

2015

Australia and New Zealand Organ Donation Registry



2015
ANZOD Registry
Annual Report
Data to 31-Dec-2014

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We would like to also acknowledge the ongoing financial commitment of the Australian Organ and Tissue Authority, the New Zealand Ministry of Health and Kidney Health Australia.

Forward



We are pleased to present the 2015 report of the Australia and New Zealand Organ Donation Registry (ANZOD Registry).

The Registry has been collecting and reporting on data for deceased organ donors since 1989 in Australia and 1993 in New Zealand. This report contains data for the year 2014 as well as cumulative data from each country since inception.

In 2014, with the implementation of the Electronic Donor Record by the Organ and Tissue Authority, the Registry received data for the first time in electronic format. Data was submitted by the DonateLife Network Donor Specialist Coordinators direct to the ANZOD Web based interface, enabling more timely data reporting on a monthly basis.

The eye and tissue sector continued to expand in 2014 with the collection of additional data elements strengthening the donation data to enable analysis on activities of eye and tissue transplantation.

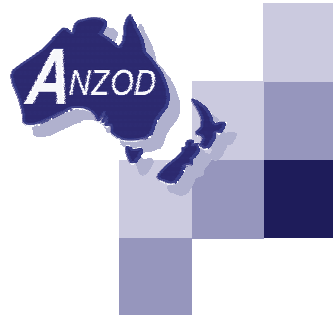
Mr Leigh Adams joined the team in 2014 in the position of Senior Project Officer and continued to strengthen operations within the Registry.

The Registry continues to be a collaborative effort of the Australasian Transplant Coordinators Association and the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA). The Registry gratefully receives funding from the Australian Organ and Tissue Donation Authority, Kidney Health Australia and the New Zealand Ministry of Health.

The report can be accessed via our website <http://www.anzdata.org.au>

Graeme Russ

Chair ANZOD Executive and Advisory Committee



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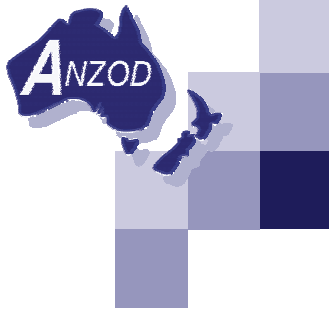
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History of ANZOD



The Australian and New Zealand Dialysis and Transplant Registry (ANZDATA) records that the first deceased donor kidney transplant in Australia was performed (from a donor after cardiac death) in Melbourne in 1963. While systematic collection of information about transplant outcomes was established at the beginning of transplantation in Australia, there was no nation-wide collection of information about deceased organ donors until 1989.

By the mid 1980s, all states and territories had introduced near identical human tissue Acts which defined the legal criteria by which organs could be obtained from deceased and living persons as well as codifying both circulatory and neurological definitions of death. The legal criteria for brain death opened up the field of transplantation to organs and tissues other than kidneys and corneas: heart, liver, lung and kidney/pancreas transplants. With increasing awareness of transplant programs people were able to consider that donation of 'all organs and tissues' was possible in the event of their death and that numerous people could benefit should they do so. This now imposed a logistic challenge on transplant teams, often from different hospitals and in different states, to ensure that the organs were retrieved in a timely and coordinated way. In Australia co-ordination of kidney retrieval from deceased donors between 1963 and 1983 had been performed primarily by renal physicians and their reg-

istrars. The need for a central coordination contact/hub that could liaise with all organ transplant teams and the donor hospital intensive care unit became obvious. By 1983 the role of the organ donor co-ordinator was well established in the United Kingdom and the United States and Australia followed suit with a donor co-ordinator job description based on the UK model.

What is now known as the Australian and New Zealand Organ Donor Registry (ANZOD) was a joint initiative of ATCA and the ANZDATA Registry. At a 1989 ATCA meeting in Melbourne it was proposed that a database of all organ donors be established. Such a registry would provide demographic, clinical and organ distribution data on a national (and later international) scale.

Initially ATCA itself intended to establish the database but following a proposal from the Australian and New Zealand Dialysis and Transplant Registry (ANZDATA) a collaborative venture was undertaken – ATCA would provide the dataset and the data while ANZDATA would provide the data entry and analysis.

The ANZDATA Registry took on this task and the Australian and New Zealand Organ Donation (ANZOD) registry was commenced in 1989. Funding is provided by the Australia Organ and Tissue Donation and Transplantation Authority, the New Zealand Ministry of Health and Kidney Health Australia.

Data Collection Form



Updated January 2008

AUSTRALIA AND NEW ZEALAND ORGAN DONATION REGISTRY INSTRUCTIONS FOR COMPLETION OF DONOR SHEET

1. **DONOR NUMBER**
State prefix, then number (eg. Q00001, N00023, W00154, W00122)
Q=Queensland W=Western Australia
N=New South Wales/ACT Z=New Zealand
V=Victoria/Tasmania O=Other
S=South Australia/NT
2. **DONOR - ACTUAL OR INTENDED**
A=Actual
A person from whom the retrieval operation is commenced for the purpose of transplantation. This includes donors who may be deemed medically unsuitable at time of surgery or after removal of organs
B=Intended
A person from whom authority has been given or not given, but organ donation did not proceed. (eg positive virology, cardiac arrest, further investigations discovered cancer, infection etc)
Record reason in Section 20 or 35
3. **DONOR HOSPITAL AND STATE**
Code as per ANZDATA hospital list
(eg RMBH3, POWH2, QEZB5, RLPTB)
If a hospital is not on the list, write on the sheet and the Registry will provide a code
Do not use code that is used by the tissue typing laboratory for allocation
4. **DATE OF BIRTH**
Two digits per box = DD.MM.YY (eg 03.04.80)
5. **POSTCODE**
Postal residential address of donor. Enter 9999 if overseas resident temporarily in Australia or NZ
6. **GENDER**
M=Male or F=Female
7. **HEIGHT**
Enter to nearest centimetre (eg 180.5 = 181)
If unknown enter X
8. **WEIGHT**
Enter to nearest kilogram (eg 80.8 = 81)
If unknown enter X
9. **RACIAL / ETHNIC ORIGIN**
10 = Caucasian 80 = Pacific People
11 = Italian 81 = Indonesian
12 = Greek 82 = Malay
13 = Turk 83 = Filipino
20 = Aboriginal 84 = Vietnamese
30 = Chinese 70 = Indian
40 = Maori 98 = Other (Specify)
50 = Arab
10. **RELIGION**
1 = Christian
2 = Muslim
3 = Buddhist
4 = Hindu
5 = Other (Specify)
6 = No religion
7 = Unknown
8 = Jewish

11. OCCUPATION

Write in answer

12. PRIMARY CAUSE OF DEATH

- 11 = Motor Vehicle Accident
- 12 = Motor Bike Accident
- 13 = Cyclist
- 14 = Pedestrian
- 15 = Other Road Accident (Specify)
- 21 = Fall
- 22 = Other Accident (Specify)
- 23 = Gunshot
- 24 = Felony or Crime eg Assault (Specify)
- 31 = Spontaneous Subarachnoid Haemorrhage
- 32 = Other Spontaneous Intracranial Haemorrhage
- 33 = Cerebral Infarct
- 34 = Hypoxia (Specify)
- 35 = Cerebral Oedema (Specify)
- 40 = Cerebral Tumour (Specify benign or malignant)
- If malignant-enter cancer sheet with details
- 50 = Drowning
- 51 = Sudden Infant Death Syndrome (SIDS)
- 52 = Hanging
- 53 = Asphyxia
- 80 = Other (Specify)

13. HEART BEATING

Y=Yes or N=No

14. DIABETES

See Codes on form

15. PAST HISTORY OF TREATED HYPERTENSION

As documented in Medical Records and/or discussion with the Local Medical Officer

16. SMOKING

See Codes on form

17. PAST HISTORY OF CANCER

Y=Yes N=No U=Unknown

If Yes, please enter the separate cancer form

18. KEY EVENTS

Admission to Hospital=Initial admission to hospital

When a patient is transferred record admission time

If exact time is unknown place X in box

Ventilation=Time of Intubation

Withdrawal (DCD)=Date and time of withdrawal

Record time of Second Brain Death Test and

Cross Clamp of Aorta in Operating Theatre

If Brain Death NOT CERTIFIED (Donation After Cardiac Death (DCD) record time of cardiac death and commencement of adequate cold perfusion

19. LABORATORY RESULTS

Blood Group A, A1, A2, B, AB, O

(Enter subtypes A1 or A2 if known)

Do not include Rhesus Factor

Tissue Typing

If unknown or not done place X in box

20. HEPATITIS HBV sAg, HBV CORE ANTIBODY, HCV Ab, HCV NAT (Nucleic Acid), CMV IgG, EBV (Epstein Barr Virus), HIV Antibody, HIV NAT

OTHER - Any other virology tests performed eg Toxoplasmosis (Specify test in section below box)

Enter 1=Positive 2=Negative 3=Not Done

21. DONOR MAINTENANCE (POST BRAIN DEATH or PRE DCD)

No doses required

If maintenance drugs given post brain death certification Enter Y=Yes or N=No

Terminal = In Intensive Care Unit (ICU) (Immediately preceding retrieval)

Mean Arterial Blood Pressure (MAP) <50 mm Hg

Enter Y=Yes or N=No (If Yes, enter duration)

22. TERMINAL TREATMENT

Drugs given to the donor terminally

Enter Y=Yes or N=No

23. KIDNEY DONOR

Enter Y=Yes or N=No in box

If not all information known, enter X in box

Admission = First available result

Terminal = In Intensive Care Unit (ICU) (Immediately preceding retrieval)

Creatinine Enter as 0.08 mmol/L

Urea Enter up to three digits eg 3.5, 12.5 mmol/L

Urine Output = last hour in ICU preceding transfer to Operating Theatre

Oliguria In last 12 hours

If Yes - Enter Duration in Hours

24. LIVER DONOR

Enter Y=Yes or N=No in box

Enter most recent donor values prior to retrieval

25. HEART DONOR

Enter Y=Yes or N=No in box

ECG Normal Y=Yes or N=No

Echocardiogram Y=Yes or N=No

26. LUNG DONOR

Enter Y=Yes or N=No in box

Bronchoscopy Y=Yes or N=No

Enter last arterial blood gas

Do not use gases taken to determine brain death

Chest Trauma Enter Y=Yes or N=No in box

1=Pneumothorax 2=Chest Drain 3=Other (Specify)

27. PANCREAS DONOR

Enter Y=Yes or N=No in box

28. ENROLLED WITH ORGAN DONOR REGISTRY

Enter Y=Yes

A=Not Accessed

R=Not Registered

S=Not Applicable

29. DRIVER'S LICENCE

See Codes

30. AUTHORITY (Sought By Initially)

1 = Donor Coordinator

2 = ICU Consultant

3 = ICU Trainee eg Registrar

4 = Social Worker

5 = Other (Specify)

6 = Volunteer

7 = Nursing Staff

31. CONTACT WITH DONOR COORDINATOR

See Codes

32. CORONER'S CASE

See Codes

34. AUTHORITY SOUGHT FOR

Y=Yes or N=No (If No, specify reason)

1 = Disease of organ

2 = Trauma to organ

3 = Age of donor

4 = Prior family request

5 = Donor refusal

If authority obtained enter Y in box - If not enter N

Reason for N is not coded

35. ORGANS RETRIEVED

Complete only for organs where authority obtained (If not retrieved - enter reason)

10 = No suitable recipient

11 = Disease of organ

12 = Trauma to organ

13 = Cardiac arrest

14 = Infection

15 = Malignancy

16 = Hypotension

17 = Biochemistry

18 = Indotropic support

19 = ECG

20 = ABG

21 = Chest Xray

22 = Logistics (Specify)

23 = Other (Specify)

24 = Age of donor

25 = Retrieval Team not available

PRESERVATION (Solution in organ at storage)

Record in order of solutions given

If two solutions used (eg Ross followed by UW)

Code Ross (20) in first column - then

Code UW (70) in second column

10 = No washout (ie slush only)

20 = Citrate solution (Ross)

31 = Eurocollins solution

32 = St Thomas solution

33 = HTK

50 = Normal Saline

51 = Crystalloid cardioplegia

52 = Albumin based blood cardioplegia (pneumoplegia)

56 = Perfadex

57 = Celvior

60 = Other (Specify)

70 = University Wisconsin (UW)

80 = Not applicable (cornea / bone)

90 = Hartman's solution

95 = PFC (Perfluorodecalin)-UW (islets Storage)

RETRIEVAL TEAM

Code as per ANZDATA Hospital List. See Question 3

36. DESTINATION

Hospital and State -

Code as per ANZDATA hospital list. See Question 3

Enter Transplant Hospital NOT Caring Hospital

OUTCOME

Enter Code

T = Transplanted

E = En bloc

D = Double Adult

R = Research

S = Stored (for bone, heart valves etc)

N = Not used (Specify reason in Surname section)

U = Unusable (Specify reason in Surname section)

RECIPIENTS' SURNAME AND GIVEN NAMES

IMPORTANT for all solid organs

Not essential for tissue recipients



Methods

Database:

Data is stored on a relational database using ORACLE version 9i.

Statistical Methods:

All statistical analyses were performed using STATA/IC version 14.0. StataCorp. 2015. Stata Statistical Software: Release 14. College Station, TX: StataCorp LP.

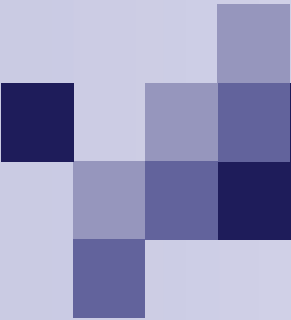
Data reported were obtained from the ANZOD 2014 database.

Australian population statistics were obtained from the Australian Bureau of Statistics, 3101.0 - Australia Demographic Statistics, Jun 2014, released 18 December 2014.

Southeast New South Wales population for local government areas obtained from the Australian Bureau of Statistics, 3235.0 - Population by Age and Sex, Regions of Australia, 2013, released 28 August 2014.

Australian death statistics were obtained from the Australian Bureau of Statistics, 3303.0 - Causes of Death, Australia, 2013, released 31 March 2015.

New Zealand death statistics were obtained from Statistics New Zealand, Births and Deaths: Year Ended December 2013.



Chapter 1

Organ Donation in Australia and New Zealand



2015
ANZOD Registry
Annual Report
Data to 31-Dec-2014



Organ Donation

Actual Deceased Donors

Australian and New Zealand donor figures include all donors consented for organ and tissue donation who went to the operating theatre for the purpose of organ or tissue retrieval for transplantation. This is consistent with international reporting (World Health Organisation - Human Organ and Tissue Transplantation. http://www.who.int/ethics/topics/human_transplant/en/).

The deceased organ donors per million population (dpmp) figures in Australia dropped to 16.1 dpmp in 2014, from 16.9 dpmp in 2013. In New Zealand, the rate rose to 10.2 dpmp in 2014, from 8.1 dpmp in 2013.

In Australia, there remains variation in organ donation rates between jurisdictions (Table 1.1). In 2014, rates varied from 12.6 dpmp in New South Wales to 28.6 dpmp in the Northern Territory.

For Australia, there were 378 actual deceased organ donors in 2014. Of those donors, 370 donors had at least one organ retrieved; and 361 resulted in at least one organ transplanted.

For New Zealand, there were 46 actual deceased organ donors in 2014. Of those donors, 43 had at least one organ retrieved; and 41 resulted in at least one organ transplanted.

Table 1.1

Number of Actual Deceased Donors** by State/Country 2010 - 2014 () Donors Per Million Population					
	2010	2011	2012	2013	2014
Queensland	49 (11.1)	67 (15)	78 (17.1)	77 (16.6)	71 (15)
New South Wales*	87 (12.6*)	77 (11*)	88 (12.4*)	102 (14.2*)	92 (12.6*)
ACT*	10 (17.4*)	8 (13.7*)	12 (20.2*)	6 (10*)	11 (18.1*)
Victoria	98 (17.9)	107 (19.3)	92 (16.3)	110 (19.2)	117 (20)
Tasmania	10 (19.7)	6 (11.7)	15 (29.3)	8 (15.6)	9 (17.5)
South Australia	31 (19)	35 (21.3)	29 (17.5)	34 (20.4)	36 (21.4)
Northern Territory	2 (8.7)	4 (17.3)	8 (33.9)	7 (28.9)	7 (28.6)
Western Australia	22 (9.6)	33 (14)	32 (13.1)	47 (18.7)	35 (13.6)
Australia	309 (14)	337 (15.1)	354 (15.6)	391 (16.9)	378 (16.1)
New Zealand	41 (9.5)	38 (8.7)	38 (8.7)	36 (8.1)	46 (10.2)
** This figure relates to the number of donors for whom the retrieval operation commenced for the purpose of transplantation. It includes donors who may have been deemed medically unsuitable at the time of the surgery or after removal of organs. * NSW population excludes residents of the NSW Southern Area Health Service (included in ACT population) Population Data - June 2014 as released by ABS in December 2014 refer to methodology section of this report for detail.					

Organ Donation



The variation, since 1998, in the number of actual deceased donors between Australian state and territories is shown in figure 1.1. The number actual deceased donors per million population, from 2010, is shown in Figure 1.2

Figure 1.1

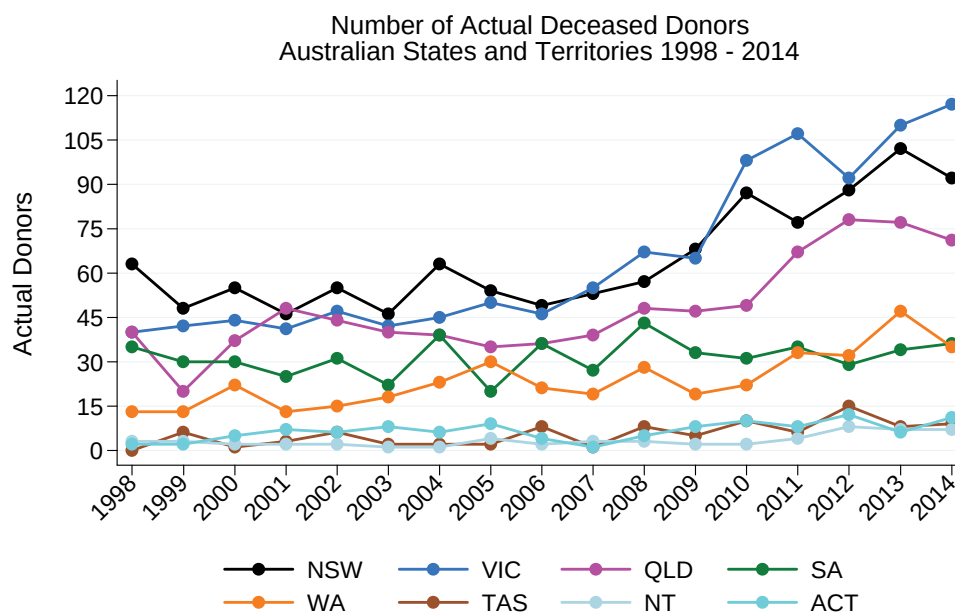
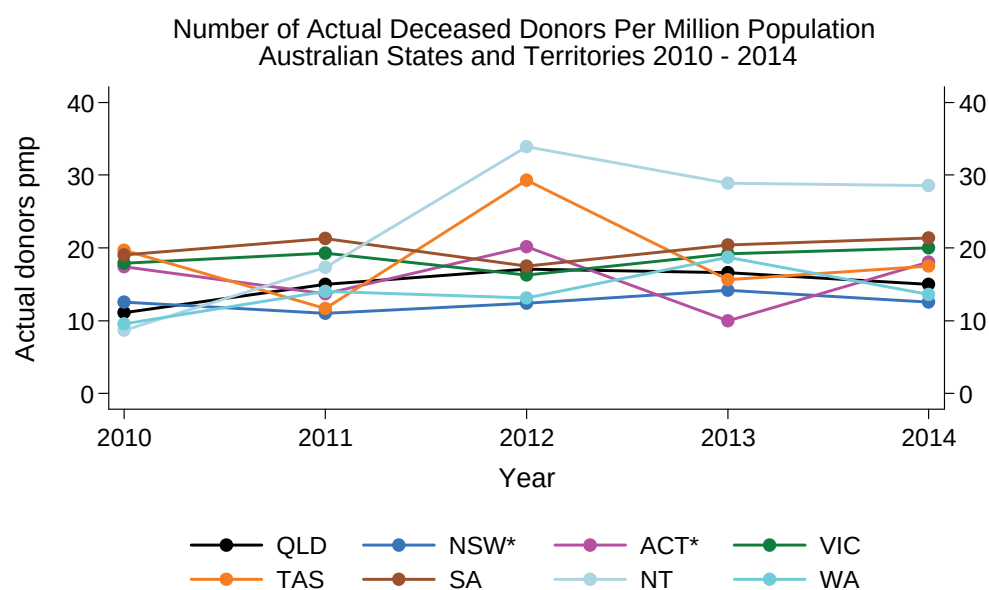


Figure 1.2



* NSW population excludes residents of the NSW Southern Area Health Service.
* ACT population includes residents of the NSW Southern Area Health Service.

There has been a steady decline in overall death rates among most ages in Australia over recent years. In many respects, using the number of deaths as the denominator to illustrate organ donation outcomes may be a more logical comparator. Rates for various jurisdictions using this metric are shown in Figure 1.3 and Table 1.2.

Figure 1.3

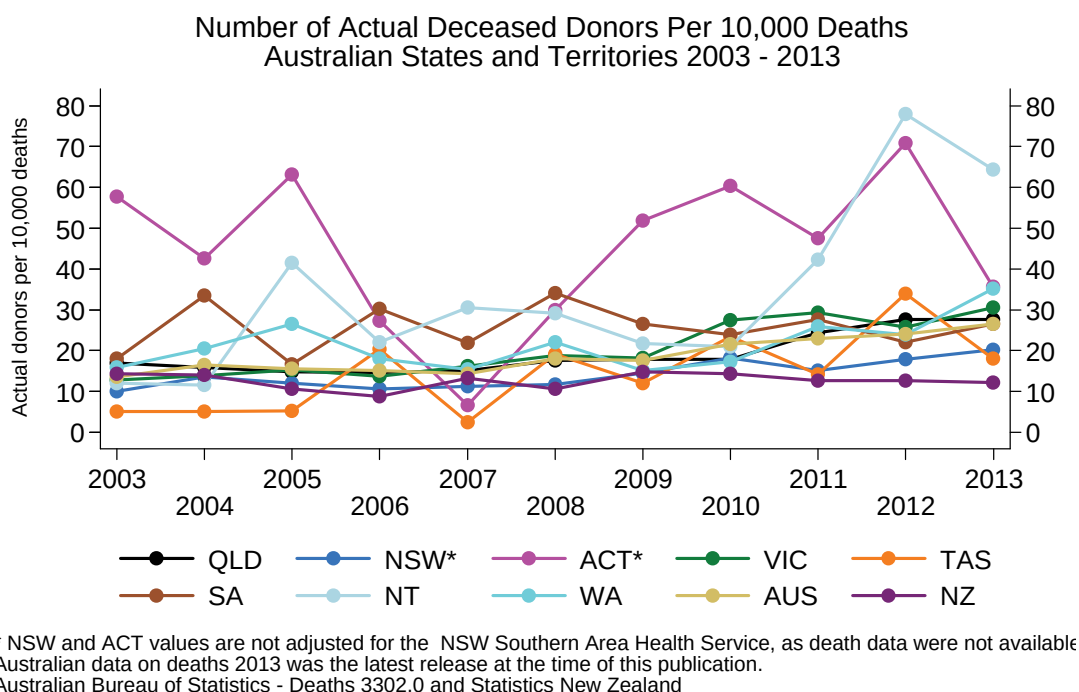


Table 1.2

Actual Deceased Donors per 10,000 Deaths Aged < 75 Years, 2010 - 2013 () is the % Deaths < 75 years as a proportion of all deaths*										
Year	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUS	NZ
2009	46 (39%)	42 (34%)	134 (39%)	55 (33%)	33 (36%)	82 (32%)	28 (77%)	39 (39%)	50 (35%)	39 (38%)
2010	47 (39%)	54 (34%)	166 (36%)	86 (32%)	67 (35%)	76 (32%)	28 (75%)	45 (38%)	62 (35%)	38 (38%)
2011	65 (38%)	46 (33%)	132 (36%)	91 (32%)	40 (35%)	89 (31%)	57 (75%)	68 (38%)	67 (34%)	34 (37%)
2012	74 (37%)	54 (33%)	213 (33%)	84 (31%)	101 (34%)	73 (30%)	103 (76%)	64 (37%)	71 (34%)	34 (37%)
2013	72 (38%)	61 (33%)	92 (39%)	98 (31%)	51 (35%)	84 (32%)	89 (73%)	93 (38%)	77 (34%)	33 (37%)

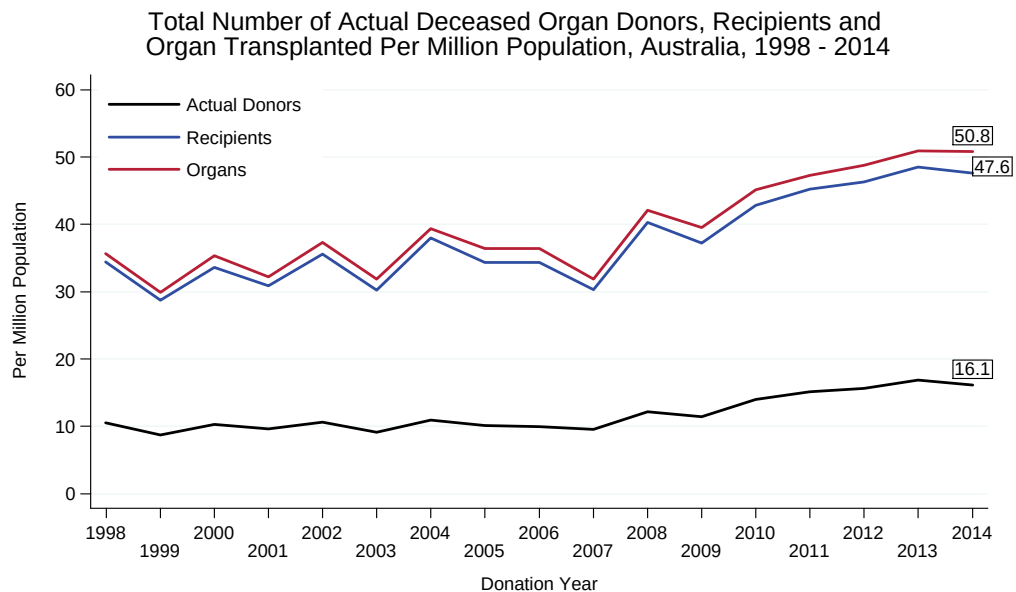
*The number of actual donors is compared to the number of deaths that are aged less than 75 years.
Australian Bureau of Statistics - Deaths 3302.0 and Statistics New Zealand

Organ Donation



Figure 1.4 represents the number of actual deceased organ donors, transplant recipients and organ transplants as per million population over time.

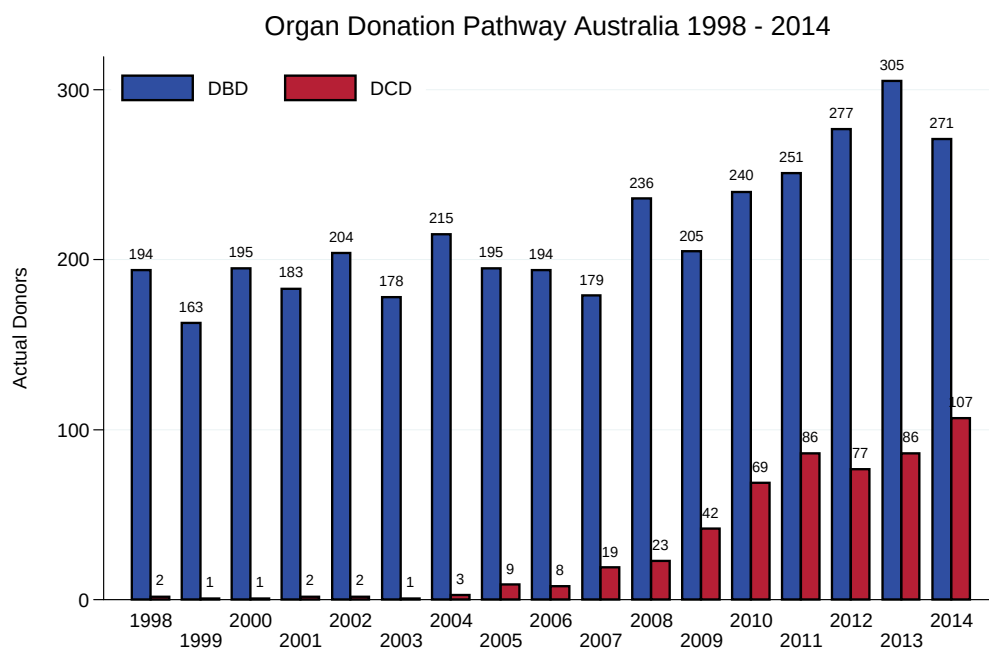
Figure 1.4



Organ Donation Pathway - Australia

Much of the increase in donor numbers has arisen from changes in rates of donors after circulatory death (DCD), demonstrated in Figure 1.5.

Figure 1.5





Organ Donation

Overview - Australia and New Zealand

Table1.3

Australia Overview

Population (million)	23.5
Actual Deceased Organ Donors - both DBD & DCD included (pmp)	378 (16.1)
Kidney Tx Recipients from deceased donors- includes all combinations (pmp)	637 (27.1)
Liver Tx Recipients from deceased donors- includes all combinations (pmp)	237 (10.1)
Heart Tx Recipients from deceased donors- includes all combinations (pmp)	79 (3.4)
Heart-Lung Tx Recipients from deceased donors- includes all combinations (pmp)	4 (.2)
Lung Tx Recipients from deceased donors- includes all combinations (pmp)	159 (6.8)
Pancreas Tx Recipients from deceased donors- includes all combinations (pmp)	44 (1.9)
Pancreas Islet Tx Recipients from deceased donors- includes all combinations (pmp)	10 (.4)
Intestine Tx Recipients from deceased donors- includes all combinations (pmp)	1 (0)
TOTAL number of Transplanted Recipients (pmp)^	1117 (47.6)
TOTAL number of Organs Transplanted (pmp)*	1193 (50.8)
(pmp) per million population	

Table 1.4

New Zealand Overview

Population (million)	4.5
Actual Deceased Organ Donors - both DBD & DCD included (pmp)	46 (10.2)
Kidney Tx Recipients from deceased donors (pmp)	66 (14.7)
Liver Tx Recipients from deceased donors (pmp)	35 (7.8)
Heart Tx Recipients from deceased donors (pmp)	17 (3.8)
Lung Tx Recipients from deceased donors (pmp)	20 (4.5)
Pancreas Tx Recipients from deceased donors (pmp)	2 (.4)
TOTAL number of Transplanted Recipients (pmp)^	134 (29.8)
TOTAL number of Organ Transplanted (pmp)*	141 (31.4)
(pmp) per million population	

* The total number of transplanted organs differs from total number of transplant recipients as each organ, with the exception of double-lung, is counted as a single organ transplant.

^ The total number of recipients includes all combinations of multi-organ transplants as a single count of transplantation.

Note: Further information on organ transplants can be found in Chapter 5 - Organ Data.

Organ Donation

Organ Transplants

Table 1.5

Number of Organ Transplants in 2014 by State / Country of Donation (pmp) in Australia and New Zealand										
Organs	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUS	NZ
Kidney	130	154	20	202	17	61	12	63	659 (28.1)	67 (14.9)
Liver	48	50	9	64	8	29	4	25	237 (10.1)	35 (7.8)
Heart	14	11	4	31	1	9	1	8	79 (3.4)	17 (3.8)
Heart/Lung	2	1	0	1	0	0	0	0	4 (0.2)	0 (0.0)
Lung	27	34	4	53	5	18	5	13	159 (6.8)	20 (4.5)
Pancreas	4	11	5	13	2	5	0	4	44 (1.9)	2 (0.4)
Pancreas Islets	1	2	0	5	1	0	0	1	10 (0.4)	0 (0.0)
Intestine	1	0	0	0	0	0	0	0	1 (0.0)	0 (0.0)
Total	227	263	42	369	34	122	22	114	1193 (50.8)	141 (31.4)

^ includes 615 single kidneys, 17 double adult kidneys and five enbloc kidneys in Australia
 * includes 65 single kidneys, zero double adult kidneys and 1 en-bloc kidneys in New Zealand
 + includes 207 whole liver, 30 split liver and zero cut down liver in Australia
 ++ includes 21 whole liver, six spilt liver and zero cut down liver in New Zealand

The number of organs transplanted per donor is calculated by the number of organs retrieved from actual donors for the purpose of transplantation and subsequently transplanted, divided by the number of actual donors

The number of organs transplanted per donor each year from 2004-2014 in Australia and New Zealand is shown in Figure 1.6.

The number of transplant organs per donor across Australia ranged from 3.8 organ transplants in the ACT to 2.9 in NSW.

Figure 1.6

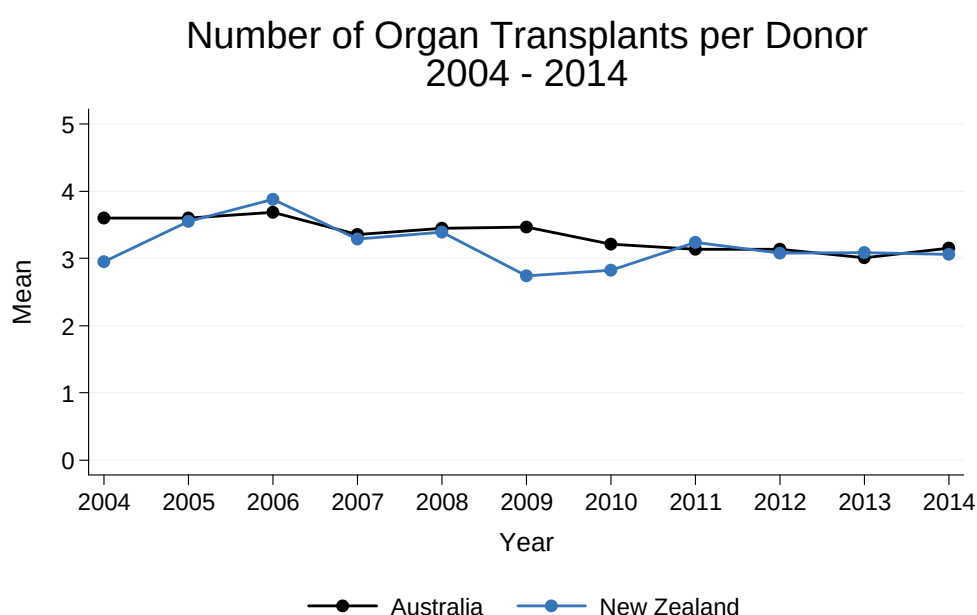


Figure 1.7 shows the organ-specific transplant rates for Australia over the period 1998 - 2014 (i.e. organ transplants per million population).

