Advances in Thoracic Organ Transplantation

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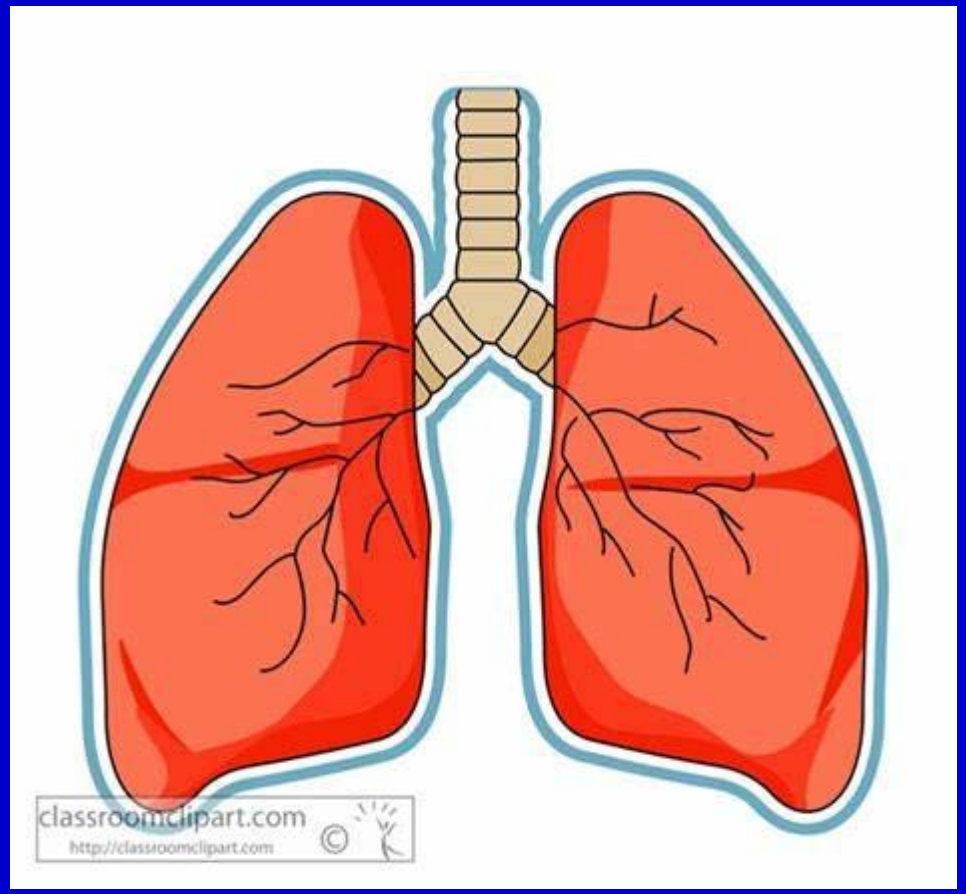
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Update on the Removal of DSA from Lung Allocation

(2 years pre vs post broader distribution, effective 11/24/17)

- Match LAS at transplant increased (45.9 to 47.9)
- Median distance between donor hospital and transplant program increased (109 to 166 NM)
- Overall no change in wait list mortality, slight decrease for some high LAS groups
- Minimal change in donor utilization, especially considering increased use of DCD donors and machine perfusion
- Wait list additions and lung alone transplants increased
- No significant change in 6 month unadjusted post TX survival

Geography

Ad Hoc Committee on Geography (2017) Charge

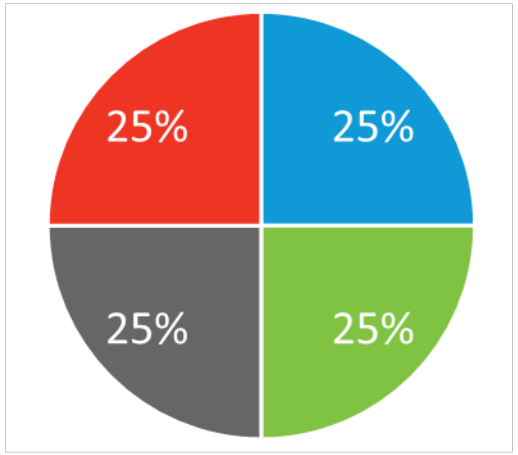
- Establish defined guiding principles for the use of geographic constraints in organ allocation
- Review and recommend frameworks/models for incorporating geographic principles into allocation policies
- Identify uniform concepts for organ specific allocation policies in light of the requirements of the OPTN Final Rule

Distribution Frameworks Considered

- Geography committee identified three distribution frameworks consistent with the Principles and the OPTN Final Rule
- Distribution Frameworks
  1. Fixed Distance from the Donor Hospital
  2. Mathematical Optimization
  3. Continuous Distribution

