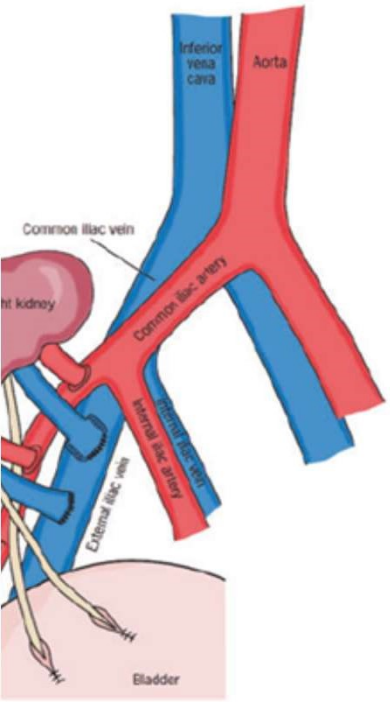

Dual Kidney Transplantation: a National Registry Update

im[1], L Mumford[1], N Ahmad[2], D Summers[3], CJ Callaghan[1]

d and Transplant, Bristol [2] Leeds Teaching Hospital NHS Trust, [3] Addenbrooke's Hospital, Cambridge

ackground

Blood and Tra

tionale for Dual Kidney Transplantation (DKT): **Nephron Mass Concept**

uidance to choose Single Kidney Transplants (SKTs) vs DKTs limited:
national consensus

onor selection difficult: age, comorbidities, size of kidney, pre-
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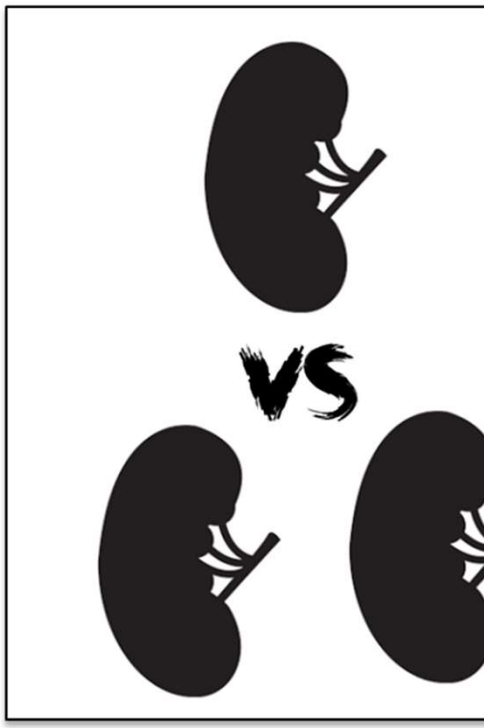

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Term Outcome of Renal Transplantation from Older donors

i et al. NEJM, Jan 2006

Blood and Tra

Renal Transplants from Older Deceased Donors: Use of Preimplantation Biopsy and Differential Allocation to Dual or Single Kidney Transplant according to Histological S Has No Advantages over Allocation to Single Kidney Transplant by Simple Clinical Ind

Casati et al. Journal of Transplantation, May 2018

ssful Transplantation of Kidneys From Elderly Circulatory Death Donors by Using copic and Macroscopic Characteristics to Guide Single or Dual Implantation.

t al. AJT, June 2015

Chronic histological changes in deceased donor kidneys at implan do not predict graft survival: a single-centre retrospective analysis