Figure 1.7

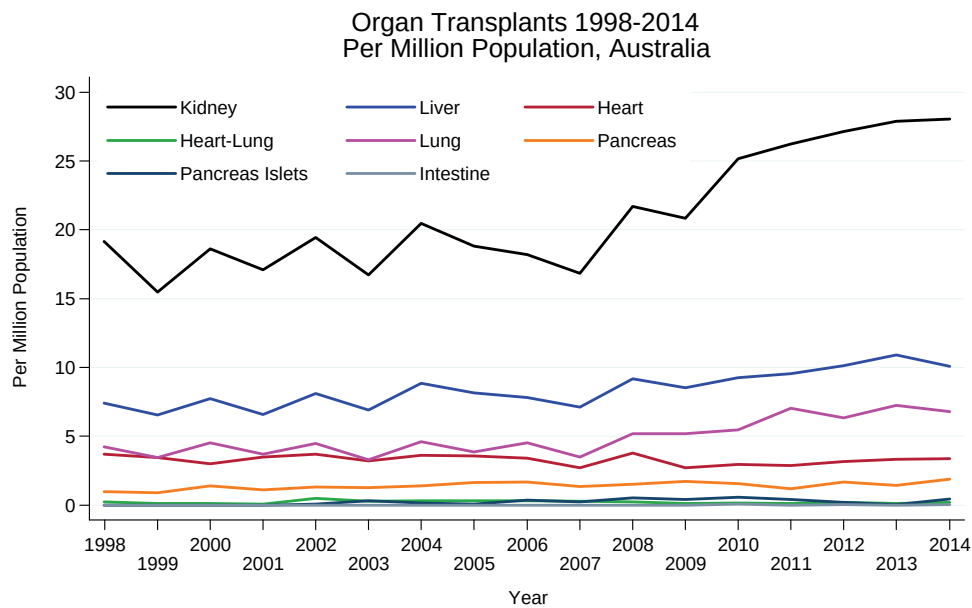
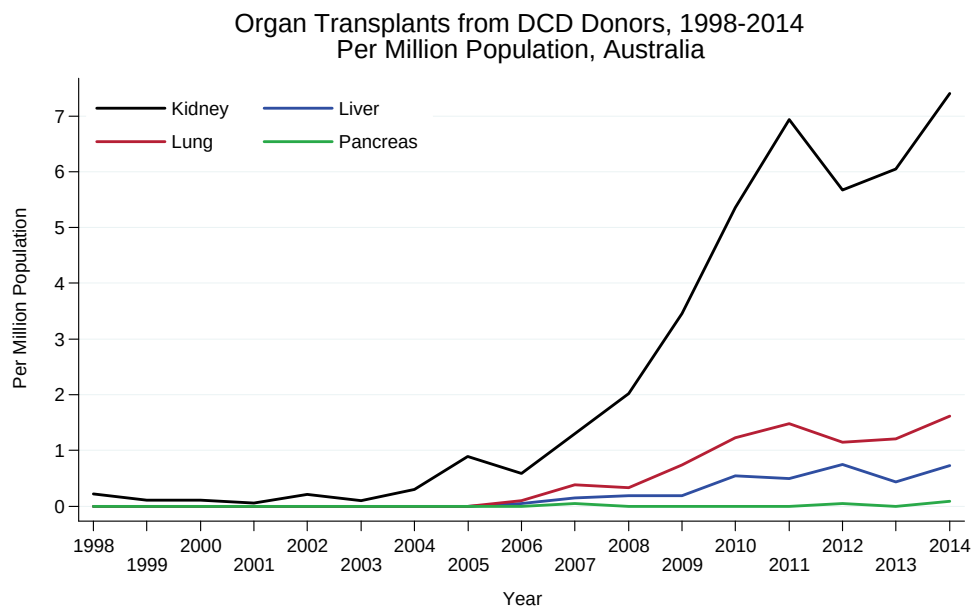


Figure 1.8 shows the corresponding rates for donation after circulatory death. Transplantation of organs from DCD has contributed to a significant increase in the rate of kidney transplantation.

Figure 1.8



Organ Donation

Location of Deceased Donors

The number of deceased donors reported are based on the State/Territory and country location in which the donor died. Supplement 1 shows a more detailed breakdown of the number of donors by retrieval hospital.

Table 1.6 details the number and proportion of donors in Australia by remoteness category. Overseas refers to donors who usually reside outside of Australia and New Zealand. The ABS standardised remoteness structure known as the Accessibility/Remoteness Index of Australia (ARIA) is used. (<http://www.abs.gov.au/websitedbs/D3310114.nsf/home/remoteness+structure#Anchor2b>).

Table 1.6

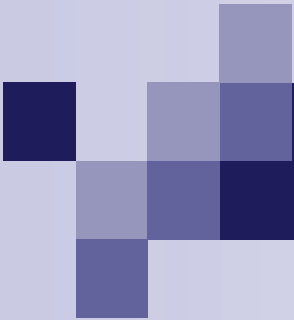
Location of Deceased Donors 2010 - 2014									
Postcode	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST
Major Cities of Australia	186 (55%)	321 (73%)	29 (62%)	369 (71%)	1 (2%)	113 (68%)	2 (7%)	123 (73%)	1144 (65%)
Inner Regional Australia	87 (26%)	86 (20%)	15 (32%)	129 (25%)	28 (58%)	20 (12%)	1 (4%)	21 (13%)	387 (22%)
Outer Regional Australia	57 (17%)	25 (6%)	2 (4%)	22 (4%)	15 (31%)	26 (16%)	18 (64%)	10 (6%)	175 (10%)
Remote Australia	2 (1%)	3 (1%)	0 (0%)	0 (0%)	3 (6%)	3 (2%)	4 (14%)	9 (5%)	24 (1%)
Very Remote Australia	4 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (1%)	2 (7%)	2 (1%)	10 (1%)
Overseas	5 (1%)	6 (1%)	1 (2%)	3 (1%)	1 (2%)	1 (1%)	1 (4%)	3 (2%)	21 (1%)
Total	341	441	47	523	48	165	28	168	1761

In the last five years (2010-2014) there have been 21 deceased donors who were visitors to Australia. In 2014, there were six donors who were visitors from overseas, two donated from Queensland and Western Australia respectively and one each from New South Wales and the Northern Territory.

There were no donors identified as overseas visitors reported in New Zealand in 2014.

The Registry does not consider organs donated in Australia and transplanted in New Zealand as an overseas donor for New Zealand, nor organs donated in New Zealand and transplanted in Australia as an overseas donor for Australia.





Chapter 2

International Data



2015
ANZOD Registry
Annual Report
Data to 31-Dec-2014



International Data 2014

Australia and New Zealand are a world leaders for successful transplant outcomes. In this chapter, the Registry reports on global activity and compares Australia and New Zealand with other countries.

For the purpose of this comparison, data has been sourced from the International Registry in Organ Donation and Transplantation (IRODaT). Data was sourced on 31 July, 2015 from the IRODaT website <http://www.irodat.org/> and represents data compiled from a broad selection of the 72 contributing countries.

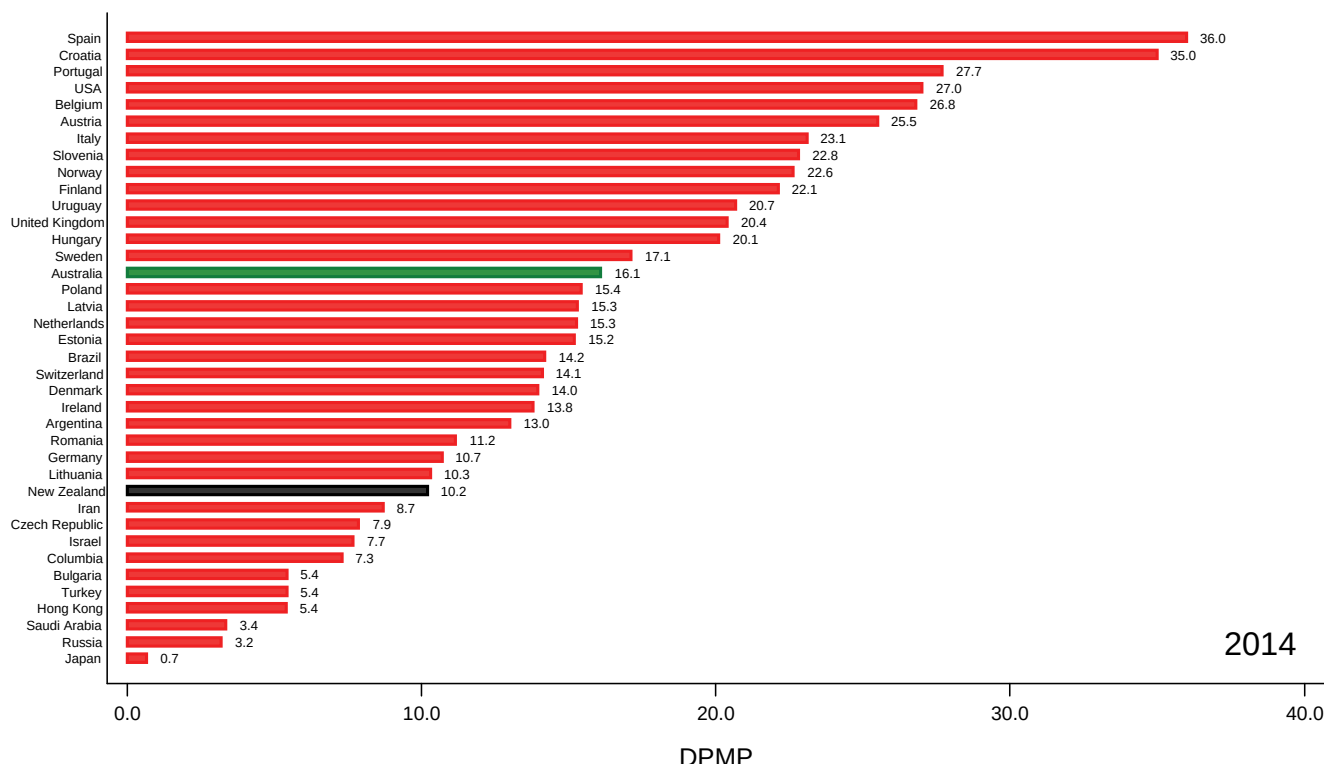
Data reported on international donation and transplantation rates may differ to that reported elsewhere if contributing countries have updated their final numbers subsequent to this publication.

Organ donation and transplantation rates vary across the world and many countries are striving to increase donor numbers. Despite the various programs, there remains unmet demand. Globally there is considerable activity and momentum among governmental and professional bodies to improve donation rates.

The usual metric of measuring and comparing international deceased organ donation rates is 'donors per million population'. Figure 2.1 compares Australia and New Zealand deceased organ donation rates against a selection of countries who contributed data to IRODaT.

Figure 2.1

International Deceased Organ Donor Rates 2014



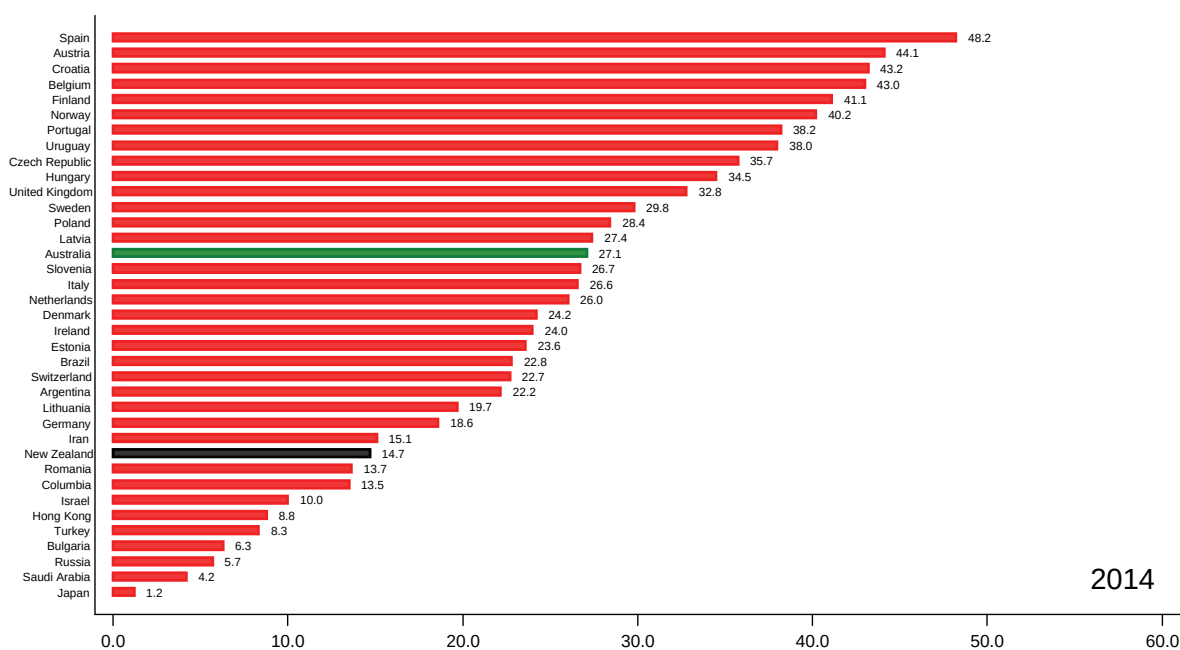
Data sourced 31 July, 2015 from IRODaT website <http://www.irodat.org>

The following pages compare Australia and New Zealand organ transplantation rates per million population for specific organs with countries who contributed 2014 data and 2013 data to IRODaT (Figures 2.2 to 2.11).

International Kidney Transplantation from Deceased Donors (Per Million Population)

Figure 2.2

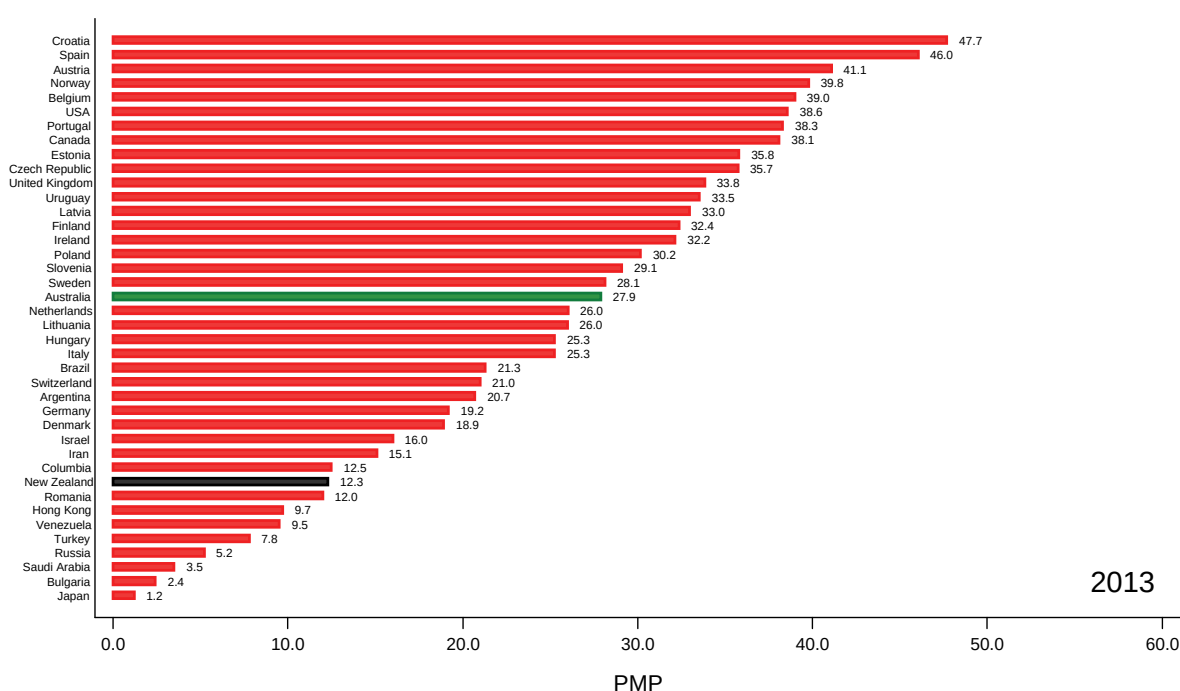
International Transplantation Rates, Kidney 2014



2014

Figure 2.3

International Transplantation Rates, Kidney 2013



2013

PMP

Data sourced 31 July, 2015 from IRODaT website <http://www.irodat.org>

International Liver Transplantation from Deceased Donors (Per Million Population)

Figure 2.4

International Transplantation Rates, Liver 2014

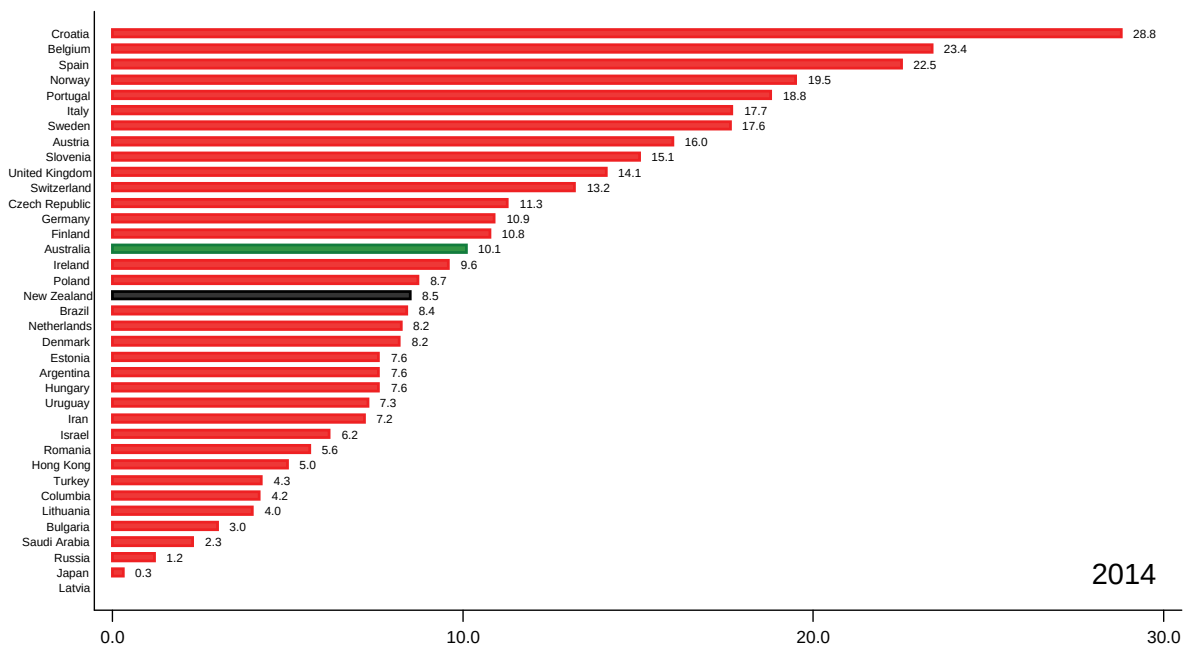
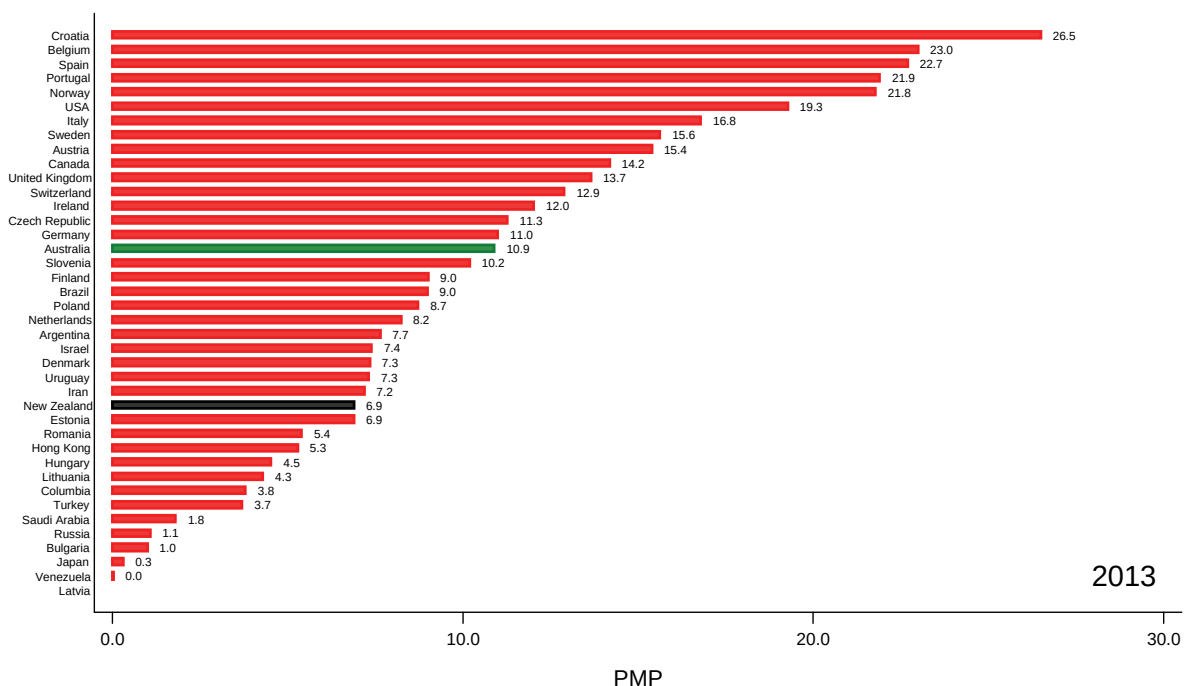


Figure 2.5

International Transplantation Rates, Liver 2013



PMP

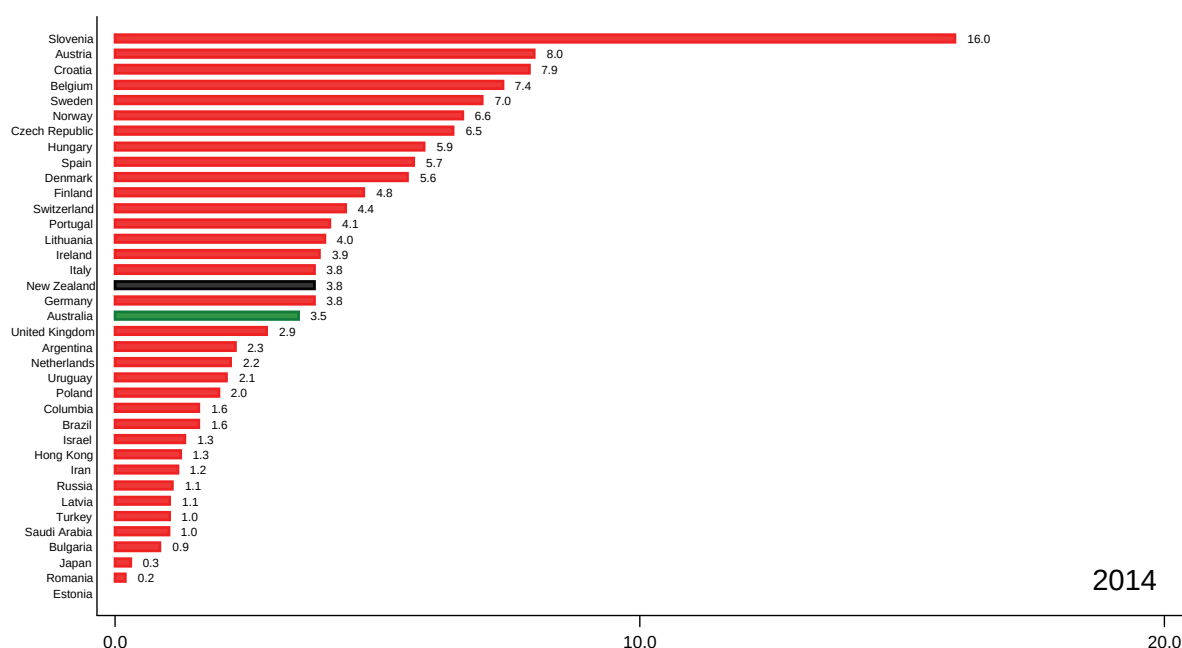
Data sourced 31 July, 2015 from IRODaT website <http://www.irodat.org>

International Data 2014



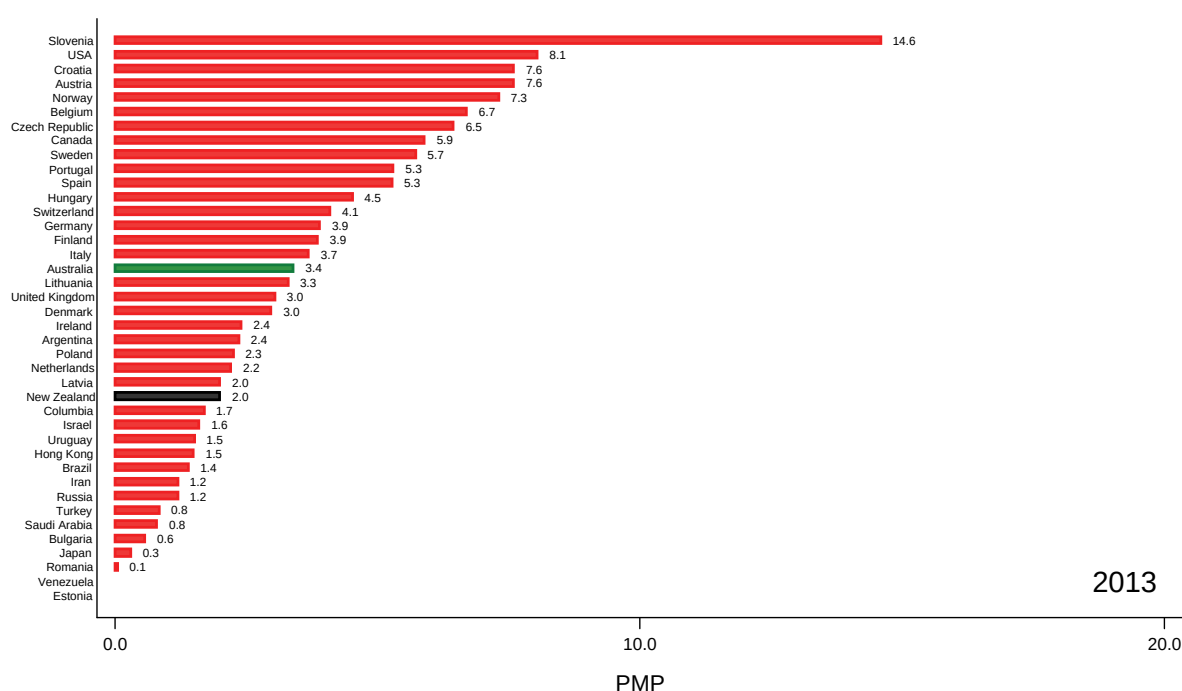
International Heart Transplantation from Deceased Donors (Per Million Population)

Figure 2.6 International Transplantation Rates, Heart 2014



2014

Figure 2.7 International Transplantation Rates, Heart 2013



2013

PMP

Data sourced 31 July, 2015 from IRODaT website <http://www.irodat.org>

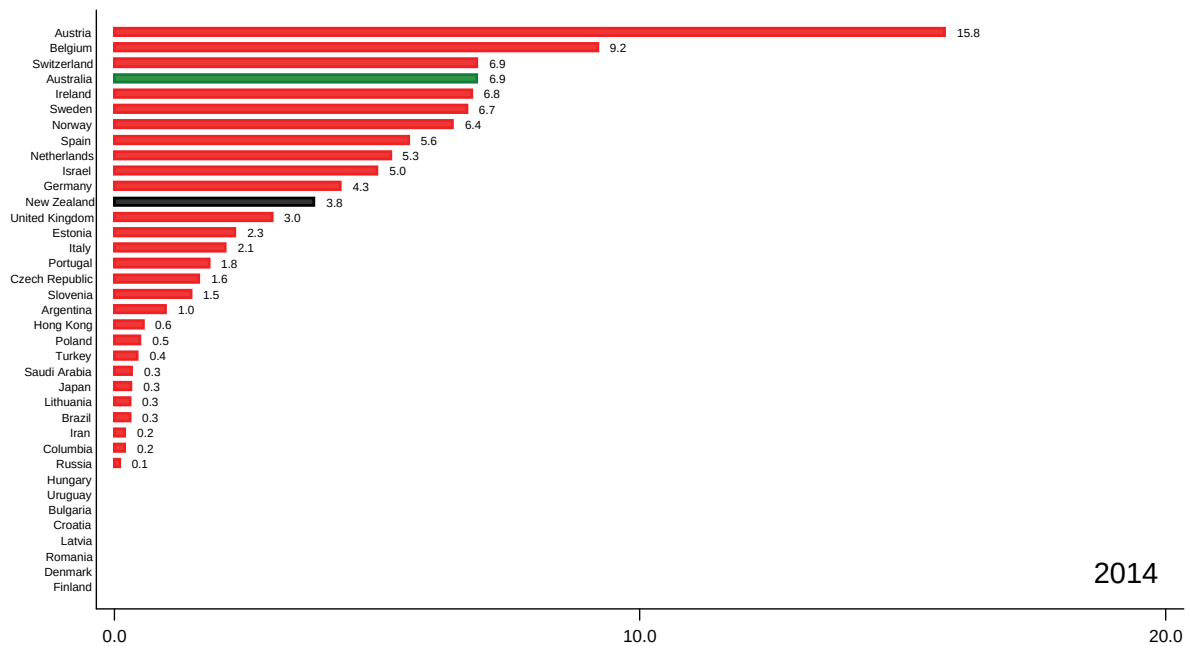


International Data 2014

International Lung Transplantation from Deceased Donors (Per Million Population)

Figure 2.8

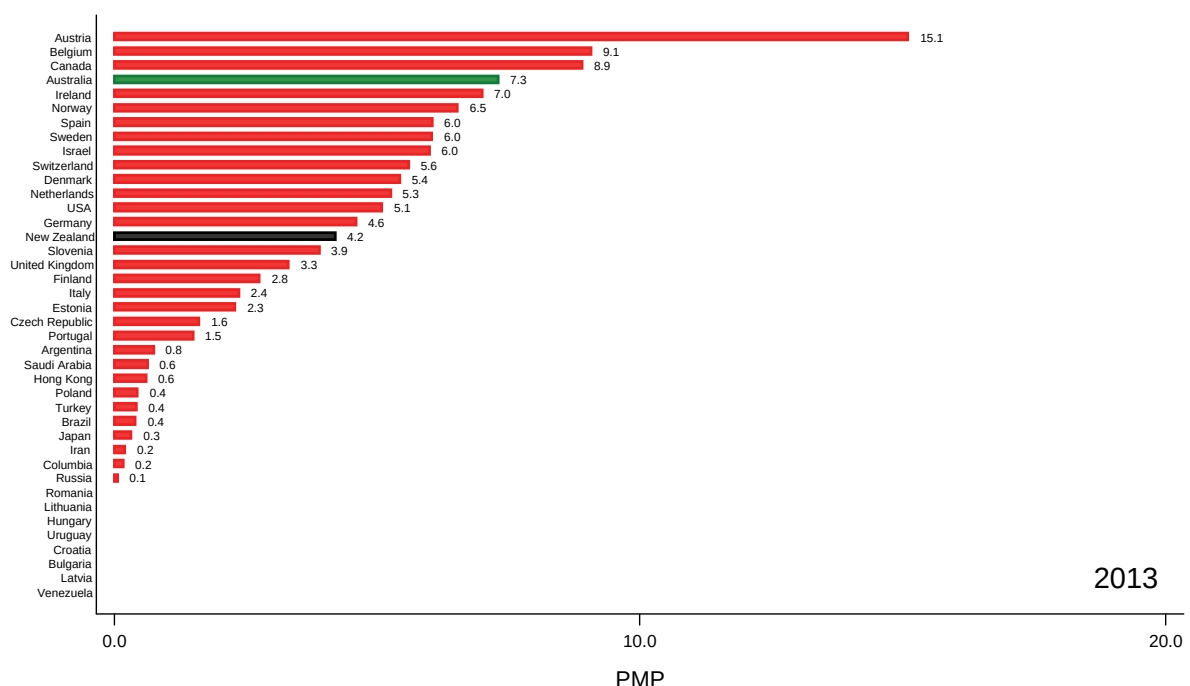
International Transplantation Rates, Lung 2014



2014

Figure 2.9

International Transplantation Rates, Lung 2013



2013

PMP

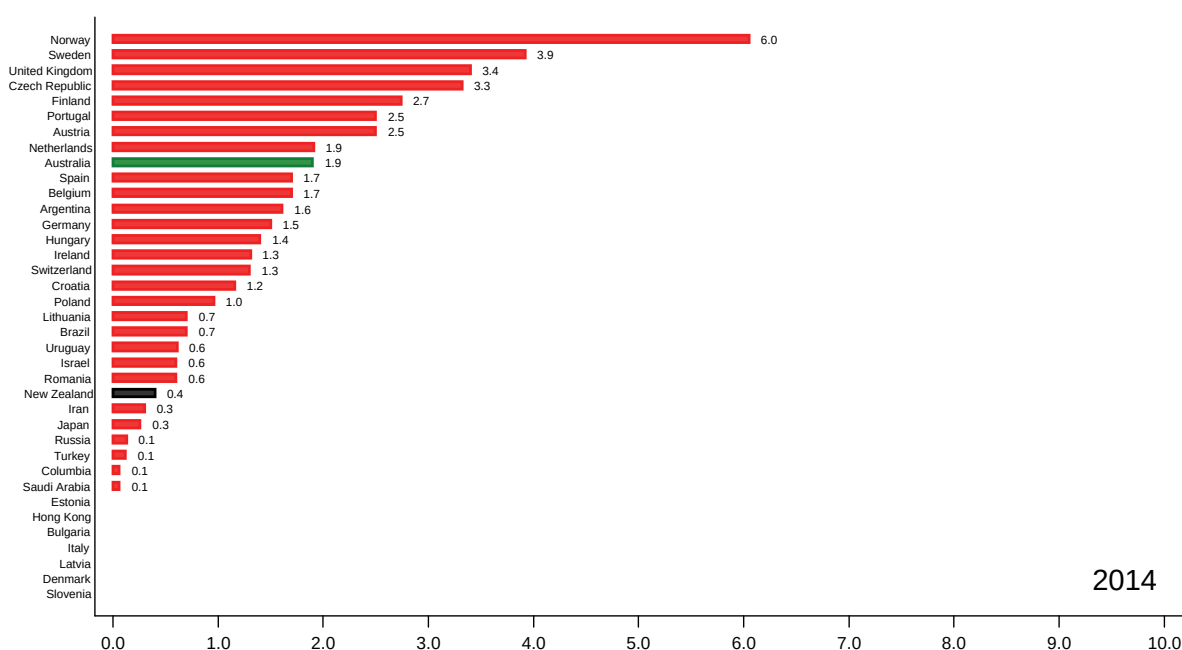
Data sourced 31 July, 2015 from IRODaT website <http://www.irodat.org>

International Data 2014



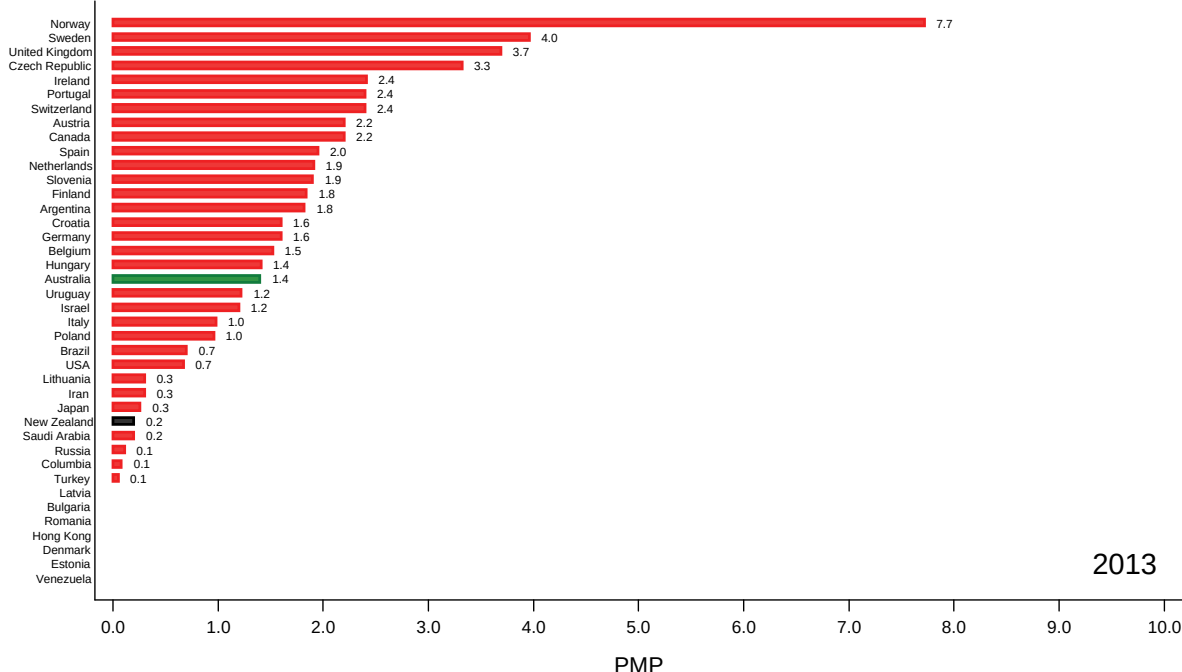
International Pancreas Transplantation from Deceased Donors (Per Million Population)

Figure 2.10 International Transplantation Rates, Pancreas 2014



2014

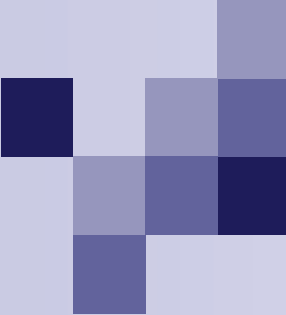
Figure 2.11 International Transplantation Rates, Pancreas 2013



2013

PMP

Data sourced 31 July, 2015 from IRODaT website <http://www.irodat.org>



Chapter 3

Organ Donation Pathway



2015
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Organ Donation Pathway

This chapter reports on the organ donation pathway from identification of a donor to the outcome of the donation. This includes the known intention to be an organ donor; cause of death and events leading up to admission to hospital; who sought authority to donate; whether the donation did not proceed or proceeded down the donation after brain death or donation after circulatory death pathway, the maintenance and terminal treatment of the donor and the outcome of the retrieval procedure resulting in transplantation of donated organs.

