Essentials of Oncology, Solid Organ and Blood/Marrow Transplant Management for the Health Care Team

Scottsdale, Arizona ● March 14–15, 2022

OPTUMHealth™
Education

The Continuous Distribution Model: A New System for Organ Allocation

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Disclosure

OPTN/UNOS BOD Member currently, through June 2023

Continuous Distribution

What is continuous distribution of organs?

- A more **fair and flexible** way to allocate deceased donor organs
- A **patient-centric** framework that considers all candidate characteristics at the same time, with no need for classifications
- A system that ranks all candidate by their **composite allocation scores**
- A **major change** in the allocation system

The OPTN has modified the allocation system several times in previous years to better achieve the goals of the transplant community.

For more information about continuous distribution visit: https://optn.transplant.hrsa.gov/governance/key-initiatives/continuous-distribution/

Historical Perspective

Transplant Center A: NY side of GW Bridge
Transplant Center B: NJ side of GW Bridge
24 miles apart

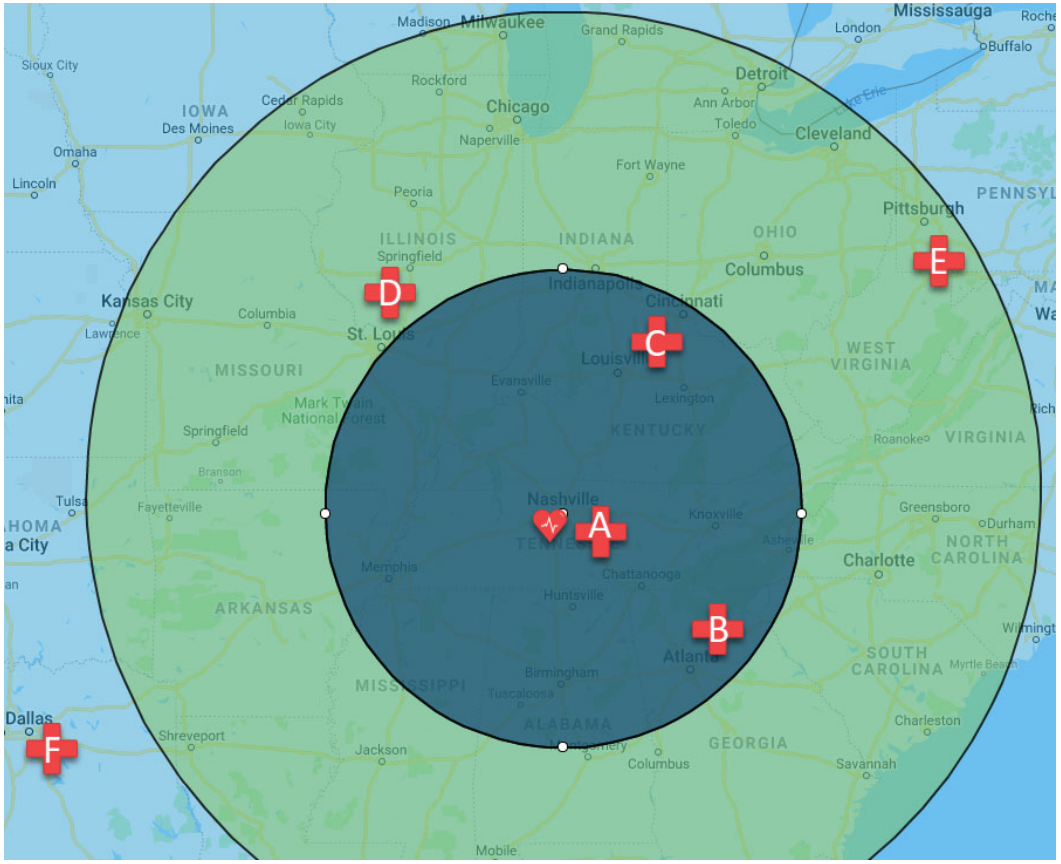
Different primary OPO
Different DSA (old concept)
Different State Insurance
Different organ availability
Major differences in transplant opportunities that ran along sex and racial differences.

Continuous Distribution - Allocation Without Boundaries

The current system has hard boundaries that create inequities. Examples:

- ABO compatibility
- Age groups
- Geography

Continuous Distribution will change allocation from a **classification-based system** to a **points-based system**.



Geography is NOT THE ONLY BOUNDARY

Current kidney allocation system

Sequence A KDPI 0-20%	Sequence B KDPI 20-34%	Sequence C KDPI 35-85%	Sequence D KDPI 86-100%
100% Highly Sensitized	100% Highly Sensitized	100% Highly Sensitized	All Highly Sensitized
Inside circle prior living donor	Inside circle prior living donor	Inside circle prior living donor	0-ABDRmm
Inside circle pediatrics	Inside circle pediatrics	98-99% Highly Sensitized	Inside circle safety net
98-99% Highly Sensitized	98-99% Highly Sensitized	0-ABDRmm	Inside circle
0-ABDRmm	0-ABDRmm	Inside circle safety net	National
Inside circle top 20% EPTS	Inside circle safety net	Inside circle	
0-ABDRmm (all)	Inside circle adults	National	
Inside circle (all)	National pediatrics		
National pediatrics	National adults		
National (top 20%)			
National (all)			

O-ABDR mm – no HLA mismatches for HLA A,B,C

Organ allocation requires making complex decisions

In continuous distribution, every patient will receive a **composite allocation score**