Phillips et al. Transplant International, Jan 2019

s at higher risk of discard: Expanding the role of Dual Kidney transplantation

r et al. AJT, Feb 2014

Dual Kidney Transplantation from Donors at the Extremes

Rogers et al. Journal of the American College of Surgeons, Jan 2019

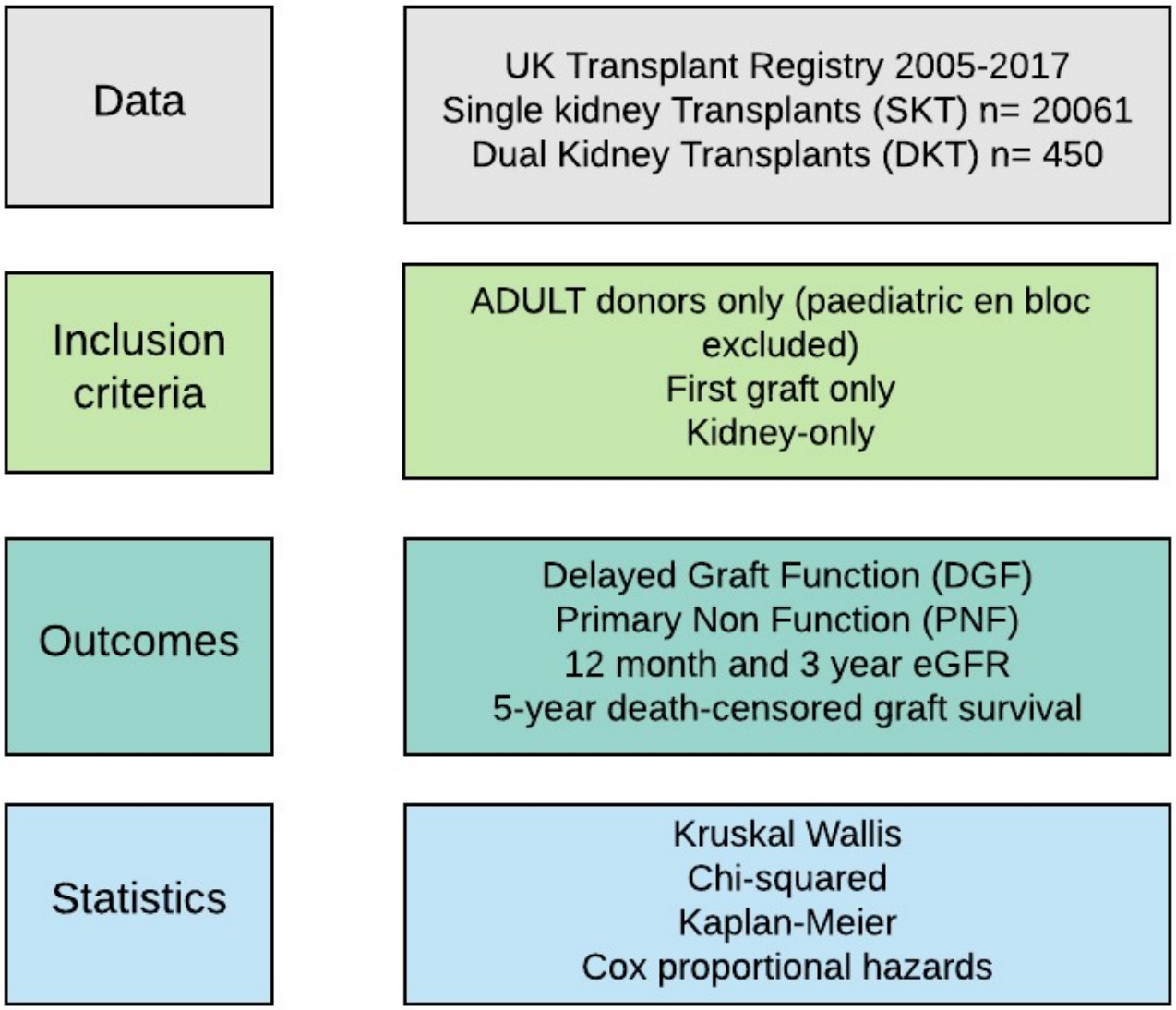
ims

1. Assess UK trends in DKTs over the past decade

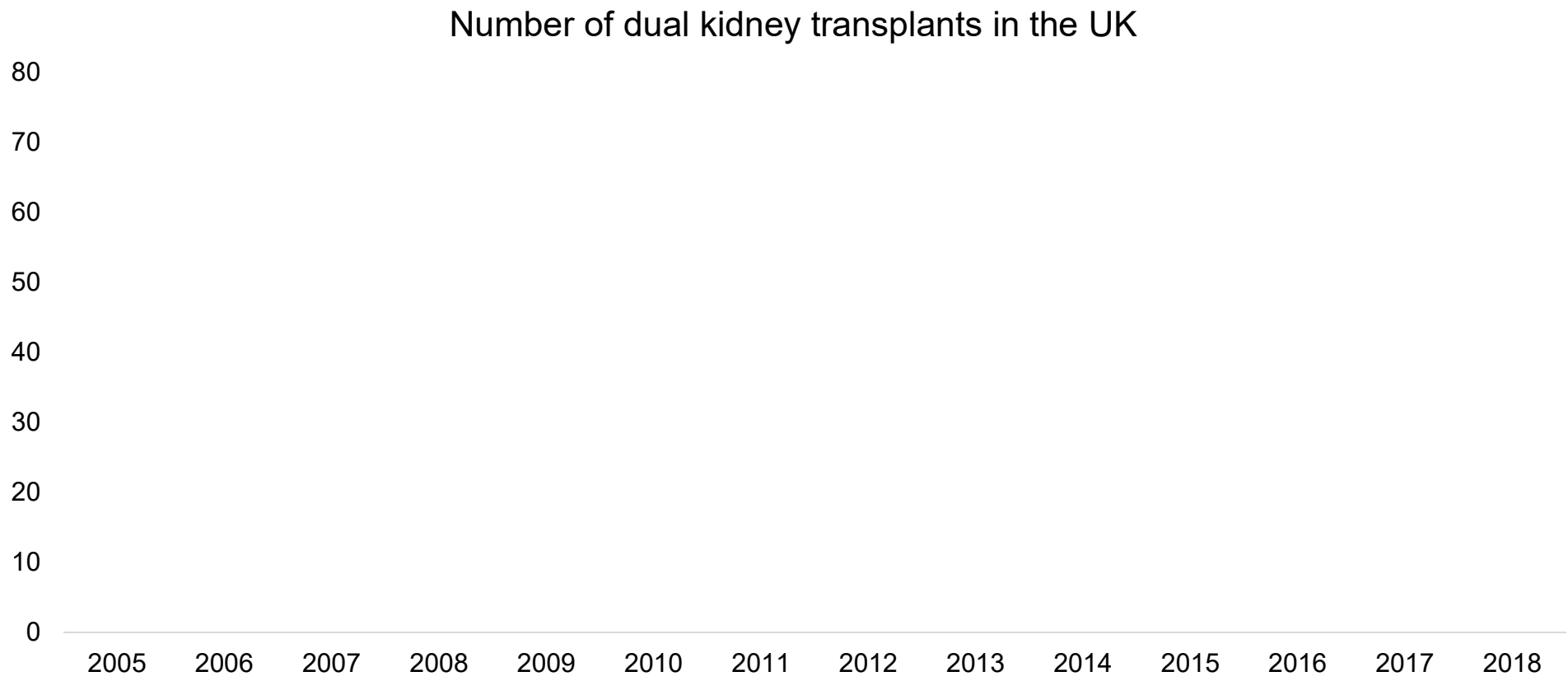
2. Compare outcomes of SKTs to DKTs from older donors

3. Explore donor stratification for DKTs

ethods


Data
UK Transplant Registry 2005-2017
Single kidney Transplants (SKT) n= 20061
Dual Kidney Transplants (DKT) n= 450
Inclusion criteria
ADULT donors only (paediatric en bloc excluded)
First graft only
Kidney-only
Outcomes
Delayed Graft Function (DGF)
Primary Non Function (PNF)
12 month and 3 year eGFR
5-year death-censored graft survival
Statistics
Kruskal Wallis
Chi-squared
Kaplan-Meier
Cox proportional hazards

