

# **A Look Inside the SRTR Data**

**ATC 2013, Seattle, WA**

**5/18/2013**

**Jon J. Snyder, PhD, MS\***

**Director of Transplant Epidemiology**

**Director of Operations**

**Scientific Registry of Transplant Recipients**

**Minneapolis Medical Research Foundation**

**Minneapolis, Minnesota**



**Jon J. Snyder, PhD**  
**Director, Transplant Epidemiology**  
**Scientific Registry of Transplant Recipients**  
**Minneapolis Medical Research Foundation**  
**Minneapolis, MN, USA**

I have no financial relationships to disclose within the past 12 months relevant to my presentation.

My presentation does not include discussion of off-label or investigational use.

I do not intend to reference unlabeled/unapproved uses of drugs or products in my presentation.

# Outline

Brief Overview of the SRTR

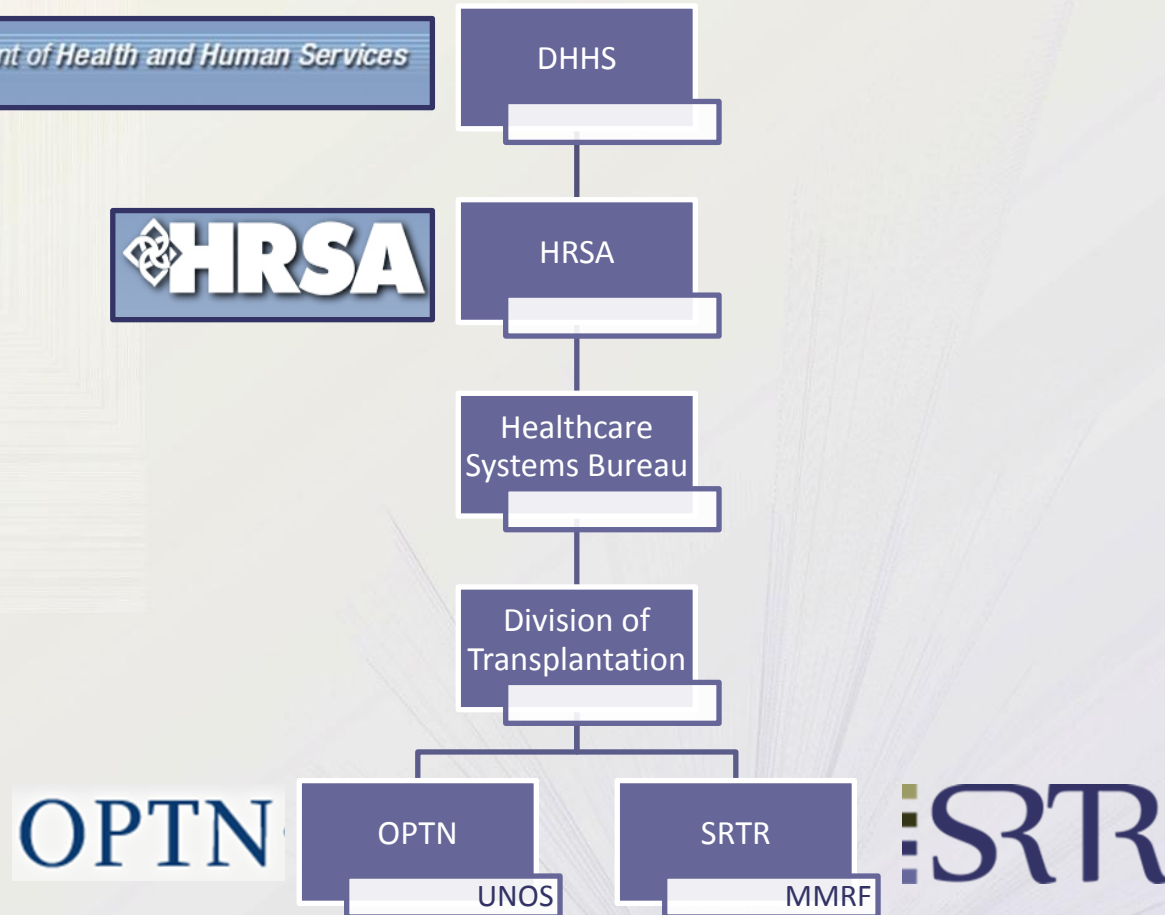
Understanding SRTR data

Acquiring SRTR data

Data timeliness and policies

Data Available on the SRTR Website

# Relationships: HRSA/OPTN/UNOS/MMRF/SRTR



# Key SRTR roles and responsibilities

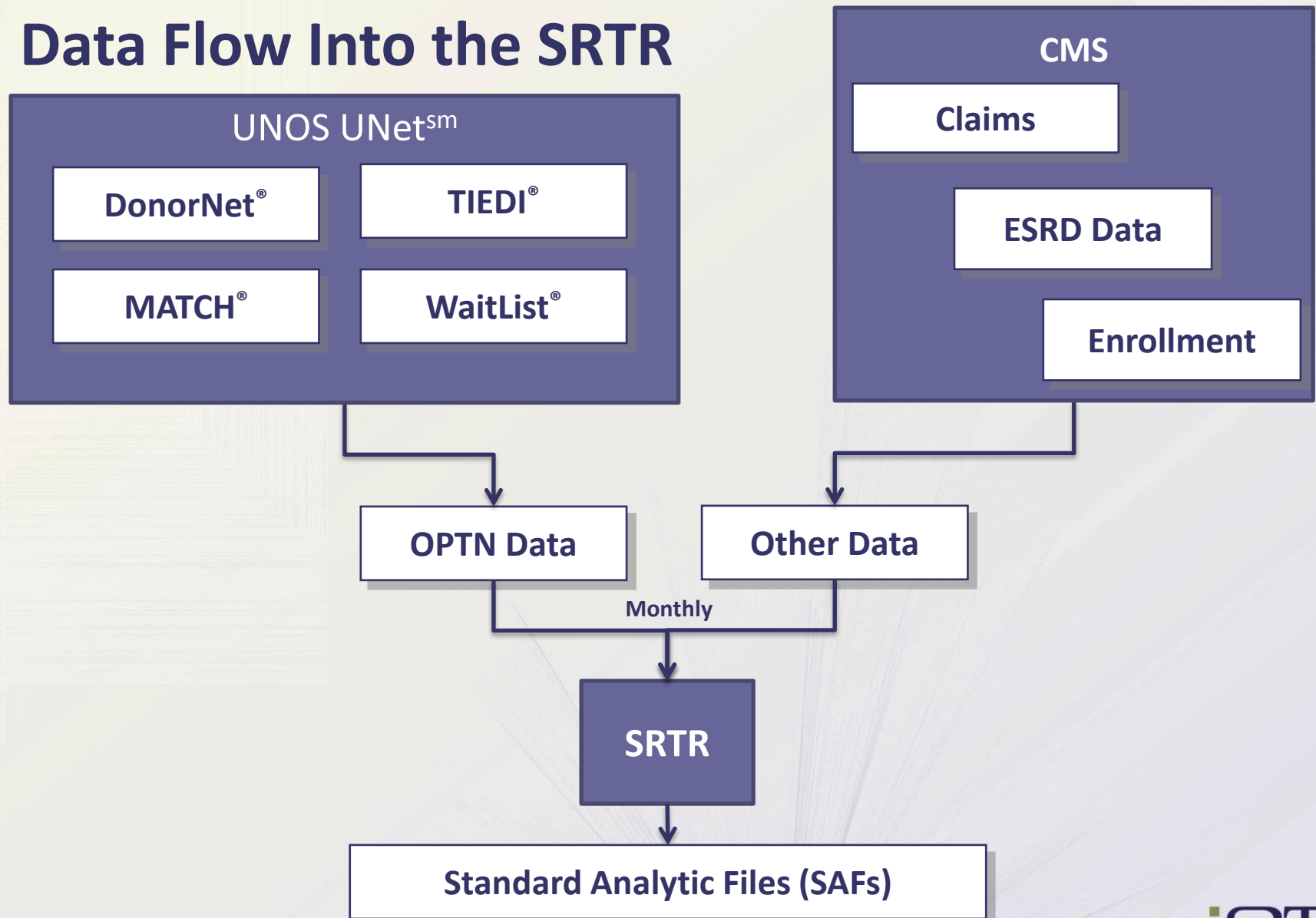
- Provide research support to the OPTN Board of Directors, OPTN Committees, HRSA, the Secretary of HHS's ACOT, and the scientific and transplant communities.
- Perform ongoing evaluations of the scientific and clinical status of solid organ transplantation.
  - Develop and publish Program- and OPO-Specific Reports.
  - Create an annual report on trends in solid organ transplantation in the US.
  - Create a biennial report to congress detailing the state of solid organ transplantation.
- Facilitate outside research on transplantation by releasing data to outside researchers.