Geography – continuous distribution

Medical urgency score + Placement efficiency score + Outcomes score + Patient access score = Patient's Composite Allocation Score



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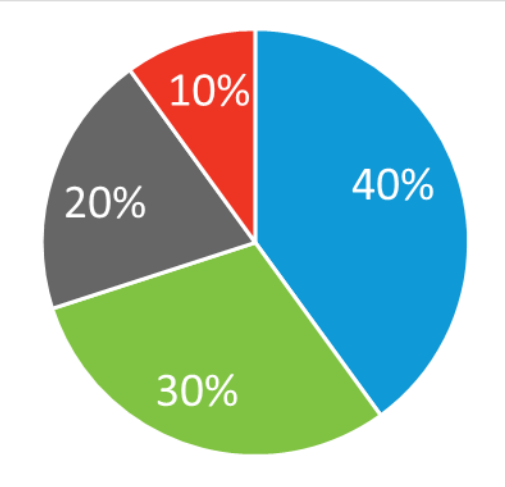
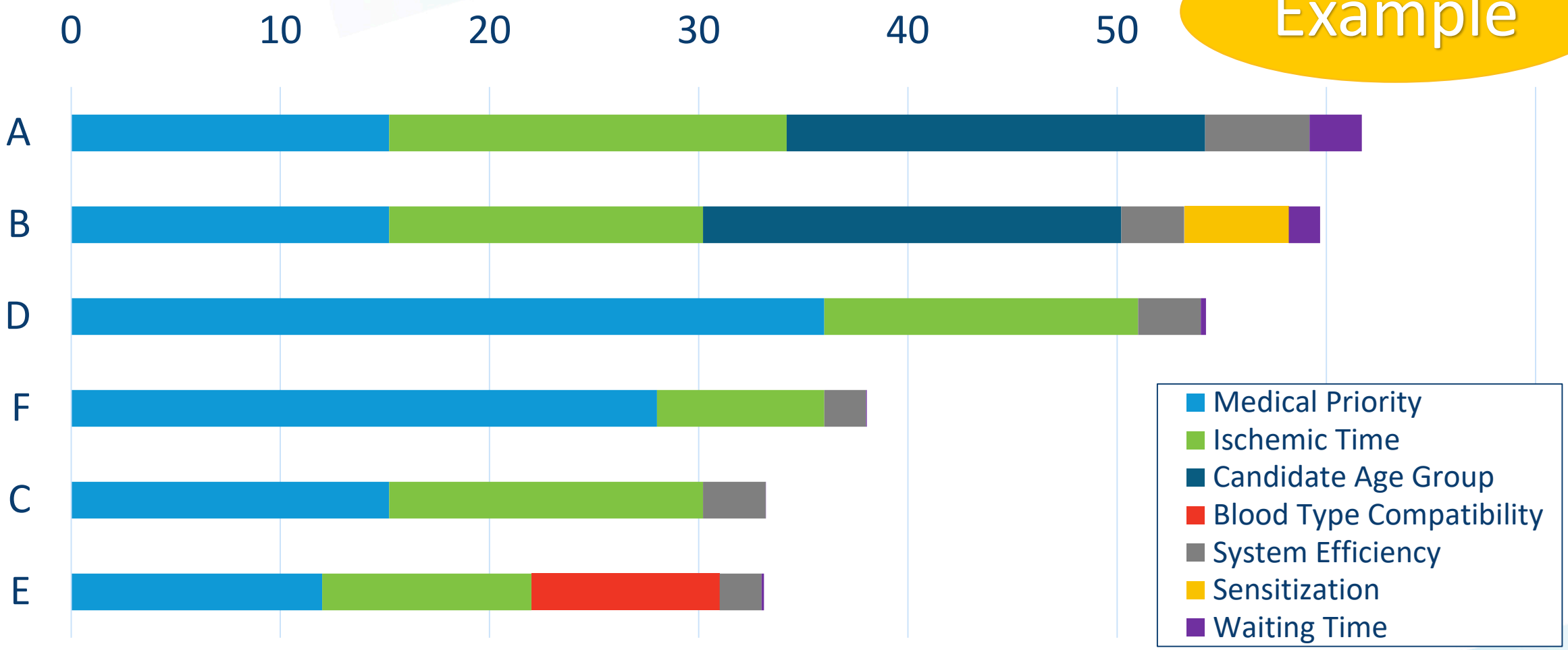
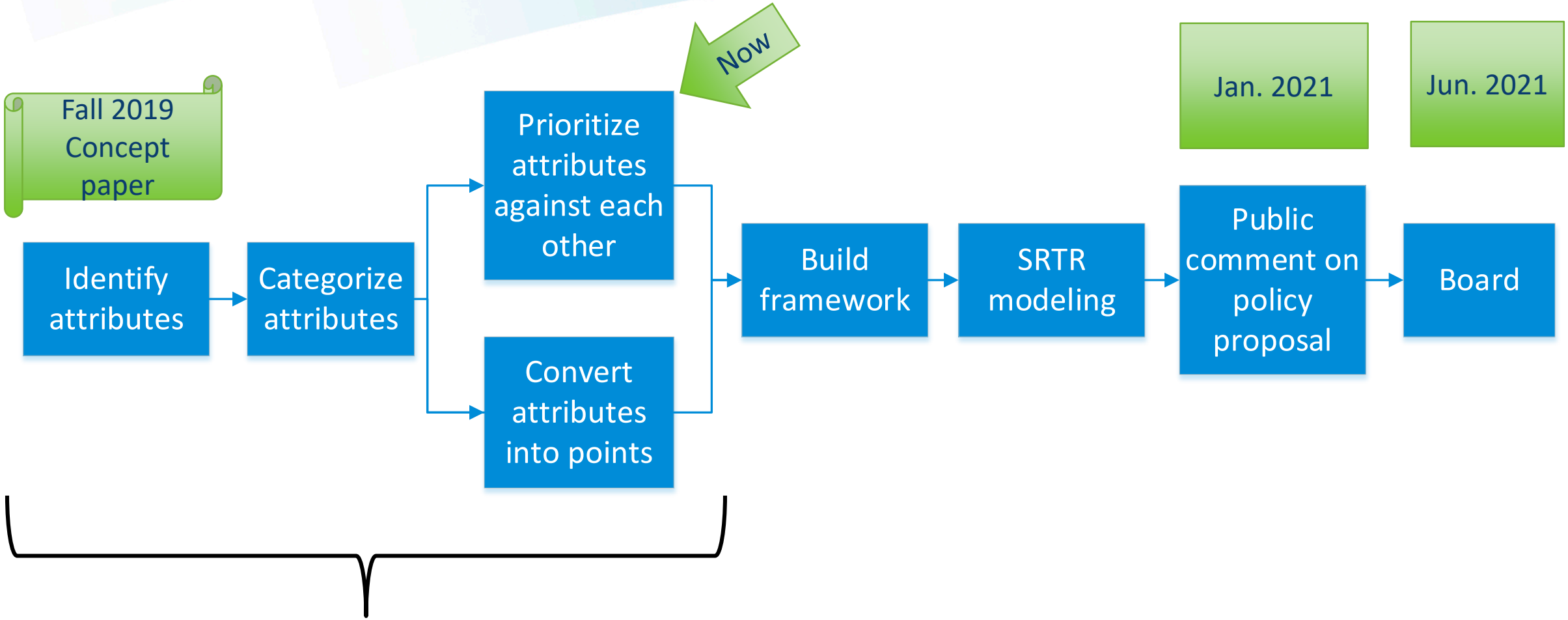