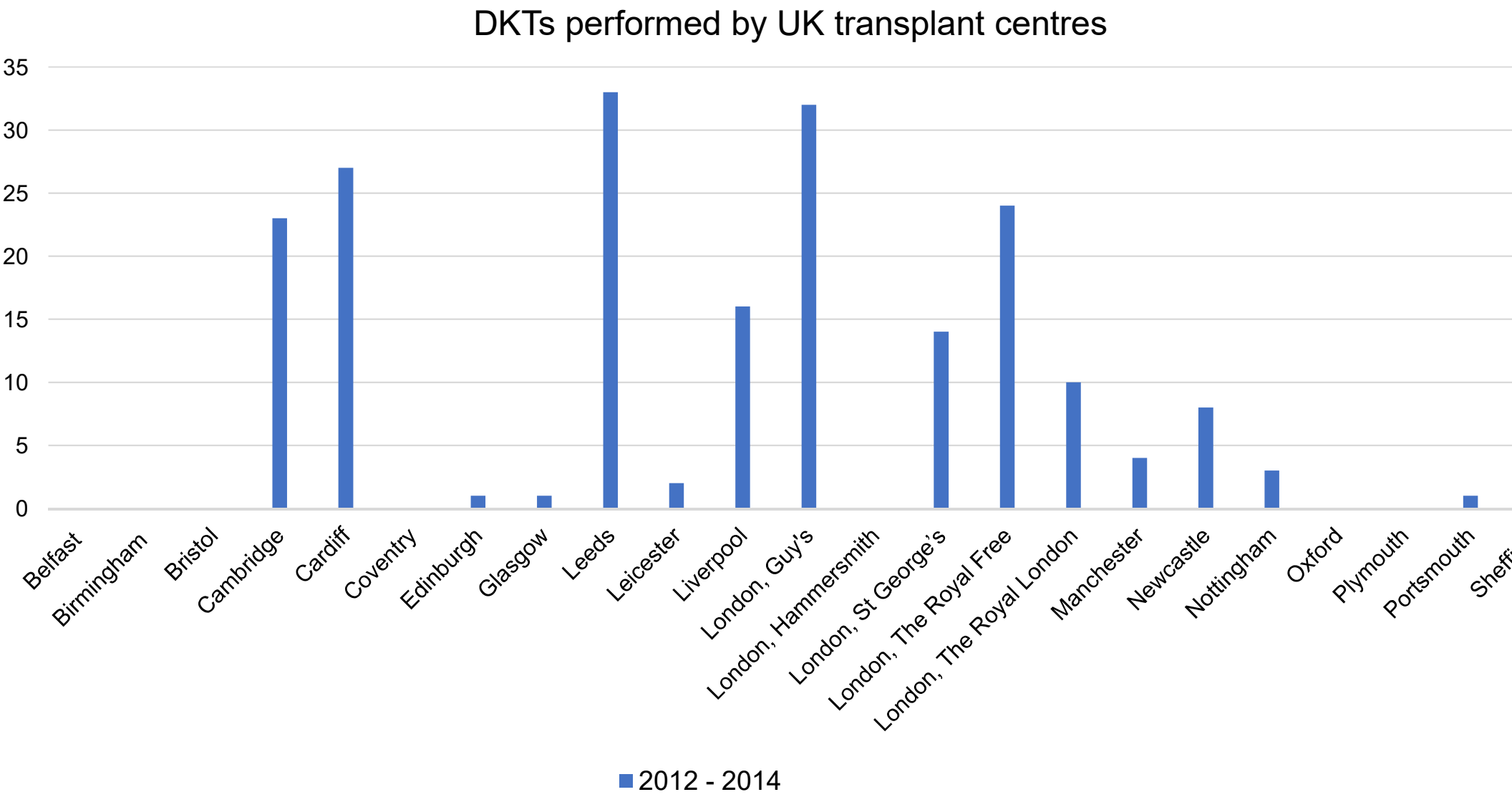
rend over time



Number of kidney transplants performed 01/01/05 to 31/12/17	SKT	DKT
	20061	450

ntre variation

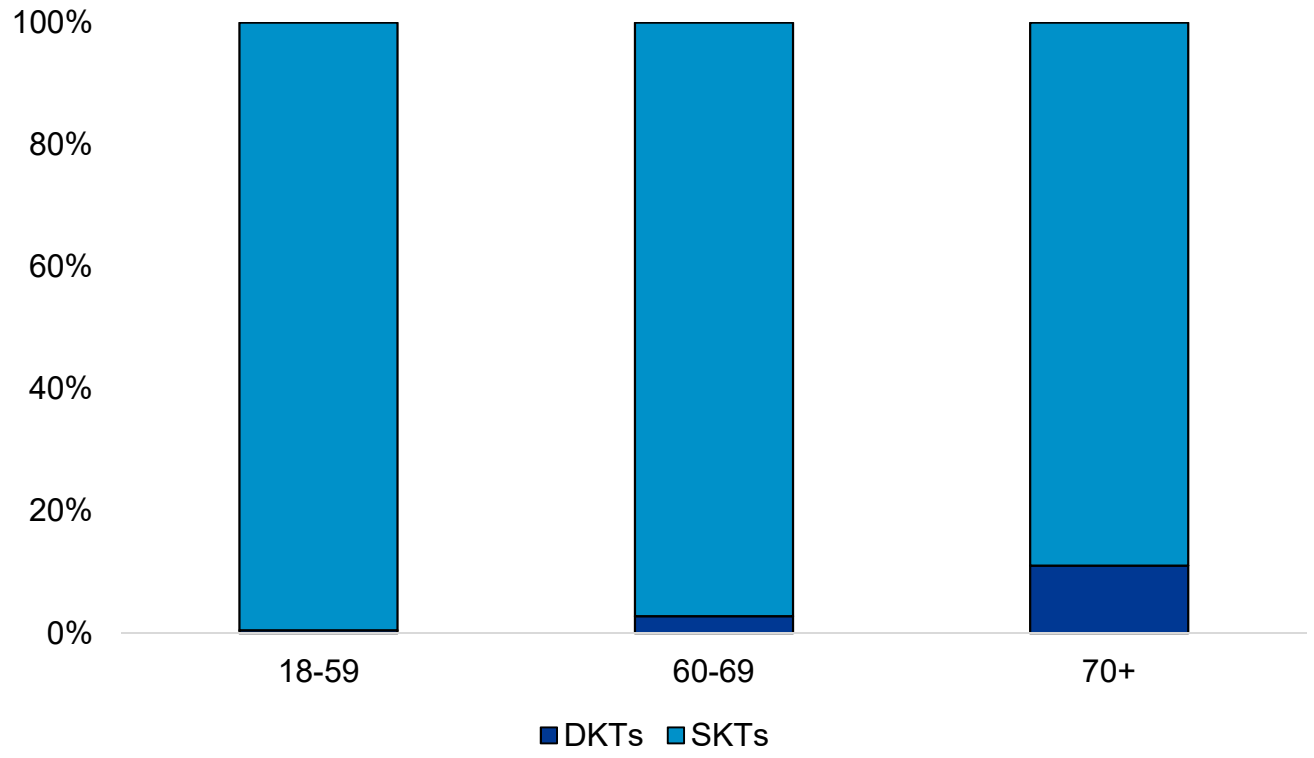
Blood and Tra



What donors are we utilising?

onor age

Donors utilised for single and dual kidney transplantation from 2005 - 2017



Donor age	18 - 59	60 - 69	70 +
SKT	13729 (68%)	4291 (21%)	2041 (10%)
DKT	71 (16%)	125 (28%)	254 (56%)

**Enti

nor Characteristics

Variable	SKT n=5234	DKT n=364	p-value
Donor age Years (IQR)	66 (63-70)	73 (68-76)	<0.0001
Donor type DBD DCD	3106 (59%) 2128 (41%)	93 (26%) 271 (74%)	<0.0001
Donor Sex Male Female	2589 (49%) 2645 (51%)	200 (55%) 164 (45%)	0.043
Median UKKDRI* (IQR)	1.86 (1.59-2.19)	2.17 (1.82-2.59)	<0.0001

KDRI for 2019 KOS used, factors included: donor age, sex, height, hypertension, CMV status, retrieval eGFR, da

**Cohort restricted to donors

cipient Characteristics

Variable	SKT n=5234	DKT n=364	p-value
Age Years (IQR)	60 (52-67)	64 (58-69)	<.0001
Sex Male Female	3322 (63%) 1912 (37%)	242 (66%) 122 (33%)	0.23
Waiting time Days (IQR)	1059 (437-1488)	728 (271-1037)	<.0001
cRF 0–85% >85%	4775 (91%) 457 (9%)	350 (96%) 14 (4%)	0.001
Dialysis status at time of transplant** HD PD Pre-emptive	3493 (75%) 1120 (24%) 14 (0%)	231 73(%) 82 (26%) 1 (0%)	0.75

656 data missing

**Cohort restricted to donors

What were the outcomes of SKTs and DKTs from donors over the age of 60?

