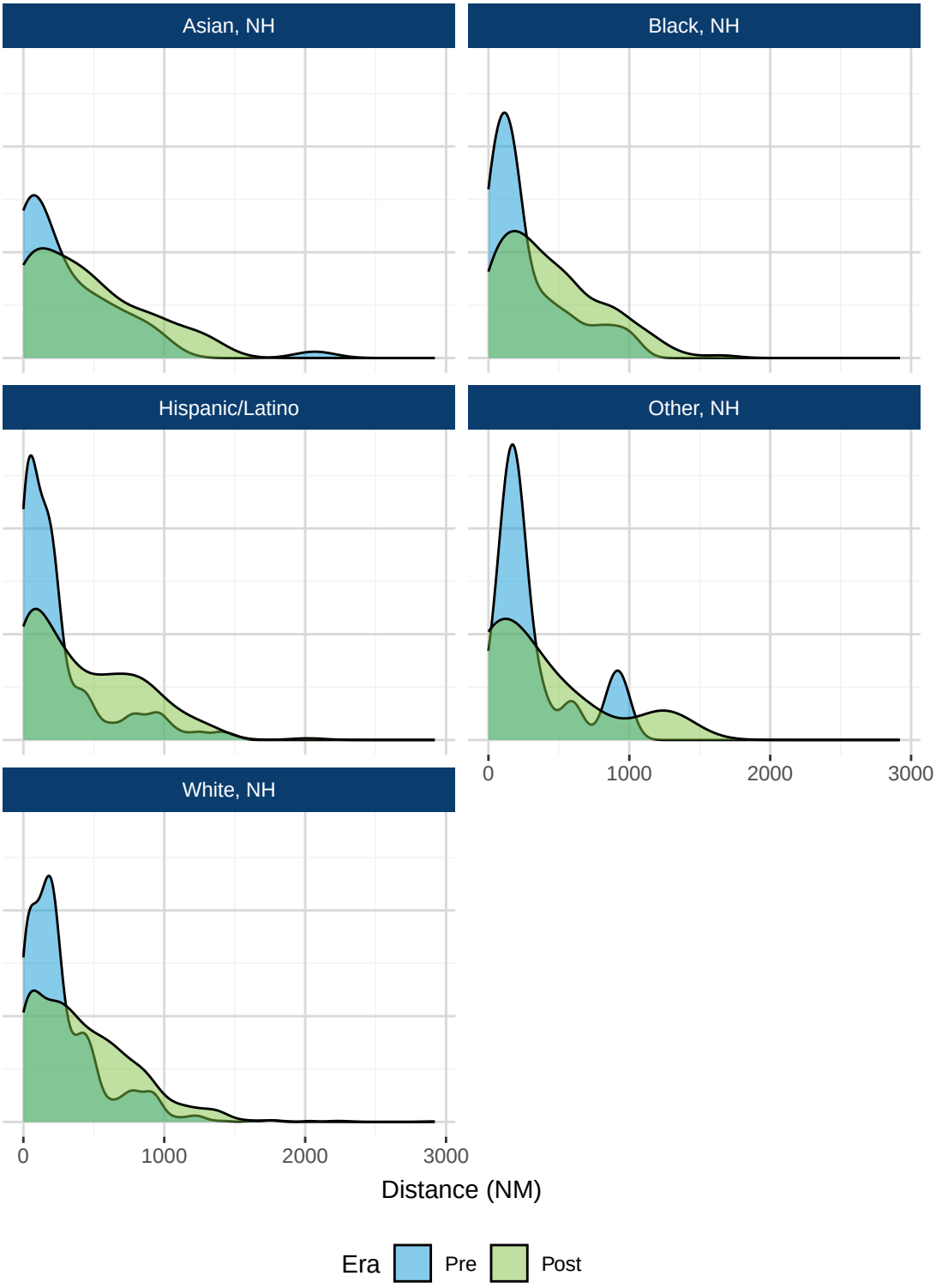


**Table 118: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Race/Ethnicity**

| Race/Ethnicity | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| Asian, NH | Pre | 47 | 0 | 3 | 24.00 | 160.0 | 315.26 | 482.50 | 2069 |
| | Post | 56 | 0 | 0 | 91.25 | 347.5 | 441.48 | 684.00 | 1355 |
| Black, NH | Pre | 115 | 0 | 0 | 67.50 | 168.0 | 269.56 | 385.00 | 1058 |
| | Post | 141 | 0 | 0 | 157.00 | 362.0 | 440.13 | 652.00 | 1652 |
| Hispanic/Latino | Pre | 203 | 0 | 0 | 41.50 | 158.0 | 257.13 | 298.00 | 1491 |
| | Post | 216 | 0 | 0 | 76.50 | 322.0 | 436.76 | 725.25 | 2021 |
| Other, NH | Pre | 14 | 0 | 0 | 137.25 | 208.0 | 311.07 | 337.75 | 950 |
| | Post | 14 | 0 | 0 | 31.75 | 251.5 | 371.93 | 546.00 | 1300 |
| White, NH | Pre | 1008 | 0 | 0 | 91.75 | 202.0 | 282.82 | 395.00 | 2036 |
| | Post | 1116 | 0 | 0 | 139.75 | 360.5 | 432.48 | 648.50 | 2920 |
| Total | Pre | 1387 | 0 | 0 | 78.00 | 195.0 | 279.35 | 391.00 | 2069 |
| | Post | 1543 | 0 | 0 | 129.00 | 353.0 | 433.55 | 662.50 | 2920 |

## Birth Sex

In both eras, there were more individuals assigned male at birth ever waiting than individuals assigned female at birth.