Hypothetical Match Run – Points-Based System

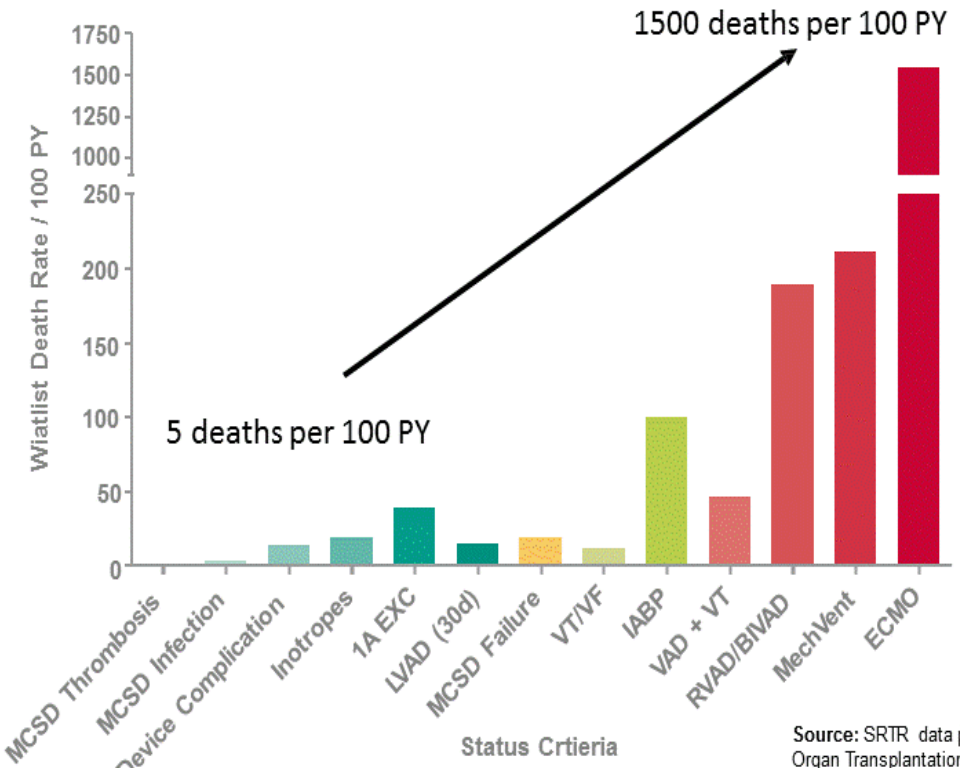
Example



Continuous Distribution of Lungs Development



Update on the Revised Heart Allocation System



OPTN | UNOS

Source: SRTR data presentation to the OPTN/UNOS Thoracic Organ Transplantation Committee (3/17/2014)

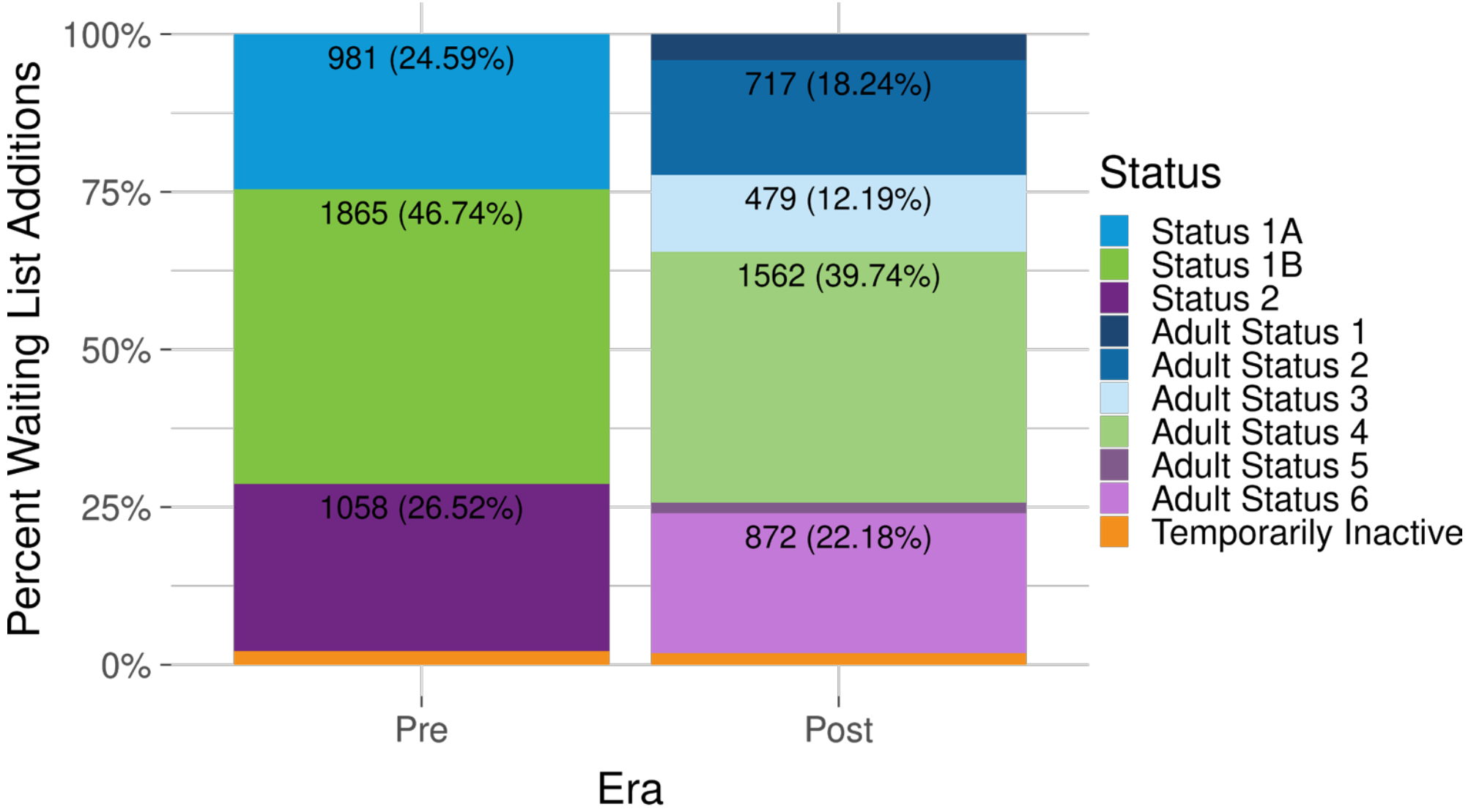
2018 Adult Heart Allocation Modifications