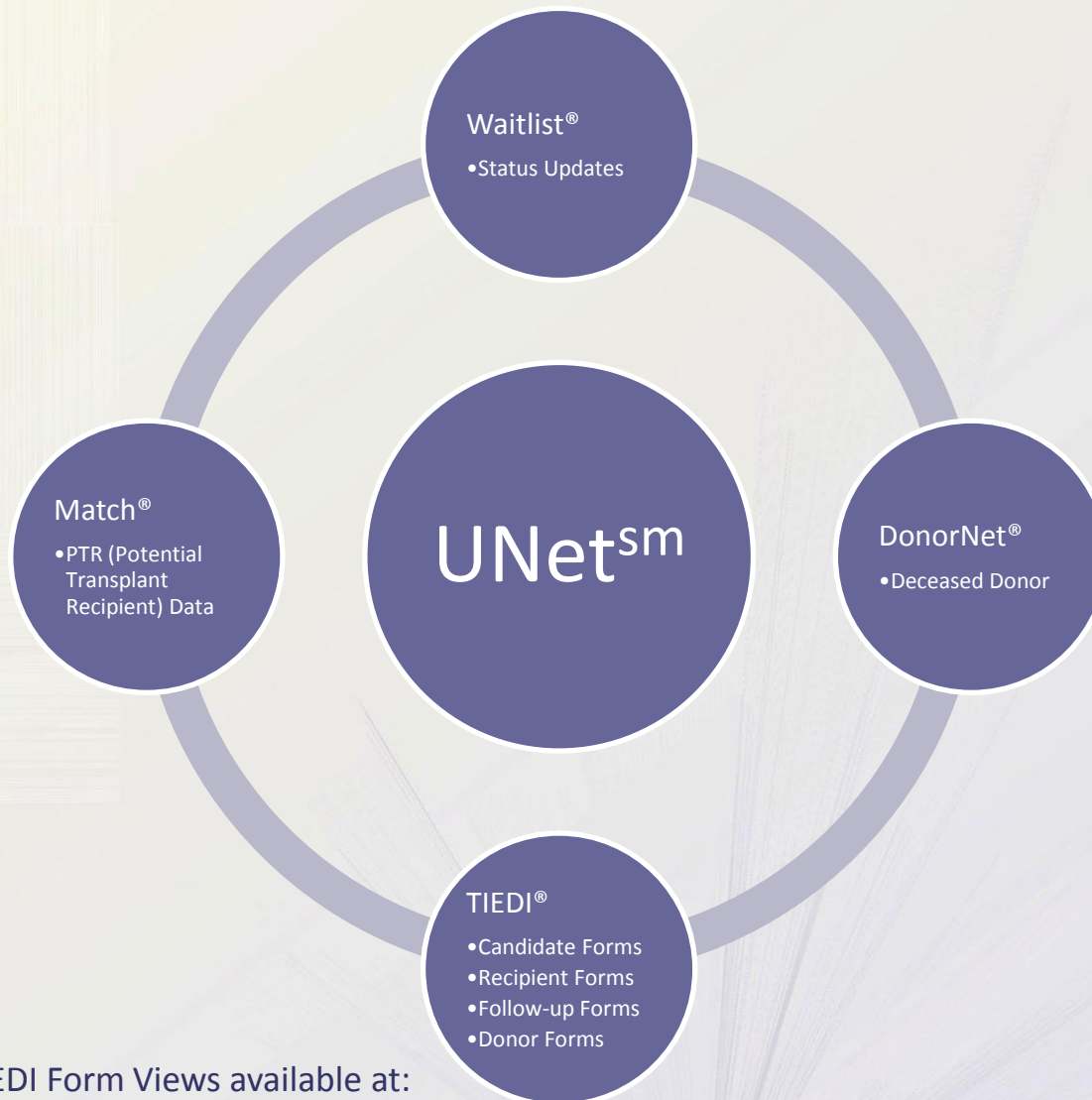
# Understanding SRTR Data



# Data Flow Into the SRTR



# Overview of the OPTN Database



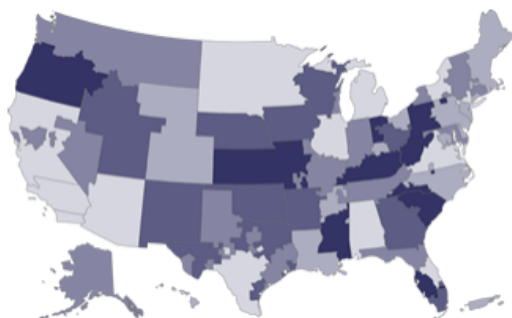
TIEDI Form Views available at:  
[http://www.unos.org/donation/index.php?topic=data\\_collection](http://www.unos.org/donation/index.php?topic=data_collection)



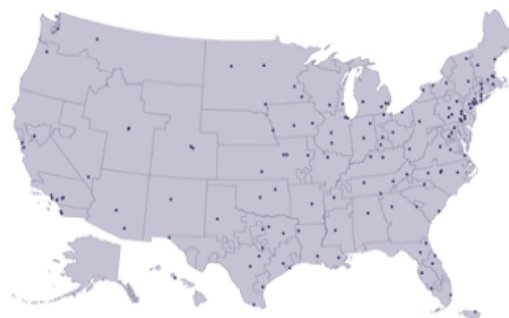
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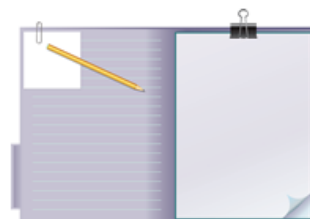
[Transplant Program Reports](#)

### PSR Quick Links

- [Transplant Program Reports](#)
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- [Risk-Adjustment Models \(Transplant Programs\)](#)
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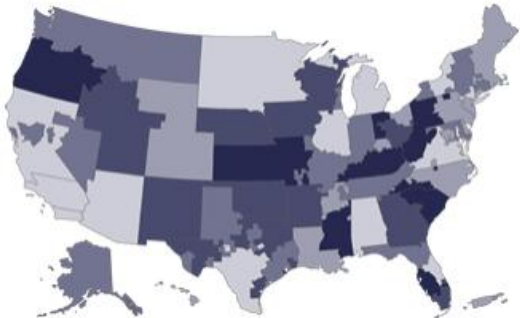
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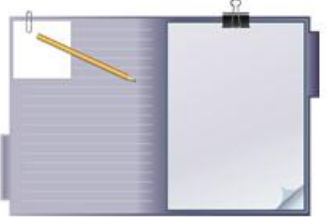

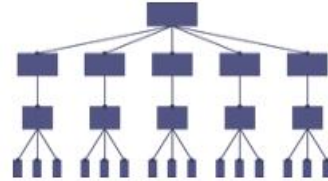


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## Standard Analysis Files

The SRTR Standard Analysis File (SAF) includes many of the data elements collected by OPTN on all solid organ transplant candidates, donors, and recipients in the United States from 1989 to the present. These data are supplemented by data from the Social Security Death Master File (SSDMF). The SRTR SAF provides data on solid organ transplantation, including heart, lung, kidney, pancreas, liver, and intestine transplants and combinations thereof.

The SAF is released quarterly (March, June, September, and December of each year) and is available only in SAS.

This Data Dictionary is intended as a guide to the contents of the SAF. The SAF includes encrypted patient identifiers, encrypted transplant center codes, and encrypted organ procurement organization codes. These codes allow for the various files to be linked. In general, the SAF does not include geographic data or text fields. Some data elements that are not part of the standard files, such as OPTN region, may be included upon request. These supplementary files may incur additional cost and require approval.

## Data Dictionary

[SAF Data Dictionary -- 1212 Q4](#)

### PSR Quick Links

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# New! Online SAF Data Dictionary ([www.srtr.org](http://www.srtr.org))

• [Money Transplant Follow-up File \(TXF\\_M\)](#)

• [Kidney-Pancreas Transplant Follow-up File \(TXF\\_KP\)](#)

• [Liver Transplant Follow-up File \(TXF\\_LU\)](#)

• [Lung Transplant Follow-up File \(TXF\\_LU\)](#)

• [Pancreas Transplant Follow-up File \(TXF\\_PA\)](#)

• [Heart-Lung Transplant File \(TX\\_HL\)](#)

• [Heart Transplant File \(TX\\_HR\)](#)

• [Intestine Transplant File \(TX\\_IN\)](#)

• [Kidney Transplant File \(TX\\_KI\)](#)

• [Kidney-Pancreas Transplant File \(TX\\_KP\)](#)

• [Liver Transplant File \(TX\\_LU\)](#)

• [Lung Transplant File \(TX\\_LU\)](#)

• [Pancreas Transplant File \(TX\\_PA\)](#)



## SAF Data Dictionary -- 2013 Q1 External Release

### TX\_KI

One record per transplant. Only KI records are included, with no KP records, although any other multi-organ transplants are included for KI. Information from the Transplant Recipient Registration (TRR) form, including characteristics of the recipient at the time of transplant and of the transplant operation. For ease of analysis, characteristics of the donor are added, as are donor-recipient interactions such as calculated HLA mismatch scores, blood compatibilities, and whether the organ was 'shared' based on the relationship between the OPO that recovered the organ and the transplant center. The TX table also includes summarized information from transplant follow-up, such as patient status information from the last transplant follow-up filed, to enable survival analyses. Link to follow-up records (TXF\_org) using trn\_id. Link to CAND files using px\_id. Link to donor records using don\_id.