Table 3.1 shows the number in 2014 of donors enrolled on the Australian Organ Donor Register, which commenced in 2000.

Table 3.1

Donors Enrolled on the Australian Organ Donor Registry 2014 (2013)									
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST
Yes	18 (20)	45 (31)	5 (3)	24 (21)	4 (4)	12 (15)	1 (2)	9 (17)	118 (113)
Not Applicable	1 (7)	1 (7)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	0 (9)	3 (25)
No	42 (0)	30 (2)	5 (0)	82 (1)	5 (0)	17 (1)	2 (0)	24 (0)	207 (4)
Not Registered	6 (47)	14 (61)	1 (3)	6 (82)	0 (4)	5 (18)	2 (5)	0 (21)	34 (241)
Not Accessed	4 (3)	2 (1)	0 (0)	4 (4)	0 (0)	2 (0)	2 (0)	2 (0)	16 (8)
Unknown	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	71 (77)	92 (102)	11 (6)	117 (110)	9 (8)	36 (34)	7 (7)	35 (47)	378 (391)

The Australian Organ Donor Register (the Donor Register) is managed by the Department of Human Services on behalf of the Australian Government. The Donor Register is the only national register for people to record their decision about becoming an organ and tissue donor for transplantation after death. Registering is voluntary and people have complete choice over which organs and tissues they wish to donate. If a person does not want to become an organ and tissue donor, they can register their decision not to donate on the Donor Register which is available at <http://www.medicareaustralia.gov.au/provider/patients/aodr/index.jsp>

Organ Donation Pathway



Coroner's Cases

Table 3.2 shows the number of donor cases subject to Coronerial inquiry. In Australia, 44% of donors in 2014 were subject to Coronerial inquiry, compared to 48% in 2013. In New Zealand it was 50% for 2014 and 28% in 2013 (Table 3.2).

Table 3.2

Coroner's Cases 2010 - 2014										
	Australia					New Zealand				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Yes	121	141	153	187	167	18	16	19	10	23
No	188	196	201	204	211	23	22	19	26	23
Total	309	337	354	391	378	41	38	38	36	46

Table 3.3 shows the number of Australian Coroner's cases by jurisdiction and the number of Coroner's cases in New Zealand for 2014 compared to 2013.

Table 3.3

Australian Coroner's Cases by State 2014 (2013)										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
Yes	37 (42)	28 (44)	6 (3)	59 (44)	3 (6)	19 (17)	2 (5)	13 (26)	167 (187)	23 (10)
No	34 (35)	64 (58)	5 (3)	58 (66)	6 (2)	17 (17)	5 (2)	22 (21)	211 (204)	23 (26)
Total	71 (77)	92 (102)	11 (6)	117 (110)	9 (8)	36 (34)	7 (7)	35 (47)	378 (391)	46 (36)



Organ Donation Pathway

Cause of Death - All Donors

In Australia and New Zealand, road trauma continues to be a reducing cause of death while cerebrovascular accident (CVA) has been increasing in Australia since 1989, although in New Zealand figures have remained steady.

In Australia for the period 2010 - 2014, CVA accounted for an overall 48% of donor deaths and road trauma for 9%.

Table 3.4 shows the cause of death by percentage in Australia and each Australian State and New Zealand over the last five years.

Table 3.4

Cause of Donor Death by State/Country 2010 - 2014										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
CVA	46	48	55	49	54	51	57	46	48	51
Trauma (road)	14	12	17	7	2	14	11	16	11	13
Trauma (non-road)	12	12	6	6	10	8	4	8	9	13
Hypoxia-Anoxia	21	24	21	32	17	21	21	23	25	16
Cerebral Tumour	1	1	0	0	0	0	0	1	0	1
Other	6	5	0	6	17	6	7	6	6	7

Table 3.5 shows the cause of death of donors by age group in 2014 in Australia and New Zealand. In 2014, CVA was the main cause of death in donors 35-54 years and 55 years and older, in both Australia and New Zealand, whereas in the younger 15-34 year age group and 14 years and younger, Hypoxia-Anoxia accounted for 30% of all deaths in Australia and 17% in New Zealand.

Table 3.5

Cause of Donor Death by Age Group 2014										
	Australia					New Zealand				
	Age Groups				Total	Age Groups				Total
	0-14	15-34	35-54	>=55		0-14	15-34	35-54	>=55	
CVA	1	16	63	101	181 (48%)	0	0	11	9	20 (43%)
Trauma (road)	4	14	10	6	34 (9%)	0	2	3	0	5 (11%)
Trauma (non-road)	1	6	10	8	25 (7%)	2	4	1	3	10 (22%)
Hypoxia-Anoxia	7	31	49	27	114 (30%)	0	4	2	2	8 (17%)
Cerebral Tumour	1	0	0	0	1 (0%)	0	0	0	0	0 (0%)
Other	0	8	14	1	23 (6%)	0	1	1	1	3 (7%)
Total	14	75	146	143	378	2	11	18	15	46

Organ Donation Pathway

The cause of death by age group is shown in Table 3.6 for each Australian State for 2014.

Table 3.6

Cause of Death by Age Group for Australian States 2014						
		Age Groups				Total
		0-14	15-34	35-54	>=55	
Queensland	CVA	0	6	14	13	33
	Trauma (road)	1	3	1	1	6
	Trauma (non-road)	0	2	3	2	7
	Hypoxia-Anoxia	4	8	5	2	19
	Other	0	2	3	1	6
	Total	5	21	26	19	71
New South Wales	CVA	1	1	12	35	49
	Trauma (road)	0	2	2	2	6
	Trauma (non-road)	0	2	4	3	9
	Hypoxia-Anoxia	1	8	8	8	25
	Other	0	1	2	0	3
	Total	2	14	28	48	92
Australian Capital Territory (ACT)	CVA	0	0	1	4	5
	Trauma (road)	0	1	0	2	3
	Trauma (non-road)	0	1	0	0	1
	Hypoxia-Anoxia	0	0	2	0	2
	Other	0	0	0	0	0
	Total	0	2	3	6	11
Victoria	CVA	0	5	18	25	48
	Trauma (road)	2	5	2	0	9
	Trauma (non-road)	1	1	3	1	6
	Hypoxia-Anoxia	0	10	22	14	46
	Other	0	2	6	0	8
	Total	3	23	51	40	117
Tasmania	CVA	0	1	2	2	5
	Trauma (road)	0	0	0	0	0
	Trauma (non-road)	0	0	0	0	0
	Hypoxia-Anoxia	0	0	1	0	1
	Other	0	1	2	0	3
	Total	0	2	5	2	9
South Australia	CVA	0	1	5	11	17
	Trauma (road)	1	1	3	1	6
	Trauma (non-road)	0	0	0	1	1
	Hypoxia-Anoxia	0	3	5	2	10
	Other	0	1	1	0	2
	Total	1	6	14	15	36
Northern Territory	CVA	0	0	3	1	4
	Trauma (road)	0	0	0	0	0
	Trauma (non-road)	0	0	0	0	0
	Hypoxia-Anoxia	1	1	1	0	3
	Other	0	0	0	0	0
	Total	1	1	4	1	7
Western Australia	CVA	0	2	8	10	20
	Trauma (road)	0	2	2	0	4
	Trauma (non-road)	0	0	0	1	1
	Hypoxia-Anoxia	1	1	5	1	8
	Other	1	1	0	0	2
	Total	2	6	15	12	35



Organ Donation Pathway

Cardiopulmonary Resuscitation

Cardiopulmonary resuscitation is recorded for events leading up to the admission and hospital stay for the patient, prior to organ donation.

Table 3.7 shows the number of recorded events for cardiopulmonary resuscitation for Australia and New Zealand donors

Table 3.7

Cardiopulmonary Resuscitation 2010 - 2014										
	Australia					New Zealand				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Yes	112	111	130	155	170	15	13	14	8	14
No	197	226	224	234	207	26	25	24	27	32
Unknown	0	0	0	2	1	0	0	0	1	0
Total	309	337	354	391	378	41	38	38	36	46

Table 3.8

Australian States Cardiopulmonary Resuscitation by State 2014 (2013)								
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
Yes	29 (31)	36 (42)	2 (1)	63 (47)	3 (3)	18 (7)	3 (4)	16 (20)
No	42 (46)	55 (59)	9 (5)	54 (63)	6 (5)	18 (27)	4 (3)	19 (26)
Unknown	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (1)
Total	71 (77)	92 (102)	11 (6)	117 (110)	9 (8)	36 (34)	7 (7)	35 (47)

Organ Donation Pathway



Authority Sought for Organ Donation

The predominant group requesting authority for organ donation in 2014 were the Intensive Care Clinicians and Registrars, 55% in Australia and 80% in New Zealand shown in Table 3.11.

In Australia, authority for organ donation was sought by a Donor Specialist on 45 (12%) occasions which is a further marked increase from previous years (Table 3.11). Authority for organ donation in New Zealand was sought by a Donor Coordinator in two cases.

In 2014, 30% of families volunteered authority for organ donation in Australia (26% in 2013), up 5%, compared to 26% in 2013. In New Zealand, 11% of families volunteered authority in 2014 (14% in 2013). (Table 3.9)

See Table 3.10 for individual State and Territory statistics.

Table 3.9

Authority to Donate 2010 - 2014										
	Australia					New Zealand				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Donor Specialist	2	1	1	21	45	0	0	0	1	2
ICU Consultant	200	179	214	242	186	29	31	33	28	35
ICU Registrar	13	18	15	13	23	1	1	1	0	2
Social Worker	1	0	0	0	1	0	0	0	0	0
Other	1	1	2	5	1	1	1	1	2	1
Volunteered	82	123	111	100	112	9	5	2	5	5
Nursing Staff	1	1	4	2	1	1	0	0	0	1
Emergency Clinician	9	14	7	8	9	0	0	1	0	0
TOTAL	309	337	354	391	378	41	38	38	36	46

Table 3.10

Authority to Donate by State 2014 (2013)								
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
Donor Specialist	8 (3)	19 (15)	2 (1)	7 (0)	1 (0)	2 (1)	3 (0)	3 (1)
ICU Clinician	34 (41)	41 (76)	3 (4)	56 (61)	2 (3)	26 (29)	2 (7)	22 (21)
ICU Registrar	4 (0)	5 (2)	0 (0)	11 (5)	0 (0)	1 (1)	0 (0)	2 (5)
Social Worker	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Other	0 (1)	1 (2)	0 (0)	0 (0)	0 (1)	0 (0)	0 (0)	0 (1)
Volunteered	23 (31)	22 (4)	6 (1)	40 (42)	5 (3)	7 (3)	2 (0)	7 (16)
Nursing Staff	1 (0)	0 (0)	0 (0)	0 (0)	0 (1)	0 (0)	0 (0)	0 (1)
Emergency Clinician	1 (1)	3 (3)	0 (0)	3 (2)	1 (0)	0 (0)	0 (0)	1 (2)
TOTAL	71 (77)	92 (102)	11 (6)	117 (110)	9 (8)	36 (34)	7 (7)	35 (47)



Organ Donation Pathway

Donation Not Proceeding

An intended donor is a person for whom authority has been given, but organ donation did not proceed. A donation may not proceed due to positive virology tests, cardiac arrest or further investigations discovered a cancer or infection. In 2014, as with previous years, the main reason donors do not proceed to organ donation was because the time to cardiac standstill for DCD was exceeded.

Table 3.11 represents the number of non-proceeding donors for each State/Territory and overall for Australia and New Zealand compared to the number of actual donors who did proceed to theatre for organ donation. In Australia, there were 91 donors who did not proceed down the pathway of solid organ donation and in New Zealand there were three. The reasons for this are described in Table 3.12.

Table 3.11

Actual vs Intended (Non - Proceeding) Donors 2014										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUS	NZ
Intended Donor	14 (16%)	22 (19%)	2 (15%)	39 (25%)	2 (18%)	5 (12%)	1 (13%)	6 (15%)	91 (19%)	3 (6%)
Actual Donor	71 (84%)	92 (81%)	11 (85%)	117 (75%)	9 (82%)	36 (88%)	7 (88%)	35 (81%)	378 (81%)	46 (94%)

Table 3.12

Reasons Why Donation Did Not Proceed 2014	
Australia and New Zealand	
Did not proceed to cardiac standstill (DCD donors)	22
Disease in organ	17
Extended ischaemic time	15
No suitable recipients on waiting list	10
Other	8
Infection in donor	5
Malignancy in donor	5
Medically unsuitable results	4
Consent withdrawn by donor family	3
Cardiac arrest	3
Trauma to organs	1
Logistics	1
Total Non-Proceeding Donors	94

Organ Donation Pathway



Donation After Circulatory Death

The majority of organs are donated by the Donation after Brain Death (DBD) pathway. After certification of brain death, the donor remains on the ventilator and the removal of organs may occur many hours later.

The Donation after Circulatory Death (DCD) pathway is defined by patients with irreversible cessation of circulation. As soon as cessation of circulation is confirmed the retrieval procedure is commenced in order to minimise warm ischaemic time.

The number of DCD donors since 1989 has risen to 556 donors for Australia and 17 DCD donors for New Zealand.

In Australia, in 2014, there were 107 DCD donors; 47 in Victoria, 27 in New South Wales, 20 in Queensland, four each in South Australia and Western Australia, three in the Australian Capital territory and two in Northern Territory. There were six DCD donors, in New Zealand in 2014. (Table 3.15)

The first multi-organ DCD was performed in South Australia in 2006.

In 2014, the mean age for a DCD donor was 47.4 years and the age range was 7.1 to 69.7 years, in Australia. In New Zealand the mean age of DCD was 46.2 years and the age range was 18 years to 59 years.

Causes of death leading to DCD in Australia, in 2014 were CVA (37), hypoxia-anoxia (45), road trauma (11), other trauma (9) and other causes (5). In New Zealand, the leading cause of death was hypoxia in 50% (3) of DCD donors.

In 2014, the first heart was donated after circulatory death and successfully transplanted in NSW.

Table 3.13

Donation After Circulatory Death by State/Country 2010 - 2014										
YEAR	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
2010	13	24	3	24	0	5	0	0	69	1
2011	18	18	2	32	0	8	1	7	86	2
2012	16	19	2	30	0	4	1	5	77	0
2013	24	15	0	35	3	2	2	5	86	2
2014	20	27	3	47	0	4	2	4	107	6



Organ Donation Pathway

Time from Admission to Brain Death

AUSTRALIA

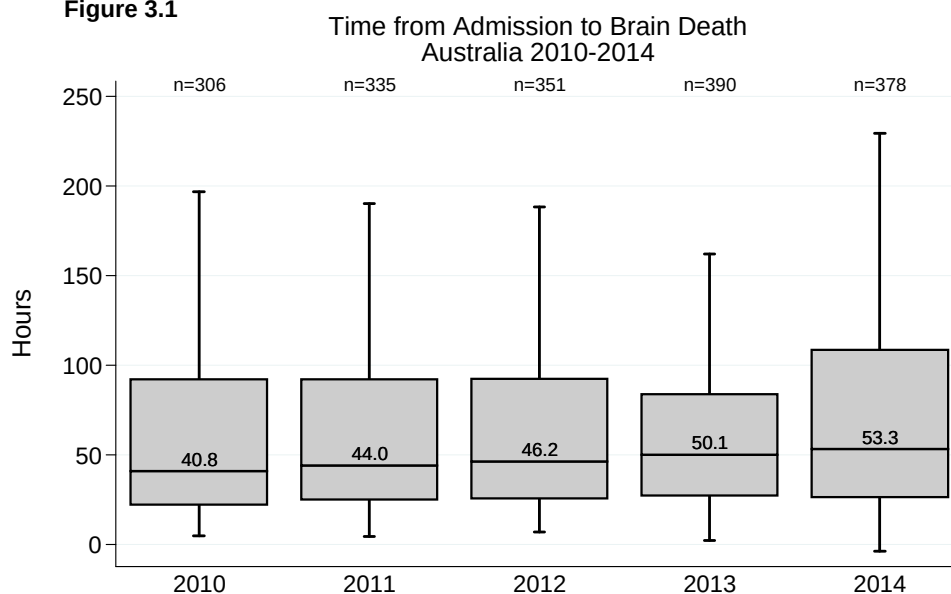
In 2014, 20% of Australian donors were declared brain dead within 24 hours of hospital admission.

Time of admission to hospital was unknown for only two donors.

The median time from admission to brain death was 53.3 hours.

Twenty one percent of donors (78) were in hospital for more than five days.

Figure 3.1



NEW ZEALAND

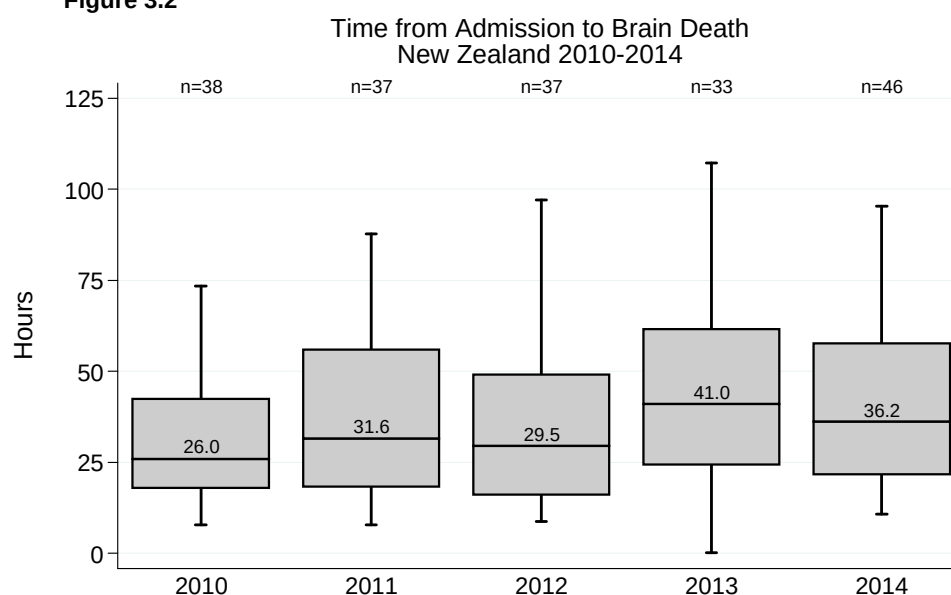
In 2014, 33% of New Zealand donors were declared brain dead within 24 hours of hospital admission.

Time of admission to hospital was unknown for two donors.

The median time from admission to brain death was 36.2 hours.

Four percent of donors (two) were in hospital for more than five days.

Figure 3.2



* For DCD donors, this is the time from admission to circulatory death

** Excluded from analysis are donors in Australia and New Zealand where no admission date was reported.

Organ Donation Pathway



Time from Ventilation to Brain Death

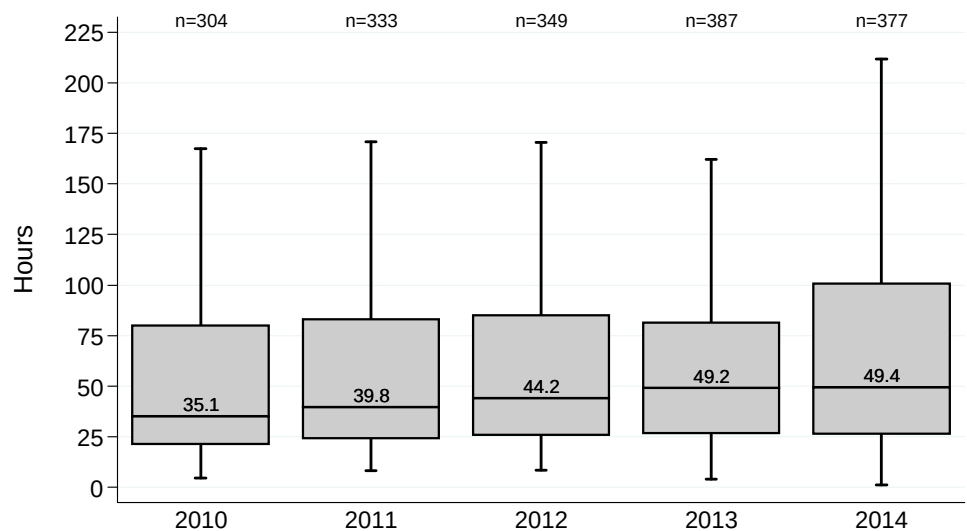
AUSTRALIA

In 2014, the median time from ventilation to brain death was 49.4 hours.

The time of ventilation was unknown for four Australian donors.

Figure 3.3

Time from Ventilation to Brain Death
Australia 2010-2014



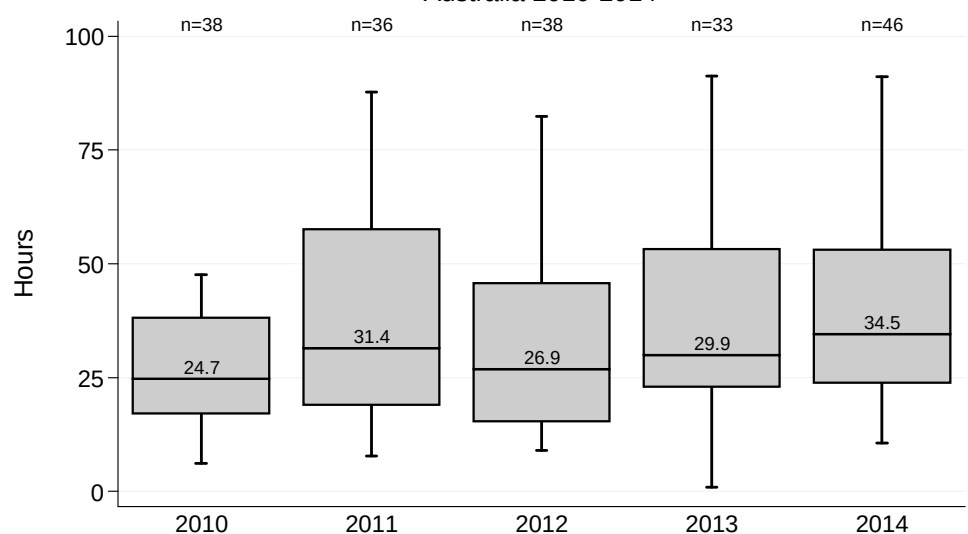
NEW ZEALAND

The median time in New Zealand from ventilation to brain death was 34.5 hours.

The time of ventilation was unknown for three New Zealand donors.

Figure 3.4

Time from Ventilation to Brain Death
Australia 2010-2014



For DCD donors, ventilation to circulatory death is analysed.

Donors in Australia and New Zealand with no ventilation date reported are excluded from the analysis.

Time From Brain Death to Donation

Figure 3.5

AUSTRALIA

In 2014, 27 DBD donors (10%) underwent aortic cross clamp within twelve hours of the certification of brain death.

The median time was 21 hours.

Cross clamp did not proceed in one Australian donor

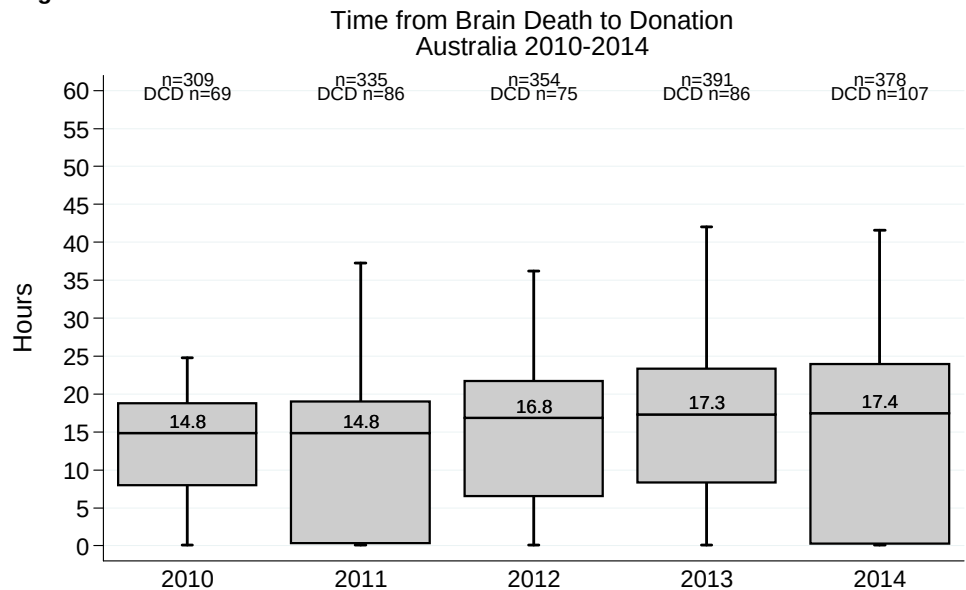


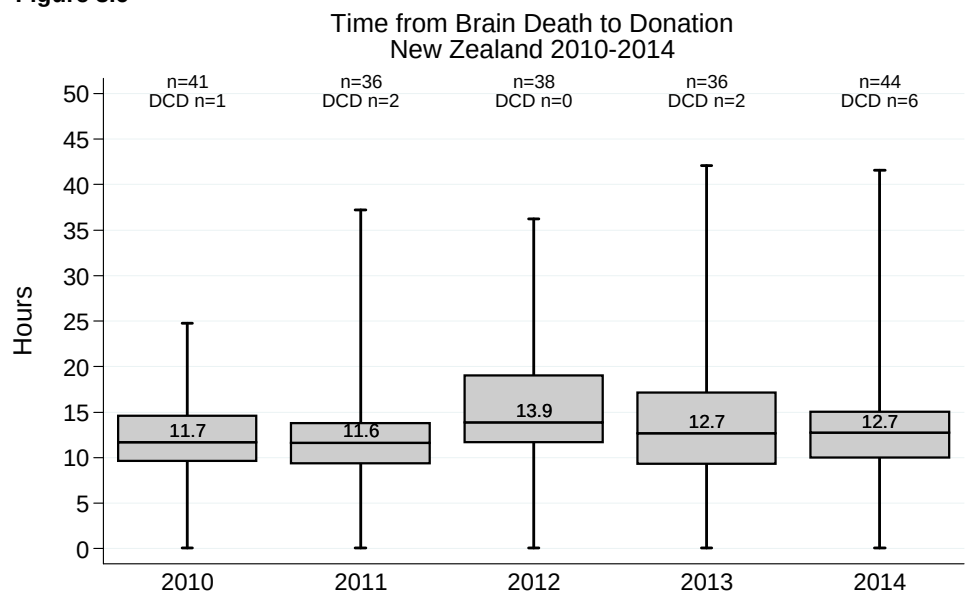
Figure 3.6

NEW ZEALAND

In 2013, 19 DBD (48%) underwent aortic cross clamp within twelve hours of the certification of brain death.

The median time was 12.9 hours.

Cross clamp of the donor did not proceed in three New Zealand donors.



* For DCD donors, the time from circulatory death to time of cold perfusion and for DBD donors, the time from brain death to time of cross clamp, is used for the analysis.

Organ Donation Pathway



Donor Maintenance

Maintenance medication of the donor (Given in the intensive care/critical care unit)

Australia

There were 66 donors (17%) who did not require maintenance drug support in 2014.

Antidiuretic agents (desmopressin/vasopressin) were prescribed to 51% (192) of all donors.

MAP <50 mm Hg

Mean arterial blood pressure (MAP) <50 mmHg was recorded in 1.6% (6) of donors in Australia in 2014. Three donors had a duration of less than one hour and no donors had one hour or longer. One donor had no reported duration of MAP <50mmHg. The range was 15 minutes to 30 mins.

New Zealand

In 2014 there were three donors who did not require inotropic support.

Antidiuretic agents were prescribed to 52.2% (24) of all donors.

MAP <50 mmHg

One donor was reported with a mean arterial blood pressure (MAP) <50 mmHg with a duration of one hour.

Terminal Treatment

(medication provided in the operating theatre)

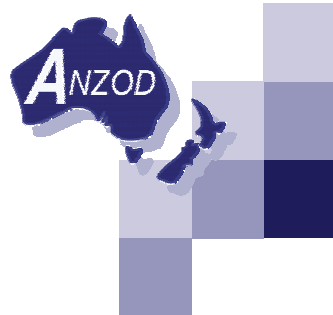
Australia

There were 78 donors who did not receive any heparin as part of their terminal treatment in 2014. Seventy three of those donors were DCD (donation after circulatory death).

Seventy two donors did not receive any terminal treatment; 71 of those were DCD.

New Zealand

There were two donors who did not receive any heparin and only One donor did not receive any drugs as part of terminal treatment in 2014. This was a heart beating donor.



Organ Donation Pathway

Summary - Organs Requested, Consent Given, Retrieved and Transplanted

Table 3.14 shows the outcome of organs requested in 2014(2103). The information on request for organ donation, refers only to those patients who become actual donors. The reasons for organs not requested, not retrieved or not transplanted are documented for all of the specific organs in Chapter 5 - Organ Data. For further details see Supplement 1 - for Australia and Supplement 2 - for New Zealand. Figure 3.16 shows the outcome of organs requested in 2014 (2013).

Table 3.14

Summary for Organ Donation Pathway by Organ Type 2014 (2013)						
	Kidneys	Liver	Heart	Lungs	Pancreas	Intestine
Australia	Organs for donation	756 (782)	378 (391)	378 (391)	756 (782)	376 (391)
	Organs Requested	742 (760)	355 (360)	279 (270)	684 (690)	302 (299)
	Organs Consented	740 (758)	347 (358)	250 (257)	660 (660)	285 (290)
	Organs Retrieved	700 (691)	241 (243)	91 (92)	166 (170)	101 (68)
	Utilised organs for transplantation	659 (645)	222 (233)	83 (79)	315 (331)	44 (33)
	Recipients transplanted	* 637 (630)	* 237 (252)	* 83 (79)	* 163 (169)	44 (33)
New Zealand	Organs for donation	92 (72)	46 (36)	46 (36)	92 (72)	46 (35)
	Organs Requested	88 (68)	41 (35)	29 (20)	66 (54)	22 (12)
	Organs Consented	88 (68)	41 (35)	27 (19)	66 (54)	22 (12)
	Organs Retrieved	74 (61)	33 (25)	17 (9)	20 (18)	2 (0)
	Utilised organs for transplantation	67 (58)	32 (24)	17 (9)	39 (36)	2 (0)
	Recipients transplanted	* 66 (55)	* 35 (26)	* 17 (9)	* 20 (18)	2 (0)
<i>Kidneys and Lungs are counted as two separate organs (i.e. left and right)</i> <i>*For Australia, 2014(2013) includes 22(15) Double adult/Enbloc Kidneys, 30(45) Partial Livers, 4(2) Heart-Lungs, 7(5) Single Lung and 152(162) Double Lungs transplants</i> <i>*For New Zealand, 2014(2013) includes 1(3) Double-adult/Enbloc Kidneys, 6(5) Partial Livers, 0(0) Heart-Lungs, 1(0) Single Lung transplants and 19(18) Double Lungs transplants</i> <i>There are 10 (1) Pancreas Islets transplants in Australia and 0 (0) in New Zealand</i>						

The reason organs were not used are identified in Chapter 5 - Organ Data and in Supplement 1 for Australia and Supplement 2 for New Zealand.

Organs retrieved and used for research were not intended for transplantation in the first instance.

Organ Donation Pathway



Multiple Organ Retrieval



There were 86 (23%) Australian donors in 2014 who had a single organ retrieved and transplanted, shown in Table . Kidney only donation occurred in 71 cases.

New Zealand had 12 (26%) single organ donors in 2014, seven donating kidneys, four donating a liver and one donating a heart.

In Australia, 75% (284) of donors and 67% (31) of donors in New Zealand had two or more organs retrieved for the purpose of transplantation.

Table 3.15

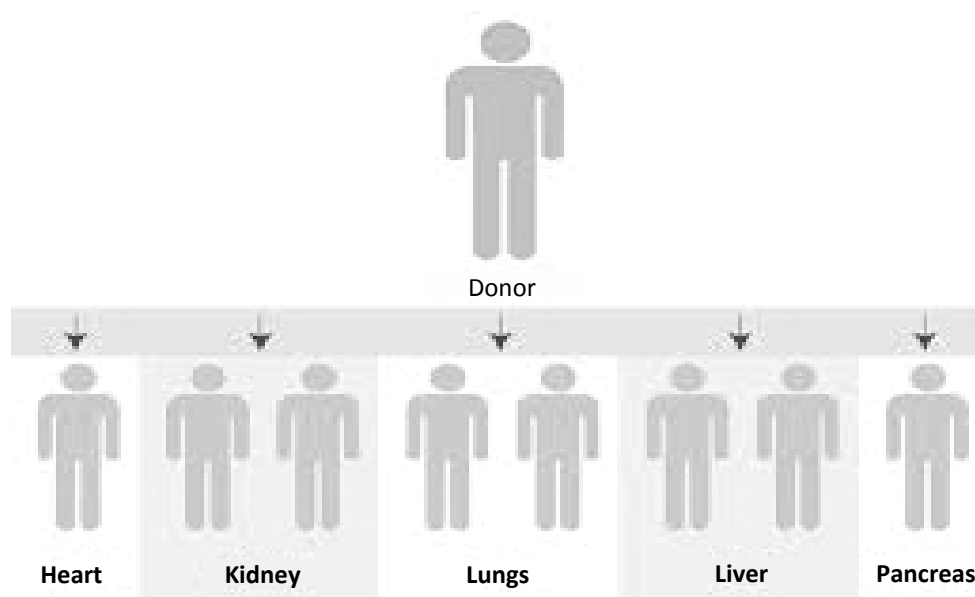
Multiple Organ Retrieval 2010 - 2014										
Number of Organs	Australia					New Zealand				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
No organs	7 (2%)	8 (2%)	12 (3%)	16 (4%)	8 (2%)	3 (7%)	3 (8%)	4 (11%)	0 (0%)	3 (7%)
One	60 (19%)	89 (26%)	87 (25%)	86 (22%)	86 (23%)	9 (22%)	4 (11%)	5 (13%)	9 (25%)	12 (26%)
Two	98 (32%)	97 (29%)	107 (30%)	120 (31%)	106 (28%)	12 (29%)	10 (26%)	12 (32%)	13 (36%)	8 (17%)
Three	61 (20%)	75 (22%)	76 (21%)	100 (26%)	92 (24%)	12 (29%)	16 (42%)	8 (21%)	8 (22%)	12 (26%)
Four	54 (17%)	45 (13%)	50 (14%)	50 (13%)	51 (13%)	5 (12%)	5 (13%)	9 (24%)	6 (17%)	10 (22%)
Five	29 (9%)	23 (7%)	22 (6%)	19 (5%)	35 (9%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)

Organ Donation Pathway

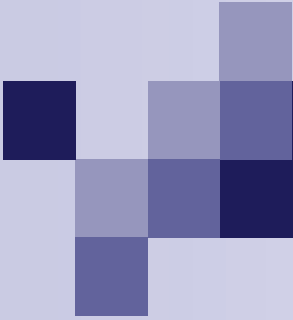
Table 3.16 shows the comparison of multiple organ retrieval by State and Country for 2014

Table 3.16

Comparison of Multiple Organ Retrieval by State/Country 2014										
Number Of Organs	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
No organs	0 (0%)	2 (2%)	0 (0%)	4 (3%)	0 (0%)	2 (6%)	0 (0%)	0 (0%)	8 (2%)	3 (7%)
One	17 (24%)	28 (30%)	3 (27%)	25 (21%)	1 (11%)	2 (6%)	2 (29%)	8 (23%)	86 (23%)	12 (26%)
Two	20 (28%)	29 (32%)	3 (27%)	27 (23%)	3 (33%)	11 (31%)	1 (14%)	12 (34%)	106 (28%)	8 (17%)
Three	21 (30%)	18 (20%)	1 (9%)	29 (25%)	2 (22%)	8 (22%)	3 (43%)	10 (29%)	92 (24%)	12 (26%)
Four	10 (14%)	8 (9%)	1 (9%)	18 (15%)	2 (22%)	9 (25%)	1 (14%)	2 (6%)	51 (13%)	10 (22%)
Five	3 (4%)	7 (8%)	3 (27%)	14 (12%)	1 (11%)	4 (11%)	0 (0%)	3 (9%)	35 (9%)	1 (2%)
For the above donor counts, 2 kidneys=1 organ, 2 lungs=1 organ On occasions when only one kidney or lung is retrieved, this is also defined as one organ										



One donor can benefit the lives of a number of recipients suffering end stage organ disease.