- Major changes:
  - New medical urgency status classifications and qualifying criteria
  - Broader distribution for critically ill candidates
  - Exception requests reviewed by other region's board rather than own region's board
- Primary goals:
  - Better stratify candidates according to waiting list mortality
  - Improve access to donor hearts for critically ill candidates
  - Reduce burden of exception requests

In This Presentation

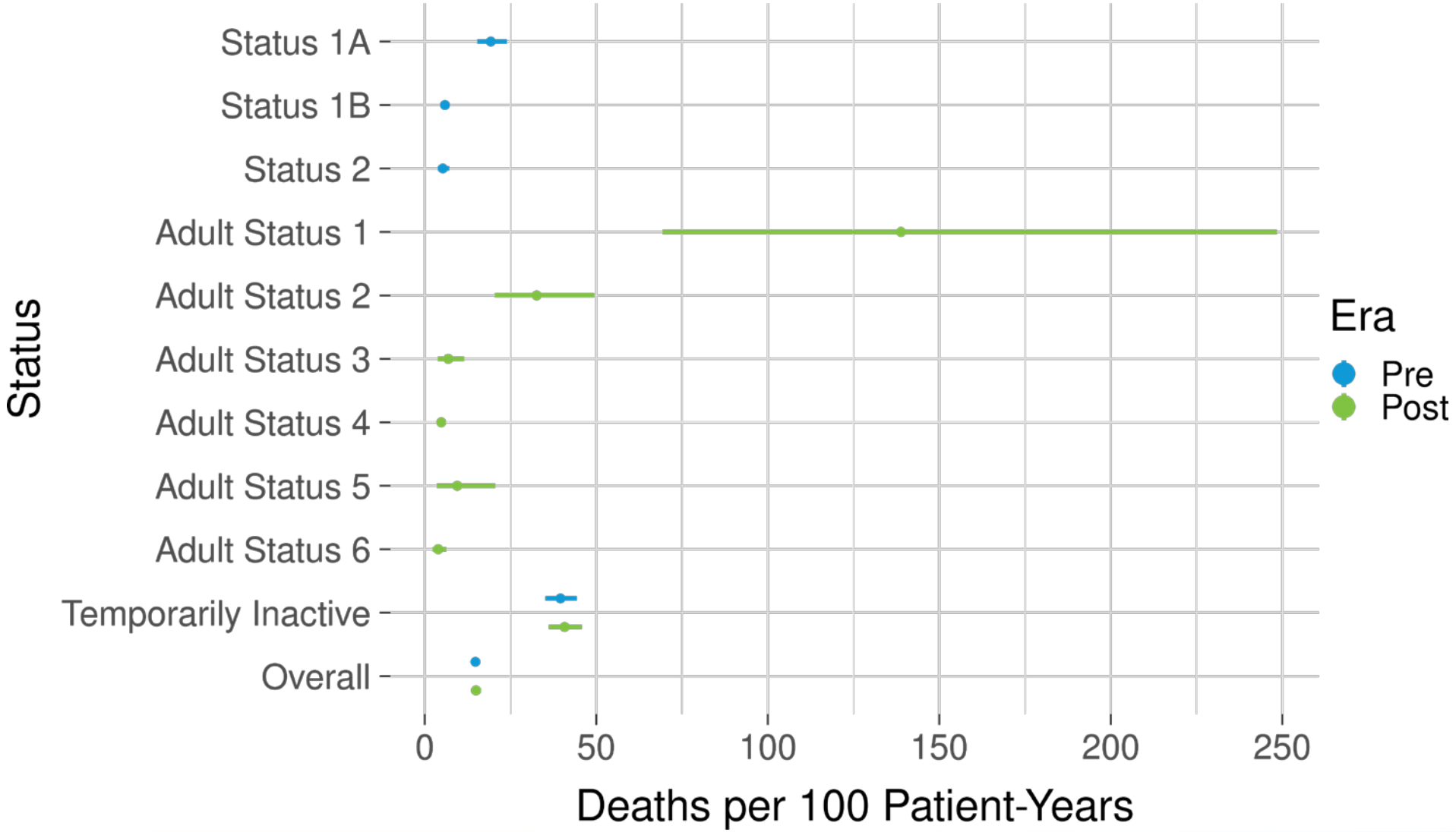
- October 18, 2018 – October 17, 2019 (one year, “post-implementation”)
  - Comparison period: October 18, 2017 – October 17, 2018 (“pre-implementation”)
  - Does NOT include data relating to the removal of DSA from allocation (happened January 9, 2020)