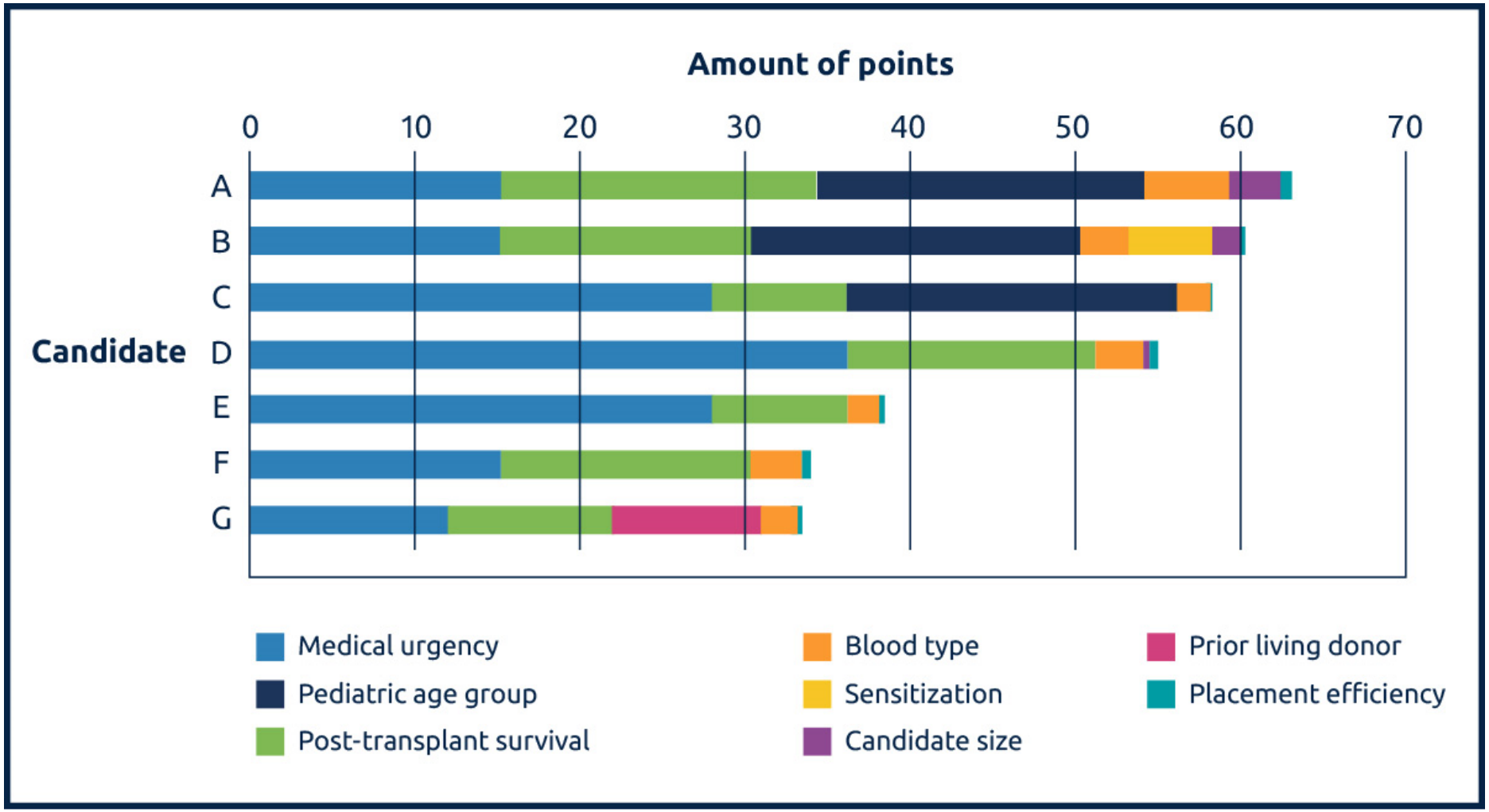
- Each attribute will have a specific weight relative to the entire formula
- Some attributes will have more effect than others on the total score
- No one attribute will decide an organ match
- The total score will determine a candidate's position on the waitlist

Example of weighted attributes in a composite allocation score

45% 10% 15% 15% 15% 100%

Every organ type will have its own unique formula with differently-weighted attributes.

JA [2]1

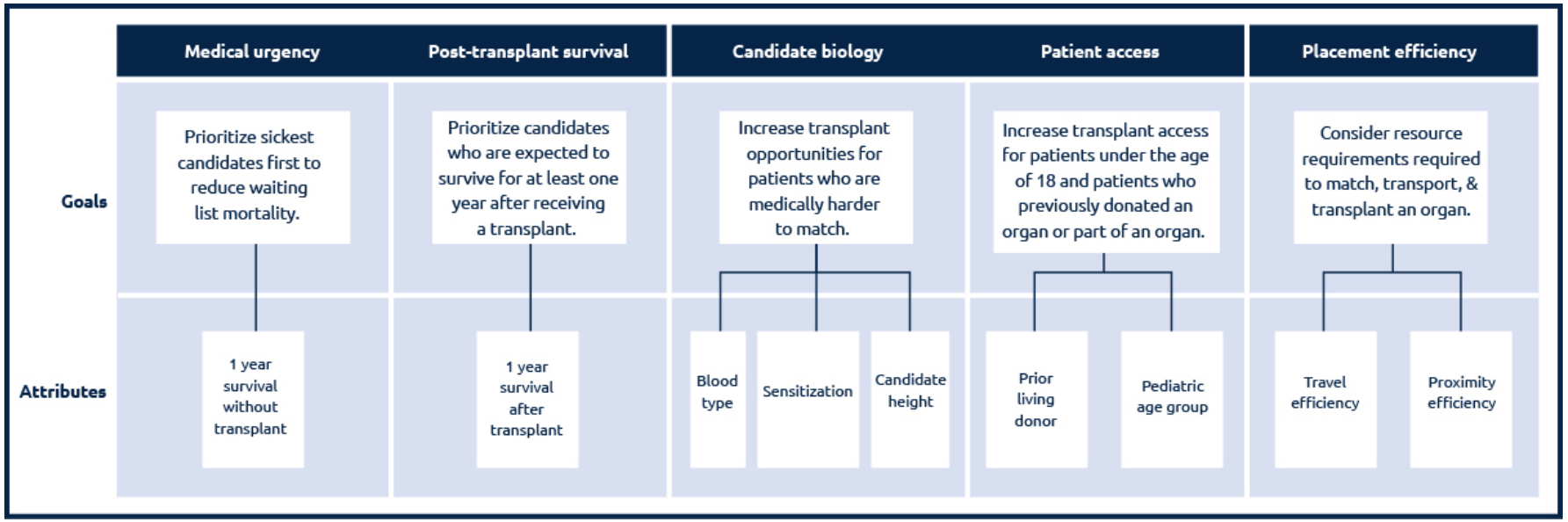

Amount of points
0
10
20
30
40
50
60
70
Candidate
A
B
C
D
E
F
G
Medical urgency
Pediatric age group
Post-transplant survival
Blood type
Sensitization
Candidate size
Prior living donor
Placement efficiency

Slide 11

JA [2]1 If you're somebody that doesn't like a lot of slides, I'll tell you that you can explain all of Cont Dist from this one slide.
1) Notice how candidates are ranked from the highest score to the lowest. That's how the new match run will work.
2) Also notice how there are multiple colors associated with each candidate. That's because of the multiple attributes in the composite allocation score.
3) Now take a look at just the light blue bar on the left of each's candidate's bar. Notice how the blue bars aren't the same size for everybody. That's because not everybody has the same amount of medical urgency. In fact, in this example, the candidate with the most medical urgenccy (D) isn't even at the top of the list.
4) Now compare the relative size of that blue medical urgency bar to the purple 'candidate size' bars on the right. Even the largest purple bar is smaller than the smallest blue bar. That's because in this example, we're placing more weight or emphasis on medical urgency than we are candidate size.
James Alcorn, 3/1/2022

JA [2]2

Lung Allocation Hierarchy



Slide 12

JA [2]2 This is a simplified version of what is on the next screen. For a general/beginner presentation, I would probably use this slide as opposed to the next.

