

# Age matching of donors and recipients: lessons from KAS and opportunities in liver

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**CUTTING EDGE** OF TRANSPLANTATION

**TRANSPLANT SUMMIT 2020**  
**BALANCING** EQUITY AND UTILITY IN THE FACE OF AN ORGAN SHORTAGE

# Disclosure

- Equity and consulting – Eurofins - Transplant Genomics, Inc.
- Consulting – Abbvie, Veloxis
- Speaker's bureau – Sanofi, Novartis
- Grant Support – Shire, Abbvie, Vitaeris, NIH, Veloxis, Eurofins/Viracor

# Learning Objectives

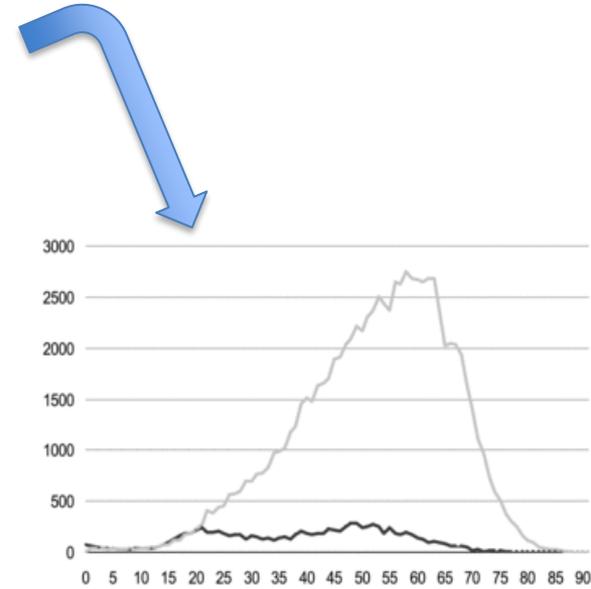
1. Understand the ruling from the Office for Civil Rights on Age Matching in Kidney Transplantation
2. Contrast that use of age with the use of age in combination with other medical factors
3. Understand the trade offs regarding an aging recipient pool as compared to the donor pool

# Back to 2011...Specific objectives for a revised kidney allocation system

- Better approximate graft longevity and recipient longevity so that the potential survival of every transplanted organ can be realized within biological reason and acceptable levels of access for those on the waiting list.
  - Foster or promote graft survival of the kidney transplant for candidates with longest post-transplant survival who are likely to require additional transplants due to early age of ESRD
  - Minimize loss of potential functioning years of deceased donor kidney grafts through improved matching of recipient and graft survival

# 2011 – Life Years From Transplant Shortcomings

- Age was the major driver in determining outcomes and there were estimates of significant decreases in the availability of organs for older candidates
- Office for Civil Rights – tied up policy development for almost a year to consider claims of “ageism”
- Finally determined that age could be considered as a medical criteria (allocation law states the need to use “objective medical criteria” to allocate organs) **but not used in isolation**



— # of DDKT per donor age in 2010 — WLC per candidate age on 12/31/2010

# Donor-Recipient Age Matching

## KPSAM Results: Baseline (Current + Extras)

**Age Correlation = 0.279**

Donor Age	Recipient Age					All
	<18	18-34	35-49	50-64	65+	
<18	1.2%	2.1%	3.5%	3.4%	0.9%	<b>11.0%</b>
18-34	3.3%	4.5%	8.7%	10.2%	3.1%	<b>29.9%</b>
35-49	0.4%	3.4%	9.0%	12.8%	4.1%	<b>29.8%</b>
50-64	0.0%	1.1%	5.0%	11.7%	6.1%	<b>23.9%</b>
65+	0.0%	0.1%	0.8%	2.7%	1.8%	<b>5.5%</b>
<b>All</b>	<b>5.0%</b>	<b>11.2%</b>	<b>27.0%</b>	<b>40.8%</b>	<b>16.1%</b>	<b>100%</b>

28.2% of transplants have close age match (green cells). 27.7% have large age differential (grey cells).