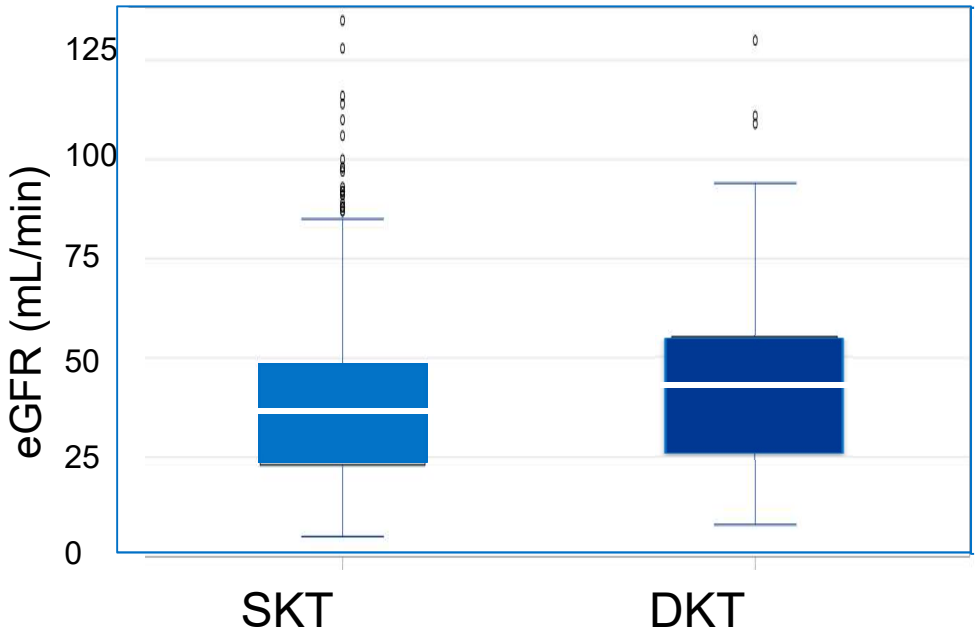
esults - Transplant Outcomes

	Transplant type	Frequency	%	p-value
DGF	SKT	1526 (DCD 52%)	33	0.14
	DKT	123 (DCD 74%)	36	
PNF	SKT	178	4	0.61
	DKT	11	3	

**Missing data 566

**Cohort restricted to donors

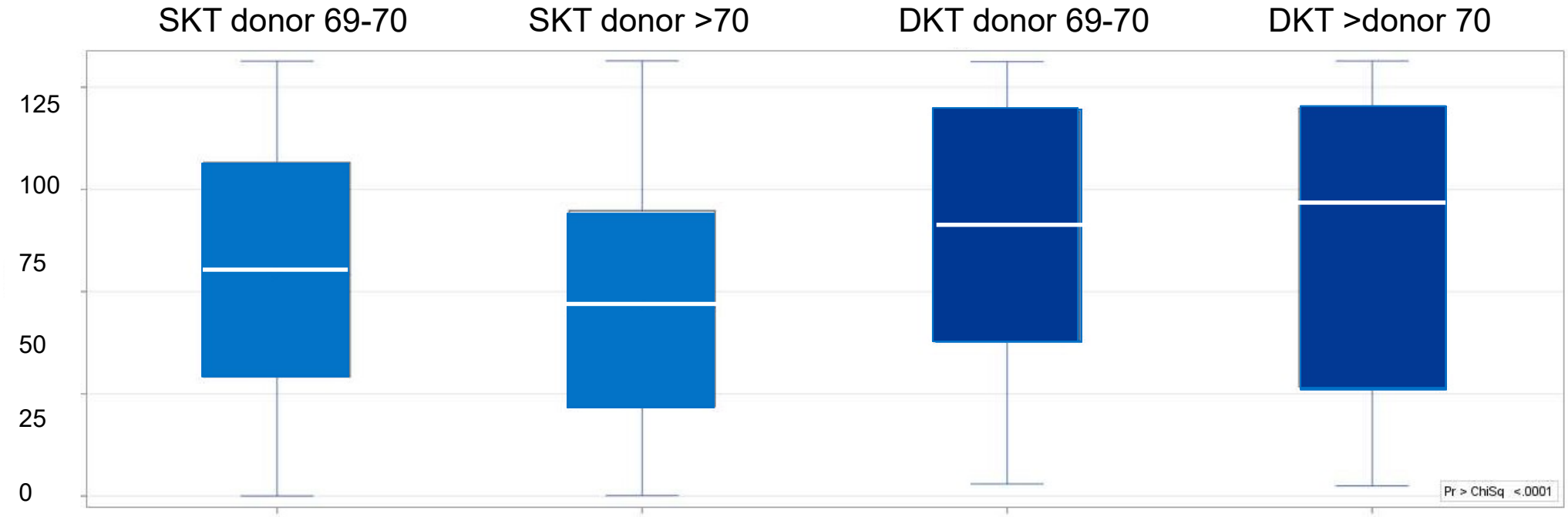
esults – Transplant outcomes



	1yr eGFR mL/min	
SKT	36 (23-48)	p=0.0001
DKT	43 (27-55)	

