

Australia and New Zealand Organ Donation Registry



2016
Annual Report
Data to 31-Dec-2015

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Australian and New Zealand Dialysis and Transplantation Registry
Australian and New Zealand Liver transplant Registry
Australia and New Zealand Cardiothoracic Transplant Registry
National Pancreas and Islets Transplant Registry
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The data reported here have been supplied by the Australia and New Zealand Organ Donation Registry. The interpretation and reporting of these data are the responsibility of the Authors and in no way should be seen as an official policy or interpretation of the Australia and New Zealand Organ Donation Registry.

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Supplements

Refer to our the ANZOD Registry website <http://www.anzdata.org.au/anzod/v1/AR-2015.html>

Supplement 1 **Australia** (Tables data for Australia)

Supplement 2 **New Zealand** (Tables Data for New Zealand)

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The Registry would like to thank the DonateLife Donor Specialists and Transplant Unit Recipient Coordinators whose reporting of data has made this 2016 report possible.

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.

We are pleased to present the 2016 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 2015 as well as cumulative data from each country since inception.

In Australia, with the implementation of the Electronic Donor Record in 2014 by the Organ and Tissue Authority, the Registry receives data in electronic format. Data is submitted by the DonateLife Network Donor Specialist Coordinators direct to the ANZOD Web based interface, enabling more timely data reporting on a monthly basis. New Zealand Donor Specialists provide data via the ANZOD Web based data collection screens.

The eye and tissue sector data collection and reporting continues to expand in 2015, strengthening the donation data to enable analysis on activities of eye and tissue transplantation.

The Registry continues to be a collaborative effort and 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

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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 2015 database.

Australian population statistics were obtained from the Australian Bureau of Statistics, 3101.0 - Australia Demographic Statistics, Jun 2015, 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



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Annual Report
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ORGAN DONATION SUMMARY

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 increased to 18.3 dpmp in 2015, from 16.1 dpmp in 2014. In New Zealand, the rate rose to 11.5 dpmp in 2015, from 10.2 dpmp in 2014.

In Australia, there remains variation in organ donation rates between jurisdictions (Table 1.1). In 2015, rates varied from 15.1 dpmp in Queensland to 24.7 dpmp in the South Australia.

For Australia, there were 435 actual deceased organ donors in 2015. Of those donors, 427 donors had at least one organ retrieved; and 418 resulted in at least one organ transplanted.

For New Zealand, there were 53 actual deceased organ donors in 2014. Of those donors, 50 had at least one organ retrieved; and all 50 resulted in at least one organ transplanted.

Table1.1

Number of Actual Deceased Donors** by State/Country 2011 - 2015 () Donors Per Million Population					
	2011	2012	2013	2014	2015
Queensland	67 (15)	78 (17.1)	77 (16.6)	71 (15)	72 (15.1)
New South Wales*	77 (11*)	88 (12.4*)	102 (14.2*)	92 (12.6*)	127 (17.2*)
ACT*	8 (13.7*)	12 (20.2*)	6 (10*)	11 (18.1*)	13 (21.2*)
Victoria	107 (19.3)	92 (16.3)	110 (19.2)	117 (20)	126 (21.2)
Tasmania	6 (11.7)	15 (29.3)	8 (15.6)	9 (17.5)	9 (17.4)
South Australia	35 (21.3)	29 (17.5)	34 (20.4)	36 (21.4)	42 (24.7)
Northern Territory	4 (17.3)	8 (33.9)	7 (28.9)	7 (28.7)	4 (16.4)
Western Australia	33 (14)	32 (13.1)	47 (18.7)	35 (13.7)	42 (16.2)
Australia	337 (15.1)	354 (15.6)	391 (16.9)	378 (16.1)	435 (18.3)
New Zealand	38 (8.7)	38 (8.6)	36 (8.1)	46 (10.2)	53 (11.5)
(x) refers to donors retrieved by retrieval State (i.e. Albury-NSW donors retrieved by Victoria). *NSW population excludes residents of the NSW Southern Area Health Service (included in ACT population). Population Data - June 2015. Please refer to methodology section of this report for detail. ** 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.					

ORGAN DONATION SUMMARY

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 2011, is shown in Figure 1.2

Figure 1.1

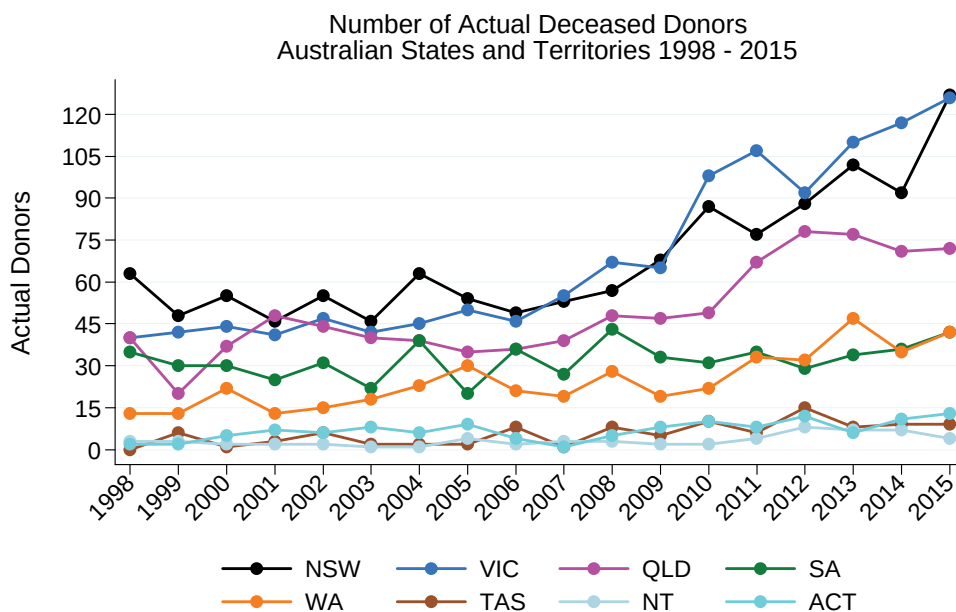
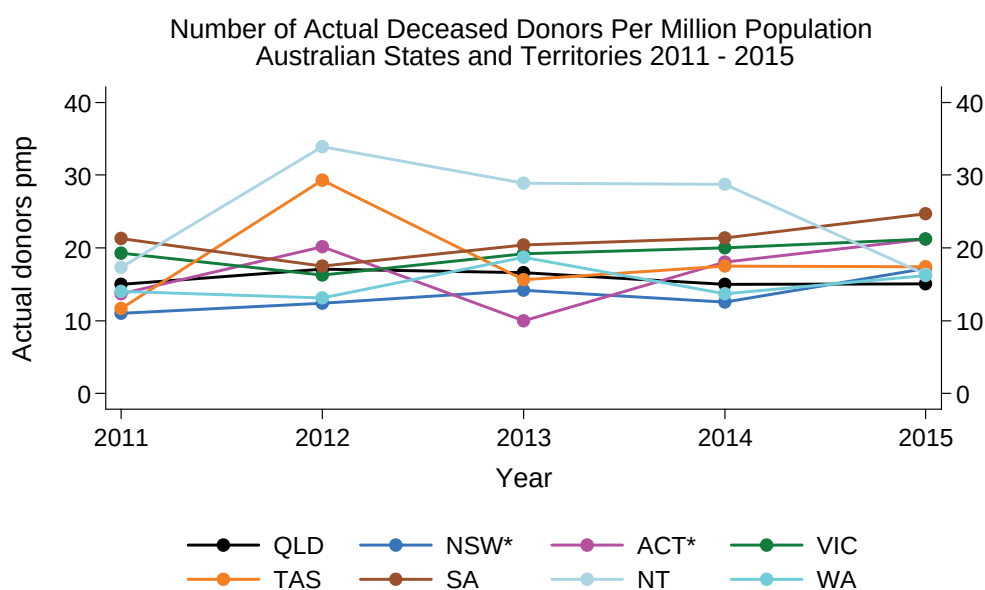


Figure 1.2



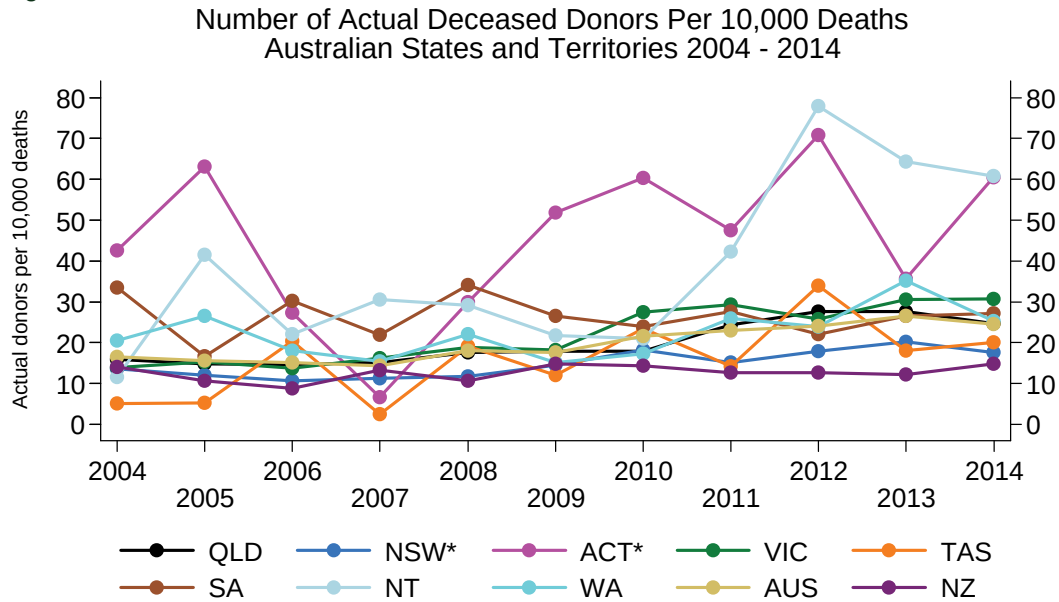
* NSW population excludes residents of the NSW Southern Area Health Service.

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

ORGAN DONATION SUMMARY

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



* NSW and ACT values are not adjusted for the NSW Southern Area Health Service, as death data were not available
Australian data on deaths 2014 was the latest release at the time of this publication.
Australian Bureau of Statistics - Deaths 3302.0 and Statistics New Zealand

Table 1.2

Actual Deceased Donors per 10,000 Deaths Aged < 75 Years, 2011 - 2014 () is the % Deaths < 75 years as a proportion of all deaths*										
Year	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUS	NZ
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%)
2014	67 (37%)	53 (33%)	170 (36%)	95 (32%)	56 (36%)	89 (31%)	82 (74%)	67 (38%)	72 (34%)	41 (36%)

*The number of actual donors is compared to the number of deaths that are aged less than 75 years.

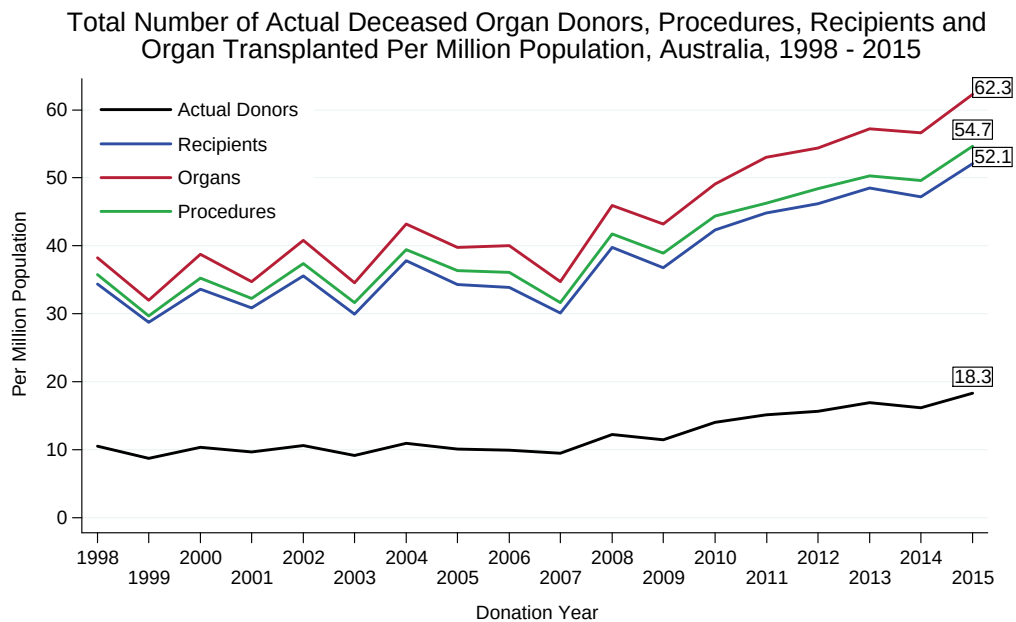
Australian Bureau of Statistics - Deaths 3302.0 and Statistics New Zealand.

Australian data on deaths 2014 was the latest release at the time of this publication.

ORGAN DONATION SUMMARY

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

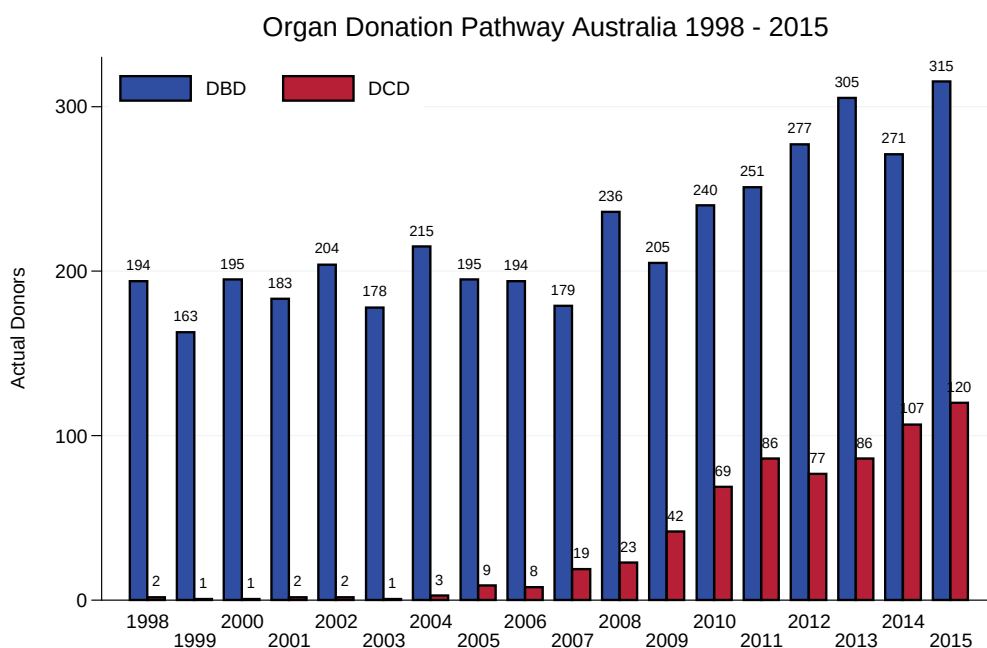
Figure 1.4



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



Overview - Australia and New Zealand

Table 1.3

Australia Overview

Population (million)	23.8
Actual Deceased Organ Donors - both DBD & DCD included (pmp)	435 (18.3)
Kidney Tx Recipients from deceased donors- includes all combinations (pmp)	703 (29.6)
Liver Tx Recipients from deceased donors- includes all combinations (pmp)	264 (11.1)
Heart Tx Recipients from deceased donors- includes all combinations (pmp)	95 (4)
Lung Tx Recipients from deceased donors- includes all combinations (pmp)	193 (8.1)
Pancreas Tx Recipients from deceased donors- includes all combinations (pmp)	45 (1.9)
Intestine Tx Recipients from deceased donors- includes all combinations (pmp)	1 (0)
TOTAL number of Transplanted Recipients (pmp)^	1239 (52.1)
TOTAL number of Organs Transplanted (pmp)*	1481 (62.3)
(pmp) per million population	

Table 1.4

New Zealand Overview

Population (million)	4.6
Actual Deceased Organ Donors - both DBD & DCD included (pmp)	53 (11.5)
Kidney Tx Recipients from deceased donors (pmp)	73 (15.9)
Liver Tx Recipients from deceased donors (pmp)	46 (10)
Heart Tx Recipients from deceased donors (pmp)	12 (2.6)
Lung Tx Recipients from deceased donors (pmp)	25 (5.4)
Pancreas Tx Recipients from deceased donors (pmp)	3 (.7)
TOTAL number of Transplanted Recipients (pmp)^	154 (33.5)
TOTAL number of Organ Transplanted (pmp)*	179 (38.9)
(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 SUMMARY

Organ Transplants

Table 1.5

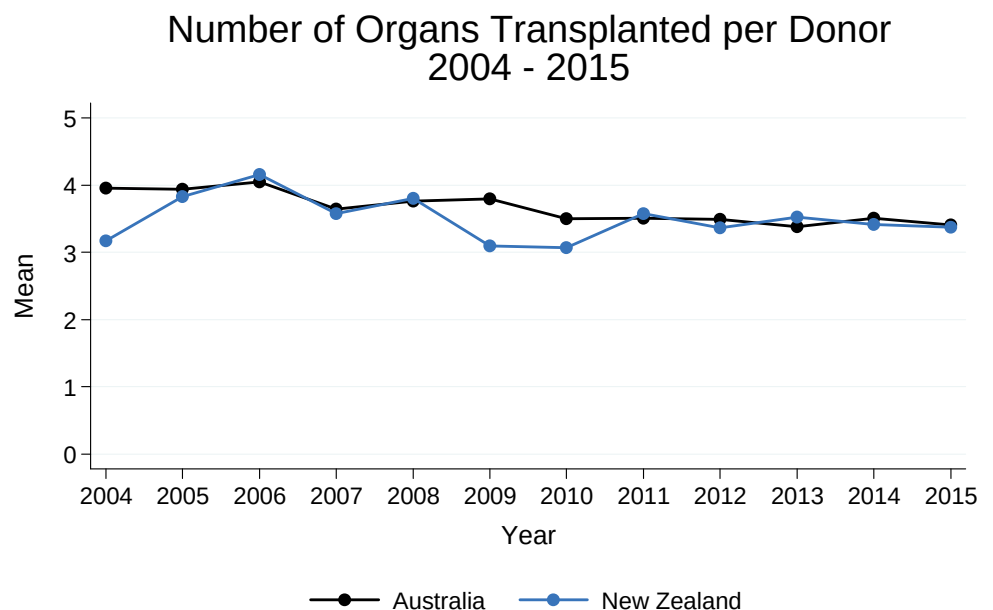
Number of Organ Transplants in 2015 by State / Country of Donation (pmp) in Australia and New Zealand										
Organs	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUS	NZ
Kidney	119	218	21	200	16	77	6	61	718 (30.2)	73 (15.9)
Liver	48	72	8	52	7	26	4	30	247 (10.4)	41 (8.9)
Heart	14	24	6	25	1	10	2	13	95 (4.0)	12 (2.6)
Lung	74	94	10	111	6	36	2	42	375 (15.8)	50 (10.9)
Pancreas	4	15	1	16	0	5	0	4	45 (1.9)	3 (0.7)
Intestine	0	0	0	1	0	0	0	0	1 (0.0)	0 (0.0)
Total	259	423	46	405	30	154	14	150	1481 (62.3)	179 (38.9)
^ includes 718 single kidneys, 9 double adult kidneys and 6 enbloc kidneys in Australia * includes 73 single kidneys, zero double adult kidneys and zero en-bloc kidneys in New Zealand + includes 247 whole liver, 34 split liver and 1 cut down liver in Australia ++ includes 41 whole liver, 10 split 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 2004-2015 in Australia and New Zealand is shown in Figure 1.6.

The number of transplant organs per donor across Australia ranged from 3.7 organ transplants in SA to 3.2

Figure 1.6



ORGAN DONATION SUMMARY

Figure 1.7 shows the organ-specific transplant rates for Australia over the period 1998 - 2015 (i.e. organ transplants per million population).

Figure 1.7

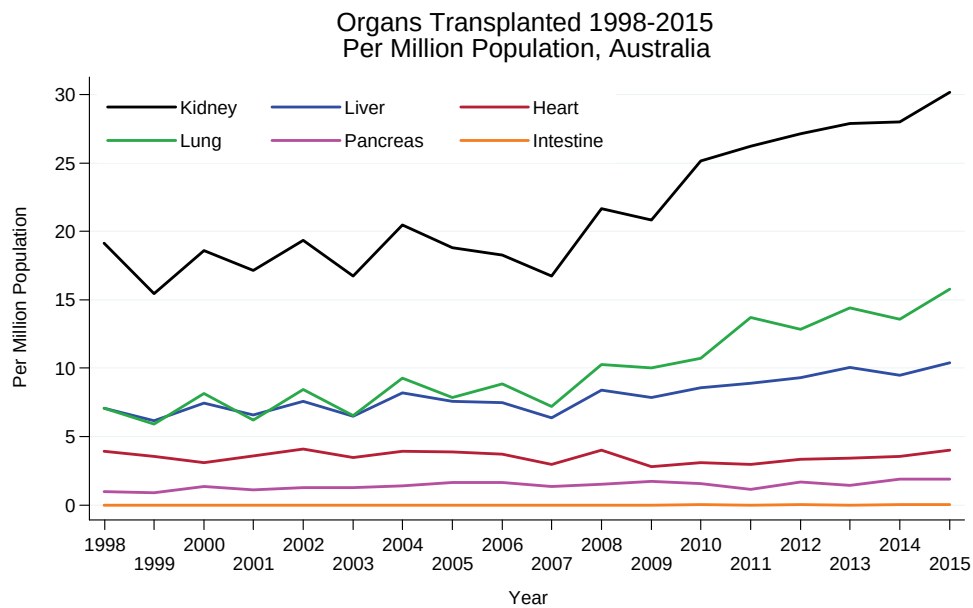
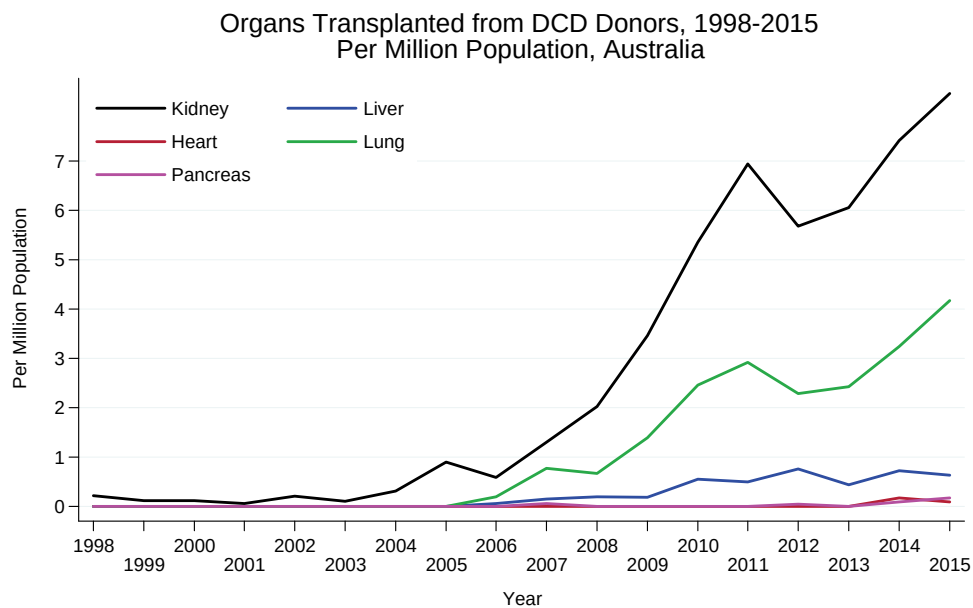


Figure 1.8 shows the corresponding rates for donation after circulatory death. Transplantation of organs from DCD has contributed to a significant increase in the rate of kidney transplantation.

Figure 1.8



ORGAN DONATION SUMMARY

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 2011 - 2015									
Postcode	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST
Major Cities of Australia	200 (55%)	363 (75%)	33 (66%)	377 (69%)	0 (0%)	128 (73%)	2 (7%)	137 (73%)	1240 (66%)
Inner Regional Australia	92 (25%)	84 (17%)	14 (28%)	140 (25%)	30 (64%)	18 (10%)	1 (3%)	27 (14%)	406 (22%)
Outer Regional Australia	60 (16%)	25 (5%)	2 (4%)	27 (5%)	15 (32%)	22 (13%)	20 (67%)	12 (6%)	183 (10%)
Remote Australia	1 (<1%)	3 (1%)	0 (0%)	0 (0%)	1 (2%)	5 (3%)	4 (13%)	7 (4%)	21 (1%)
Very Remote Australia	5 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (1%)	2 (7%)	2 (1%)	11 (1%)
Overseas	6 (2%)	7 (1%)	1 (2%)	6 (1%)	1 (2%)	1 (1%)	1 (3%)	3 (2%)	26 (1%)
Total	364	482	50	550	47	176	30	188	1887

In the last five years (2011-2015) there have been 26 deceased donors who were visitors to Australia. In 2015, there were twenty six donors who were visitors from overseas, seven donated from New South Wales, six from Queensland and Victoria, three from Western Australia and one each from the Australian Capital Territory, Tasmania, South Australia and the Northern Territory.

There were no donors identified as overseas visitors reported in New Zealand in 2015.

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 Comparisons



2016
Annual Report
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INTERNATIONAL COMPARISONS

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.

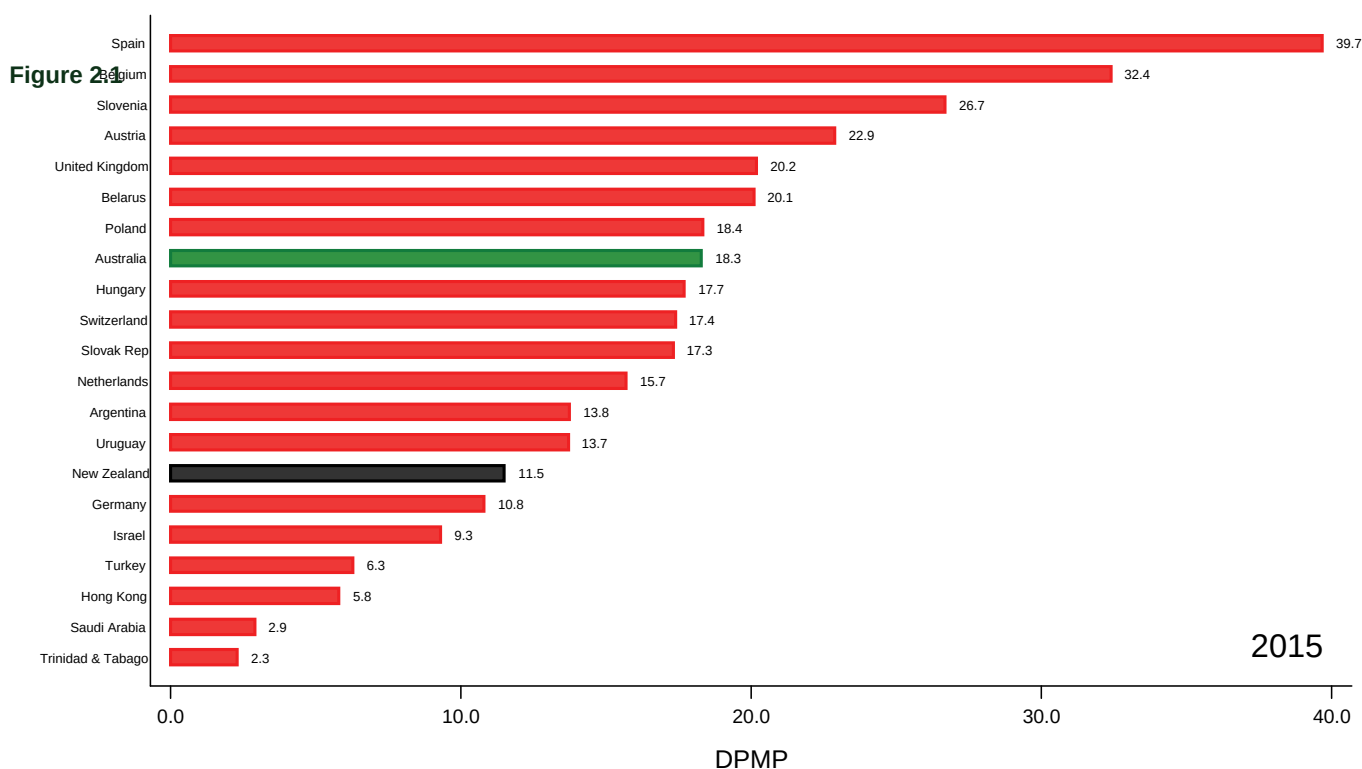
For the purpose of this comparison, data has been sourced from the International Registry in Organ Donation and Transplantation (IRODaT). Data was sourced on 31 July, 2016 from the IRODaT website <http://www.irodat.org/> and represents data compiled from a broad selection of the 72 contributing countries.

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.

International Deceased Organ Donor Rates 2015



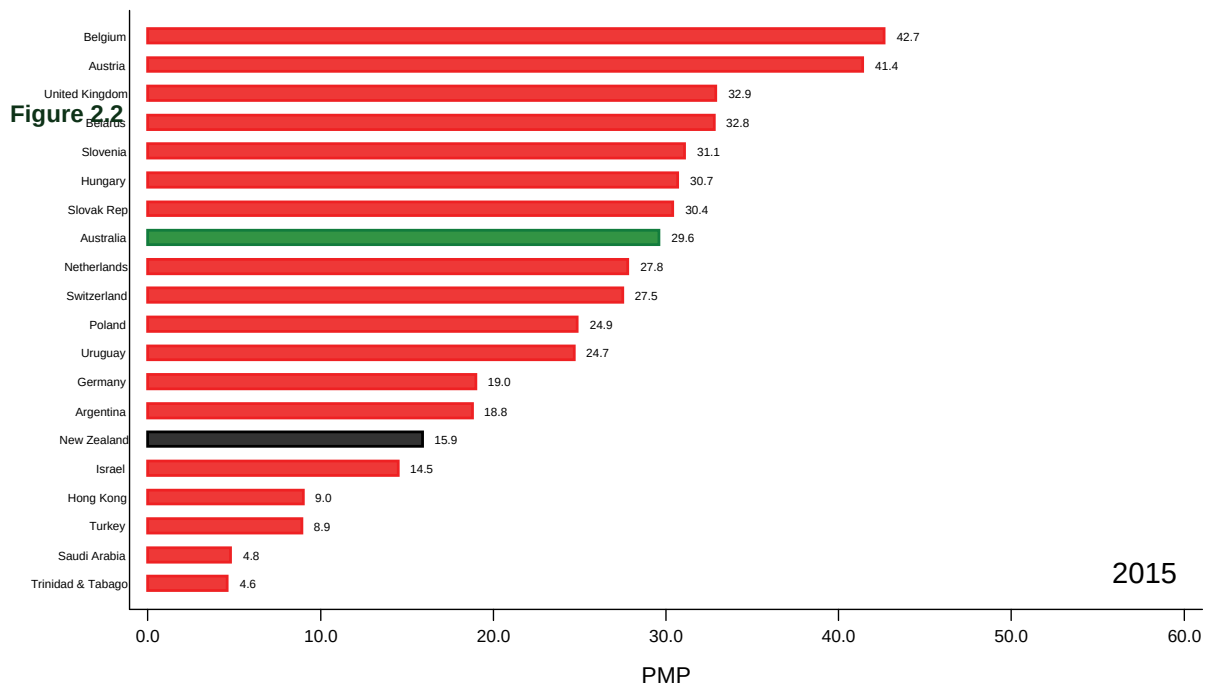
Data sourced 31 July, 2015 from IRODaT website <http://www.irodat.org>

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).