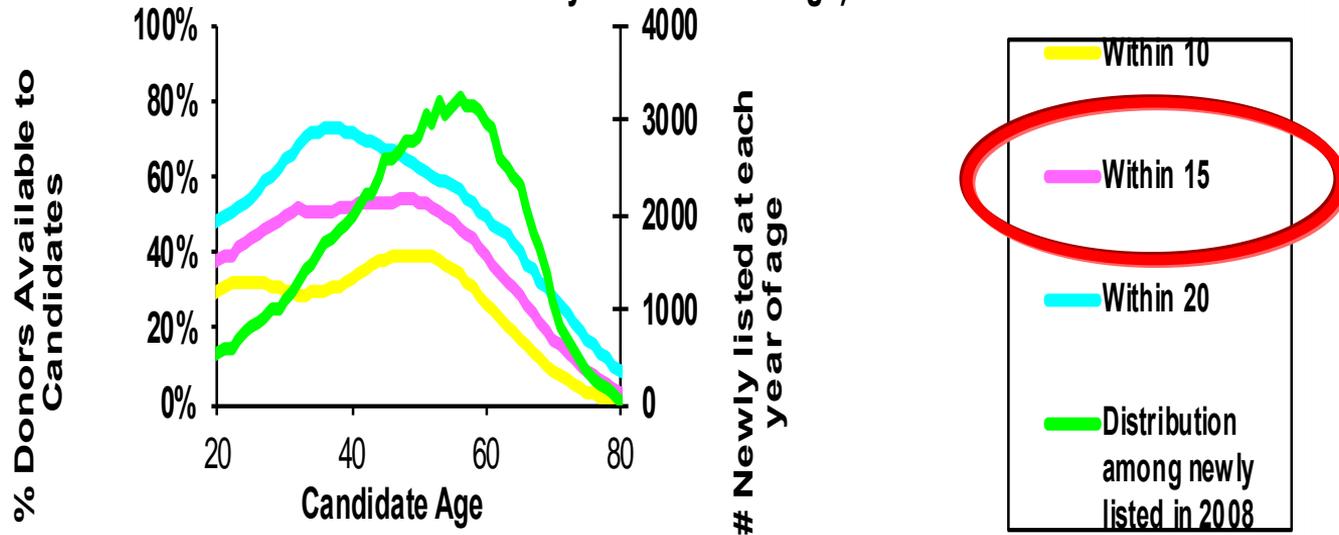
Based on SRTR KPSAM Results, Jan 27, 2010.

# When we were considering age matching, why was +/- 15 years chosen?

- Considered 10, 15, and 20-year ranges
- Donor distribution is younger than candidate distribution
  - +/- 10 resulted in fewer donors available to the youngest candidates
  - +/- 20 resulted in fewer donors available to older candidates
- +/- 15 resulted in a compromise with a more even number of donors available to all candidates