Waiting List Additions by Status and Era

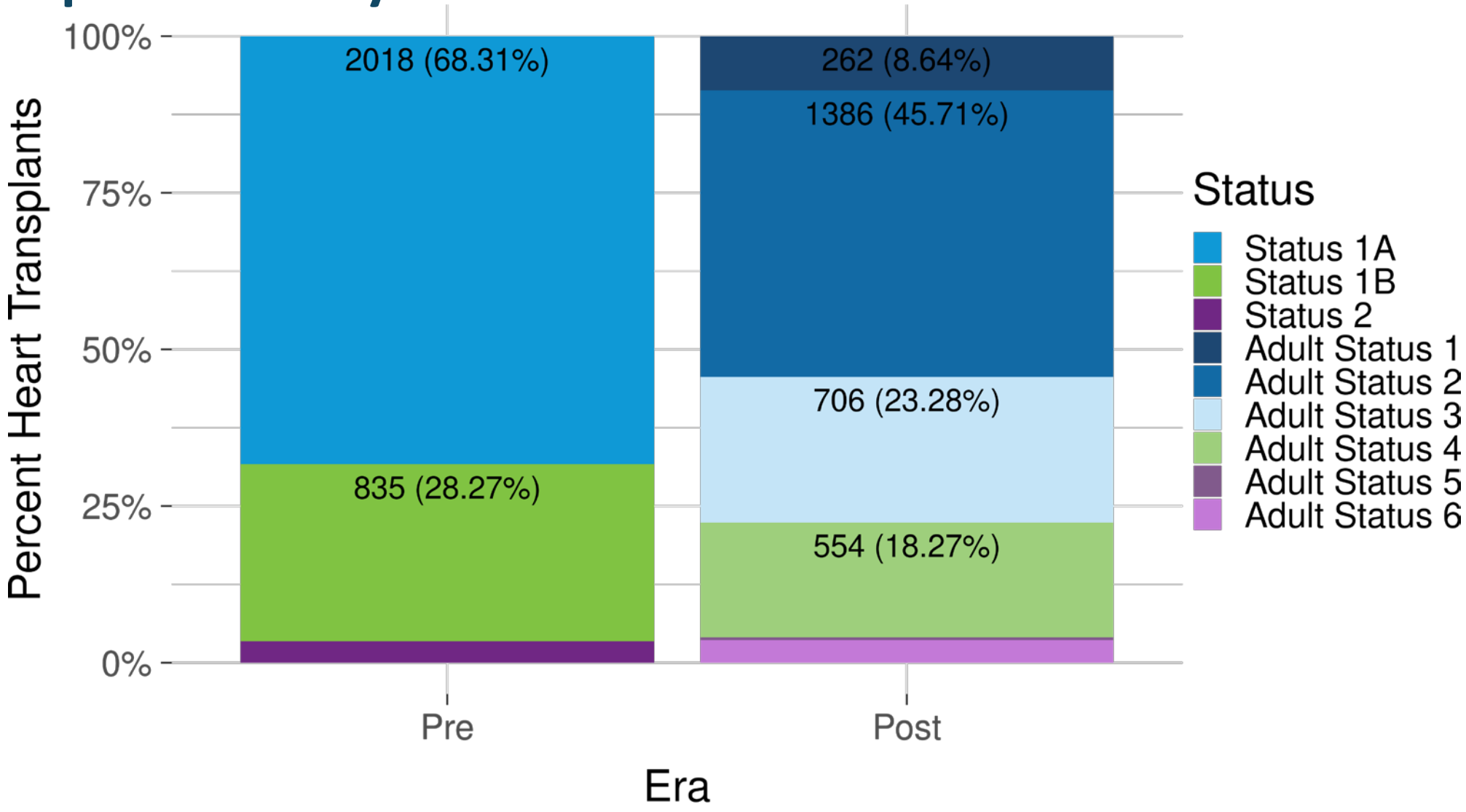


Statuses representing less than 5% of the total are not labelled on the plot

Waiting List Mortality



Transplants by Status and Era



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Devices at Transplant by Era

Device	Era	Count	Percent
ECMO	Pre	30	1.79%
ECMO	Post	159	7.42%
IABP	Pre	221	13.22%
IABP	Post	822	38.34%
LVAD	Pre	1328	79.43%
LVAD	Post	1002	46.74%
RVAD, LVAD+RVAD, TAH	Pre	93	5.57%
RVAD, LVAD+RVAD, TAH	Post	161	7.51%