**Cohort restricted to donors

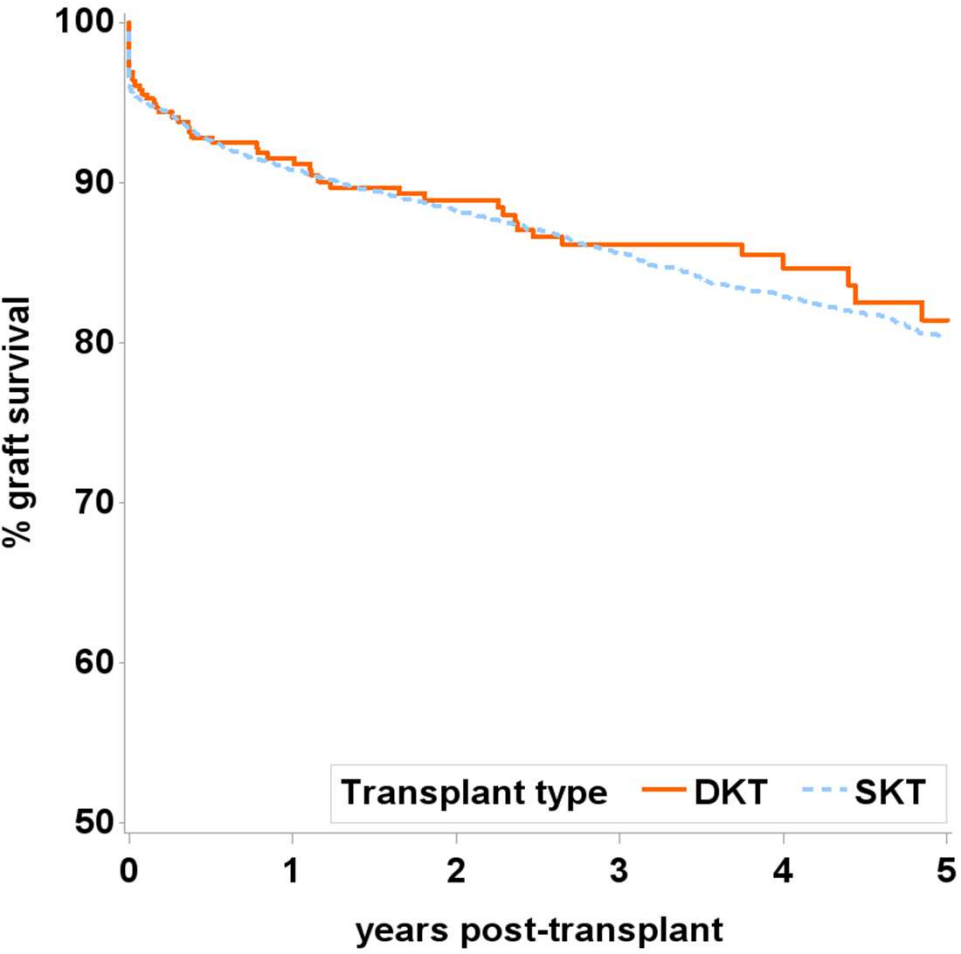
year eGFR



Transplant type	n	eGFR 1yr mL/min	p-value
SKT donor 69-70	3820	39 (30-50)	<.0001
SKT donor > 70	1414	36 (27-45)	
DKT donor 69-70	119	43 (33-58)	
DKT donor > 70	245	46 (29-59)	

**Cohort restricted to donors

esults – Graft Survival



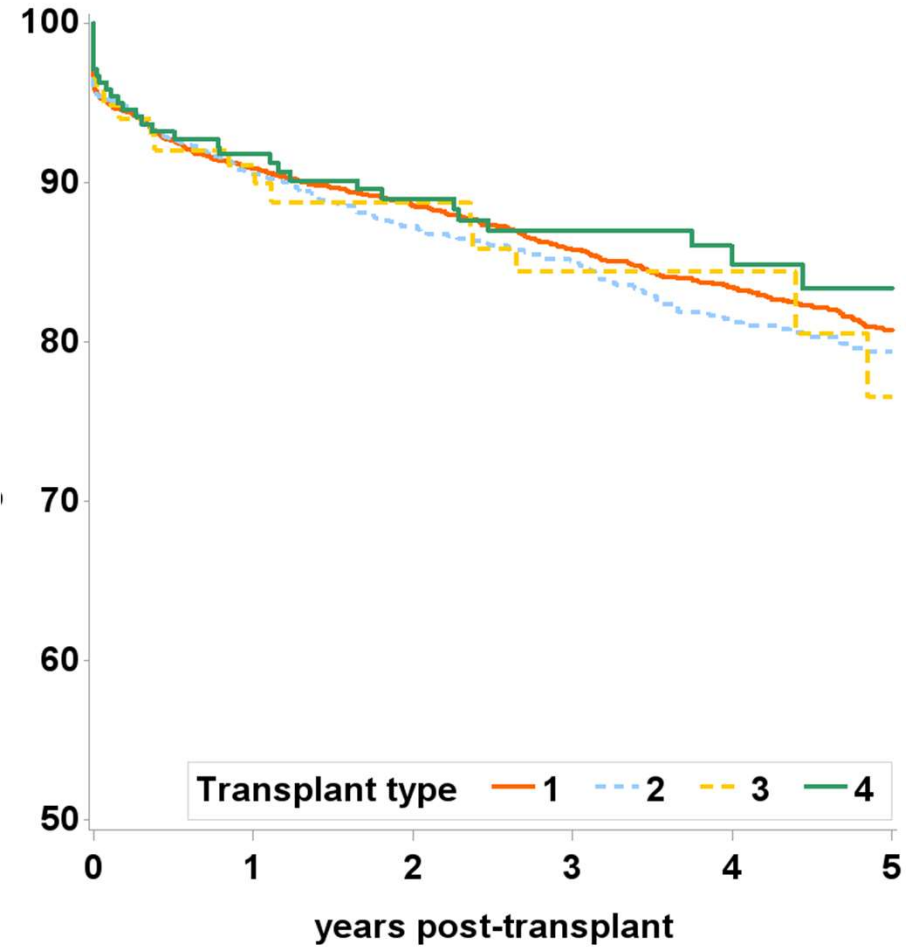
p=0.63

Transplant type	n	Graft survival	LCL	UCL
SKT	5154	**80**	79	81
DKT	359	**81**	75	86

lan-Meier survival curves to show 5-year death censored graft survival

**Cohort restricted to donor

esults – Graft Survival



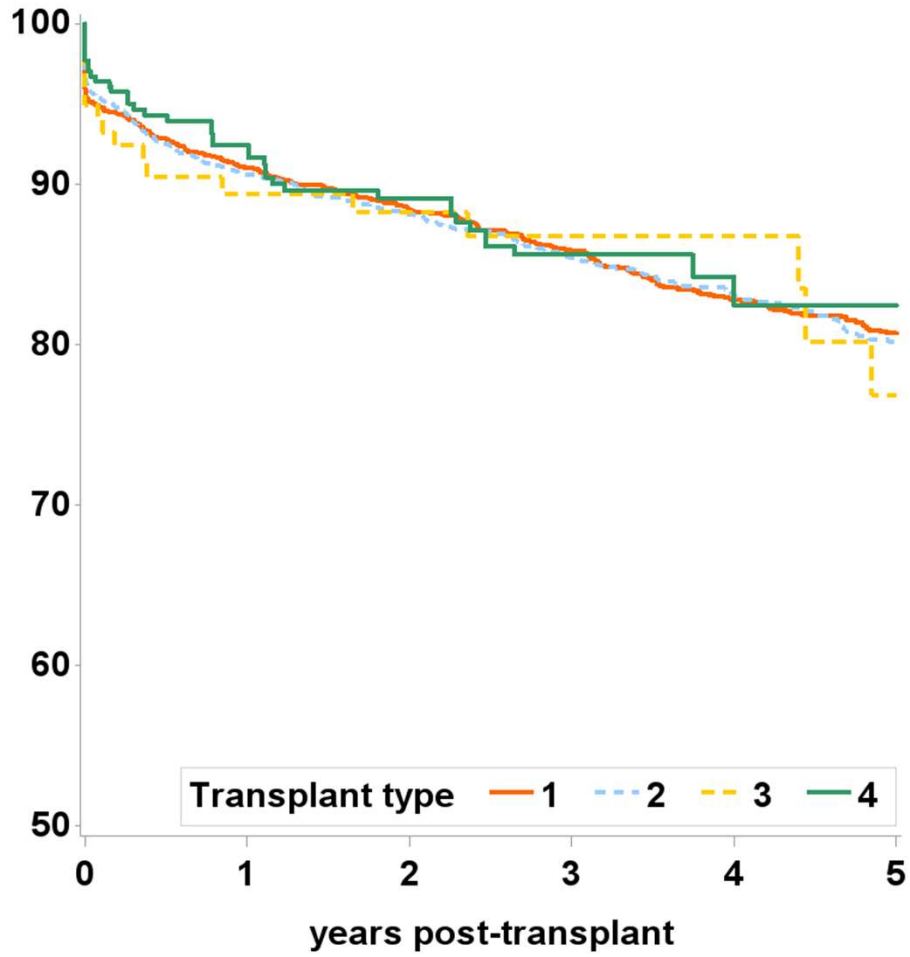
p=0.70

Transplant type	n	5-yr graft survival (%)	LCL	UC
1 - SKT donors < 69	3773	**81**	79	8
2 - SKT donors 70 +	1381	**79**	76	8
3 - DKT donors < 69	117	**77**	61	8
4 - DKT donors 70 +	242	**83**	76	8