# Candidates With Priority if Age Within X Years of Donor Age Shifts Kidneys Away From Oldest Candidates

## Restrictions to Access to Donors by Candidate Age and Rule (Candidate within X years of Donor Age)



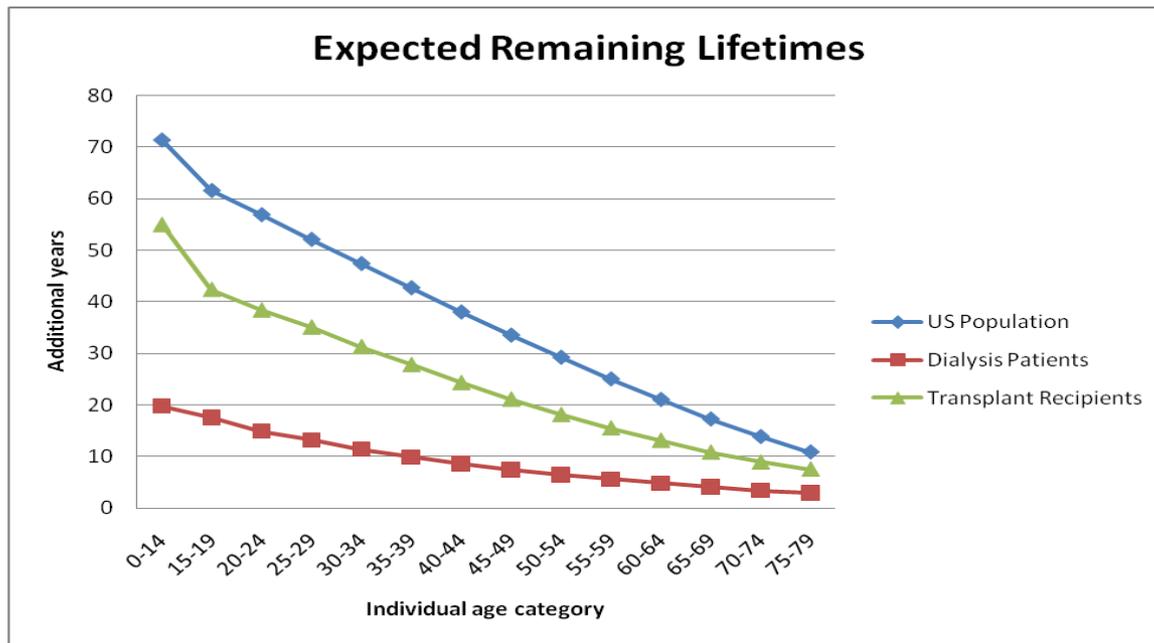
# Eurotransplant Senior Program

- Started in 1999, Kidneys from donors > 65 fast-tracked to recipients > 65
- Steady increase in older donors



Giessing, M. 10 Jahre „Eurotransplant Senior Program“. *Urologe* **48**, 1429 (2009)

# “Fair Innings”



# What was finally decided?

- “Longevity Matching”
  - Based on 4 factors in the candidate – we had more but public comment, mostly from patients, said to “keep it simple”
  - Estimated Post Transplant Survival Score
    - Age, Time on Dialysis, Diabetes (Y/N), and Prior Transplant (Y/N)
    - A 55-year-old candidate without diabetes, dialysis, or prior transplant would be right at the 20% cut point

# Longevity Matching

- EPTS was not designed to tell candidates on which day they will die...based on only 4 factors, it was good enough to tell broad groups apart
- Top 20% EPTS vs. Bottom 80%
- Then the Top 20% Kidneys by KDPI are prioritized to the top 20% EPTS candidates first, but not exclusively