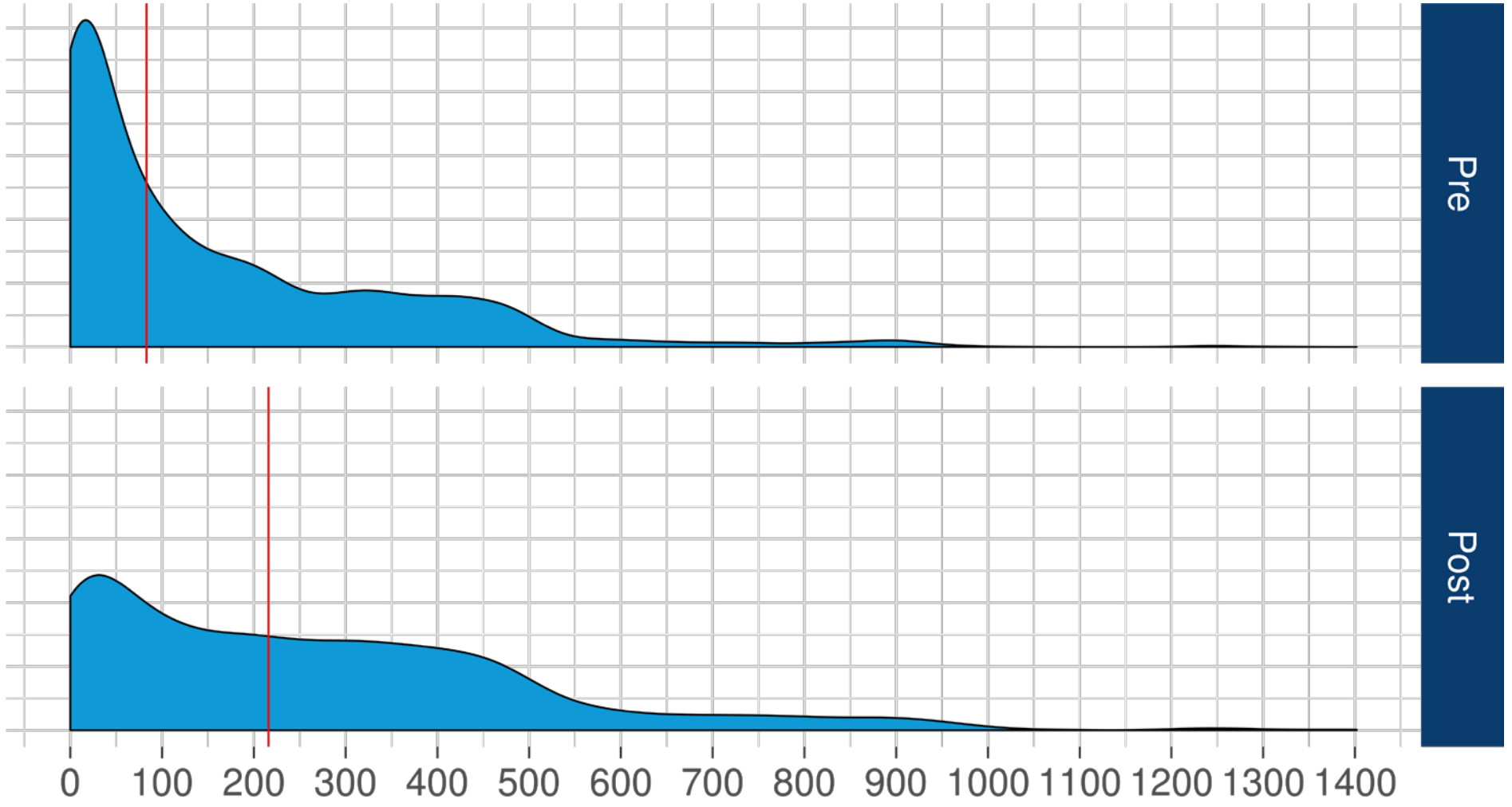
For complete device data, see full report

Median Days to Transplant

Era	Status	Days Waiting
Pre	Status 1A	56
Pre	Status 1B	201
Pre	Status 2	**
Pre	**Overall**	**198**