an-Meier survival curves to show 5-year death censored graft survival

**Cohort restricted to donors

esults – Graft Survival



Median UKKDRI of over 60 cohort = 1.8785
'Upper UKKDRI' >1.8785
'Lower UKKDRI' <=1.8785

p=0.95

Transplant type	n	5-yr graft survival (%)	LCL
1 - SKT 'lower UKKDRI'	2719	**81**	79
2 - SKT 'upper UKKDRI'	2506	**80**	78
3 - DKT 'lower UKKDRI'	119	**77**	62
4 - DKT SKT 'upper UKKDRI'	307	**82**	77

an-Meier survival curves to show 5-year death censored graft survival

**Cohort restricted to donors

esults – Risk adjusted

ox proportional hazards model to show effect of DKT on death-censored graft survival

	Hazard Ratio	95% confidence interval	p-value
SKT	**1**	**-**	**-**
DKT	**0.93**	**0.69-1.26**	**0.65**

k adjusted for:

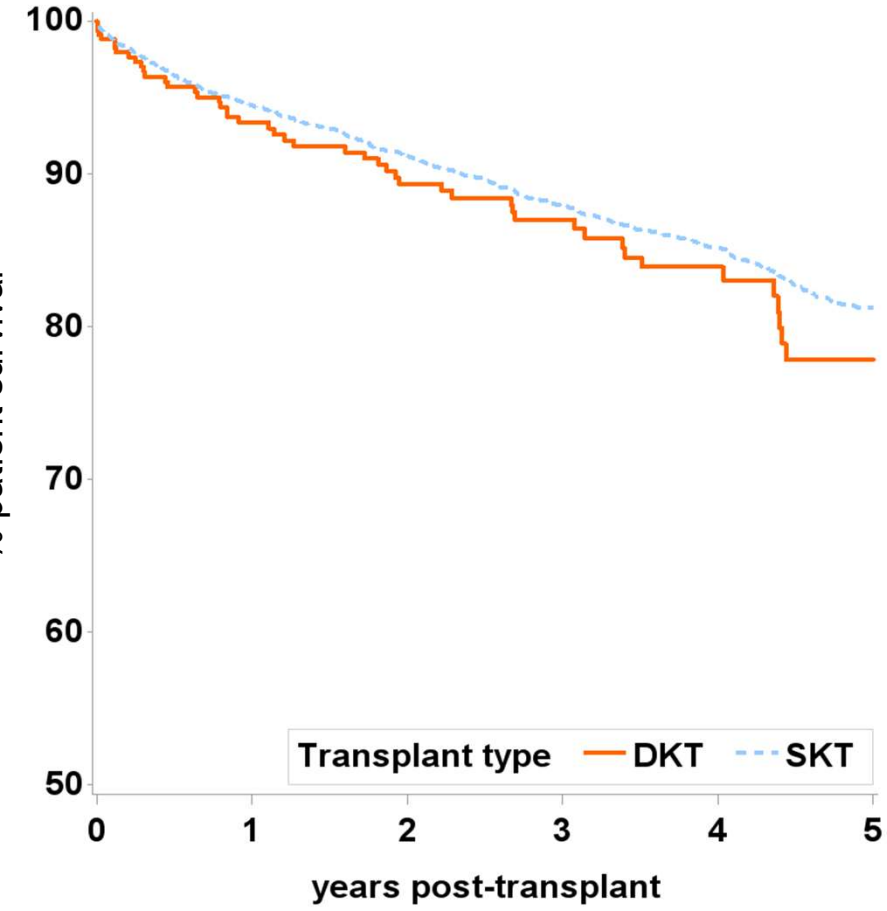
or factors - age, donor type, donor cause of death,

ipient factors - age, waiting time to transplant, ethnicity, primary renal disease

nsplant factors - HLA mismatch level, year of transplant

**Cohort restricted to donors

esults – Patient Survival



p=0.31

Transplant type	N	5-year patient survival (%)	LCL	U
SKT	4559	**81**	80	
DKT	346	**78**	71	

an-Meier survival curves demonstrating 5-year patient survival

**Cohort restricted to donors

ummary

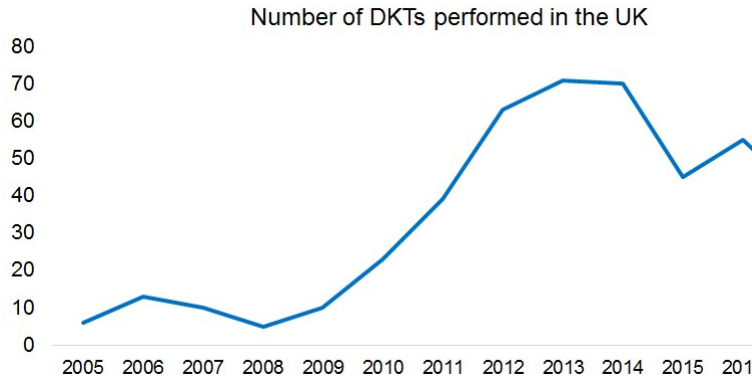
ppetite for DKTs is declining

ariation across the UK

etter 12-month eGFR in DKT cohort

omparable outcomes in donors > 60 with DGF, PNF and graft urvival

Blood and Tra



ummary

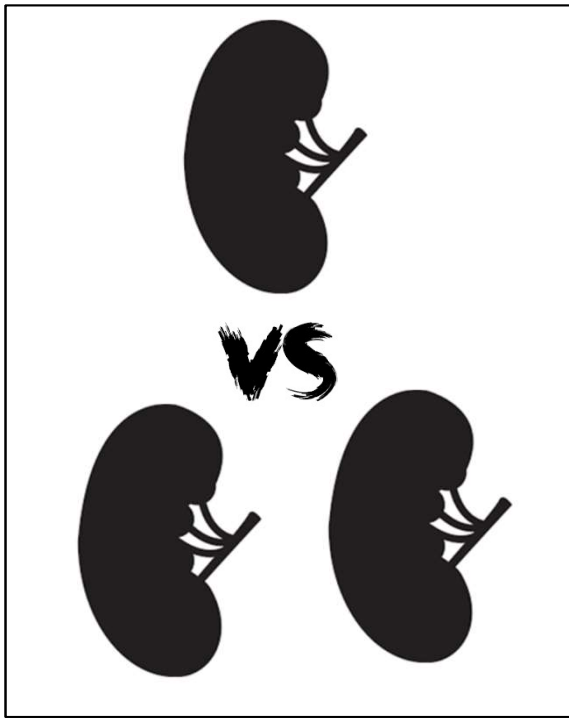
ppetite for DKTs is declining

ariation across the UK

etter 1-year and 3-year eGFR in DKT cohort

omparable outcomes in donors > 60 with DGF, PNF, graft urvival and patient survival