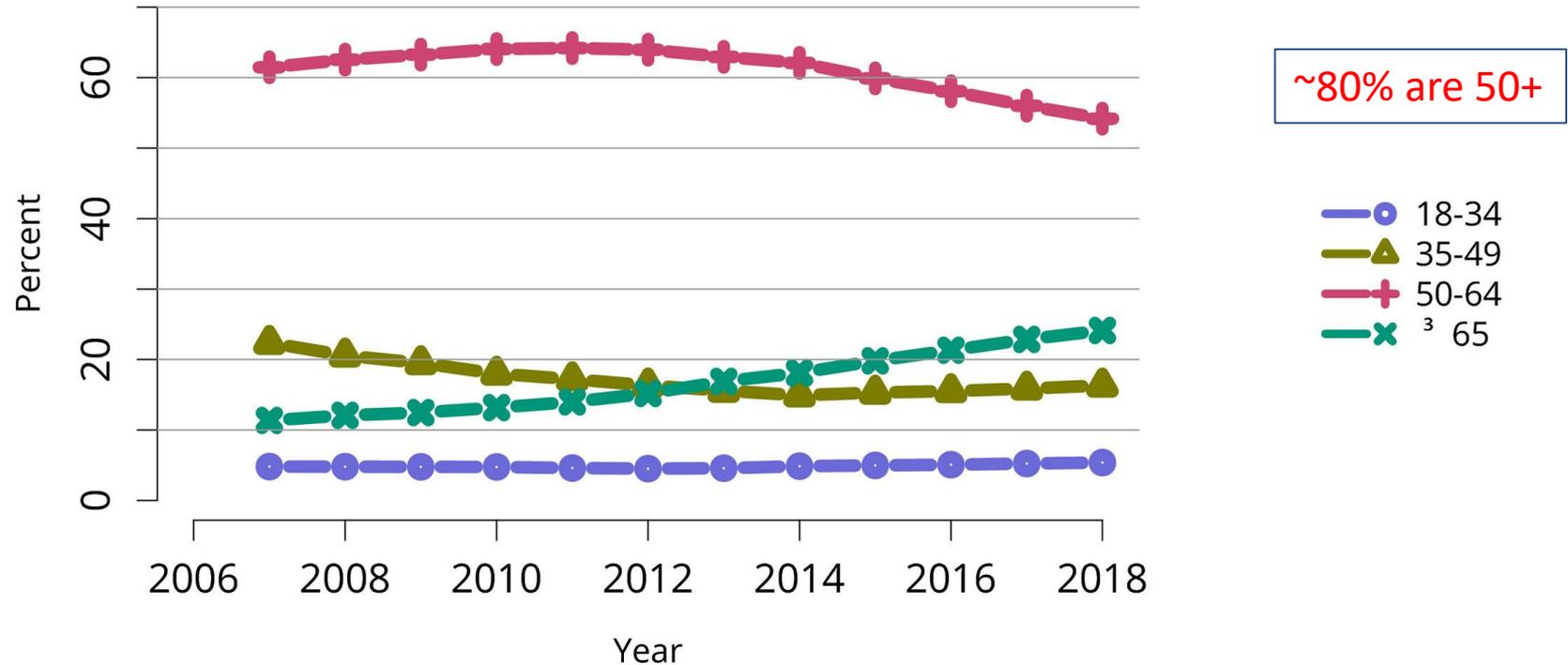
# How Might This Apply to Liver Allocation?

- Really depends on your goal
- In kidney, reducing re-transplants was really the major goal
- ~1 in 7 waitlisted kidney patients are back for a repeat transplant

# Other Potential Goals

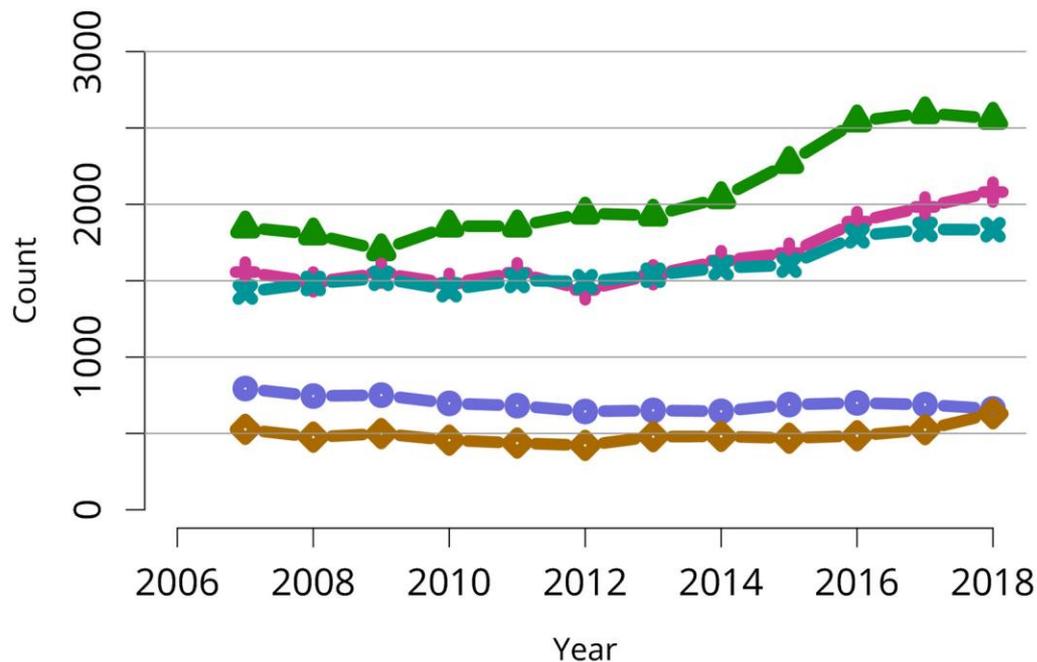
- Reducing organ discard
- Improving survival