**Figure 119: Number of Candidates Ever Waiting by Era and Birth Sex**

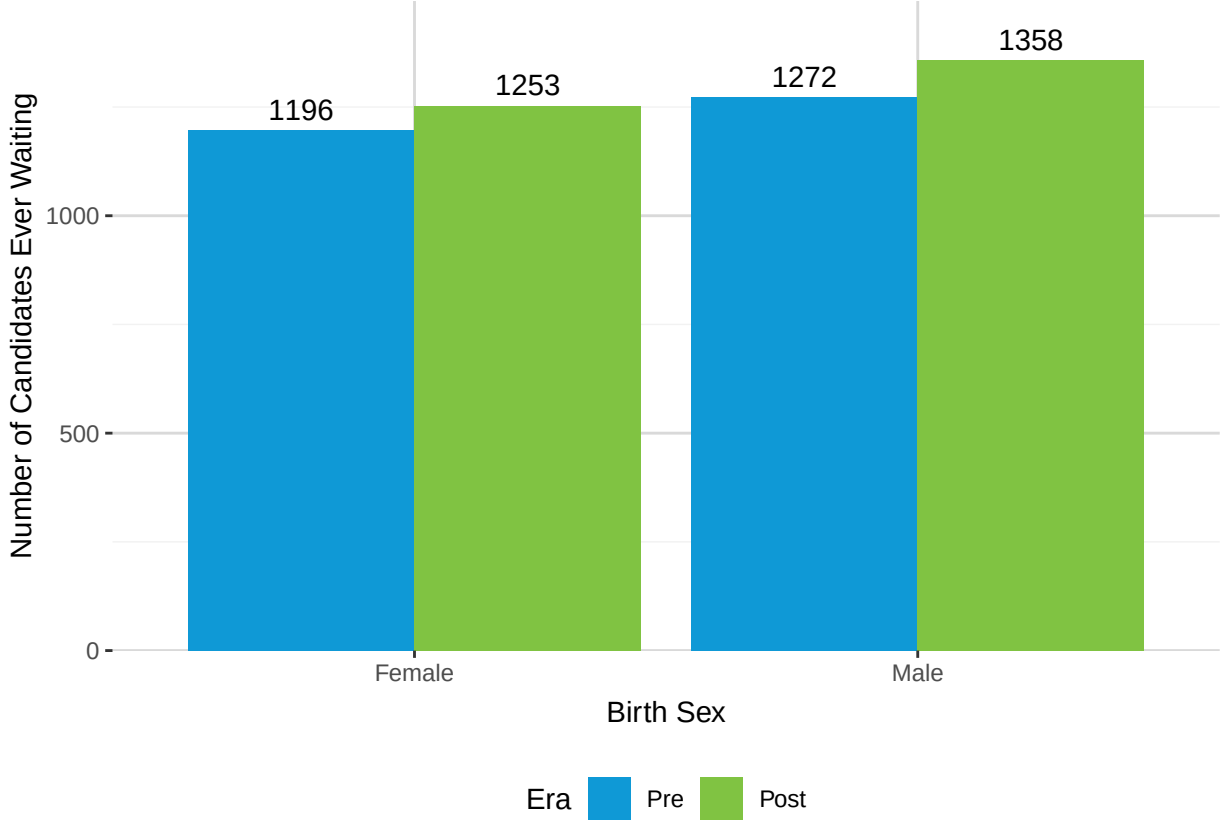



**Table 119: Number of Candidates Ever Waiting by Era and Birth Sex**

| Birth Sex | Pre | Post |
|---|---|---|
| Female | 1,196 (48.5%) | 1,253 (48.0%) |
| Male | 1,272 (51.5%) | 1,358 (52.0%) |
| Total | 2,468 (100.0%) | 2,611 (100.0%) |

There were more registrations for candidates assigned male at birth added to the waiting list in both eras than registrations for candidates assigned female at birth.