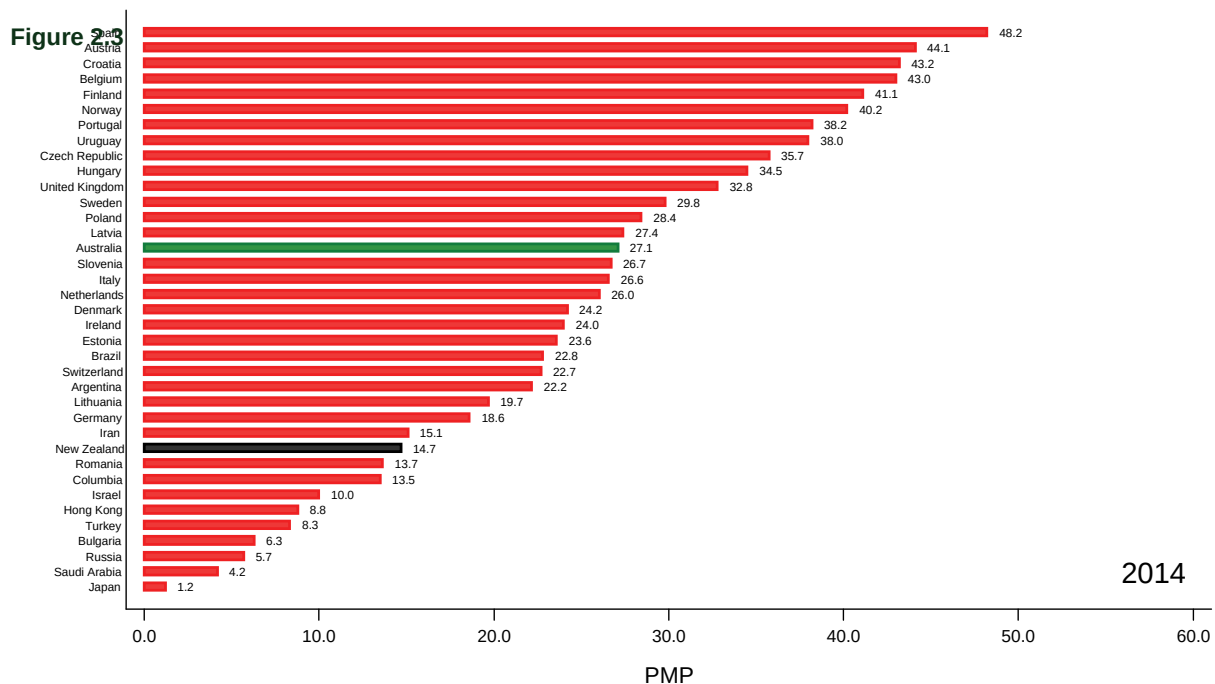
INTERNATIONAL COMPARISONS

International Kidney Transplantation from Deceased Donors (Per Million Population)

International Transplantation Rates, Kidney 2015



International Transplantation Rates, Kidney 2014



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 2015

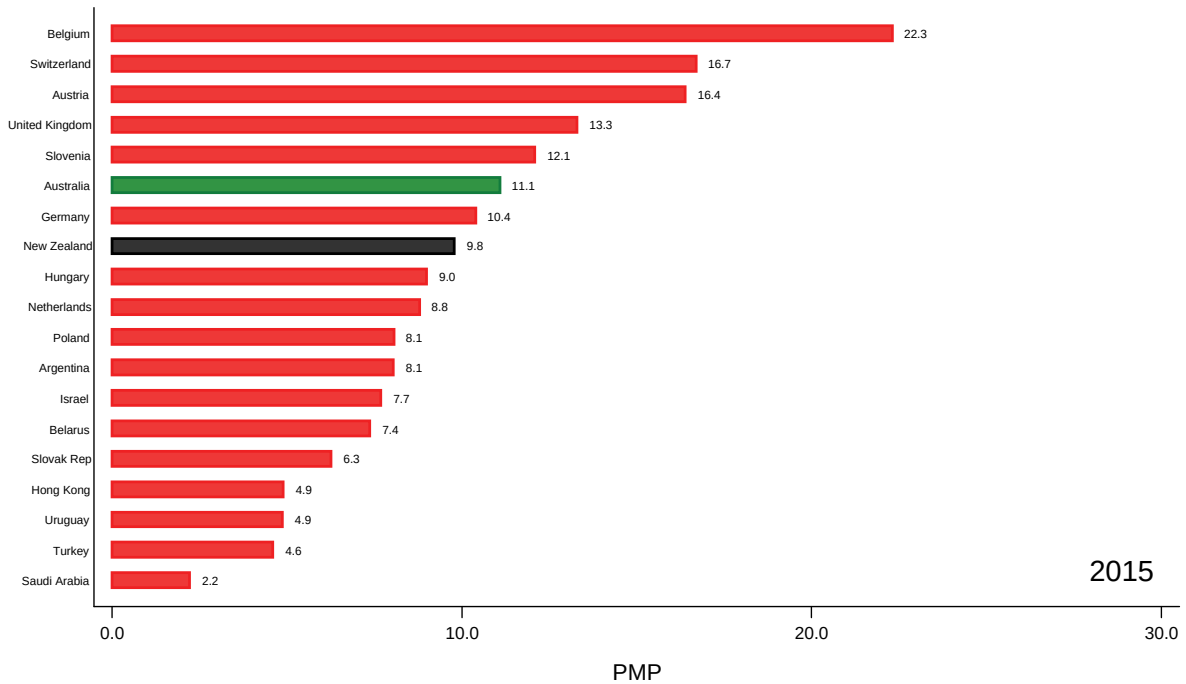
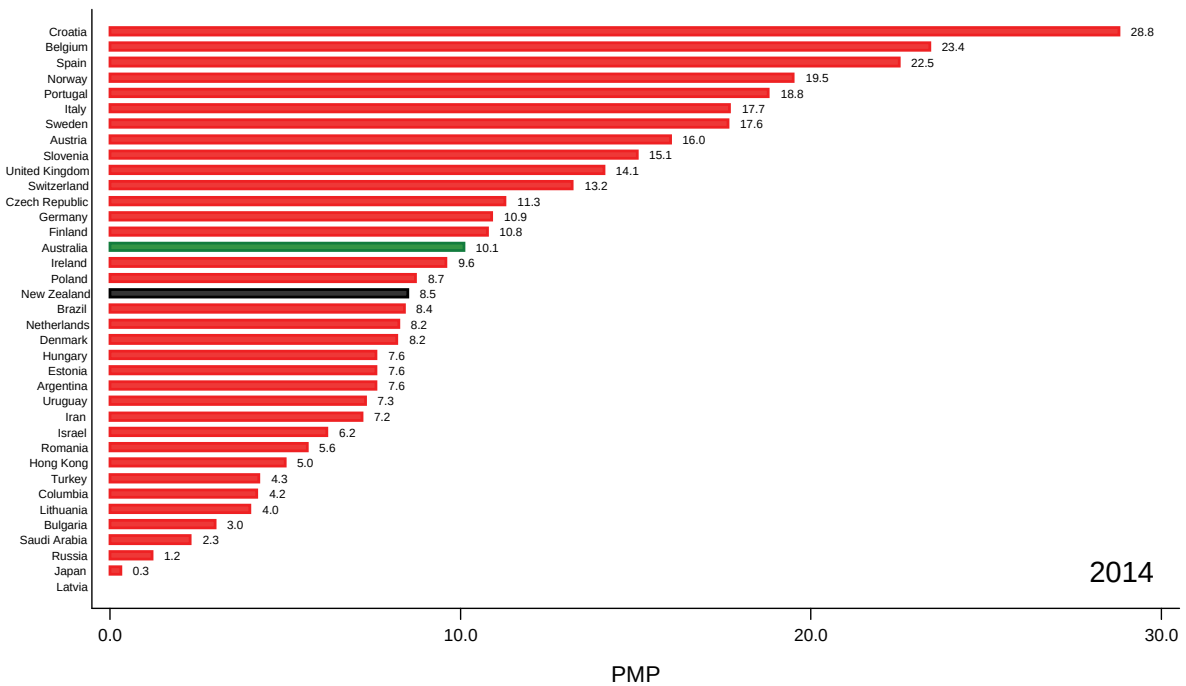


Figure 2.5

International Transplantation Rates, Liver 2014



INTERNATIONAL COMPARISONS

International Heart Transplantation from Deceased Donors (Per Million Population)

Figure 2.6

International Transplantation Rates, Heart 2015

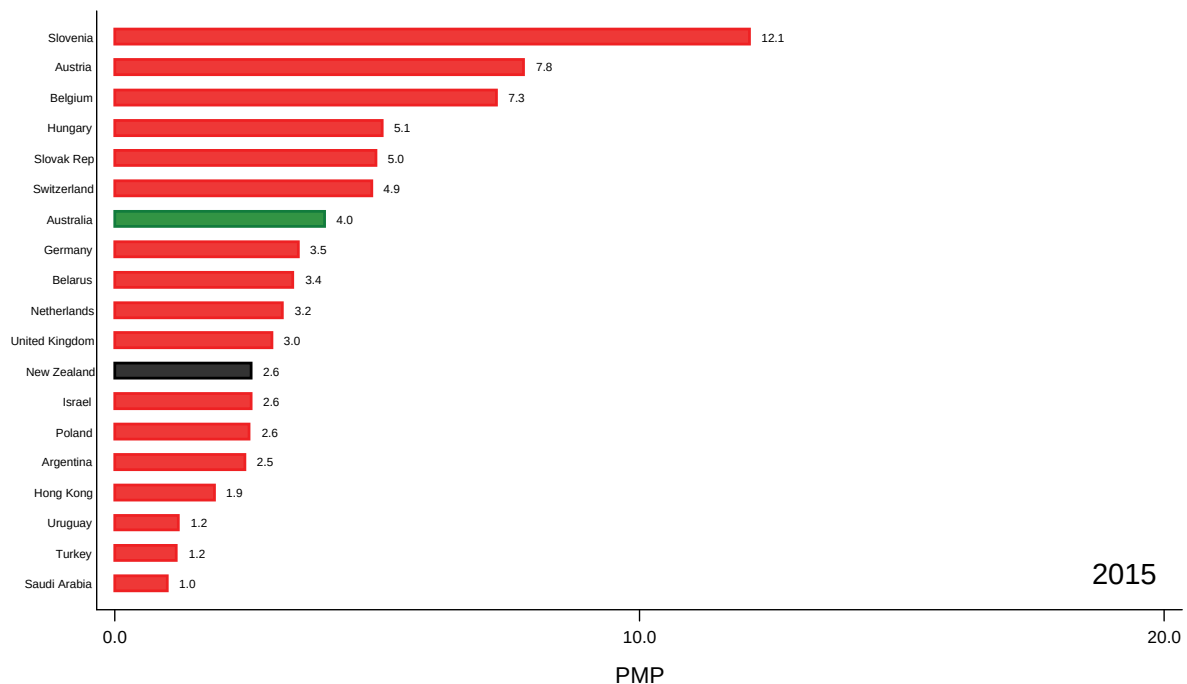
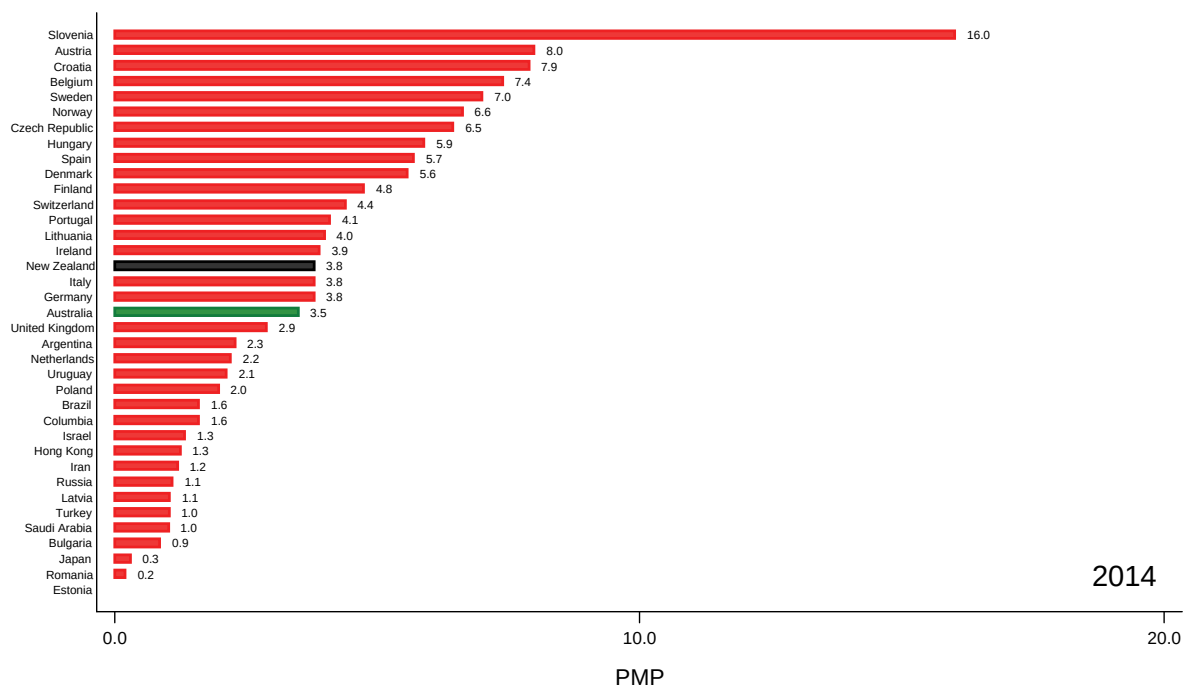


Figure 2.7

International Transplantation Rates, Heart 2014



INTERNATIONAL COMPARISONS

International Lung Transplantation from Deceased Donors (Per Million Population)

Figure 2.8

International Transplantation Rates, Lung 2015

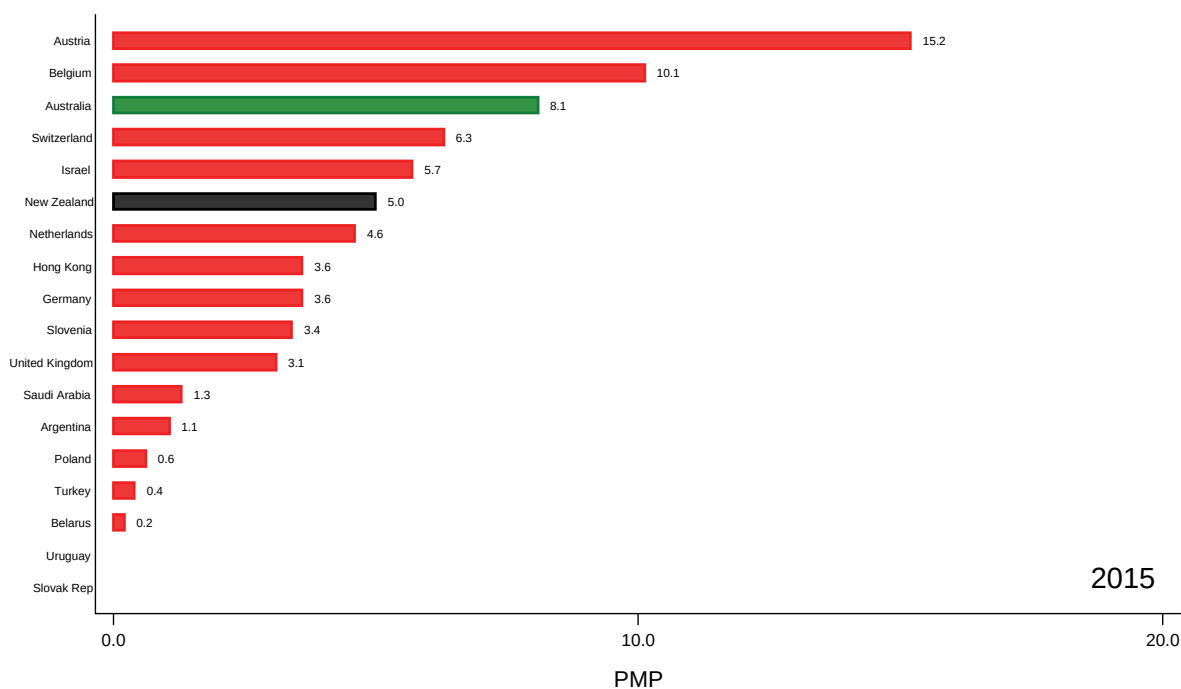
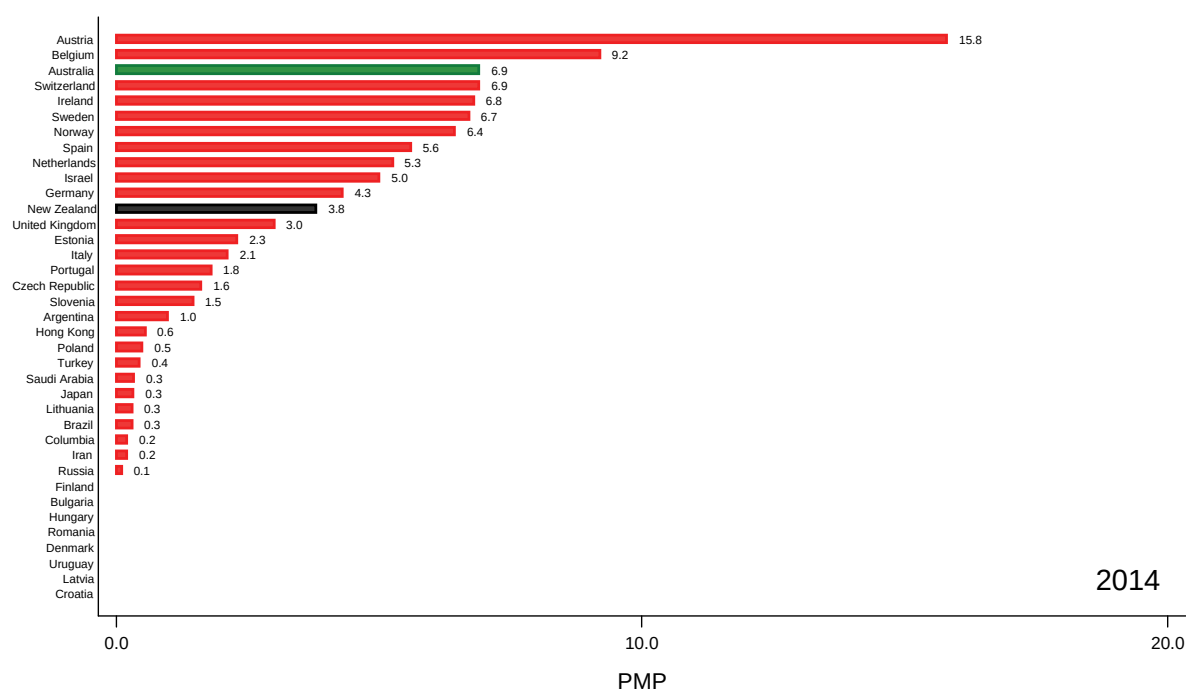


Figure 2.9

International Transplantation Rates, Lung 2014



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

INTERNATIONAL COMPARISONS

International Pancreas Transplantation from Deceased Donors (Per Million Population)

Figure 2.10

International Transplantation Rates, Pancreas 2015

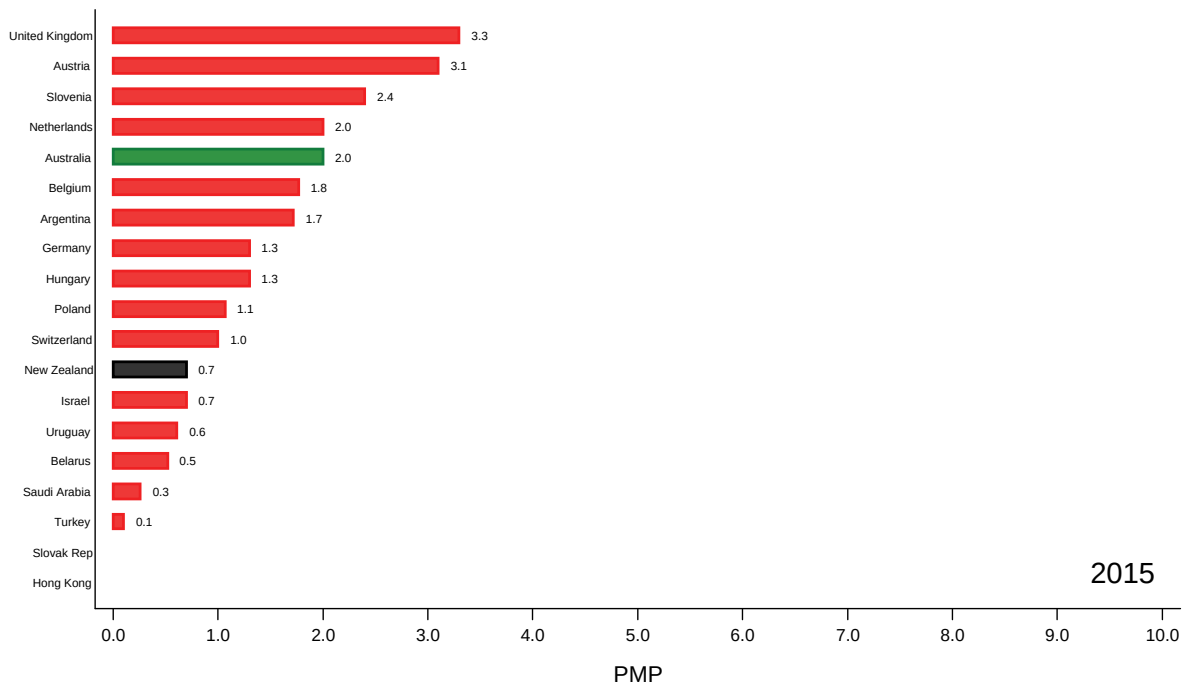
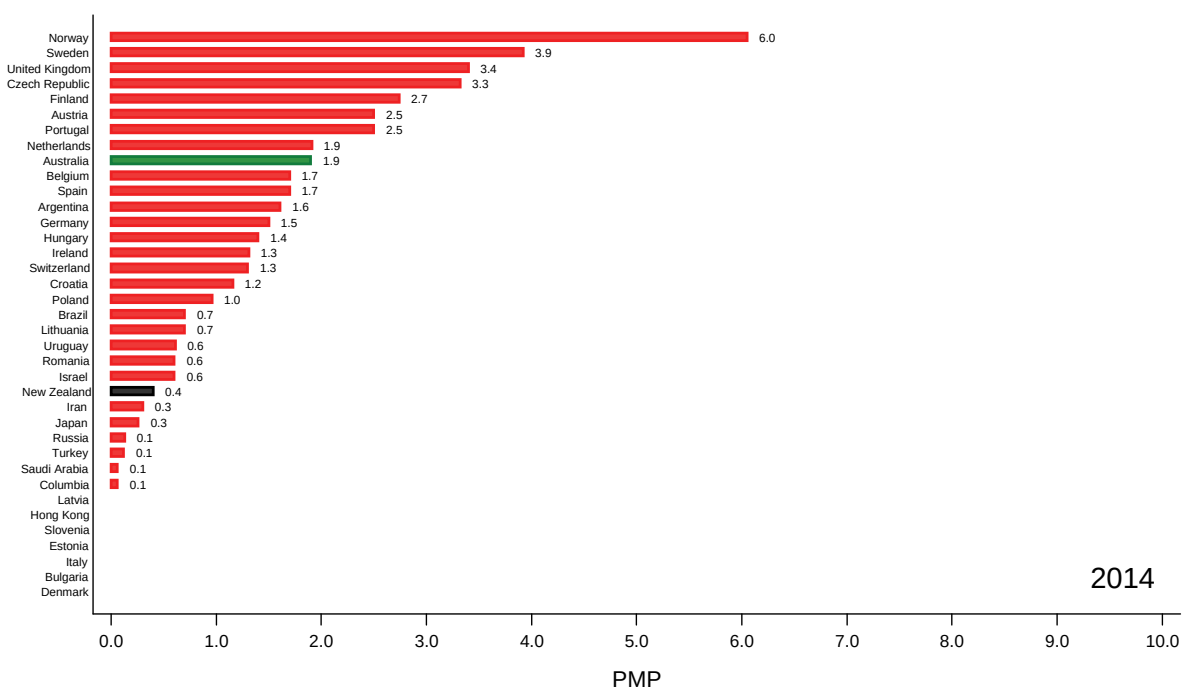


Figure 2.11

International Transplantation Rates, Pancreas 2014



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

Chapter 3

Organ Donation Pathway



2016
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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 3.3 shows the number in 2015 of donors enrolled on the Australian Organ Donor Register, which commenced in 2000.

Table 3.1

Driver's Licence Intention Status, 2011 - 2015										
Intention	Australia					New Zealand				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Yes	80 (24%)	77 (22%)	76 (19%)	85 (22%)	93 (21%)	4 (11%)	3 (8%)	1 (3%)	7 (15%)	7 (13%)
Not Applicable	113	158	153	201	253	3	3	2	6	3
No	45	38	77	38	36	1	2	2	4	4
Unknown	99	81	85	54	53	30	30	31	29	39
Total	337	354	391	378	435	38	38	36	46	53

Table 3.2

Driver's Licence Intention Status, Australian States, 2015 (2014)								
Intention	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
Yes	5 (4)	62 (54)	0 (2)	4 (3)	2 (0)	19 (19)	0 (1)	1 (2)
Not Applicable	63 (67)	19 (5)	6 (3)	108 (83)	7 (6)	7 (5)	3 (6)	40 (26)
No	2 (0)	19 (16)	0 (1)	2 (4)	0 (1)	13 (10)	0 (0)	0 (6)
Unknown	2 (0)	27 (17)	7 (5)	12 (27)	0 (2)	3 (2)	1 (0)	1 (1)
Total	72 (71)	127 (92)	13 (11)	126 (117)	9 (9)	42 (36)	4 (7)	42 (35)

Table 3.3

Donors Enrolled in the Australian Organ Donor Registry 2015 (2014)									
Intention	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST
Registered as Yes	17 (18)	53 (47)	4 (5)	30 (24)	5 (4)	15 (12)	1 (1)	16 (9)	141 (120)
Registered as No	0 (5)	0 (1)	0 (0)	0 (5)	0 (0)	0 (0)	0 (0)	1 (0)	1 (11)
Not Registered	50 (42)	65 (41)	9 (6)	87 (83)	4 (5)	23 (22)	3 (4)	25 (23)	266 (226)
Not Accessed	5 (6)	9 (3)	0 (0)	9 (5)	0 (0)	4 (2)	0 (2)	0 (3)	27 (21)
Total	72 (71)	127 (92)	13 (11)	126 (117)	9 (9)	42 (36)	4 (7)	42 (35)	435 (378)

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>

Coroner's Cases

Table 3.4 shows the number of donor cases subject to Coronial inquiry. In Australia, 49% of donors in 2015 were subject to Coronial inquiry, compared to 44% in 2014. In New Zealand it was 47% for 2015 and 50% in 2014 (Table 3.3).

Table 3.4

Coroner's Cases 2011 - 2015										
	Australia					New Zealand				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Yes	141	153	187	166	211	16	19	10	23	25
No	196	201	204	212	224	22	19	26	23	28
Total	337	354	391	378	435	38	38	36	46	53

Table 3.5 shows the number of Australian Coroner's cases by jurisdiction and the number of Coroner's cases in New Zealand for 2015 compared to 2014.

Table 3.5

Coroner's Cases by State and Country 2015 (2014)										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
Yes	35 (37)	43 (28)	6 (6)	74 (59)	3 (3)	26 (18)	2 (2)	22 (13)	211 (166)	25 (23)
No	37 (34)	84 (64)	7 (5)	52 (58)	6 (6)	16 (18)	2 (5)	20 (22)	224 (212)	28 (23)
Total	72 (71)	127 (92)	13 (11)	126 (117)	9 (9)	42 (36)	4 (7)	42 (35)	435 (378)	53 (46)

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 2011 - 2015, Intracranial Haemorrhage accounted for an overall 41% of donor deaths and Traumatic Brain Injury for 16%.

Table 3.6.1 shows the cause of death by percentage in Australia and each Australian State and New Zealand over the last five years.

Table 3.6.1

Cause of Donor Death 2011 - 2015 (%)										
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
Intracranial Haemorrhage	41	41	46	40	45	41	50	38	41	46
Traumatic Brain Injury	19	18	20	12	6	16	10	19	16	21
Cerebral Infarct	4	5	4	8	9	7	10	8	6	4
Cerebral Hypoxia / Ischaemia	22	24	24	30	19	24	17	20	25	17
Other Neurological Condition	0	1	0	1	2	2	0	0	1	0
Non-Neurological Condition	6	5	4	4	6	4	7	6	5	4

Table 3.6.2 shows the cause of death of donors by age group in 2015 in Australia and New Zealand. In donors aged ≥ 55 years, intracranial haemorrhage accounted for 36% of deaths in Australia and 45% in New Zealand in 2015. In donors aged 15-34 years, cerebral hypoxia/ischaemia accounted for 49% of deaths in Australia and 10% in New Zealand in 2015.

Table 3.6.2

Cause of Donor Death Related to Age Group 2015										
	Australia					New Zealand				
	Age Groups				Total	Age Groups				Total
	0-14	15-34	35-54	≥ 55		0-14	15-34	35-54	≥ 55	
Intracranial Haemorrhage	2	9	48	97	156 (36%)	0	1	9	14	24 (45%)
Traumatic Brain Injury	4	19	19	14	56 (13%)	1	3	2	4	10 (19%)
Cerebral Infarct	0	3	9	15	27 (6%)	0	1	1	0	2 (4%)
Cerebral Hypoxia / Ischaemia	12	49	66	45	172 (40%)	0	10	5	1	16 (30%)
Other Neurological Condition	0	3	2	4	9 (2%)	0	1	0	0	1 (2%)
Non-Neurological Condition	1	1	1	12	15 (3%)	0	0	0	0	0 (0%)
Total	19	84	145	187	435	1	16	17	19	53

ORGAN DONATION PATHWAY

The cause of death by age group is shown in Table 3.8.1 for each Australian State for 2015.

Table 3.8.1

Cause of Death by Age Group for Australian States 2015						
		Age Groups				Total
		0-14	15-34	35-54	>=55	
Queensland	Intracranial Haemorrhage	0	2	9	15	26
	Traumatic Brain Injury	1	4	1	4	10
	Cerebral Infarct	0	1	0	2	3
	Cerebral Hypoxia / Ischaemia	3	10	10	8	31
	Other	0	1	0	1	2
	Total	4	18	20	30	72
New South Wales	Intracranial Haemorrhage	0	3	11	33	47
	Traumatic Brain Injury	3	8	6	2	19
	Cerebral Infarct	0	0	2	6	8
	Cerebral Hypoxia / Ischaemia	4	7	13	22	46
	Other	0	2	1	4	7
	Total	7	20	33	67	127
Australian Capital Territory (ACT)	Intracranial Haemorrhage	0	0	1	4	5
	Traumatic Brain Injury	0	0	1	0	1
	Cerebral Infarct	0	0	0	0	0
	Cerebral Hypoxia / Ischaemia	0	2	4	0	6
	Other	0	0	0	1	1
	Total	0	2	6	5	13
Victoria	Intracranial Haemorrhage	1	1	17	24	43
	Traumatic Brain Injury	0	5	6	5	16
	Cerebral Infarct	0	0	7	4	11
	Cerebral Hypoxia / Ischaemia	3	14	20	10	47
	Other	1	0	1	7	9
	Total	5	20	51	50	126
Tasmania	Intracranial Haemorrhage	0	0	1	2	3
	Traumatic Brain Injury	0	1	0	0	1
	Cerebral Infarct	0	0	0	1	1
	Cerebral Hypoxia / Ischaemia	0	1	2	1	4
	Other	0	0	0	0	0
	Total	0	2	3	4	9
South Australia	Intracranial Haemorrhage	1	1	3	7	12
	Traumatic Brain Injury	0	0	3	3	6
	Cerebral Infarct	0	0	0	1	1
	Cerebral Hypoxia / Ischaemia	2	5	9	3	19
	Other	0	1	1	2	4
	Total	3	7	16	16	42
Northern Territory	Intracranial Haemorrhage	0	0	1	1	2
	Traumatic Brain Injury	0	0	0	0	0
	Cerebral Infarct	0	0	0	0	0
	Cerebral Hypoxia / Ischaemia	0	2	0	0	2
	Other	0	0	0	0	0
	Total	0	2	1	1	4
Western Australia	Intracranial Haemorrhage	0	2	5	11	18
	Traumatic Brain Injury	0	1	2	0	3
	Cerebral Infarct	0	2	0	1	3
	Cerebral Hypoxia / Ischaemia	0	8	8	1	17
	Other	0	0	0	1	1
	Total	0	13	15	14	42

Cardiopulmonary Resuscitation

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

Table 3.9 shows the number of recorded events for cardiopulmonary resuscitation for Australia and New Zealand donors

Table 3.9

Cardiopulmonary Resuscitation 2011 - 2015										
	Australia					New Zealand				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Yes	111	130	155	170	212	13	14	8	15	25
No	226	224	234	207	223	25	24	27	31	28
Unknown	0	0	2	1	0	0	0	1	0	0
Total	337	354	391	378	435	38	38	36	46	53

Table 3.10

Cardiopulmonary Resuscitation by Australian State 2015 (2014)								
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
Yes	38 (29)	60 (36)	7 (2)	60 (63)	5 (3)	20 (18)	3 (3)	19 (16)
No	34 (42)	67 (55)	6 (9)	66 (54)	4 (6)	22 (18)	1 (4)	23 (19)
Unknown	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	72 (71)	127 (92)	13 (11)	126 (117)	9 (9)	42 (36)	4 (7)	42 (35)

Authority Sought for Organ Donation

The predominant group requesting authority for organ donation in 2015 were the Intensive Care Clinicians and Registrars, 58% in Australia and 75% in New Zealand shown in Table 3.11.

In Australia, authority for organ donation was sought by a Donor Specialist on 29 (7%) occasions which is a 5% decrease from 2014 (Table 3.11). Authority for organ donation in New Zealand was sought by a Donor Coordinator in zero cases.

In 2015, 33% of families volunteered authority for organ donation in Australia (30% in 2014), up 3%, compared to 30% in 2015. In New Zealand, 15% of families volunteered authority in 2015 (11% in 2014). (Table 3.11)

See Table 3.12 for individual State and Territory statistics.

Table 3.11

Authority to Donate Sought by 2011 - 2015										
	Australia					New Zealand				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Donor Specialist	1	1	21	45	29	0	0	1	2	0
ICU Consultant	179	214	242	186	228	31	33	28	35	37
ICU Registrar	18	15	13	24	25	1	1	0	2	3
Social Worker	0	0	0	1	0	0	0	0	0	0
Other	1	2	5	0	2	1	1	2	1	3
Volunteered	123	111	100	112	142	5	2	5	5	8
Nursing Staff	1	4	2	1	1	0	0	0	1	2
Emergency Clinician	14	7	8	9	8	0	1	0	0	0
TOTAL	337	354	391	378	435	38	38	36	46	53

Table 3.12

Authority to Donate Sought by Australian State 2015 (2014)								
	QLD	NSW	ACT	VIC	TAS	SA	NT	WA
Donor Specialist	1 (8)	18 (19)	0 (2)	7 (7)	2 (1)	1 (2)	0 (3)	0 (3)
ICU Clinician	51 (34)	70 (41)	9 (3)	54 (56)	4 (2)	25 (26)	1 (2)	14 (22)
ICU Registrar	0 (4)	6 (6)	0 (0)	10 (11)	0 (0)	4 (1)	0 (0)	5 (2)
Social Worker	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Other	0 (0)	1 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Volunteered	20 (23)	29 (22)	3 (6)	54 (40)	2 (5)	12 (7)	3 (2)	19 (7)
Nursing Staff	0 (1)	0 (0)	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Emergency Clinician	0 (1)	3 (3)	0 (0)	0 (3)	1 (1)	0 (0)	0 (0)	4 (1)
TOTAL	72 (71)	127 (92)	13 (11)	126 (117)	9 (9)	42 (36)	4 (7)	42 (35)

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 2015, the main reason donors did not proceed to organ donation was due to disease of organ.

Table 3.13

Actual vs Intended (Non-Proceeding) Donors 2015						
	DBD		DCD		Total	
	Actual	Intended	Actual	Intended	Actual	Intended
QLD	53 (85%)	9 (15%)	19 (59%)	13 (41%)	72 (76%)	23 (24%)
NSW	87 (93%)	7 (7%)	40 (67%)	20 (33%)	127 (82%)	27 (18%)
ACT	9 (82%)	2 (18%)	4 (44%)	5 (56%)	13 (65%)	7 (35%)
VIC	79 (81%)	19 (19%)	47 (59%)	33 (41%)	126 (71%)	52 (29%)
TAS	9 (90%)	1 (10%)	-	1 (100%)	9 (82%)	2 (18%)
SA	37 (97%)	1 (3%)	5 (56%)	4 (44%)	42 (89%)	5 (11%)
NT	4 (100%)	-	-	2 (100%)	4 (67%)	2 (33%)
WA	37 (86%)	6 (14%)	5 (50%)	5 (50%)	42 (79%)	11 (21%)
AUSTRALIA	315 (88%)	45 (13%)	120 (59%)	83 (41%)	435 (77%)	129 (23%)
NEW ZEALAND	48 (100%)	-	5 (100%)	-	53 (100%)	-

Table 3.13 represents the number of non-proceeding DBD and DCD 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 129 donors who did not proceed down the pathway of solid organ donation, of which 45 (35%) were DBD and 83 (64%) were DCD. In New Zealand there were none.

The reasons for donations not proceeding are described in Table 3.14.

Table 3.14

Reasons Why Donation Did Not Proceed 2015	
Australia	
Outcome Details for Donors Who Did Not Pro-	Freq.
Planned DCD who died outside time limit	46
Medical contradiction discovered	43
No suitable recipients	17
Declined by family after initial consent	7
Refused by Coroner / Pathologist	4
Other reason not specified	4
Failed physiological support	4
Unexpected cardiac arrest	2
No available retrieval team	2
Total Non-Proceeding Donors	129

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 676 donors for Australia and 22 DCD donors for New Zealand.

In Australia, in 2015, there were 120 DCD donors; 47 in Victoria, 40 in New South Wales, 19 in Queensland, five each in South Australia and Western Australia, four in the Australian Capital territory and zero in Northern Territory. There were five DCD donors, in New Zealand in 2015. (Table 3.15)

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

In 2015, the mean age for a DCD donor was 50.7 years and the age range was 4.3 to 75 years, in Australia. In New Zealand the mean age of DCD was 42.9 years and the age range was 17.1 years to 57.9 years.

Causes of death leading to DCD in Australia, in 2015 were intracranial haemorrhage (32), cerebral hypoxia/ischaemia(46), traumatic brain injury (13), cerebral infarct (10), other neurological conditions (4) and non-neurological conditions (15).

In Australia six of the 120 actual DCD donors did not have any organs transplanted.

In New Zealand, the leading cause of death was cerebral hypoxia/ischaemia in 100% (5) of DCD donors.

All 5 New Zealand DCD donors had organs transplanted.

Table 3.15

Donation After Circulatory Death 2011 - 2015										
YEAR	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
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
2015	19	40	4	47	0	5	0	5	120	5

Time from Admission to Brain Death

Australia

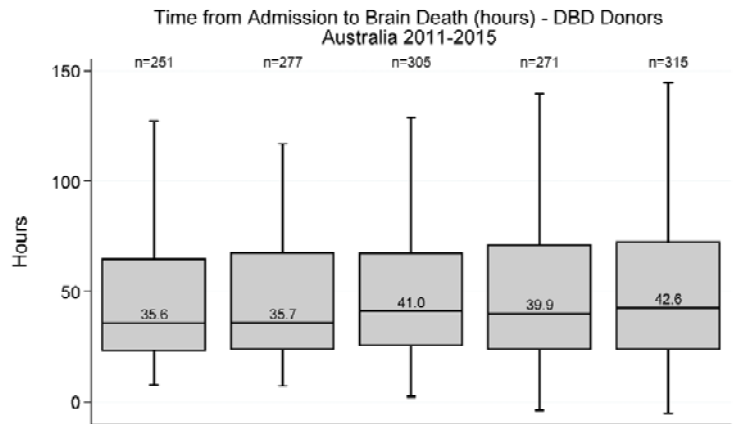
In 2015, 26% of Australian donors were declared brain dead within 24 hours of hospital admission.