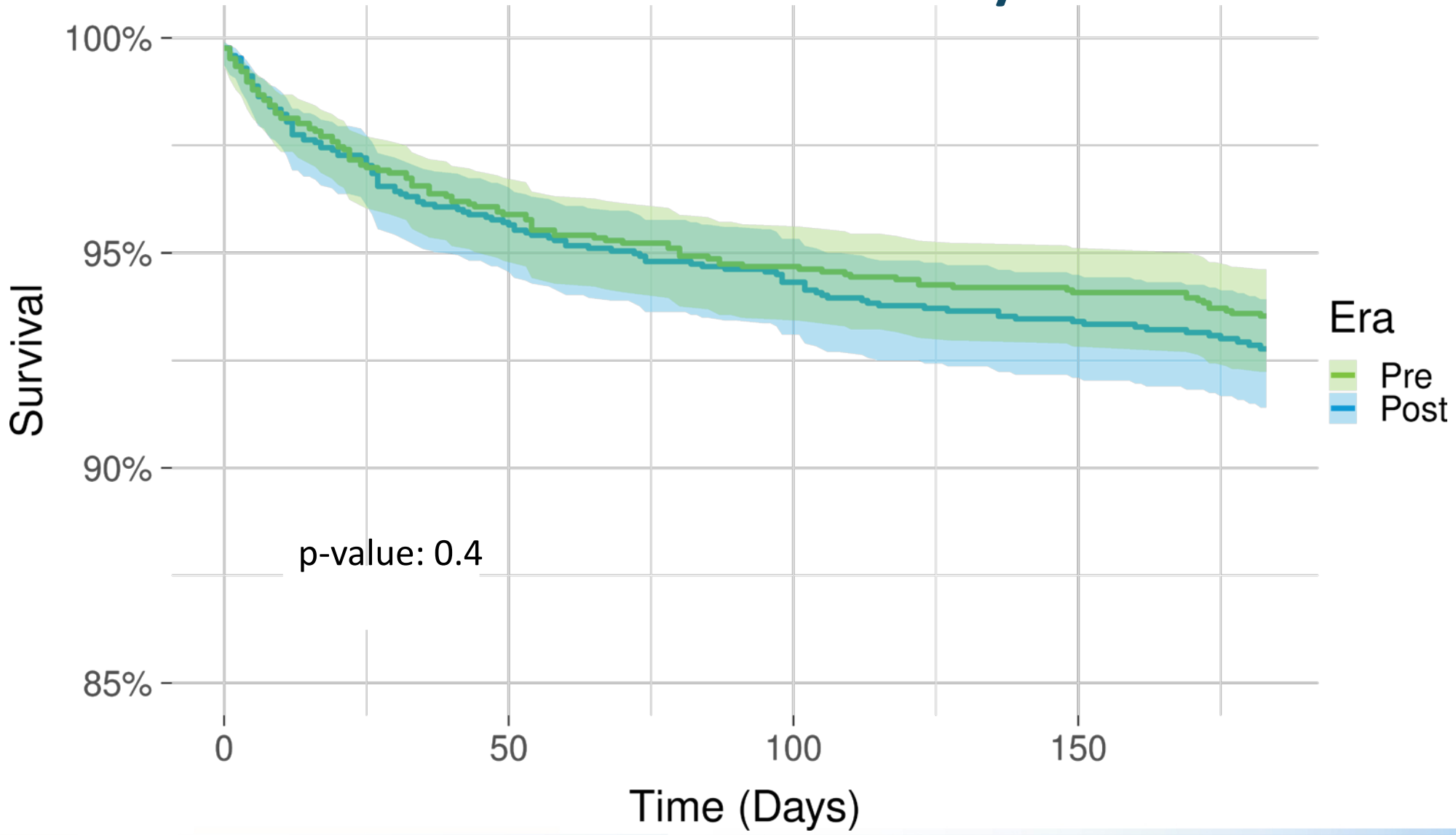
Era	Status	Days Waiting
Post	Adult Status 1	4
Post	Adult Status 2	9
Post	Adult Status 3	27
Post	Adult Status 4	262
Post	Adult Status 5	**
Post	Adult Status 6	**
Post	**Overall**	**111**

Distance Traveled at Transplant by Era



Vertical lines indicate the median distance traveled for each era

Six-Month Patient Survival by Era



Takeaways

- Increase in use of VA ECMO and especially IABPs
  - IABP use greatest for candidates in Adult Status 2
- No significant change in waiting list mortality
  - But new statuses do more accurately stratify medically urgent candidates
- Dramatic decrease in median waiting time for medically urgent candidates
- Transplant rates increased for medically urgent candidates
  - Overall rate significantly higher than pre-implementation
- No significant difference in six-month graft or patient survival
- 300-400 exception requests per month; almost all are approved
- No clear impact on pediatric heart candidates

Innovations in Thoracic Transplantation

Lung Perfusion / Rejuvenation

DCD Heart Transplant Facilitated by Organ Perfusion

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Transplantation for COVID Lung and Heart Disease

- Transplants performed for COVID lung disease; possibility of COVID myocarditis/cardiomyopathy requiring heart transplant
- “Data” so far primarily from press reports
- On 10/28/20 OPTN added COVID codes as reasons for thoracic transplantation
- Lung candidates (will be considered as LAS Group D)
    - COVID 19: ARDS
    - COVID 19: pulmonary fibrosis
- Heart candidates
    - COVID 19: dilated myopathy, active myocarditis
    - COVID 19: dilated myopathy, history of myocarditis