Blood and Tra



iscussion

e appropriate selection of kidneys from older deceased donors remains
certain and a major challenge for the transplant community

single clear marker for decision making at present

h new clinical trials and kidney offering scheme trends in DKTs may change

Blood and Tra

Blood and Trans

cknowledgements

s work was funded by NHS Blood and Transplant

at NHSBT Statistics and Audit for their help

donor coordinators, SNODs, surgeons and physicians who contributed to the NHSBT database

donors and families who make this work possible

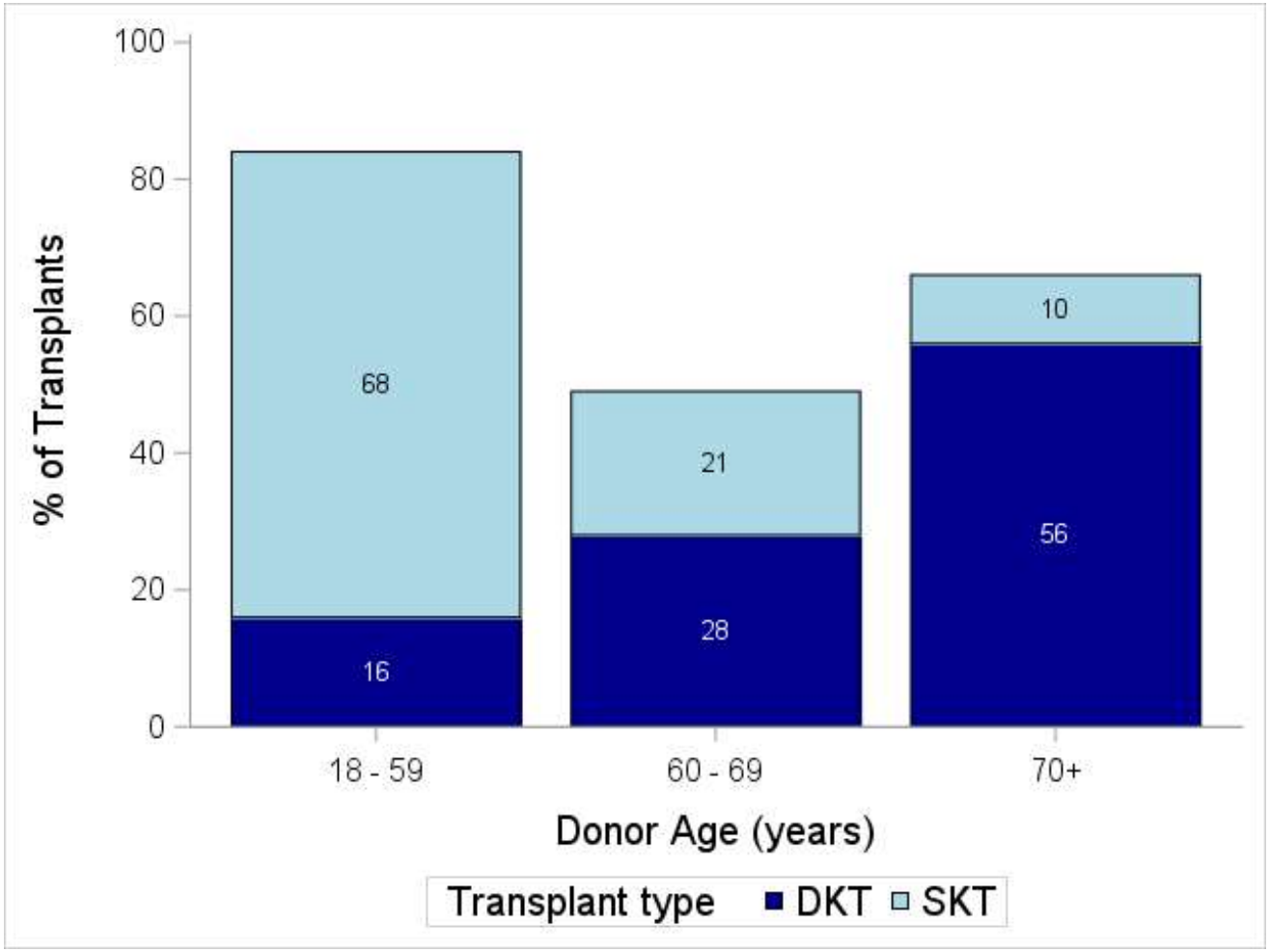
Thank you

dditional slides

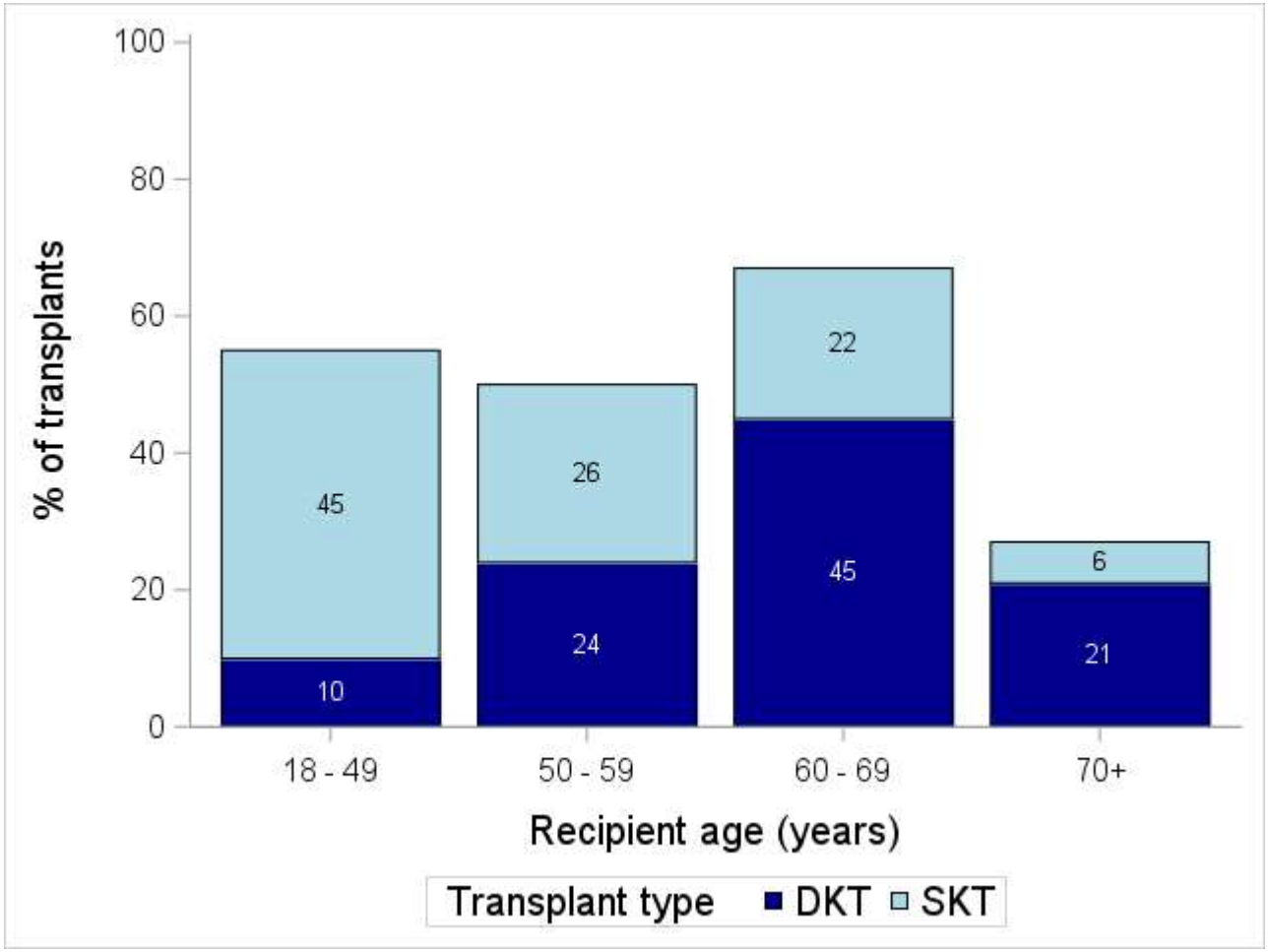
- In order to ascertain statistical significant difference of 3% graft survival in donors > 60 ....
- Current power 0.393
- Total number of transplants required: 20385
- DKT: 1456

…we can obtain this result in another 33years

sults - Donor Age