For either, the talking points are pretty similar:
1) The OPTN has identified five goals, consistent with the Final Rule, that we currently use for organ allocation.
2) We'll customeize the specific attributes for each organ. For example, lung has a measurement for post transplant survival but heart and kidney do not yet have one. Or, kidney might place more weight on waiting time than heart.
3) In this way we can achieve a consistent framework while also recognizing the clinical and scientific differences between the organs.
James Alcorn, 3/1/2022

	Medical Urgency	Post-Transplant Survival	Candidate Biology	Patient Access	Placement Efficiency
Lung	• Part of LAS	• Part of LAS	• Blood Type • CPRA • Height	• Prior Living Donors • Pediatrics • Height	• Proximity Efficiency
Kidney	• Medical Urgency Definition	• HLA Matching • EPTS	• Blood Type • CPRA	• Prior Living Donors • Pediatrics • Kidney-after-Liver Safety Net • Waiting Time	• Proximity Efficiency • Dual vs. Single • En Bloc
Pancreas			• Blood Type • CPRA	• Prior Living Donors • Pediatrics • Waiting Time	• Proximity Efficiency
Liver	• MELD • PELD		• Blood Type • CPRA	• Prior Living Donors • Pediatrics • Waiting Time	• Proximity Efficiency

Match Run Ordering Analysis

Mock Match Run: Ped O

Rank CAS	Current Policy R..	Change	
1	9	+ 8	58.1118
2	15	+ 13	56.2568
3	2	- 1	56.1746
4	6	+ 2	56.0088
5	5	=	55.9960
6	10	+ 4	55.2363
7	4	- 3	55.0955
8	3	- 5	55.0585
9	1	- 8	54.2261
10	19	+ 9	53.8279
11	7	- 4	53.4830
12	20	+ 8	53.2948
13	41	+ 28	53.1401
14	16	+ 2	52.6383
15	17	+ 2	52.5973
16	8	- 8	52.0413
17	11	- 6	51.5368
18	42	+ 24	51.4679
19	22	+ 3	51.2996

Select scenario for mock match run

Ped O

Set Attribute Weights

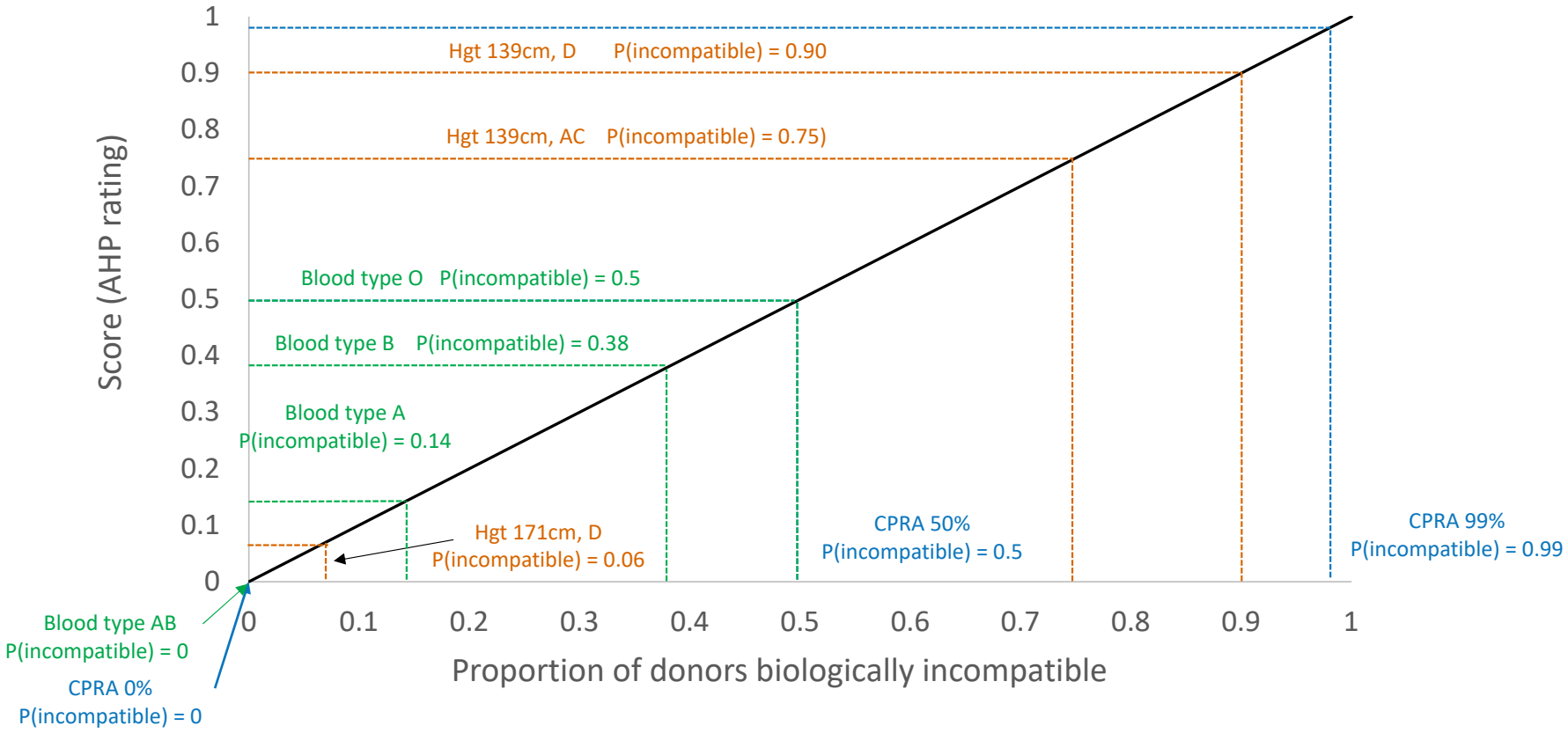
27.67%	WLAUC (Priority)
9.95%	PTAUC (Priority)
6.39%	ABO (Priority)
6.39%	CPRA (Priority)
6.39%	Height (Priority)
9.01%	PLD (Priority)
25.59%	Pediatric Age (Priority)
5.02%	Proximity Efficiency (Priority)
3.59%	Travel Efficiency (Priority)

Total Priorities

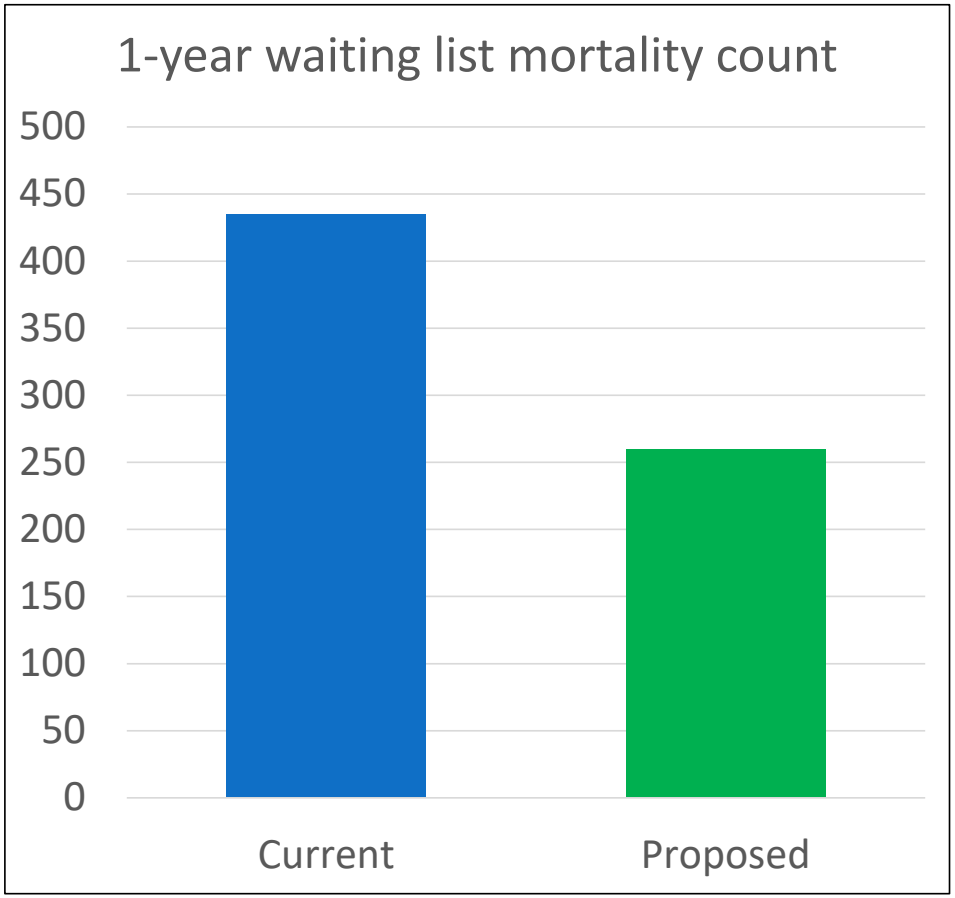
100.00%

Rating Scales

Candidate Biology: We're measuring the same thing!