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

The median time from admission to brain death was 42.6 hours.

Ten percent of donors (33) were in hospital for more than five days.

Figure 3.1



New Zealand

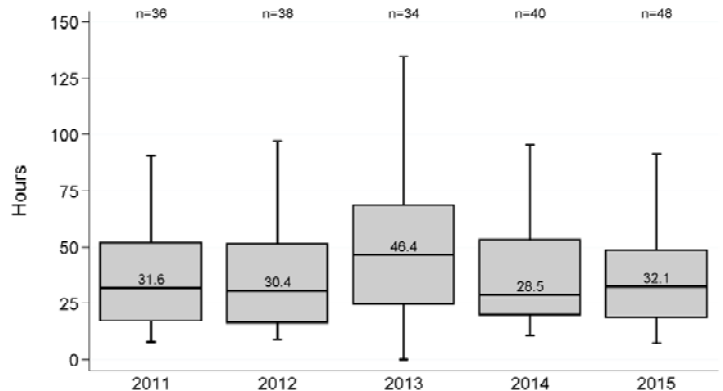
In 2015, 35% of New Zealand donors were declared brain dead within 24 hours of hospital admission.

Time of admission to hospital was unknown for zero donors.

The median time from admission to brain death was 32.1 hours.

Eight percent of donors (four) were in hospital for more than five days.

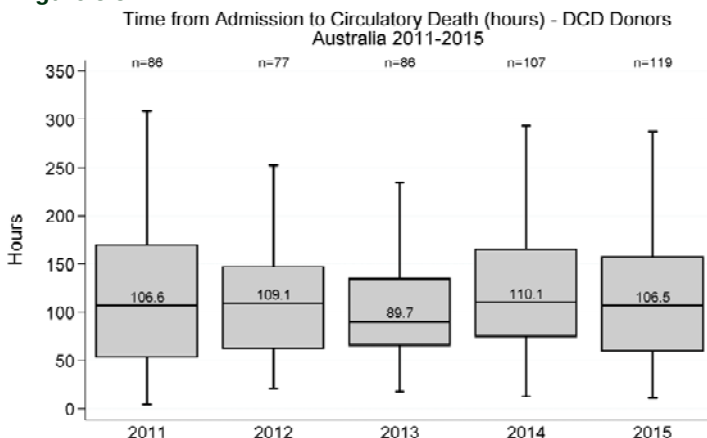
Figure 3.2 Time from Admission to Brain Death (hours) - DBD Donors
New Zealand 2011-2015



Time from Admission to Circulatory Death

Australia

Figure 3.3



As shown in figure 3.3, in 2015, 3% 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 circulatory death was 106.5 hours.

Forty percent of donors (48) were in hospital for more than five days.

New Zealand

In 2015, all 5 (100%) of New Zealand donors were declared brain dead between 24 hours and 5 days of hospital admission.

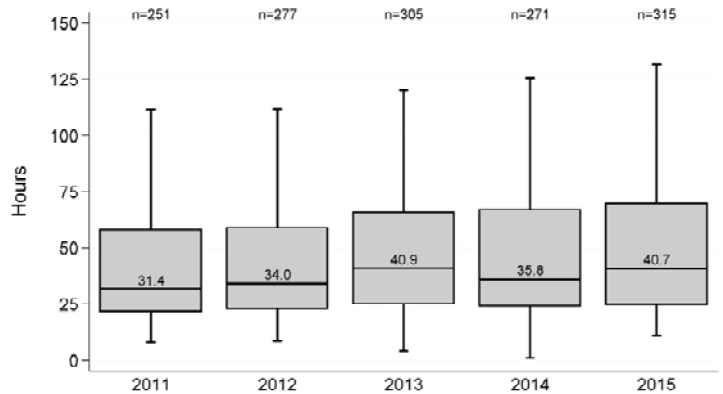
The median time from admission to brain death was 35.7 hours.

Time from Ventilation to Brain Death

Australia

In 2015, the median time from ventilation to brain death was 40.7 hours.

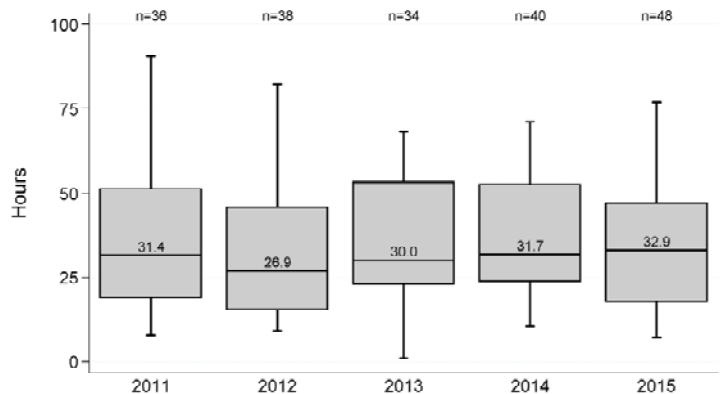
Figure 3.5 Time from Ventilation to Brain Death (hours) - DBD Donors Australia 2011-2015



New Zealand

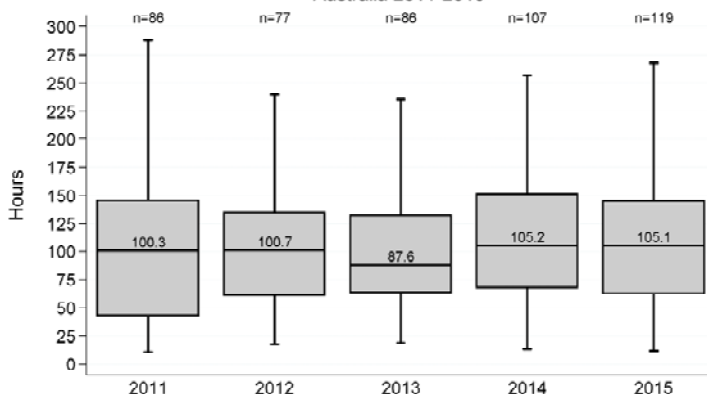
The median time in New Zealand from ventilation to brain death was 32.9 hours.

Figure 3.6 Time from Ventilation to Brain Death (hours) - DBD Donors New Zealand 2011-2015



Time from Ventilation to Circulatory Death

Figure 3.7 Time from Ventilation to Circulatory Death (hours) - DCD Donors Australia 2011-2015



Australia

Figure 3.7 shows that in 2015, the median time from ventilation to circulatory death was 105.1 hours.

New Zealand

The median time in New Zealand from ventilation to circulatory death was 36.5 hours.

Time From Brain Death to Donation

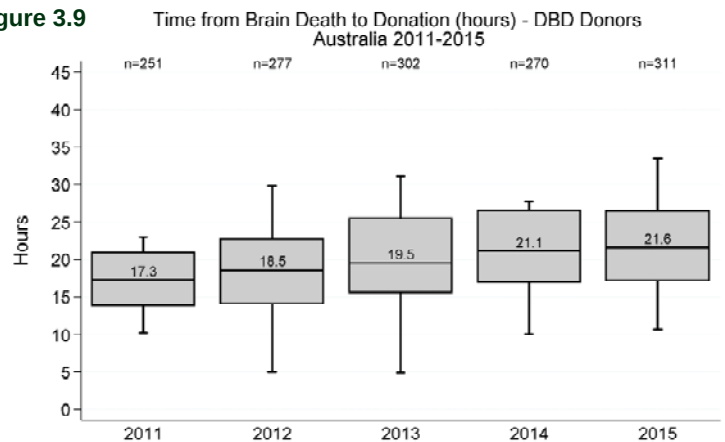
Australia

In 2015, 33 DBD donors (10%) underwent aortic cross clamp within twelve hours of the certification of brain death.

The median time was 21.6 hours.

Cross clamp did not proceed in four Australian donors.

Figure 3.9



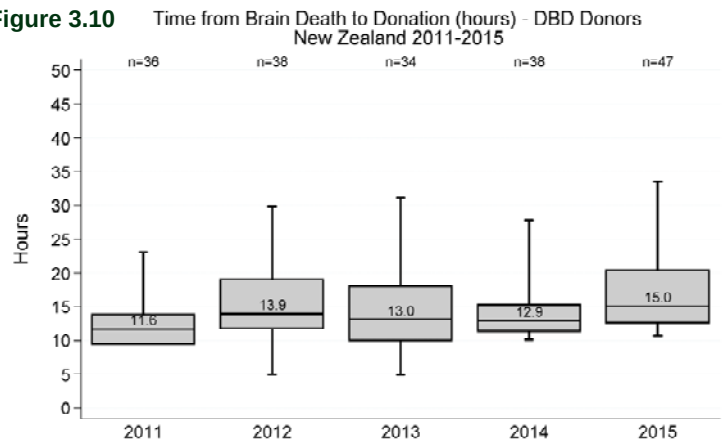
New Zealand

In 2015, 12 DBD (25%) underwent aortic cross clamp within twelve hours of the certification of brain death.

The median time was 15 hours.

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

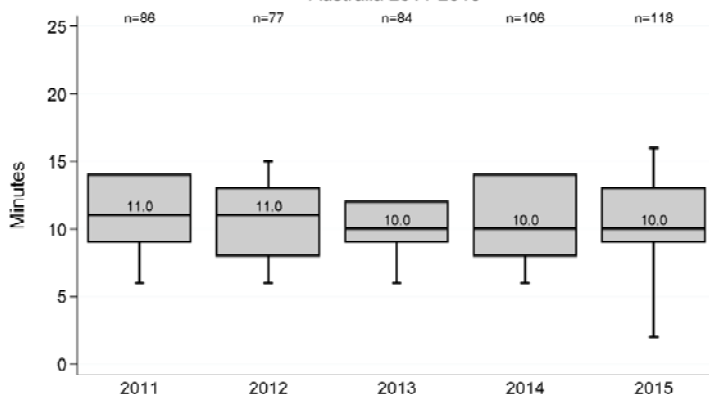
Figure 3.10



Time From Circulatory Death to Donation

Australia

Figure 3.11 Time from Circulatory Death to Donation (minutes) - DCD Donors Australia 2011-2015



In 2015, 85 DCD donors (71%) underwent aortic cross clamp within twelve minutes of the certification of brain death. The median time was 10 minutes.

Cold perfusion did not proceed in one Australian donor. One more donor had no DCD death date, due to initial declaration being DBD.

New Zealand

In 2015, 5 DCD (100%) underwent aortic cross clamp within twelve minutes of the certification of circulatory death. The median time was 7 minutes.

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

Donor Maintenance

Maintenance medication of the donor

(GIVEN IN THE INTENSIVE CARE/CRITICAL CARE UNIT)

Australia

There were 7 donors (1.61%) who did not require maintenance drug support in 2015.

Antidiuretic agents (desmopressin/vasopressin) were prescribed to 43.9% (191) 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 2015. 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 minutes.

New Zealand

In 2015 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 96 donors who did not receive any heparin as part of their terminal treatment in 2015. Seventy three of those donors were DCD (donation after circulatory death).

Ninety six donors did not receive any terminal treatment; 93 of those were DCD.

New Zealand

There were two donors who did not receive any heparin and only two donors did not receive any drugs as part of terminal treatment in 2015. These were heart beating donors.

Summary - Organs Requested, Consent Given, Retrieved and Transplanted

Table 3.13 shows the outcome of organs requested in 2015 (2104). 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.

Table 3.13

Summary for Organ Donation Pathway by Organ Type 2015 (2014)						
		Kidneys	Liver	Heart	Lungs	Pancreas Intestine
Australia	Organs for donation	870 (756)	435 (378)	435 (378)	870 (756)	435 (378) 435 (378)
	Organs Requested	828 (738)	389 (354)	306 (279)	784 (684)	328 (301) 185 (170)
	Organs Consented	824 (738)	377 (347)	281 (249)	752 (660)	314 (285) 147 (132)
	Organs Retrieved	763 (700)	264 (241)	103 (90)	394 (329)	121 (101) 1 (1)
	Utilised organs for transplantation	718 (658)	247 (222)	95 (83)	375 (319)	45 (44) 1 (1)
	Recipients transplanted	* 703 (636)	* 264 (237)	* 95 (83)	* 193 (163)	* 45 (44) * 1 (1)
New Zealand	Organs for donation	106 (92)	53 (46)	53 (46)	106 (92)	53 (46) 53 (46)
	Organs Requested	100 (88)	50 (41)	40 (29)	92 (66)	39 (22) 0 (0)
	Organs Consented	100 (88)	50 (41)	39 (27)	92 (66)	38 (22) 0 (0)
	Organs Retrieved	78 (74)	41 (33)	12 (17)	50 (40)	3 (2) 0 (0)
	Utilised organs for transplantation	73 (67)	41 (32)	12 (17)	50 (39)	3 (2) 0 (0)
	Recipients transplanted	* 73 (66)	* 46 (35)	* 12 (17)	* 25 (20)	* 3 (2) * 0 (0)
<i>Kidneys and Lungs are counted as two separate organs (i.e. left and right)</i> <i>*For Australia, 2015(2014) includes 15(22) Double adult/Enbloc Kidneys, 35(30) Partial Livers, 11 (7) Single Lung and 182(156) Double Lungs transplants</i> <i>*For New Zealand, 2015(2014) includes 0(1) Double-adult/Enbloc Kidneys, 10(6) Partial Livers, 0(1) Single Lung transplants and 25(19) Double Lungs transplants</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 118 (27%) Australian donors in 2015 who had a single organ retrieved and transplanted, shown in Table 3.14. Kidney only donation occurred in 85 cases.

New Zealand had 11 (21%) single organ donors in 2015, six donating kidneys and five donating a liver.

In Australia, 71% (309) of donors and 74% (39) of donors in New Zealand had two or more organs retrieved for the purpose of transplantation.

Table 3.14

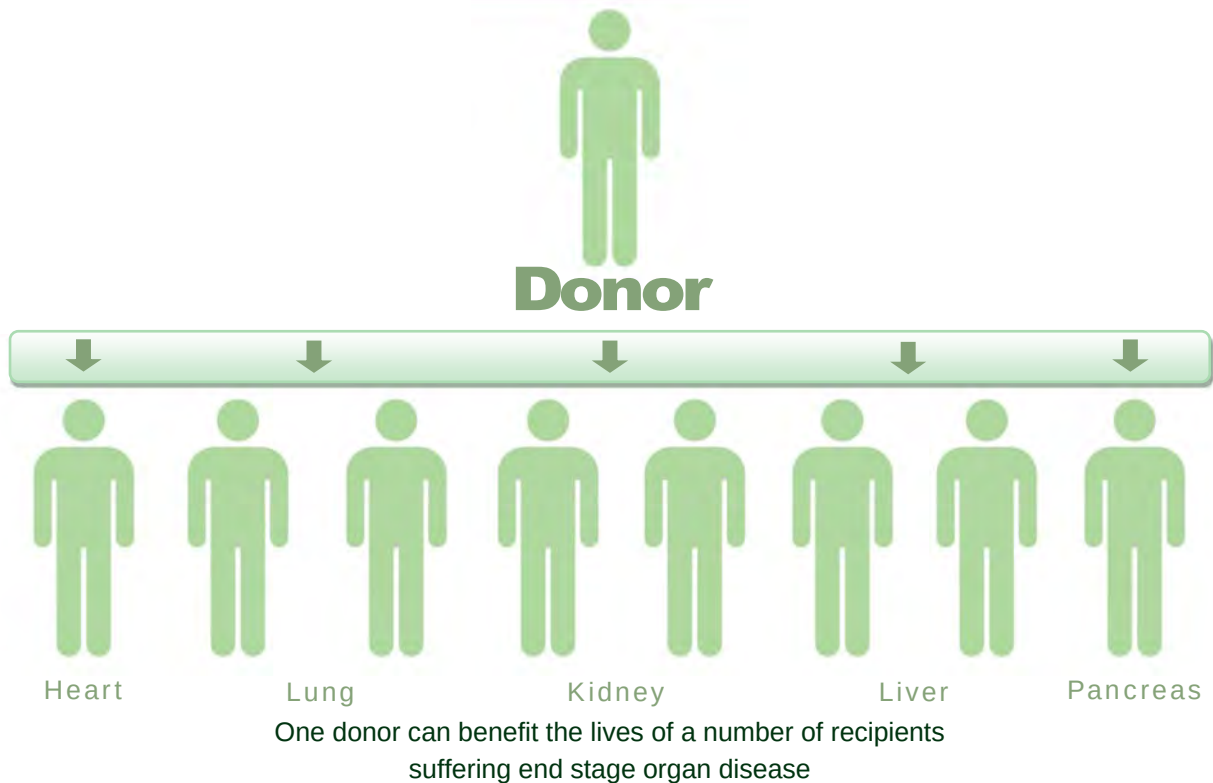
Multiple Organ Retrieval 2011 - 2015										
Number of Organs	Australia					New Zealand				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
No organs	8 (2%)	12 (3%)	16 (4%)	8 (2%)	8 (2%)	3 (8%)	4 (11%)	0 (0%)	3 (7%)	3 (6%)
One	89 (26%)	87 (25%)	86 (22%)	86 (23%)	118 (27%)	4 (11%)	5 (13%)	9 (25%)	12 (26%)	11 (21%)
Two	97 (29%)	107 (30%)	120 (31%)	107 (28%)	114 (26%)	10 (26%)	12 (32%)	13 (36%)	8 (17%)	14 (26%)
Three	75 (22%)	76 (21%)	100 (26%)	91 (24%)	95 (22%)	16 (42%)	8 (21%)	8 (22%)	12 (26%)	19 (36%)
Four	45 (13%)	50 (14%)	50 (13%)	51 (13%)	62 (14%)	5 (13%)	9 (24%)	6 (17%)	10 (22%)	5 (9%)
Five	23 (7%)	22 (6%)	19 (5%)	35 (9%)	37 (9%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)	1 (2%)
	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

ORGAN DONATION PATHWAY

Table 3.15 shows the comparison of multiple organ retrieval by State and Country for 2015

Table 3.15

Comparison of Multiple Organ Retrieval by State/Country 2015										
Number Of Organs	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
0	1 (1%)	3 (2%)	0 (0%)	2 (2%)	0 (0%)	0 (0%)	0 (0%)	2 (5%)	8 (2%)	3 (6%)
1	16 (22%)	38 (30%)	3 (23%)	41 (33%)	3 (33%)	11 (26%)	0 (0%)	6 (14%)	118 (27%)	11 (21%)
2	22 (31%)	41 (32%)	3 (23%)	23 (18%)	2 (22%)	7 (17%)	2 (50%)	14 (33%)	114 (26%)	14 (26%)
3	20 (28%)	19 (15%)	5 (38%)	27 (21%)	2 (22%)	10 (24%)	1 (25%)	11 (26%)	95 (22%)	19 (36%)
4	12 (17%)	16 (13%)	1 (8%)	19 (15%)	2 (22%)	5 (12%)	1 (25%)	6 (14%)	62 (14%)	5 (9%)
5	1 (1%)	10 (8%)	1 (8%)	13 (10%)	0 (0%)	9 (21%)	0 (0%)	3 (7%)	37 (9%)	1 (2%)
6	0 (0%)	0 (0%)	0 (0%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (0%)	0 (0%)
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										



Chapter 4

Donor Profile



2016
Annual Report
Data to 31-Dec-2015

DONATION PATHWAY

Table 4.1 contains a detailed description of organ donors in Australia in 2015 compared to 2014. Key observations are the gender discrepancy for DCD donors (where there are greater number or more 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 2014 - 2015								
			2014			2015		
			DBD	DCD	Total	DBD	DCD	Total
Australia	Gender	Male	131(48%)	77(72%)	208 (55%)	185(59%)	74(62%)	259 (60%)
		Female	140(52%)	30(28%)	170 (45%)	130(41%)	46(38%)	176 (40%)
	Age	0-4	4(1%)		4 (1%)	5(2%)	1(1%)	6 (1%)
		5-14	8(3%)	2(2%)	10 (3%)	10(3%)	3(3%)	13 (3%)
		15-24	14(5%)	8(7%)	22 (6%)	23(7%)	10(8%)	33 (8%)
		25-34	39(14%)	14(13%)	53 (14%)	42(13%)	9(8%)	51 (12%)
		35-44	41(15%)	15(14%)	56 (15%)	48(15%)	11(9%)	59 (14%)
		45-54	63(23%)	27(25%)	90 (24%)	65(21%)	21(18%)	86 (20%)
		55-64	53(20%)	34(32%)	87 (23%)	63(20%)	43(36%)	106 (24%)
		65-74	38(14%)	7(7%)	45 (12%)	47(15%)	21(18%)	68 (16%)
		75+	11(4%)		11 (3%)	12(4%)	1(1%)	13 (3%)
	BMI (kg/m2)	Underweight (<18.5)	11(4%)	3(3%)	14 (4%)	12(4%)	5(4%)	17 (4%)
		Normal (18.5-<25)	97(36%)	37(35%)	134 (35%)	117(37%)	42(35%)	159 (37%)
		Overweight(25-<30)	106(39%)	35(33%)	141 (37%)	101(32%)	37(31%)	138 (32%)
		Obese(>=30)	57(21%)	32(30%)	89 (24%)	85(27%)	35(29%)	120 (28%)
		Unknown					1(1%)	1 (0%)
	Blood Group	A	102(38%)	42(39%)	144 (38%)	126(40%)	48(40%)	174 (40%)
		AB	11(4%)	3(3%)	14 (4%)	10(3%)	5(4%)	15 (3%)
		B	27(10%)	13(12%)	40 (11%)	43(14%)	15(13%)	58 (13%)
		O	131(48%)	49(46%)	180 (48%)	136(43%)	52(43%)	188 (43%)
	Ethnicity	Australian	207(76%)	79(74%)	286 (76%)	237(75%)	89(74%)	326 (75%)
		Australian Aboriginal	4(1%)	3(3%)	7 (2%)	10(3%)	1(1%)	11 (3%)
		New Zealander	5(2%)	2(2%)	7 (2%)	4(1%)	1(1%)	5 (1%)
		Māori	1(0%)		1 (0%)		1(1%)	1 (0%)
		Pacific Islander	2(0%)	2(2%)	4(1%)	4(1%)		4(1%)
		European	24(8%)	7(7%)	31(9%)	29(9%)	15(13%)	44(11%)
		Middle East	2(0%)		2(0%)	2(0%)	2(2%)	4(1%)
		Asian	15(5%)	10(10%)	25(7%)	23(7%)	9(9%)	32(7%)
		American	10(3%)	2(2%)	10(3%)	4(2%)	1(1%)	5(1%)
		Other	3(1%)	2(2%)	5 (1%)	2(1%)	1(1%)	3 (1%)
	Cause of Death	Intracranial Haemorrhage	131(48%)	29(27%)	160 (42%)	124(39%)	32(27%)	156 (36%)
		Traumatic Brain Injury	38(14%)	15(14%)	53 (14%)	43(14%)	13(11%)	56 (13%)
		Cerebral Infarct	21(8%)	12(11%)	33 (9%)	17(5%)	10(8%)	27 (6%)
		Cerebral Hypoxia / Ischaemia	73(27%)	45(42%)	118 (31%)	126(40%)	46(38%)	172 (40%)
		Other Neurological Condition	4(1%)	1(1%)	5 (1%)	5(2%)	4(3%)	9 (2%)
		Non-Neurological Condition	4(1%)	5(5%)	9 (2%)		15(13%)	15 (3%)

As of 2014, with the implementation of the EDR racial origin has been classified by Ethnicity according to the Australian Bureau of Statistics.

DONATION PATHWAY

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 2014 - 2015								
			2014			2015		
			DBD	DCD	Total	DBD	DCD	Total
New Zealand	Gender	Male	26(65%)	5(83%)	31 (67%)	29(60%)	4(80%)	33 (62%)
		Female	14(35%)	1(17%)	15 (33%)	19(40%)	1(20%)	20 (38%)
	Age	0-4	1(3%)		1 (2%)			
		5-14	1(3%)		1 (2%)	1(2%)		1 (2%)
		15-24	7(18%)	1(17%)	8 (17%)	8(17%)	1(20%)	9 (17%)
		25-34	3(8%)		3 (7%)	7(15%)		7 (13%)
		35-44	6(15%)	1(17%)	7 (15%)	7(15%)	1(20%)	8 (15%)
		45-54	10(25%)	1(17%)	11 (24%)	7(15%)	2(40%)	9 (17%)
		55-64	6(15%)	3(50%)	9 (20%)	10(21%)	1(20%)	11 (21%)
		65-74	3(8%)		3 (7%)	7(15%)		7 (13%)
		75+	3(8%)		3 (7%)	1(2%)		1 (2%)
	BMI (kg/m2)	Underweight (<18.5)				1(2%)		1 (2%)
		Normal (18.5-<25)	17(43%)	1(17%)	18 (39%)	25(52%)	3(60%)	28 (53%)
		Overweight(25-<30)	16(40%)	5(83%)	21 (46%)	16(33%)	2(40%)	18 (34%)
		Obese(≥30)	6(15%)		6 (13%)	6(13%)		6 (11%)
		Unknown	1(3%)		1 (2%)			
	Blood Group	A	22(55%)	1(17%)	23 (50%)	15(31%)	3(60%)	18 (34%)
		AB	2(5%)		2 (4%)	3(6%)		3 (6%)
		B		1(17%)	1 (2%)	5(10%)		5 (9%)
		O	16(40%)	4(67%)	20 (43%)	25(52%)	2(40%)	27 (51%)
	Ethnicity	Australian	4(10%)		4 (9%)			
		New Zealander	22(55%)	5(83%)	27 (59%)	38(79%)	3(60%)	41 (77%)
		Māori	6(15%)		6 (13%)	3(6%)	2(40%)	5 (9%)
		Polynesian	1(3%)		1 (2%)			
		European	3(8%)	1(17%)	4(9%)	2(4%)		2(4%)
		Asian - Filipino	1(3%)		1 (2%)	2(4%)		2 (4%)
		American	2(6%)		2(4%)	3(6%)		3(6%)
		Other	1(3%)		1 (2%)			
	Cause of Death	Intracranial Haemorrhage	17(43%)	1(17%)	18 (39%)	24(50%)		24 (45%)
		Traumatic Brain Injury	13(33%)	2(33%)	15 (33%)	10(21%)		10 (19%)
		Cerebral Infarct	3(8%)		3 (7%)	2(4%)		2 (4%)
		Cerebral Hypoxia / Ischaemia	5(13%)	3(50%)	8 (17%)	11(23%)	5(100%)	16 (30%)
		Other Neurological Condition				1(2%)		1 (2%)
		Non-Neurological Condition	2(5%)		2 (4%)			

As of 2014, with the implementation of the EDR racial origin has been classified by Ethnicity according to the Australian Bureau of Statistics.

AGE AND GENDER DISTRIBUTION IN AUSTRALIA AND NEW ZEALAND

In Australia in 2015, 15.63% of donors (68) were 65-74 years of age and 2.99% (13 donors) were aged 75 years or older. The oldest donor was 87.4 years and the youngest 1.2 years. In New Zealand in 2015, 15.1% of donors (8) were 65 years or older. The age range was from 5.1 years to 79.6 years.

The mean age of donors in Australia in 2015 was 48.6 years. The mean age in New Zealand was 45.3 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 2007-2009, 2010-2012 and 2013-2015.

Figure 4.1

Age and Gender of Deceased Donors
Australia 2007-2015

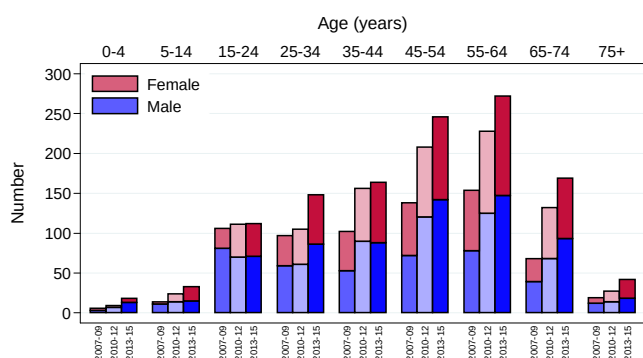


Figure 4.2

Age and Gender of Deceased Donors
New Zealand 2007-2015

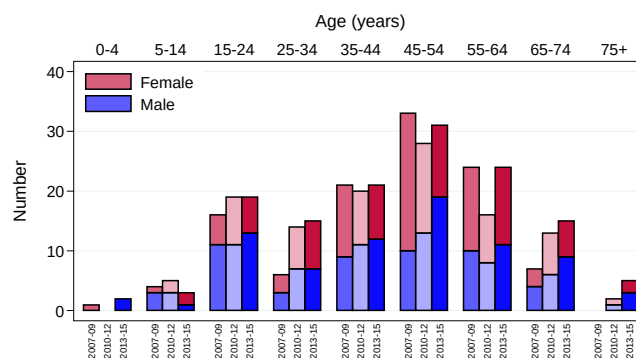


Figure 4.3

Age and Gender of Donors After Brain Death
Australia 2007-2015

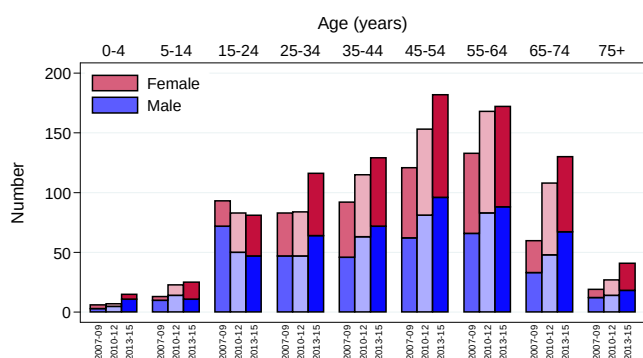


Figure 4.4

Age and Gender of Donors After Circulatory Death
Australia 2007-2015

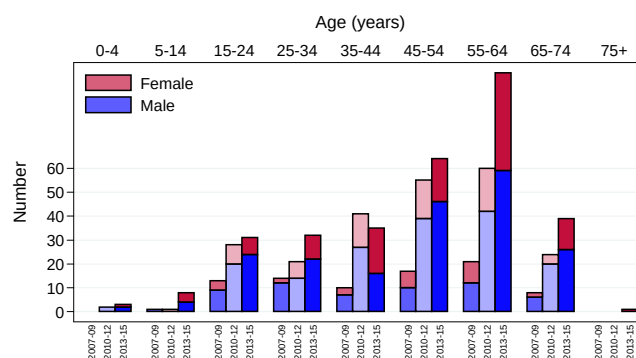


Figure 4.5

Age and Gender of Donors After Brain Death
New Zealand 2007-2015

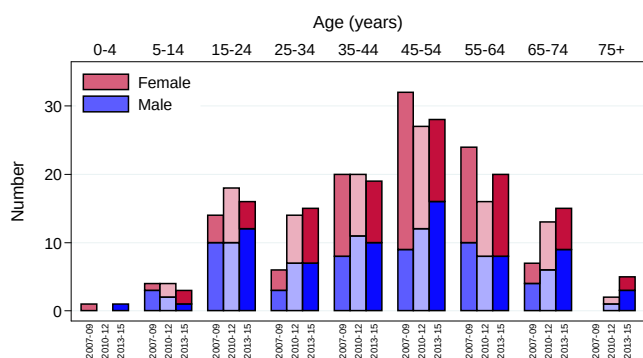
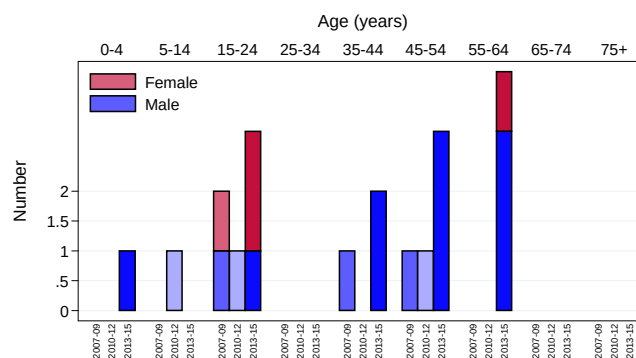


Figure 4.6

Age and Gender of Donors After Circulatory Death
New Zealand 2007-2015



DONATION PATHWAY

Australia

The mean age of donors for Australia in 2015 was 48.6 years. Across Australian States the mean age ranged from 43.8 years in the Northern Territory to 52 years in New South Wales.

The median age of donors for Australian States in 2015 ranged from 36.8 years in the Northern Territory to 56.3 years in New South Wales.

The median age for Australian donors in 2015 was 51.3 years.

Figure 4.7

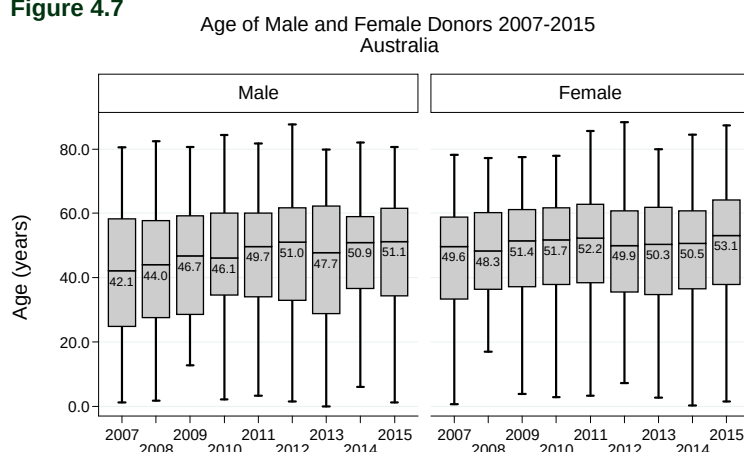
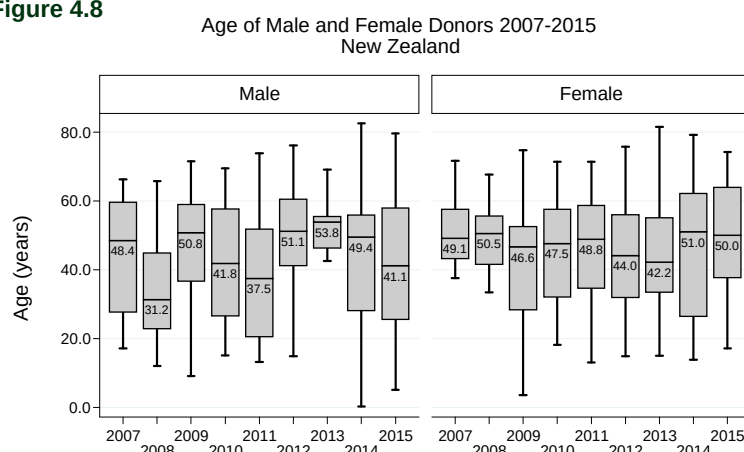


Figure 4.8



New Zealand

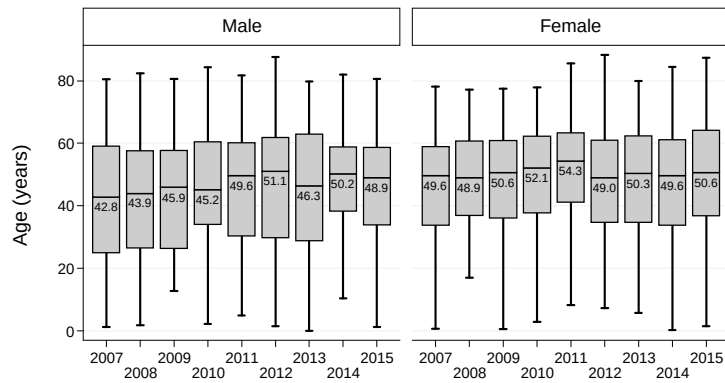
For New Zealand the mean age of donors was 45.3 years.