**Figure 120: Number of Registrations Added to the Waiting List by Era and Birth Sex**

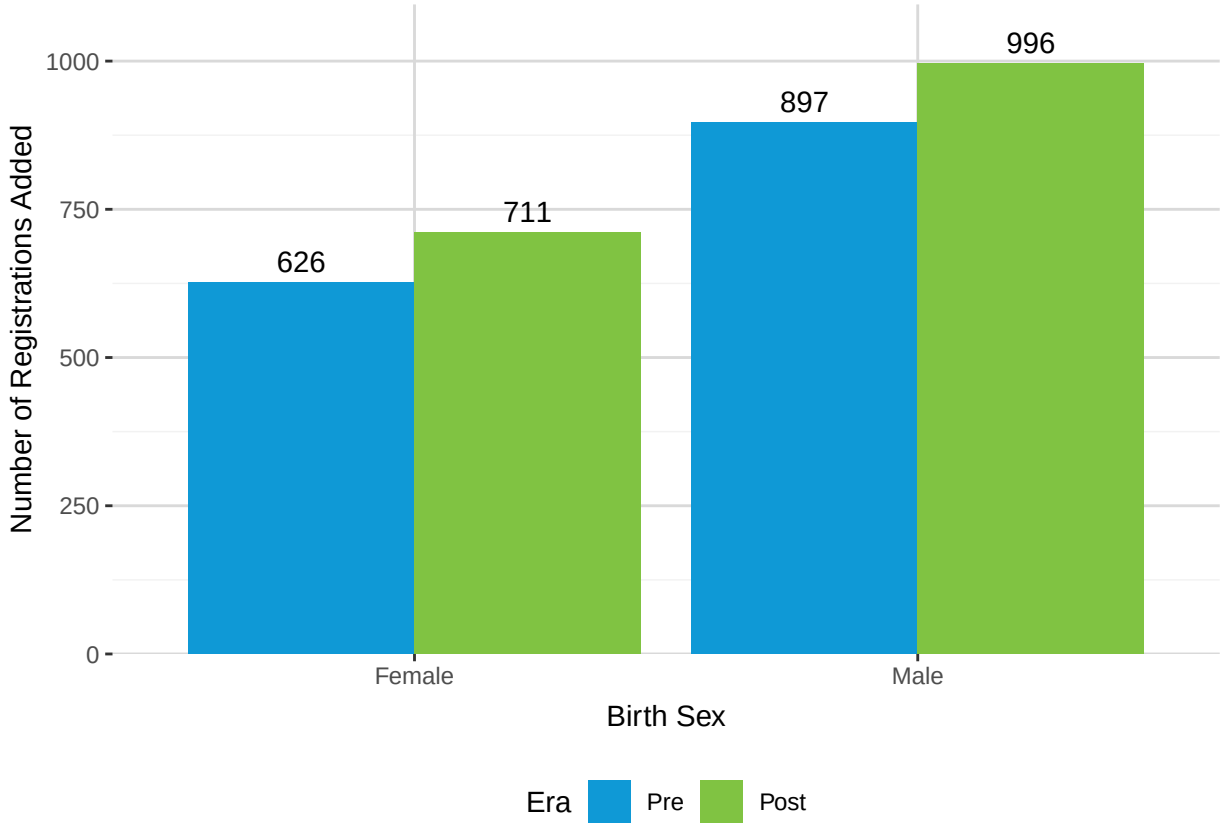



**Table 120: Number of Registrations Added to the Waiting List by Era and Birth Sex**

| Birth Sex | Pre | Post |
|---|---|---|
| Female | 626 (41.1%) | 711 (41.7%) |
| Male | 897 (58.9%) | 996 (58.3%) |
| Total | 1,523 (100.0%) | 1,707 (100.0%) |

In both eras, more candidates assigned female at birth were removed from the waiting list for death or too sick than candidates assigned male at birth.