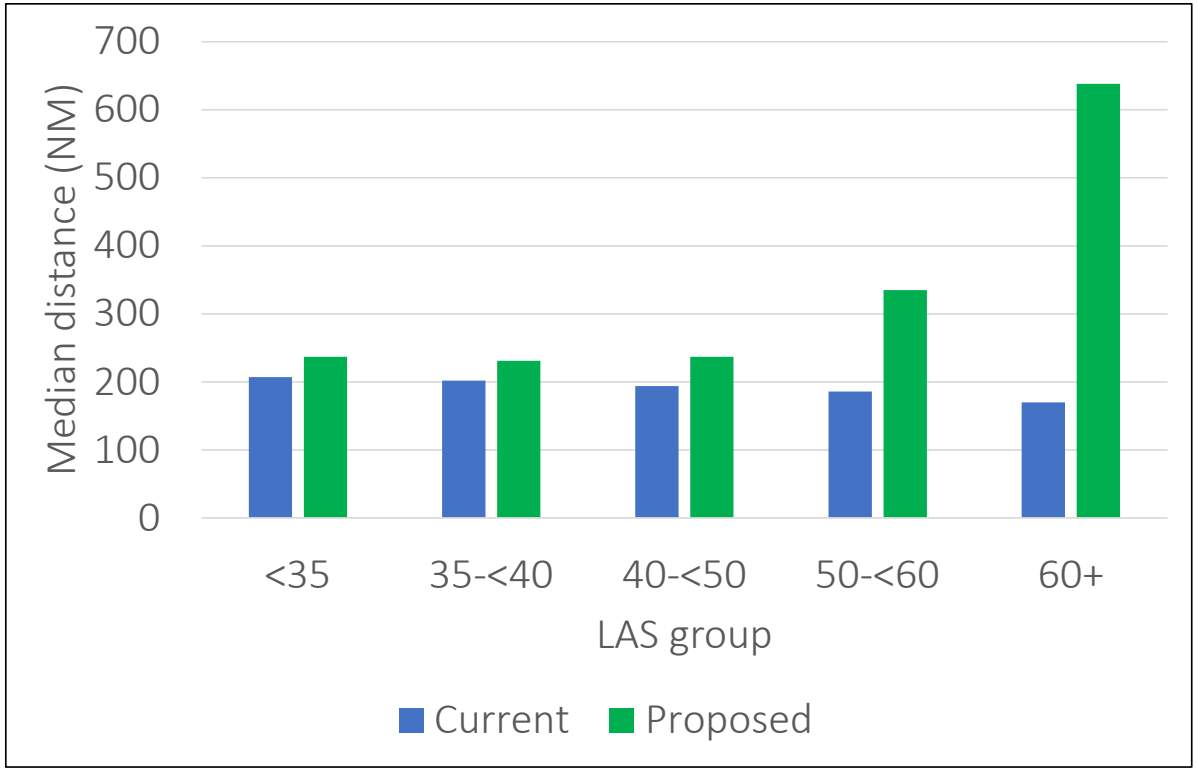
Waiting List Mortality



- Reduces overall lung waiting list mortality by more than 1/3

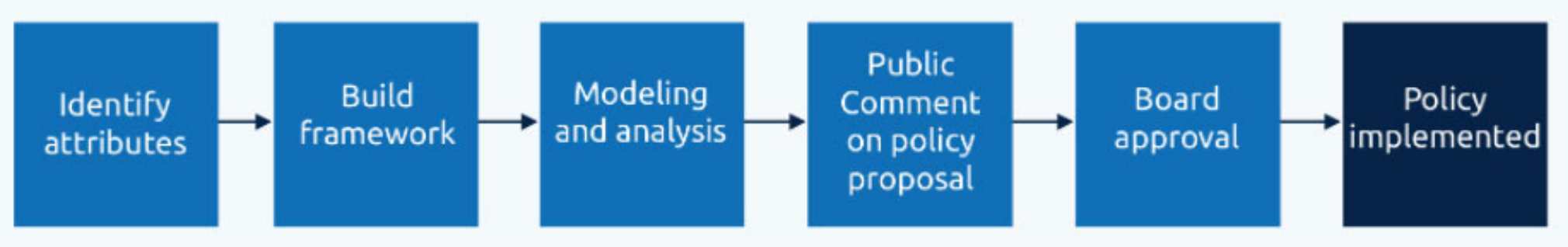
Efficiency

- Traveling farthest for the highest LAS/most urgent candidates
- Much smaller changes in distances for lower LAS candidates



Process to move each organ type to continuous distribution

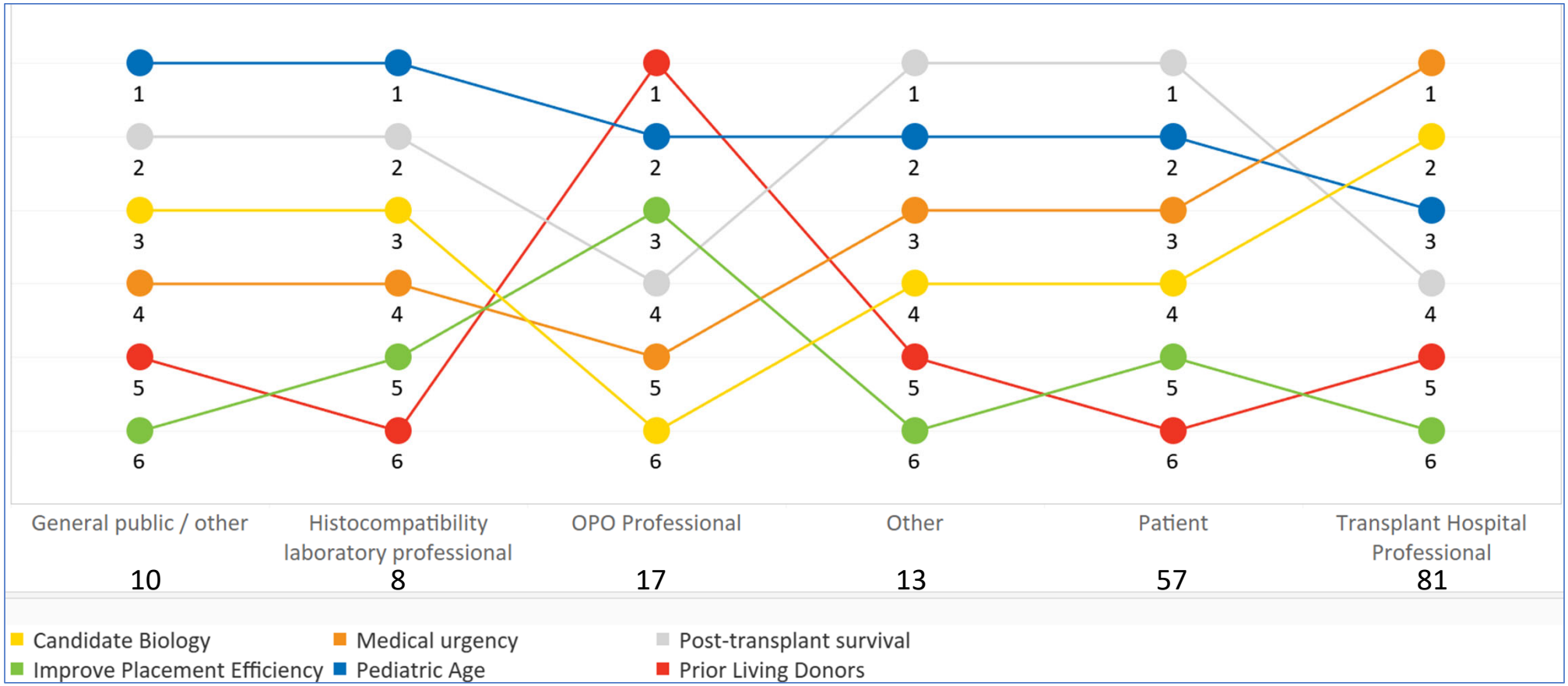
Community input is being used through each phase of development to inform evidence-based rules for the new system. Here are the steps we'll take:



What did the prior system look like?

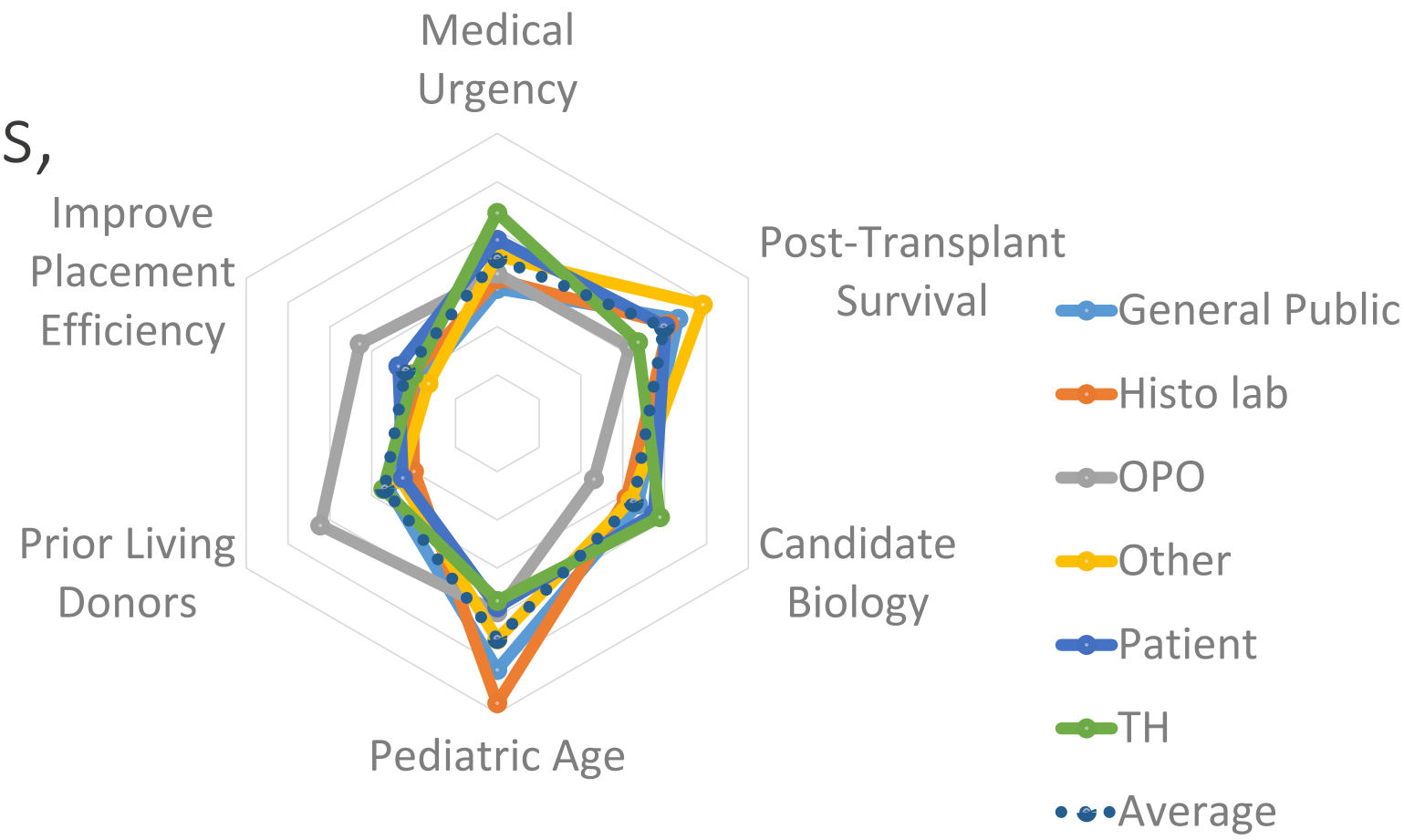
- Revealed Preference Analysis/Multi-Criteria Decision Making
- This is how we think, how we considered and negotiated prior policy.
- Analysis of prior decisions made that drove policy making/what value judgments did we make that shaped policy?
- In review of prior Lung Policy, it was realized that proximity between donor and recipient carried the greatest weight (81% of the score).
- This was very different from what came next, which was using an Analytical Hierarchy Process to identify and weigh value judgments toward building a CAS (Composite Allocation Score).