Chapter 4

Donor Profile



2015
ANZOD Registry
Annual Report
Data to 31-Dec-2014



Donor Profile 2014

Table 4.1 contains a detailed description of organ donors in Australia in 2014 compared to 2013. Key observations are the gender discrepancy for DCD donors (where there are greater numbers of males than females; the preponderance of Caucasian donors, and the distribution of blood groups (largely O and A).

Table 4.1

Demographics of Deceased Donors in Australia 2013 - 2014							
		2013			2014		
		DBD	DCD	Total	DBD	DCD	Total
Australia	Gender						
	Male	158(52%)	48(56%)	206 (53%)	131(48%)	77(72%)	208 (55%)
	Female	147(48%)	38(44%)	185 (47%)	140(52%)	30(28%)	170 (45%)
	Age						
	0-4	6(2%)	2(2%)	8 (2%)	4(1%)		4 (1%)
	5-14	7(2%)	3(3%)	10 (3%)	8(3%)	2(2%)	10 (3%)
	15-24	44(14%)	13(15%)	57 (15%)	14(5%)	8(7%)	22 (6%)
	25-34	35(11%)	9(10%)	44 (11%)	39(14%)	14(13%)	53 (14%)
	35-44	40(13%)	9(10%)	49 (13%)	41(15%)	15(14%)	56 (15%)
	45-54	54(18%)	16(19%)	70 (18%)	63(23%)	27(25%)	90 (24%)
	55-64	56(18%)	23(27%)	79 (20%)	53(20%)	34(32%)	87 (23%)
	65-74	45(15%)	11(13%)	56 (14%)	38(14%)	7(7%)	45 (12%)
	75+	18(6%)		18 (5%)	11(4%)		11 (3%)
	BMI (kg/m2)						
	Underweight (<18.5)	18(6%)	5(6%)	23 (6%)	11(4%)	3(3%)	14 (4%)
	Normal (18.5-<25)	109(36%)	32(37%)	141 (36%)	98(36%)	37(35%)	135 (36%)
	Overweight(25-<30)	103(34%)	33(38%)	136 (35%)	106(39%)	35(33%)	141 (37%)
	Obese(>=30)	75(25%)	15(17%)	90 (23%)	56(21%)	32(30%)	88 (23%)
	Unknown		1(1%)	1 (0%)			
	Blood Group						
	A	103(34%)	36(42%)	139 (36%)	106(39%)	42(39%)	148 (39%)
	AB	7(2%)	2(2%)	9 (2%)	8(3%)	3(3%)	11 (3%)
	B	39(13%)	5(6%)	44 (11%)	27(10%)	13(12%)	40 (11%)
	O	156(51%)	43(50%)	199 (51%)	130(48%)	49(46%)	179 (47%)
	Racial/Ethnic Origin						
	Caucasian	265(87%)	81(94%)	346 (88%)	240(89%)	88(82%)	328 (87%)
	Aboriginal	6(2%)	2(2%)	8 (2%)	3(1%)	2(2%)	5 (1%)
	Asian	19(6%)	2(2%)	21 (5%)	13(5%)	10(9%)	23 (6%)
	Maori	4(1%)		4 (1%)	1(0%)		1 (0%)
	Pacific Islander	3(1%)		3 (1%)	1(0%)	1(1%)	2 (1%)
	Other	8(3%)	1(1%)	9 (2%)	13(5%)	6(6%)	19 (5%)
	Cause of Death						
	CVA	152(50%)	26(30%)	178 (46%)	144(53%)	37(35%)	181 (48%)
	Trauma (road)	36(12%)	9(10%)	45 (12%)	23(8%)	11(10%)	34 (9%)
	Trauma (non-road)	36(12%)	6(7%)	42 (11%)	16(6%)	9(8%)	25 (7%)
	Hypoxia-Anoxia	65(21%)	38(44%)	103 (26%)	68(25%)	45(42%)	113 (30%)
	Cerebral Tumour	2(1%)		2 (1%)	1(0%)		1 (0%)
	Other	14(5%)	7(8%)	21 (5%)	19(7%)	5(5%)	24 (6%)

Donor Profile 2014



In New Zealand in 2014 there were six DCD donors. There was a lower proportion of donors <25 years, compared with Australia, but a similar proportion of donors ≥65 years. (Table 4.2).

Table 4.2

Demographics of Deceased Donors in New Zealand 2013 - 2014							
		2013			2014		
		DBD	DCD	Total	DBD	DCD	Total
New Zealand	Gender						
	Male	12(35%)	1(50%)	13 (36%)	26(65%)	5(83%)	31 (67%)
	Female	22(65%)	1(50%)	23 (64%)	14(35%)	1(17%)	15 (33%)
	Age						
	0-4		1(50%)	1 (3%)	1(3%)		1 (2%)
	5-14	1(3%)		1 (3%)	1(3%)		1 (2%)
	15-24	1(3%)	1(50%)	2 (6%)	7(18%)	1(17%)	8 (17%)
	25-34	5(15%)		5 (14%)	3(8%)		3 (7%)
	35-44	6(18%)		6 (17%)	6(15%)	1(17%)	7 (15%)
	45-54	11(32%)		11 (31%)	10(25%)	1(17%)	11 (24%)
	55-64	4(12%)		4 (11%)	6(15%)	3(50%)	9 (20%)
	65-74	5(15%)		5 (14%)	3(8%)		3 (7%)
	75+	1(3%)		1 (3%)	3(8%)		3 (7%)
	BMI (kg/m2)						
	Underweight (<18.5)	1(3%)		1 (3%)			
	Normal (18.5-<25)	14(41%)	1(50%)	15 (42%)	17(43%)	1(17%)	18 (39%)
	Overweight(25-<30)	15(44%)		15 (42%)	16(40%)	5(83%)	21 (46%)
	Obese(≥30)	4(12%)		4 (11%)	6(15%)		6 (13%)
	Unknown		1(50%)	1 (3%)	1(3%)		1 (2%)
	Blood Group						
	A	14(41%)		14 (39%)	22(55%)	2(33%)	24 (52%)
	AB				2(5%)		2 (4%)
	B	4(12%)	1(50%)	5 (14%)		1(17%)	1 (2%)
	O	16(47%)	1(50%)	17 (47%)	16(40%)	3(50%)	19 (41%)
	Racial Origin						
	Caucasian	28(82%)	1(50%)	29 (81%)	30(75%)	6(100%)	36 (78%)
	Asian	3(9%)		3 (8%)	1(3%)		1 (2%)
	Maori	2(6%)	1(50%)	3 (8%)	5(13%)		5 (11%)
	Pacific Islander				1(3%)		1 (2%)
	Other	1(3%)		1 (3%)	3(8%)		3 (7%)
	Cause of Death						
	CVA	26(76%)		26 (72%)	19(48%)	1(17%)	20 (43%)
	Trauma (road)	1(3%)		1 (3%)	4(10%)	1(17%)	5 (11%)
	Trauma (non-road)	1(3%)	1(50%)	2 (6%)	9(23%)	1(17%)	10 (22%)
	Hypoxia-Anoxia	5(15%)	1(50%)	6 (17%)	5(13%)	3(50%)	8 (17%)
	Other	1(3%)		1 (3%)	3(8%)		3 (7%)



Donor Profile 2014

Age and Gender Distribution in Australia and New Zealand

In Australia in 2014, 11.9% of donors (45) were 65-74 years of age and 2.9% (11 donors) were aged 75 years or older. The oldest donor was 84.5 years and the youngest 3 months. In New Zealand in 2014, 13% of donors (6) were 65 years or older. The age range was from 2½ months to 82.4 years.

The mean age of donors in Australia in 2014 was 47.8 years. The mean age in New Zealand was 45.6 years. The mean age of donors in 1989 for Australia and New Zealand combined was 32.4 years and the age range was between 16.5 months and 69.5 years.

Figures 4.1 - 4.6 show donors according to age and gender in Australia and New Zealand for the years 2006-2008, 2009-2011 and 2012-2014.

Figure 4.1

Age and Gender of Deceased Donors
Australia 2006-2014

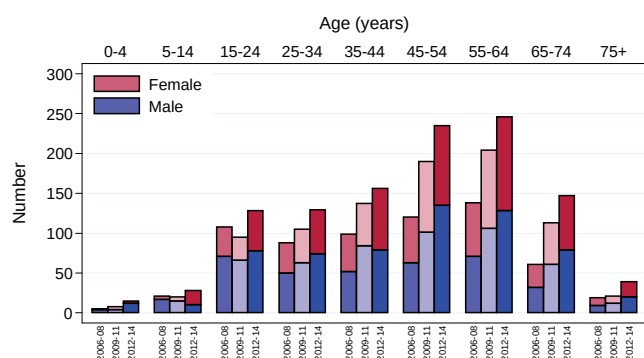


Figure 4.2

Age and Gender of Deceased Donors
New Zealand 2006-2014

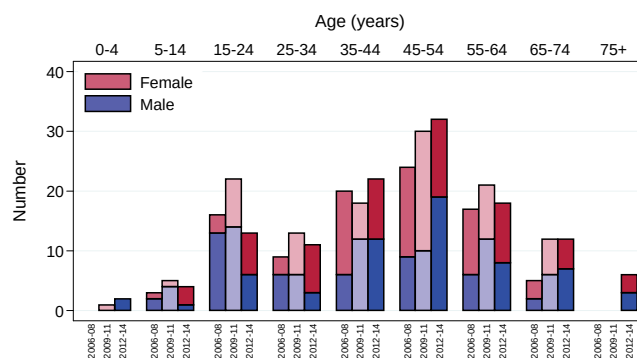


Figure 4.3

Age and Gender of Donors After Brain Death
Australia 2006-2014

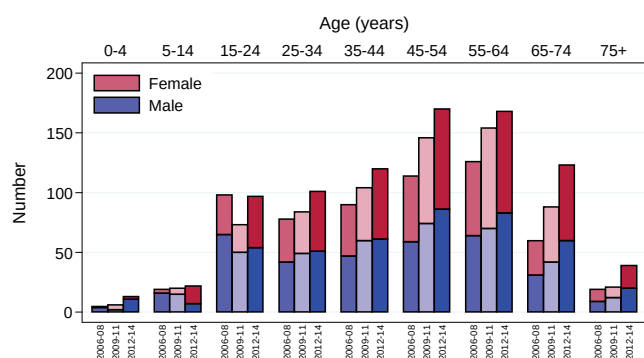


Figure 4.4

Age and Gender of Donors After Brain Death
New Zealand 2006-2014

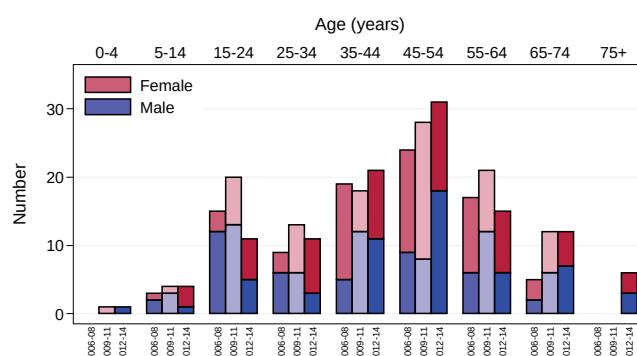


Figure 4.5

Age and Gender of Donors After Circulatory Death
Australia 2006-2014

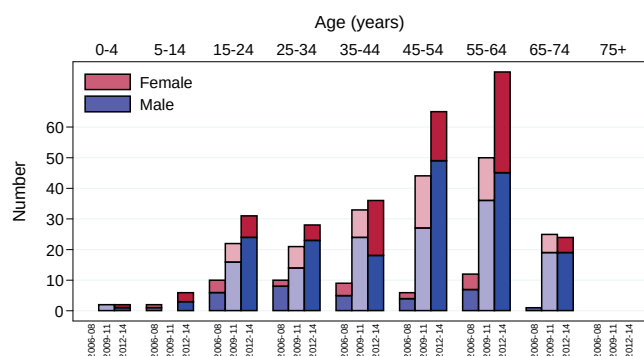
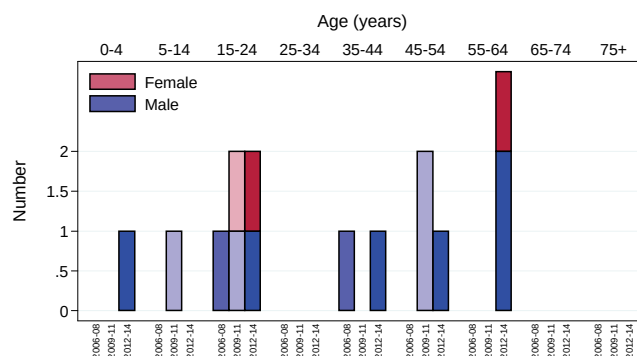


Figure 4.6

Age and Gender of Donors After Circulatory Death
New Zealand 2006-2014



Donor Profile 2014

Australia

The mean age of donors for Australia in 2014 was 47.8 years. Across Australian States the mean age ranged from 41.3 years in Queensland to 53.5 years in the Australian Capital Territory.

The median age of donors for Australian States in 2014 ranged from 44.2 years in the Northern Territory to 59.1 years in the Australia Capital Territory.

The median age for Australian donors in 2014 was 50.6 years.

Figure 4.7

Age of Male and Female Donors 2006-2014
Australia

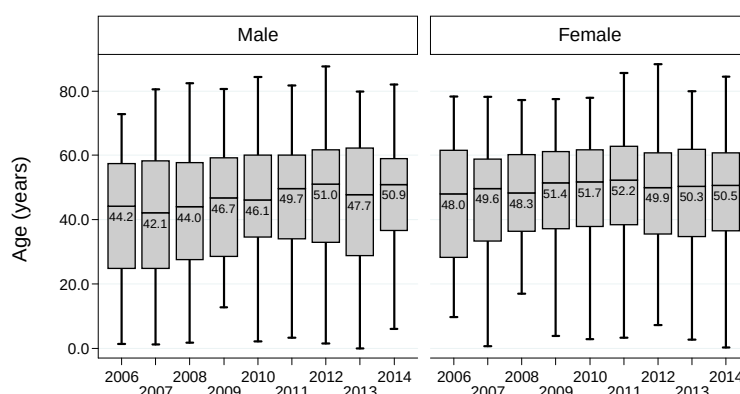
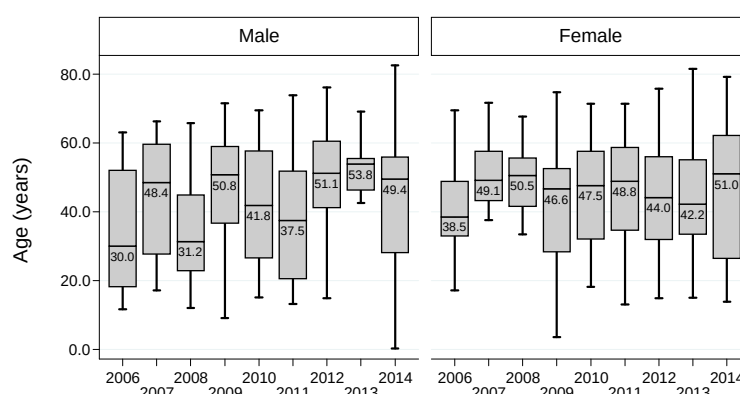


Figure 4.8

Age of Male and Female Donors 2006-2014
New Zealand

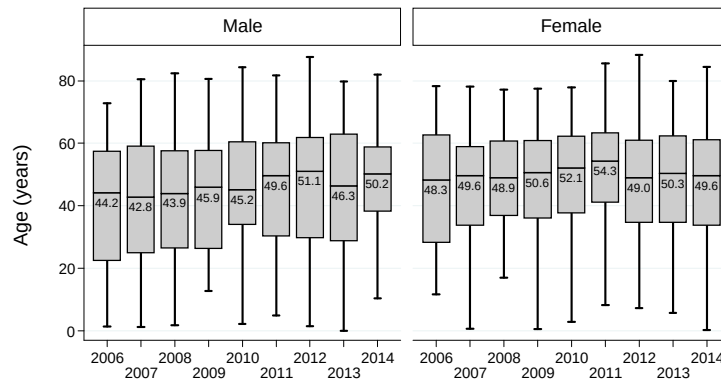


New Zealand

For New Zealand the mean age of donors was 45.6 years.

The median age for New Zealand was 50.2 years in 2014. There were three donors aged 75 years or over (up from 1 in 2013) and one donor aged less than 5 years.

Figure 4.9 Age of Male and Female Donors After Brain Death 2006-2014
Australia



The age and gender of donors by donation pathway is shown per year from 2006 - 2014 for Australia and New Zealand in Figures 4.10 to 4.11.



Figure 4.10 Age of Male and Female Donors After Circulatory Death 2006-2014
Australia

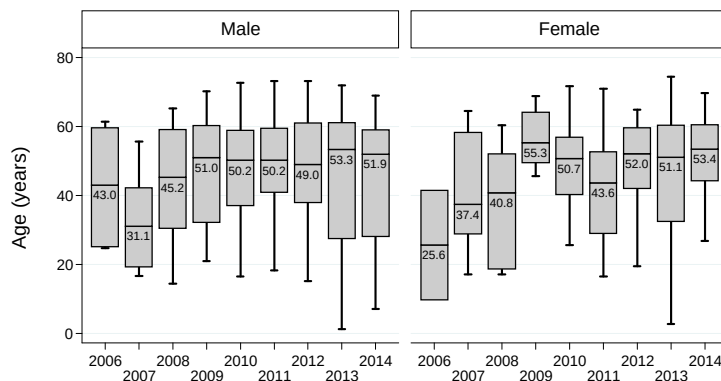
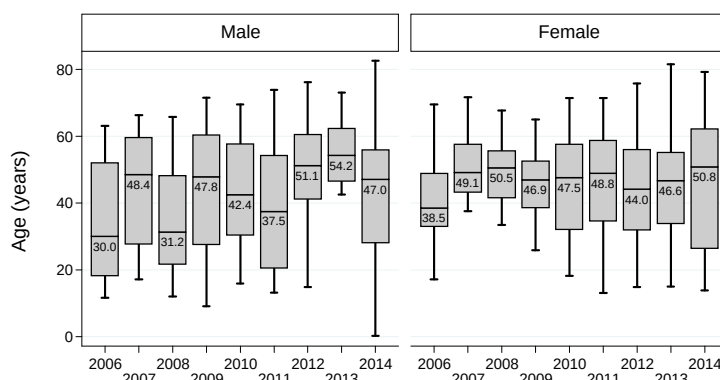


Figure 4.11 Age of Male and Female Donors After Brain Death 2006-2014
New Zealand



New Zealand

Donor Profile 2014



Figure 4.12 Age of Deceased Donors 2006-2014
Queensland

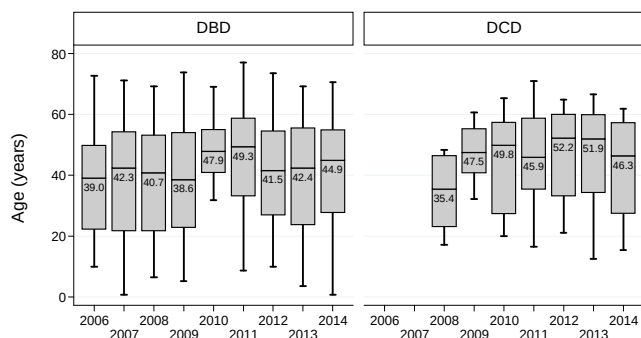


Figure 4.13 Age of Deceased Donors 2006-2014
New South Wales

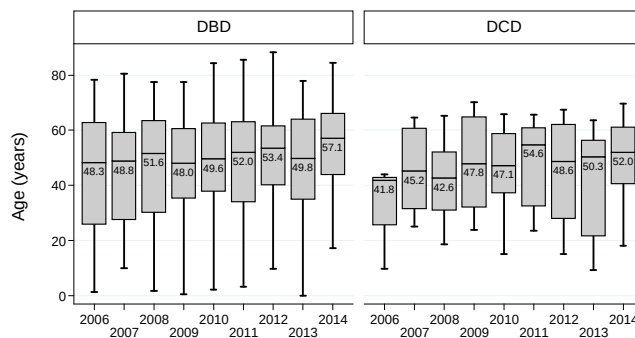


Figure 4.14 Age of Deceased Donors 2006-2014
Australian Capital Territory

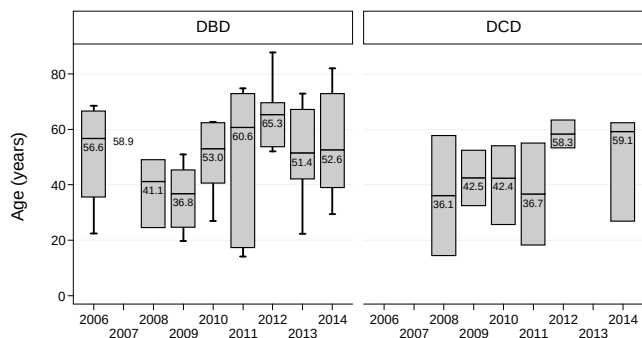


Figure 4.15 Age of Deceased Donors 2006-2014
Victoria

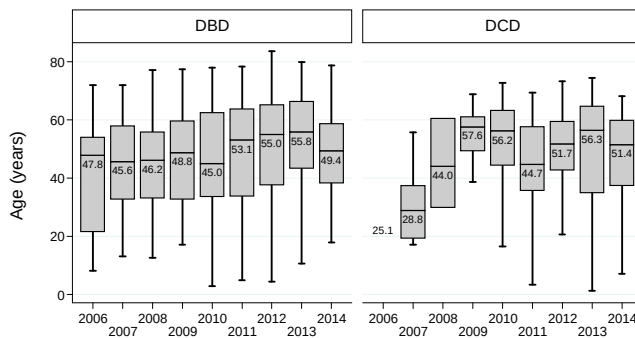


Figure 4.16 Age of Deceased Donors 2006-2014
Tasmania

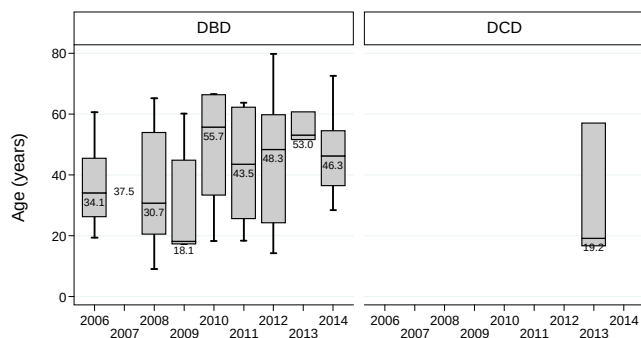


Figure 4.17 Age of Deceased Donors 2006-2014
South Australia

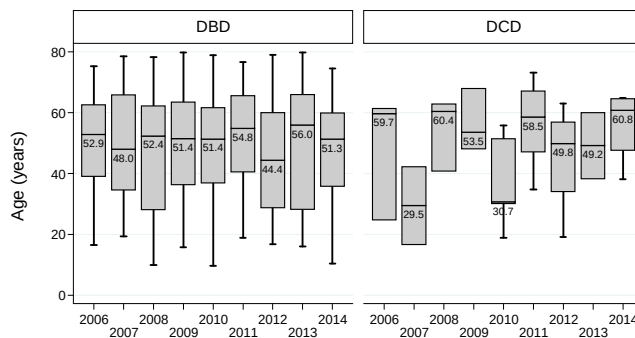


Figure 4.18 Age of Deceased Donors 2006-2014
Northern Territory

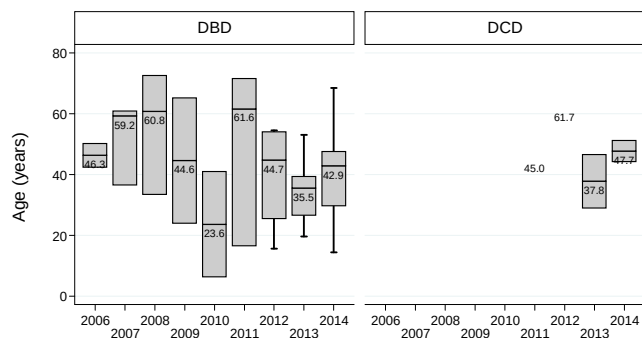
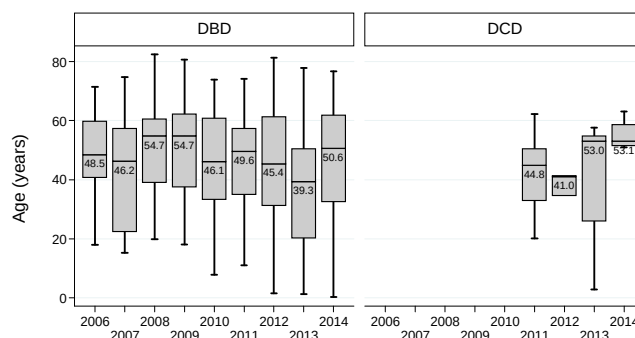
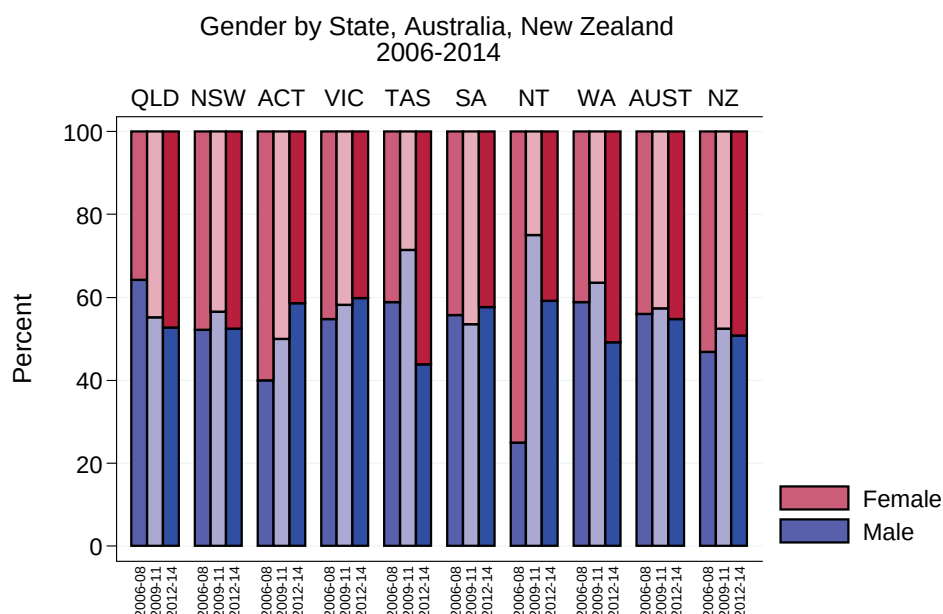


Figure 4.19 Age of Deceased Donors 2006-2014
Western Australia



Donor gender in each State, Australia and New Zealand is shown in three year cohorts in Figures 4.20

Figure 4.20



The ethnic origin of donors has remained stable over the past 5 years, in Australia and New Zealand (Table 4.3).



Table 4.3

Ethnic Origin of Donors 2010- 2014										
Donor racial/ ethnic origin	Australia					New Zealand				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Caucasian	289 (94%)	323 (96%)	331 (94%)	346 (88%)	328 (87%)	32 (78%)	30 (79%)	28 (74%)	29 (81%)	36 (78%)
Aboriginal	4 (1%)	3 (1%)	4 (1%)	8 (2%)	5 (1%)	-	-	-	-	-
Asian	15 (5%)	9 (3%)	10 (3%)	21 (5%)	23 (6%)	2 (5%)	1 (3%)	3 (8%)	3 (8%)	1 (2%)
Māori	-	-	4 (1%)	4 (1%)	1 (0%)	5 (12%)	3 (8%)	6 (16%)	3 (8%)	5 (11%)
Pacific Islander	-	1 (0%)	2 (1%)	3 (1%)	2 (1%)	1 (2%)	4 (11%)	1 (3%)	-	1 (2%)
Other	1 (0%)	1 (0%)	3 (1%)	9 (2%)	19 (5%)	1 (2%)	-	-	1 (3%)	3 (7%)

Donor Profile 2014



Table 4.4 shows the religious denomination of donors. This has remained stable over the 5 years to 2014.

Table 4.4

Religious Denomination of Donors 2010 - 2014										
Donor Religion	Australia					New Zealand				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Christian	99 (32%)	108 (32%)	108 (31%)	120 (31%)	95 (25%)	3 (7%)	7 (18%)	5 (13%)	3 (8%)	4 (9%)
Jewish	1 (0%)	-	-	3 (1%)	2 (1%)	-	-	-	-	-
Orthodox	-	3 (1%)	2 (1%)	2 (1%)	-	-	-	-	-	-
Muslims	-	-	1 (0%)	2 (1%)	-	-	-	-	-	-
Buddhist	1 (0%)	1 (0%)	4 (1%)	1 (0%)	7 (2%)	-	-	-	-	-
Hindu	2 (1%)	-	2 (1%)	-	2 (1%)	-	-	-	1 (3%)	-
No religion	-	-	-	4 (1%)	4 (1%)	-	-	-	-	-
Other	64 (21%)	75 (22%)	59 (17%)	77 (20%)	86 (23%)	-	-	-	-	1 (2%)
Unknown	142 (46%)	150 (45%)	178 (50%)	182 (47%)	182 (48%)	38 (93%)	31 (82%)	33 (87%)	32 (89%)	41 (89%)

Donor Weight

The allocation of heart, lungs and livers are based in part on the matching of recipient and donor size and weight. In 2014 there were 10 donors in Australia and one donor in New Zealand who weighed less than 40 kilograms. There were 38 donors 100 kilograms and over in Australia and four donors in New Zealand.

Table 4.5

Donor Weight 2010 - 2014												
Kilograms												
		0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100 +	Total
Australia	2010	2	5	4	2	20	43	62	70	53	48	309
	2011	3	4	1	6	31	59	73	74	48	38	337
	2012	2	4	0	7	23	73	70	85	44	46	354
	2013	10	2	3	7	24	62	95	90	53	45	391
	2014	4	4	2	4	29	54	104	86	53	38	378
New Zealand	2010	1	0	0	1	2	6	14	8	4	5	41
	2011	0	0	0	2	1	11	7	9	4	4	38
	2012	0	0	0	0	6	5	10	5	8	4	38
	2013	1	0	1	0	3	9	11	4	5	2	36
	2014	1	0	0	0	3	8	7	16	7	4	46



Donor Profile 2014

Medical Condition of Donors

Table 4.6 lists the medical conditions of donors by States, Territories and Country for 2014 compared to 2013 by Donor type.

Table 4.6

Medical Condition of Donors by States/Country 2014 (2013)											
Donor Type	Medical Condition	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
DBD	Diabetes Type I	1 (0)	2 (1)	0 (0)	2 (1)	0 (0)	0 (2)	0 (0)	0 (0)	5 (4)	1 (0)
	Diabetes Type II	2 (2)	4 (6)	0 (1)	3 (7)	1 (0)	2 (2)	0 (0)	2 (2)	14 (20)	1 (3)
	Hypertension	7 (5)	25 (26)	2 (1)	19 (22)	2 (2)	10 (10)	0 (0)	12 (7)	77 (73)	11 (5)
	Smoking-Current	27 (27)	28 (31)	2 (2)	33 (30)	5 (3)	14 (13)	2 (2)	10 (21)	121 (129)	7 (6)
	Cancer	1 (3)	2 (4)	0 (1)	0 (1)	0 (0)	3 (0)	0 (0)	1 (4)	7 (13)	0 (1)
DCD	Diabetes Type I	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)
	Diabetes Type II	0 (0)	2 (0)	0 (0)	2 (3)	0 (0)	0 (0)	0 (0)	0 (0)	4 (3)	0 (0)
	Hypertension	3 (5)	4 (1)	0 (0)	13 (13)	0 (0)	1 (1)	0 (0)	1 (3)	22 (23)	1 (0)
	Smoking-Current	6 (9)	10 (7)	0 (0)	21 (12)	0 (1)	1 (0)	0 (1)	2 (1)	40 (31)	1 (1)
	Cancer	1 (1)	1 (1)	1 (0)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)	3 (3)	0 (0)

Diabetes

There were 24 donors with diabetes in Australia in 2014, six donors with Type 1 and 18 with Type 2 diabetes. There were two donors in New Zealand with diabetes; one each of Type 1 and Type 2 diabetes.

In Australia, there was one diabetic Type 2 donor who did not have organs retrieved (due to poor perfusion of the organs). The 18 Type 2 donors provided 23 kidneys, 10 livers, five double lungs, two hearts, 20 corneas, four sets of heart valves, four bone donations and one tissue donation. The six diabetic Type 1 donors in Australia, provided six kidneys, three liver, one heart, five double lungs and one bone donation.

In New Zealand, two kidneys, one heart, one liver, one double lungs and two corneas were retrieved from the two diabetic donors.

Donor Profile 2014



Hypertension

A past history of hypertension was recorded in 26.2% of donors (99) in Australia and 26.1% (12 donors) in New Zealand in 2014 (Table 4.6).

The Australian donors provided 154 kidneys, 54 livers, 11 hearts, 31 double lungs, three single lungs, one pancreas, two pancreas islets, 92 corneas, 18 sets of heart valves, 19 bone donations and nine tissue donations. Three of the 99 donors did not provide any organs; one due to disease in the organ, one due to poor perfusion and one did not die within the timeframe.

In New Zealand, the 12 donors with hypertension provided 12 kidneys, eight livers, four hearts, four double lungs and 18 corneas and one tissue donation.

Smoking

In 2014, 42.6% (161) of Australian donors were recorded as current smokers while in New Zealand, 17.4% (8) donors were reported as current smokers.

Cancer in Donor

In Australia, 10 donors had a history of cancer prior to donation. In New Zealand, no donors in 2014 had a history of previous cancer.

Australia (10 donors)

- * Two diagnosed with squamous cell carcinomas (1 cervical)
- * One melanoma
- * One ductal carcinoma
- * One with granulosa cell
- * Five reported as having cancer of unknown type or site

There were 16 kidneys, four livers, four double lungs, 16 corneas, three bone donation and two tissue donations from these 10 donors. Three were DCD donors.



Donor Profile 2014

Virology Screening

Table 4.7 shows the cytomegalovirus (CMV) status of donors from 2010 to 2014.

Table 4.7

Cytomegalovirus (CMV) Status of Donors 2010 - 2014										
	Australia					New Zealand				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Positive	191	214	225	242	230	23	21	30	21	22
Negative	118	123	129	148	146	18	17	8	15	23
Not done	0	0	0	0	2	0	0	0	0	1
Total	309	337	354	390	378	41	38	38	36	46

Table 4.8 shows the Epstein-Barr Virus (EBV) status of donors from 2010 to 2014.

Table 4.8

Epstein-Barr Virus (EBV) Status of Donors 2010 - 2014										
	Australia					New Zealand				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Positive	198	293	321	356	338	33	27	33	27	36
Negative	14	28	33	33	30	2	4	1	4	6
Not done	97	16	0	2	6	6	7	4	0	3
Total	309	337	354	391	374	41	38	38	31	45

Not all Australian States require organ donors to be tested for EBV.

Hepatitis C Antibody

There were eleven Hepatitis C positive donors in 2014 , nine in Australia and two in New Zealand.

Of the positive donors in Australia, nine were DBD donors. There were two kidneys, seven livers, one heart, one double lungs and one single lung donated.

The two positive donors in New Zealand were DBD donors, who donated four kidneys, two livers, one heart, two corneas and one set of heart valves. There was one donor in Australia who was both HCV and HBV positive and who donated a liver.

Table 4.9

Hepatitis C Antibody Status of Donors 2010 - 2014										
	Australia					New Zealand				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Positive	2	7	5	13	9	0	1	2	1	2
Negative	307	330	349	378	364	41	37	36	35	44
Not done	0	0	0	0	4	0	0	0	0	0
Total	309	337	354	391	377	41	38	38	36	46

Donor Profile 2014



Hepatitis B Core Antibody

The Registry commenced collection of Hepatitis B core antibody results in 1998.

A positive result was recorded for 5% (20) of Australian donors and 7% (3) of New Zealand donors in 2014 (Table 4.10).

Of the positive donors in Australia, all were DBD donors. These 20 donors, provided 27 kidneys, 12 whole livers, two hearts, nine double lungs, one pancreas islets, two corneas and one set of heart valves tissue.