The median age for New Zealand was 47.1 years in 2015. There was one donor aged 75 years or over (down from 3 in 2014) and no donors aged less than 5 years.

DONATION PATHWAY

Figure 4.9

Age of Male and Female Donors After Brain Death 2007-2015
Australia



The age and gender of donors by donation pathway is shown per year from 2007 - 2015 for Australia and New Zealand in Figures 4.10 to 4.11.

Figure 4.10

Age of Male and Female Donors After Circulatory Death 2007-2015
Australia

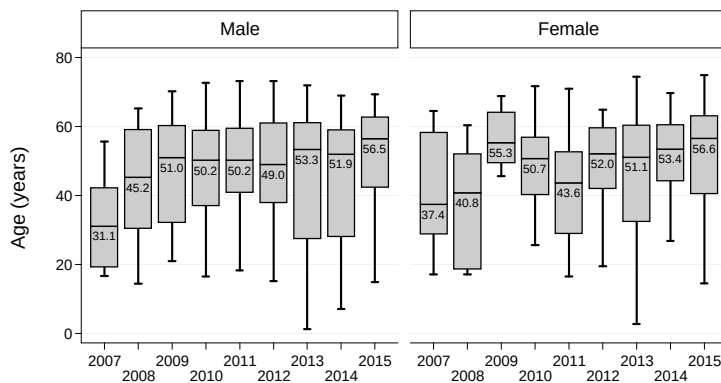
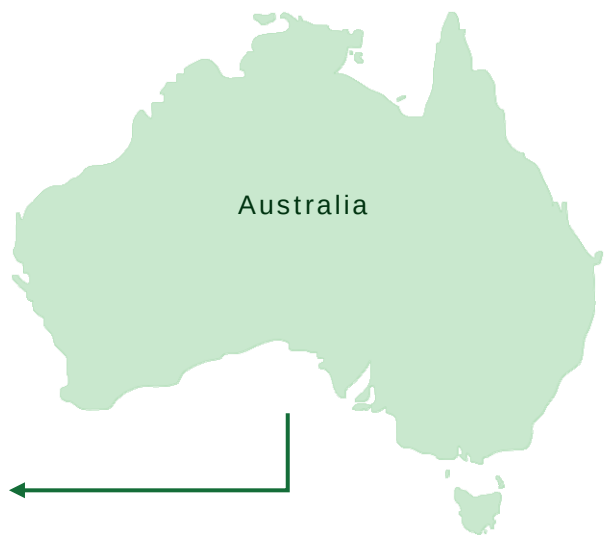
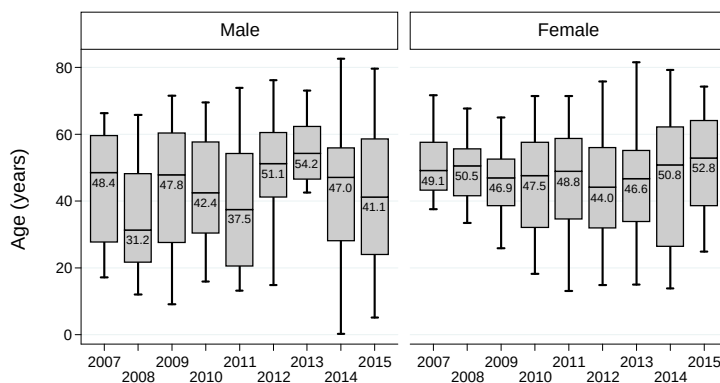


Figure 4.11

Age of Male and Female Donors After Brain Death 2007-2015
New Zealand



DONATION PATHWAY

Figure 4.12

Age of Deceased Donors 2007-2015
Queensland

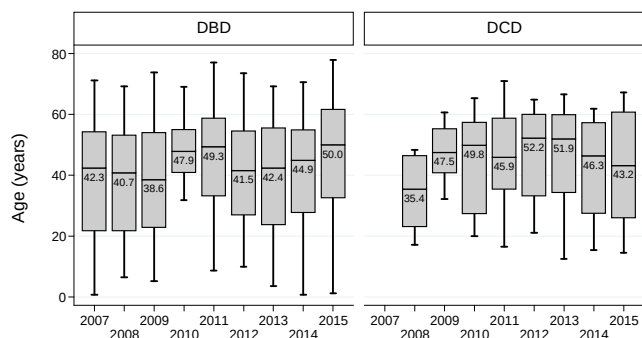


Figure 4.13

Age of Deceased Donors 2007-2015
New South Wales

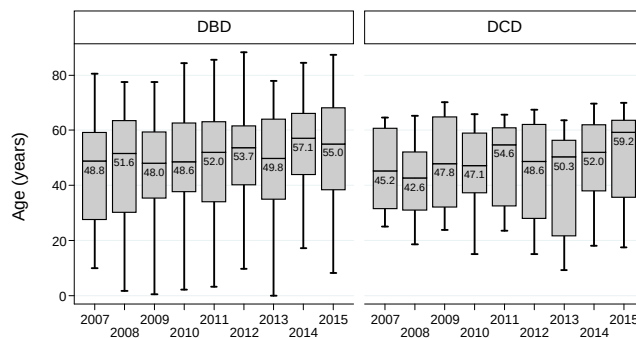


Figure 4.14

Age of Deceased Donors 2007-2015
Australian Capital Territory

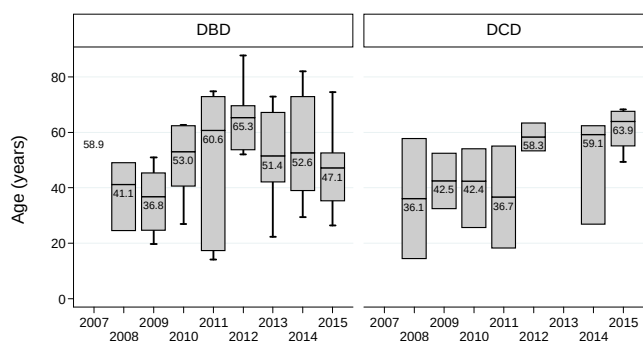


Figure 4.15

Age of Deceased Donors 2007-2015
Victoria

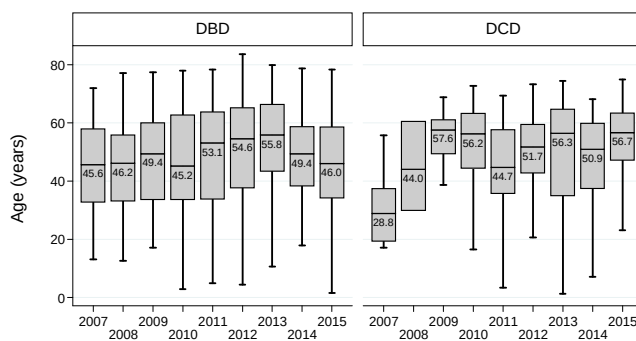


Figure 4.16

Age of Deceased Donors 2007-2015
Tasmania

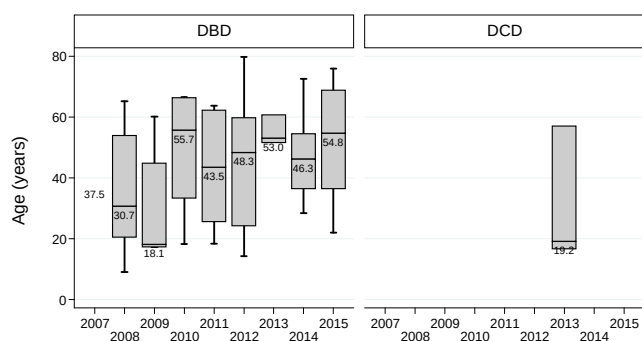


Figure 4.17

Age of Deceased Donors 2007-2015
South Australia

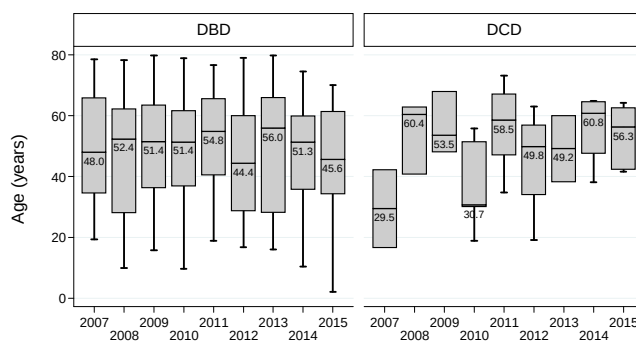


Figure 4.18

Age of Deceased Donors 2007-2015
Northern Territory

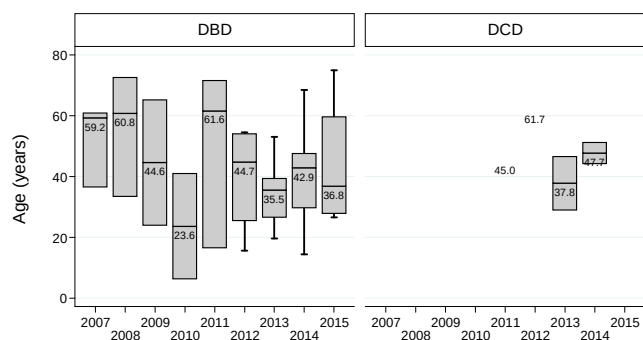
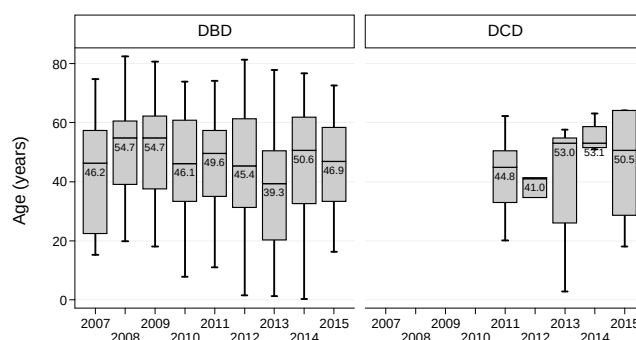


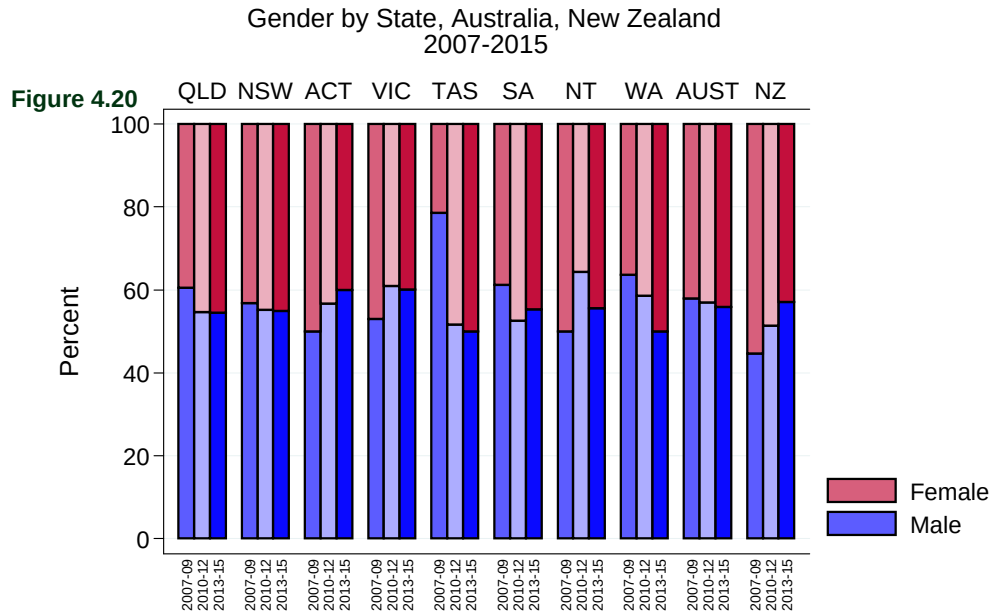
Figure 4.19

Age of Deceased Donors 2007-2015
Western Australia



DONATION PATHWAY

Donor gender in each State, Australia and New Zealand is shown in three year cohorts in Figures 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 2011- 2015										
Ethnicity	Australia					New Zealand				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Caucasoid	316 (94%)	320 (90%)	335 (86%)	-	-	30 (79%)	28 (74%)	29 (81%)	-	-
Australian				286 (76%)	326 (75%)	-	-	-	4 (9%)	
Australian Aboriginal	3 (1%)	4 (1%)	8 (2%)	7 (2%)	11 (3%)	-	-	-	-	-
New Zealander	-	-	-	7 (2%)	5 (1%)	-	-	-	27 (59%)	41 (77%)
Māori	-	4 (1%)	4 (1%)	1 (0%)	1 (0%)	3 (8%)	6 (16%)	3 (8%)	6 (13%)	5 (9%)
Pacific Islander	1(0%)	2(1%)	3(1%)	4(1%)	3(1%)	4(11%)	1(3%)			
European	6(2%)	11(3%)	8(2%)	8(3%)	31(9%)	46(11%)			4(9%)	2(4%)
North African & Middle East		1(0%)	3(1%)	1(0%)						
Asian	9(2%)	11(3%)	22(7%)	25(7%)	32(7%)	1(3%)	3(9%)	3(9%)	1(2%)	2(4%)
American	1(0%)			10(3%)	5(1%)				1(4%)	3(6%)
Other	1(0%)	1(0%)		5(1%)	3(1%)			1(3%)	1(2%)	

As of 2014, with the implementation of the EDR racial origin has been classified by Ethnicity according to the Australian Bureau of Statistics.

DONATION PATHWAY

Table 4.4 shows the religious denomination of donors. This has remained stable over the 5 years to 2015.

Table 4.4

Religious Denomination of Donors 2011 - 2015										
Donor Religion	Australia					New Zealand				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Christianity	111 (33%)	110 (31%)	122 (31%)	96 (25%)	136 (31%)	7 (18%)	5 (13%)	3 (8%)	4 (9%)	3 (6%)
Judaism	-	-	3 (1%)	2 (1%)	2 (0%)	-	-	-	-	-
Islam	-	1 (0%)	2 (1%)	-	1 (0%)	-	-	-	-	-
Buddhism	1 (0%)	4 (1%)	1 (0%)	7 (2%)	6 (1%)	-	-	-	-	-
Hinduism	-	2 (1%)	-	2 (1%)	3 (1%)	-	-	1 (3%)	-	-
Others	-	-	5 (1%)	3 (1%)	4 (1%)	-	-	-	-	-
No religion	75 (22%)	59 (17%)	77 (20%)	87 (23%)	92 (21%)	-	-	-	1 (2%)	-
Unknown	150 (45%)	178 (50%)	181 (46%)	181 (48%)	191 (44%)	31 (82%)	33 (87%)	32	41 (89%)	50 (94%)

DONOR WEIGHT

The allocation of heart, lungs and livers are based in part on the matching of recipient and donor size and weight. In 2015 there were 14 donors in Australia and one donor in New Zealand who weighed less than 40 kilograms. There were 68 donors 100 kilograms and over in Australia and four donors in New Zealand.

Table 4.5

Donor Weight 2011 - 2015												
Kilograms												
		0-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100 +	Total
Australia	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	53	104	86	54	38	378
	2015	7	4	3	8	33	70	93	86	63	68	435
New Zealand	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
	2015	0	1	0	0	3	12	12	11	10	4	53

MEDICAL CONDITION OF DONORS

Table 4.6 lists the medical conditions of donors by States, Territories and Country for 2015 compared to 2014 by Donor type.

Table 4.6

Medical Condition of Donors by States/Country 2015 (2014)											
Donor Type	Medical Condition	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUST	NZ
DBD	Diabetes Type I	0 (1)	2 (2)	0 (0)	0 (2)	0 (0)	0 (0)	0 (0)	1 (0)	3 (5)	2 (1)
	Diabetes Type II	3 (2)	6 (4)	0 (0)	10 (3)	1 (1)	3 (2)	0 (0)	5 (2)	28 (14)	0 (1)
	Hypertension	14 (7)	35 (25)	3 (2)	23 (19)	1 (2)	5 (10)	0 (0)	13 (12)	94 (77)	15 (11)
	Smoking-Current	21 (27)	34 (28)	2 (2)	35 (33)	4 (5)	14 (14)	2 (2)	15 (10)	127 (121)	18 (7)
	Cancer	3 (1)	13 (3)	0 (0)	5 (0)	2 (1)	2 (3)	0 (0)	5 (1)	30 (9)	1 (0)
DCD	Diabetes Type I	1 (0)	1 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	3 (1)	0 (0)
	Diabetes Type II	0 (0)	3 (2)	0 (0)	11 (2)	0 (0)	0 (0)	0 (0)	0 (0)	14 (4)	1 (0)
	Hypertension	4 (3)	11 (4)	2 (0)	20 (13)	0 (0)	2 (1)	0 (0)	1 (1)	40 (22)	1 (1)
	Smoking-Current	8 (6)	12 (10)	3 (0)	17 (21)	0 (0)	1 (1)	0 (0)	0 (2)	41 (40)	1 (1)
	Cancer	4 (1)	4 (1)	1 (1)	5 (1)	0 (0)	0 (0)	0 (0)	0 (0)	14 (4)	0 (0)

Diabetes

There were 48 donors with diabetes in Australia in 2014, six donors with Type 1 and 42 with Type 2 diabetes. There were three donors in New Zealand with diabetes; two with Type 1 and 1 with 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 42 Type 2 donors provided fifty seven kidneys, two double/en-bloc kidneys, eighteen livers, one heart, twenty double lungs, twenty corneas, eight cardiovascular tissues, nineteen eyes (whole), three corneas, four musculoskeletal arm donations, ten musculoskeletal leg donations, nine pelvic donations and four skin donations. The six diabetic Type 1 donors in Australia, provided six kidneys, three liver, one heart, five double lungs and one bone donation.

DONATION PATHWAY

In New Zealand, two kidneys, one liver, one double lungs and two eyes (whole) were retrieved from the three diabetic donors.

Hypertension

A past history of hypertension was recorded in 30.8% of donors (134) in Australia and 30.19% (16 donors) in New Zealand in 2015 (Table 4.6).

The Australian donors provided 185 kidneys, 7 double/en-bloc kidneys, 64 livers, 2 split livers, 13 hearts, 49 double lungs, 1 single lung, 2 pancreases, 5 pancreas islets, 5 corneas, 68 eyes (whole), 31 cardiovascular tissue donations, eight musculoskeletal arm donations, 28 musculoskeletal leg donations, 22 pelvic donations, 2 abdomen vessels, 4 thoracic vessels and eighteen tissue donations.

In New Zealand, the 16 donors with hypertension provided 13 kidneys, 14 livers, 1 heart, 9 double lungs and 1 thoracic vessel, 6 eyes (whole) and 2 cardiovascular donations.

Smoking

In 2015, 38.62% (168) of Australian donors were recorded as current smokers while in New Zealand, 35.85% (19) donors were reported as current smokers.

Cancer in Donor

In Australia, 44 donors had a history of cancer prior to donation. There 27 donors having skin only cancers, 15 with non-skin cancers and two with a history of both skin and non-skin cancer. In New Zealand, one donor in 2015 had a history of previous cancer, which was a skin only cancer. Table 4.7 identifies the type of cancer by primary site in Australian Donors.

Table 4.7

History of Cancer in Donor - Type of Cancer by Primary Site							
Type of Cancer / Primary Site	SCC BCC Intraepidermal	Adeno- carcinoma	Other - (specified)	Lymphoma	Leukaemia	Unknown	Total
Skin	52	0	3	0	0	1	56
Brain	0	0	2	0	0	0	2
Nasal Cavity	0	0	0	0	0	1	1
Tongue	1	0	0	0	0	0	1
Thyroid	0	0	1	0	0	1	2
Kidney/Urinary	0	0	1	0	0	0	1
Ovary	0	0	2	0	0	0	2
Cervix	0	1	0	0	0	1	2
Prostate	0	3	0	0	0	0	3
Colon	0	0	1	0	0	0	1
Leukaemia	0	0	0	0	1	0	0
Other unspecified	1	0	0	0	0	0	1
Unknown	0	0	0	1	0	0	1
Total	54	3	10	1	1	4	74

VIROLOGY SCREENING

Table 4.8 shows the cytomegalovirus (CMV) status of donors from 2010 to 2015.

Table 4.8

Cytomegalovirus (CMV IgG) Status of Donors 2010 - 2015												
	Australia						New Zealand					
	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Positive	191	214	225	242	229	268	23	21	30	21	23	26
Negative	118	123	129	148	147	167	18	17	8	15	23	27
Not Done	0	0	0	0	2	0	0	0	0	0	0	0
Unknown	0	0	0	1	0	0	0	0	0	0	0	0
Indeterminate	0	0	0	0	0	0	0	0	0	0	0	0
Pending	0	0	0	0	0	0	0	0	0	0	0	0
Total	309	337	354	391	378	435	41	38	38	36	46	53

Table 4.9 shows the Epstein-Barr Virus (EBV) status of donors from 2010 to 2015.

Table 4.9

Epstein-Barr Virus (EBV IgG) Status of Donors 2010 - 2015												
	Australia						New Zealand					
	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Positive	198	293	321	356	339	402	33	27	33	27	37	36
Negative	14	28	33	33	30	28	2	4	1	4	5	13
Not Done	97	16	0	2	5	1	6	7	4	0	3	2
Unknown	0	0	0	0	0	0	0	0	0	5	0	1
Indeterminate	0	0	0	0	1	0	0	0	0	0	1	0
Pending	0	0	0	0	3	4	0	0	0	0	0	1
Total	309	337	354	391	378	435	41	38	38	36	46	53

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

DONATION PATHWAY

HEPATITIS C ANTIBODY

There were eleven Hepatitis C positive donors in 2015 , nine in Australia and one in New Zealand.

Of the positive donors in Australia, nine were DBD donors. There were two double/en-bloc kidneys, five livers and one double lung donated.

The one positive donor in New Zealand was a DBD donor, who donated a liver.

Table 4.10

Hepatitis C Antibody Status of Donors 2010 - 2015												
	Australia						New Zealand					
	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Positive	2	7	5	13	8	11	0	1	2	1	2	1
Negative	307	330	349	378	364	420	41	37	36	35	44	52
Not Done	0	0	0	0	5	4	0	0	0	0	0	0
Unknown	0	0	0	0	1	0	0	0	0	0	0	0
Indeterminate	0	0	0	0	0	0	0	0	0	0	0	0
Pending	0	0	0	0	0	0	0	0	0	0	0	0
Total	309	337	354	391	378	435	41	38	38	36	46	53

HEPATITIS B CORE ANTIBODY

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

A positive result was recorded for 4.6% (20) of Australian donors and 5.7% (3) of New Zealand donors in 2015 (Table 4.10).

Of the positive donors in Australia, nine were DBD and two were DCD donors. These 20 donors, provided 23 kidneys, 10 whole livers, 1 left split liver, 1 right split liver, 1 heart, 6 double lungs, 1 pancreas islets, 6 eyes (whole), 2 corneas and 2 skin donations, 3 cardiovascular tissue donations and 3 musculoskeletal leg donations.

The three positive Hepatitis B donors in New Zealand provided, 2 kidneys, 3 whole livers, 1 double lung and 1 abdomen vessel donation.

Figure 4.11

Hepatitis B Core Antibody Status of Donors (Anti-HBcAb) 2010 - 2015												
	Australia						New Zealand					
	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Positive	20	11	15	17	21	20	2	5	8	2	3	3
Negative	289	326	339	374	337	394	39	33	30	34	42	50
Not Done	0	0	0	0	19	21	0	0	0	0	1	0
Unknown	0	0	0	0	1	0	0	0	0	0	0	0
Indeterminate	0	0	0	0	0	0	0	0	0	0	0	0
Pending	0	0	0	0	0	0	0	0	0	0	0	0
Total	309	337	354	391	378	435	41	38	38	36	46	53

Hepatitis B Surface Antigen

Since 1993, all donors in Australia and New Zealand have been tested negative for Hepatitis B surface antigen, except 1 donors in 2004, 2 in 2014 and 4 in 2015 all of whom were not tested.

Figure 4.12

Hepatitis B Surface Antigen Status of Donors (HBsAg) 2010 - 2015												
	Australia						New Zealand					
	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Positive	0	0	0	2	1	0	0	0	0	2	1	0
Negative	309	337	354	389	375	431	41	38	38	34	45	53
Not Done	0	0	0	0	2	4	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Indeterminate	0	0	0	0	0	0	0	0	0	0	0	0
Pending	0	0	0	0	0	0	0	0	0	0	0	0
Total	309	337	354	391	378	435	41	38	38	36	46	53

Chapter 5

Kidney Donation in Australia and New Zealand



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KIDNEY DONATION

In Australia, there were 703 kidney transplant recipients in 2015. Of the 703 kidney transplant procedures performed, there were 9 double adult kidney recipients, six enbloc kidney recipients, 43 combined kidney/pancreas recipients, nine kidney/liver recipients, two kidney/heart recipients and one kidney/intestine recipient.

In New Zealand, there were 73 kidney recipients including two combined kidney/pancreas and two combined kidney/liver transplant procedures and 0 double/enbloc kidney transplants.

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 2015, and DBD kidneys from 2010 to 2015 in Australia.

Figure 5.1

Outcomes of Request for Kidney Donation Australia 2015

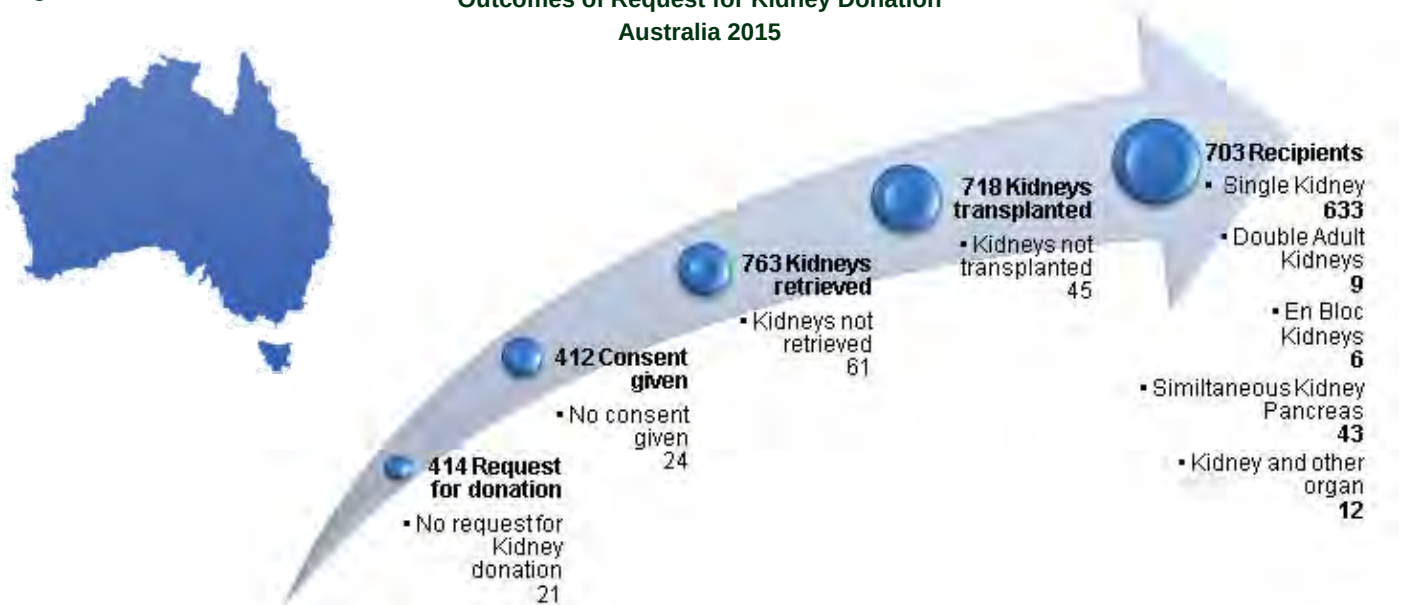
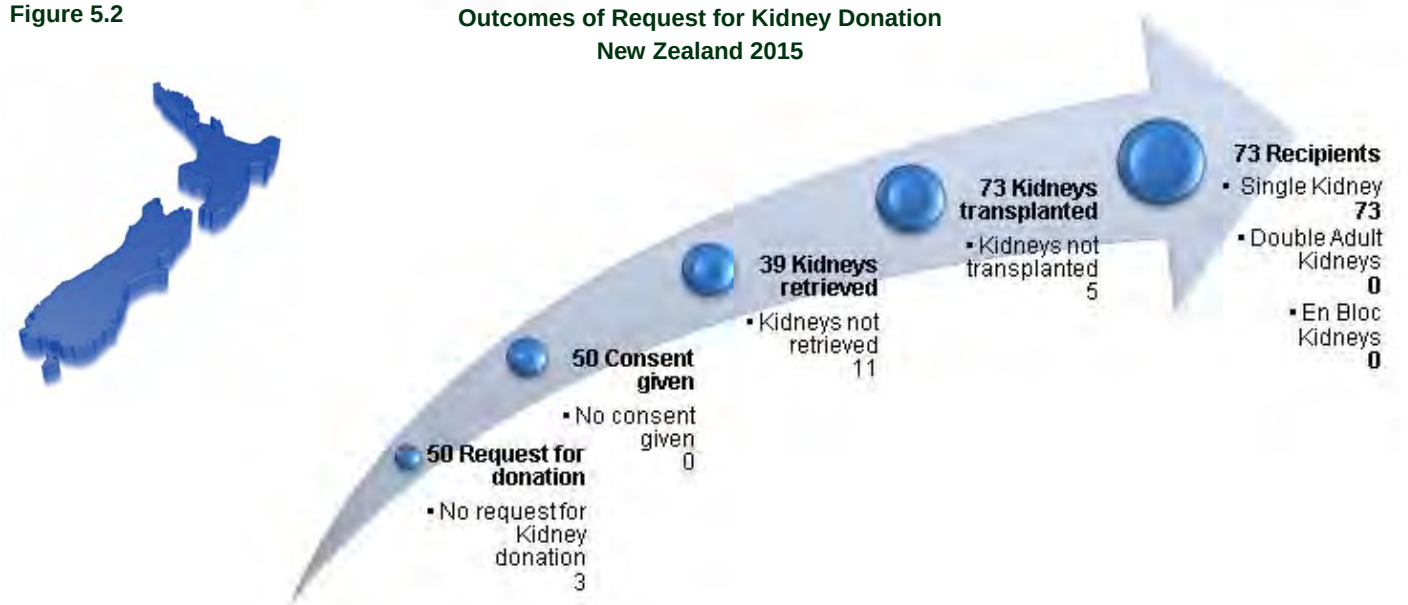


Figure 5.2

Outcomes of Request for Kidney Donation New Zealand 2015



KIDNEY DONATION

Figure 5.3

Kidneys Transplanted by Donation Pathway
Australia 1998-2015

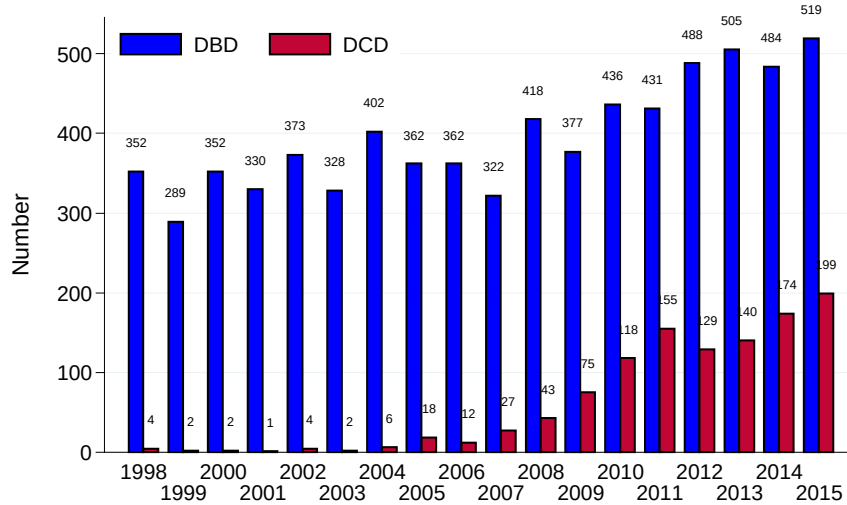


Figure 5.4

Kidneys Transplanted by Donation Pathway
New Zealand 1998-2015

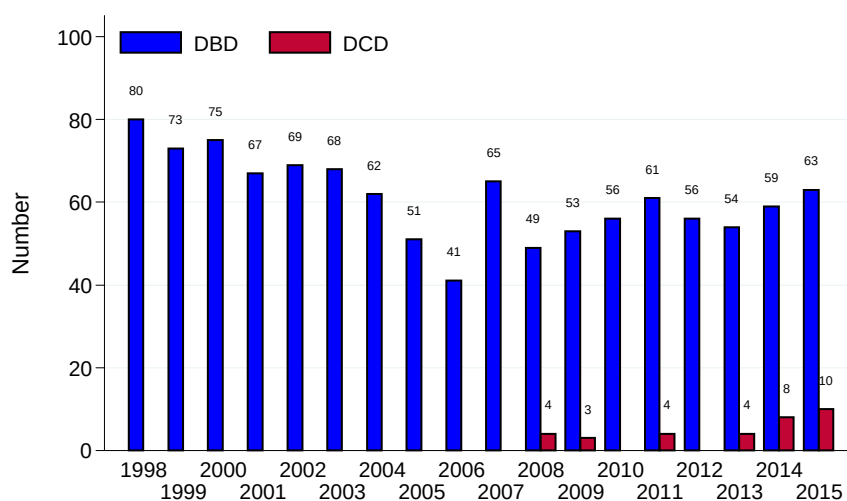
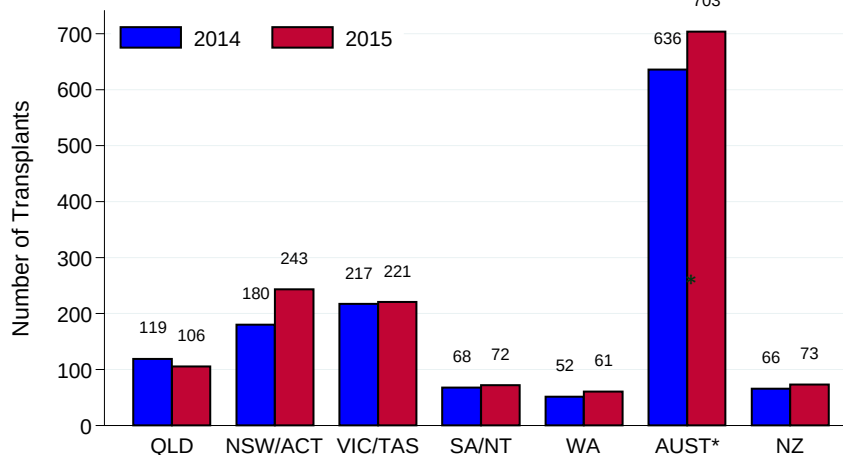


Figure 5.5

Deceased Donor Kidney Transplant Recipients*
by Transplant State, Australia and New Zealand, 2014-2015



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

KIDNEY DONATION

KIDNEY DONORS

The age distribution of donors providing transplanted kidneys for Australia and New Zealand is shown in Figures 5.6 and 5.7 respectively.