# Distribution of adults waiting for liver transplant by age



American Journal of Transplantation, Volume: 20, Issue: s1, Pages: 193-299, First published: 02 January 2020, DOI: (10.1111/ajt.15674)

# Deceased liver donor count by age

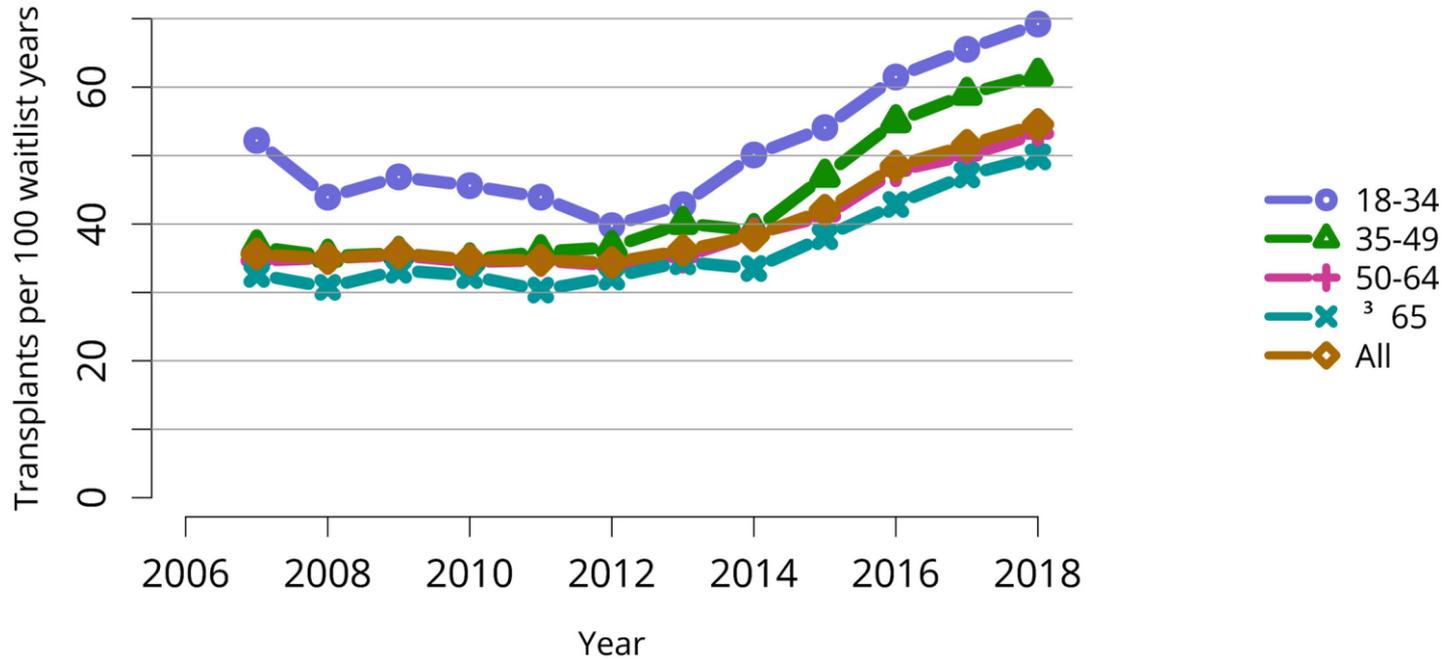