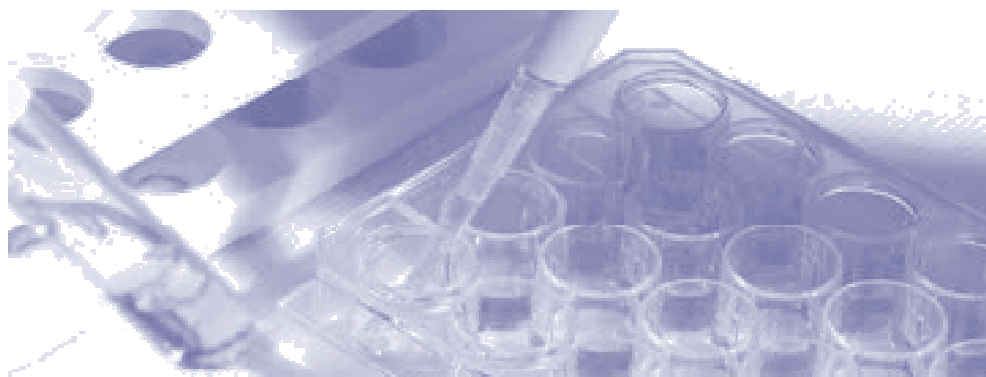
The three positive Hepatitis B donors in New Zealand provided, two kidneys, two whole livers and six corneas donated.

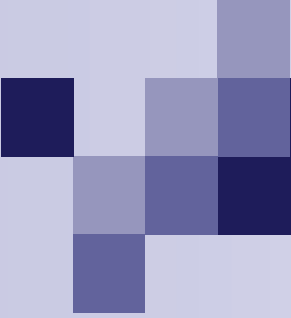
Figure 4.10

Hepatitis B Core Antibody Status of Donors 2010 - 2014										
	Australia					New Zealand				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Positive	20	11	15	17	20	2	5	8	2	3
Negative	289	326	339	374	340	39	33	30	34	42
Not done	0	0	0	0	17	0	0	0	0	1
Total	309	337	354	391	377	41	38	38	36	46

Hepatitis B Surface Antigen

Since 1993, all donors in Australia and New Zealand have been tested negative for Hepatitis B surface antigen, except one donor in 2004 who was not tested.





Chapter 5

Organ Data



2015
ANZOD Registry
Annual Report

Data to 31-Dec-2014

Kidney Donation

In Australia, there were 637 kidney transplant recipients in 2014. Of the 637 kidney transplant procedures performed, there were 17 double adult kidney recipients, five enbloc kidney recipients, 43 combined kidney/pancreas recipients, seven kidney/liver recipients, one kidney/pancreas islets recipient and one kidney/double lungs recipient.

In New Zealand, there were 66 kidney recipients including one enbloc kidney, two combined kidney/pancreas and two combined kidney/liver transplant procedures.

Figures 5.1 to 5.5 show the outcomes of requests for kidney donation, the number of kidney transplants by donation pathway and the number of kidney recipients by jurisdiction, in Australia and New Zealand respectively. In particular Figure 5.3 shows an increase in DCD kidneys from 2006 to 2014, and DBD kidneys from 2010 to 2014 in Australia.

Figure 5.1

Outcomes of Request for Kidney Donation
Australia 2014

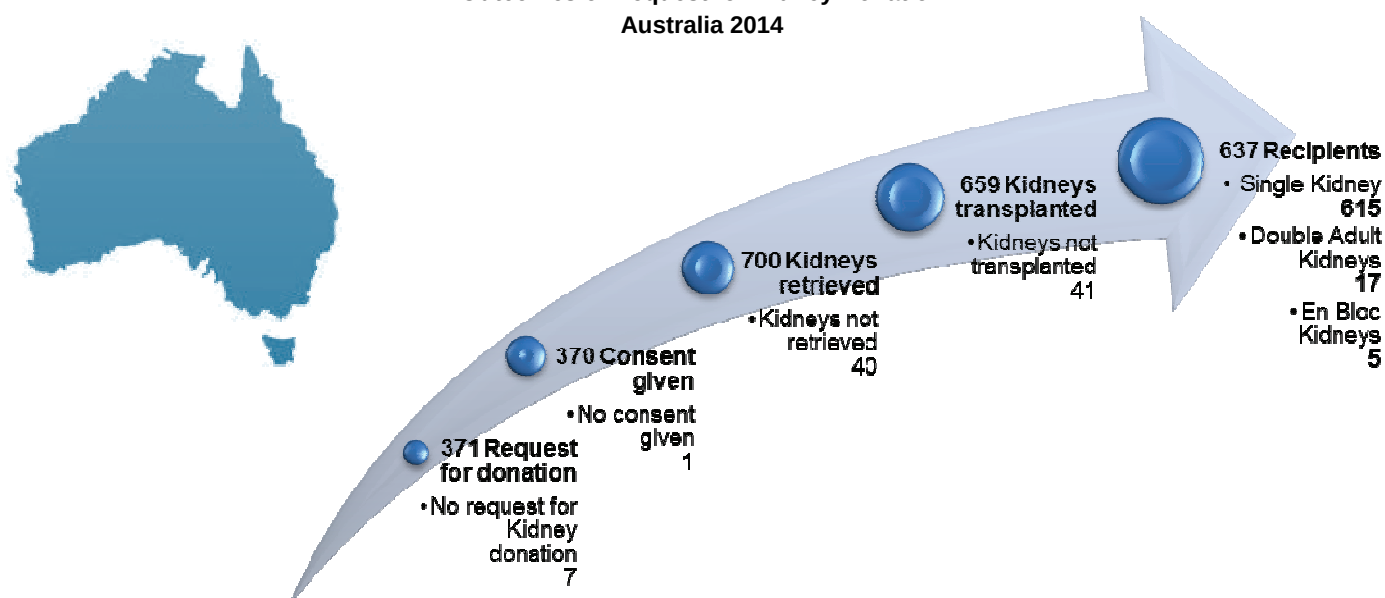
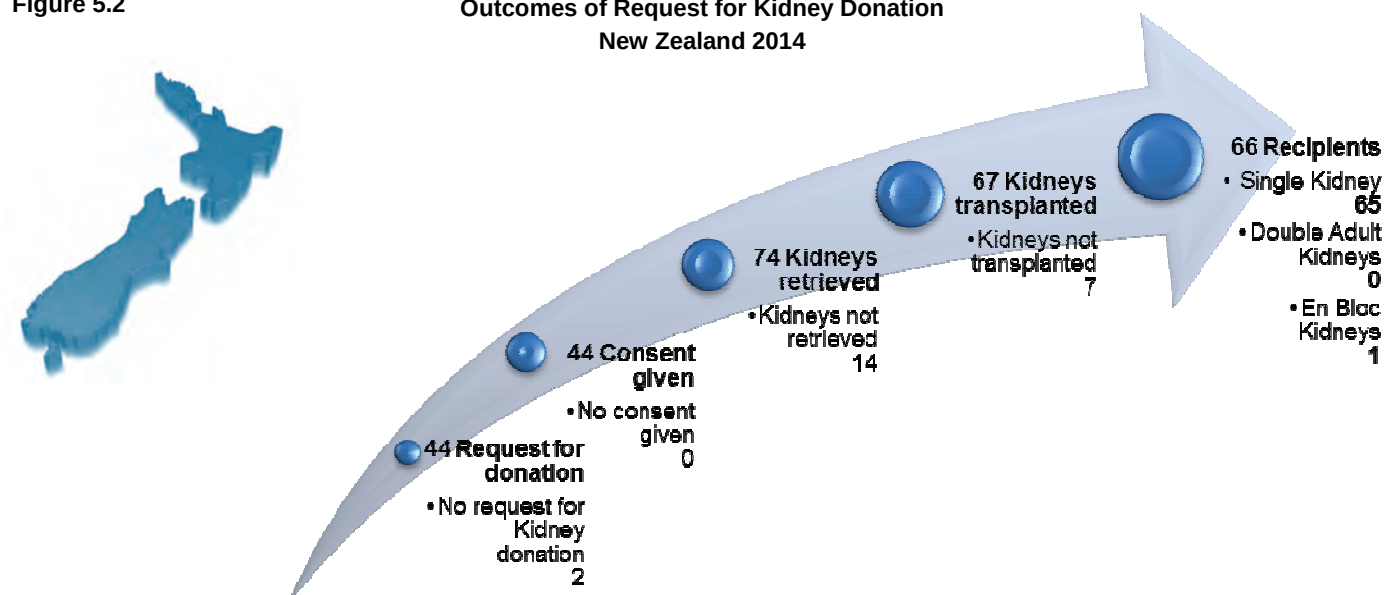


Figure 5.2

Outcomes of Request for Kidney Donation
New Zealand 2014



Organ Data 2014



Figure 5.3

**Kidneys Transplanted by Type of Organ Donor
Australia 1998-2014**

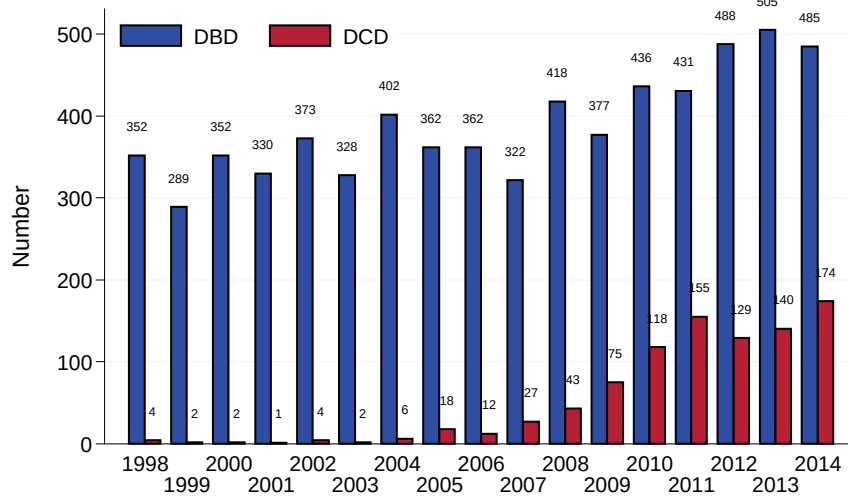


Figure 5.4

**Kidneys Transplanted by Type of Organ Donor
New Zealand 1998-2014**

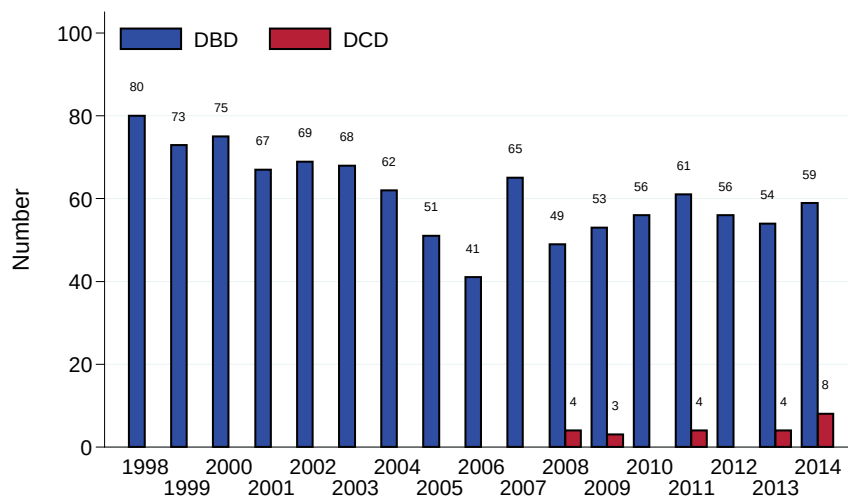
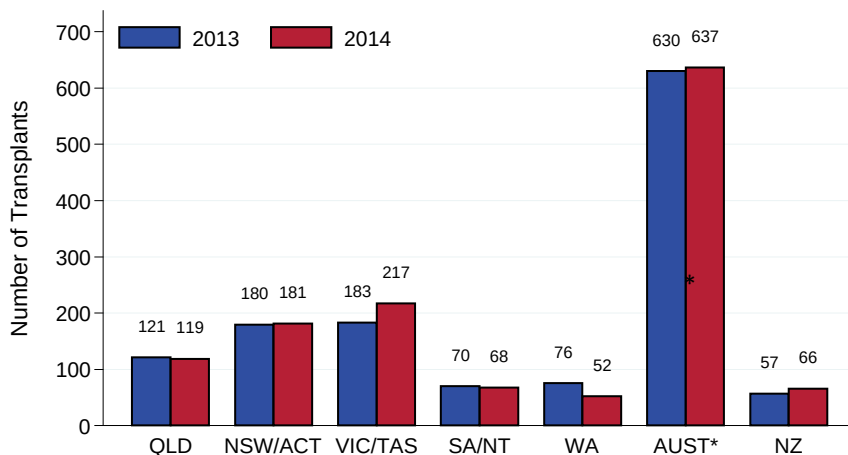


Figure 5.5

**Deceased Donor Kidney Transplant Recipients*
by Transplant State Australia and New Zealand, 2013-2014**



*These numbers include the exchange of organ between States and Territories of Australia and New Zealand

In 2014, there were 40 kidneys not retrieved from Australian donors and 14 not retrieved from New Zealand donors. For Australia, the main reason was due to the kidney not being medically suitable (24), followed by no suitable recipient for the kidney (4). In New Zealand, all non-retrieved kidneys were due to not being medically suitable with the exception of one which was not surgically suitable.

Figures 5.6 and 5.7 show the non-utilisation rate of retrieved kidneys – the proportion of kidneys that were retrieved for the purpose of solid organ transplantation, but not ultimately transplanted into a recipient (either due to an absence of suitable recipients, or the kidney being found to be medically or surgically unsuitable after retrieval). In Australia, the non-utilisation rate remained steady at around 3% over 2004-2012, but increased to 6.7% (95% CI 4.9 to 8.8) in 2013. In New Zealand these rates have historically been generally higher than in Australia and rose to 4.9% in 2013 from its lowest rate 1.5% in 2011 (note the different y-axis scales). By way of comparison, reported international non-utilisation rates were 23.5% in Spain¹ for 2013 and 19% in 2012 in the United States of America². The reasons why kidneys were not utilised for organ transplantation is presented in Table 5.1.

Figure 5.6

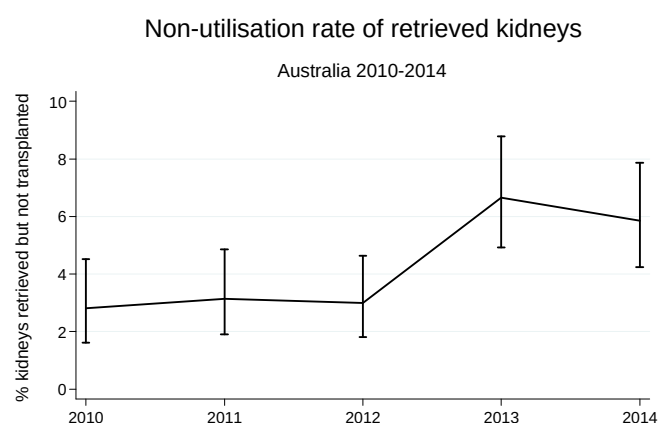


Figure 5.7

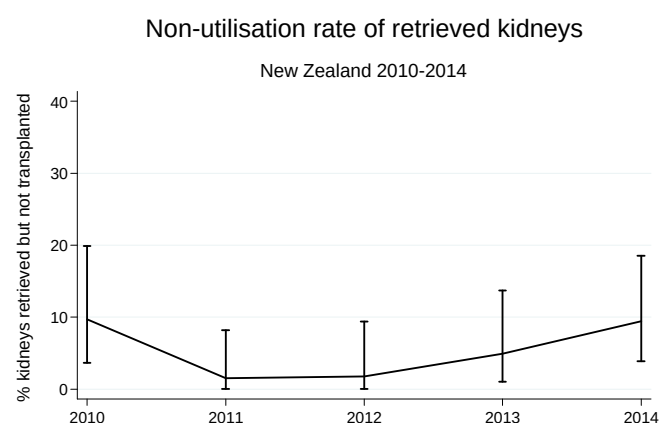


Table 5.1

Reasons Kidneys Retrieved and Not Utilised for Organ Transplantation in Australia (New Zealand) 2010 - 2014						
Year	Logistics	Not Medically Suitable	Not Surgically Suitable	No Suitable Recipients	Other	Total
2010	0 (0)	8 (6)	2 (0)	1 (0)	5 (0)	16 (6)
2011	1 (0)	9 (0)	3 (0)	4 (1)	2 (0)	19 (1)
2012	0 (0)	9 (1)	7 (0)	2 (0)	1 (0)	19 (1)
2013	3 (0)	31 (3)	7 (0)	3 (0)	2 (0)	46 (3)
2014	0 (0)	31 (6)	3 (1)	6 (0)	1 (0)	41 (7)

Footnotes: ¹ Memorias de actividad - ONT 2013

² OPTN/SRTR 2012 Annual Data Report

Organ Data 2014

Liver Donation

In 2014, there were 222 livers retrieved providing 237 recipients with transplanted livers from Australian donors, and 32 retrievals in New Zealand providing for 35 recipients, as shown in Figure 5.8 and 5.9. In Australia, this was an increase of 28.1% in the number of liver transplant recipients. There were seven recipients of combined liver/kidney transplants and one liver/intestine transplant in Australia.

Thirty partial liver transplants, from 15 donors, were performed in Australia using the “split” liver technique (transplanting one liver into two recipients) and in New Zealand there were 6 split liver transplants performed.

Figure 5.8

Outcome of Request for Liver Donation
Australia 2014

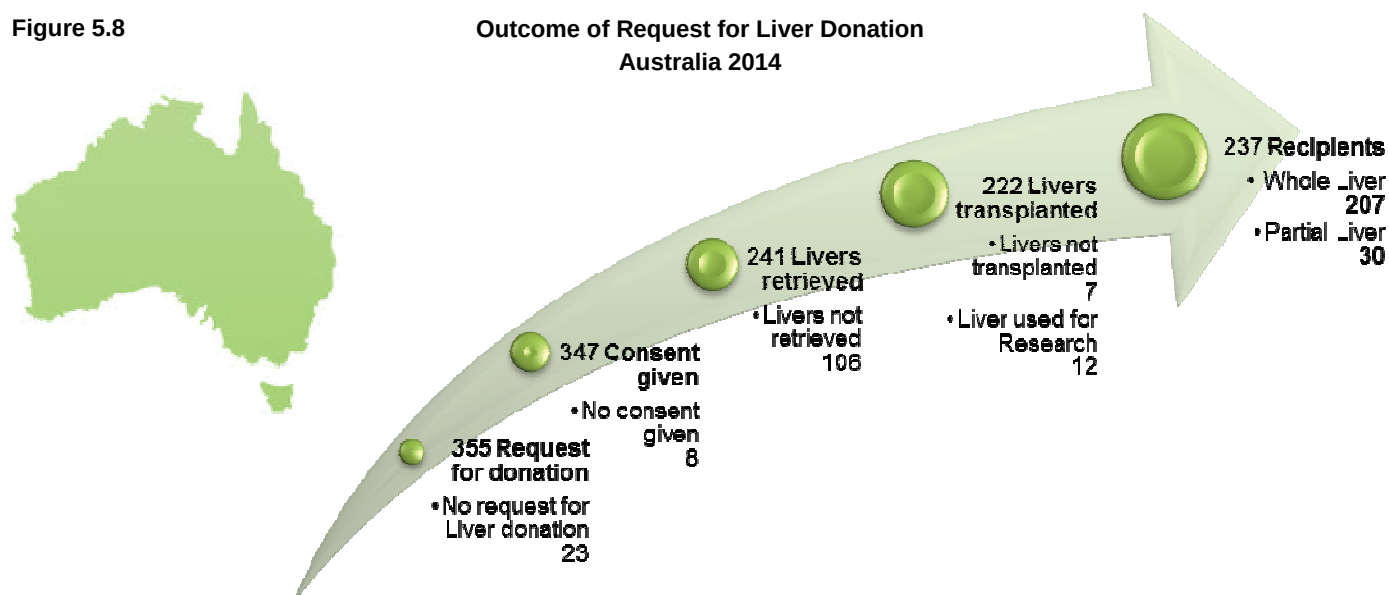
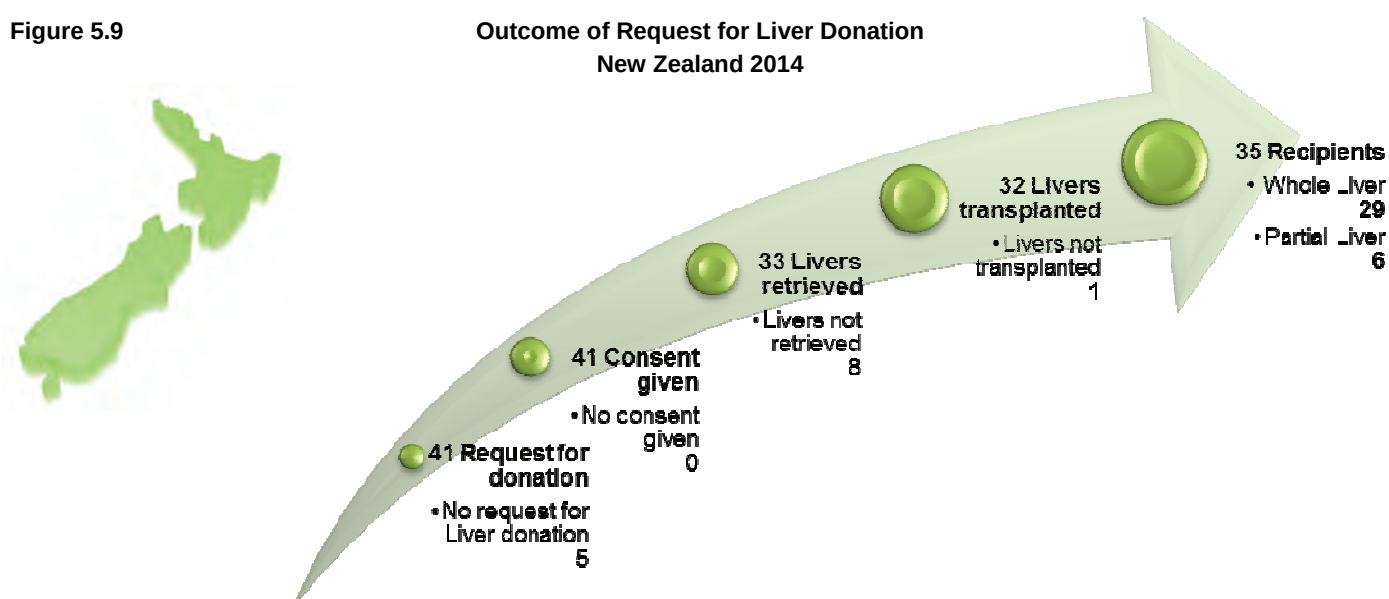


Figure 5.9

Outcome of Request for Liver Donation
New Zealand 2014



Figures 5.10 and 5.11 show the number of recipients of liver transplants by donation pathway in Australia and New Zealand respectively from 1998 to 2014.

Figure 5.10

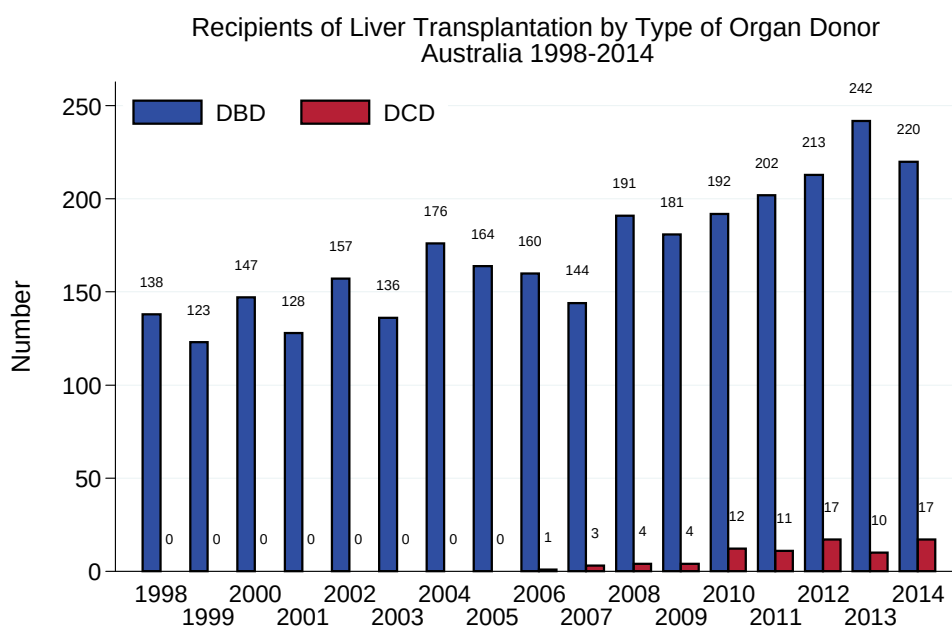
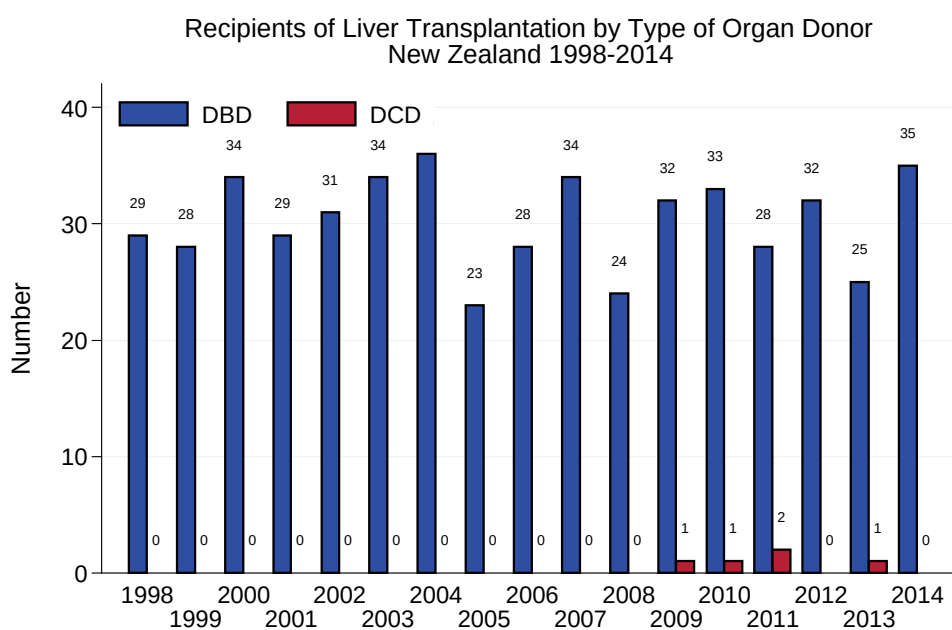


Figure 5.11

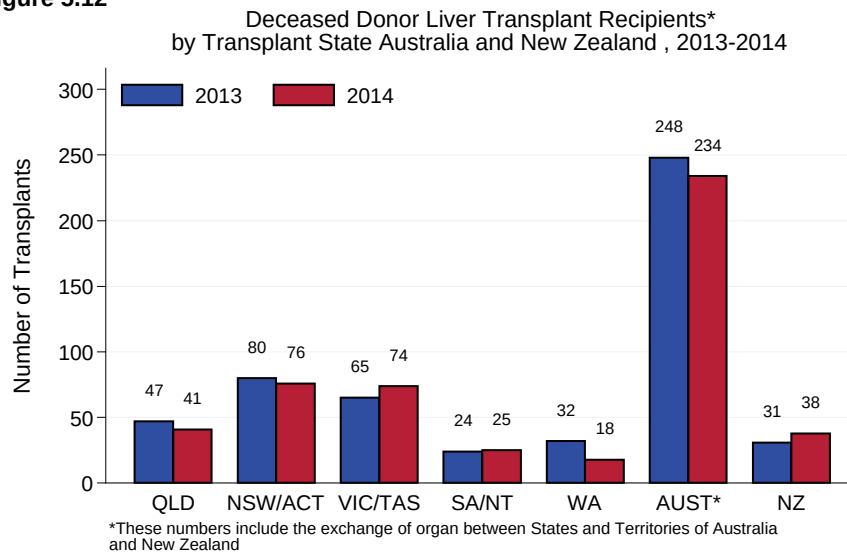


Organ Data 2014



Figure 5.12 compares the number of deceased donor liver recipients by state and country for 2013 and 2014.

Figure 5.12



There were 105 livers not retrieved from Australian donors in 2014 and no livers from New Zealand donors.

For Australia, the main reasons were the liver not being medically suitable (77), followed by age of donor (16). In New Zealand, mostly non-retrieved livers were due to being not medically suitable (7).

Figure 5.2 tabulates the reasons livers were not used after retrieval for the purpose of transplantation since 2010.

Table 5.2

Reasons Livers Retrieved and Not Utilised for Organ Transplantation in Australia (New Zealand) 2010 - 2014						
Year	Logistics	Not Medically Suitable	Not Surgically Suitable	No Suitable Recipients	Other	Total
2010	0 (0)	2 (0)	0 (0)	0 (0)	1 (0)	3 (0)
2011	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	1 (0)
2012	0 (0)	5 (1)	0 (0)	0 (0)	1 (0)	6 (1)
2013	0 (0)	6 (1)	0 (0)	0 (0)	0 (0)	6 (1)
2014	0 (0)	6 (1)	0 (0)	0 (0)	1 (0)	7 (1)



Organ Data 2014

Age of Liver Donors

The age distribution of donors providing transplanted livers for Australia and New Zealand is shown in Figures 5.13 and 5.14 respectively.

Figure 5.13

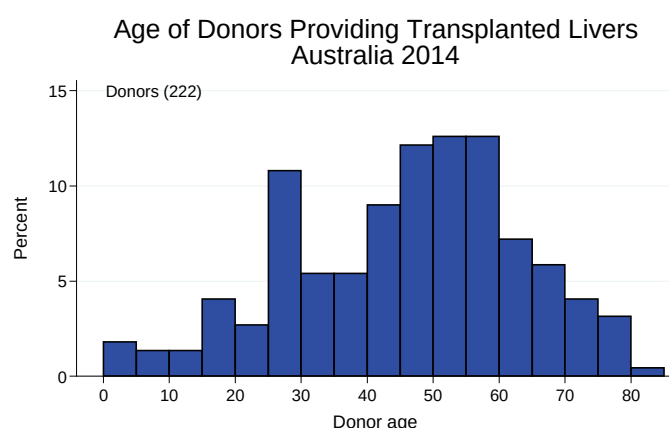
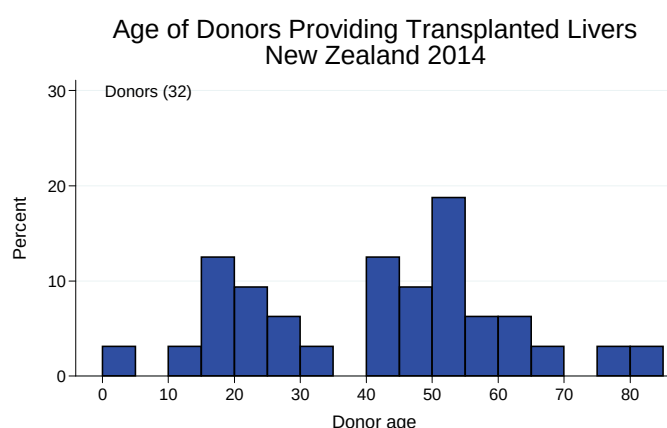


Figure 5.14



Donor Liver Function

The results of the serum tests for liver function for 243 Australian and 22 New Zealand donors in 2014 who had livers retrieved, are shown below. There were 80% of donors in Australia (195) and 86% of donors in New Zealand (19) who had all five tests performed. Table 5.3 shows the number of donors whose liver function was above the normal range.

Table 5.3

Number of Donors with Liver Function Tests above Normal Range 2014				
Liver Function Tests	Australia		New Zealand	
	Donors with value recorded *	Above Normal	Donors with value recorded *	Above Normal
Alanine Transaminase ALT > 40 u/L	238	100	27	12
Aspartate Transaminase AST > 40 u/L	207	113	27	11
Gamma Glutamyl Transferase GGT > 60 u/L	237	61	29	4
Alkaline Phosphatase > 116 u/L	237	20	33	2
Total Bilirubin > 20 umol/L	239	34	33	6
* Not all donors have all tests				

Organ Data 2014

Heart Donation

In 2014, there were 83 heart transplant recipients, including four heart/double lung transplant recipients. This was an increase of almost 36% for heart transplants since 2009.

New Zealand performed 17 heart transplants in 2014. This number has increased by 88.8% after being relatively stable over the past 8 years at between 9 and 12 heart transplants per year.

Figures 5.15 and 5.16 show the outcomes of requests for heart donation in Australia and New Zealand for 2014 respectively.

Figure 5.15

Outcome of Request for Heart Donation
Australia 2014

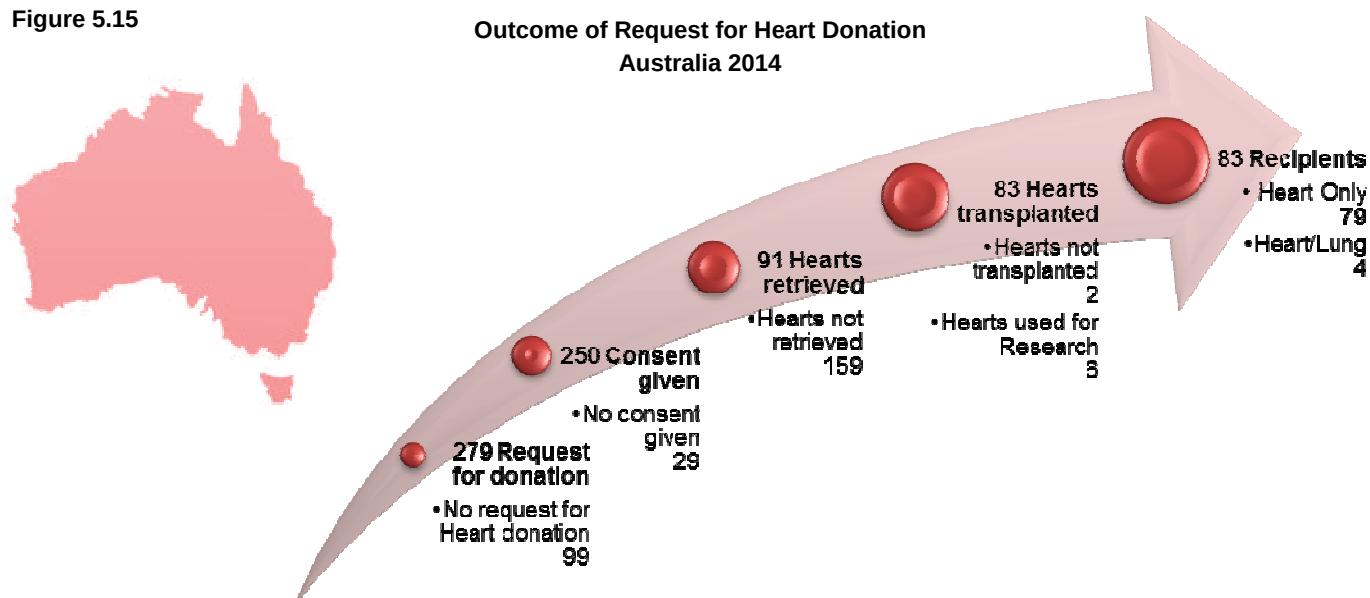
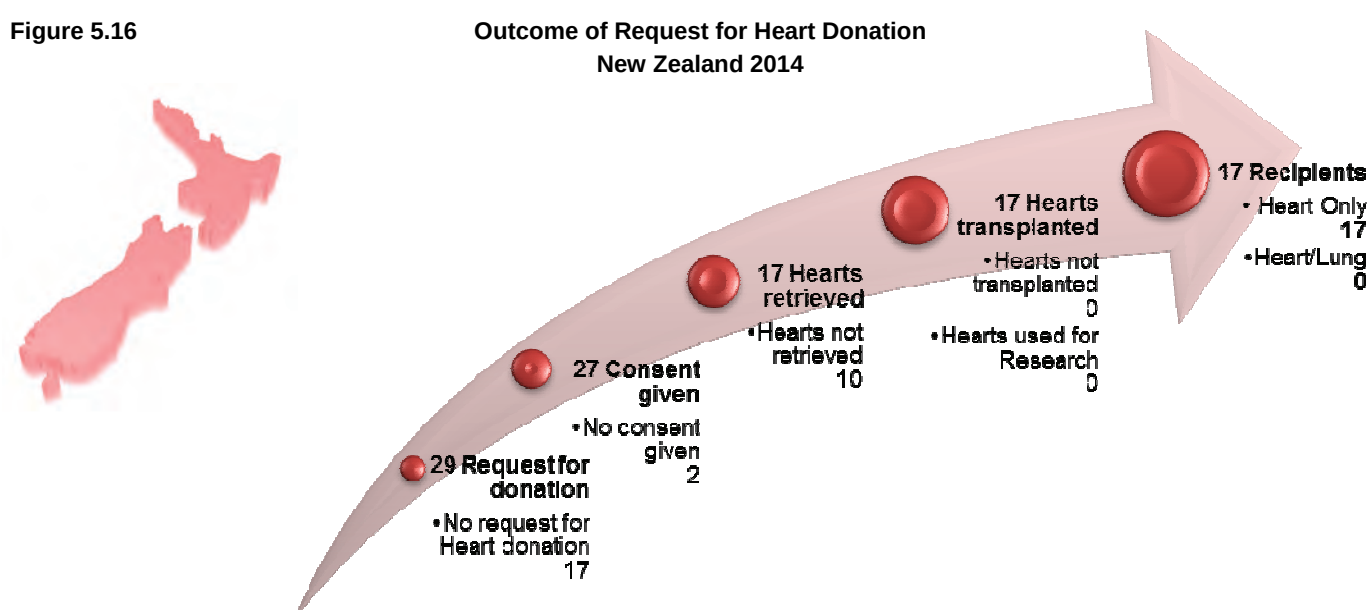


Figure 5.16

Outcome of Request for Heart Donation
New Zealand 2014



Figures 5.17 and 5.18 show the number of recipients of heart transplants in Australia and New Zealand respectively from 1998 to 2014. In Australia in 2014, the first heart transplant following donation after donor circulatory death was successfully performed.