Figure 5.6

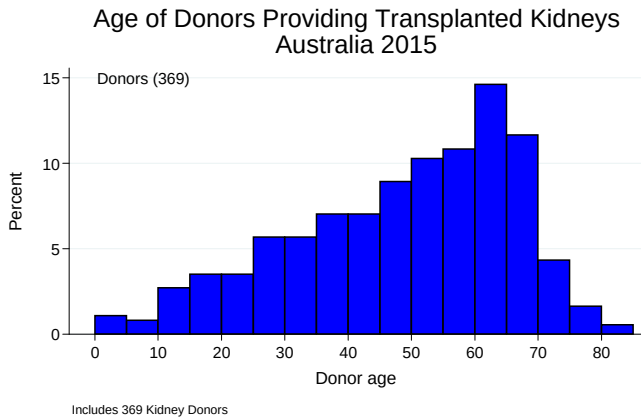
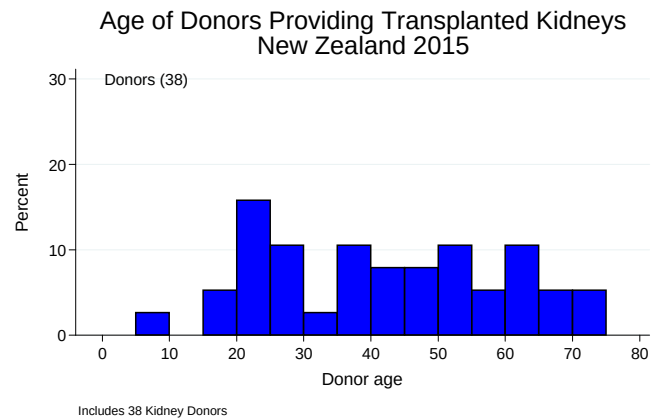


Figure 5.7



DONOR KIDNEY FUNCTION

Table 5.1

Terminal Serum Creatinine Levels 2011-2015						
Country	Creatinine (μmol/L)	2011	2012	2013	2014	2015
Australia	00-99	76%	75%	79%	77%	71%
	100-124	11%	9%	7%	7%	7%
	125-149	5%	5%	4%	4%	5%
	150-174	3%	2%	3%	2%	3%
	175-199	1%	2%	2%	1%	3%
	200-224	1%	1%	1%	2%	1%
	225-249	1%	1%	0%	0%	1%
	>= 250	2%	4%	4%	5%	9%
New Zealand	00-99	81%	87%	81%	83%	88%
	100-124	9%	10%	6%	15%	10%
	125-149	6%	3%	6%	-	2%
	150-174	-	-	3%	-	-
	175-199	-	-	-	2%	-
	200-224	3%	-	-	-	-
	225-249	-	-	3%	-	-
	>= 250	-	-	-	-	-

KIDNEY DONATION

KIDNEYS NOT RETRIEVED

In 2015, there were 61 kidneys not retrieved from Australian donors and 22 not retrieved from New Zealand donors. For Australia, the main reason was due to the kidney not being medically suitable (46), followed by no suitable recipient for the kidney (13). In New Zealand, there were 14 non-retrieved kidneys due to not being medically suitable and eight due to trauma to the organ.

Table 5.2

Reasons Kidney Not Retrieved, 2015		
Reason	Australia	New Zealand
Logistics	2	0
Not Medically Suitable	46	14
Surgically Unsuitable	0	0
Trauma to Organ	0	8
No Suitable Recipients	13	0
Age of Donor	0	0
Total	61	22

KIDNEYS RETRIEVED AND NOT UTILISED

The reasons why kidneys were not utilised for organ transplantation is presented in Table 5.2.

Table 5.3

Reasons Kidneys Retrieved and Not Utilised for Organ Transplantation in Australia (New Zealand) 2011 - 2015						
Year	Logistics	Not Medically Suitable	Not Surgically Suitable	No Suitable Recipients	Other	Total
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)	32 (3)	7 (0)	3 (0)	1 (0)	46 (3)
2014	0 (0)	32 (6)	3 (1)	5 (0)	2 (0)	42 (7)
2015	0 (0)	38 (4)	3 (1)	2 (0)	2 (0)	45 (5)

Figures 5.8 and 5.9 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).

Figure 5.8

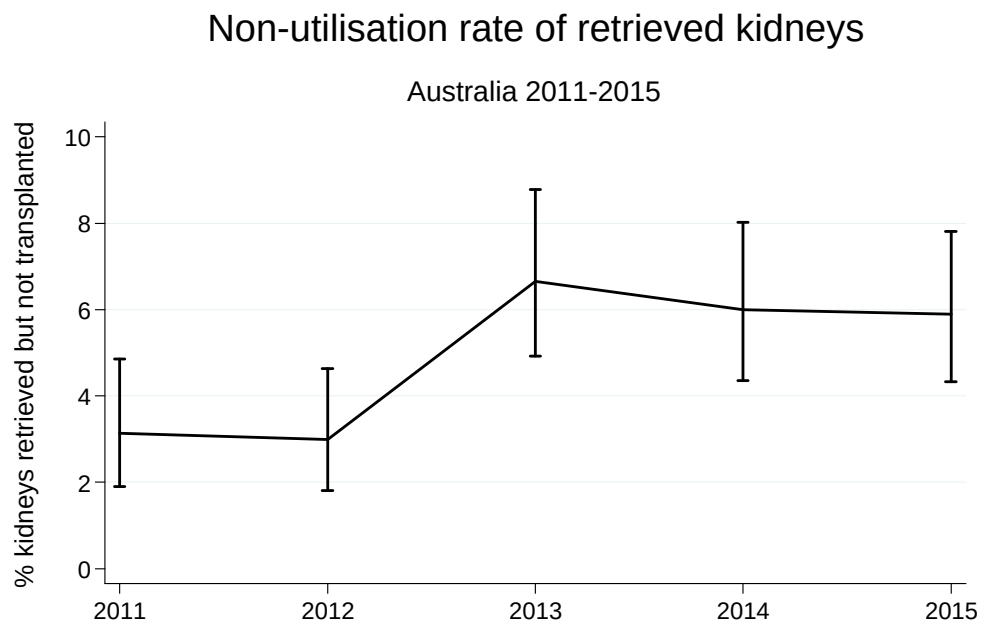
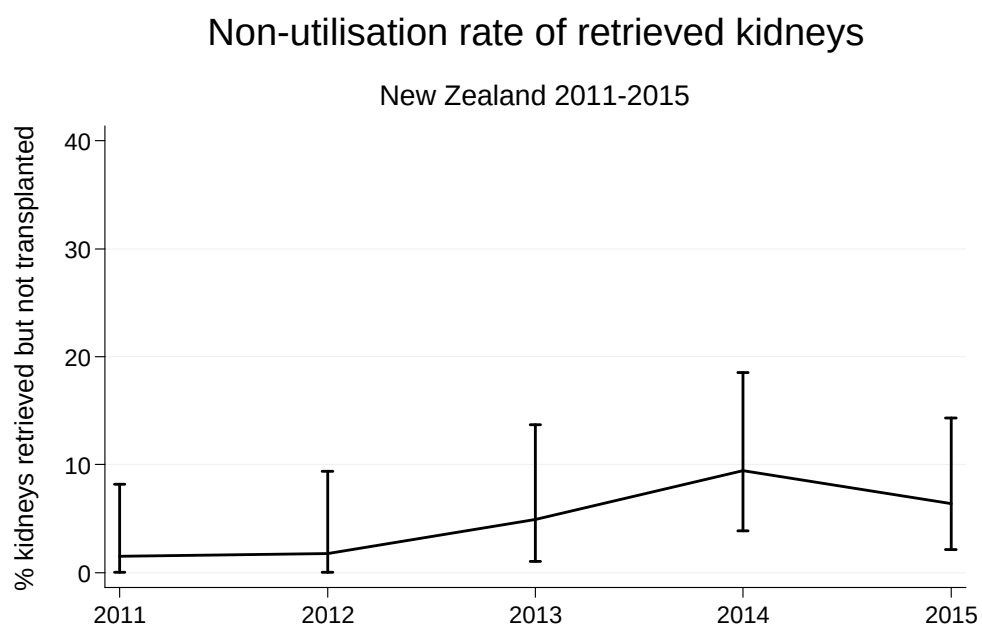


Figure 5.9



KIDNEY DONATION

OUTCOME OF KIDNEY DONATION IN AUSTRALIA

Table 5.4.1

Outcome of Request for Kidney Donation, Australia, 2011 - 2015					
Outcome	2011	2012	2013	2014	2015
Total Donors	337	354	391	378	435
Kidneys Requested for Donation	658	690	760	738	828
Kidneys Not Requested for Donation	16	18	22	18	42
Kidneys with Consent Given	656	688	758	738	824
Kidneys with Consent Not Given	18	20	24	18	46
Kidneys Retrieved	605	636	691	700	763
Kidneys Not Retrieved	51	52	67	38	61
Total Kidneys Not Used	19	18	45	42	45
(Left Kidney Not Used)	10	9	23	20	21
(Right Kidney Not Used)	9	9	22	20	22
(Double/Enbloc Kidney Not Used)	0	0	0	2	2
Kidney (L) used for Research	0	0	0	0	0
Kidney (R) used for Research	0	1	1	0	0
Kidney Double/Enbloc used for Research	0	0	0	0	0
Kidneys Transplanted	586	617	645	658	718
Left Kidney Transplanted	277	301	309	309	345
Right Kidney Transplanted	277	296	306	305	343
Double/Enbloc Kidney Transplanted	32	20	30	44	30
Recipient Transplanted	570	607	630	636	703
Double Adult Kidney Procedures	13	8	9	17	9
En Bloc Kidney Procedures	3	2	6	5	6
Kidney Discard Rate	3.14%	2.99%	6.66%	6%	5.90%
Kidney Utilised Rate	96.86%	97.01%	93.34%	94%	94.10%

KIDNEY DONATION

OUTCOME OF KIDNEY DONATION IN NEW ZEALAND

Table 5.4.2

Outcome of Request for Kidney Donation, New Zealand, 2011 - 2015					
Outcome	2011	2012	2013	2014	2015
Total Donors	38	38	36	46	53
Kidneys Requested for Donation	76	74	68	88	100
Kidneys Not Requested for Donation	0	2	4	4	6
Kidneys with Consent Given	76	72	68	88	100
Kidneys with Consent Not Given	0	4	4	4	6
Kidneys Retrieved	66	57	61	74	78
Kidneys Not Retrieved	10	15	7	14	22
Total Kidneys Not Used	1	1	3	7	5
(Left Kidney Not Used)	0	0	1	3	3
(Right Kidney Not Used)	1	1	2	4	2
(Double/Enbloc Kidney Not Used)	0	0	0	0	0
Kidney (L) used for Research	0	0	0	0	0
Kidney (R) used for Research	0	0	0	0	0
Kidney Double/Enbloc used for Research	0	0	0	0	0
Kidneys Transplanted	65	56	58	67	73
Left Kidney Transplanted	29	28	26	33	37
Right Kidney Transplanted	28	28	26	32	36
Double/Enbloc Kidney Transplanted	8	0	6	2	0
Recipient Transplanted	61	56	55	66	73
Double Adult Kidney Procedures	4	0	2	0	0
En Bloc Kidney Procedures	0	0	1	1	0
Kidney Discard Rate	1.52%	1.75%	4.92%	9.46%	6.41%
Kidney Utilised Rate	98.48%	98.25%	95.08%	90.54%	93.59%

Chapter 6

Liver Donation in Australia and New Zealand



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LIVER DONATION

LIVER DONATION

In 2015, there were 264 recipients with transplanted livers from Australian donors, and 41 retrievals in New Zealand providing for 46 recipients, as shown in Figure 6.1 and 6.2. There were nine recipients of combined liver/kidney transplants, one liver/double lung and one liver heart transplant in Australia.

Thirty four partial liver transplants, from 16 donors, were performed in Australia using the “split” liver technique (transplanting one liver into two recipients) and in New Zealand there were 10 split liver transplants performed.

In Australia during 2015, 5 recipients received a subsequent liver transplant for a failure of transplant in the same year.

Figure 6.1

Outcome of Request for Liver Donation
Australia 2015

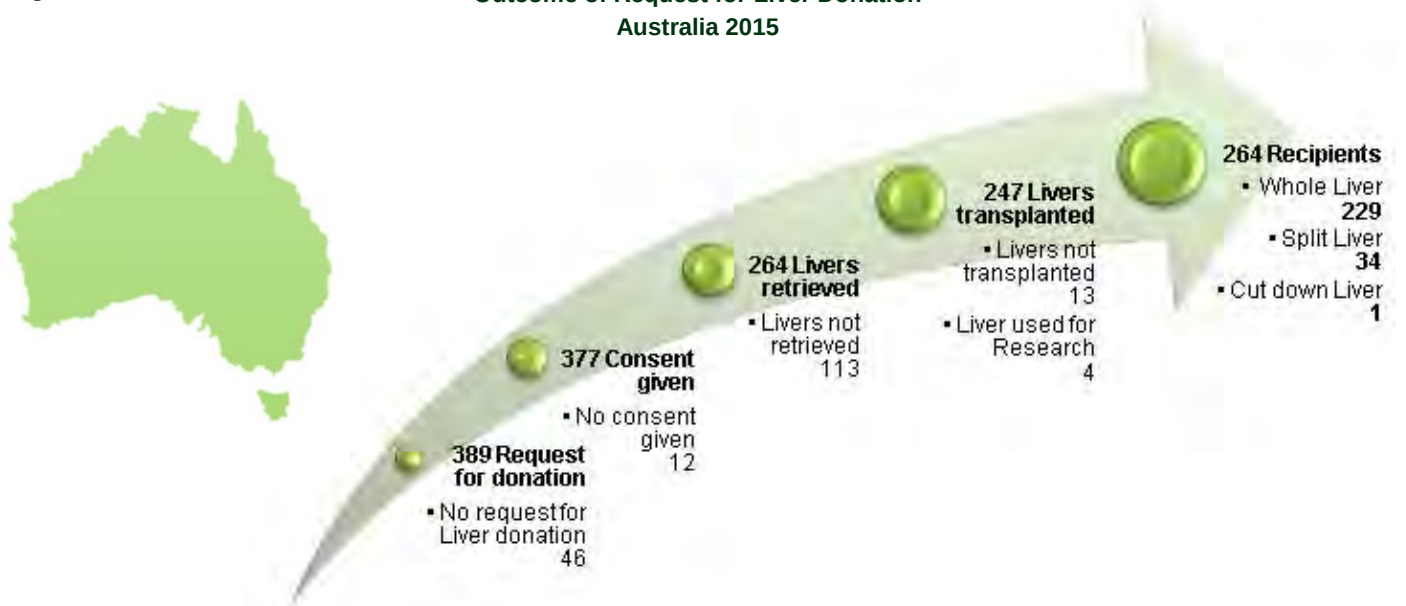


Figure 6.2

Outcome of Request for Liver Donation
New Zealand 2015



LIVER DONATION

Figures 6.3 and 6.4 show the number of recipients of liver transplants by donation pathway in Australia and New Zealand respectively from 1998 to 2015. Figure 6.5 compares the number of deceased donor liver recipients by state and country for 2014 and 2015.

Figure 6.3

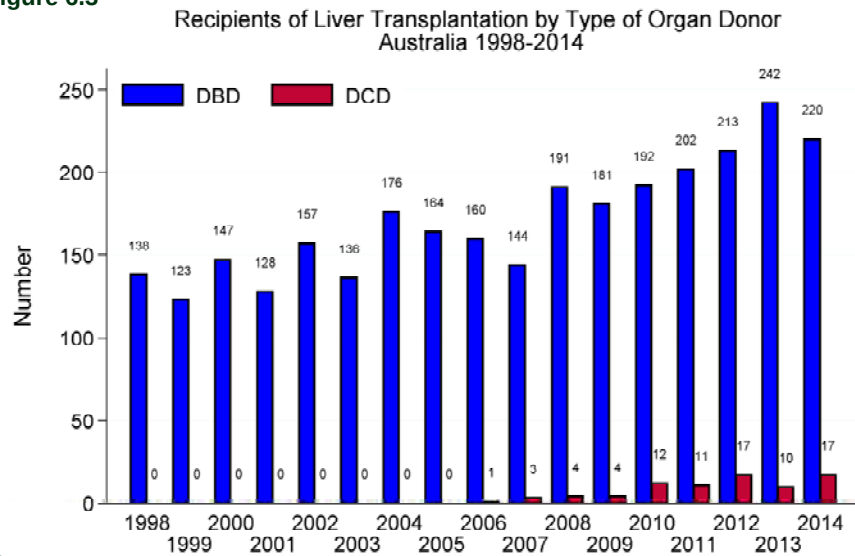


Figure 6.4

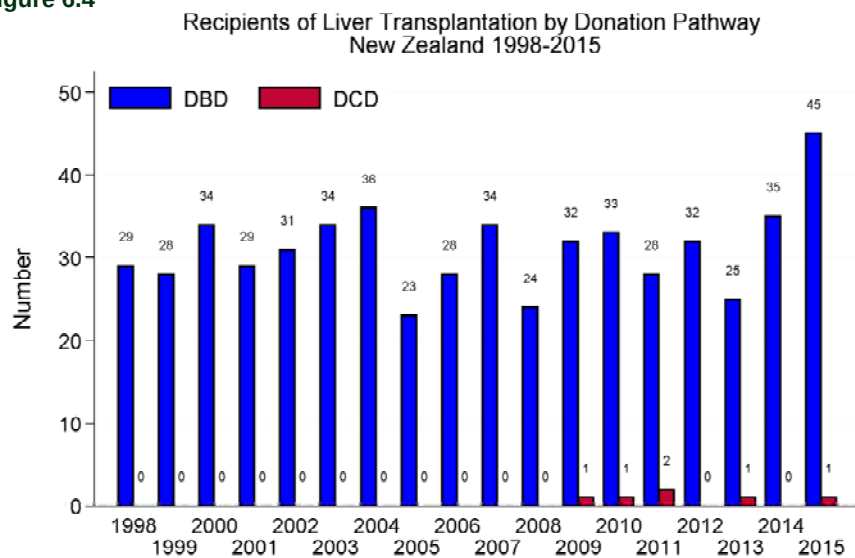
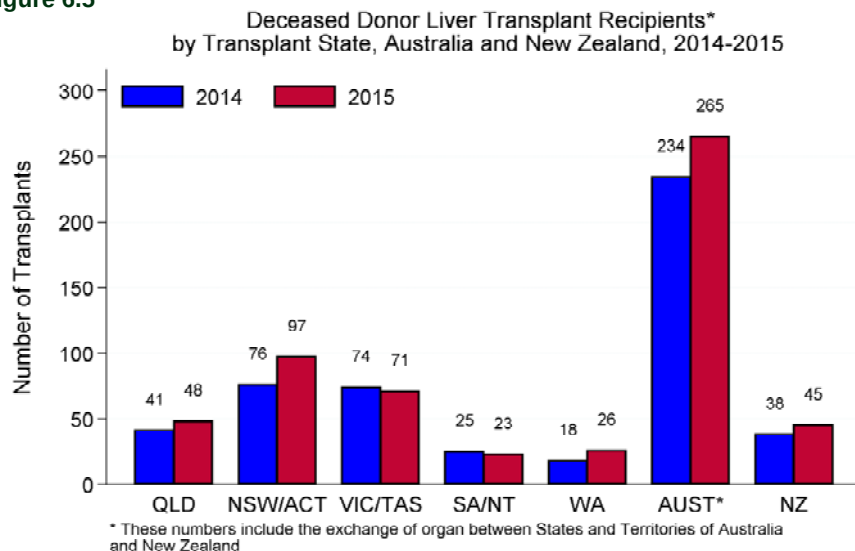


Figure 6.5



LIVER DONATION

LIVER DONORS

The age distribution of donors providing transplanted livers for Australia and New Zealand is shown in Figures 6.6 and 6.7 respectively.

Figure 6.6

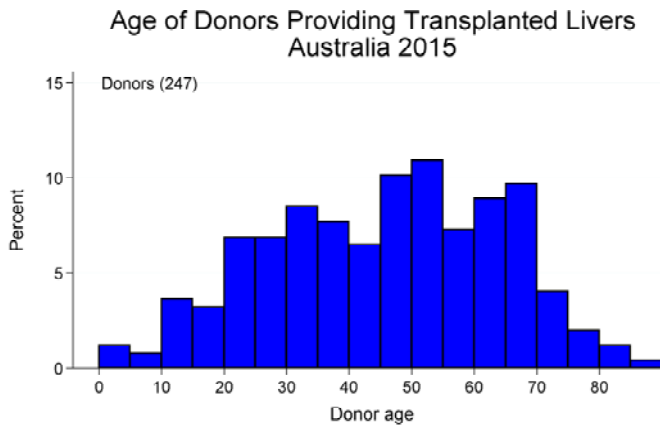
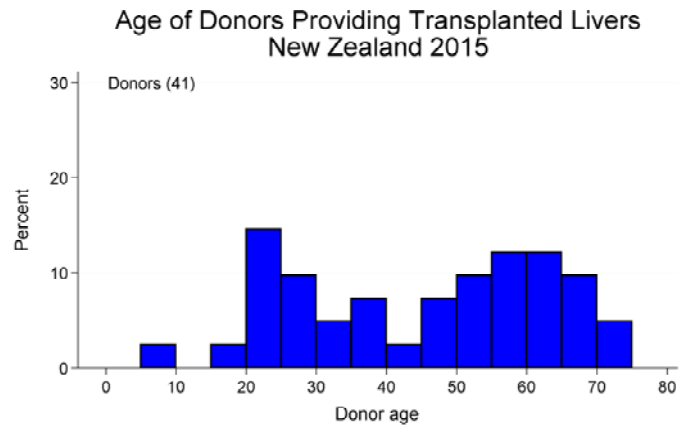


Figure 6.7



DONOR LIVER FUNCTION

The results of the serum tests for liver function for 264 Australian and 41 New Zealand donors in 2015 who had livers retrieved, are shown below. There were 92% of donors in Australia (243) and 46% of donors in New Zealand (19) who had all five tests performed. Table 5.4 shows the number of donors whose liver function was above the normal range.

Table 6.1

Number of Donors with Liver Function Tests Above Normal Range 2015				
Liver Function Tests	Australia		New Zealand	
	Donors with value recorded *	Above Normal	Donors with value recorded *	Above Normal
Alanine Transaminase ALT > 40 µ/L	264	124	34	17
Aspartate Transaminase AST > µ/L	243	150	27	13
Gamma Glutamol Tranferase GGT > 60 µ/L	264	79	30	9
Alkaline Phosphatase > 116 µ/L	264	27	41	5
Total Bilirubin > 20 µmol/L	264	34	40	5
* Not all donors have all tests				

LIVER DONATION

LIVERS NOT RETRIEVED

There were 113 livers not retrieved from Australian donors in 2015 and 9 livers from New Zealand donors.

For Australia, the main reasons were the liver not being medically suitable (83), followed by age of donor (16). In New Zealand, mostly non-retrieved livers were due to being not medically suitable (6).

Table 6.2

Reasons Liver Not Retrieved, 2015		
Reason	Australia	New Zealand
Logistics	2	1
Not Medically Suitable	83	6
Surgically Unsuitable	0	0
Trauma to Organ	1	1
No Suitable Recipients	4	1
Age of Donor	16	0
DCD Donor	5	0
Consent Withdrawn	2	0
Others	0	0
Total	113	9

LIVERS RETRIEVED AND NOT UTILISED

Table 6.3 tabulates the reasons livers were not used after retrieval for the purpose of transplantation since 2011.

Table 6.3

Reasons Livers Retrieved and Not Utilised for Organ Transplantation in Australia (New Zealand) 2011 - 2015						
Year	Logistics	Not Medically Suitable	Not Surgically Suitable	No Suitable Recipients	Other	Total
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)
2015	0 (0)	13 (0)	0 (0)	0 (0)	0 (0)	13 (0)

LIVER DONATION

Figures 6.8 and 6.9 show the non-utilisation rate of retrieved livers - the proportion of livers that were retrieved for the purpose of solid organ transplantation, but not ultimately transplanted into a recipient (either due to absence of suitable recipients, or the liver being found to be medically or surgically unsuitable after retrieval).

In Australia the non-utilisation rate of livers has increased from 0.5% in 2011 to 7.9% in 2014. In 2015, this fell to just under 6.5%.

Figure 6.8

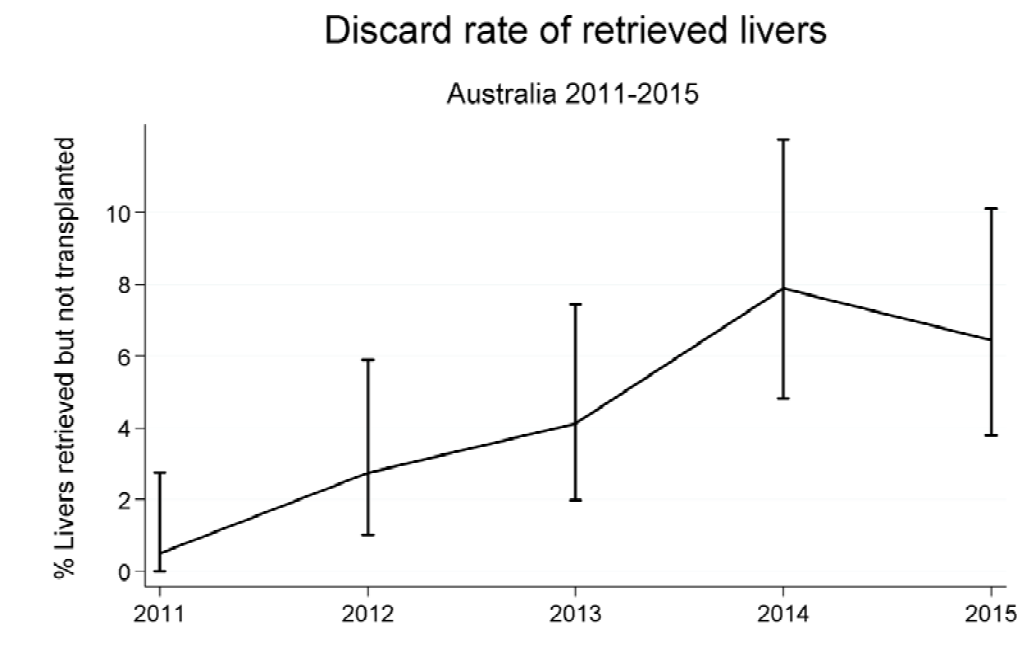
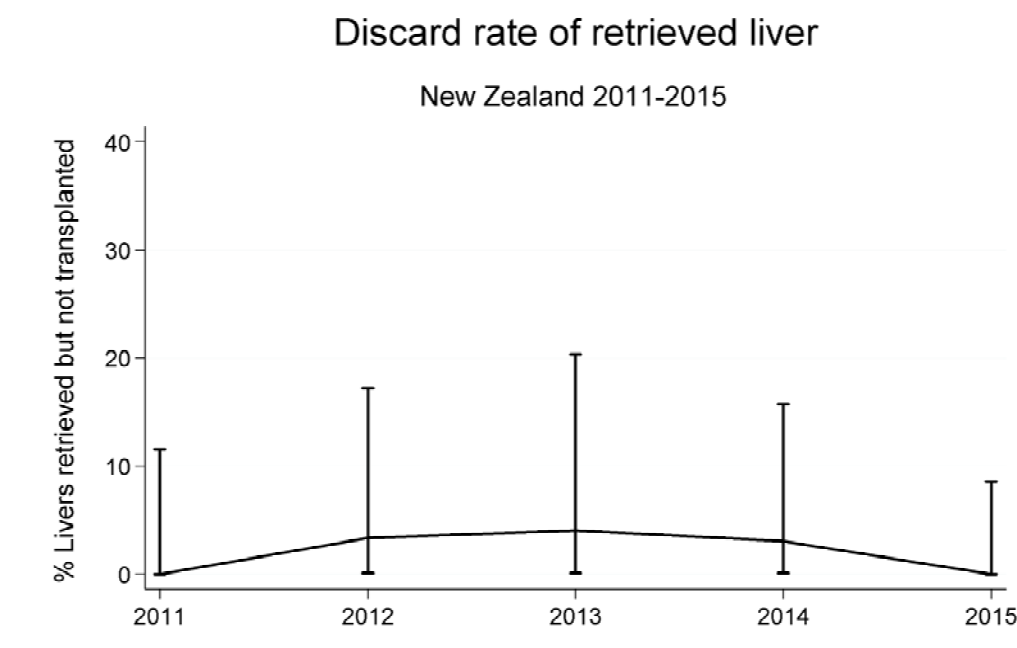


Figure 6.9



LIVER DONATION

Table 6.4.1

Outcome of Request for Liver Donation, Australia, 2011 - 2015					
Outcome	2011	2012	2013	2014	2015
Total Donors	337	354	391	378	435
No Request for Liver Donation	42	20	31	24	46
Request for Liver Donation	295	334	360	354	389
Consent Not Given	0	5	3	7	12
Consent Given	295	329	357	347	377
Liver Not Retrieved	95	111	112	106	113
Liver Retrieved	200	218	243	241	264
Whole Liver not used	1	6	6	7	13
(Split Liver (L) not used)	0	1	0	0	0
(Split Liver (R) not used)	2	3	7	0	1
Liver used for Research	0	1	4	12	4
Total Livers Transplanted	199	212	233	222	247
Recipients Transplanted	213	230	252	237	264
Whole Liver Transplanted	183	189	207	207	229
(Left Liver Transplant Procedures)	16	22	26	15	18
(Right Liver Transplant Procedures)	14	19	19	15	17
Split Liver Procedures	28	36	38	30	34
Cut down Liver	2	5	7	0	1
Liver Discard Rate	0.50%	3.21%	4.12%	7.88%	6.44%
Liver Utilised Rate	99.50%	97.25%	95.88%	92.12%	93.56%

LIVER DONATION

Table 6.4.2

Outcome of Request for Liver Donation, New Zealand, 2011 - 2015					
Outcome	2011	2012	2013	2014	2015
Total Donors	38	38	36	46	53
No Request for Liver Donation	1	1	1	5	3
Request for Liver Donation	37	37	35	41	50
Consent Not Given	0	1	0	0	0
Consent Given	37	36	35	41	50
Liver Not Retrieved	7	6	10	8	9
Liver Retrieved	30	30	25	33	41
Whole Liver not used	0	1	1	1	0
(Split Liver(L) not used)	0	0	0	0	0
(Split Liver(R) not used)	0	2	1	0	0
Liver used for Research	0	0	0	0	0
Total Livers Transplanted	30	29	24	32	41
Recipients Transplanted	30	32	26	35	46
Whole Liver Transplanted	30	24	21	29	36
(Left Liver or Cutdown Transplant Procedures)	0	5	3	3	5
(Right Liver Transplant Procedures)	0	3	2	3	5
Split Liver Procedures	0	6	4	6	10
Cut down Liver	0	2	1	0	0
Liver Discard Rate	0%	3.33%	4%	3.03%	0%
Liver Utilised Rate	100%	96.67%	96%	96.97%	100%

Chapter 7

Heart Donation in Australia and New Zealand



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HEART DONATION

In 2015, there were 95 heart transplant recipients, including two heart/double lung transplant recipients. This was an increase of almost 56% for heart transplants since 2009.

New Zealand performed 12 heart transplants in 2015. This number has decreased by 29% from 2014, after being relatively stable over the past 8 years at between 9 and 12 heart transplants per year.

Figures 5.18 and 5.20 show the outcomes of requests for heart donation in Australia and New Zealand for 2015 respectively.

Figure 7.1

Outcome of Request for Heart Donation
Australia 2015

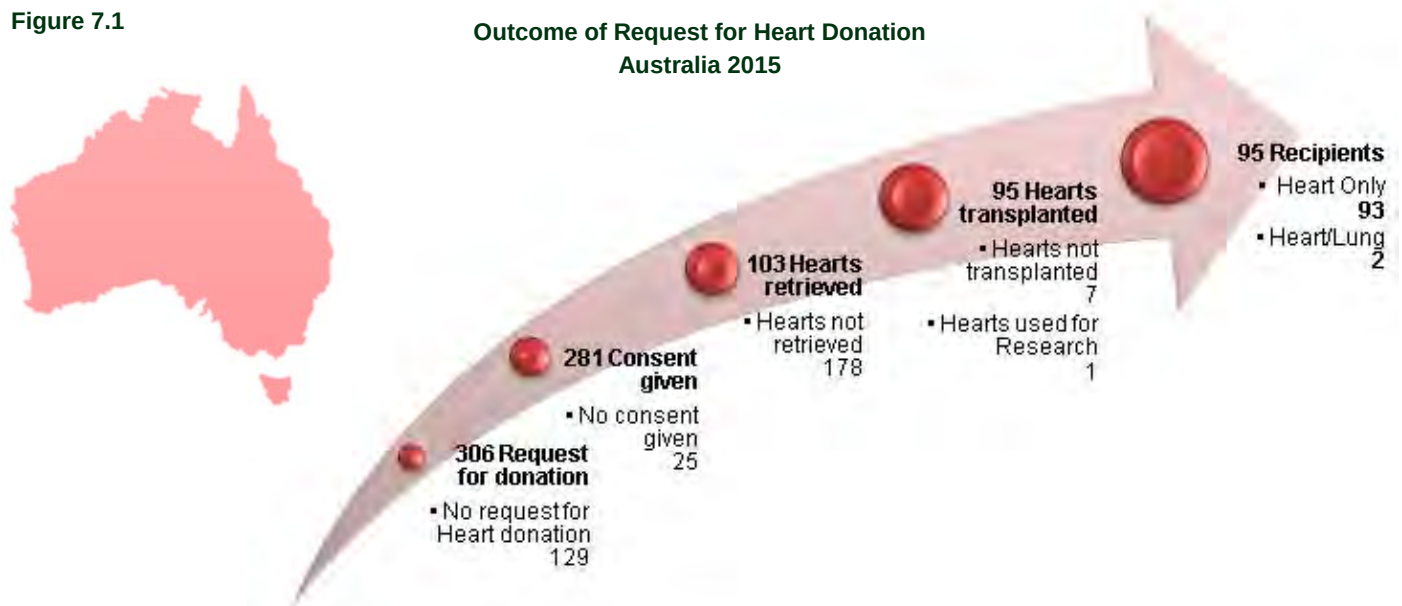
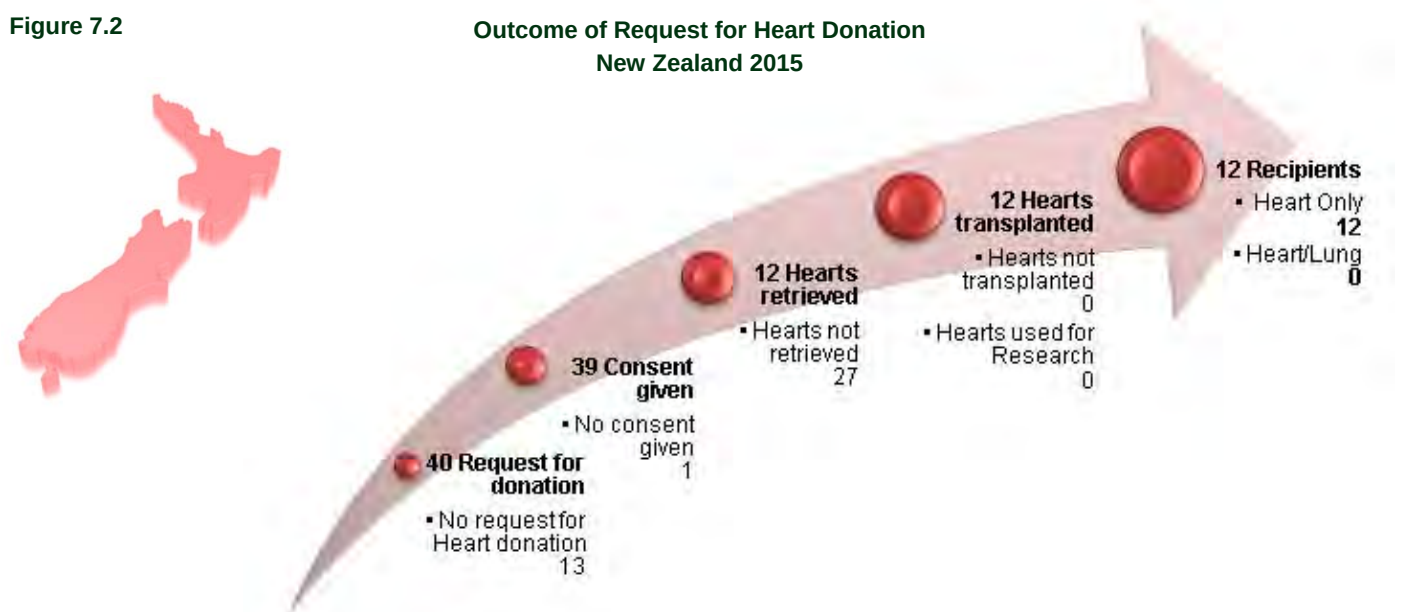


Figure 7.2

Outcome of Request for Heart Donation
New Zealand 2015



HEART DONATION

Figures 7.3 and 7.4 show the number of recipients of heart transplants in Australia and New Zealand respectively from 1998 to 2015. In Australia in 2014, the first heart transplant following donation after donor circulatory death was successfully performed.