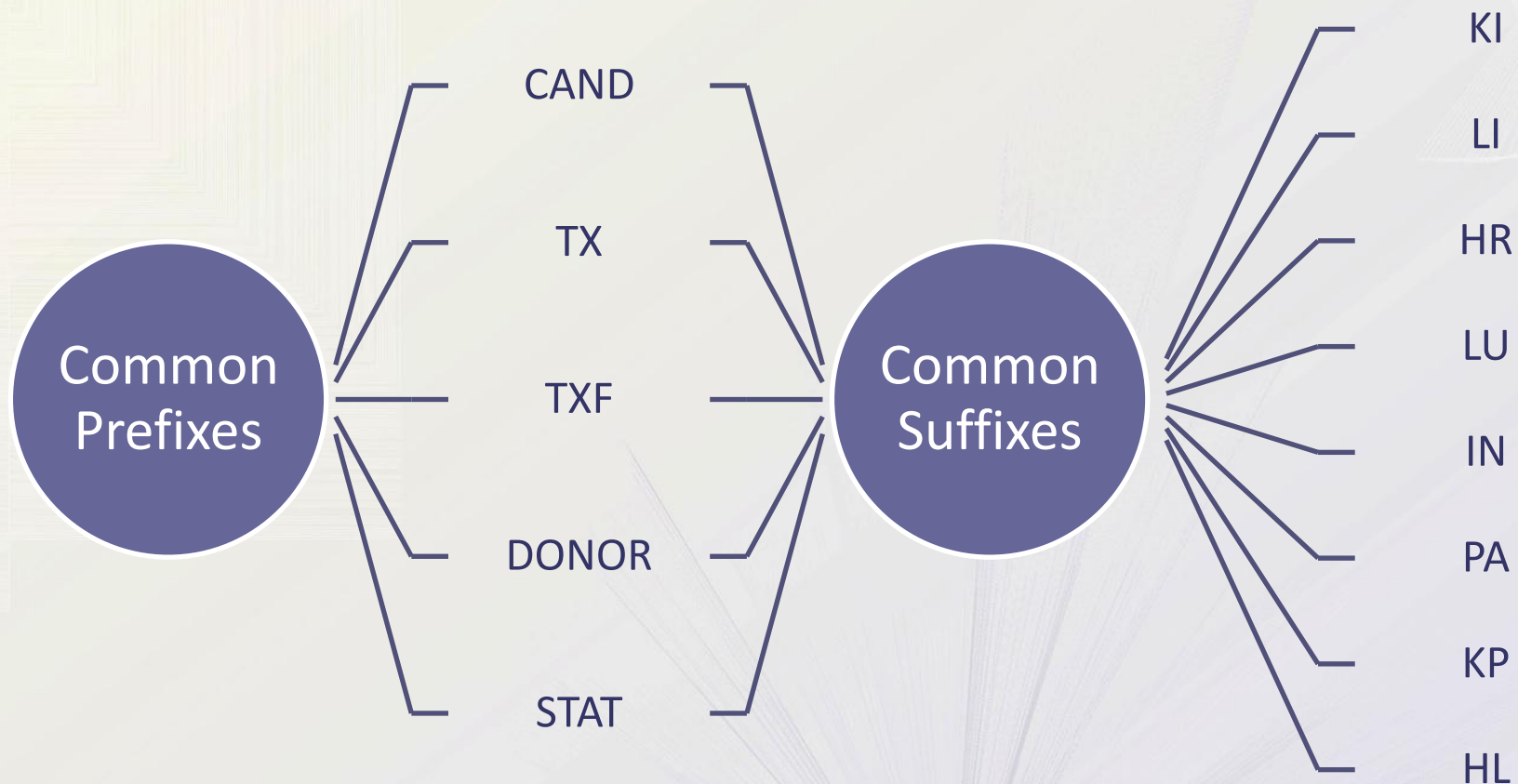
### [File Linking Diagram](#)

Total # of Records = 339,020

Total # of Variables = 276

Variable	Type	Format	Label	Length
CAN_ABO	char	<a href="#">SABO</a>	Patient/s Blood Type	3
CAN_AGE_AT_LISTING	num	<a href="#">AGE9A</a>	Calculated Candidate Age at Listing	8
CAN_AGE_DIAB	num		Age at Diabetes Onset	8
CAN_AGE_IN_MONTHS_AT_LISTING	num		Calculated Candidate Age in Months at Listing	8
CAN_ANGINA	num	<a href="#">ANGINA</a>	Angina/Coronary Artery Disease	8
CAN_ANGINA_CAD	num	<a href="#">ANGNACAD</a>	Angina and Coronary Artery Disease status	8
CAN_CEREB_VASC	char		Symptomatic Cerebrovascular Disease	1
CAN_CITIZENSHIP	num	<a href="#">CTZNLDTC</a>	Patient/s Citizenship	8
CAN_DGN	num	<a href="#">DGN</a>	Primary Diagnosis / KI Diagnosis for KP Candidate	8

# File Naming Conventions





# New! Online SAF Data Dictionary ([www.srtr.org](http://www.srtr.org))

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•[Heart Transplant File \(TX\\_HR\)](#)

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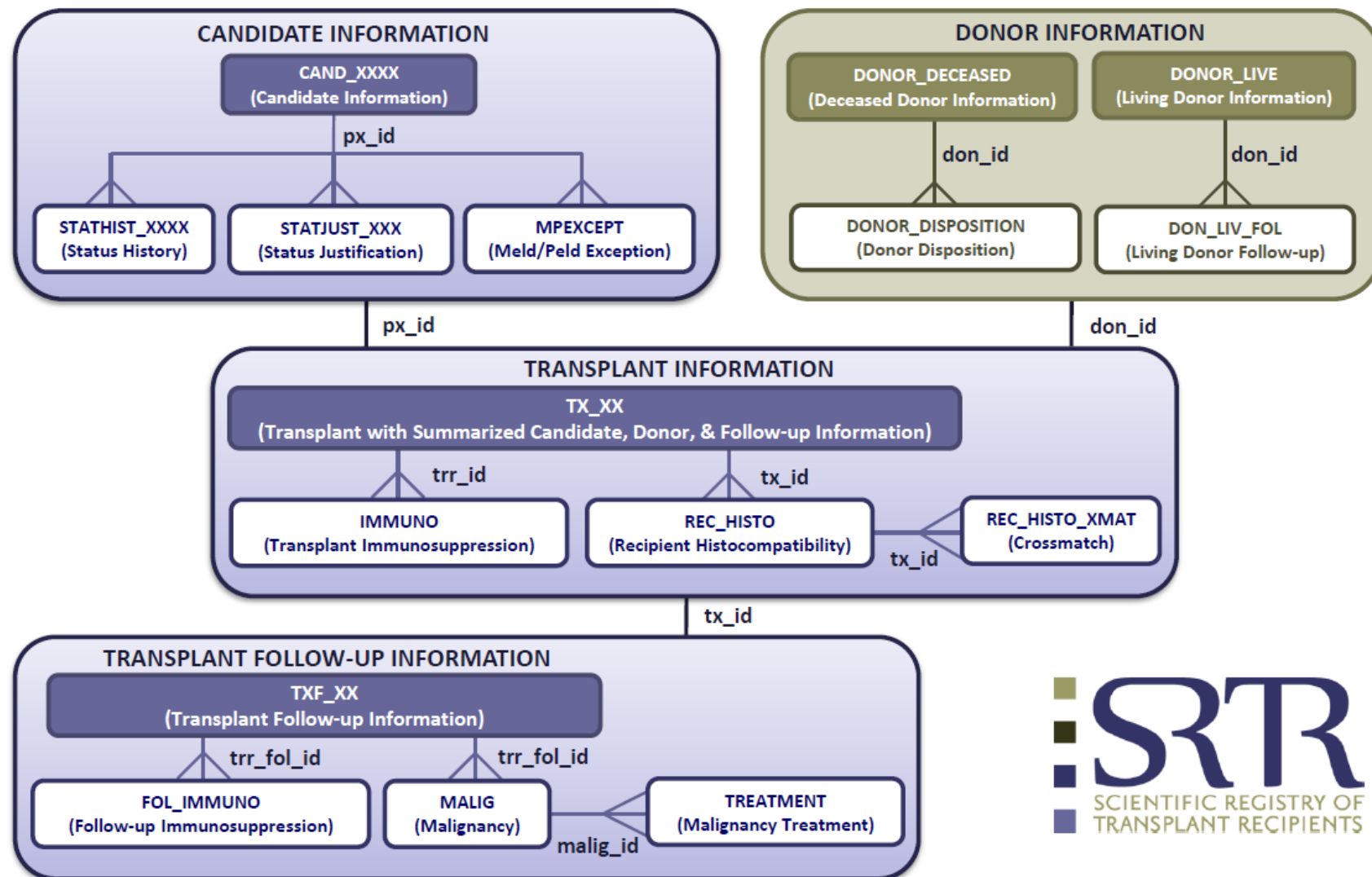
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# Linking SAF Datasets

The SAS datasets can be linked as diagrammed below. The text along the connector lines indicates the foreign key variable for linkages between the two data sets, used in a "by" statement in a SAS merge. A fork in the link indicates that more than one record may be associated with a single ID.



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•[Heart Transplant File \(TX\\_HR\)](#)

•[Intestine Transplant File \(TX\\_IN\)](#)

•[Kidney Transplant File \(TX\\_KI\)](#)

•[Kidney-Pancreas Transplant File \(TX\\_KP\)](#)

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# Formats readily available:

Format Name	Code	Descript
DGN	100	100: LU:ALLERGIC BRONCHOPULMONARY ASPERGILLOSIS
DGN	103	103: LU:BRONCHOPULMONARY DYSPLASIA
DGN	105	105: LU:CILIARY DYSKINESIS SYNDROME
DGN	106	106: LU:CONSTRUCTIVE BRONCHIOLITIS
DGN	107	107: LU:DYSMOTILE CILIA SYNDROME
DGN	109	109: LU:GRANULOMATOUS LUNG DISEASE
DGN	111	111: LU:KARTAGENER'S SYNDROME
DGN	113	113: LU:OBSTRUCTIVE LUNG DISEASE
DGN	114	114: LU:PRIMARY CILIARY DYSKINESIA
DGN	116	116: LU:TUBEROUS SCLEROSIS
DGN	200	200: LU:CONGENITAL MALFORMATION
DGN	202	202: LU:PERIPHERAL PULM ARTERY STENOSIS & 2° PULM HTN

# Standard Analysis Files (SAF)

Standard set of files that include most data fields collected by the OPTN for donors, candidates, and recipients in the US from 1988 to present.

- Includes encrypted patient and program identifiers
- Excludes geographic variables and most text fields
- Requires a Data Use Agreement, Security Plan, and Research plan
- Cost US\$1,000

Requestors can request additional variables, such as un-blinded center codes, at an additional fee.

Requests for identifying variables, such as candidate ZIP code, follow the same process as data linkages.



# Student Discount

- A student discount is available for current students using SRTR data to fulfill requirements of a degree program.
- The student discount is also available for medical doctors currently in residency or fellowship programs.
- Documentation is required and the student must be named as the principal investigator.
- For qualifying students, the cost of a SAF/SAM is \$200.
- No student discount is available for requests requiring additional SRTR programming.