~60% of donors <50

- <18
- 18-34
- 35-49
- 50-64
- ≥ 65

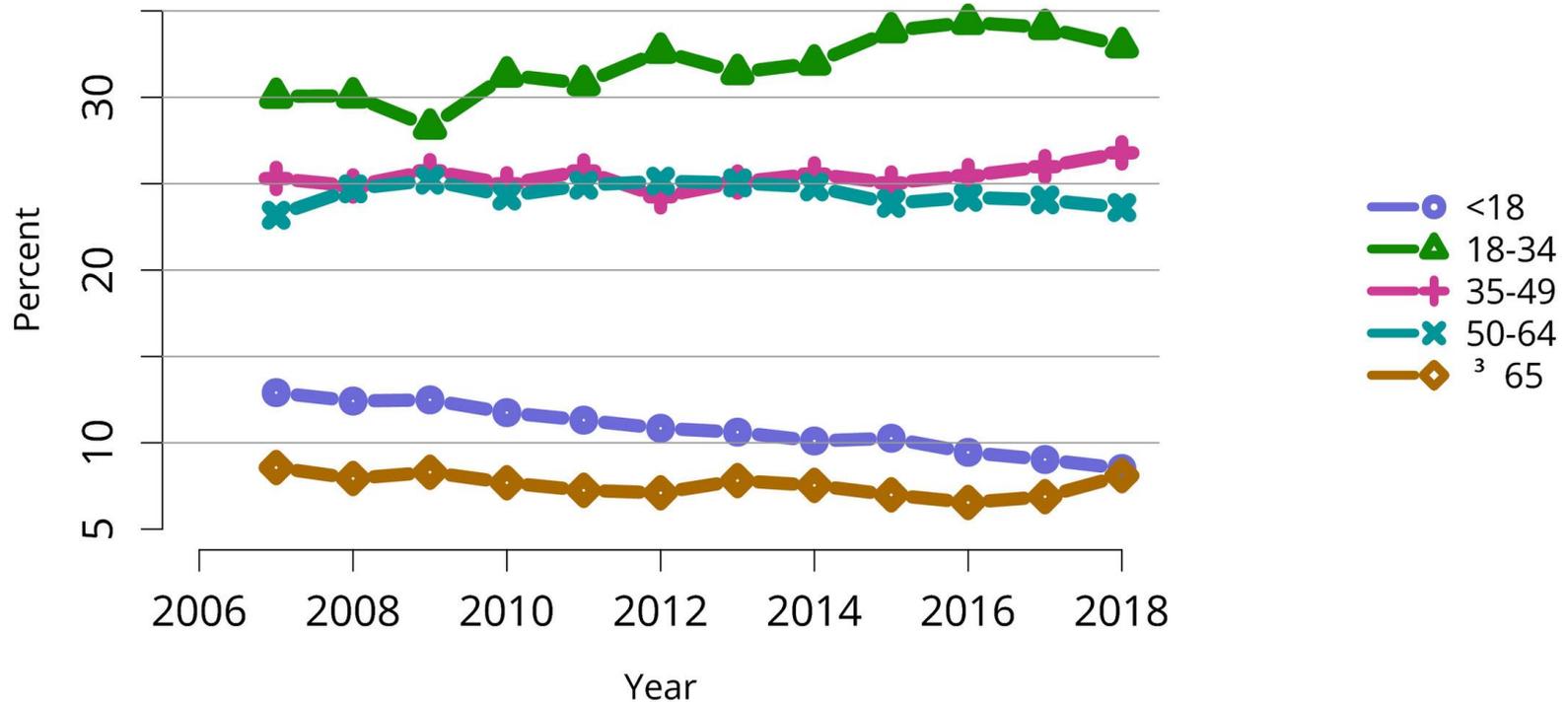
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# Deceased donor liver transplant rates among adult waitlist candidates by age