Priorities Rankings



JA [2]5

Different Populations, Different Priorities



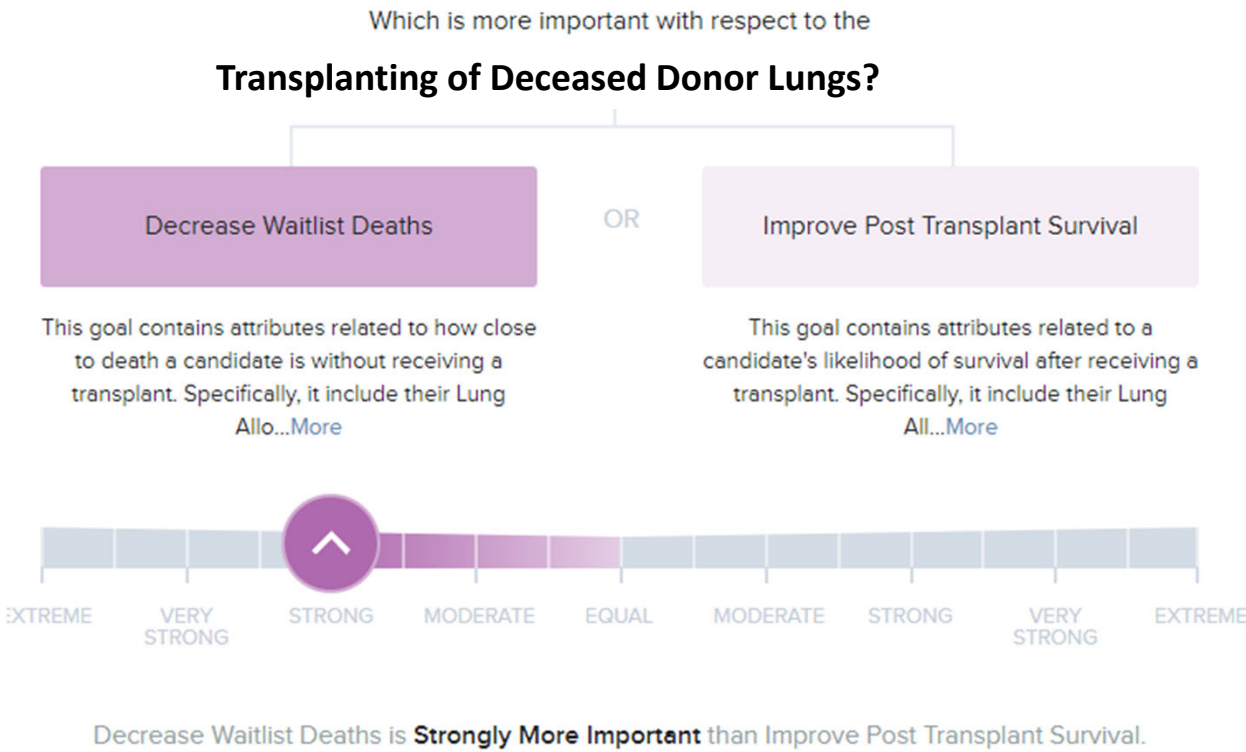
Slide 21

JA [2]5 This is another way to show the information on the previous slide. For a general presentation, I would show one or the other but not both.

James Alcorn, 3/1/2022

AHP (Analytic Hierarchy Process)

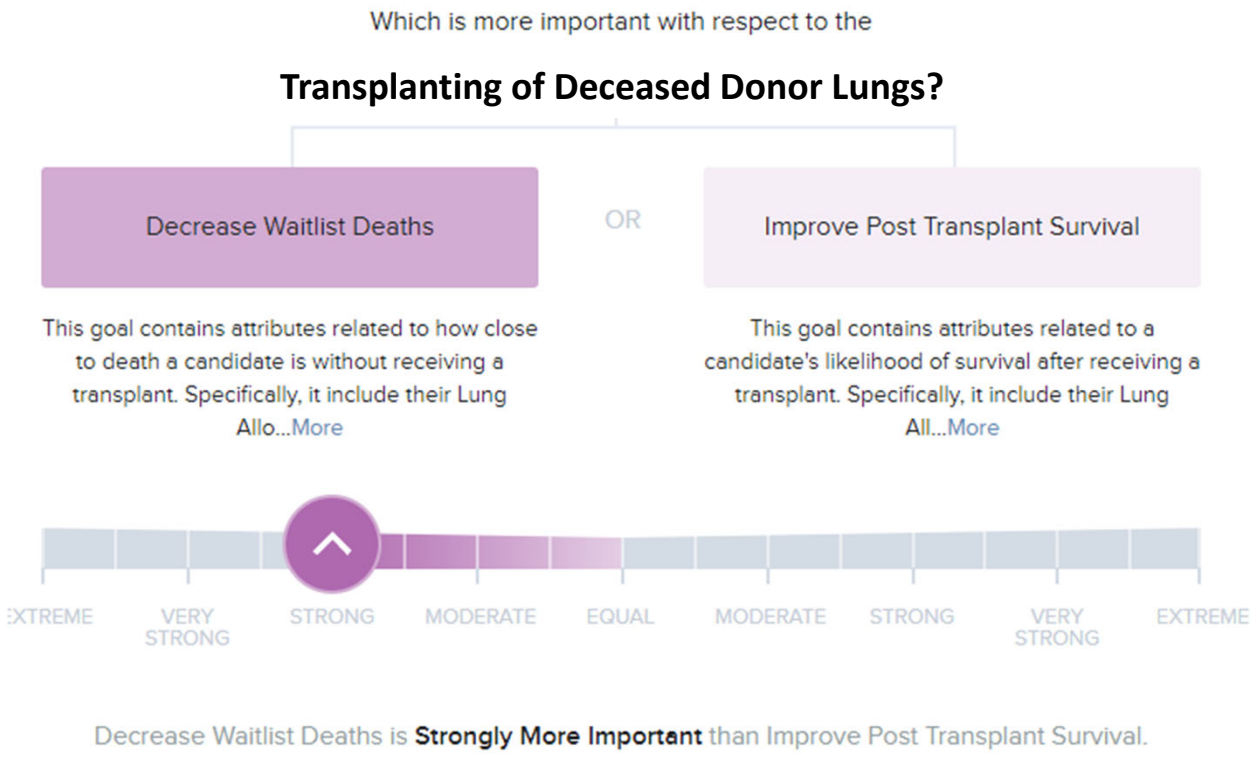
- The OPTN is using AHP to help determine the relative importance of attributes related to organ allocation.



What's more important?

AHP (Analytic Hierarchy Process)

- Decision making is more than a scientific process
- Some questions can’t be answered by science alone



How the OPTN is using AHP

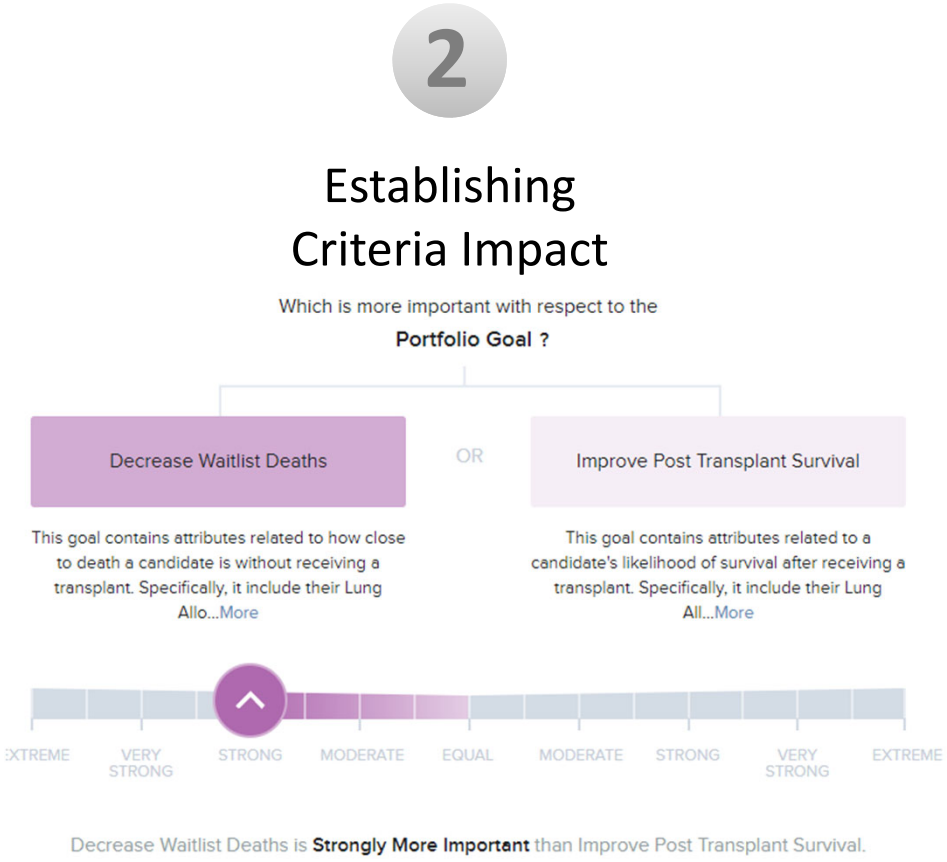
1

Criteria Defining

First the committees will define criteria

Every organ-specific OPTN committee will identify all of the competing questions and define the criteria that support OPTN goals when allocating that particular type of deceased donor organs.