# Linkages and Identifying Data

**Any time researchers want to link SRTR data with outside data or want to receive identifiers with SRTR data.**

- Requires a Data Use Agreement, Security Plan, and Research plan
- Must demonstrate the research is not feasible without these data/linkage
- Requires review and approval of the SRTR Technical Advisory Committee and SRTR Project Officer
- Cost based on the time required for linkage (US\$120/hour) and SAF

**Examples:**

- Linking SRTR SAF to clinical trial data
- Linking SRTR SAF to Medicare/Medicaid data
- Candidate and recipient ZIP code

# Limitations on Data Release

- Possible reasons for denying a data request in whole or in part include:
  - The data are not collected and/or verified;
  - Release of the data violates the Privacy Act or applicable federal or state laws regarding confidentiality of patient medical records or trade secrets;
  - The purpose of the data use is not sufficiently valuable to warrant a large-scale expenditure of time and effort; or
  - The data and information are an exception from disclosure under the Freedom of Information Act (FOIA)

# Acquiring SRTR Data

All inquiries are received by a central phone line (877-970-SRTR) and/or email address ([srtr@srtr.org](mailto:srtr@srtr.org)) and then handled according to the details of the request.

**Tabitha Leighton, MPH & Susan Leppke, MPH**

Research and Policy Liaisons  
Scientific Registry of Transplant Recipients  
Minneapolis Medical Research Foundation  
914 S 8th St, Suite S-422, Minneapolis, MN 55404  
[srtr@srtr.org](mailto:srtr@srtr.org)  
612-347-7787



# Data Use Agreement

- Data may only be used for specified purposes
- All manuscripts and abstracts must be reviewed prior to submission
- Expires 1 year after date
- Can be renewed free of charge



## Data release agreement

for bona fide research & analysis

Project number: \_\_\_\_\_  
Date \_\_\_\_\_

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Pursuant to a contract with the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS), through the Scientific Registry of Transplant Recipients Contractor (SRTR), The Minneapolis Medical Research Foundation (MMRF), with offices at 914 S. 8th Street, Suite 5-206 Minneapolis, Minnesota, 55404, will provide the organization identified below (Recipient) with patient-level data (but not patient-identified data unless authorized in writing as described below). The data extracted from the SRTR research database is maintained by MMRF solely for the use identified below. Patient-identified data may only be made available when approved by the SRTR Technical Advisory Committee (S-TAC) and the SRTR Project Officer (PO). The recipient of released data will abide by the terms stated in the Agreement Clauses.

---

Recipient name \_\_\_\_\_  
Institution \_\_\_\_\_ Phone \_\_\_\_\_  
Mailing address \_\_\_\_\_  
Contact name \_\_\_\_\_ Phone \_\_\_\_\_  
email \_\_\_\_\_

check all that apply ☐ Standard Analysis File (SAF) ☐ LSAM ☐ KPSAM ☐ Additional variables ☐ Other \_\_\_\_\_

Description of data to be delivered \_\_\_\_\_





# Security Plan

- Identifies individuals authorized to have access to the data
- Outlines data protection





## Security plan questions

for data release agreement

Project number: \_\_\_\_\_  
Date \_\_\_\_\_

Researcher name \_\_\_\_\_

1. On what type of computer system will the data be stored and used? Please answer this for each computer on which the data will be stored or used. Check all that apply.

- ☐ Laptop with an encrypted hard drive
- ☐ Personal/home-user computer
- ☐ Institutional stationary computer

2. Please list the full names and titles of all individuals who will be accessing this data.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Affirmative answers to all of the questions below will certify your compliance with the security agreement. If you cannot check a box to confirm compliance, please contact the SSTR to discuss your situation.



# How Current are the SRTR Data?

- Public SAF's are produced quarterly in March, June, September, and December; allows for citable SAF source (current SAF: Mar 2013)
- Currency of data is based on OPTN policy for timeliness of form submission
- Transplant follow-up forms collected at 6 months and annually
  - OPTN Policy allows for submission:
    - Within 30 days for the following forms (Policy 7.2):
      - » Transplant Candidate Registration (TCR)
      - » Deceased Donor Registration (DDR)
      - » Living Donor Follow-Up (LDF)
      - » Recipient and Donor Histocompatibility (RHS & DHS)
      - » Recipient Malignancy (MALIG)
    - Within 60 days for the following forms (Policy 7.3.1)
      - » Transplant Recipient Registration (TRR)
      - » TRR completed when discharged from the hospital or 6-weeks post-transplant, whichever is first
    - Within 30 days of the 6-month follow-up form (Policy 7.1.5)
    - Within 90 days of the annual follow-up forms (Policy 7.1.5)

# **A Look Into the SRTR Website**

[www.srtr.org](http://www.srtr.org)



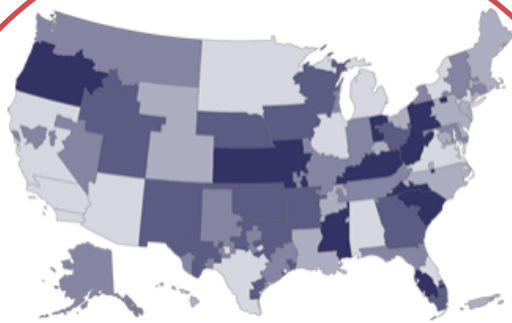
# New OPO Reports In the Works....

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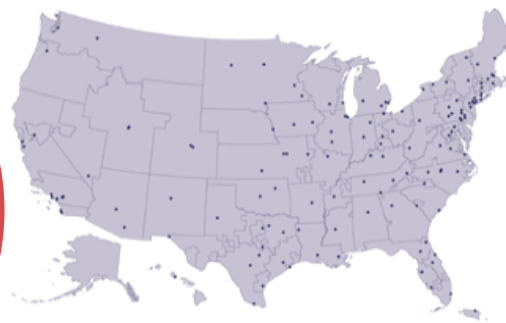
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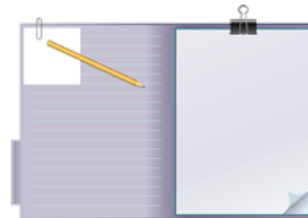
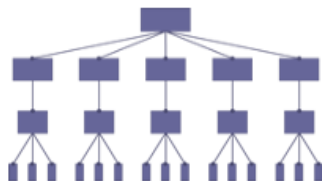
Supporting the transplant community with statistical analyses to improve patient outcomes.



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[Transplant Program Reports](#)



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Fax: (612) 347-5878  
[Email Us](#)



# OPO-Specific Reports, Future Reports:



## Arkansas Regional Organ Recovery Agency

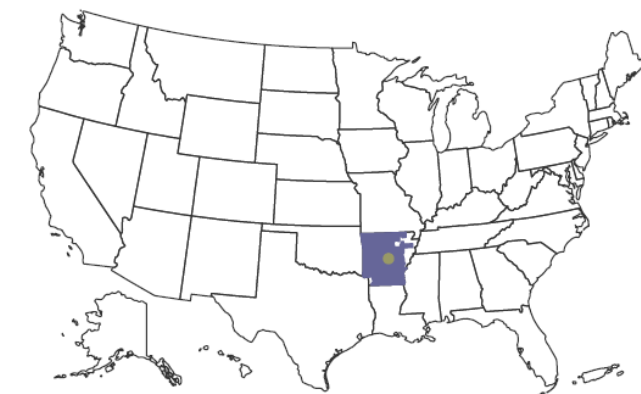
OPO Code: AROR

Release Date: July 12, 2012  
Based on Data Available: April 30, 2012

SRTR OPO-Specific Report  
Feedback?: SRTR@SRTR.org  
1.877.970.SRTR (7787)  
http://www.srtr.org

## A. Description of the Donation Service Area (DSA) Served by AROR

Figure A1. Donation Service Area of AROR



● Indicates the location of OPO headquarters

Figure A2. Counties Served



● Indicates the locations of transplant hospitals  
(See Tables A3 and G1 for more details)

Table A3. Transplant Programs\* within This DSA

Hospital Name (Code)	HR	IN	KI	LI	LU	PA
Arkansas Children's Hospital (ARCH)	X		X			
Baptist Medical Center (ARBH)	X		X			
UAMS Medical Center (ARUA)			X	X		

\*Performed at least one transplant of that type from 1/1/2011 to 12/31/2011.

The data reported here were prepared by the Scientific Registry of Transplant Recipients (SRTR) under contract with the Health Resources and Services Administration (HRSA).

Page: 1



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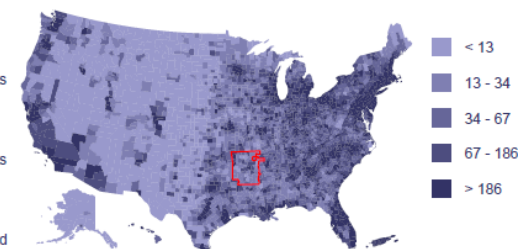
## B. Population Density, Death, and Donations

Figure B1. Population Density (Per Square Mile)\*

Population of this DSA: 2,509,774  
This ranks 46th among the 58 DSAs  
(1st is the highest).

Land area of this DSA: 44,074.2  
This ranks 26th among the 58 DSAs  
(1st is the highest).

\*US Census Bureau, 2011 projected  
population/2010 land area

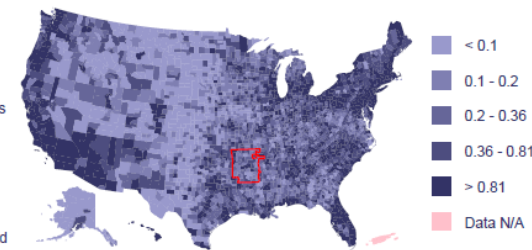


Legend for Figure B1:  
 < 13  
 13 - 34  
 34 - 67  
 67 - 186  
 > 186

Figure B2. Death Rate (Per 1000 Population)\*

Deaths of this DSA: 24,430  
This ranks 41st among the 58 DSAs  
(1st is the highest).