**Figure 121: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and Birth Sex**

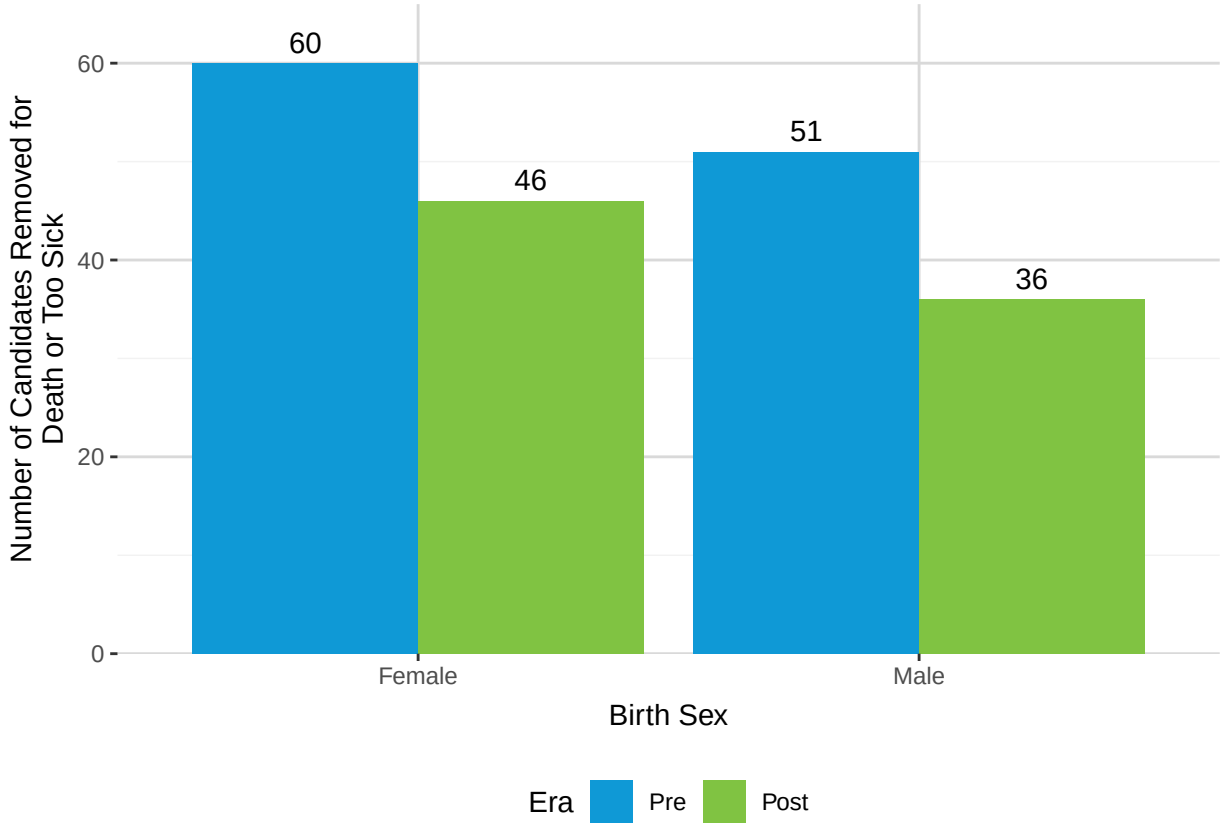



**Table 121: Number of Candidates Removed from the Waiting List for Death or Too Sick by Era and Birth Sex**

| Birth Sex | Pre | Post |
|---|---|---|
| Female | 60 (54.1%) | 46 (56.1%) |
| Male | 51 (45.9%) | 36 (43.9%) |
| Total | 111 (100.0%) | 82 (100.0%) |

In the post era, median time to transplant decreased for candidates assigned female at birth and remained stable for candidates assigned male at birth.