Figure 5.17

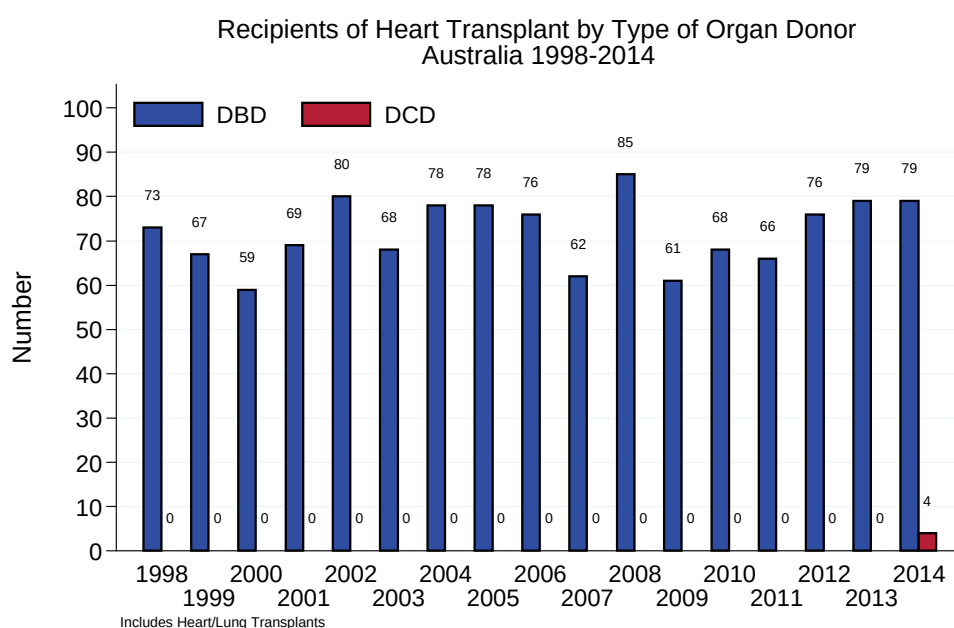
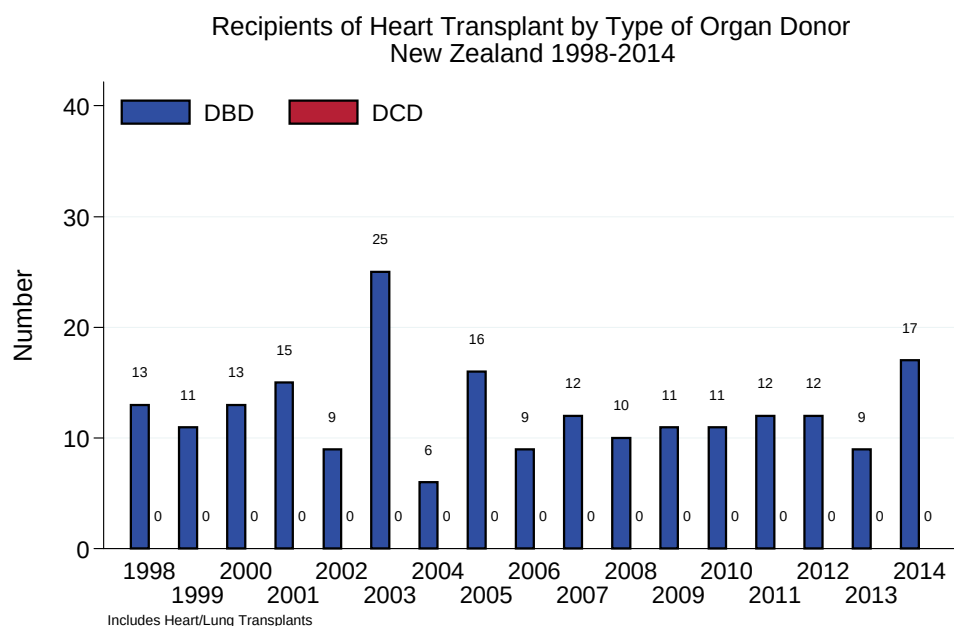


Figure 5.18



Organ Data 2014



Figures 5.19 and 5.20 show the number of heart transplant and heart-lung transplant recipients from Australia and New Zealand decreased donors from 2013 to 2014.

Figure 5.19

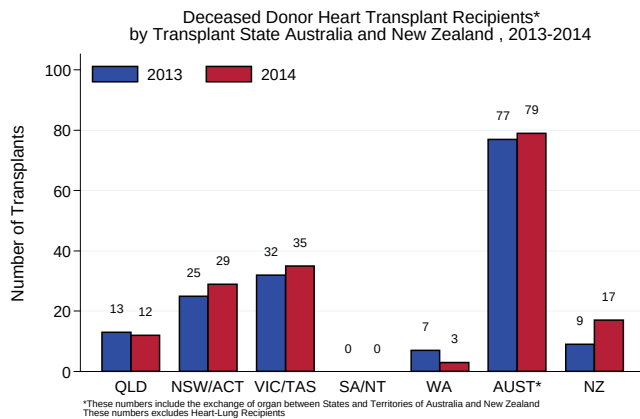
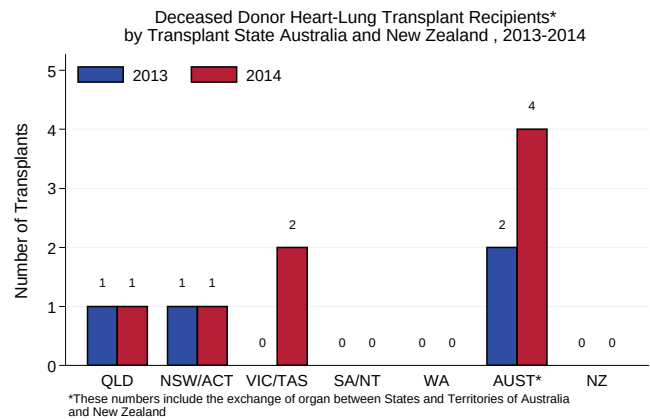


Figure 5.20



In 2014, there were 158 hearts not retrieved from Australian donors and 10 hearts not retrieved from New Zealand donors. For Australia, the main reason was due to the heart not being medically suitable (74) followed by age of donor (25), circulatory death preventing donation (24) and no suitable recipient for the heart (22).

In New Zealand, six hearts were not retrieved as there were no suitable recipients, three of the hearts were medically unsuitable and one heart was not retrieved due to logistics.

Table 5.4

Reasons Hearts Retrieved and Not Utilised for Organ Transplantation in Australia (New Zealand) 2010 - 2014						
Year	Logistics	Not Medically Suitable	Not Surgically Suitable	No Suitable Recipients	Other	Total
2010	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
2011	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
2012	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
2013	0 (0)	0 (0)	0 (0)	1 (0)	0 (0)	1 (0)
2014	0 (0)	2 (0)	0 (0)	0 (0)	0 (0)	2 (0)

Age of Heart Donors

The age of donors providing transplanted hearts for Australia and New Zealand are shown in Figures 5.20 and 5.21 respectively.

Figure 5.20

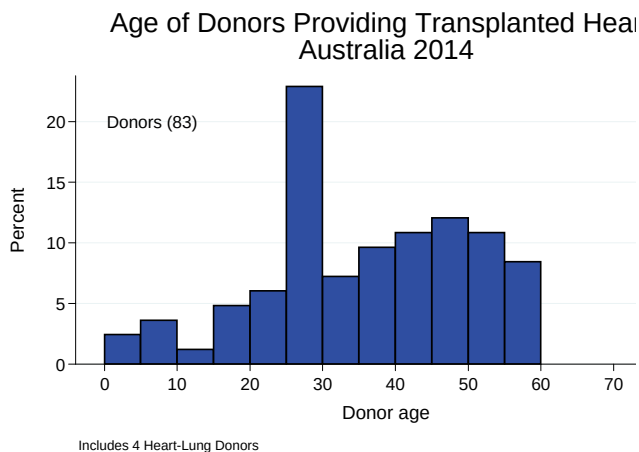
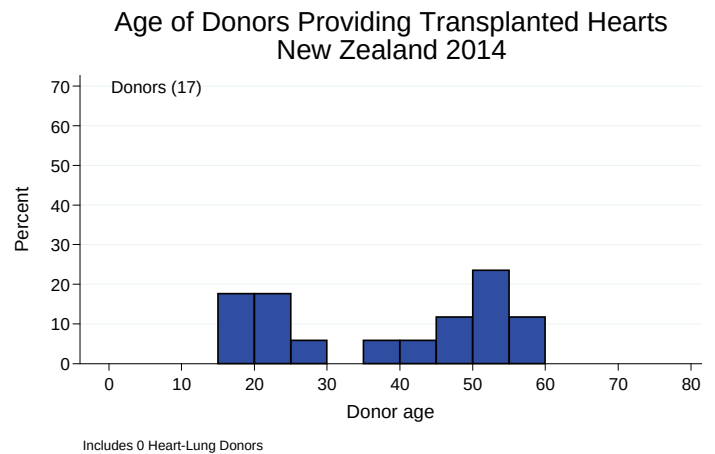


Figure 5.21



ECG and Echocardiogram

In Australia, 62 donors (74%) had a normal ECG and 71 of the 84 heart donors (84.5%) had a normal echocardiogram. In New Zealand, all 17 heart donors had a normal ECG and 15 had a normal echocardiogram.

Organ Data 2014

Lung Donation

In 2014, there were 163 lung transplant recipients, including four heart/double lung transplant recipients. This was an increase of almost 24.5% for the number of lung transplants recipients since 2009.

New Zealand performed 20 lung transplants in 2014. This included 19 double lungs transplanted and one single lung transplant.

Figures 5.22 and 5.23 show the outcome of request for heart donation in Australia and New Zealand for 2014 respectively.

Figure 5.22

Outcome of Request for Lung Donation Australia 2014

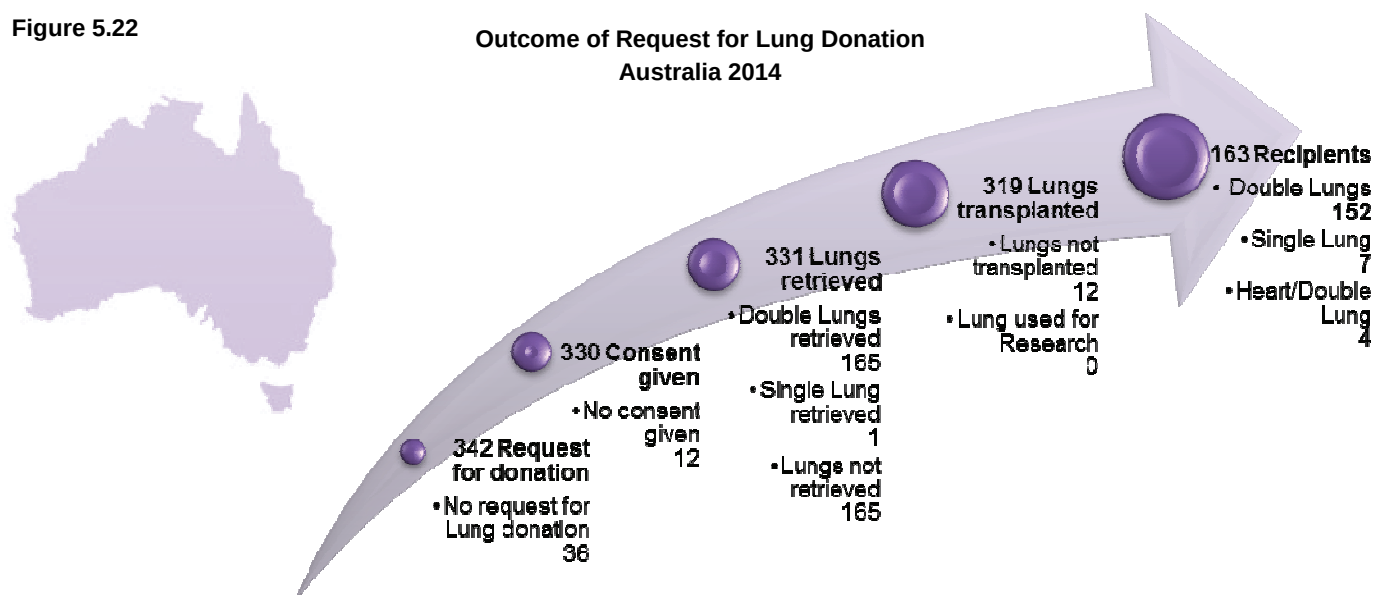
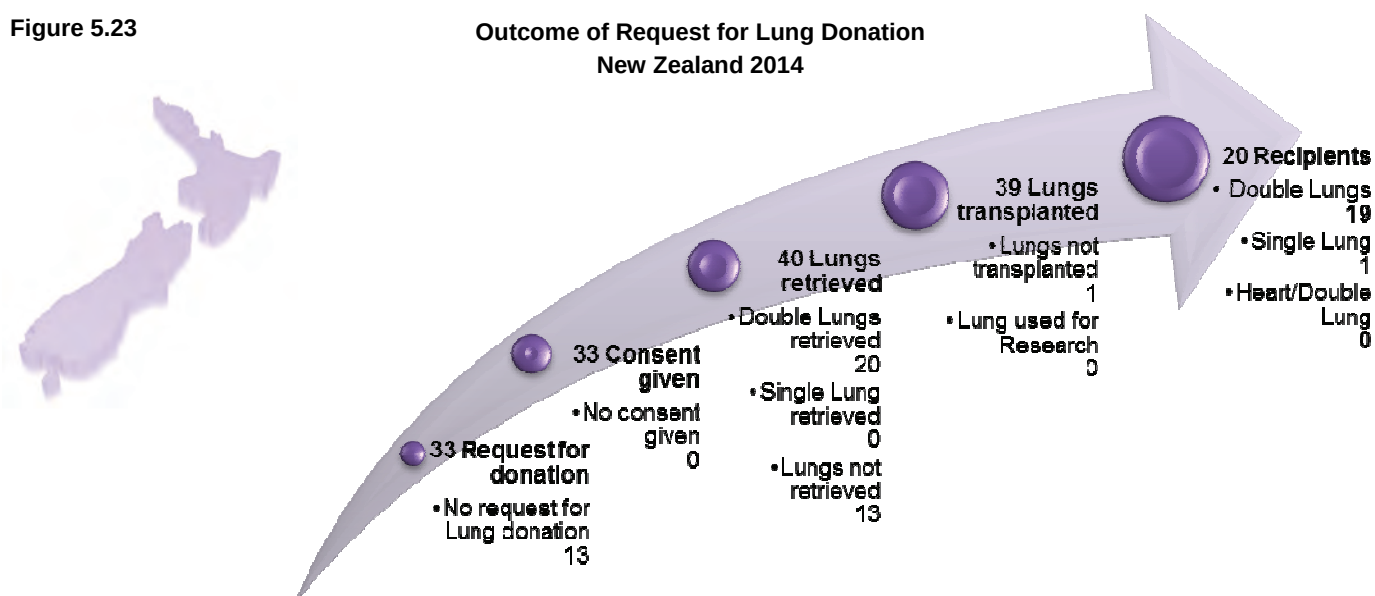


Figure 5.23

Outcome of Request for Lung Donation New Zealand 2014





Organ Data 2014

Figures 5.24 and 5.25 show the number of recipients of lung transplants in Australia and New Zealand respectively from 1998 to 2014.

Figure 5.24

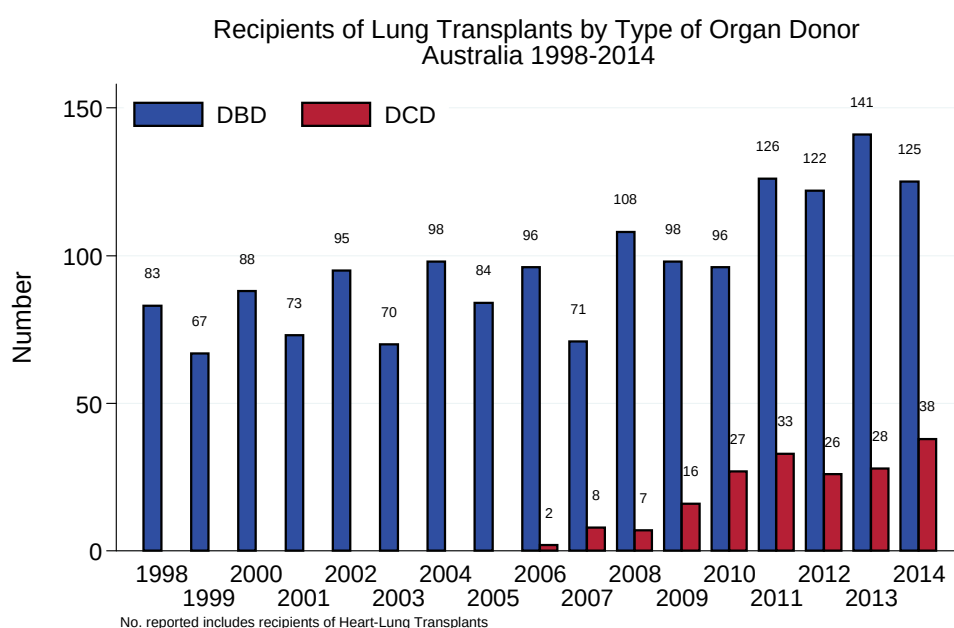
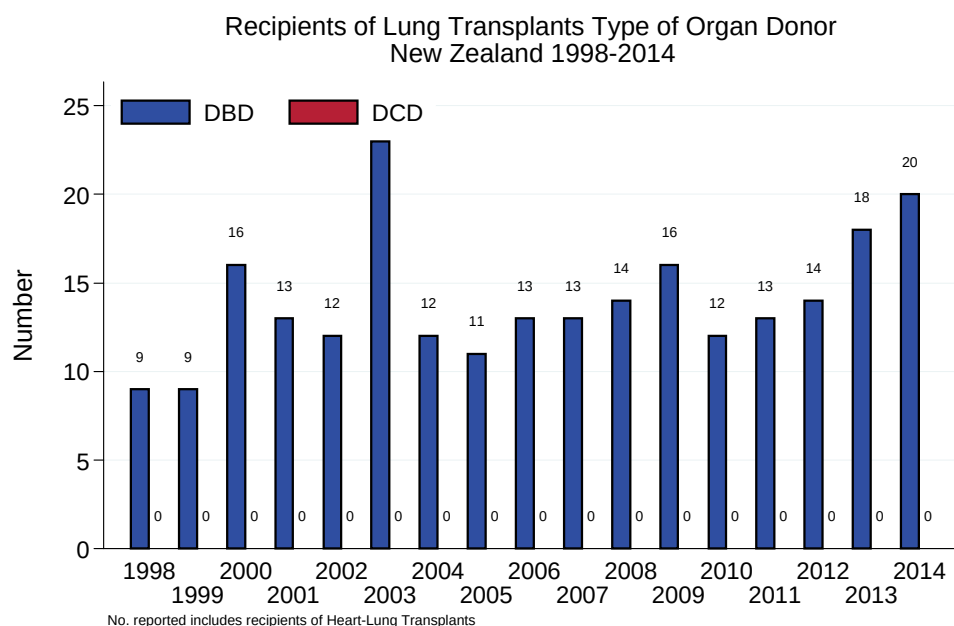


Figure 5.25

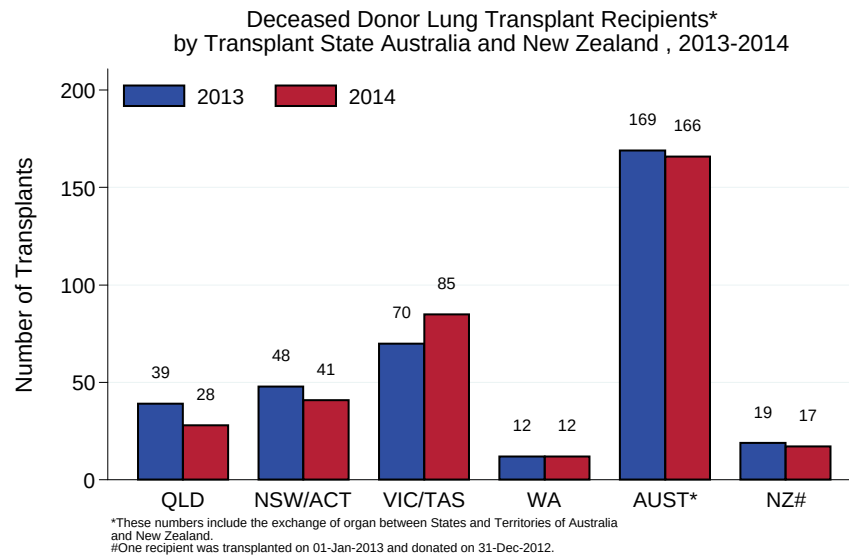


Organ Data 2014



Figures 5.26 shows the number of recipients for lung transplants by state Australia and New Zealand deceased donors from 2013 to 2014.

Figure 5.26



In 2014, there were 165 lungs not retrieved from Australian donors and 13 lungs not retrieved from New Zealand donors. For Australia, 112 lungs (68%) were not medically suitable, and in New Zealand, seven lungs (53%) were not medically suitable for transplantation.

Figure 5.5 shows the reasons lungs were not used from Australian deceased donors since 2010. In New Zealand, only one lung in 2009 was not transplanted, due to no suitable recipient being available.

Table 5.5

Reasons Lungs Retrieved and Not Utilised for Organ Transplantation in Australia (New Zealand) 2010 - 2014						
Year	Logistics	Not Medically Suitable	Not Surgically Suitable	No Suitable Recipients	Other	Total
2010	0 (0)	1 (0)	2 (0)	0 (0)	2 (0)	5 (0)
2011	0 (0)	1 (0)	0 (0)	0 (0)	1 (0)	2 (0)
2012	0 (0)	0 (0)	0 (0)	0 (0)	3 (0)	3 (0)
2013	0 (0)	4 (0)	0 (0)	0 (0)	0 (0)	4 (0)
2014	0 (0)	10 (1)	0 (0)	2 (0)	0 (0)	12 (1)

Age of Lung Donors

The age distribution of donors providing transplanted lungs for Australia and New Zealand is shown in Figures 5.27 and 5.28 respectively.

Figure 5.27

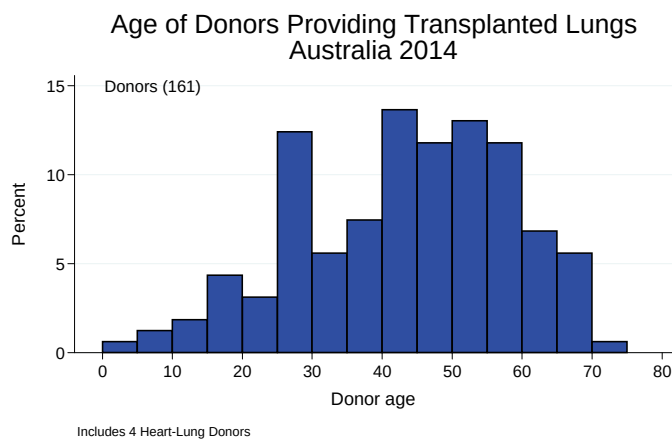
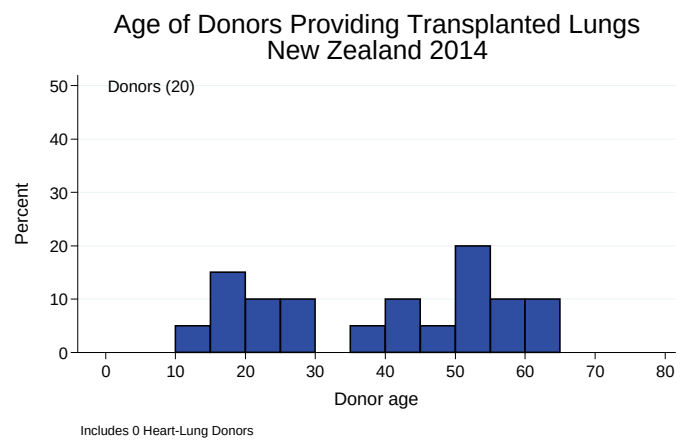


Figure 5.28



Donor Lung Function

In Australia, there were 140 lung donors (84.8%) who had a bronchoscopy in 2014. Sixteen donors had chest trauma; these included eight with a chest drain, five pneumothorax, with an contusions and one with fractured ribs. The arterial blood gases were taken on 100% FiO₂ and PEEP of 5 cm. Seventy donors had a PEEP > 5 cm (42.4%). The results from 166 lung donors in 2014 show 14.6% (24) to be acidotic (pH < 7.35) and 22.4% (37) to be alkalotic (pH > 7.45). Oxygenation measured as PaO₂ ranged from 43-930 mmHg with a median of 40 mmHg. PaCO₂ ranged from 4.70 - 54.0 mmHg with a median of 37.9 mmHg.

In New Zealand, there were four (22%) lung donors who had a bronchoscopy in 2013. No donors had chest trauma. All 18 lung donors had 100% FiO₂; six had a PEEP greater than 5cm. The arterial blood gas results from nine lung donors in 2013 show 39% (7) to be acidotic (pH < 7.35) and two donors (11%) to be alkalotic (pH > 7.45). Oxygenation measured as PaO₂ ranged from 39 - 539 mmHg with a median of 379 mmHg. PaCO₂ ranged from 30.0 - 329.00 mmHg with a median of 38.0 mmHg.

Organ Data 2014

Pancreas Donation

In 2014, there were 44 pancreas transplant recipients and 43 were recipients of combined kidney/pancreas transplants and one of a combined pancreas, liver and intestine transplant. The 44 pancreas transplants was an increase of 15.9% since 2009.

New Zealand performed 2 pancreas transplants in 2014 compared to no pancreas transplants in 2013.

Figures 5.29 and 5.30 show the outcomes of request for pancreas donation in Australia and New Zealand for 2014 respectively.

Figure 5.29

Outcome of Request for Pancreas Donation Australia 2014

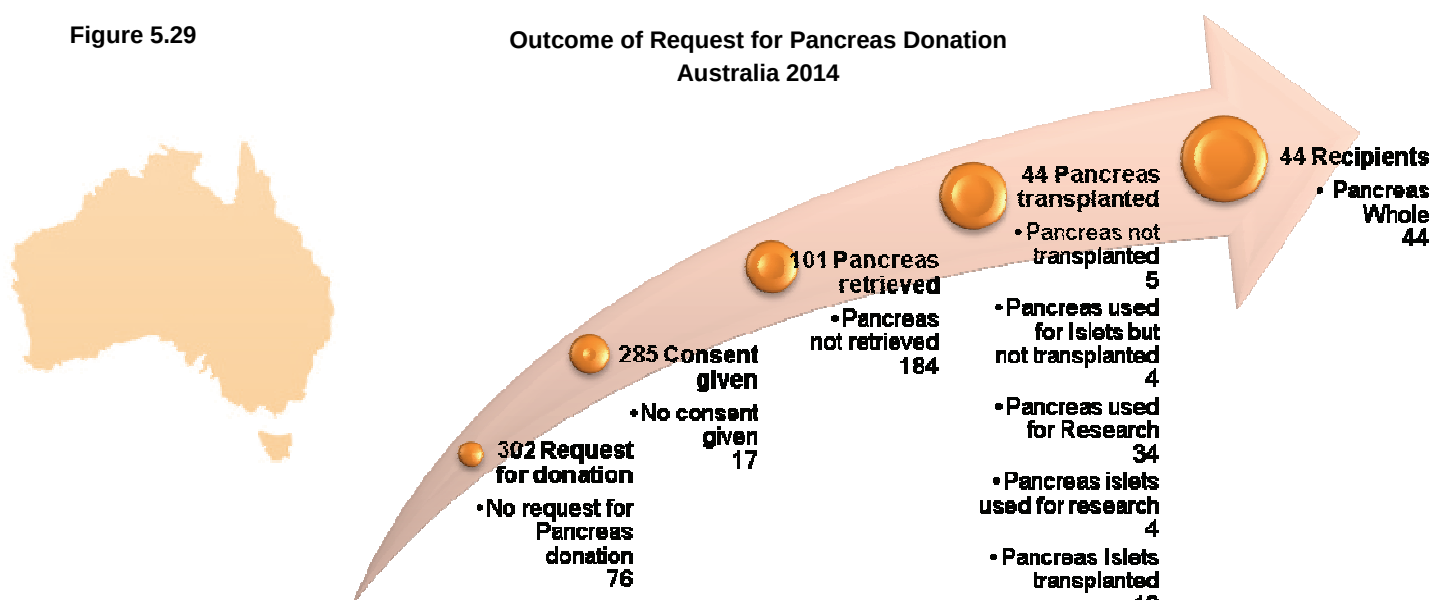
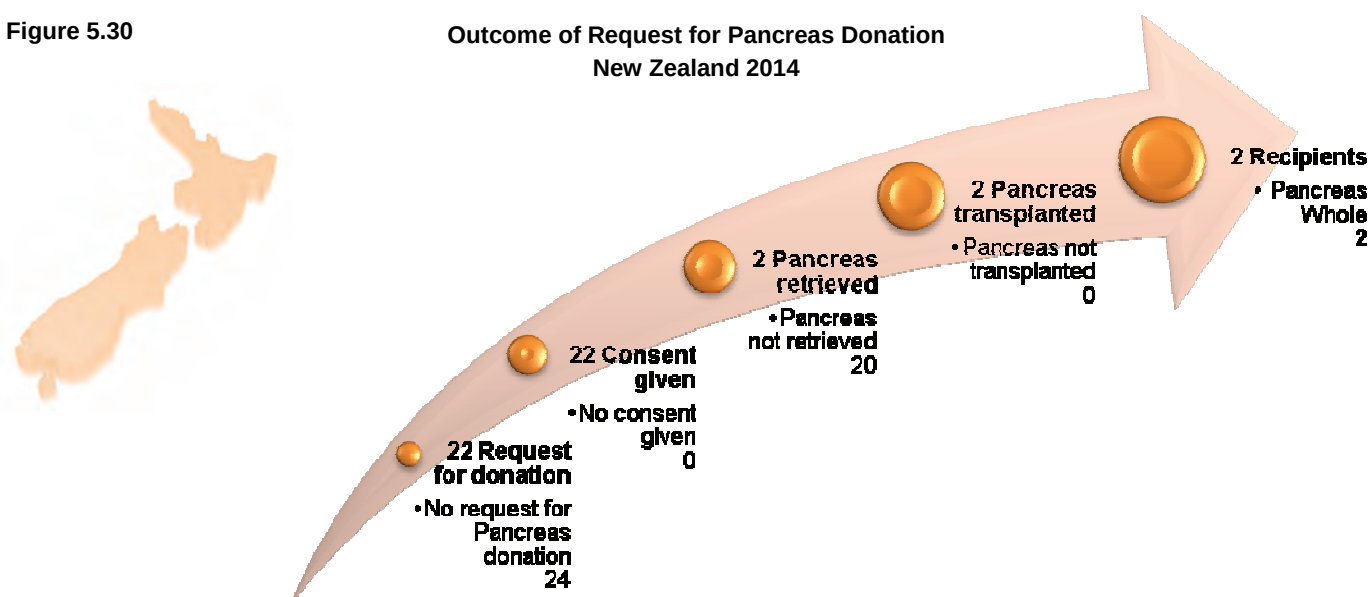


Figure 5.30

Outcome of Request for Pancreas Donation New Zealand 2014



Figures 5.31 and 5.32 show the number of recipients of pancreas transplants by donation pathway in Australia and New Zealand respectively from 1998 to 2014.

Figure 5.31

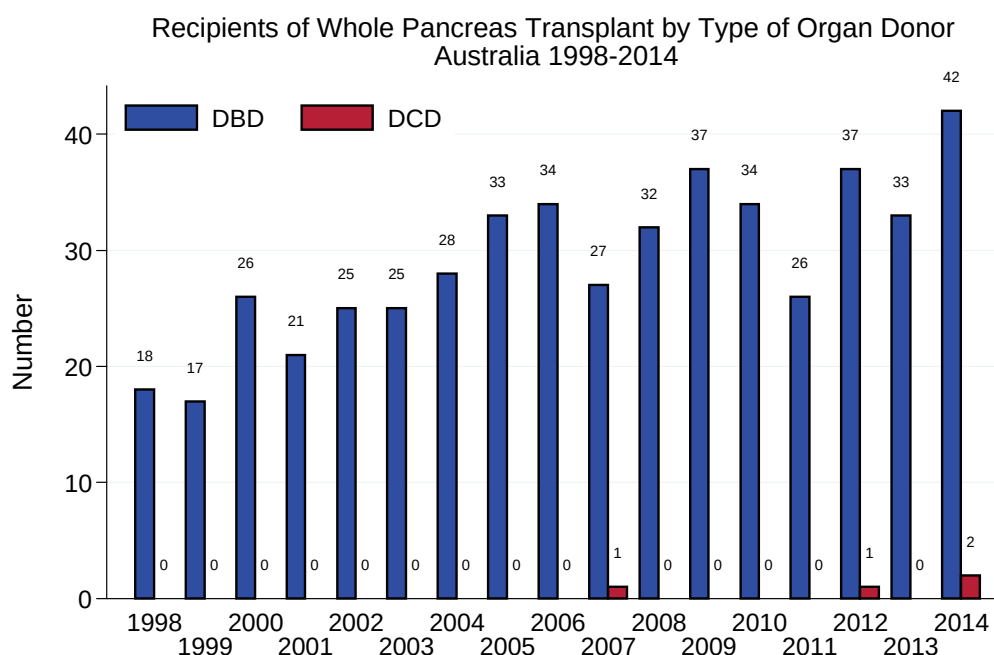
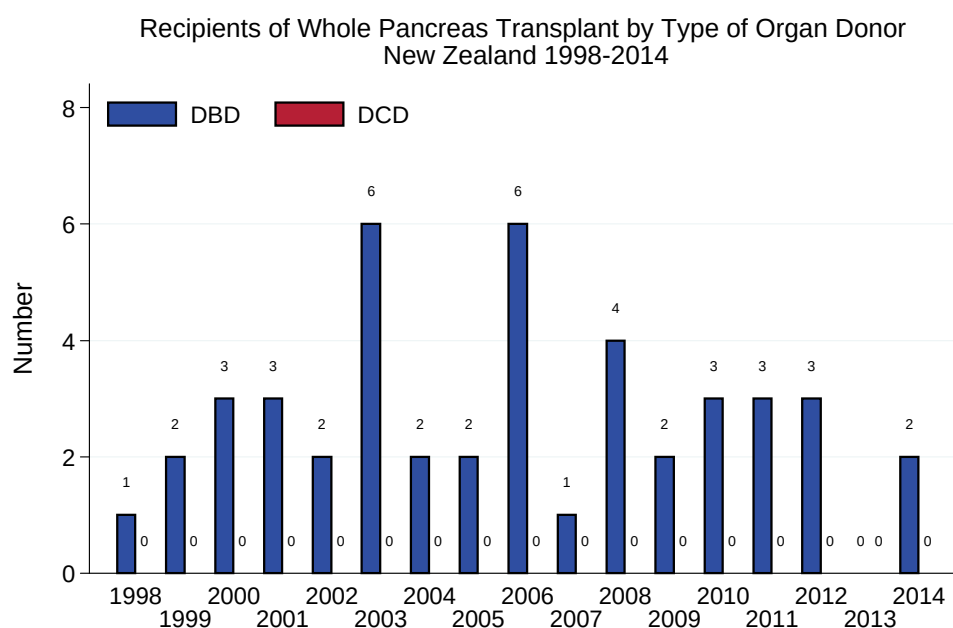


Figure 5.32

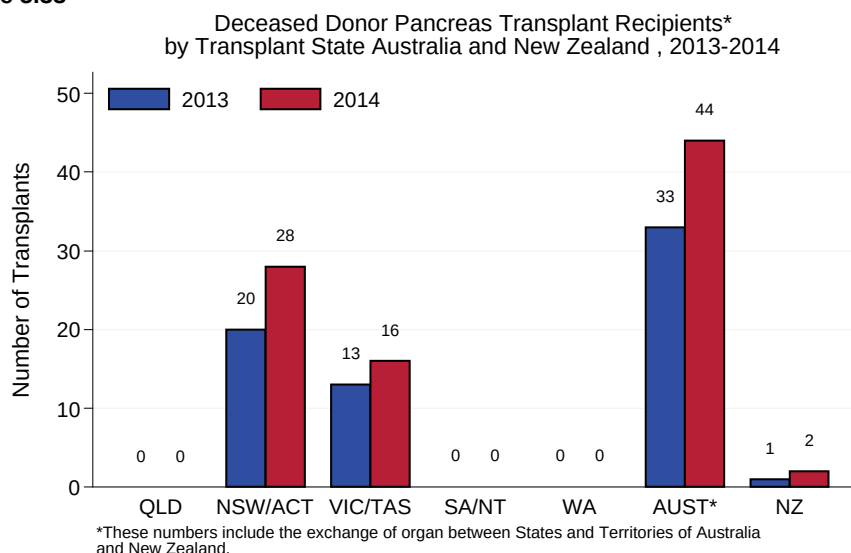


Organ Data 2014



Figures 5.33 shows the number of recipients of pancreas transplant recipients by Australia and New Zealand in 2013 to 2014.