\*US Census Bureau, 2011 projected  
death and population

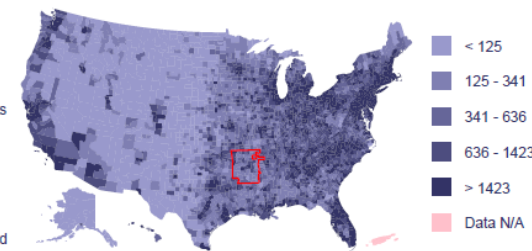


Legend for Figure B2:  
 < 0.1  
 0.1 - 0.2  
 0.2 - 0.36  
 0.36 - 0.81  
 > 0.81  
 Data N/A

Figure B3. Deaths (Per 1000 Square Miles)\*

Death density of this DSA: 554.29  
This ranks 44th among the 58 DSAs  
(1st is the highest).

\*US Census Bureau, 2011 projected  
death/2010 land area



Legend for Figure B3:  
 < 125  
 125 - 341  
 341 - 636  
 636 - 1423  
 > 1423  
 Data N/A

The data reported here were prepared by the Scientific Registry of Transplant Recipients (SRTR) under contract with the Health Resources and Services Administration (HRSA).

Page: 2



# OPO-Specific Reports, Future Reports



Arkansas Regional Organ Recovery Agency  
OPO Code: AROR

Release Date: July 12, 2012  
Based on Data Available: April 30, 2012

SRTR OPO-Specific Report  
Feedback?: SRTR@SRTR.org  
1.877.970.SRTR (7787)  
http://www.srtr.org

## C. Organ Utilization (cont.)

Table C8. Observed and Expected Organ Yield

Measure of Donor Yield (125 donors)	Obs # Tx Orgs	Exp # Tx Orgs	Obs # Tx Orgs/100	Exp # Tx Orgs/100	Obs/100 - Exp/100	Obs/Exp Ratio	P-Value
Aggregate Donor Yield	377	392.46	301.60	313.97	-12.37	0.96	0.176
Kidney Yield	196	192.95	156.80	154.36	2.44	1.02	0.644
Liver Yield	100	99.71	80.00	79.77	0.23	1.00	0.958
Heart Yield	43	44.80	34.40	35.84	-1.44	0.96	0.660
Lung Yield	29	31.56	23.20	25.25	-2.05	0.92	0.470
Pancreas Yield	6	21.05	4.80	16.84	-12.04	0.29	<0.01

Figure C9. O/E hrt yield

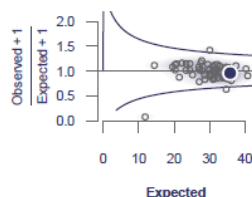


Figure C9. O/E intestine yield

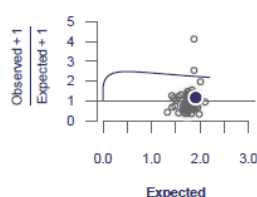


Figure C9. O/E kidney yield

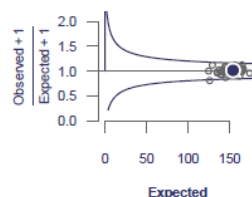


Figure C9. O/E liver yield

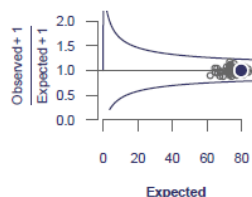


Figure C9. O/E lung yield

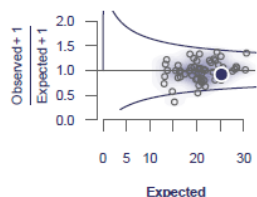
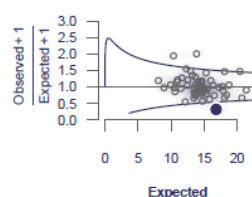


Figure C9. O/E pancreas yield



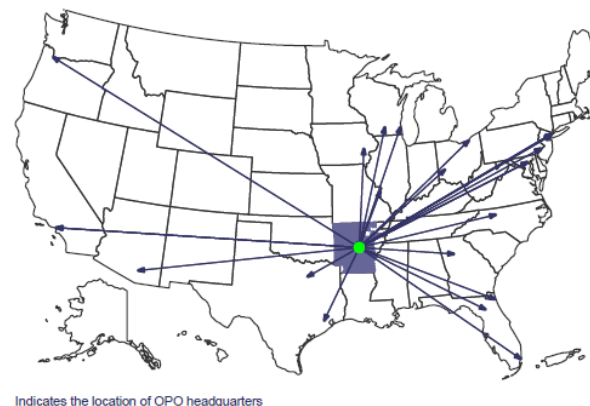
Arkansas Regional Organ Recovery Agency  
OPO Code: AROR

Release Date: July 12, 2012  
Based on Data Available: April 30, 2012

SRTR OPO-Specific Report  
Feedback?: SRTR@SRTR.org  
1.877.970.SRTR (7787)  
http://www.srtr.org

## E3. Programs Transplanting Kidneys Procured by AROR

Figure E3.1 Programs transplanting kidneys procured by AROR from 1/1/2011 to 12/31/2011\*



\* Transplants within the local area of the OPO are not always visible on the map due to scale. See Table E3.2 for full details.

Table E3.2 Programs transplanting kidneys procured by AROR from 1/1/2011 to 12/31/2011

Hospital Name (Code)	Geography*	Transplants
Arkansas Children's Hospital (ARCH)	Local	3
Baptist Medical Center (ARBH)	Local	22
UAMS Medical Center (ARUA)	Local	38
Emory University Hospital (GAEM)	Regional	3
Jackson Memorial Hospital University of Miami School of Medicine (FLJM)	Regional	2
Mayo Clinic Florida (FLSL)	Regional	1
Shands Hospital at The University of Florida (FLUF)	Regional	6
Albert Einstein Medical Center (PAAE)	National	1
Aurora St. Luke's Medical Center (WISL)	National	1
Barnes-Jewish Hospital (MOBH)	National	1
Baylor University Medical Center (TXTX)	National	1
Cedars-Sinai Medical Center (CACs)	National	1
Johns Hopkins Hospital (MDJH)	National	3
Legacy Good Samaritan Hospital and Medical Center (ORGS)	National	1
Memorial Hermann Hospital, University of Texas at Houston (TXHH)	National	1
Miami Valley Hospital (OHMV)	National	1
Montefiore Medical Center (NYMA)	National	1
Mount Sinai Medical Center (NYMS)	National	4

\*Note: Local = within same DSA; Regional = within same OPTN region, but not same DSA; National = not within same DSA or OPTN region

# OPO-Specific Reports, Future Reportst:



**MNOP**  
Center Code: MNOP  
Donation Service Area  
Release Date: July 12, 2012  
Based on Data Available: April 30, 2012

SRT OPO-Specific Report  
Feedback?: SRT@SRT.org  
1.877.970.SRT (7787)  
<http://www.srt.org>

## Section: DCD Utilization

Figure DCD A. Trends in DCD Recovered

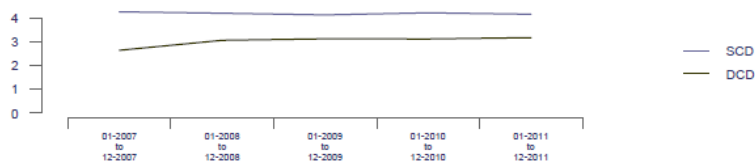
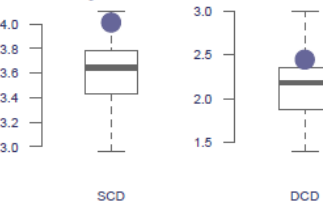


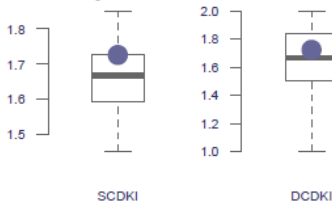
Figure C8:Footnote

Figure DCD B. Total Organs Transplanted Per Donor by DCD/SCD



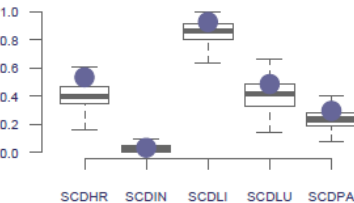
S14:Footnotes Tot Org Tx/ Donor by DCD/SCD Don

Figure DCD C. Kidney Organs Transplanted Per Donor by DCD/SCD



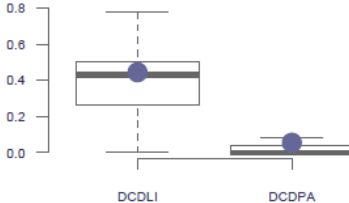
S19:Footnotes KI Org Tx/ Donor by DCD/SCD Don

Figure DCD D. Non Renal Organs Transplanted Per Donor SCD



S23:Footnote: Non-Renal - Organs Transplanted Per Donor SCD

Figure DCD E. Non Renal Organs Transplanted Per Donor DCD



S27:Footnote: Non-Renal - Organs Transplanted Per Donor by DCD



**MNOP**  
Center Code: MNOP  
Donation Service Area  
Release Date: July 12, 2012  
Based on Data Available: April 30, 2012

SRT OPO-Specific Report  
Feedback?: SRT@SRT.org  
1.877.970.SRT (7787)  
<http://www.srt.org>

## Section F. Transplants Facilitated by OPO - LU

Table F. Characteristics of deceased donor organ transplants  
Transplant programs served between 01/01/2010 and 12/31/2011