Figure 7.3

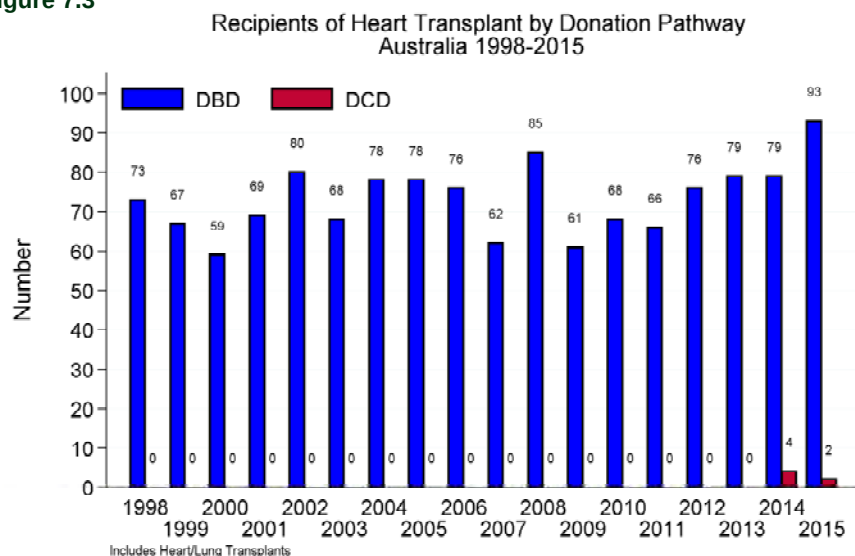


Figure 7.3

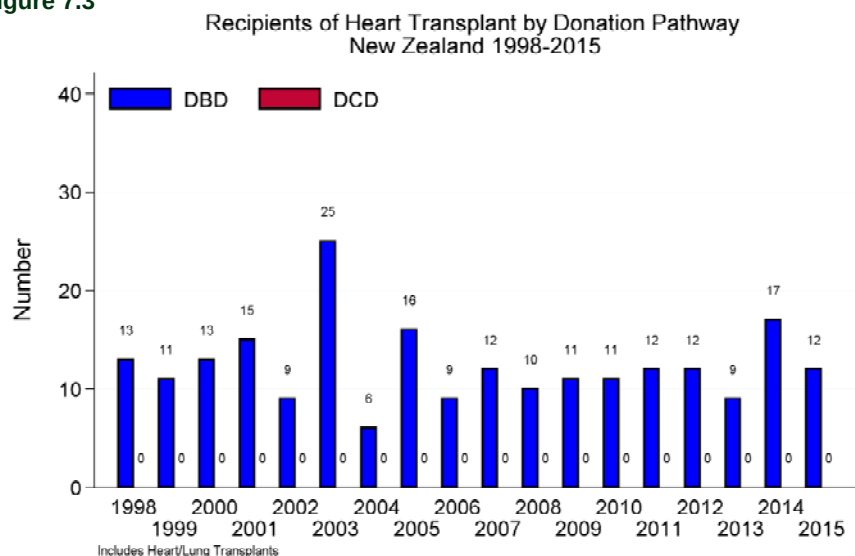
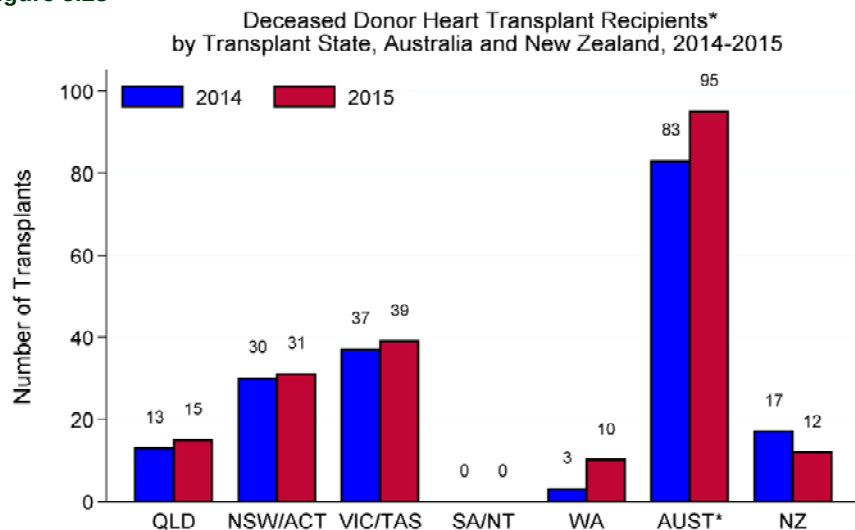


Figure 5.23



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

HEART DONATION

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 5.24

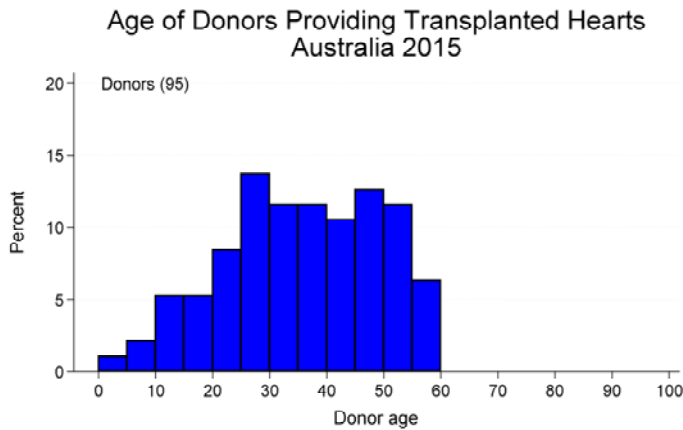
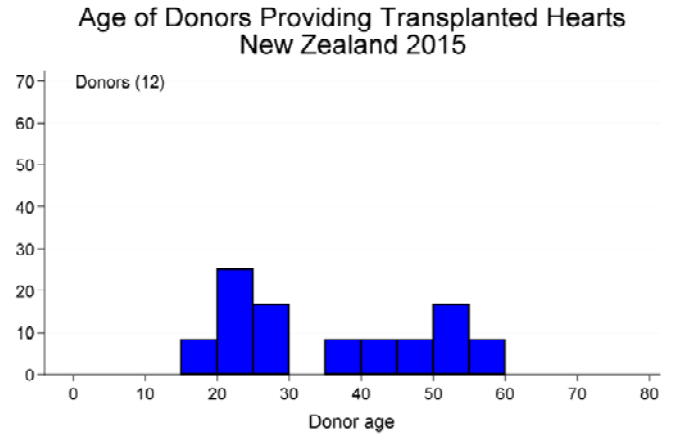


Figure 5.25



ECG AND ECHOCARDIOGRAM

In Australia, 86 donors (81%) had a normal ECG and 71 of the 88 heart donors (81.5%) had a normal echocardiogram. In New Zealand, all 12 heart donors had a normal ECG and 11 had a normal echocardiogram.

HEART DONATION

HEARTS NOT RETRIEVED

In 2015, there were 178 hearts not retrieved from Australian donors and 27 hearts not retrieved from New Zealand donors. For Australia, the main reason was due to the heart not being medically suitable (85) followed by age of donor (44), no suitable recipient for the heart (23), circulatory death preventing donation (12), consent withdrawn (6), logistics (4), trauma to the organ (2) and other reasons (2).

In New Zealand, twenty seven hearts were not retrieved as sixteen of the hearts were medically unsuitable, the age of the donor (5), trauma to the organ (3), there were no suitable recipients (2) and one heart was not retrieved due to logistics.

Table 7.1

Reasons Heart Not Retrieved, 2015		
Reason	Australia	New Zealand
Logistics	4	1
Not Medically Suitable	85	16
Surgically Unsuitable	0	0
Trauma to Organ	2	3
No Suitable Recipients	23	2
Age of Donor	44	5
DCD Donor	12	0
Consent Withdrawn	6	0
Others	2	0
Total	178	27

HEARTS NOT UTILISED

Table 5.9

Reasons Hearts Retrieved and Not Utilised for Organ Transplantation in Australia (New Zealand) 20101- 2015						
Year	Logistics	Not Medically Suitable	Not Surgically Suitable	No Suitable Recipients	Other	Total
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)
2015	1 (0)	4 (0)	0 (0)	1 (0)	1 (0)	7 (0)

HEART DONATION

Figures 7.8 and 7.9 show the non-utilisation rate of retrieved hearts – the proportion of hearts 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 heart being found to be medically or surgically unsuitable after retrieval).

In Australia, the non-utilisation rate increased to 14.1% in 2013 from 1.3% in 2009; dropping to 7.7% in 2015.

In New Zealand, there have been 100% utilisation of hearts retrieved for transplantation.

Figure 7.8

Discard rate of retrieved heart

Australia 2011-2015

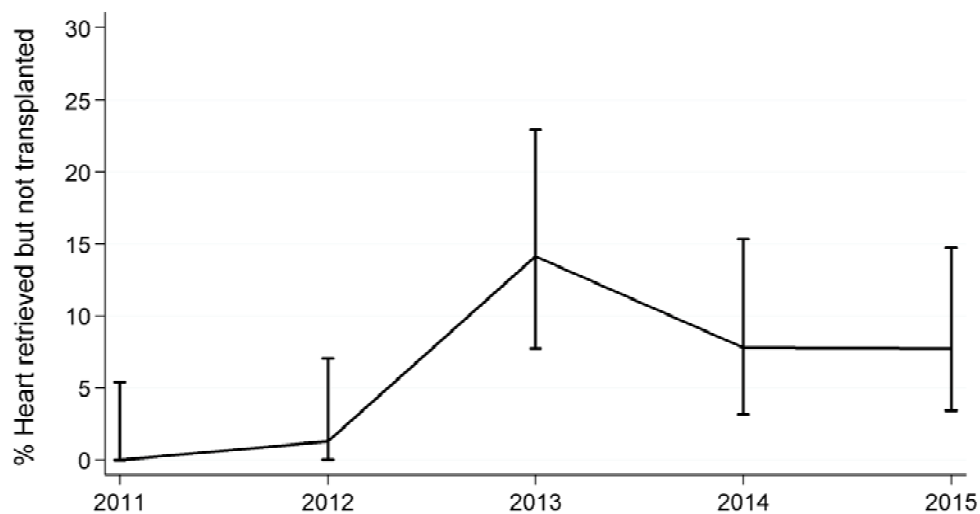
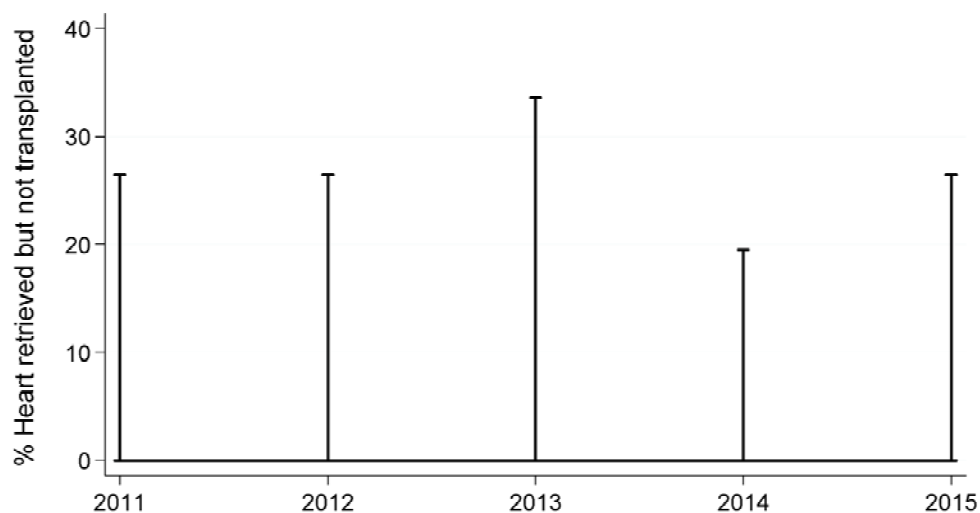


Figure 7.9

Discard rate of retrieved heart

New Zealand 2011-2015



HEART DONATION

Table 7.3.1

Outcome of Request for Heart Donation, Australia, 2011 - 2015					
Outcome	2011	2012	2013	2014	2015
Total Donors	337	354	391	378	435
No Request for Heart Donation	101	96	121	99	129
Request for Heart Donation	236	258	270	279	306
Consent Not Given	9	11	13	30	25
Consent Given	227	247	257	249	281
Heart Not Retrieved	161	170	165	159	178
Heart Retrieved	66	77	92	90	103
Heart not used	0	0	1	2	7
Heart used for Research	0	1	12	5	1
Total Heart Transplanted	66	76	79	83	95
Recipients Transplanted	66	76	79	83	95
(Heart/Lung Transplanted)	2	4	2	4	2
Heart Discard Rate	0%	1.30%	14.13%	7.78%	7.77%
Heart Utilised Rate	100%	98.70%	85.87%	92.22%	92.23%

Table 7.3.2

Outcome of Request for Heart Donation, New Zealand, 2011 - 2015					
Outcome	2011	2012	2013	2014	2015
Total Donors	38	38	36	46	53
No Request for Heart Donation	10	8	16	17	13
Request for Heart Donation	28	30	20	29	40
Consent Not Given	0	2	1	2	1
Consent Given	28	28	19	27	39
Heart Not Retrieved	16	16	10	10	27
Heart Retrieved	12	12	9	17	12
Heart not used	0	0	0	0	0
Heart used for Research	0	0	0	0	0
Total Heart Transplanted	12	12	9	17	12
Recipients Transplanted	12	12	9	17	12
(Heart/Lung Transplanted)	0	0	0	1	0
Heart Discard Rate	0%	0%	0%	0%	0%
Heart Utilised Rate	100%	100%	100%	100%	100%

Chapter 8

Lung Donation in Australia and New Zealand



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LUNG DONATION

LUNG DONATION

In 2015, there were 193 lung transplant recipients, including 182 double lung transplants and one heart/double lung transplant recipient. This was an increase of 72% for the number of lung transplants recipients since 2009.

New Zealand performed 25 lung transplants in 2014. This included 25 double lungs transplanted and 0 single lung transplants.

Figures 5.28 and 5.29 show the outcome of request for heart donation in Australia and New Zealand for 2015 respectively.

Figure 8.1

Outcome of Request for Lung Donation Australia 2015

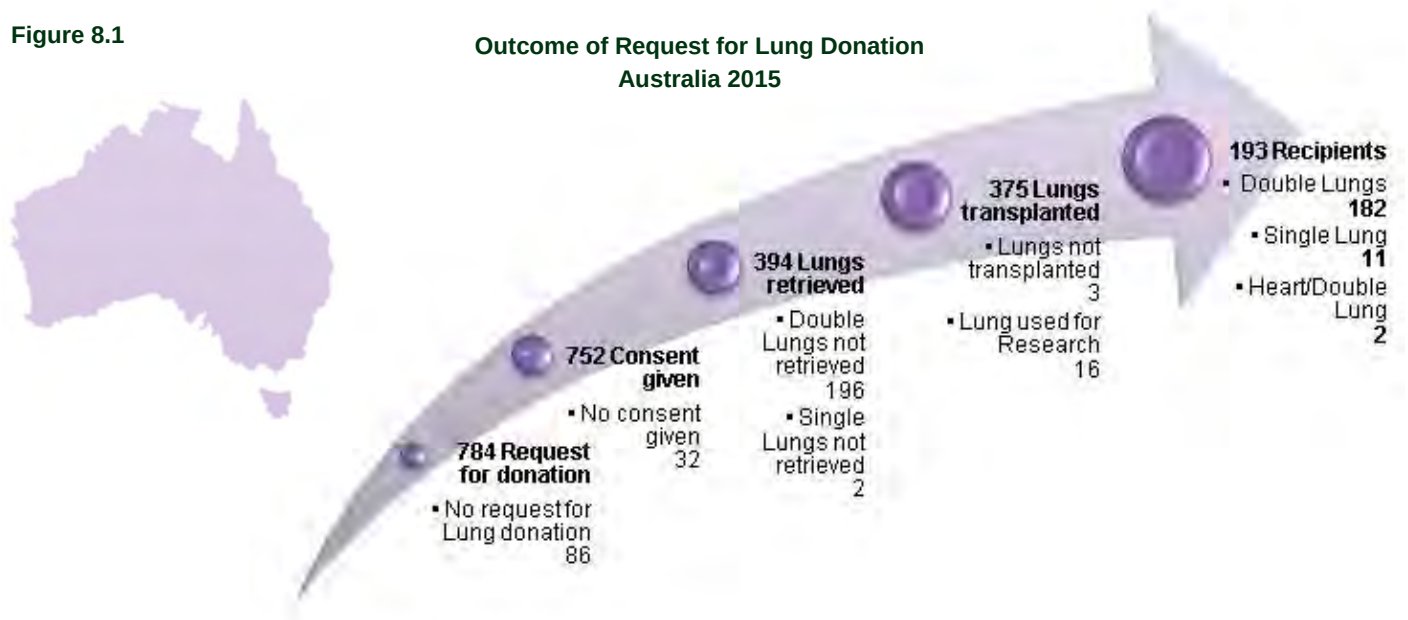
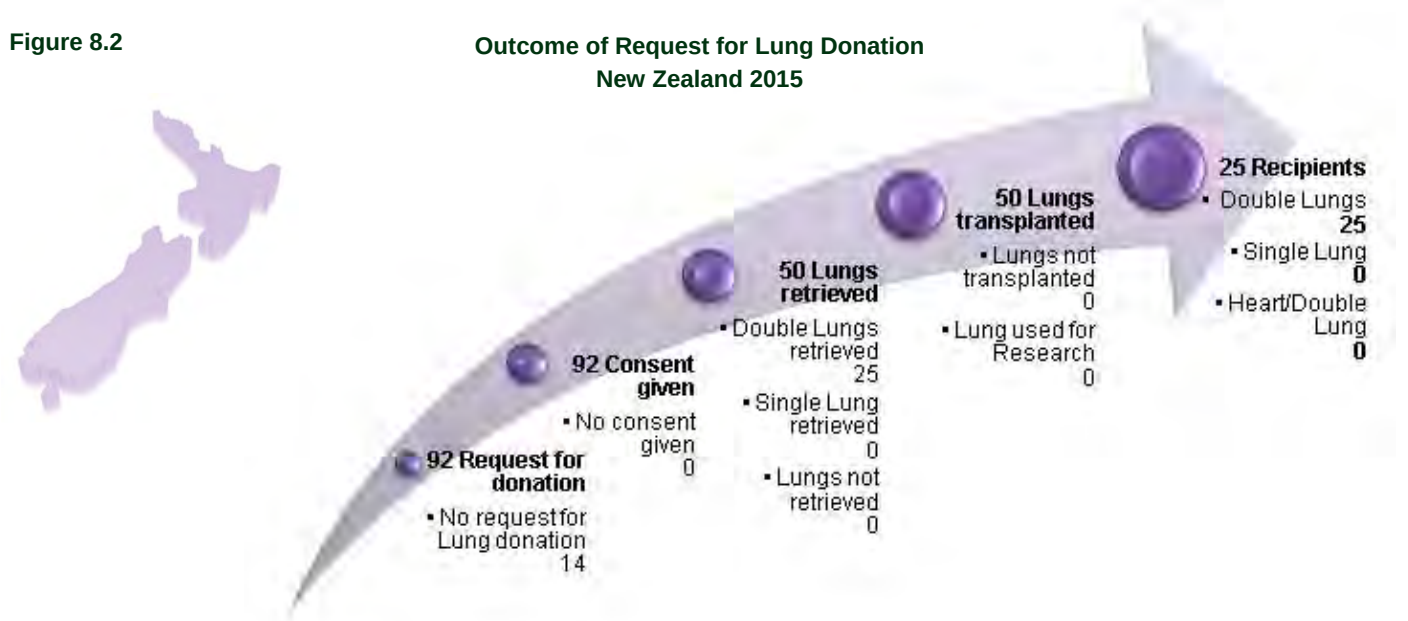


Figure 8.2

Outcome of Request for Lung Donation New Zealand 2015



LUNG DONATION

Figures 8.3 and 8.4 show the number of recipients of lung transplants in Australia and New Zealand respectively from 1998 to 2015. Figure 8.5 shows the number of recipients for lung transplants by state in Australia and New Zealand increased donors from 2014 to 2015, except for Victoria/Tasmania which decreased by 1.

Figure 8.3

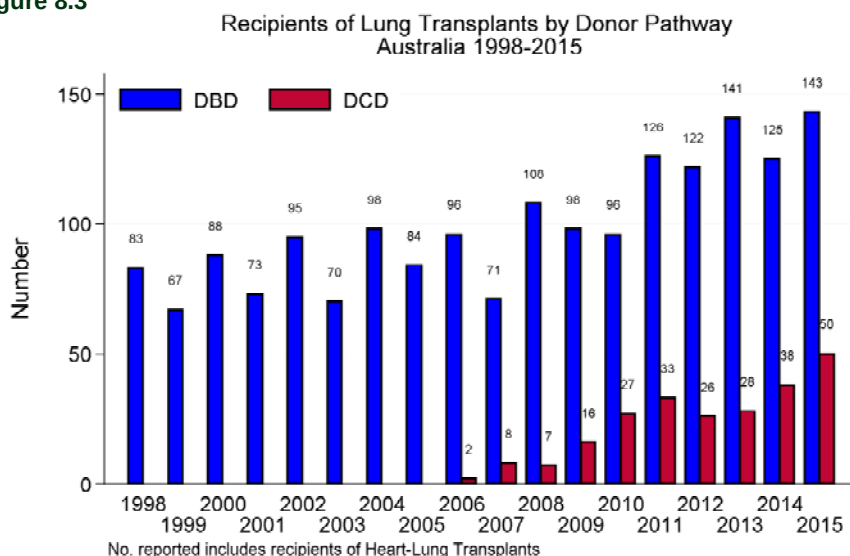


Figure 8.4

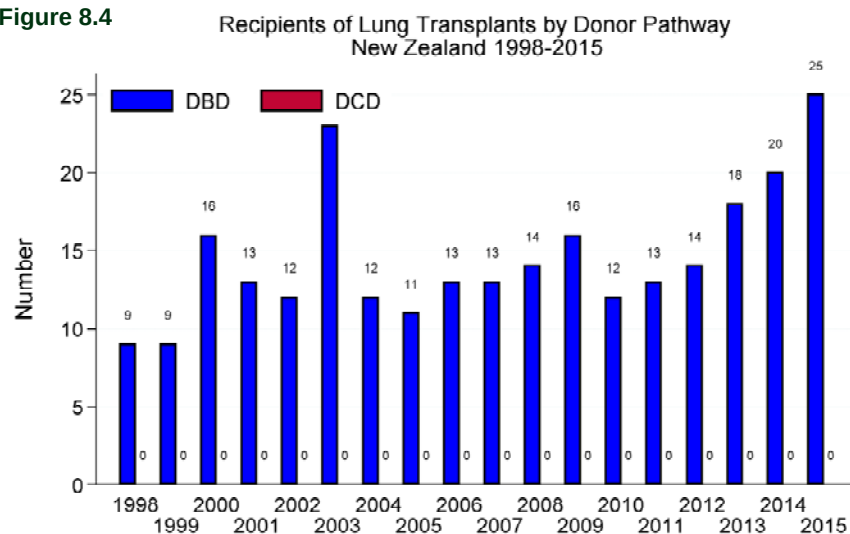
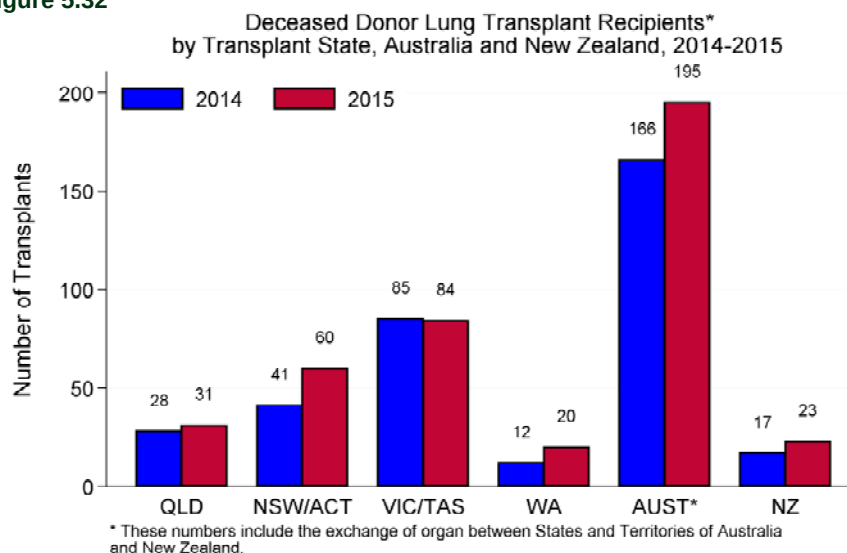


Figure 5.32



LUNG DONATION

LUNG DONORS

The age distribution of donors providing transplanted lungs for Australia and New Zealand is shown in Figures 8.6 and 8.7 respectively.

Figure 8.6

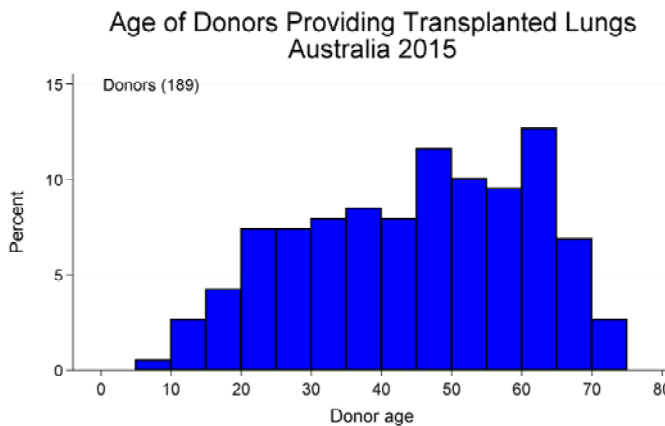
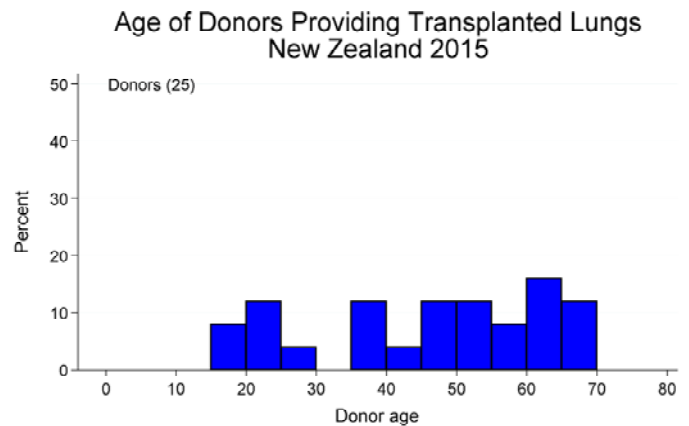


Figure 8.7



DONOR LUNG FUNCTION

In Australia, there were 175 lung donors (88.4%) who had a bronchoscopy in 2015. Four donors had chest trauma; these included one with a lung contusion, one with thoracic fractures and two with rib fractures. The arterial blood gases were taken on 100% FiO₂ and PEEP of 5 cm. Two hundred and fourteen had a PEEP > 5 cm (52%). The results from 175 lung donors in 2015 show 21.8% (91) to be acidaemic (pH < 7.35) and 18% (75) to be alkalaemic (pH > 7.45). Oxygenation measured as PaO₂ ranged from 25 - 602 mmHg with a median of 339 mmHg. PaCO₂ ranged from 21 - 68 mmHg with a median of 39 mmHg.

In New Zealand, there were five (20%) lung donors who had a bronchoscopy in 2015. One donor had a contusion from CPR. All 25 lung donors had 100% FiO₂; eight had a PEEP greater than 5cm. The arterial blood gas results from twenty five lung donors in 2015 show 20% (5) to be acidotic (pH < 7.35) and three donors (12%) to be alkalotic (pH > 7.45). Oxygenation measured as PaO₂ ranged from 0 - 528 mmHg with a median of 399 mmHg. PaCO₂ ranged from 0 - 435 mmHg with a median of 37 mmHg.

LUNG DONATION

LUNGS NOT RETRIEVED

In 2015, there were 358 lungs not retrieved from Australian donors and 42 lungs not retrieved from New Zealand donors. For Australia, 240 lungs (67%) were not medically suitable, and in New Zealand, twenty six lungs (53%) were not medically suitable for transplantation.

Table 8.1

Reasons Lungs Not Retrieved, 2015		
Reason	Australia	New Zealand
Logistics	16	0
Not Medically Suitable	240	26
Surgically Unsuitable	2	0
Trauma to Organ	10	4
No Suitable Recipients	70	8
Age of Donor	12	4
DCD Donor	2	0
Consent Withdrawn	6	0
Others	0	0
Total	358	42

NON UTILISED LUNGS

Figure 8.2 shows the reasons lungs were not used from Australian deceased donors since 2011. In New Zealand, only three lungs in 2015 were not transplanted, due to the lungs not being medically suitable.

Table 8.2

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
2011	1 (0)	1 (0)	0 (0)	0 (0)	0 (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)
2015	0 (0)	3 (0)	0 (0)	0 (0)	0 (0)	3 (0)

LUNG DONATION

Figures 8.8 and 5.9 show the non-utilisation rate of retrieved lungs – the proportion of lungs 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 lung(s) being found to be medically or surgically unsuitable after retrieval).

In Australia, the non-utilisation rate has steadily increased from 0.7% in 2011 to 4.9% in 2015, with the exception of 2013 when it fell to 1.2%. In New Zealand these rates have historically been generally lower than in Australia (note the different y-axis scales).

Figure 8.8

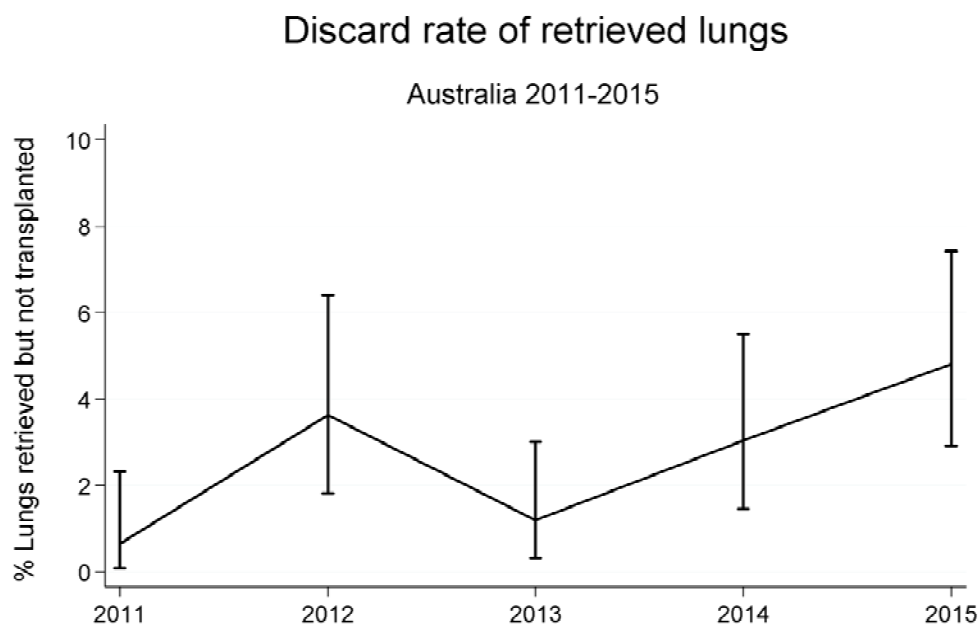
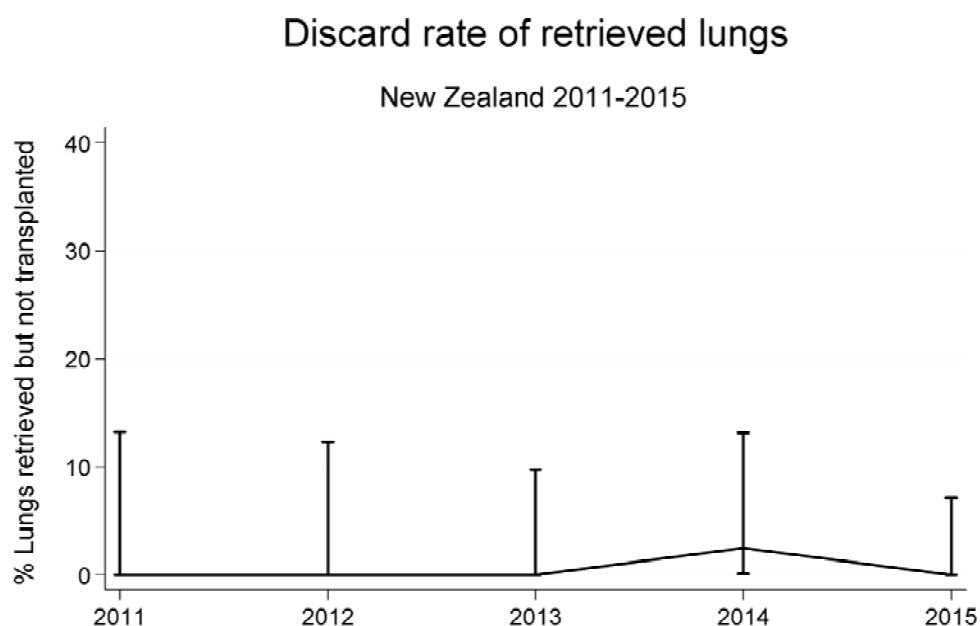


Figure 8.9



LUNG DONATION

Table 5.12.1

Outcome of Request for Lung Donation Australia, 2011 - 2015					
Outcome	2011	2012	2013	2014	2015
Total Donors	337	354	391	378	435
Lungs with No Request for Donation	80	86	92	72	86
Lungs with Request for Donation	594	622	690	684	784
Lungs with Consent Not Given for Donation	8	12	30	24	32
Lungs with Consent Given for Donation	586	610	660	660	752
Lung Not Retrieved	278	307	323	331	358
Lung Retrieved	308	303	337	329	394
(Single Lung Retrieved)	4	1	1	3	2
(Double Lung Retrieved)	152	151	168	163	196
Total Lungs Not Used	2	3	4	10	3
Lungs used for Research	0	8	0	0	16
Lungs Transplanted	306	292	333	319	375
Recipient Transplanted	159	148	169	163	193
Double Lung Recipient	147	144	164	156	182
Single Lung(L) Recipients	7	2	3	4	6
Single Lung(R) Recipients	5	2	2	3	5
(Heart/Lung Recipients)	2	4	2	4	2
Lung Discard Rate	0.65%	3.63%	1.19%	3.04%	4.82%
Lung Utilised Rate	99.35%	96.37%	98.81%	96.96%	95.18%

LUNG DONATION

Table 5.12.2

Outcome of Request for Lung Donation New Zealand, 2011 - 2015					
Outcome	2011	2012	2013	2014	2015
Total Donors	38	38	36	46	53
Lungs with No Request for Donation	18	10	18	26	14
Lungs with Request for Donation	58	66	54	66	92
Lungs with Consent Not Given for Donation	0	4	0	0	0
Lungs with Consent Given for Donation	58	62	54	66	92
Lung Not Retrieved	32	34	18	26	42
Lung Retrieved	26	28	36	40	50
(Single Lung Retrieved)	0	0	0	0	0
(Double Lung Retrieved)	13	14	18	20	25
Total Lungs Not Used	0	0	0	1	0
Lungs used for Research	0	0	0	0	0
Lungs Transplanted	26	28	36	39	50
Recipient Transplanted	13	14	18	20	25
Double Lung Recipient	13	14	18	19	25
Single Lung(L) Recipients	0	0	0	1	0
Single Lung(R) Recipients	0	0	0	0	0
(Heart/Lung Recipients)	0	0	0	1	0
Lung Discard Rate	0%	0%	0%	2.50%	0%
Lung Utilised Rate	100%	100%	100%	97.50%	100%

Chapter 9

Pancreas Donation in Australia and New Zealand



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PANCREAS DONATION

PANCREAS DONATION

In Australia in 2015, there were 45 pancreas transplant recipients, 43 were recipients of simultaneous kidney/pancreas transplants and two were pancreas alone transplants. The 45 pancreas transplants was an increase of 29% since 2009.