**Figure 122: Median Time to Transplant (Days) by Era and Birth Sex**

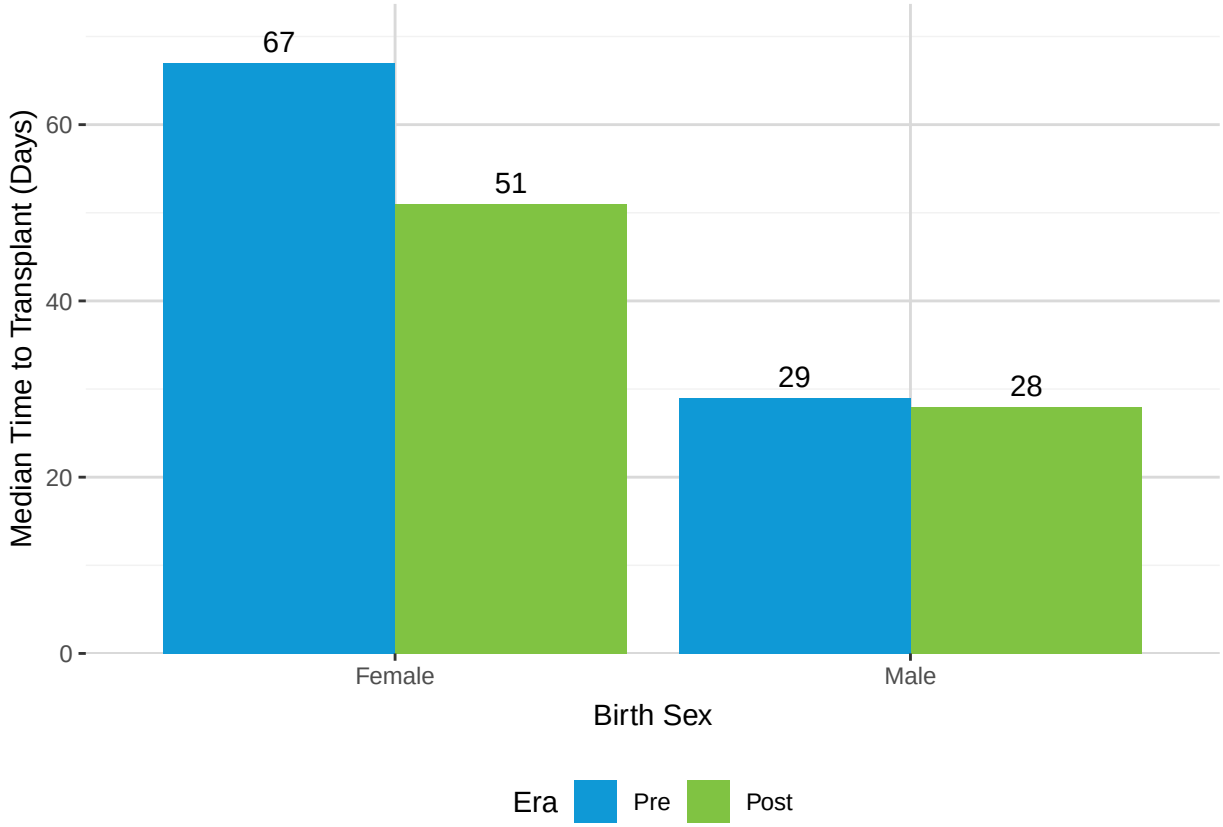



**Table 122: Median Time to Transplant (Days) by Era and Birth Sex**

| Birth Sex | Era | N Registrations | Median Time to Transplant (Days) |
|---|---|---|---|
| Female | Pre | 626 | 67 |
| | Post | 711 | 51 |
| Male | Pre | 897 | 29 |
| | Post | 996 | 28 |

The number of transplants increased in the post era for individuals assigned both male and female at birth.