Figure 5.33



In 2014, there were 184 pancreas not retrieved from Australian donors and 20 from New Zealand donors. For those pancreas not retrieved in Australia, 81 were not medically suitable, 53 due to age of donor, 19 due to no suitable recipient being available, 15 due to logistical issues, 11 a result of DCD donation, two surgically unsuitable, one not retrieved for other reasons and one consent withdrawn. In New Zealand, pancreas were not retrieved due to the age of donor (7), no suitable recipient being available (6), not medically suitable (5) and two a result of trauma to the organ.

One hundred and one donors in 2014 had pancreas retrieved in Australia, however 38 of those were not for the purpose of organ transplantation but rather retrieved for research purposes. In New Zealand, no pancreas retrieved from donors were used for research purposes.

Table 5.6 shows the reasons pancreas were not used from Australian and New Zealand deceased donors since 2010.

Table 5.6

Reasons Pancreas Retrieved and Not Utilised for Organ Transplantation in Australia (New Zealand) 2010 - 2014						
Year	Logistics	Not Medically Suitable	Not Surgically Suitable	No Suitable Recipients	Other	Total
2010	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	1 (0)
2011	0 (0)	0 (0)	0 (0)	1 (0)	0 (1)	1 (1)
2012	2 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (0)
2013	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	1 (0)
2014	0 (0)	2 (0)	1 (0)	0 (0)	0 (0)	3 (0)



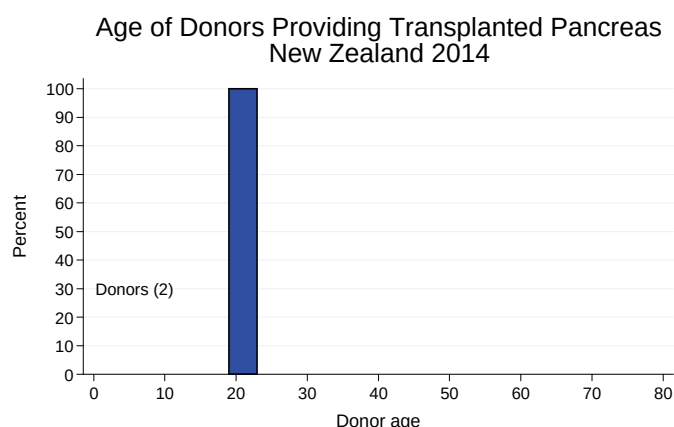
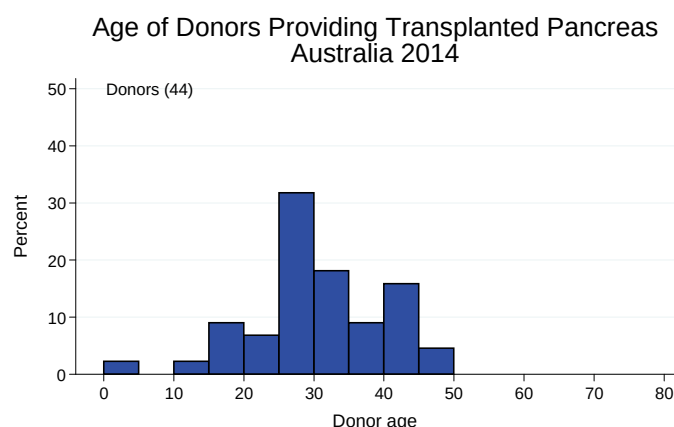
Organ Data 2014

Age of Pancreas Donors

The age distribution of donors providing transplanted pancreas for Australia and New Zealand is shown in Figures 5.32 and 5.35 respectively.

Figure 5.32

Figure 5.34

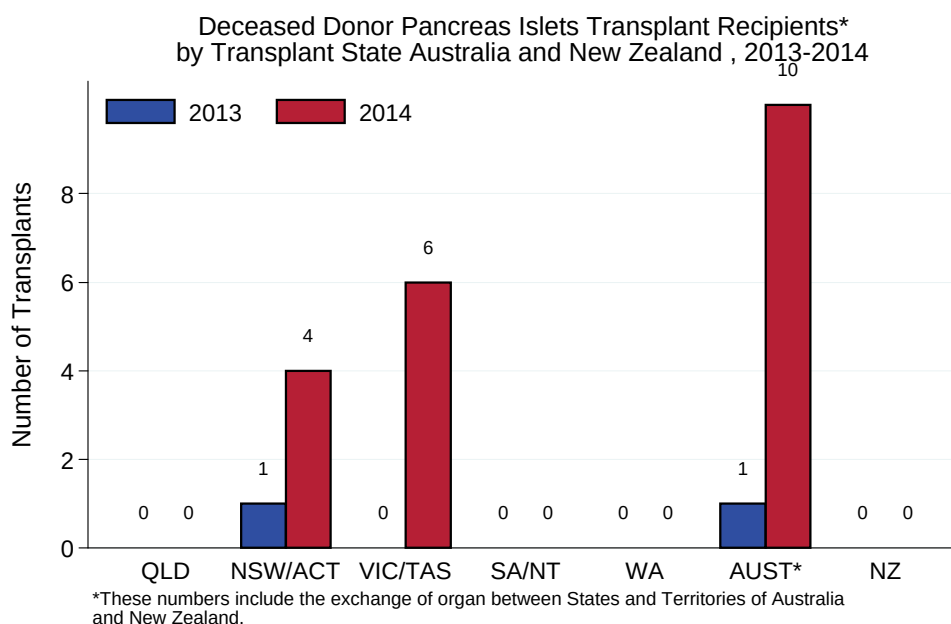


Pancreas Islets Donation

In Australia and New Zealand, the total number of pancreas islet transplants performed, since this experimental procedure began in 2002, is 79. In 2014, one person received a pancreas islet transplant combined with a kidney transplant procedure. Pancreas islets were not used for transplantation in six cases due to insufficient islets and a further four pancreas retrieved were used for pancreas islets research.

Figure 5.36 shows the pancreas islets transplant recipients from Australian and New Zealand deceased donors from 2013-2014.

Figure 5.36

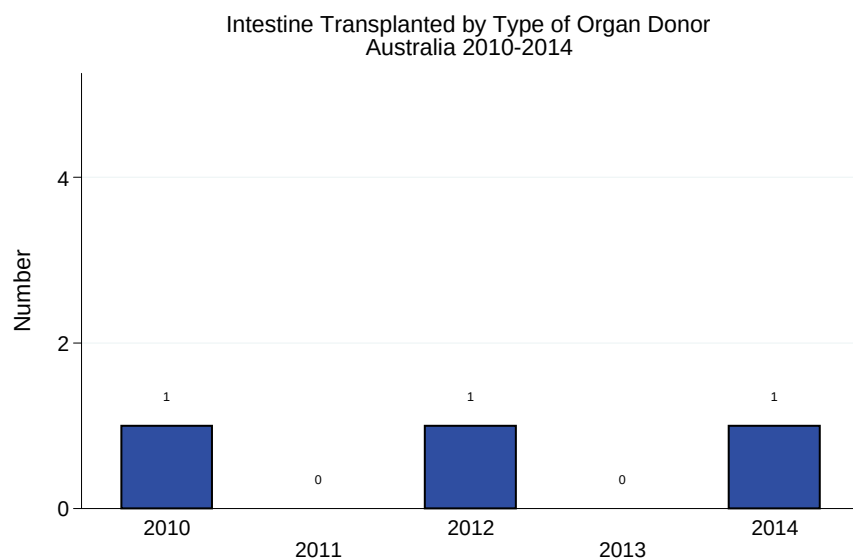


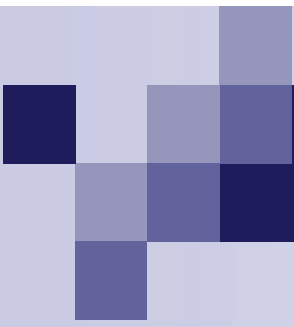
Intestine Donation

Adult and paediatric patients with irreversible intestinal failure and developing severe complications from parenteral nutrition can benefit from intestinal transplantation. Only three intestinal transplants have been performed in Australia; this is not yet a widespread treatment for irreversible intestinal failure.

The first successful intestinal transplant was performed at the Austin Hospital in Victoria, Australia in 2010. Subsequently there was one intestinal transplant in 2012 and another in 2014.

Figure 5.26





Chapter 6

Eye and Tissue Donation



2015
ANZOD Registry
Annual Report

Data to 31-Dec-2014



Eye and Tissue Data 2014

The continued partnership between the Australian Organ and Tissue Authority (OTA), jurisdictional tissue and eye banks and the ANZOD Registry has strengthened the national reporting of tissue data for 2014. This chapter presents the data on tissue and eye donation provided by banks across Australia, in conjunction with data collected within the solid organ donation sector.

The aim for the ANZOD Registry is to continue delivering accurate data for the tissue and eye sectors. The goals going forward include the collection of donor specific data with the allocation of a unique donor identification, capturing outcome data and terminology across agencies.

Collaboration with the Eye Bank Association of Australia and New Zealand (EBAANZ) is assisting the accurate reconciliation for reporting.

The following tissue banks contributed data:

- ACT** - ACT Bone Bank
- NSW** - Australian Biotechnologies
- Hunter New England Bone Bank
- NSW Bone Bank
- Rachel Forster Bone Bank
- Sydney Heart Valve Bank
- QLD** - QLD Bone Bank
- QLD Heart Valve Bank
- SA** - SA Tissue Bank
- VIC** - Barwon Health Bone Bank Geelong
- Donor Tissue Bank Victoria
- WA** - Perth Bone and Tissue Bank (PlusLife)
- Royal Perth Heart Valve Bank

The following eye banks contributed data:

- NSW** - Lions NSW Eye Bank
- QLD** - Queensland Eye Bank
- SA** - The Eye Bank of SA
- VIC** - Lions Eye Donation Service (Vic)
- WA** - Lions Eye Bank of WA
- NZ** - NZ National Eye Bank

Reported datasets and analyses produced here inform the discussions held by health care professionals, policy makers, consumers and individual agencies to optimise every potential donation opportunity and to increase access to life-transforming transplantation for Australians - See more at:

<http://www.donatelife.gov.au/organ-and-tissue-authority-ota>.

Eye and Tissue Data 2014

Tissue Donors

In 2014, tissue banks across Australia continued to provide data for 4,216 cardiovascular, musculoskeletal and skin tissue donations from a total of 3,980 tissue donors.

Figure 6.1 shows the number of tissue donors in each Jurisdiction (both living and deceased combined) for 2012, 2013 and 2014. Each total number excludes duplicate counts of donors that are also multi-organ and tissue donors or multi-tissue donors where the donor coordination is performed by another donation agency. This data is sourced from Australian tissue banks.

Figure 6.1

Number of Tissue Donors by Jurisdiction, 2012-2014

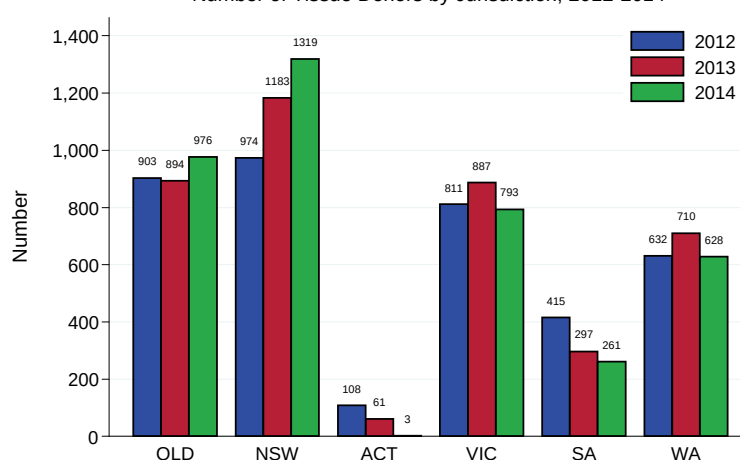


Table 6.1 shows the number of tissue donors, by donation pathway, by jurisdiction and the percentage change in donor numbers from 2013 to 2014. Nationally there was a 16% increase in the number of deceased tissue donors in 2014. Living tissue donor numbers decreased by 3% resulting in an overall reduction in tissue donors for 2014 compared to 2013.

Table 6.1

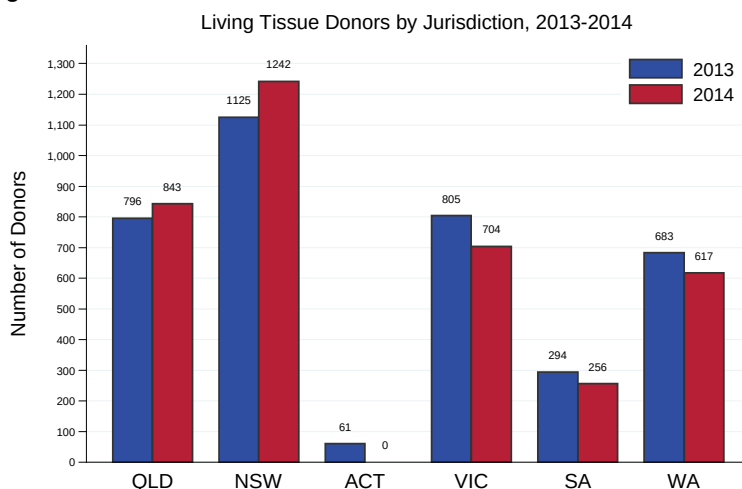
Number of Tissue Donors by Donation Pathway, Jurisdiction, 2013-2014				
Donor Pathway	Jurisdiction	2013	2014	Change in donation
Living Tissue Donor	QLD	796 (21.1%)	843 (23%)	6%
	NSW	1125 (29.9%)	1242 (33.9%)	9%
	ACT	61 (1.6%)	0 (0%)	0%
	VIC	805 (21.4%)	704 (19.2%)	-14%
	SA	294 (7.8%)	256 (7%)	-15%
	WA	683 (18.1%)	617 (16.8%)	-11%
	AUS	3764 (100%)	3662 (100%)	-3%
Deceased Tissue Donor	QLD	99 (36.9%)	133 (41.8%)	26%
	NSW	58 (21.6%)	77 (24.2%)	25%
	ACT	0 (0%)	3 (0.9%)	10%
	VIC	81 (30.2%)	89 (28%)	9%
	SA	3 (1.1%)	5 (1.6%)	40%
	WA	27 (10.1%)	11 (3.5%)	-145%
	AUS	268 (100%)	318 (100%)	16%
Total Donors	QLD	895 (22.2%)	976 (24.5%)	8%
	NSW	1183 (29.3%)	1319 (33.1%)	10%
	ACT	61 (1.5%)	3 (0.1%)	-95%
	VIC	886 (22%)	793 (19.9%)	-12%
	SA	297 (7.4%)	261 (6.6%)	-14%
	WA	710 (17.6%)	628 (15.8%)	-13%
	AUS	4032 (100%)	3980 (100%)	-1%



Eye and Tissue Data 2014

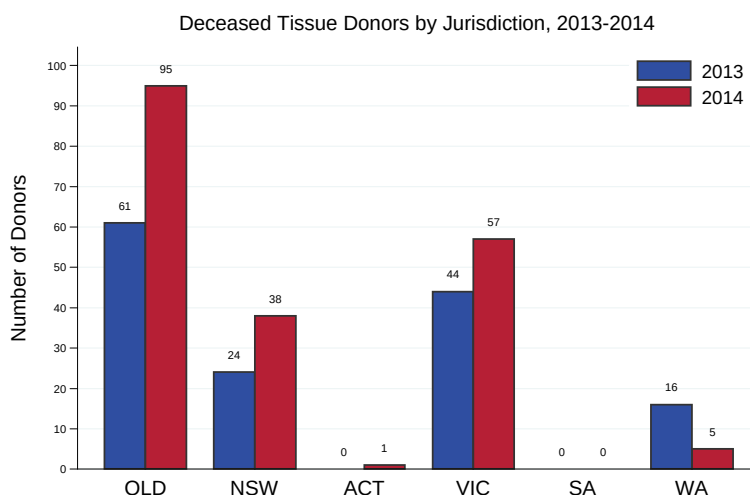
Among the 3,980 tissue donors in Australia during 2014, there were 3,662 living donors compared to 3,764 in 2013. Figure 6.2 shows the number of living donors by jurisdiction for 2013 and 2014. Five tissue banks in NSW accounted for 33.9% (1,242) of living tissue donors.

Figure 6.2



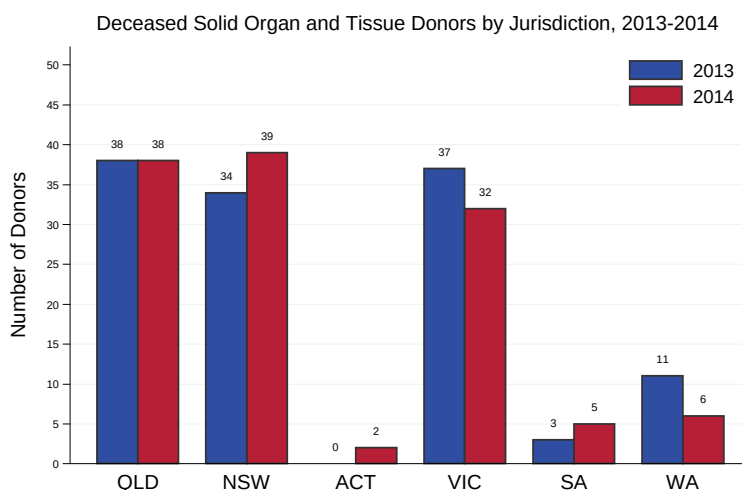
There were 318 deceased tissue donors in Australia in 2014, an increase of 18% from 268 in 2013. Figure 6.3 shows the breakdown by jurisdiction for 2013 and 2014. Of the 318 deceased tissue donors, 133 (41.8%) donors were reported by the two tissue banks located in QLD.

Figure 6.3



Of the 318 deceased tissue donors in Australia, in 2014, 122 (38%) were reported through the solid organ and tissue donation sector. These donors were referred by the DonateLife Network. Figure 6.4 provides the breakdown by jurisdiction in tissue donations from deceased solid organ and tissue donors for 2013 and 2014.

Figure 6.4



Eye and Tissue Data 2014

Donation of Tissue

The 3,980 tissue donors in Australia during 2014, accounted for 4,216 tissue donations. Of these 4,216 donations of musculoskeletal, cardiovascular and skin tissue, 3,704 (88%) were from live donors and 512 (12%) were tissue donations from deceased donors.

Figure 6.5 shows the breakdown by jurisdiction for the total number of tissue donations since the commencement of national tissue donation reporting and in 2012.

Figure 6.5

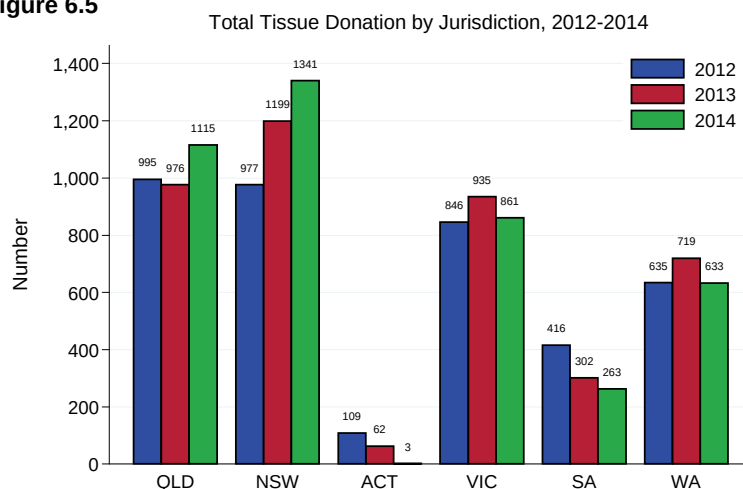


Table 6.2 provides the proportion of tissue donations by Jurisdiction by donor type for 2012-2014.

Table 6.2

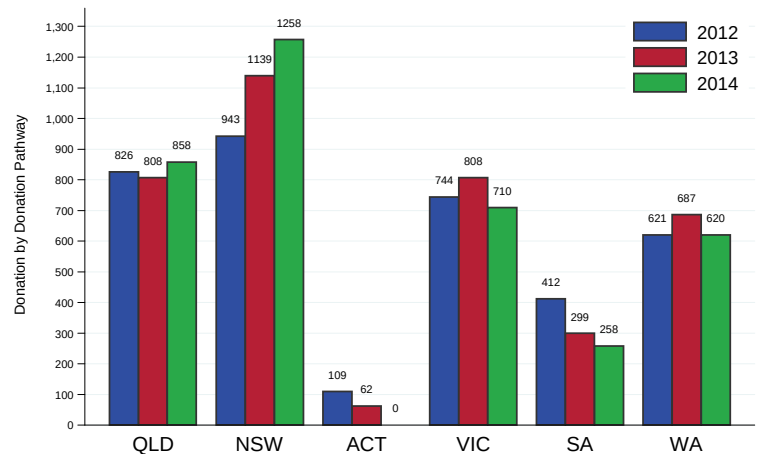
Number of Tissue Donations by Donor Type, Jurisdiction 2012-2014						
Donor Type	Jurisdiction	2012		2013		2014
Living Donor	QLD	826	(22.6%)	808	(21.2%)	858 (23.2%)
	NSW	943	(25.8%)	1139	(30%)	1258 (34%)
	ACT	109	(3%)	62	(1.6%)	0 (0%)
	VIC	744	(20.4%)	808	(21.2%)	710 (19.2%)
	SA	412	(11.3%)	299	(7.9%)	258 (7%)
	WA	621	(17%)	687	(18.1%)	620 (16.7%)
	AUS	3655	(100%)	3803	(100%)	3704 (100%)
Deceased Donor	QLD	169	(52.3%)	168	(43.1%)	257 (50.2%)
	NSW	34	(10.5%)	60	(15.4%)	83 (16.2%)
	ACT	0	(0%)	0	(0%)	3 (.6%)
	VIC	102	(31.6%)	127	(32.6%)	151 (29.5%)
	SA	4	(1.2%)	3	(.8%)	5 (1%)
	WA	14	(4.3%)	32	(8.2%)	13 (2.5%)
	AUS	323	(100%)	390	(100%)	512 (100%)
Total Donors	QLD	995	(25%)	976	(23.3%)	1115 (26.4%)
	NSW	977	(24.6%)	1199	(28.6%)	1341 (31.8%)
	ACT	109	(2.7%)	62	(1.5%)	3 (.1%)
	VIC	846	(21.3%)	935	(22.3%)	861 (20.4%)
	SA	416	(10.5%)	302	(7.2%)	263 (6.2%)
	WA	635	(16%)	719	(17.1%)	633 (15%)
	AUS	3978	(100%)	4193	(100%)	4216 (100%)



Eye and Tissue Data 2014

Figure 6.6

Tissue Donation by Living Donors by Jurisdiction, 2012-2014

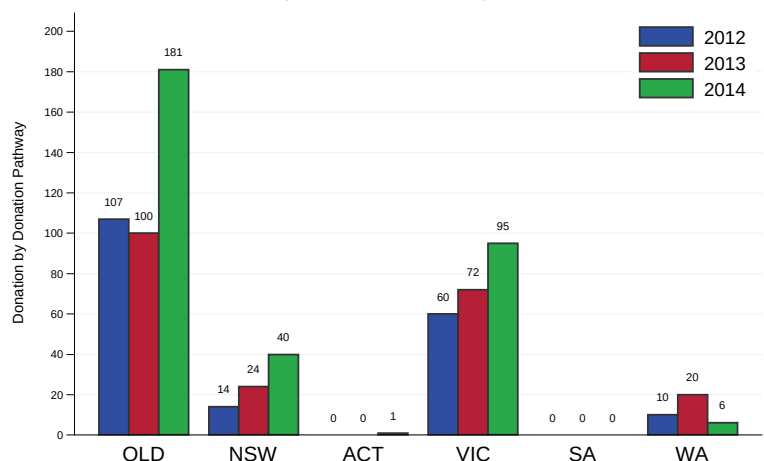


Figures 6.6 to 6.8 show the breakdown by living tissue, deceased tissue only and solid organ and tissue donation, by Jurisdiction, for the period 2012 to 2014.

Among the 3,704 living tissue donations in Australia during 2014, NSW and QLD recorded an increase in donation numbers compared to 2013, with NSW reporting 34% (1,258) of living tissue donations.

Figure 6.7

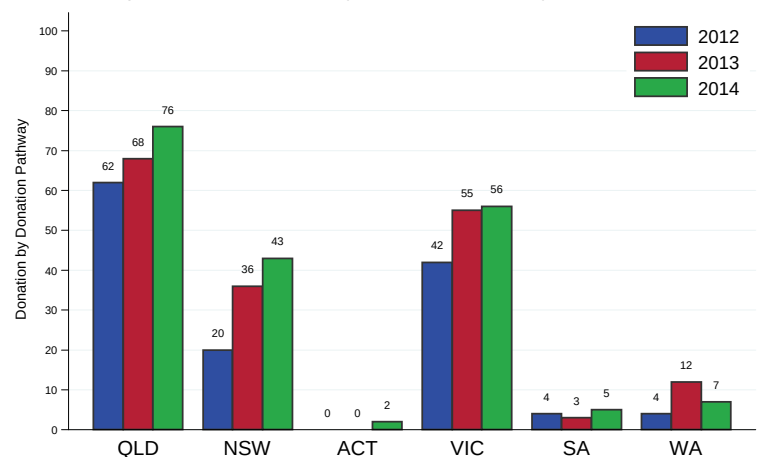
Tissue Donation by Deceased Donors by Jurisdiction, 2012-2014



Of the 512 tissue donations from deceased donors in 2014, 323 (63%) came from tissue only donors. Figure 6.7 shows the breakdown by Jurisdiction for 2012 to 2014. QLD reported 181 (56%) tissue only donations. This was an increase of 81 donors compared to 2013 (100).

Figure 6.8

Solid Organ & Tissue Donation by Deceased Donors by Jurisdiction, 2012-2014



Of the 512 deceased tissue donors in Australia, in 2014, 189 (37%) were reported through the solid organ and tissue donation sector. These donors were referred by the DonateLife Network. Figure 6.8 provides the breakdown by jurisdiction of tissue donations from deceased solid organ and tissue donors for the period 2012 to 2014.

Eye and Tissue Data 2014



Tissue Donation

Musculoskeletal donations can be in the form of bone, tendon and ligaments and are utilised for knee and hip replacements, reconstructive orthopaedic surgery following trauma or disease and spinal deformities and can aid in prevention of limb loss following tumour removal. Just one musculoskeletal donation can aid many recipients and greatly improve their quality of life.

Cardiovascular tissue incorporates donations of heart valves, pericardium and thoracic aorta. Heart valves are necessary to regulate the flow of blood to and from the heart, whereas pericardium can be used during neurosurgery or, like the thoracic aorta, can also be used for vascular repair of defects or injury.

Donated skin contributes to saving lives and improving long term outcomes for patients who suffer severe burns. Donated skin is essential when a patient's own skin cannot be used for grafting. Using donated skin as a wound "dressing" helps reduce infection, fluid loss and pain, promotes wound healing and minimises scarring. Often recipients will require more than one donated graft for their wounds to heal. Skin grafts are also used to treat wounds resulting from trauma and serious infection.

Deceased Donor Tissue Donation

The 512 tissue donations from deceased donors in 2014 included donations from tissue only and solid organ/tissue donors. This consisted of 203 musculoskeletal tissue, 144 cardiovascular tissue and 165 skin. Overall this is a 31% increase of deceased tissue donations compared to 2013. Table 6.3 shows the donation for tissue retrieved from deceased donors, by tissue type and donation sector. Sixty three percent (323) of tissue retrieved from deceased donors was from the tissue only sector, while 37% (189) was from the solid organ/tissue sector.

Table 6.3

Tissue Donation from Deceased Donors in 2014 by Jurisdiction and Donation Sector									
Jurisdiction	Tissue Only Sector			Solid Organ/Tissue Sector			Tissue Total		
	ms	cv	skin	ms	cv	skin	ms	cv	skin
QLD	78	29	74	27	21	28	105	50	102
NSW	32	8	0	14	29	0	46	37	0
ACT	0	1	0	0	2	0	0	3	0
VIC/TAS	27	20	48	16	25	15	43	45	63
SA	0	0	0	0	5	0	0	5	0
WA	4	2	0	5	2	0	9	4	0
AUSTRALIA	141	60	122	62	84	43	203	144	165
ms = musculoskeletal tissue cv = cardiovascular tissue									



Eye and Tissue Data 2014

In Australia during 2014, there were 203 musculoskeletal tissue donation from deceased donors. Figure 6.10 shows the number of musculoskeletal tissue donations by jurisdiction for the period 2012 to 2014. Fifty two percent (105) of the 203 musculoskeletal donations were reported by the QLD Bone Bank.

Figure 6.10

Musculoskeletal Tissue Donation by Deceased Donors by Jurisdiction, 2012-2014

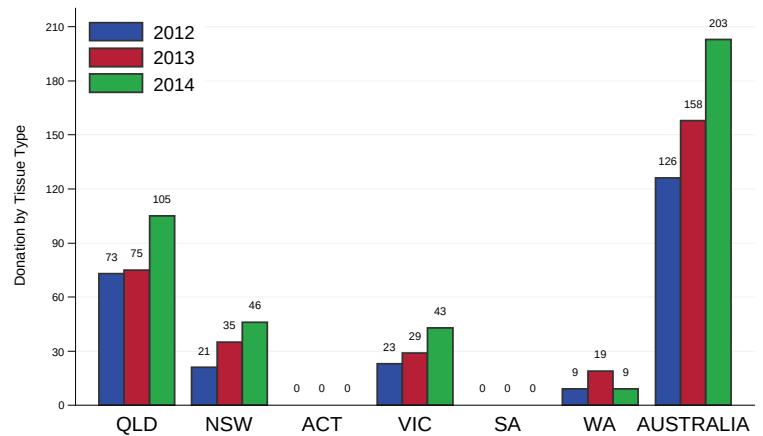


Figure 6.11

Cardiovascular Tissue Donation by Deceased Donors by Jurisdiction, 2012-2014

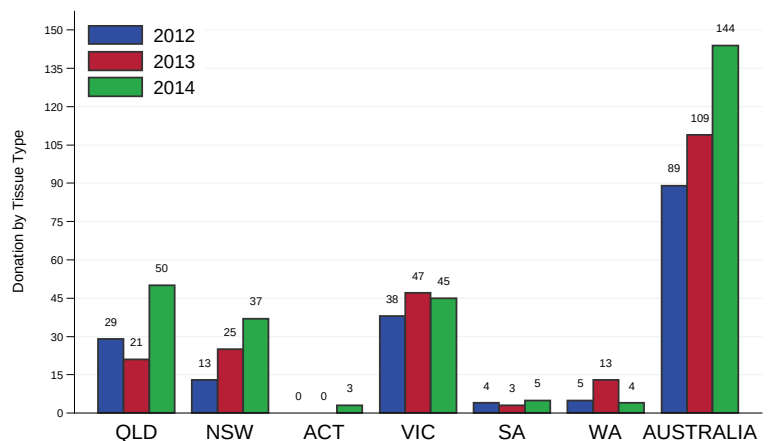
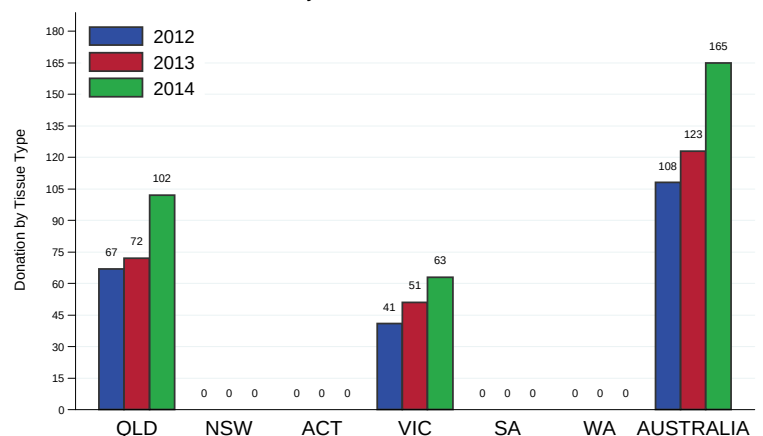


Figure 6.11 shows the breakdown by jurisdiction for cardiovascular tissue donation for the period 2012 to 2014. Ninety two percent all cardiovascular donation come from the eastern jurisdictions of Australia (QLD, NSW, VIC).

Figure 6.12

Skin Tissue Donation by Deceased Donors by Jurisdiction, 2012-2014



QLD and VIC are the only two jurisdictions with skin donation services. Figure 6.12 shows the breakdown of skin donations between the two jurisdictions for the period 2012 to 2014.

Eye and Tissue Data 2014



Tissue Donation from Living Donors

Tissue donations from living donors (88% of all donations) consisted predominately of musculoskeletal tissue, where 3,687 people donated femoral heads whilst undergoing hip replacement surgery.

Table 6.4 shows tissue donation from living donors. Seventeen living donors provided cardiovascular tissue, down from 20 in 2013. Tissue donation from living donors is managed by the tissue banks across Australia.

Table 6.4

Tissue Donation from Living Donors in 2014 by Jurisdiction and Donation Sector			
Jurisdiction	Musculoskeletal	Cardiovascular	Total
QLD	858	0	858
NSW	1243	15	1258
VIC	708	2	710
SA	258	0	258
WA	620	0	620
AUSTRALIA	3687	17	3704

Figure 6.13

Musculoskeletal Tissue Donation by Living Donors
by Jurisdiction, 2012-2014

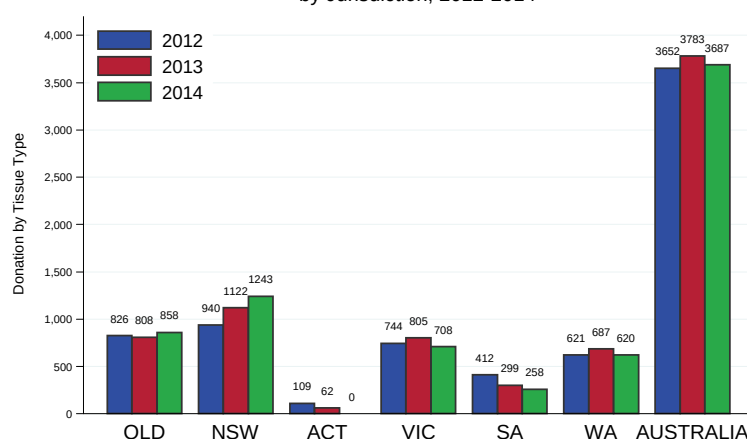


Figure 6.13 shows the numbers of musculoskeletal tissue donations from living donors by Jurisdiction for the period 2012 - 2014.