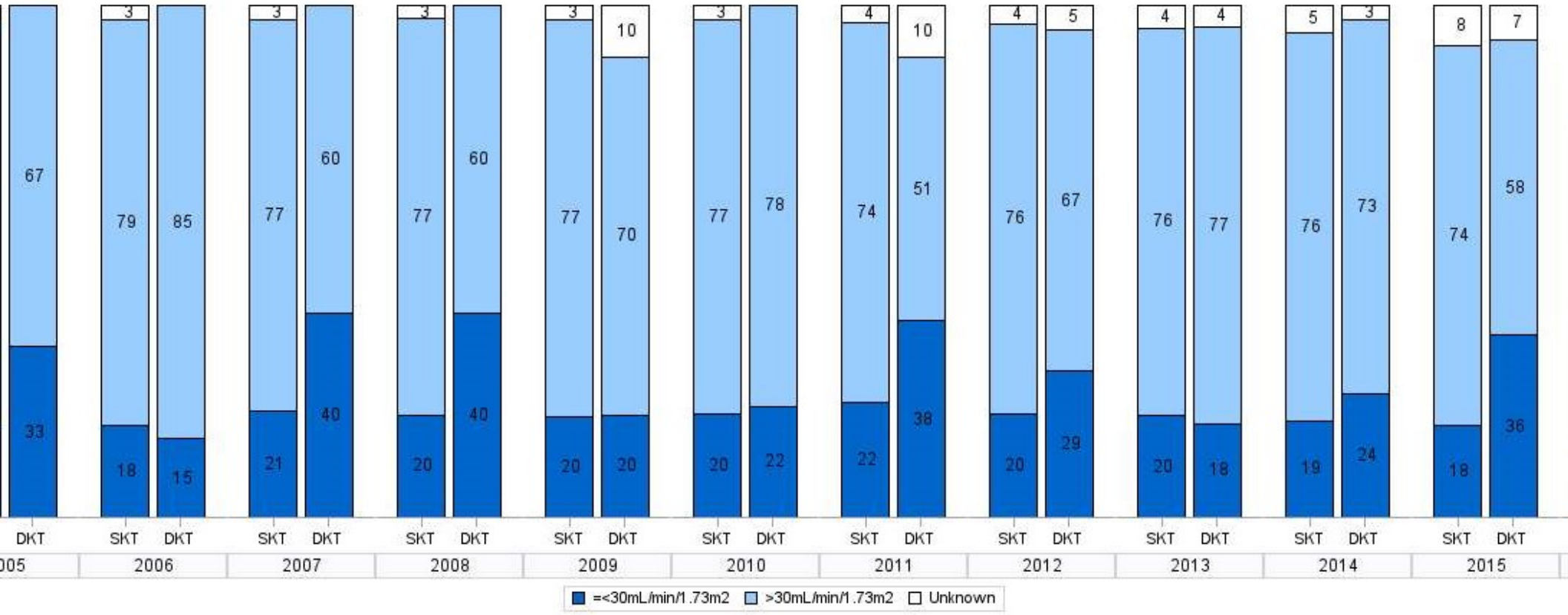


esults - Recipient Age



Blood and Tra

s and SKT by year



GFR Further stratification

Median UKKDRI of over 60 cohort = 1.8785
'Upper UKKDRI' >1.8785
'Lower UKKDRI' <=1.8785

Transplant type	n	eGFR 1yr	p-value	3yr eGFR	p-value
1 – SKT 'lower UKKDRI'	2747	39 (IQR 28-50)	<.0001	37 (IQR 22-49)	<.0001
2 – SKT 'upper UKKDRI'	2558	35 (IQR 25-45)		32 (IQR 19-44)	
3 - DKT 'lower UKKDRI'	122	44 (IQR 31-58)		44 (IQR 35-32)	
4 – DKT SKT 'upper UKKDRI'	310	42 (IQR 28-57)		39 (IQR 21-53)	

**Cohort restricted to donors

m and 3yr eGFR

Transplant type	n	eGFR 1yr	p-value	3yr eGFR	p-value
1 – SKT donor 69-70	3820	39 (IQR 30-50)	<.0001	36 (IQR 21-48)	<.0001
2 – SKT donor > 70	1414	36 (IQR 27-45)		31 (IQR 11-43)	
3 - DKT donor 69-70	119	43 (IQR 33-58)		41 (IQR 23-50)	
4 – DKT SKT donor > 70	245	46 (IQR 29-59)		43 (IQR 22-55)	

NB: 2034 missing values for 3yr eG

**Cohort restricted to donors