**Figure 123: Number of Lung Transplants by Era and Birth Sex**

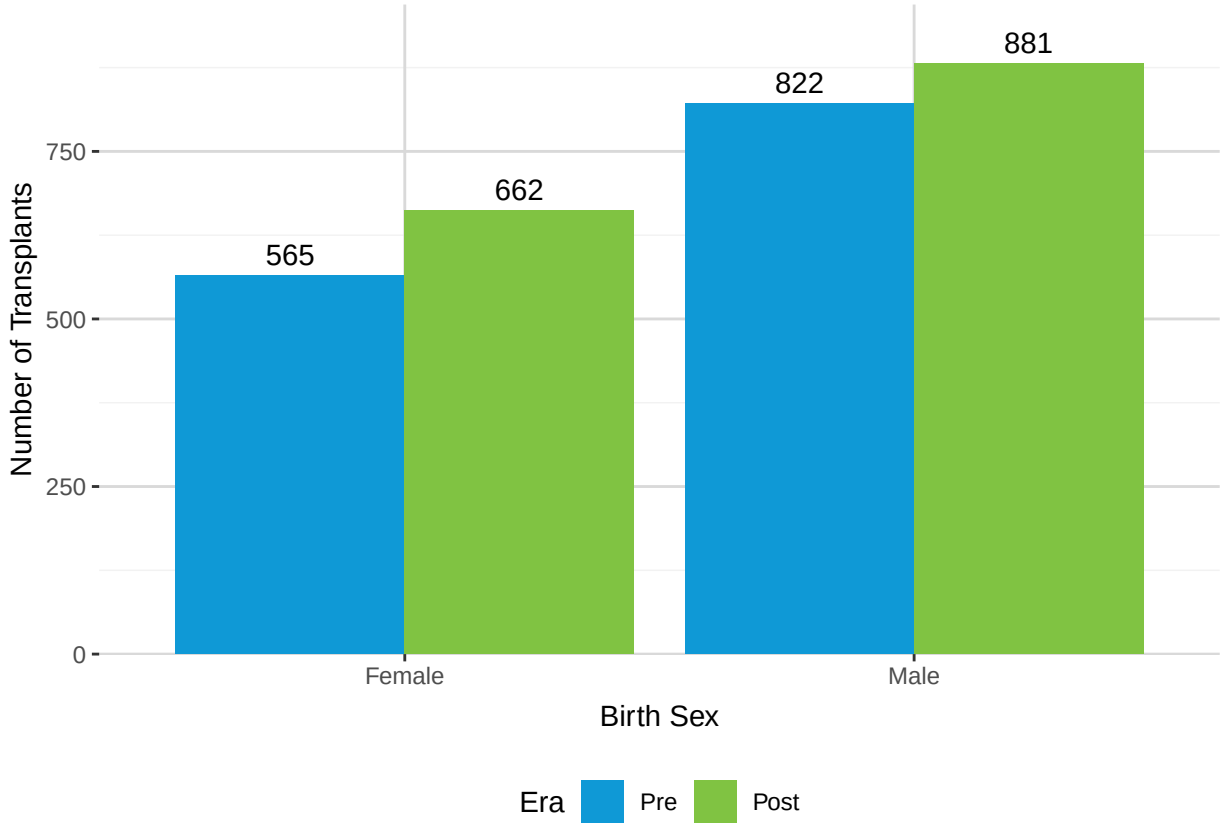



**Table 123: Number of Lung Transplants by Era and Birth Sex**

| Birth Sex | Pre | Post |
|---|---|---|
| Female | 565 (40.7%) | 662 (42.9%) |
| Male | 822 (59.3%) | 881 (57.1%) |
| Total | 1,387 (100.0%) | 1,543 (100.0%) |

In the post era, median distance from the donor hospital to transplant program increased for both recipients assigned female at birth and recipients assigned male at birth.