New Zealand performed 3 pancreas transplants in 2015 compared to 2 pancreas transplants in 2014.

Figures 9.1 and 9.2 show the outcomes of request for pancreas donation in Australia and New Zealand for 2015 respectively.

Figure 9.1

Outcome of Request for Pancreas Donation Australia 2015

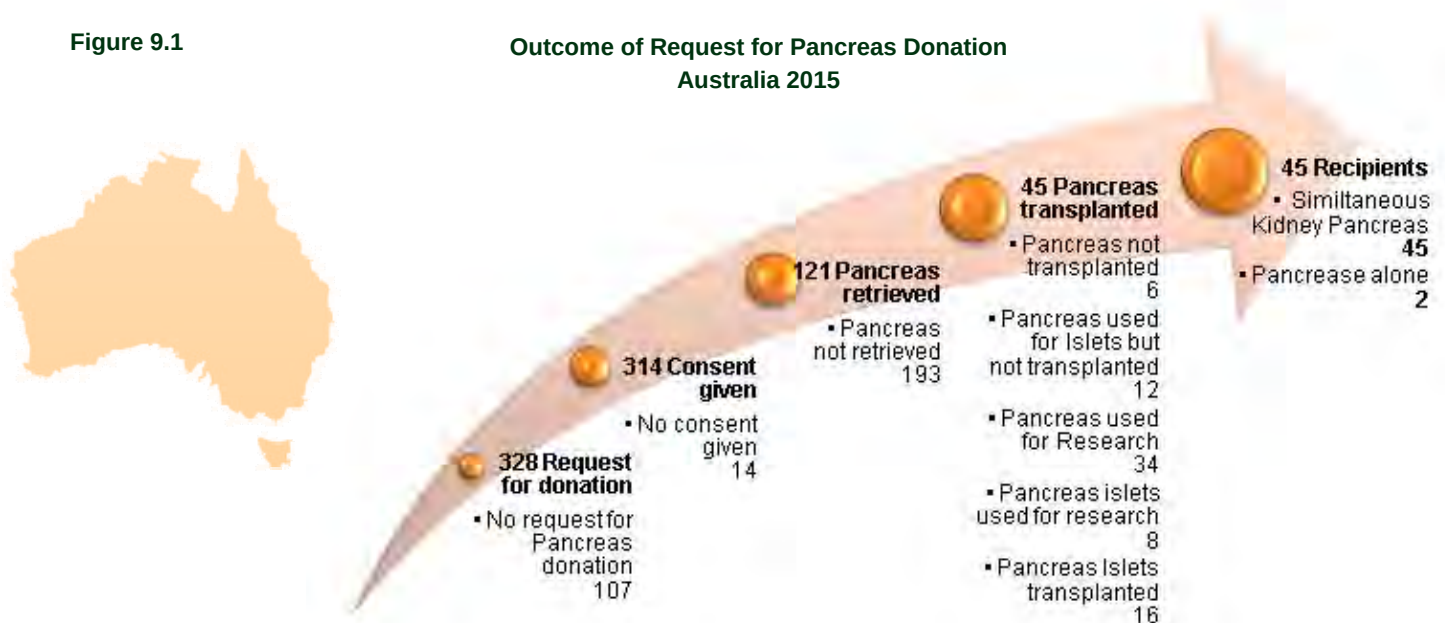
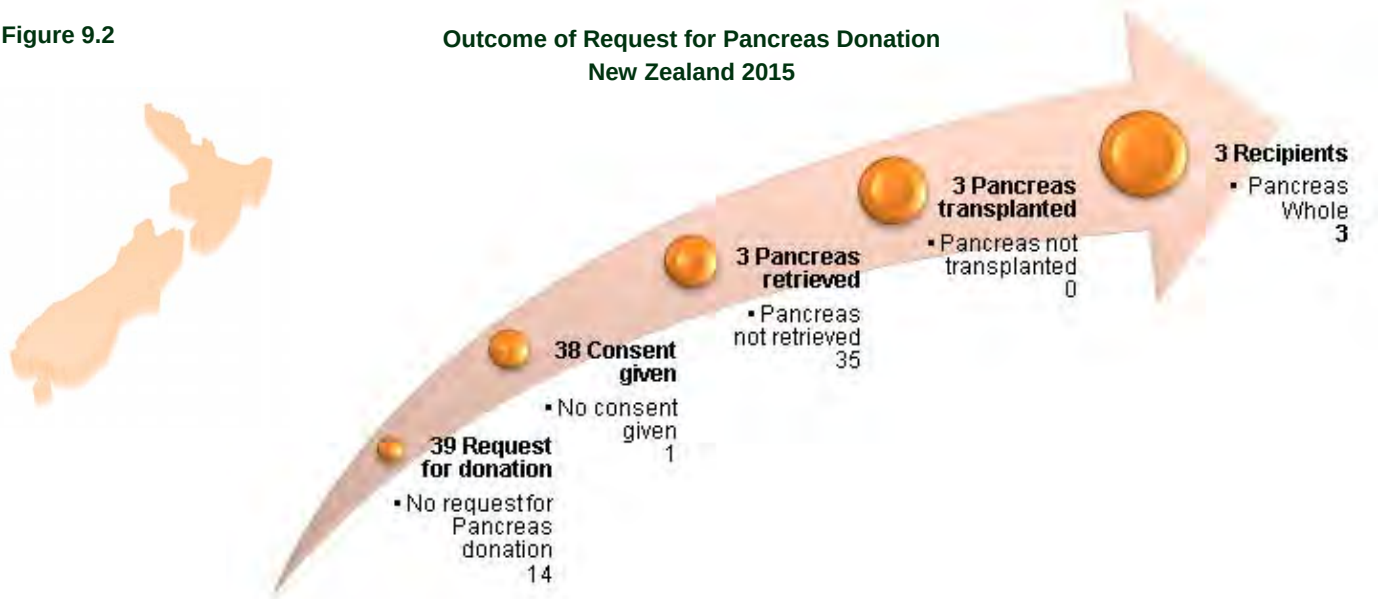


Figure 9.2

Outcome of Request for Pancreas Donation New Zealand 2015



PANCREAS DONATION

Figures 9.3 and 9.4 show the number of recipients of pancreas transplants by donation pathway in Australia and New Zealand respectively from 1998 to 2015. Figure 9.5 shows the number of recipients of pancreas transplant recipients by Australia and New Zealand in 2014 to 2015.

Figure 9.3 Recipients of Whole Pancreas Transplant by Donation Pathway
Australia 1998-2015

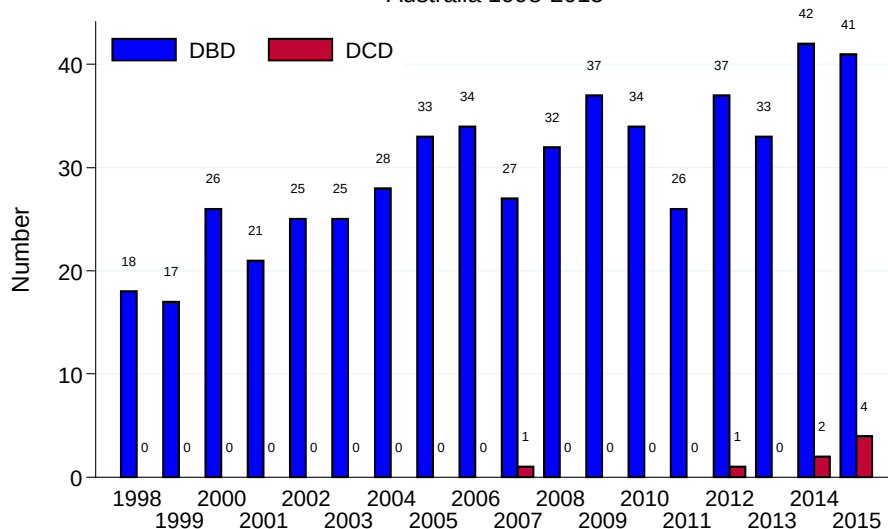


Figure 9.4 Recipients of Whole Pancreas Transplant by Donation Pathway
New Zealand 1998-2015

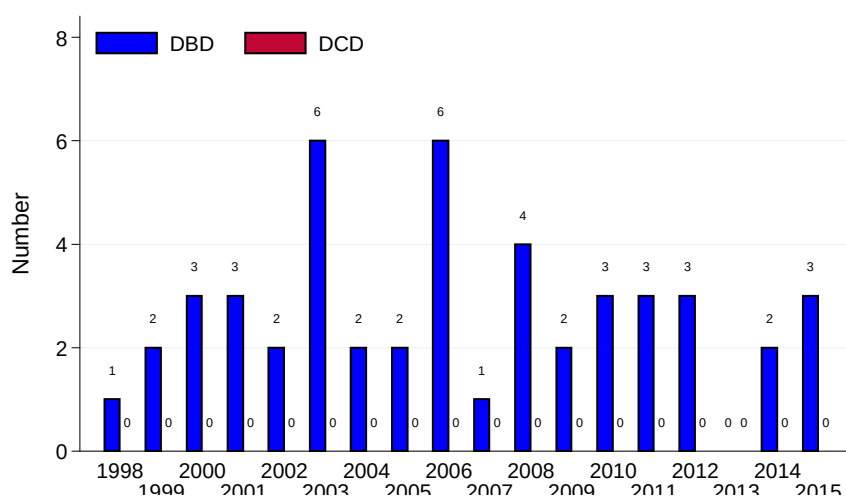
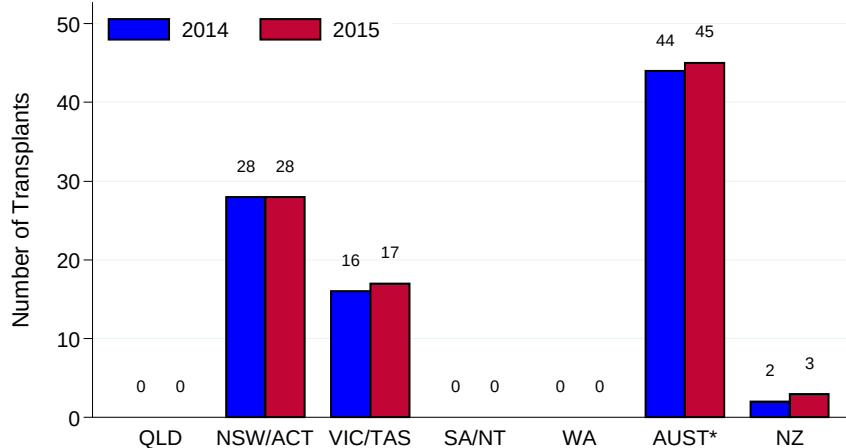


Figure 9.5 Deceased Donor Pancreas Transplant Recipients*
by Transplant State, Australia and New Zealand, 2014-2015



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

PANCREAS DONATION

PANCREAS DONORS

The age distribution of donors providing transplanted pancreas for Australia and New Zealand is shown in Figures 9.40 and 9.41 respectively.

Figure 9.40

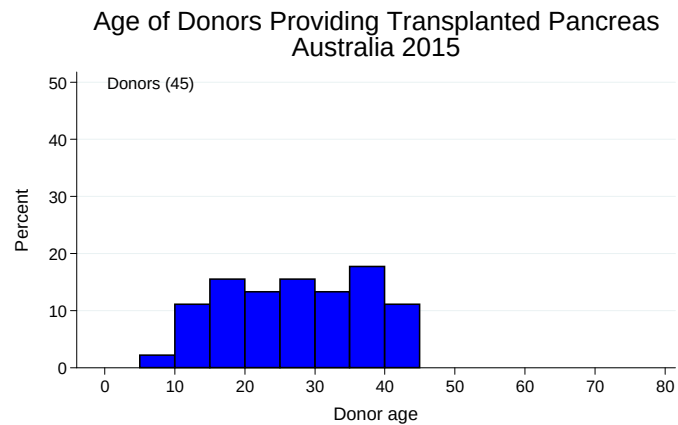
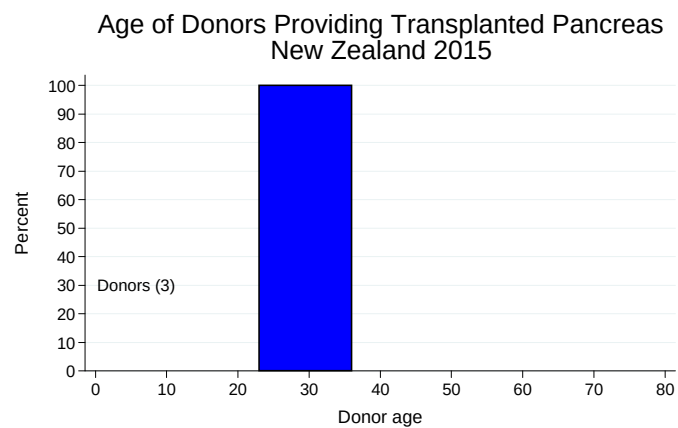


Figure 9.41



PANCREAS DONATION

NON RETRIEVED PANCREAS

In 2015, there were 193 pancreas not retrieved from Australian donors and 35 from New Zealand donors. For those pancreas not retrieved in Australia, 84 were not medically suitable, 54 due to age of donor, 19 due to no suitable recipient being available, 17 due to logistical issues, 7 a result of DCD donation, seven surgically unsuitable and 5 due to trauma to the organ. In New Zealand, pancreas were not retrieved due to the age of donor (18), no suitable recipient being available (2), not medically suitable (11) and four a result of trauma to the organ.

One hundred and twenty one donors in 2015 had pancreas retrieved in Australia, however 34 of those were not for the purpose of organ transplantation but rather retrieved for research purposes. In New Zealand, 3 pancreas retrieved from donors were used for research purposes.

Table 9.1 shows the reasons pancreas were not used from Australian and New Zealand deceased donors since 2010.

Table 9.1

Reasons Pancreas Not Retrieved, 2015		
Reason	Australia	New Zealand
Logistics	17	0
Not Medically Suitable	84	11
Surgically Unsuitable	7	0
Trauma to Organ	5	4
No Suitable Recipients	19	2
Age of Donor	54	18
DCD Donor	7	0
Consent Withdrawn	0	0
Others	0	0
Total	193	35

NON UTILISED PANCREAS

Table 9.2 shows the reasons pancreas were not used from Australian and New Zealand deceased donors since 2010.

Table 9.2

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)

PANCREAS DONATION

Table 9.4

Outcome of Request for Pancreas Donation Australia, 2011 - 2015					
Outcome	2011	2012	2013	2014	2015
Total Donors	337	354	391	378	435
No Request for Pancreas Donation	73	88	92	77	107
Request for Pancreas Donation	264	266	299	301	328
Consent Not Given	5	8	10	16	14
Consent Given	259	258	289	285	314
Pancreas Not Retrieved	183	188	221	184	193
Pancreas Retrieved	76	70	68	101	121
Pancreas Not Used	1	2	2	3	6
Pancreas Islets Not Used	7	7	6	6	12
Pancreas used for Research	4	1	13	33	34
Pancreas Islets used for Research	29	18	13	5	8
Pancreas Transplanted	26	38	33	44	45
Pancreas Islets Transplanted	9	4	1	10	16
Pancreas only Recipients	26	38	33	44	45
Pancreas Islets Recipients	9	3	1	10	15
Pancreas only (no Islets) Discard Rate	6.58%	4.29%	22.06%	35.64%	33.06%
Pancreas only (no Islets) Utilised Rate	34.21%	54.29%	48.53%	43.56%	37.19%

PANCREAS DONATION

Table 9.4

Outcome of Request for Pancreas Donation New Zealand, 2011 - 2015					
Outcome	2011	2012	2013	2014	2015
Total Donors	38	38	36	46	53
No Request for Pancreas Donation	9	16	23	24	14
Request for Pancreas Donation	29	22	12	22	39
Consent Not Given	0	0	0	0	1
Consent Given	29	22	12	22	38
Pancreas Not Retrieved	25	19	12	20	35
Pancreas Retrieved	4	3	0	2	3
Pancreas Not Used	1	0	0	0	0
Pancreas Islets Not Used	0	0	0	0	0
Pancreas used for Research	0	0	0	0	0
Pancreas Islets used for Research	0	0	0	0	0
Pancreas Transplanted	3	3	0	2	3
Pancreas Islets Transplanted	0	0	0	0	0
Pancreas only Recipients	3	3	0	2	3
Pancreas Islets Recipients	0	0	0	0	0
Pancreas only (no Islets) Discard Rate	25%	0%	.%	0%	0%
Pancreas only (no Islets) Utilised Rate	75%	100%	.%	100%	100%

Chapter 10

Intestine Donation in Australia and New Zealand



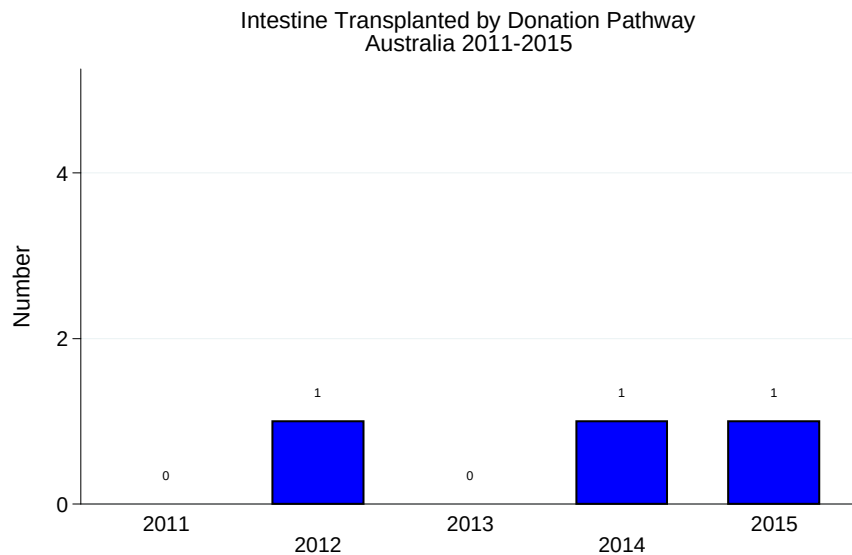
2016
Annual Report
Data to 31-Dec-2015

INTESTINE DONATION

Adult and paediatric patients with irreversible intestinal failure and developing severe complications from parenteral nutrition can benefit from intestinal transplantation. Only four 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.

Figure 10.1



Chapter 11

Tissue & Eye Donation



2016
Annual Report
Data to 31-Dec-2015

The partnership between the Australian Organ and Tissue Authority (OTA), jurisdictional tissue and eye banks and the ANZOD Registry continues to strengthen the national reporting of tissue data. This chapter presents the data on tissue and eye donation provided by tissue and eye 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 include the collection of donor specific data, outcome data and aligning 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:

- 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)

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:

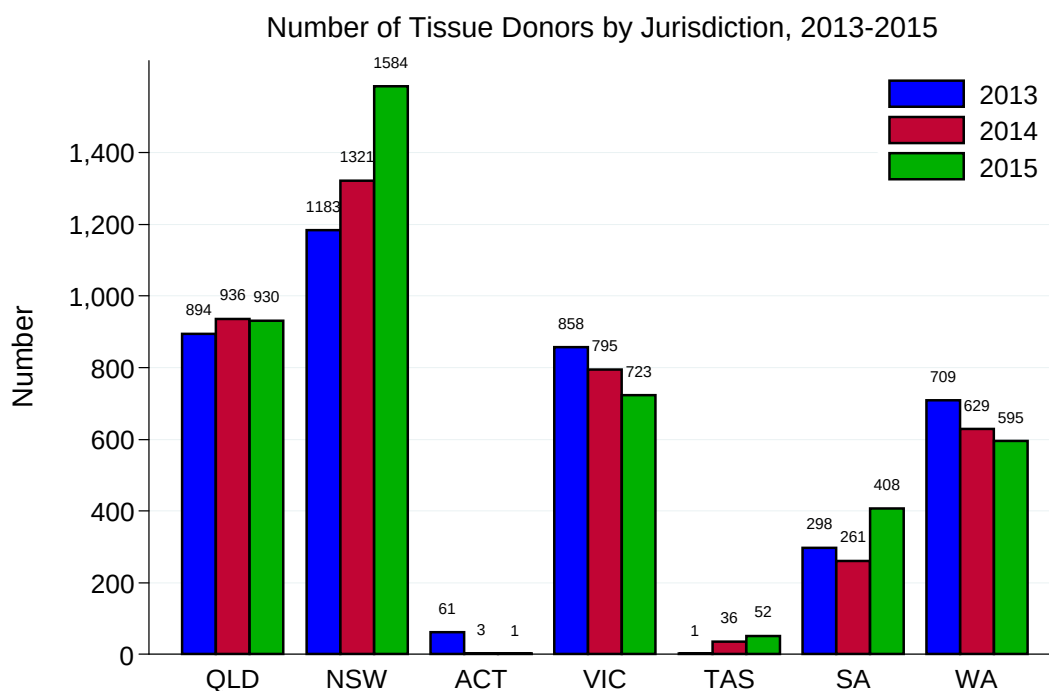
<http://www.donatelife.gov.au/organ-and-tissue-authority-ota>.

Tissue Donors

In 2015, tissue banks across Australia continued to provide data for 4,544 cardiovascular, musculoskeletal and skin tissue donations from a total of 4,293 tissue donors.

Figure 11.1 shows the number of tissue donors in each jurisdiction (both living and deceased combined) for 2013, 2014 and 2015. 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 11.1



TISSUE & EYE DONATION

Table 11.1 shows the number of tissue donors, by donation pathway, by jurisdiction and the percentage change in donor numbers from 2014 to 2015. Nationally there was a 9% increase in the number of deceased tissue donors in 2015. Living tissue donor numbers increased by 7% resulting in an overall increase in tissue donors for 2015 compared to 2014.

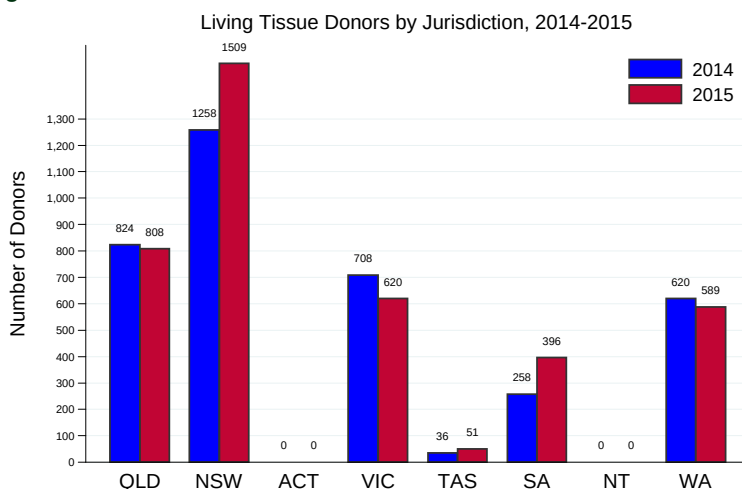
Table 11.1

Number of Tissue Donors by Donation Pathway, Jurisdiction, 2014-2015				
Donor Pathway	Jurisdiction	2014	2015	Change in donation
Living Tissue Donor	QLD	824 (22.2%)	808 (20.3%)	-2%
	NSW	1258 (34%)	1509 (38%)	17%
	ACT	0 (0%)	0 (0%)	.%
	VIC	708 (19.1%)	620 (15.6%)	-14%
	TAS	36 (1%)	51 (1.3%)	29%
	SA	258 (7%)	396 (10%)	35%
	NT	0 (0%)	0 (0%)	.%
	WA	620 (16.7%)	589 (14.8%)	-5%
	AUS	3704 (100%)	3973 (100%)	7%
Deceased Tissue Donor	QLD	256 (49%)	241 (42.2%)	-6%
	NSW	85 (16.3%)	112 (19.6%)	24%
	ACT	3 (.6%)	1 (.2%)	-200%
	VIC	156 (29.9%)	182 (31.9%)	14%
	ACT	1 (.2%)	4 (.7%)	75%
	SA	5 (1%)	13 (2.3%)	62%
	NT	2 (.4%)	0 (0%)	.%
	WA	14 (2.7%)	18 (3.2%)	22%
	AUS	522 (100%)	571 (100%)	9%
Total Donors	QLD	1080 (25.6%)	1049 (23.1%)	-3%
	NSW	1343 (31.8%)	1621 (35.7%)	17%
	ACT	3 (.1%)	1 (0%)	-200%
	VIC	864 (20.4%)	802 (17.6%)	-8%
	TAS	37 (.9%)	55 (1.2%)	33%
	SA	263 (6.2%)	409 (9%)	36%
	NT	2 (0%)	0 (0%)	.%
	WA	634 (15%)	607 (13.4%)	-4%
	AUS	4226 (100%)	4544 (100%)	7%

TISSUE & EYE DONATION

Among the 4544 tissue donors in Australia during 2015, there were 3,973 living donors compared to 3,704 in 2014. Figure 11.2 shows the number of living donors by jurisdiction for 2014 and 2015. Five tissue banks in NSW accounted for 38% (1,509) of living tissue donors.

Figure 11.2



There were 571 deceased tissue donors in Australia in 2015, an increase of 9% from 522 in 2014. Figure 11.3 shows the breakdown by jurisdiction for 2014 and 2015. Of the 571 deceased tissue donors, 241(42.2%) donors were reported by the two tissue banks located in QLD.

Figure 11.3

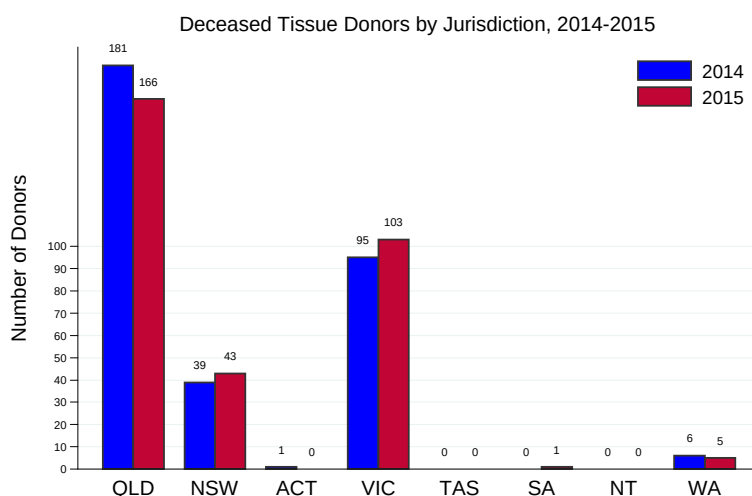
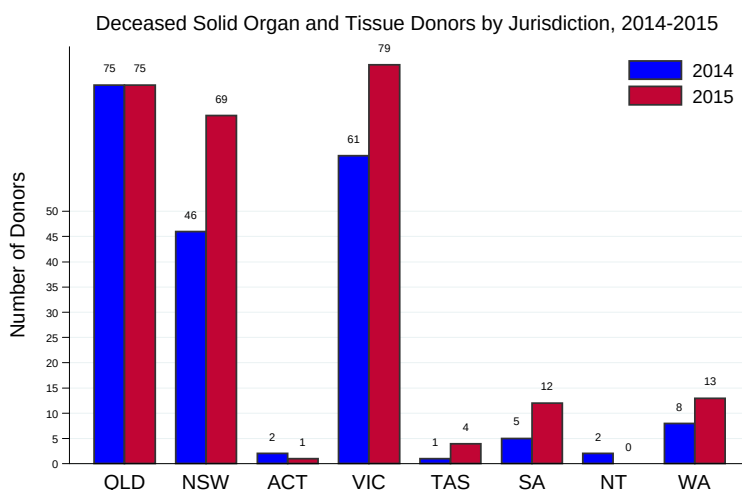


Figure 11.4

Of the 571 deceased tissue donors in Australia, in 2015, 253 (44.3%) were reported through the solid organ and tissue donation sector. These donors were referred by the DonateLife Network. Figure 11.4 provides the breakdown by jurisdiction in tissue donations from deceased solid organ and tissue donors for 2014 and 2015.



Donation of Tissue

The 4,293 tissue donors in Australia during 2015, accounted for 4,544 tissue donations. Of these 4,544 donations of musculoskeletal, cardiovascular and skin tissue, 3,973 (87.4%) were from live donors and 571 (12.5%) were tissue donations from deceased donors.

Figure 11.5 shows the breakdown by jurisdiction for the total number of tissue donations by year, 2013 to 2015

Figure 11.5

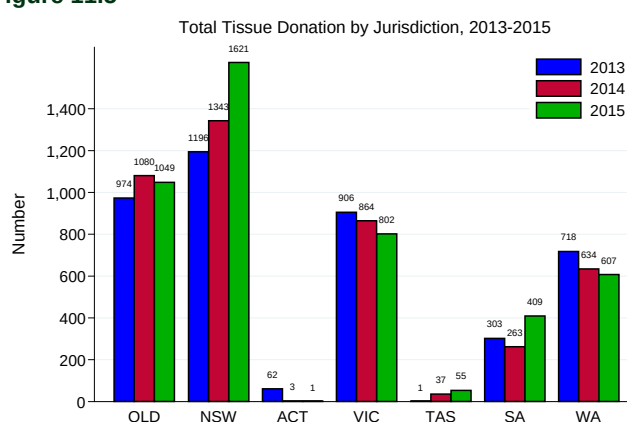


Table 11.2 provides the proportion of tissue donations by Jurisdiction by donor type for 2014-2015.

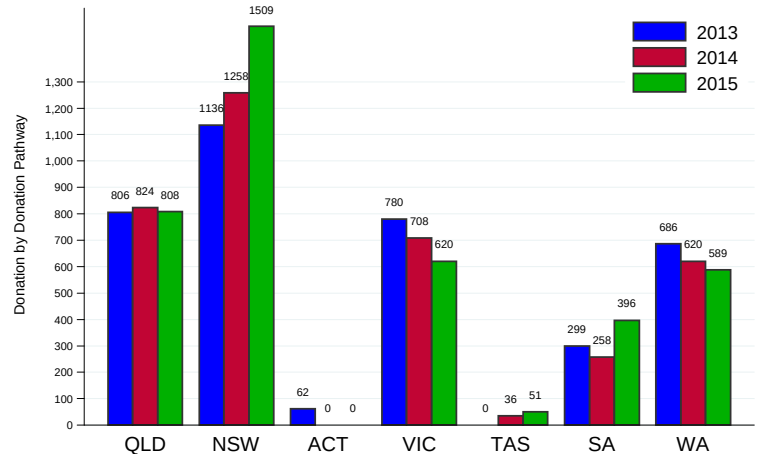
Table 11.2

Number of Tissue Donations by Donor Type, Jurisdiction 2014-2015			
Donor Type	Jurisdiction	2014	2015
Living Donor	QLD	824 (22.2%)	808 (20.3%)
	NSW	1258 (34%)	1509 (38%)
	ACT	0 (0%)	0 (0%)
	VIC	708 (19.1%)	620 (15.6%)
	TAS	36 (1%)	51 (1.3%)
	SA	258 (7%)	396 (10%)
	WA	620 (16.7%)	589 (14.8%)
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Deceased Donor	QLD	256 (49.2%)	241 (42.2%)
	NSW	85 (16.3%)	112 (19.6%)
	ACT	3 (.6%)	1 (.2%)
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	TAS	1 (.2%)	4 (.7%)
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	ACT	3 (.1%)	1 (0%)
	VIC	864 (20.5%)	802 (17.6%)
	TAS	37 (.9%)	55 (1.2%)
	SA	263 (6.2%)	409 (9%)
	WA	634 (15%)	607 (13.4%)
	AUS	4224 (100%)	4544 (100%)

TISSUE & EYE DONATION

Figure 11.6

Tissue Donation by Living Donors by Jurisdiction, 2013-2015

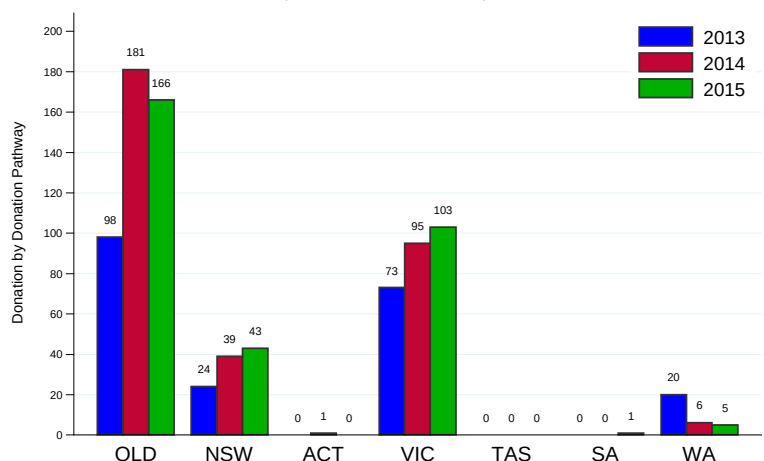


Figures 11.6 to 11.8 show the breakdown by living tissue, deceased tissue only and solid organ and tissue donation, by Jurisdiction, for the period 2013 to 2015.

Among the 3,973 living tissue donations in Australia during 2015, NSW and QLD recorded an increase in donation numbers compared to 2014, with NSW reporting 38% (1,509) of living tissue donations.

Figure 11.7

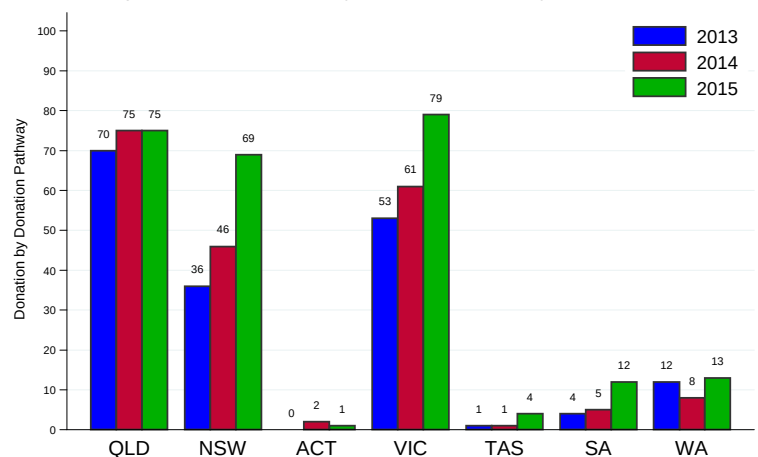
Tissue Donation by Deceased Donors by Jurisdiction, 2013-2015



Of the 571 tissue donations from deceased donors in 2015, 318 (55.7%) came from tissue only donors. Figure 11.7 shows the breakdown by Jurisdiction for 2012 to 2014. QLD reported 166 (29.1%) tissue only donations. This was a decrease of 15 donors compared to 2014 (181).