How the OPTN is using AHP



Stakeholders will participate in AHP

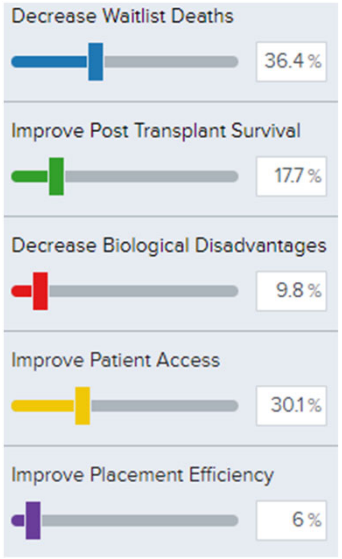
In the second step, the committees will ask stakeholders (professionals, patients and caregivers) to weigh in and submit their judgments about the criteria for the respective organ type.

This will be done on a software platform called **Decision Lens** and will require approximately 15 minutes to complete.

How the OPTN is using AHP

3

Final Criteria Weights



Each OPTN committee will use their AHP stakeholder data to finalize criteria weights and develop a policy proposal

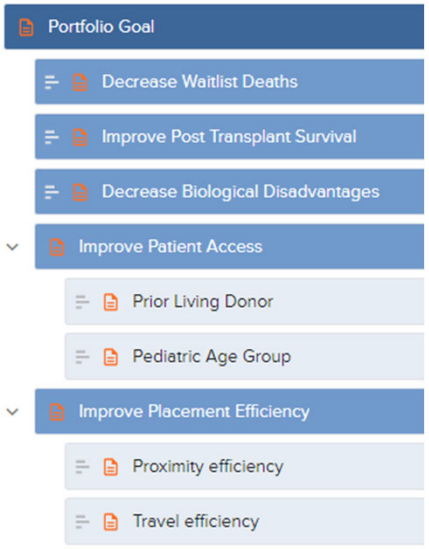
The third step happens once all of the informed judgments are completed and the OPTN organ-specific committee has their criteria weights.

Each committee will take this and other analysis into consideration as they build their policy proposal for modeling and public comment.