Organ: Lung	This DSA		United States	
	Jan 2010- Dec 2010	Jan 2011- Dec 2011	Jan 2010- Dec 2010	Jan 2011- Dec 2011
<b>Total Number of Transplants</b>	35	31	1,769	1,821
<b>Race (%)</b>				
White	82.9	87.1	82.7	84.3
African-American	5.7	6.5	8.6	8.3
Hispanic/Latino	2.9	3.2	5.9	5.2
Asian	2.9	0.0	1.8	1.5
Other	5.7	3.2	1.0	0.7
Unknown	0.0	0.0	0.0	0.0
<b>Age (%)</b>				
< 2 Years	2.9	0.0	0.7	0.3
2-11 Years	0.0	3.2	0.7	0.7
12-17 Years	0.0	0.0	1.8	1.4
18-34 Years	2.9	3.2	11.2	11.9
35-49 Years	14.3	19.4	15.6	12.3
50-64 Years	65.7	61.3	45.3	47.1
65+ Years	14.3	12.9	24.7	26.4
Unknown	0.0	0.0	0.0	0.0
<b>Gender (%)</b>				
Male	54.3	48.4	59.4	58.2
Female	45.7	51.6	40.6	41.8
<b>Blood Type (%)</b>				
O	40.0	38.7	45.9	44.9
A	48.6	48.4	38.2	41.1
B	8.6	9.7	12.1	10.7
AB	2.9	3.2	3.8	3.3
<b>Primary Cause of Disease (%)</b>				
Congenital Disease	0.0	0.0	0.0	0.0
Primary Pulmonary Hypertension	2.9	3.2	6.6	4.6
Cystic Fibrosis	14.3	12.9	14.0	14.3
Idiopathic Pulmonary Fibrosis	31.4	45.2	44.8	47.0
Emphysema/COPD	48.6	32.3	28.7	30.9
Retransplant/Graft Failure	0.0	0.0	0.0	0.0
Other	2.9	6.5	5.9	3.3
Missing	0.0	0.0	0.0	0.0

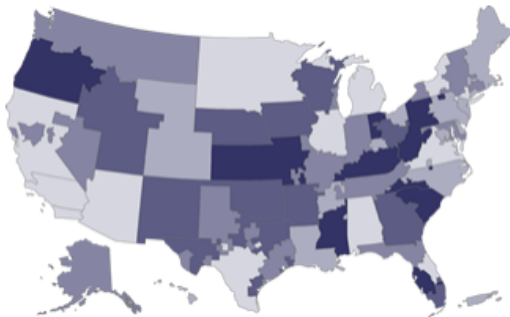
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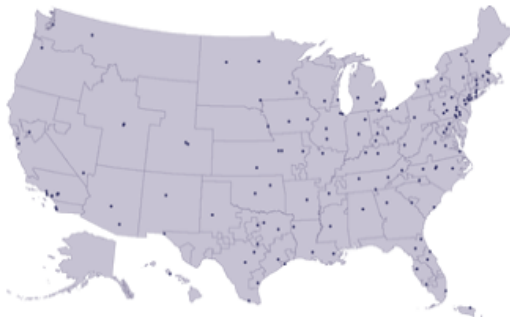
**Srtr** SCIENTIFIC REGISTRY OF TRANSPLANT RECIPIENTS

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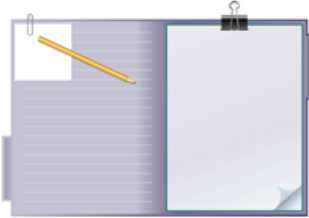
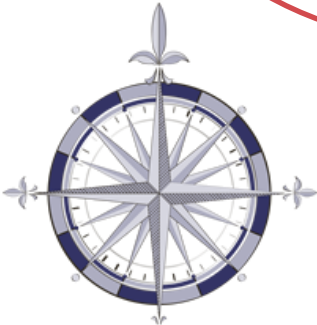
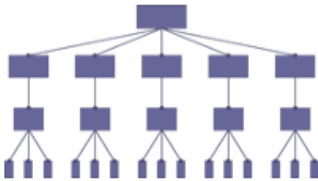
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Minneapolis, MN 55404  
Tel: (877) 970-SRTR  
Fax: (612) 347-5878  
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# Graphical Summary Page



Center Code:  
Transplant Program (Organ): Kidney  
Release Date: January 13, 2012  
Based on Data Available: October 31, 2011

SRTR Program-Specific Report  
Feedback?: [SRTR@SRTR.org](mailto:SRTR@SRTR.org)  
1.877.970.SRTR (7787)  
<http://www.srtr.org>

## A. Program Summary

Figure A1. Waiting list and transplant activity

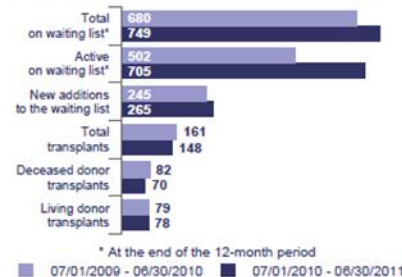
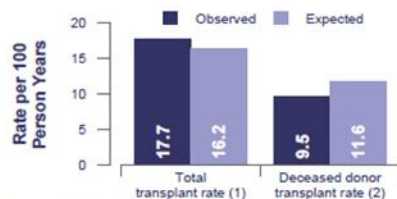


Table A1. Census of transplant recipients

Recipients	07/01/2009-06/30/2010	07/01/2010-06/30/2011
Transplanted at this center	161	148
Followed by this center*	2,174	2,185
...transplanted at this program	2,158	2,165
...transplanted elsewhere	16	20

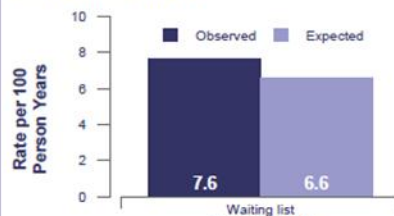
\* Recipients followed are transplant recipients for whom the center has submitted a post-transplant follow-up form for a transplant that took place before the 12-month interval for each column.

Figure A2. Transplant rates  
07/01/2010 - 06/30/2011



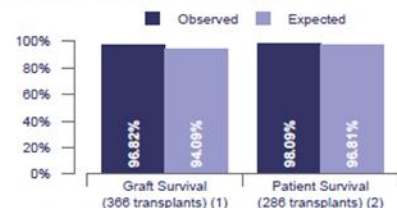
(1) Not significantly different ( $p=0.344$ )  
(2) Not significantly different ( $p=0.100$ )

Figure A3. Waiting list mortality rates  
07/01/2010 - 06/30/2011



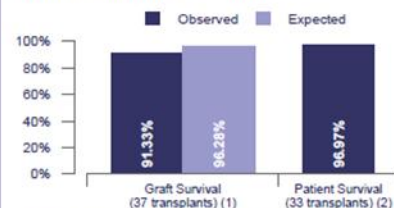
(1) Not significantly different ( $p=0.309$ )

Figure A4. First-year adult graft and patient survival: 07/01/2008 - 12/31/2010



(1) Statistically higher ( $p=0.026$ )  
(2) Not significantly different ( $p=0.246$ )

Figure A5. First-year pediatric graft and patient survival: 07/01/2008 - 12/31/2010



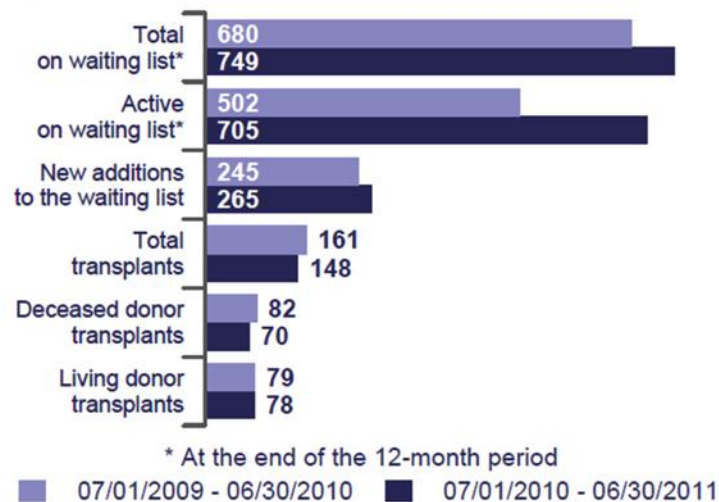
(1) Not significantly different ( $p=0.274$ )  
(2) Expected patient survival was not estimated

The data reported here were prepared by the Scientific Registry of Transplant Recipients (SRTR) under contract with the Health Resources and Services Administration (HRSA).



# Graphical Summary Page

**Figure A1. Waiting list and transplant activity**



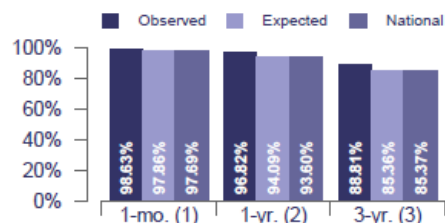
**Table A1. Census of transplant recipients**

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Transplanted at this center	161	148
Followed by this center*	2,174	2,185
...transplanted at this program	2,158	2,165
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\* Recipients followed are transplant recipients for whom the center has submitted a post-transplant follow-up form for a transplant that took place before the 12-month interval for each column.