Figure 6.14

Cardiovascular Tissue Donation by Living Donors
by Jurisdiction, 2012-2014

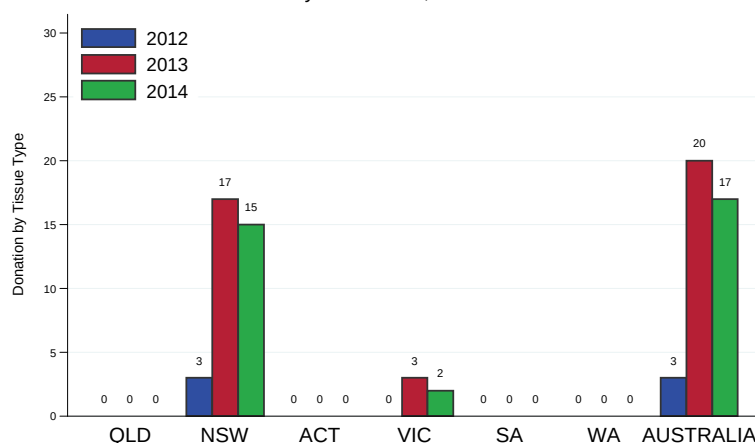


Figure 6.14 shows the number of cardiovascular tissue donation from living donors by Australian jurisdictions for the period 2012 - 2014.



Eye and Tissue Data 2014

Tissue Transplantation

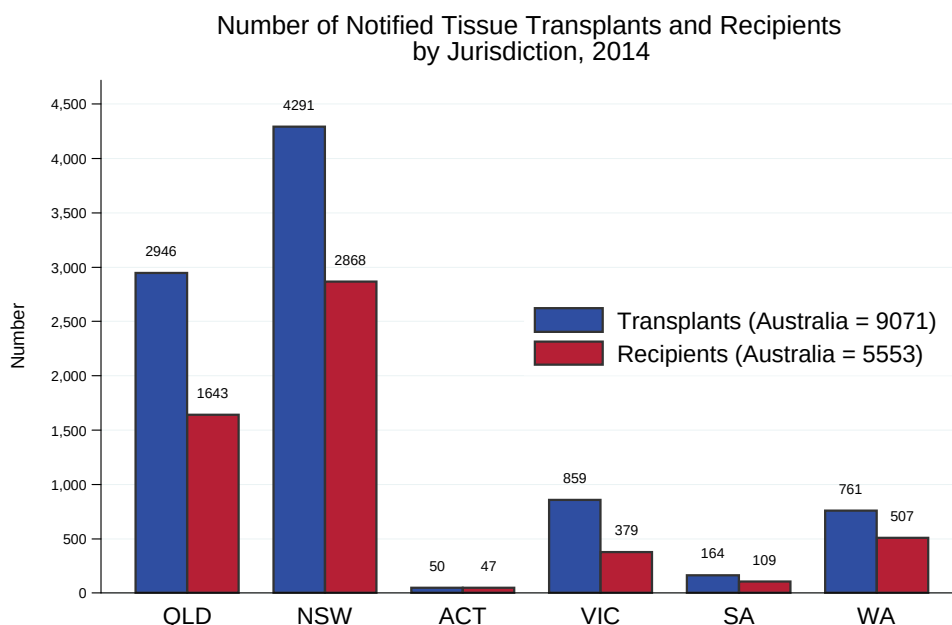
In 2014, national tissue reporting continued to strengthen with the consolidated collection and reporting of tissue donation outcomes by capturing tissue transplantation numbers in Australia. Tissue banks provided the number of notified graft tissue transplants and the number of notified recipients of tissue transplantation.

Musculoskeletal, cardiovascular and skin tissue donated for the purpose of transplantation can be stored for a period of time before a transplant occurs. Therefore the numbers reported for grafts and recipients of tissue, in this section, represent transplantation outcomes for the reporting period only, not the outcome of donations for the reporting period.

A tissue transplant recipient can receive one or more tissue grafts in one or more transplant events. Tissue transplantation counts are reported by tissue banks as the number of notified transplants and notified recipients from tissue retrieved by that tissue bank.

Figure 6.15 shows the number of notified^(1,2) tissue transplants (grafts) and recipients by Jurisdiction for 2014.

Figure 6.15



⁽¹⁾ Notified tissue transplant is defined as the "Number of grafts implanted into recipients, that banks have been notified of". ⁽²⁾ Notified tissue recipient is defined as the "Number of recipients notified to the bank, who receive one or more graft implants during a single transplant event".

Eye and Tissue Data 2014



Figure 6.16 Number of Notified Musculoskeletal Transplants and Recipients by Jurisdiction, 2014

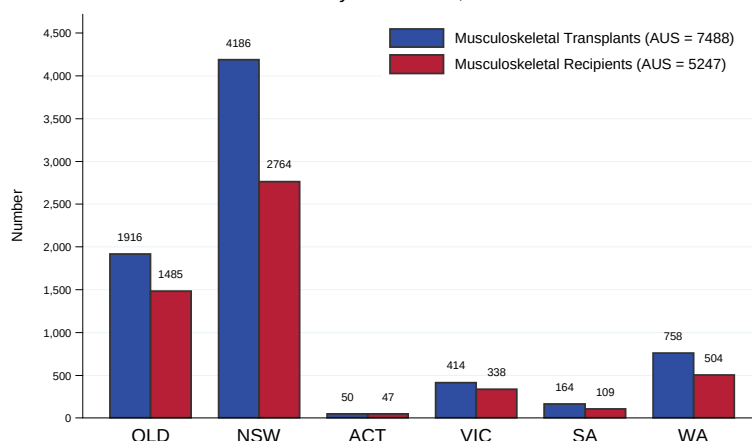


Figure 6.16 shows the number of notified^(1,2) musculoskeletal tissue transplants and recipients, by Jurisdiction, for 2014.

In Australia, there were 5,247 recipients who received 7,488 musculoskeletal transplants.

Figure 6.17 Number of Notified Cardiovascular Transplants and Recipients by Jurisdiction, 2014

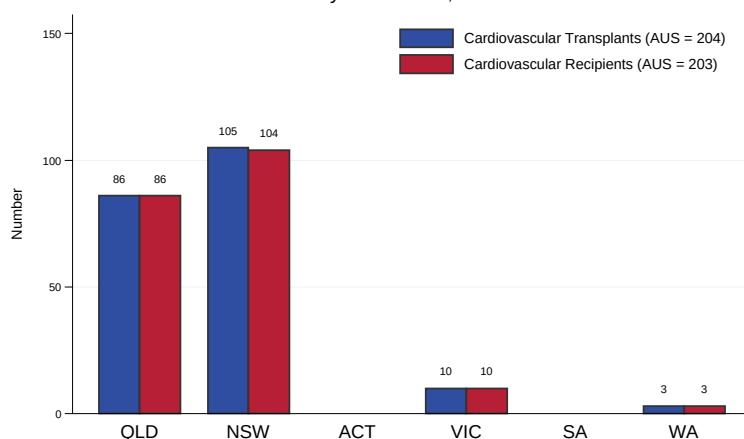


Figure 6.17 shows the number of notified^(1,2) cardiovascular tissue transplants and recipients by Australian Jurisdiction, for 2014.

In Australia, there were 203 recipients who received 204 cardiovascular transplants.

Figure 6.18 Number of Notified Skin Tissue Transplants and Recipients by Jurisdiction, 2014

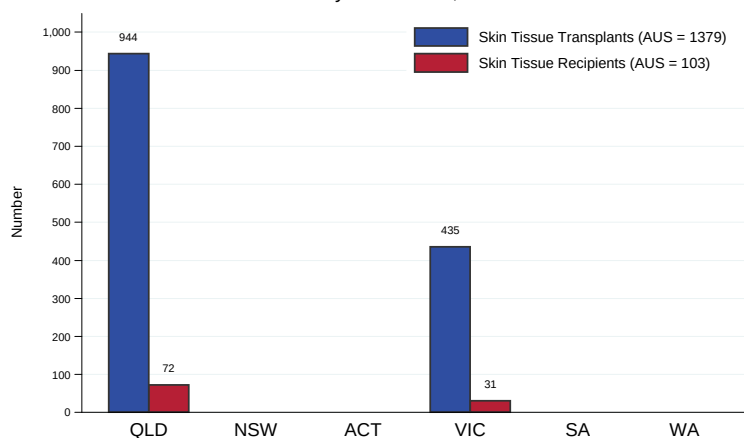


Figure 6.18 shows the number of notified^(1,2) skin tissue transplants and recipients by Jurisdiction, for 2014.

In Australia, there were 103 recipients who received 1,379 skin transplants.

⁽¹⁾ Notified tissue transplant is defined as the "Number of grafts implanted into recipients, that banks have been notified of". ⁽²⁾ Notified tissue recipient is defined as the "Number of recipients notified to the bank, who receive one or more graft implants during a single transplant event".



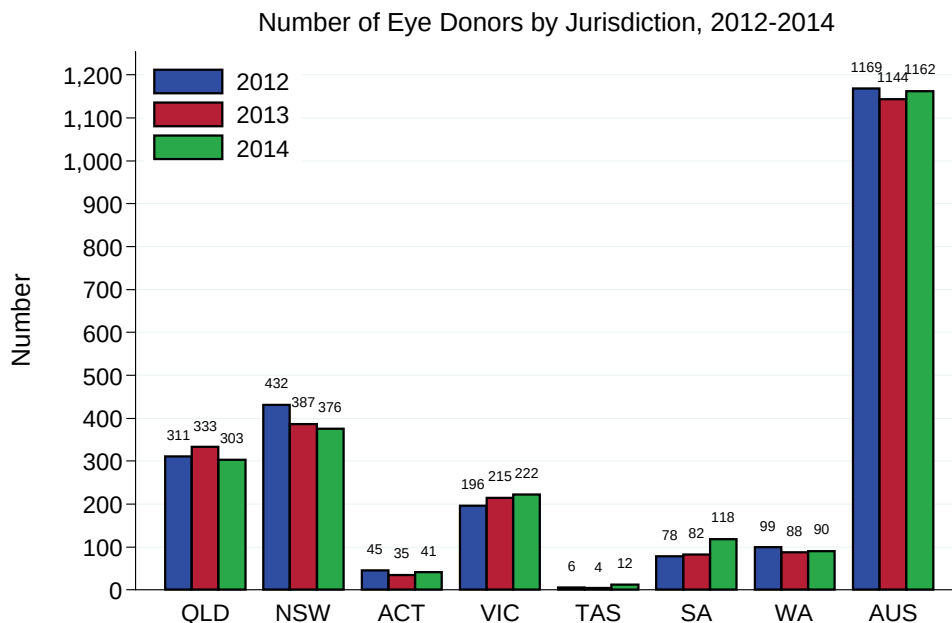
Eye and Tissue Data 2014

Eye Donors

In 2014, eye banks across Australia continued to report data to the ANZOD Registry for eye donation. Total numbers reported in this section may include duplicate counts of donors that are also multi-organ and tissue donors or multi-tissue donors, where the donor coordination was performed by another donation agency. Where there is no eye bank in a jurisdiction, eye donation is managed from a satellite Jurisdiction. This data is sourced from Australian eye banks in conjunction with EBAANZ.

Figure 6.19 represents the number of eye donors from each Australian Jurisdiction for the reporting period 2012 to 2014. In 2014 there were 1,162 eye donors, compared with 1,144 in 2013 and 1,169 in 2012.

Figure 6.19



Eye and Tissue Data 2014

Figures 6.20 to 6.23 represent the number of donors for jurisdictions, in 2014, by donor type.

In 2014 there were 908 eye only donors (Figure 6.20), 96 donors who donated eye and tissue (Figure 6.21), 61 donors who donated eye and one or more solid organs (Figure 6.22) and 97 donors who donated eye, tissue and one or more solid organs (Figure 6.23).

Figure 6.20

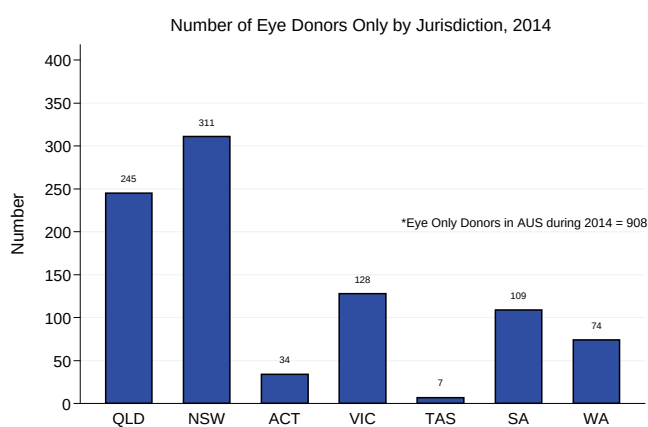


Figure 6.21

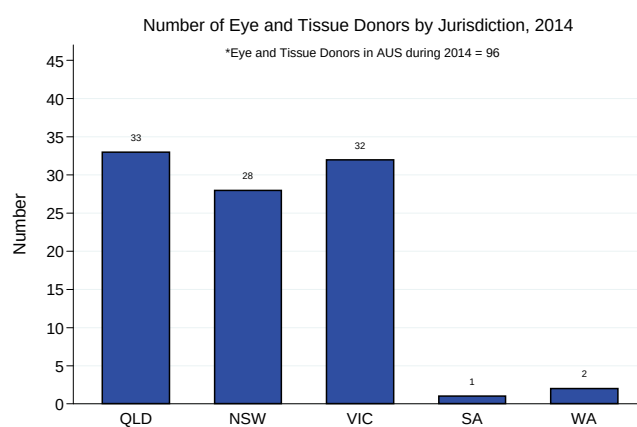


Figure 6.22

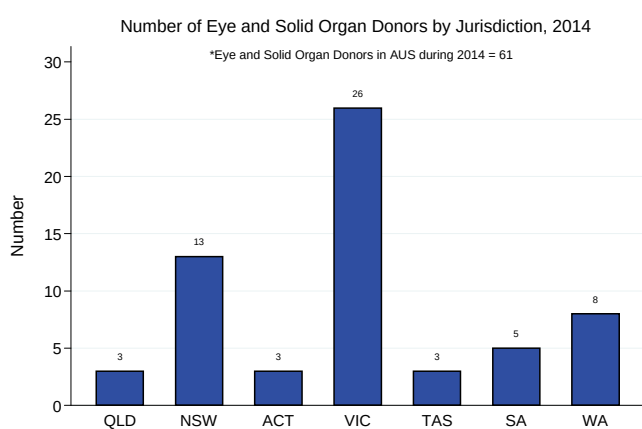
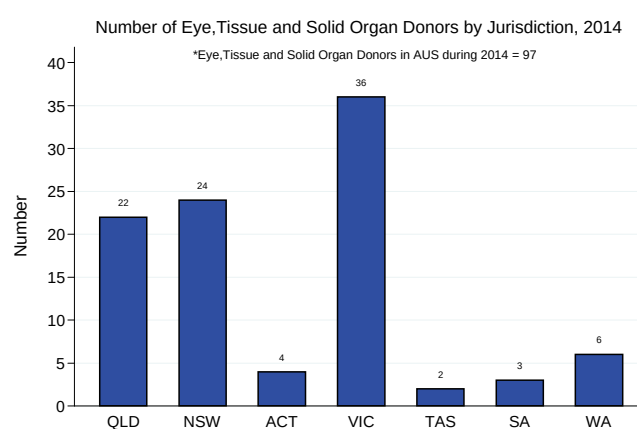
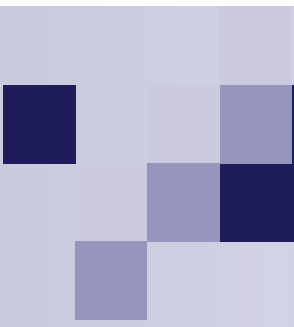


Figure 6.23





Chapter 7

Organ Waiting Lists in Australia and New Zealand



2015
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Organ Waiting Lists

This chapter brings together waiting list data for the various organs. This data is not directly collected by ANZOD, but has been provided by the relevant transplant outcome Registries. In many cases more detailed information is contained in the annual reports of the relevant transplant outcome Registries. There are, however, important general considerations in interpretation of waiting list data.

Firstly, waiting list data is not necessarily a good indicator of actual demand for transplantation. There are many people with organ disease for whom transplant is not the primary treatment option and who are not therefore placed on transplant waiting lists. There are many rules guiding eligibility for transplantation. For further advice please see the organ transplantation from deceased donors consensus statement on eligibility criteria and allocation protocols. (www.tsanz.com.au/organallocationprotocols/index.asp).

For example, listing on the kidney transplant waiting list requires an 80% expected survival at 5 years post transplantation.

Secondly, the reasons for removal from the waiting list also vary. In some cases an individual dies. In other cases (particularly cardiothoracic and liver waiting lists) they may be removed due to improving health; conversely removal may reflect deteriorating health such that the risks. Data regarding whether these people subsequently return to the waiting list, remain off the list, or die without returning to the list is not collected at this stage.

Thirdly, the waiting list data refers only to people on the “active” waiting list who would be transplanted immediately if an organ were available. For some organs, there are groups of patients who have been assessed but not yet activated on the waiting list, or who are temporarily removed or made “inactive”. For example patients may develop a medical problem that makes them temporarily or permanently unfit for transplantation.

Residents of Australia or New Zealand who have transplants performed abroad may not be reported to local transplant outcome Registries and may not impact on the wait list stock and flow.

For all organs, data is presented in a “stock and flow” format, examining the transitions on and off the waiting list over the period of a calendar year. It is possible those removed from the waiting list are subsequently re-listed. The figures in the tables refer to the lists at 1 January and 31 December of each year.



Organ Waiting Lists

Kidneys

Data for these waiting lists are derived from the from National Organ Matching System (NOMS) of Australia combined with material from the ANZDATA Registry. Some people in the deceased donor kidney waiting lists may receive a kidney from a living donor, though the majority of living kidney donor recipients are not in the waiting lists. A patient is deemed fit for transplantation and activated on the deceased donor transplant list but a living donor kidney can be made available prior to a diseased donor transplant taking place. These two groups are illustrated separately.

Data is currently available only for Australia. Negotiations are currently underway to extend to the inclusion of New Zealand data.

Figure 7.1

Australian Deceased Donor Kidney Waiting List Stock and Flow Totals 2008 - 2013							
	Event	2008	2009	2010	2011	2012	2013
Australia	Active start of year	1334	1252	1266	1185	1087	1073
	Made active	653	671	630	707	744	762
	Taken off list	182	178	149	199	153	140
	DD graft	417	401	499	533	554	581
	LD graft	122	64	58	62	45	54
	Overseas graft	2	4	1	2	0	1
	Died on list	12	10	4	9	6	3
	Active end of year	1252	1266	1185	1087	1073	1056
Classification is by year of death, not year of de-listing. If a de-listing is followed by a re-listing or a transplant from any source it is not counted as a death within 12 months of de-listing.							



Organ Waiting Lists

Liver

This table includes the waiting lists for both Australia and New Zealand. For liver transplantation, the waiting list is extracted from the Australia and New Zealand Liver Transplant Registry (ANZLTR) Annual Report, based on returns from transplanting centres. More detailed analyses can be found in the Report, at <http://www.anzltr.org/>.

Figure 7.2			
Australian and New Zealand Deceased Donor Liver Waiting List Stock and Flow Totals 2013 - 2014			
Country	Event	2013	2014
Australia	Active start of year	165	145
	Made active	317	347
	Taken off list	66	55
	Deceased donor transplant	248	234
	Died on list	24	16
	Active end of year	145	186
New Zealand	Active start of year	21	19
	Made active	43	56
	Taken off list	5	14
	Deceased donor transplant	31	38
	Died on list	5	2
	Active end of year	19	18

Organ Waiting Lists

Cardiothoracic Organs

Waiting lists for heart transplants, lung transplants and heart-lung transplants are collated by the Australia and New Zealand Cardiothoracic Organ Transplant Registry (ANZCOTR), based on reports from transplant units. The data in the tables are supplied by the ANZCOTR, and include both Australia and New Zealand wait list data. Further material for each organ is available in the ANZCOTR Annual Report at <http://www.anzcotr.org.au/>.

Heart

Figure 7.3

Australian and New Zealand Deceased Donor Heart Waiting List Stock and Flow Totals 2009 - 2014							
Country	Event	2009	2010	2011	2012	2013	2014
Australia	Active start of year	51	45	46	65	64	48
	Made active	96	89	107	92	91	127
	Taken off list	37	15	16	13	19	32
	Deceased donor transplant	60	65	65	73	77	78
	Died on list	5	8	7	7	11	5
	Active end of year	45	46	65	64	48	60
New Zealand	Active start of year	7	7	11	13	14	10
	Made active	15	19	20	19	18	18
	Taken off list	2	4	5	5	9	3
	Deceased donor transplant	11	11	11	12	9	17
	Died on list	2	0	2	1	4	0
	Active end of year	7	11	3	14	10	8



Organ Waiting Lists

Lung

Figure 7.4

Australian and New Zealand Deceased Donor Lung Waiting List Stock and Flow Totals 2009 - 2014

Country	Event	2009	2010	2011	2012	2013	2014
Australia	Active start of year	101	102	116	99	94	96
	Made active	150	167	182	171	206	223
	Taken off list	21	13	24	11	23	29
	Deceased donor transplant	122	126	162	149	169	166
	Died on list	6	14	13	11	13	14
	Active end of year	102	116	99	99	95	110
New Zealand	Active start of year	4	6	8	13	13	13
	Made active	11	17	17	24	21	18
	Taken off list	1	3	2	9	1	0
	Deceased donor transplant	8	9	10	12	19	17
	Died on list	0	3	0	4	1	1
	Active end of year	6	8	13	12	13	13

Organ Waiting Lists

Pancreas

Data for the pancreas transplant waiting list is derived from data supplied by hospitals to the Australian and New Zealand Pancreas and Islets Transplant Registry. It includes both people waiting for a combined kidney-pancreas transplant (the majority) and those waiting for a pancreas transplant (following a previous kidney transplant). It does not include people waiting for pancreas islet cell transplants.

Figure 7.5		
Australian & New Zealand Deceased Donor Pancreas Waiting List Stock and Flow Totals 2014		
Country	Event	2014
Australia	Active start of year	63
	Made active	38
	Taken off list	14
	Deceased donor transplant	43
	Died on list	5
	Active end of year	59
New Zealand	Active start of year	7
	Made active	3
	Taken off list	3
	Deceased donor transplant	2
	Died on list	1
	Active end of year	4

Suggested Citation:

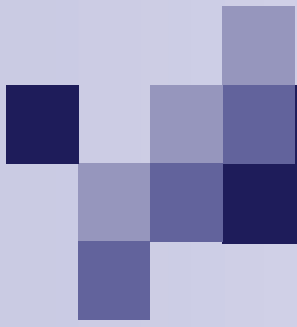
ANZOD Registry, 2015 Annual Report, Chapter 7: Organ Waiting Lists. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2015. Available at: <http://www.anzdata.org.au>

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Chapter 8

Organ Donation Outcome Data Australia and New Zealand



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Outcome Data

This chapter summarises the outcomes for the solid organ transplants performed in Australia and New Zealand and graft survival at 1 and 5 years.

For each organ, the concept of graft survival is similar: sufficient organ function to maintain life without other organ replacement therapy. Thus the endpoints for graft survival analyses are death or re-transplantation of organs. For kidneys, return to dialysis also indicates a loss of graft function, and for pancreas transplant the recommencement of insulin therapy.

Further information is available for each organ at the websites of the relevant transplant outcome registries (www.anzdata.org.au; www.anzltr.org; www.anzcotr.org.au; www.anziptr.org).

Kidney Graft Survival

Table 8.1 refer to recipients of primary kidney-only transplants from deceased donors and shows the proportion of grafts functioning at 1 and 5 years, calculated using the Kaplan-Meier method. Graft survival is not censored for death and is unadjusted.

Table 8.1

Kidney Graft Survival, All Grafts by Era				
Organ transplant type	Era	n	1 year % (95% CI)	5 year % (95% CI)
Kidney transplant (Australia) ¹	2006-2007	593	92 (89,94)	81 (77, 84)
	2008-2009	767	93 (91,95)	81 (78, 84)
	2010-2011	989	95 (93,96)	-
	2012-2013	1098	95 (93,96)	-
Kidney transplant (New Zealand) ¹	2006-2007	95	89 (81,94)	77 (67,84)
	2008-2009	95	97 (91,99)	87 (79,93)
	2010-2011	103	94 (87,97)	-
	2012-2013	104	97 (90, 99)	-

1. Source Australia and New Zealand Dialysis and Transplant Registry (ANZDATA) www.anzdata.org.au

Outcome Data



Cardiothoracic Graft Survival

Table 8.2 refers to all heart and lung transplants in Australia and New Zealand respectively, at 1 and 5 year survival post transplant for an era.

Table 8.2

Cardiothoracic Graft Survival, All Grafts by Era				
Organ transplant type	Era	n	1 year %	5 year %
Heart transplant (Australia) ²	2009	60	88.3	83.3
	2010	65	87.7	78.1
	2011	65	84.6	81.3
	2012	73	87.7	-
Heart transplant (New Zealand) ²	2009	11	90.9	90.9
	2010	11	81.8	72.7
	2011	11	90.9	81.8
	2012	12	91.7	-
Lung transplant (Australia) ²	2009	122	91	68.9
	2010	126	96.8	63
	2011	162	89.5	70.8
	2012	149	87.2	-
Lung transplant (New Zealand) ²	2009	8	75	62.5
	2010	9	100	66.7
	2011	10	100	87.5
	2012	12	58.3	-

2. Source Australia and New Zealand Cardiothoracic Organ Transplant Registry (ANZCOTR) www.anzcotr.org.au



Outcome Data

Liver Graft Survival

Table 8.3 refers to all primary liver transplants performed for an era, in Australia and New Zealand combined.

Table 8.3

Liver Graft Survival, All Grafts by Era				
Organ transplant type	Era	n	1 year %	5 year %
Liver transplant (Australia and New Zealand) ³	1995-1999	759	81	73
	2000-2004	915	88	79
	2005-2009	1032	90	80
	2010-2014	1331	91	83

3. Source Australia and New Zealand Liver Transplant Registry (ANZLTR) - www.anzltr.org.au

Pancreas Graft Survival

Table 8.4 shows pancreas survival (pancreas component of combined kidney-pancreas transplants) censored for death and includes all pancreas transplants performed for an era, in Australia and New Zealand combined.

Table 8.4

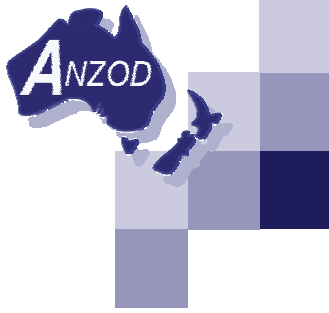
Pancreas Graft Survival, All Grafts by Era				
Organ transplant type	Era	n	1 year %	5 year %
Pancreas transplant (Australia and New Zealand) ⁴	1984-1999	151	80.5	74
	2005-2014	336	91.5	87.3

4. Source Australia and New Zealand Islets and Pancreas Transplant Registry (ANZIPTTR) - <http://anziptr.org/>

Glossary of Terms



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Glossary of Terms

Active Transplant Waiting List - This is the list of patients who have been through the assessment process and are fit and ready to receive a transplant. When a donor organ becomes available, the patient is included among those who are matched against the donor. It may sometimes be necessary to remove someone from the transplant list, either temporarily or permanently. This may be done, for example, if someone becomes too ill to receive a transplant. If a patient is suspended from the list, they are not eligible to receive a transplant and are not included in the consideration of any donor organs that become available.

Actual Donor - Definitions for this term can vary. The World Health Organisation consider an "Actual deceased organ donor" is a consented eligible donor from whom at least one organ was recovered for the purpose of transplantation. Historically the ANZOD Registry has used a slightly different definition of "a person from whom the retrieval operation is commenced for the purpose of transplantation". This includes donors who may be deemed medically unsuitable at time of surgery or after removal of organs.

Allocation - refers to the algorithm and process for determining to whom (from the waiting list of potential recipients) a given donated organ is offered. The algorithms determining allocation are pre-determined by a consensus process, and are available at the TSANZ website (www.tsanz.com.au).

Australia and New Zealand Organ Donation Registry (ANZOD Registry). The Registry collects and reports data for deceased organ donors. Data has been collected since 1989 in Australia and 1993 in New Zealand.

Body Mass Index (BMI) - is a calculation used as a measure of obesity (in adults). It is calculated as the quotient of weight and the square of height, in units of kg/m^2 .

Bone - Dense calcified tissue that forms the skeleton and supports the body. Bone can be donated and transplanted.

Brain Death - Brain death occurs when the brain function at all level is totally and irreversibly lost. This is determined by specialist doctors using a series of legally defined tests.

Cardiac (or circulatory) Death - Occurs when a person's heart stops and cannot be resuscitated. As with brain death, there is no recovery from cardiac death.

Cardiovascular (CV) Tissue - Cardiovascular tissue refers to heart valves which are necessary to regulate the flow of blood to and from the heart (see Heart Valves). Cardiovascular tissue can be donated and transplanted.

Cornea - The transparent outer covering of the eye's iris and pupil, forming the lens of the eye. Corneas can be donated and transplanted to restore sight for people with damaged corneas.

Deceased Donor - An individual from whom at least one solid organ is recovered for the purpose of transplantation after suffering brain death or cardiac death

Deceased Donor Transplant - The transplant of an organ, multiple organs or tissue from a deceased donor.

Glossary of Terms



Donation - The act of giving organ(s), tissue(s), or blood to someone else without compensation.

Donation after Brain Death (DBD)- Donation of human organ(s) and/or tissue(s) for transplantation that occurs after Brain death has been certified.

Donation after Circulatory Death (DCD) - Donation of human organ(s) and/or tissue(s) for transplantation that occurs after the circulatory system has stopped and cardiac death certified. Acronym is DCD.

Double Adult Kidney Transplant - describes dual kidney transplantation from a marginal adult deceased donor, where both kidneys are implanted separately with separate anastomoses into the one recipient.

En bloc Kidney Transplant - describes the transplant of both kidneys retrieved together with aorta as a single item. These are obtained from paediatric donors typically under 15 kg in weight, into a single recipient and using the donor aorta and vena cava for vascular anastomosis.

End-Stage Organ Disease - A disease that leads, ultimately, to permanent, complete failure of an organ to function. Some examples are emphysema (lungs), cardiomyopathy (heart), and polycystic kidney disease (kidneys).

Graft Survival - The length of time an organ functions successfully after being transplanted. The end-points for calculations of grafts survival are either loss of graft function (for example, return to dialysis or retransplantation) or the death of the patient

Heart - A muscular organ that pumps blood through the body. The heart can be donated and transplanted.

Heart Valves (HV) - Prevent the back flow or leakage of blood as it is being pumped through the chambers inside of the heart. Heart valves can be donated and transplanted.

Intended Donor - Definitions for this term can vary. An intended organ donor is a person for whom the donation work was initiated as evidenced by both:

- 1) Formal written consent undertaken, including consent for donation of specific organ+/- tissues, and
- 2) Blood for tissue typing sent with allocation of a donor number;

but donation did not proceed. Historically the ANZOD Registry has used a slightly different definition, "A person from whom authority has been given or volunteered, but organ donation did not proceed. (eg positive virology, cardiac arrest, further investigations discovered cancer, infection etc.)"

Intestines - The portion of the digestive tract extending from the stomach to the anus, consisting of the stomach, the upper segment (small intestine) and lower segment (large intestine.) The intestines can be donated and transplanted.

Intestinal transplants - A transplant carried out in a patient with intestinal failure who requires a transplant.



Kidneys - A pair of organs that maintain proper water and electrolyte balance, regulate acid-base concentration, and filter metabolic waste which is excreted as urine. Kidneys can be donated by deceased and living donors to be transplanted.

Living Donor - A person who donates an organ or tissue while alive.

Liver - A large reddish-brown organ that secretes bile and is active in the formation of certain blood proteins and in the metabolism of carbohydrates, fats, and proteins. The liver, like the kidneys, assists in the removal of waste and toxins from the blood stream. The liver can be donated by deceased donors, and a liver lobe (section) can be provided by a living donor to be transplanted. The donor's liver will grow to full size, and the transplanted lobe will too.

Lungs - The organs that enable breathing to take place, providing life-sustaining oxygen to the body and its organs. Air is inhaled into the lungs and oxygen in the air is exchanged for carbon dioxide which is then exhaled. The exchange happens in the blood as it circulates through the sponge-like lung tissue. The lungs can be donated and transplanted. Lung transplantation can refer to single lung, double lung or even a heart-lung transplantation. A lung lobe can also be donated by a live donor.

Multi-organ transplant - A transplant in which the patient receives more than one organ.

Musculoskeletal (MS) Tissue - Musculoskeletal tissue refers to bone, tendon and ligaments and related products and is utilised for knee and hip replacements, reconstructive orthopaedic surgery following trauma or disease, spinal deformities and can aid in prevention of limb loss following tumour removal.

National Organ Matching System (NOMS) - A national database maintained by the Australian Red Cross of all patients waiting for an organ transplant.

Organ - A part of the body, made up of various tissues, which performs a particular function. Transplantable organs are: heart, intestines, liver, lungs, kidneys, and pancreas.

Organ Donation - To give an organ or a part of an organ to be transplanted into another person. Organ donation can occur with a deceased donor, who can give kidneys, pancreas, liver, lungs, heart, intestinal organs, and with a live donor, who can give a kidney or a portion of the liver, lung, or intestine.

Organ Preservation - Methods used to maintain the quality of organs between removal from the donor and transplantation into recipient. These methods include preservation solutions, pumps, and cold storage. Preservation times can vary from 2 to 48 hours depending on the type of organ being preserved.

Pancreas - Long, irregularly shaped gland that lies behind the stomach. Some glands in the pancreas secrete insulin. Pancreas transplants give patients with diabetes a chance to become independent of insulin injections. In addition to insulin, the pancreas secretes digestive enzymes (into the small intestine) that aid in the digestion of proteins, carbohydrates, and fats. Pancreas can be donated and transplanted.

Pancreas Islets - are clusters of *pancreatic* cells that sense blood sugar levels and release insulin to maintain normal levels. Pancreas islets are endocrine tissue located in the pancreas. Pancreas Islets can be donated and transplanted.



Patient survival rate - The percentage of patients who are still alive (whether the graft is still functioning or not). This is usually specified for a given time period after transplant. For example, a three-year patient survival rate is the percentage of patients who are still alive three years after their first transplant.

Recipient - In the context of organ and tissue transplantation, this is the patient receiving the donated organ or tissue.

Request - Where families of suitable donors are asked to give consent to their loved one's organs and tissues to be used for transplant.

Retrieval - The surgical procedure of organ recovery. Also referred to as procurement.

Skin - This is the largest organ of the body and has several different functions (e.g., protection from infection, fluid balance, cooling). Skin grafts can save the life a burn victim and can provide severely scarred individuals with a better quality of life.

Split liver - A split liver transplant occurs when the donor liver is divided into segments and then transplanted. These segments may be transplanted into more than one recipient, or a segment could be transplanted into a child for whom an entire adult liver would be too large.

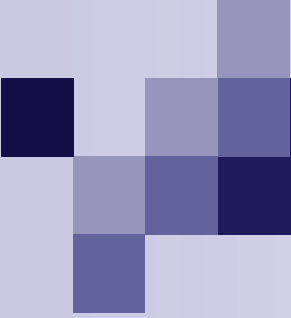
Tissue - A body part consisting of similar cells that perform a special function. Examples of tissues that can be transplanted are bones, corneas, heart valves, ligaments, veins, and tendons.

Transplantation - The transfer of cells (eg. stem cells), tissue, or organs from one person to another.

Transplant Recipient - A person who has received a tissue or organ transplant.

Waiting List - The list of patients registered to receive organ transplants. It is made up of sub-lists of patients waiting for specific organs, and is also (for some organs) broken down by blood group. When a donor organ becomes available, the matching system generates a specific list of potential recipients based on the criteria defined in that organ's allocation policy.

Ventilation - The mechanism by which a machine "breathes" for a patient when the patient is not able to breathe properly.



Supplement 1

Organ Donation in Australia



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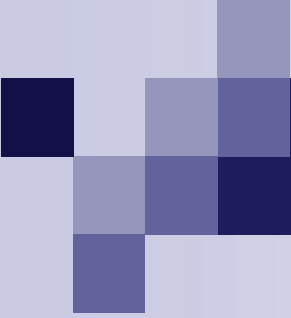
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Australia

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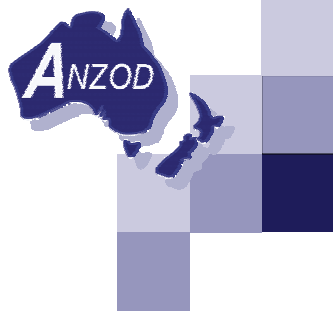
Supplement 2

Organ Donation in New Zealand



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New Zealand

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