Stakeholder feedback is key to AHP

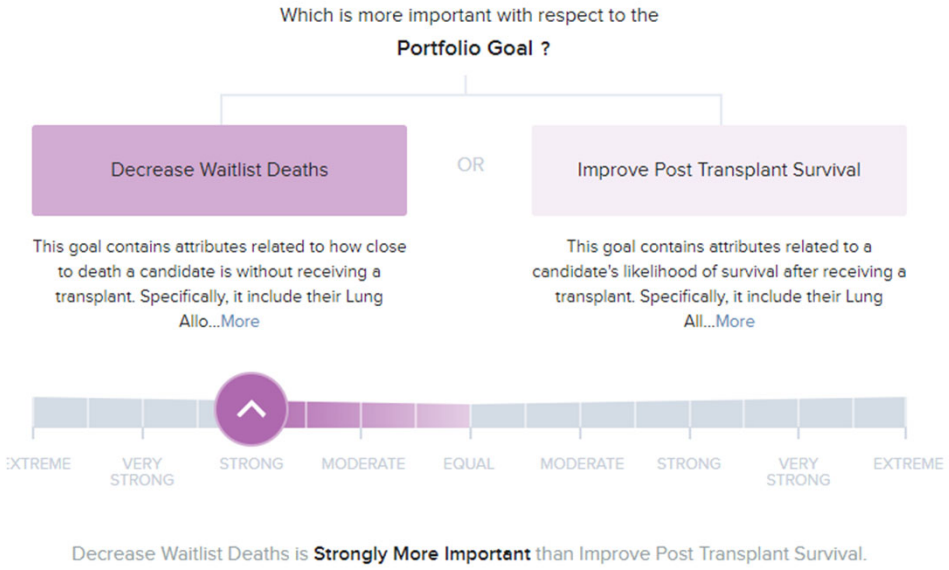
1

Criteria Defining



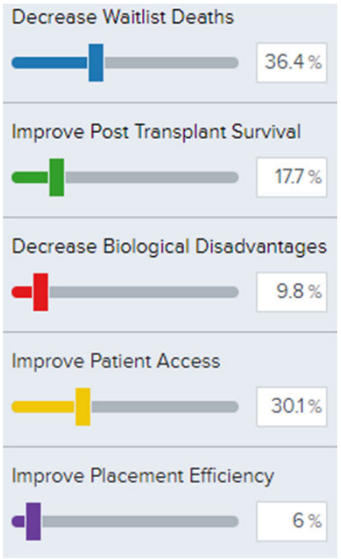
2

Establishing Criteria Impact

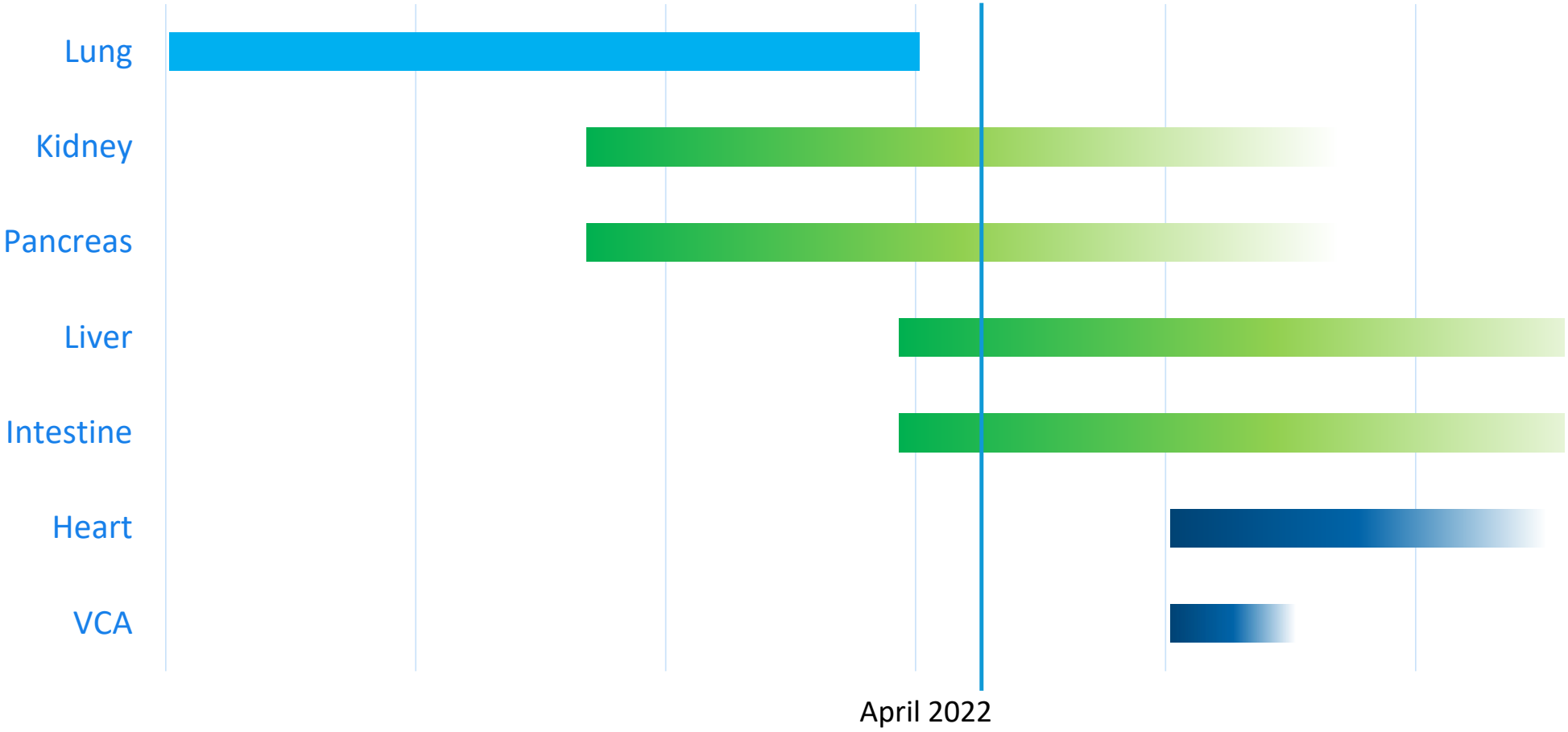


3

Final Criteria Weights



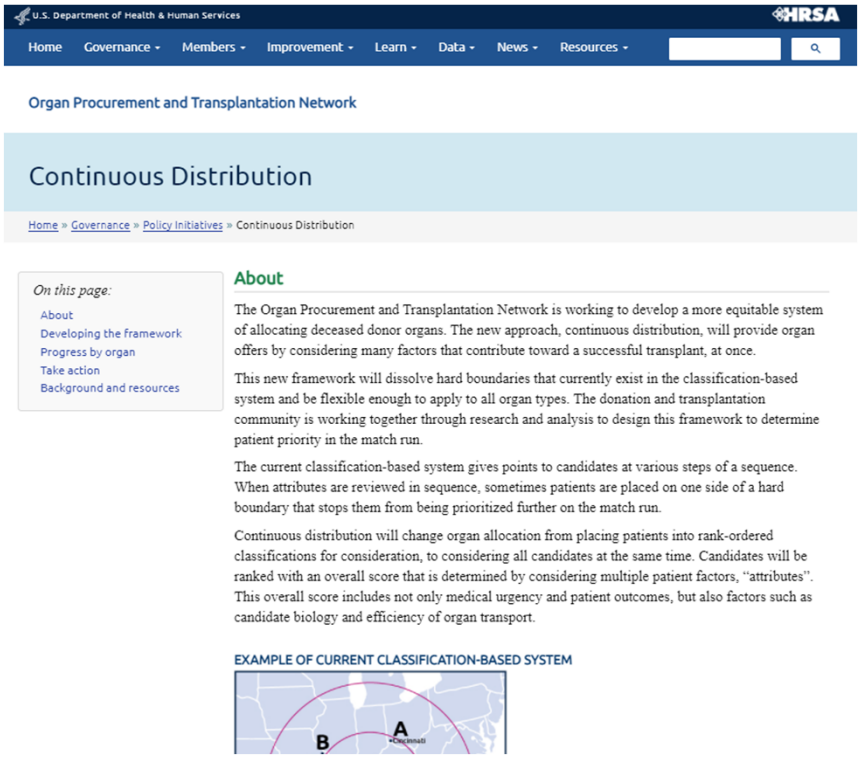
Continuous Distribution Timeline



Resources

OPTN website

- Concept graphics
- Video explaining Analytic Hierarchy Process
- Key terms
- Schedule of when each organ committee is expected to start work
- Interactive dashboard tool to stage your own match runs – specific to lung committee work
- Subpages for organ committees with reports and documentation of progress

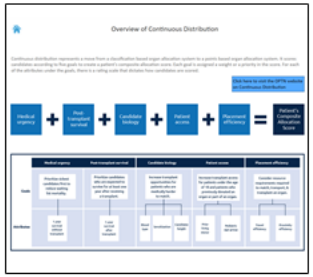


Interactive Tableau Tool

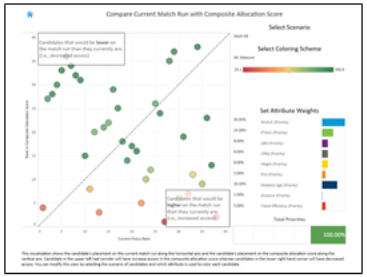
https://public.tableau.com/profile/optn.committees#!/vizhome/ContinuousDistributionofLungs/Home

OPTN

Continuous Distribution of Lungs



Overview of Continuous Distribution: This worksheet gives background on this project.

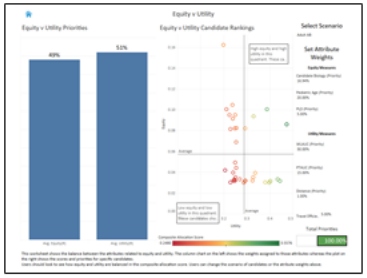


Compare Current Match Run with Composite Allocation Score: This dashboard allows users to select a scenario of candidates and compare how they are ranked in the current system versus how they could be ranked in a composite allocation score.

Match Run Ordering: This dashboard allows users to change the weights on the attributes used in a composite allocation score. Users will see a ranked match run of these patients and can change the attribute weights and see the changes in the match run.

Rating Scales: This dashboard visualizes the different rating scales in the lung allocation score. Users may visualize the different scales and choose which scale to use when calculating scores in this workbook.

Compare Two Candidates: This dashboard allows users to enter clinical criteria for two sample candidates then see their composite allocation score and how the two candidates would be ranked against each other.



Equity v Utility: This dashboard shows the balance of equity and utility according to the weights assigned to each attribute. It also displays candidates based upon their equity and utility scores.

This workbook is an interactive tool for users to better understand a potential composite allocation score. The sample candidate data in this workbook are all illustrative and not meant to represent any specific candidates; rather they are meant to reflect how a possible match run might be scored and ranked. The rating scales and priority levels are preliminary; therefore, the weighted and unweighted scores are also preliminary.
This workbook was last updated on October 12, 2020. If you have any feedback on this tool, please contact us via email: james.alcorn@unos.org.

This presentation includes the work of James Alcorn, Darren Stewart, Julia Chipko, Rebecca Goff, Elizabeth Miller, and Brian Shepard, all of UNOS.

Thank you for your time

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