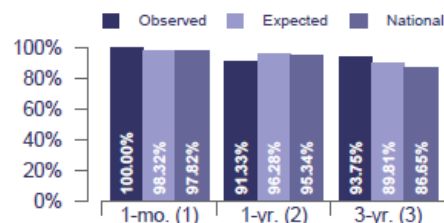
## C. Transplant Metrics

Figure C1. Adult (18+) graft survival



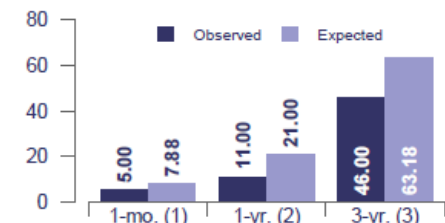
(1) Based on 366 transplants performed 07/01/2008-12/31/2010  
(2) Based on 366 transplants performed 07/01/2008-12/31/2010  
(3) Based on 411 transplants performed 01/01/2006-06/30/2008

Figure C2. Pediatric (<18) graft survival



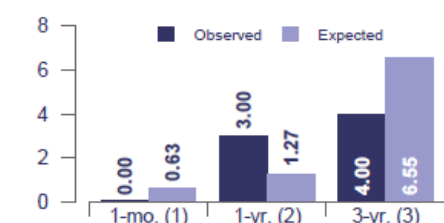
(1) Based on 37 transplants performed 07/01/2008-12/31/2010  
(2) Based on 37 transplants performed 07/01/2008-12/31/2010  
(3) Based on 64 transplants performed 01/01/2006-06/30/2008

Figure C3. Counts of observed and expected adult (18+) graft failures



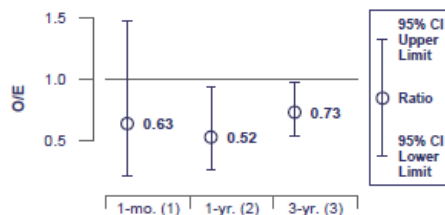
(1) Based on 366 transplants performed 07/01/2008-12/31/2010  
(2) Based on 366 transplants performed 07/01/2008-12/31/2010  
(3) Based on 411 transplants performed 01/01/2006-06/30/2008

Figure C4. Counts of observed and expected pediatric (<18) graft failures



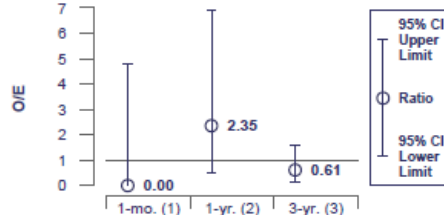
(1) Based on 37 transplants performed 07/01/2008-12/31/2010  
(2) Based on 37 transplants performed 07/01/2008-12/31/2010  
(3) Based on 64 transplants performed 01/01/2006-06/30/2008

Figure C5. Ratios of observed and expected adult (18+) graft failures



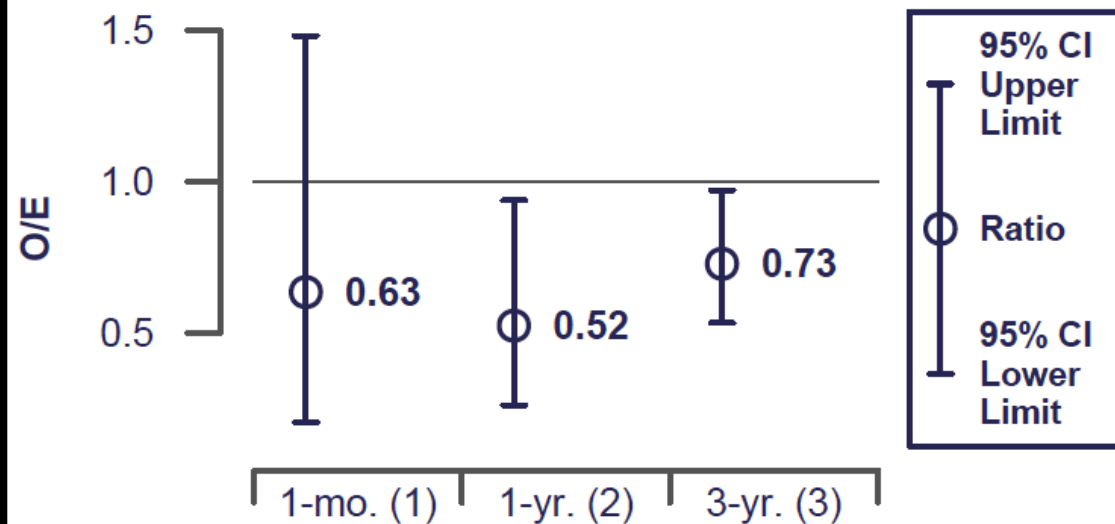
(1) Not significantly different ( $p=0.405$ , 95% CI=[0.21, 1.48])  
(2) Lower than expected ( $p=0.026$ , 95% CI=[0.26, 0.94])  
(3) Lower than expected ( $p=0.029$ , 95% CI=[0.53, 0.97])

Figure C6. Ratios of observed and expected pediatric (<18) graft failures



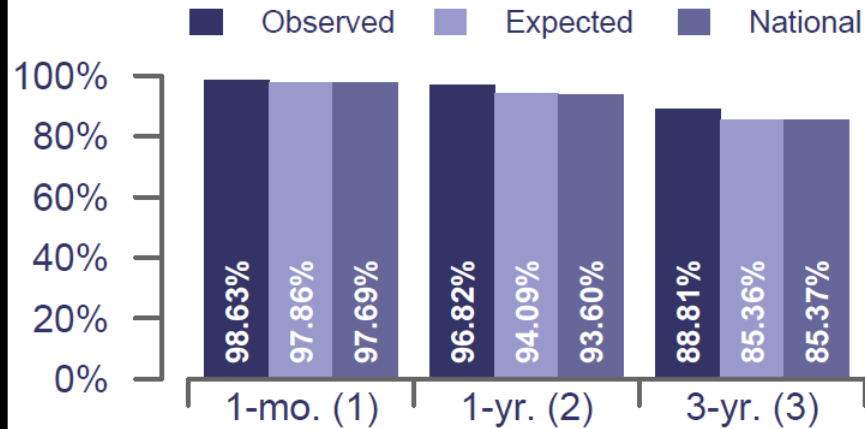
(1) Not significantly different ( $p=0.999$ , 95% CI=[0.00, 4.77])  
(2) Not significantly different ( $p=0.274$ , 95% CI=[0.49, 6.88])  
(3) Not significantly different ( $p=0.437$ , 95% CI=[0.17, 1.56])

**Figure C5. Ratios of observed and expected adult (18+) graft failures**



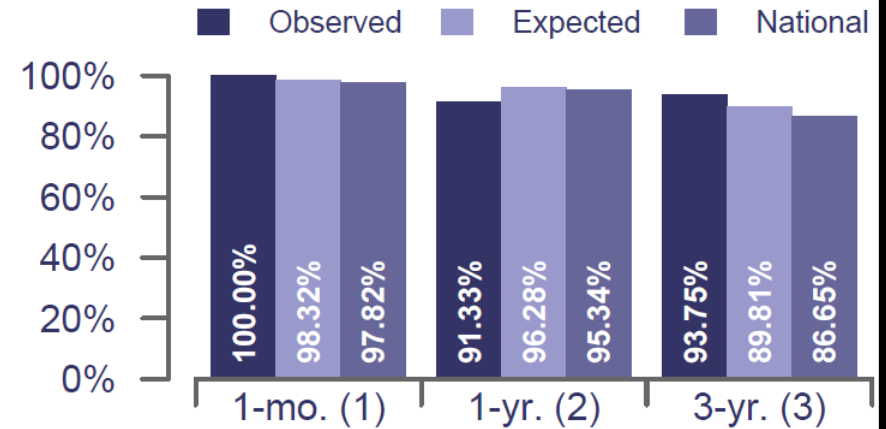
- (1) Not significantly different ( $p=0.405$ , 95% CI=[0.21, 1.48])  
(2) Lower than expected ( $p=0.026$ , 95% CI=[0.26, 0.94])  
(3) Lower than expected ( $p=0.029$ , 95% CI=[0.53, 0.97])

**Figure C1. Adult (18+) graft survival**



- (1) Based on 366 transplants performed 07/01/2008-12/31/2010  
 (2) Based on 366 transplants performed 07/01/2008-12/31/2010  
 (3) Based on 411 transplants performed 01/01/2006-06/30/2008

**Figure C2. Pediatric (<18) graft survival**



- (1) Based on 37 transplants performed 07/01/2008-12/31/2010  
 (2) Based on 37 transplants performed 07/01/2008-12/31/2010  
 (3) Based on 64 transplants performed 01/01/2006-06/30/2008



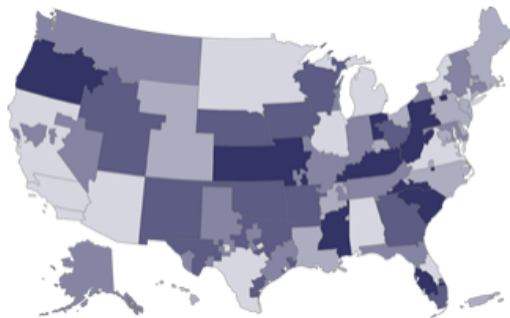
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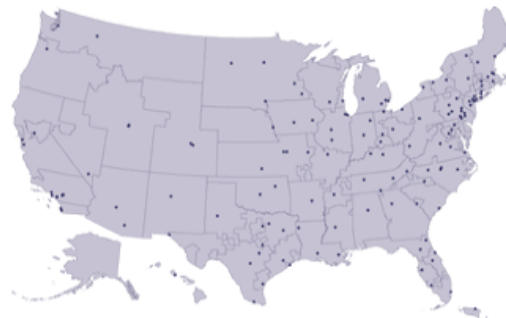


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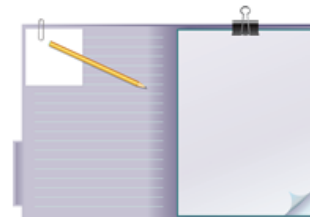
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## Risk-Adjustment Models

Posttransplant Baseline Survival Curves (All Organs)

[Kidney](#) [Liver](#) [Heart](#) [Kidney/Pancreas](#) [Lung](#) [Intestine](#) [Heart/Lung](#)

### Deceased Donor Posttransplant Survival Models

[Adult, One-Year Graft Survival](#)

[Pediatric \(Age 0-17\) One-Year Graft Survival](#)

[Adult, One-Year Patient Survival](#)

[Adult, Three-Year Graft Survival](#)

[Pediatric \(Age 0-17\), Three-Year Graft Survival](#)

[Adult, Three-Year Patient Survival](#)

### Living Donor Posttransplant Survival Models

[Adult, One-Year Graft Survival](#)

[Pediatric \(Age 0-17\) One-Year Graft Survival](#)

[Adult, One-Year Patient Survival](#)

[Adult, Three-Year Graft Survival](#)

[Adult, Three-Year Patient Survival](#)

[Pediatric \(Age 0-17\), Three-Year Graft Survival](#)

[Pediatric \(Age 0-17\), Three-Year Patient Survival](#)