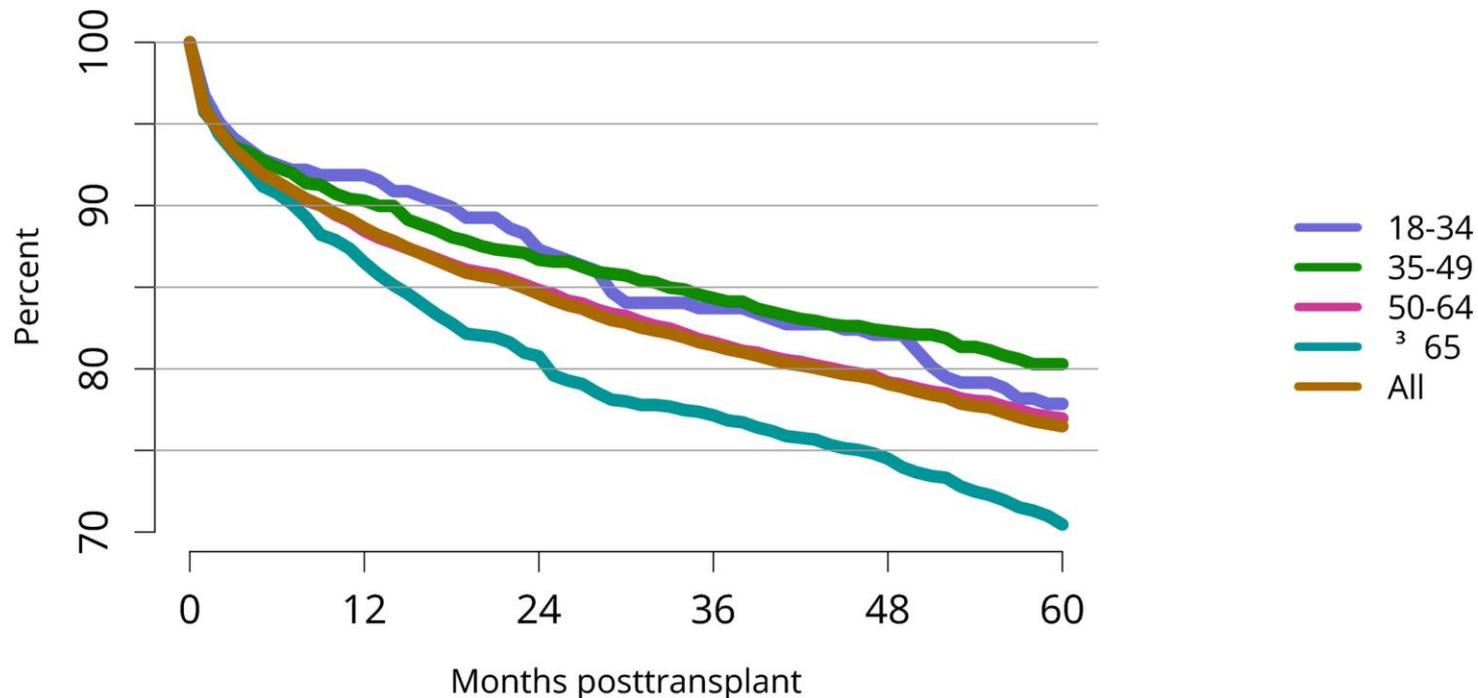
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# Distribution of deceased liver donors by age



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# Graft survival among adult deceased donor liver transplant recipients, 2013, by age



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# Potential Consequences of Moving to Age Matching in Liver

- Further decrease in allocation to older candidates
- Opposite may be true as well with increased utilization of older liver donors for older candidates (Eurotransplant Senior program experience)
- Higher waitlist mortality with movement away from MELD only allocation
- Sharply-worded letter from the DOJ!

# Thank you

- Questions???