**Figure 124: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Birth Sex**

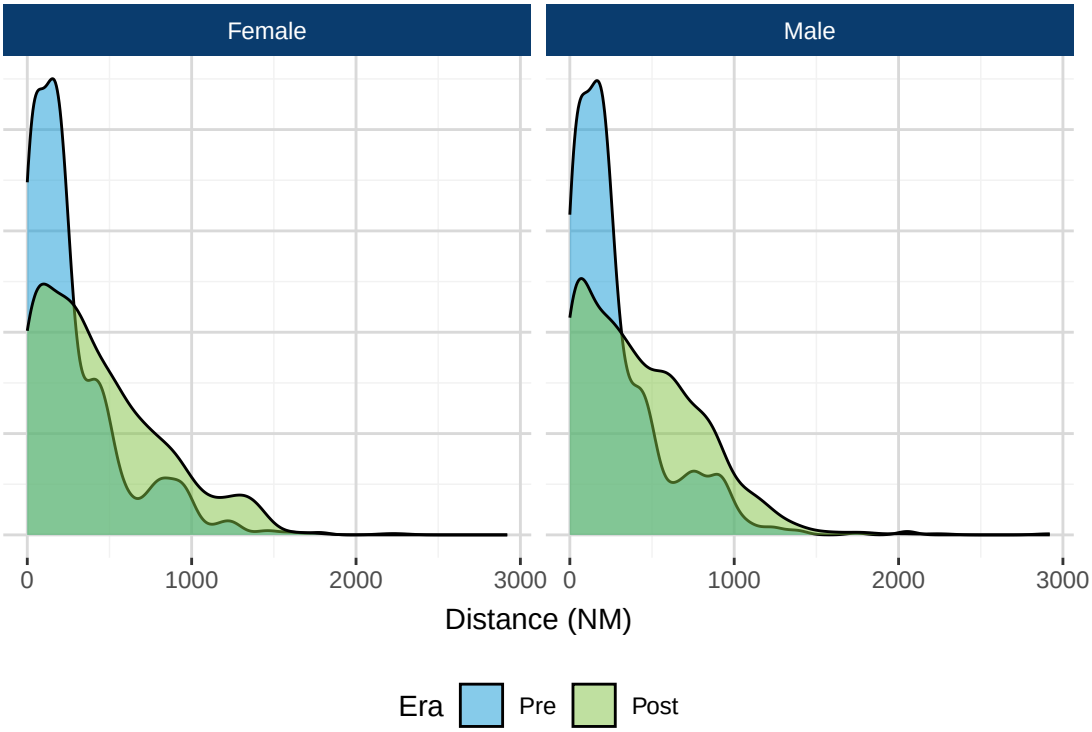



**Table 124: Distribution of Distance (in Nautical Miles) from Donor Hospital to Transplant Program by Era and Birth Sex**

| Birth Sex | Era | N | N Missing | Min | 25th Percentile | Median | Mean | 75th Percentile | Max |
|---|---|---|---|---|---|---|---|---|---|
| Female | Pre | 565 | 0 | 0 | 70.00 | 184.0 | 273.24 | 387.00 | 1777 |
| | Post | 662 | 0 | 0 | 131.75 | 339.0 | 435.05 | 661.75 | 2227 |
| Male | Pre | 822 | 0 | 0 | 81.00 | 199.5 | 283.54 | 397.25 | 2069 |
| | Post | 881 | 0 | 0 | 125.00 | 368.0 | 432.43 | 665.00 | 2920 |
| Total | Pre | 1387 | 0 | 0 | 78.00 | 195.0 | 279.35 | 391.00 | 2069 |
| | Post | 1543 | 0 | 0 | 129.00 | 353.0 | 433.55 | 662.50 | 2920 |