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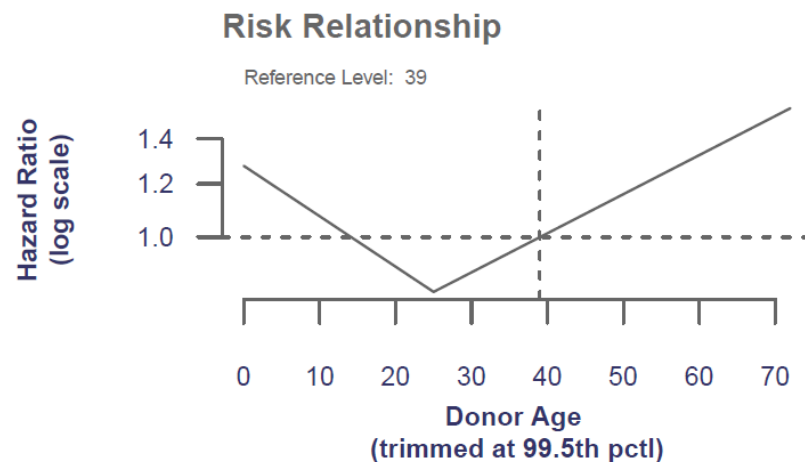
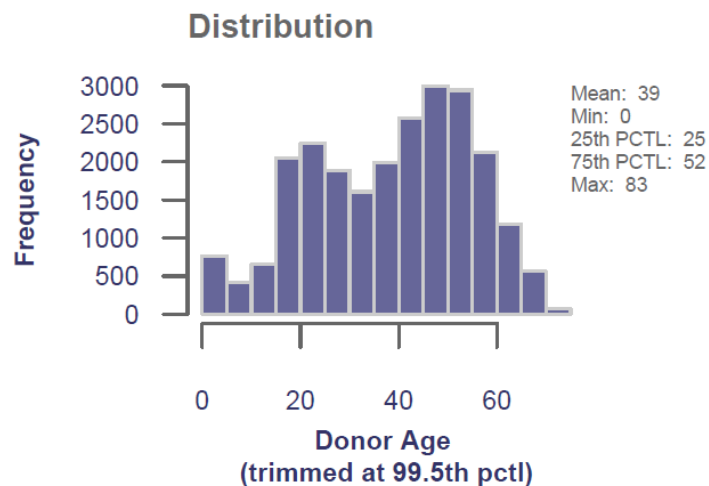
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# Understanding the Risk Adjustment:

## Donor Age



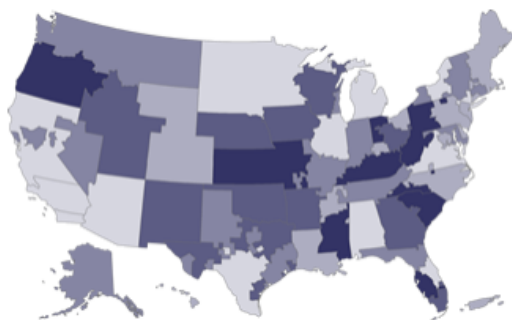
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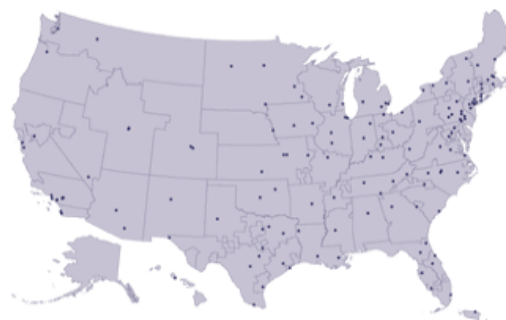


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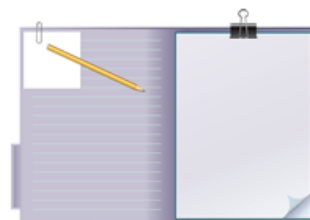
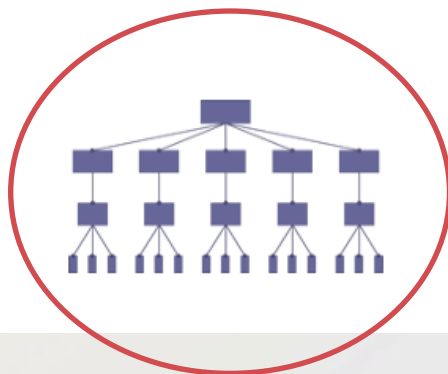
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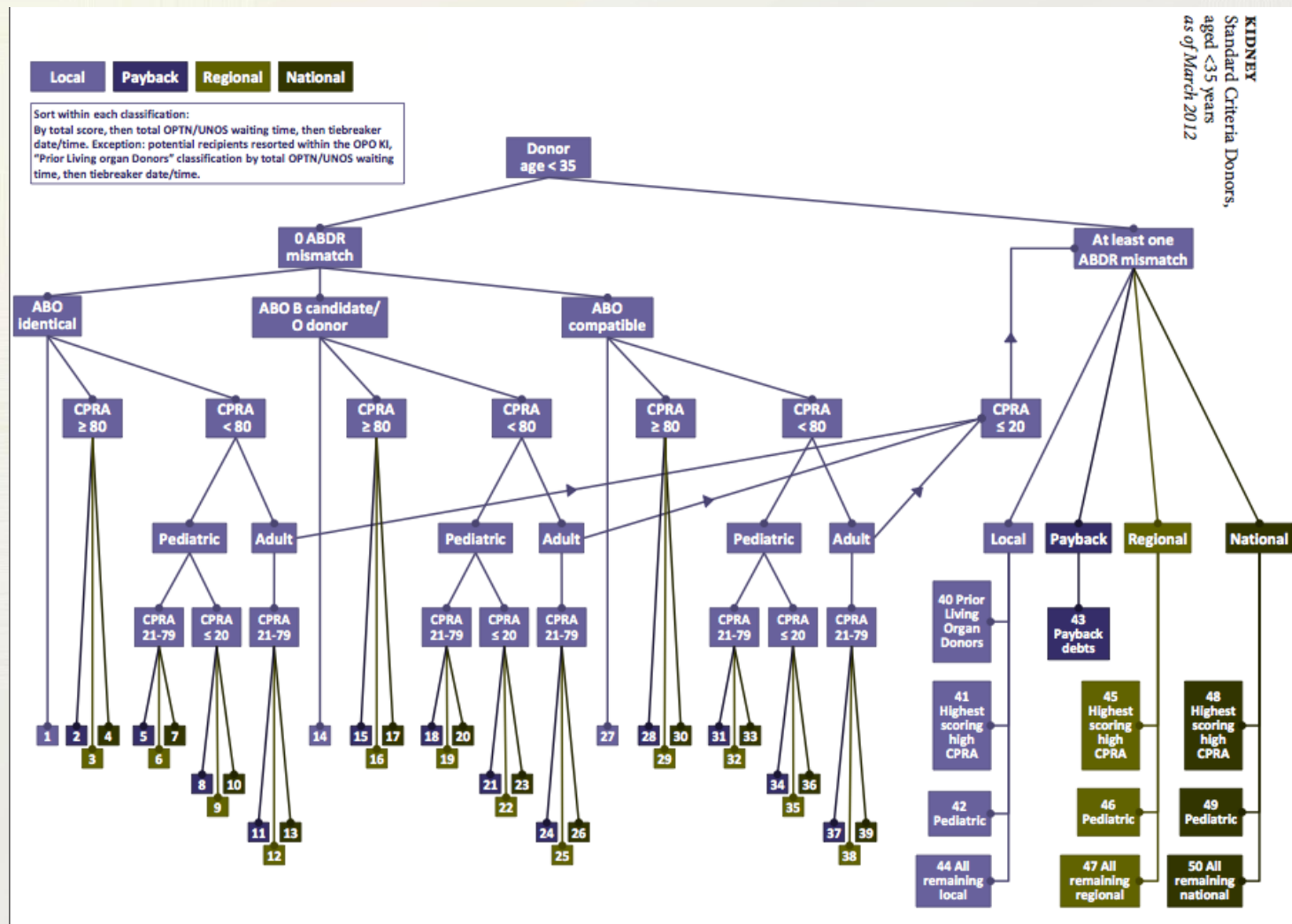
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# Allocation Flowcharts



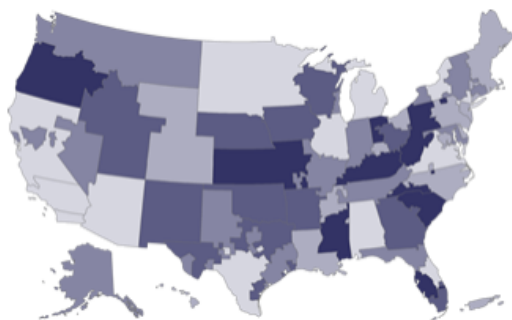
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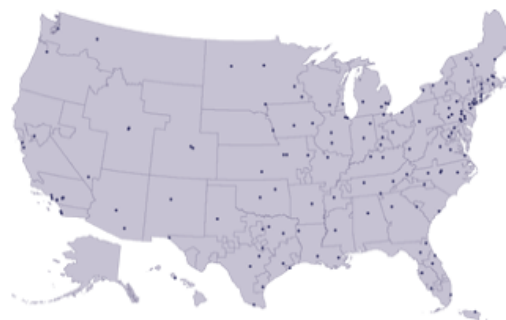


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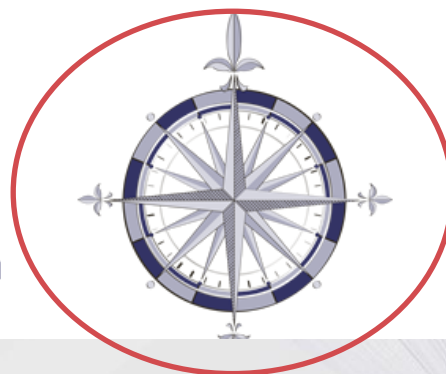
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# Adult Kidney Transplant Centers, 2011



# Conclusions