Figure 11.8

Solid Organ & Tissue Donation by Deceased Donors by Jurisdiction, 2013-2015



Of the 571 deceased tissue donors in Australia, in 2015, 253 (44.3%) were reported through the solid organ and tissue donation sector. These donors were referred by the DonateLife Network. Figure 11.8 provides the breakdown by jurisdiction of tissue donations from deceased solid organ and tissue donors for the period 2012 to 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 571 tissue donations from deceased donors in 2015 included donations from tissue only and solid organ/tissue donors. This consisted of 233 musculoskeletal tissue, 151 cardiovascular tissue, 171 skin and 16 pancreas islets. Overall this is a 11.5% increase of deceased tissue donations compared to 2014. Table 11.3 shows the donation for tissue retrieved from deceased donors, by tissue type and donation sector. 55.7% (318) of tissue retrieved from deceased donors was from the tissue only sector, while 44.3% (253) was from the solid organ/tissue sector.

Table 11.3

Tissue Donation from Deceased Donors in 2015 by Jurisdiction and Donation Sector												
Jurisdiction	Tissue Only Sector				Solid Organ/Tissue Sector				Tissue Total			
	ms	cv	skin	pi	ms	cv	skin	pi	ms	cv	skin	pi
QLD	74	19	73	0	25	21	27	2	99	40	100	2
NSW	38	5	0	0	31	35	0	3	69	40	0	3
ACT	0	0	0	0	0	1	0	0	0	1	0	0
VIC	32	25	46	0	19	27	25	8	51	52	71	8
TAS	0	0	0	0	0	4	0	0	0	4	0	0
SA	0	1	0	0	0	10	0	2	0	11	0	2
WA	4	1	0	0	10	2	0	1	14	3	0	1
AUSTRALIA	148	51	119	0	85	100	52	16	233	151	171	16
ms = musculoskeletal tissue cv = cardiovascular tissue pi = pancreas islets												

TISSUE & EYE DONATION

In Australia during 2015, there were 233 musculoskeletal tissue donation from deceased donors. Figure 11.9 shows the number of musculoskeletal tissue donations by jurisdiction for the period 2012 to 2015. Forty two percent (99) of the 233 musculoskeletal donations were reported by the QLD Bone Bank.

Figure 11.9

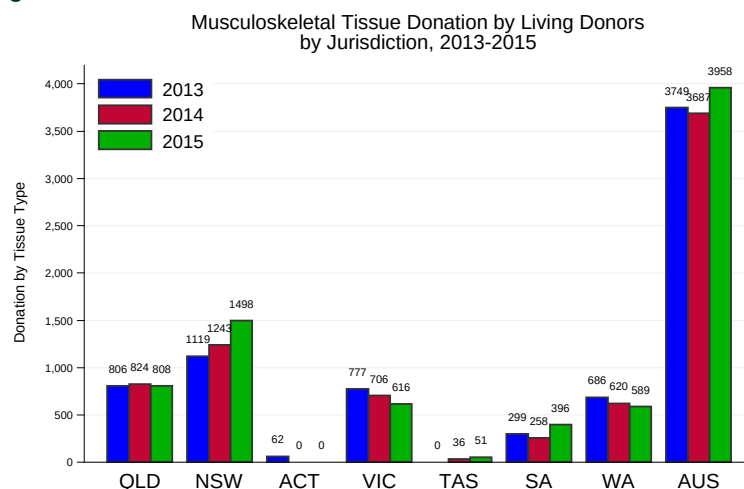


Figure 11.10

Figure 11.10 shows the breakdown by jurisdiction for cardiovascular tissue donation for the period 2012 to 2015. Eighty seven percent all cardiovascular donations come from the eastern jurisdictions of Australia (QLD, NSW, VIC).

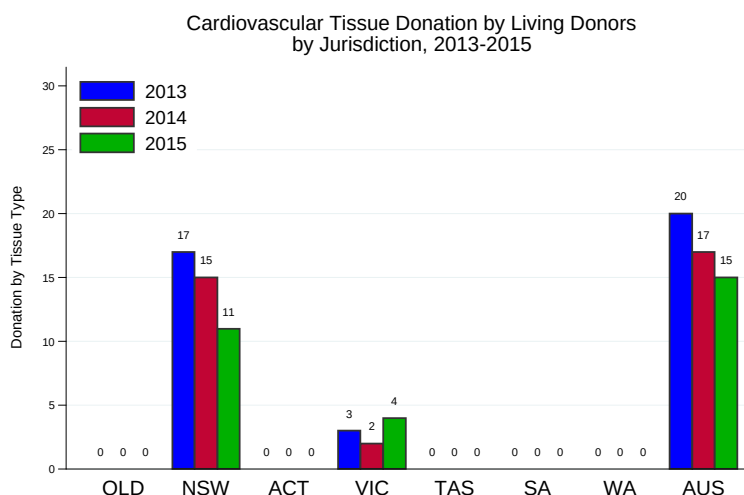
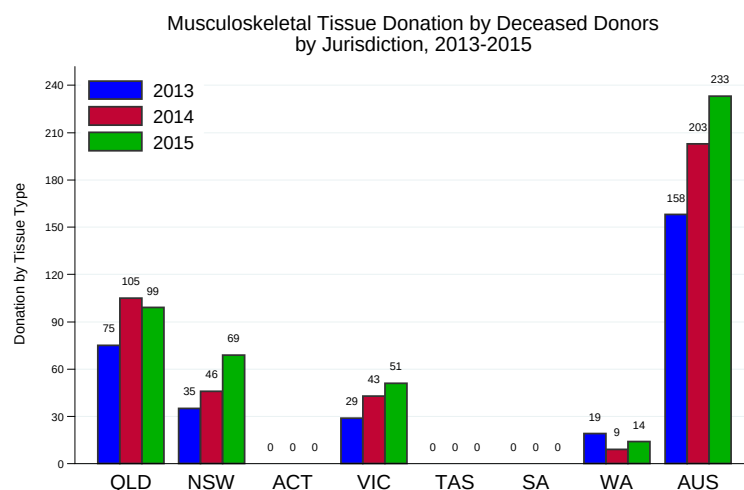


Figure 11.11

QLD and VIC are the only two jurisdictions with skin donation services. Figure 11.11 shows the breakdown of skin donations between the two jurisdictions for the period 2012 to 2014.



Tissue Donation from Living Donors

Tissue donations from living donors (87.4% of all donations) consisted predominately of musculoskeletal tissue, where 3,958 people donated femoral heads whilst undergoing hip replacement surgery.

Table 11.4 shows tissue donation from living donors. Fifteen living donors provided cardiovascular tissue, down from 17 in 2014. Tissue donation from living donors is managed by the tissue banks across Australia.

Table 11.4

Tissue Donation from Living Donors in 2014/5 by State and Donation Sector			
Jurisdiction	Musculoskeletal	Cardiovascular	Total
QLD	808	0	808
NSW	1498	11	1509
ACT	0	0	0
VIC	616	4	620
TAS	51	0	51
SA	396	0	396
WA	589	0	589
AUSTRALIA	3958	15	3973

Figure 11.12

Cardiovascular Tissue Donation by Deceased Donors
by Jurisdiction, 2013-2015

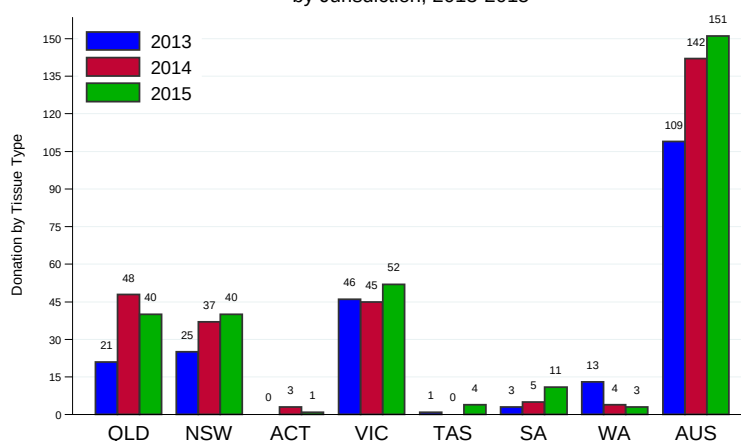


Figure 11.12 shows the numbers of musculoskeletal tissue donations from living donors by Jurisdiction for the period 2012 - 2014.

Figure 11.13

Skin Tissue Donation by Deceased Donors
by Jurisdiction, 2013-2015

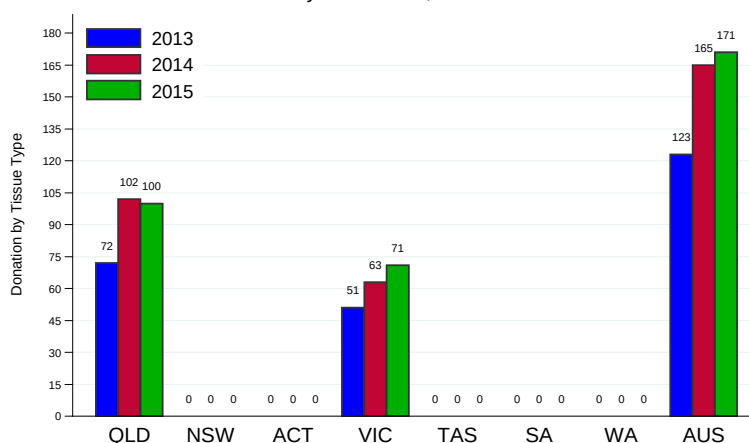


Figure 11.13 shows the number of skin tissue donations from deceased donors by Australian jurisdictions for the period 2012 - 2014.

Tissue Transplantation

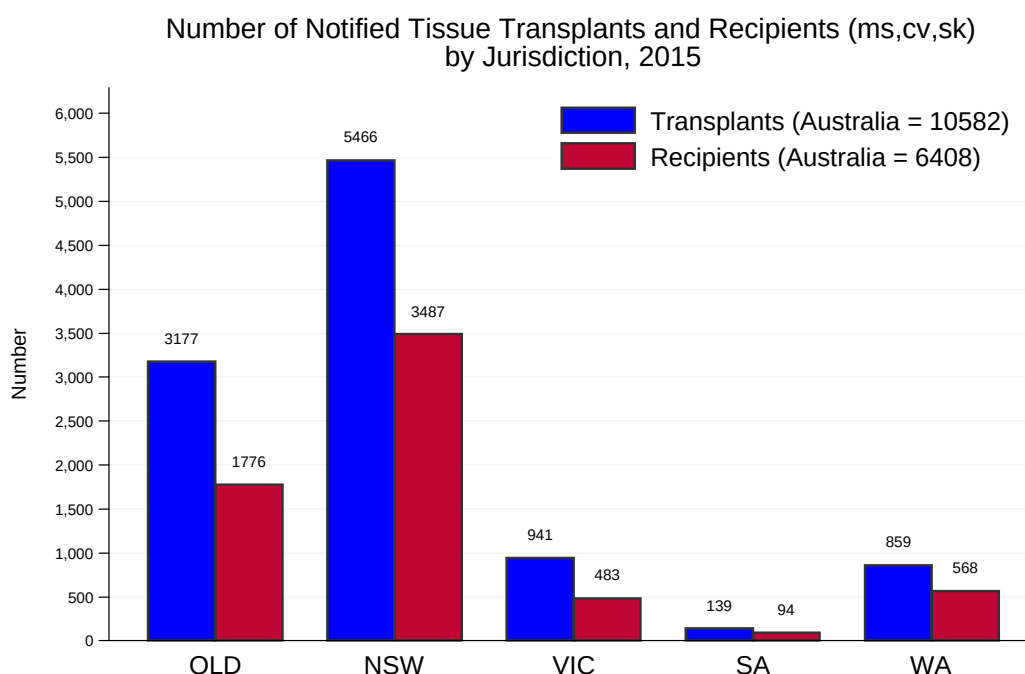
In 2015, national tissue reporting continued to strengthen with the consolidated collection and reporting of tissue donation outcomes by capturing tissue transplantation numbers in Australia. Tissue banks provided the number of notified graft tissue transplants and the number of notified recipients of 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 11.14 shows the number of notified^(1,2) tissue transplants (grafts) and recipients by Jurisdiction for 2015.

Figure 11.14



⁽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".

Figure 11.15

Pancreas Islets Donation by Deceased Donors
by Jurisdiction, 2013-2015

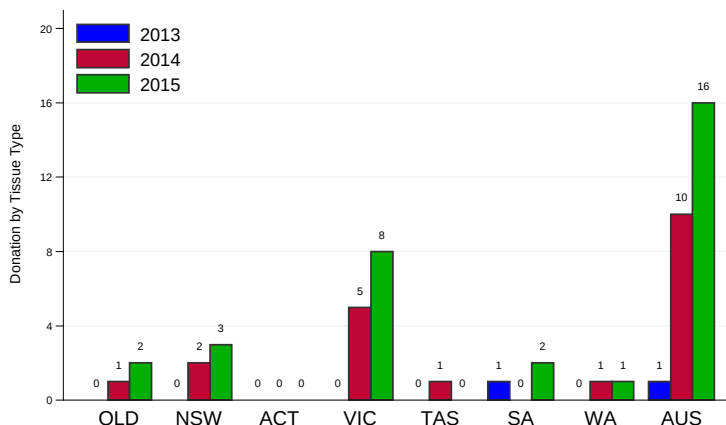


Figure 11.15 shows the number of pancreas islets donations by deceased donors by Jurisdiction, for 2013-2015.

In Australia, there were 16 pancreas islets donations by deceased donors.

Figure 11.16

Number of Notified Musculoskeletal Transplants and Recipients
by Jurisdiction, 2015

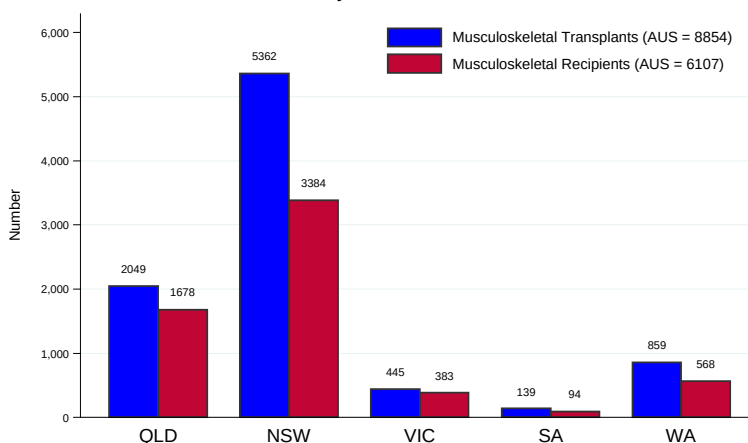


Figure 11.16 shows the number of notified^(1,2) musculoskeletal tissue transplants and recipients, by Jurisdiction, for 2015.

In Australia, there were 6,107 recipients who received 8,854 musculoskeletal transplants.

Figure 11.17

Number of Notified Cardiovascular Transplants and Recipients
by Jurisdiction, 2015

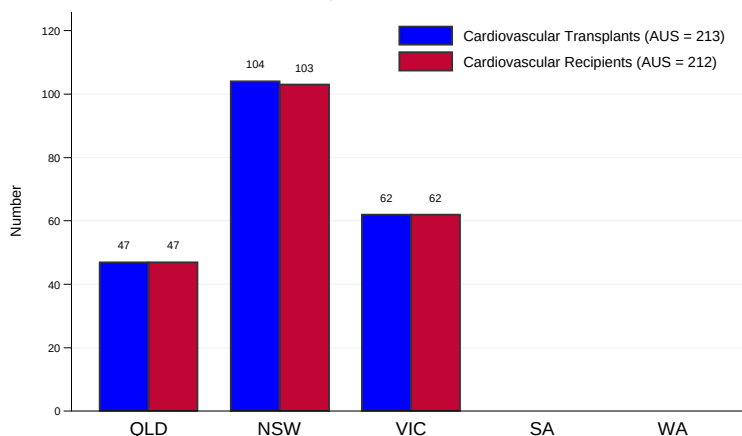


Figure 11.17 shows the number of notified^(1,2) cardiovascular tissue transplants and recipients by Australian Jurisdiction, for 2015.

In Australia, there were 212 recipients who received 213 cardiovascular 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".

TISSUE & EYE DONATION

Figure 11.18 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.

Figure 11.18 Number of Notified Skin Tissue Transplants and Recipients by Jurisdiction, 2015

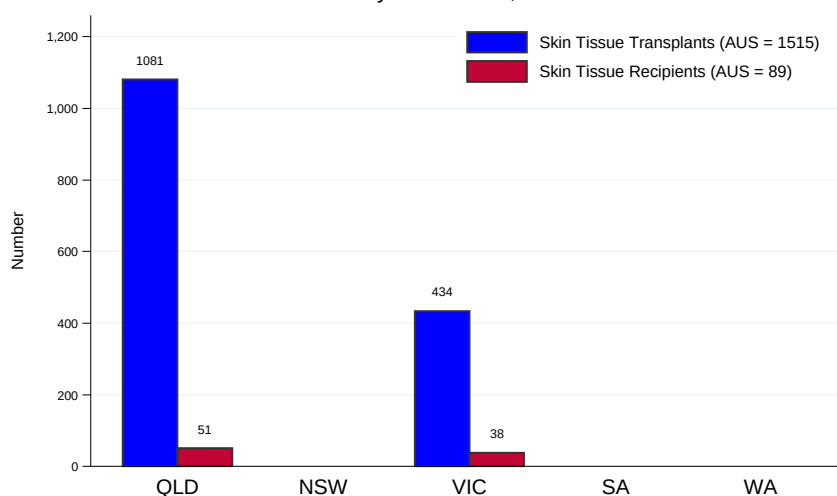
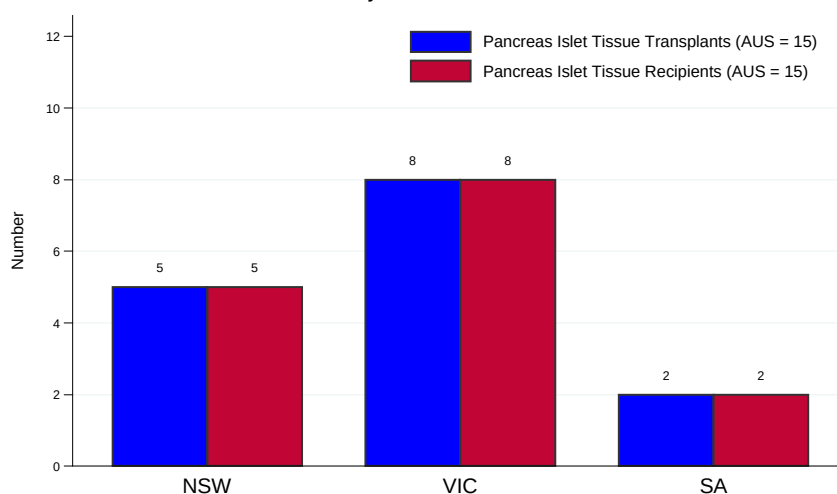


Figure 11.19 shows the number of notified ^(1,2) musculoskeletal tissue transplants and recipients, by Jurisdiction, for 2014.

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

Figure 11.19 Number of Pancreas Islet Tissue Transplants and Recipients by Jurisdiction, 2015



⁽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 Donors

In 2015, 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 11.20 represents the number of eye donors from each Australian Jurisdiction for the reporting period 2013 to 2015. In 2015 there were 1,266 eye donors (Figure 11.21), compared with 1,162 in 2014 and 1,144 in 2013.

Figure 11.20 Number of Eye Donors by Jurisdiction, 2013-2015

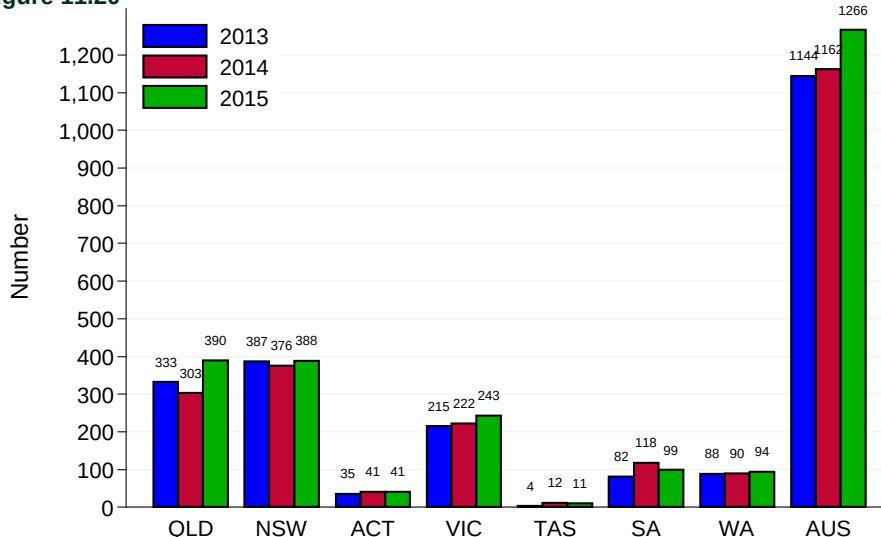
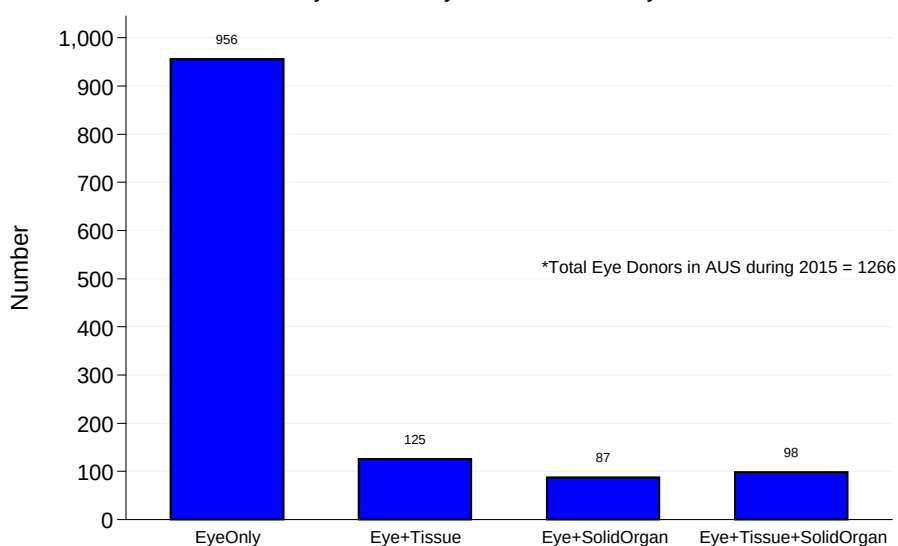


Figure 11.21

Number of Eye Donors by Donation Pathway, Australia, 2015



TISSUE & EYE DONATION

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

In 2015 there were 956 eye only donors (Figure 11.22), 125 donors who donated eye and tissue (Figure 11.23), 87 donors who donated eye and one or more solid organs (Figure 11.24) and 98 donors who donated eye, tissue and one or more solid organs (Figure 11.25).

Figure 11.22

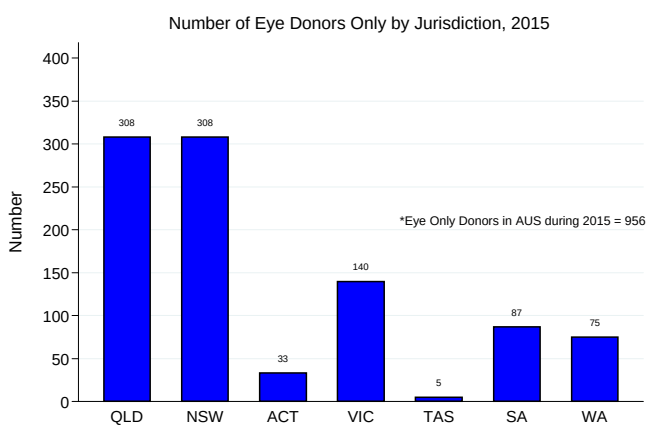


Figure 11.23

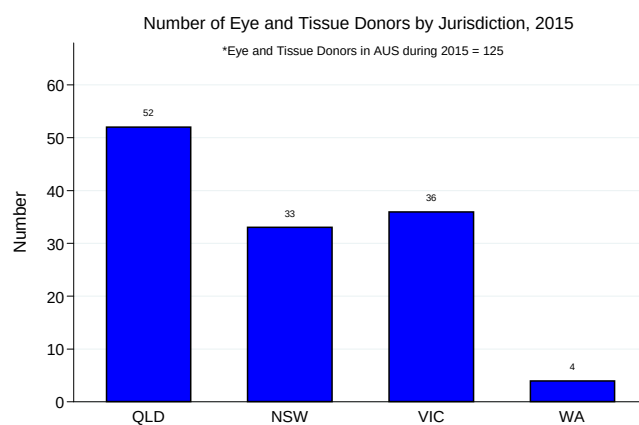


Figure 11.24

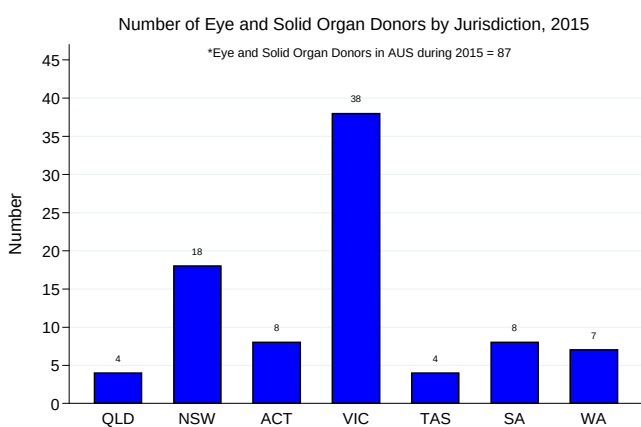
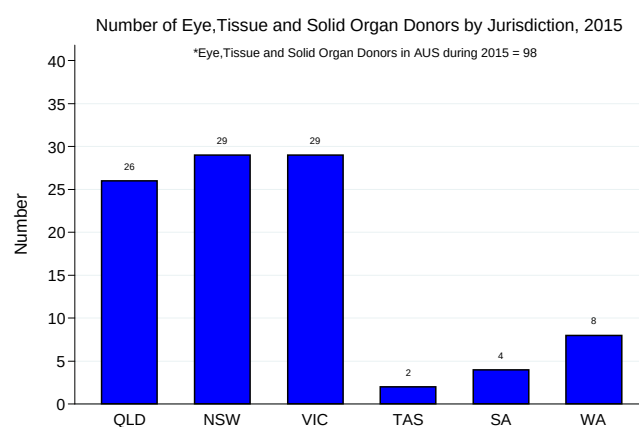


Figure 11.25



Outcome of Eye Donation

Eye banks contributed additional data elements to the national reporting in 2015 by reporting corneal graft and sclera transplantation numbers across Australia. This further strengthened the collection and reporting of eye donation and outcomes and supplements reporting by EBAANZ and the Corneal Graft Registry (ACGR) reporting. Data was sourced from eye banks in Australia .

For 2015, there were 2,124 corneal transplants and 754 sclera transplants.

Other outcome data, such as, follow up data, corneal grafts survival, trends in corneal transplant practice and comparisons between corneal graft procedures is reported by the ACGR. Considerable further information is available at <https://www.flinders.edu.au/medicine/sites/ophthalmology/clinical/the-australian-corneal-graft-registry.cfm>.

Figure 11.26 shows the number of notified corneal transplants by jurisdiction for 2015.

Figure 11.26

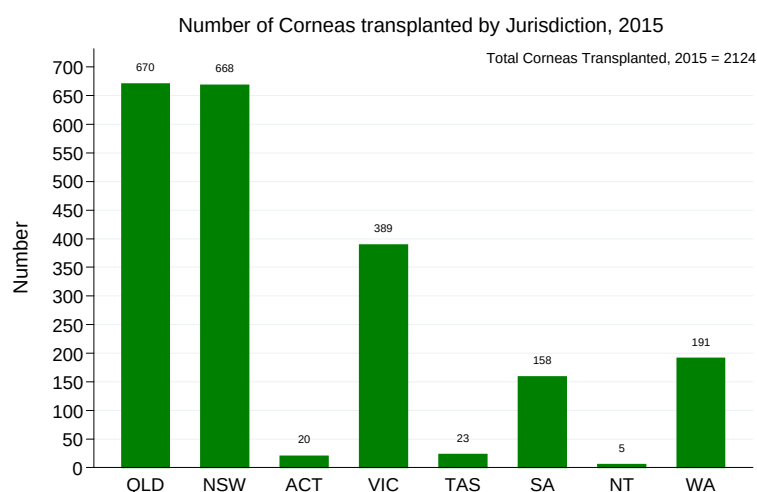
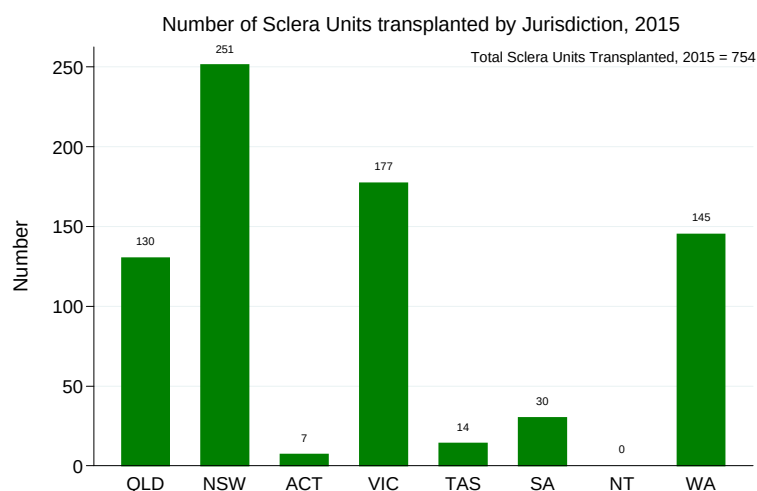


Figure 11.27 shows the number of notified sclera transplants by jurisdiction for 2015.

Figure 11.27



Chapter 12

Australian Waiting List Data



2016
Annual Report
Data to 31-Dec-2015

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 outweigh benefits. 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 they lists at 1 January and 31 December of each year.



ORGAN WAITING LIST DATA

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 (DD) kidney waiting lists may receive a kidney from a living donor (LD), though the majority of living kidney donor recipients are not on 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 deceased donor transplant taking place. These two groups are illustrated separately.

Data is currently only available for Australia. Negotiations are currently underway to also include New Zealand data.

Figure 12.1

Australian Deceased Donor Kidney Waiting List Stock and Flow Totals 2010 - 2015							
	Event	2010	2011	2012	2013	2014	2015
Australia	Active start of year	1266	1185	1089	1077	1075	1141
	Made active	630	709	746	778	852	760
	Taken off list	149	199	154	141	148	155
	DD graft	499	533	553	581	573	633
	LD graft	58	62	45	54	56	42
	Overseas graft	1	2	0	1	0	2
	Died on list	4	9	6	3	9	8
	Active end of year	1185	1089	1077	1075	1141	1061

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 12.2				
Australian and New Zealand Deceased Donor Liver Waiting List Stock and Flow Totals 2013 - 2015				
Country	Event	2013	2014	2015
Australia	Active start of year	165	145	186
	Made active	317	347	335
	Taken off list	66	55	52
	Deceased donor transplant	248	234	265
	Died on list	24	16	18
	Active end of year	145	186	186
New Zealand	Active start of year	21	19	21
	Made active	43	56	61
	Taken off list	5	14	7
	Deceased donor transplant	31	38	45
	Died on list	5	2	3
	Active end of year	19	18	27

ORGAN WAITING LIST DATA

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 12.3

Australian and New Zealand Deceased Donor Heart Waiting List Stock and Flow Totals 2009 - 2015								
Country	Event	2009	2010	2011	2012	2013	2014	2015
Australia	Active start of year	51	45	46	65	64	48	60
	Made active	96	89	107	92	91	127	98
	Taken off list	37	15	16	13	19	32	16
	Deceased donor transplant	60	65	65	73	77	78	93
	Died on list	5	8	7	7	11	5	5
	Active end of year	45	46	65	64	48	60	44
New Zealand	Active start of year	7	7	11	13	14	10	8
	Made active	15	19	20	19	18	18	19
	Taken off list	2	4	5	5	9	3	4
	Deceased donor transplant	11	11	11	12	9	17	10
	Died on list	2	0	2	1	4	0	0
	Active end of year	7	11	3	14	10	8	13

ORGAN WAITING LIST DATA

Lung

Figure 12.4

Australian and New Zealand Deceased Donor Lung Waiting List Stock and Flow Totals 2009 - 2015

Country	Event	2009	2010	2011	2012	2013	2014	2015
Australia	Active start of year	101	102	116	99	94	96	111
	Made active	150	167	182	171	206	223	211
	Taken off list	21	13	24	11	23	29	33
	Deceased donor transplant	122	126	162	149	169	166	195
	Died on list	6	14	13	11	13	14	9
	Active end of year	102	116	99	99	95	110	85
New Zealand	Active start of year	4	6	8	13	13	13	13
	Made active	11	17	17	24	21	18	19
	Taken off list	1	3	2	9	1	0	4
	Deceased donor transplant	8	9	10	12	19	17	23
	Died on list	0	3	0	4	1	1	0
	Active end of year	6	8	13	12	13	13	5

ORGAN WAITING LIST DATA

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 12.5			
Australian & New Zealand Deceased Donor Pancreas Waiting List Stock and Flow Totals 2014 - 2015			
Country	Event	2014	2015
Australia	Active start of year	63	59
	Made active	38	42
	Taken off list	14	12
	Deceased donor transplant	43	45
	Died on list	5	4
	Active end of year	59	40
New Zealand	Active start of year	7	5
	Made active	3	3
	Taken off list	3	1
	Deceased donor transplant	2	3
	Died on list	1	0
	Active end of year	4	4

Chapter 13

Transplant Outcome



2016
Annual Report
Data to 31-Dec-2015

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

For each organ, the definition 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.anzctr.org.au; www.anziptr.org).

Kidney Graft Survival

Table 13.1 refers 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 13.1

Kidney Graft Survival, All Grafts by Era				
Organ transplant type	Era	n	1 year %	5 year %
Kidney transplant (Australia) ¹	2007-2008	678	92	82
	2009-2010	854	95	82
	2011-2012	1044	94	-
	2013-2014	1134	95	-
Kidney transplant (New Zealand) ¹	2007-2008	103	93	82
	2009-2010	95	96	85
	2011-2012	108	94	-
	2013-2014	113	95	-

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

TRANSPLANT OUTCOME

Cardiothoracic Graft Survival

Table 13.2 refers to all heart and lung transplants in Australia and New Zealand respectively, at 1 and 5 year survival post transplant per year.

Table 13.2

Cardiothoracic Graft Survival, All Grafts by Era				
Organ transplant type	Year	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

Liver Graft Survival

Table 13.3 refers to all primary liver transplants performed per era, in Australia and New Zealand combined.

Table 13.3

Liver Graft Survival, All Grafts by Era				
Organ transplant type	Era	n	1 year %	5 year %
Liver transplant (Australia) ³	1996 - 2000	721	81	73
	2001 – 2005	748	88	79
	2006 – 2010	901	89	78
	2011 - 2015	1193	91	85
Liver transplant (New Zealand) ³	1996 – 2000	73	96	80
	2001 – 2005	176	90	83
	2006 - 2010	188	95	90
	2011 - 2015	206	90	82

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 per era, in Australia and New Zealand combined.

Table 13.4

Pancreas Graft Survival, All Grafts by Era				
Organ transplant type	Era	n	1 year %	5 year %
Pancreas transplant (Australia and New Zealand) ⁴	1984-2000	179	80.2	73.7
	1984-2015	701	86.8	81.8

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

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