



## SECTION 2

# Deceased Organ Donation

*This section summarises organ donation in Australia and New Zealand. Figures reported here include the number of donors per million population; and number of transplant recipients and organs transplanted during 2017 in comparison to previous years.*

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## Executive Summary

2017 saw a stabilisation of donor rates in Australia, and a continuing rise in donor rates in New Zealand. Much of the growth in organ donor numbers is due to the increasing use of organs from donors after circulatory death. As a consequence, the greatest growth in transplant recipients is in kidney transplants and, in Australia, lung transplants.

## Suggested Citation:

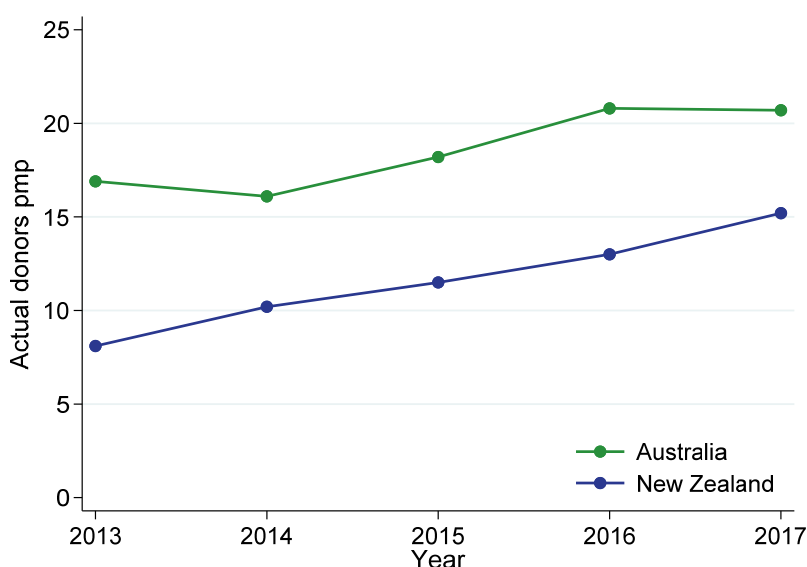
ANZOD Registry, 2018 Annual Report, Section 2: Deceased Organ. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2018. Available at [www.anzdata.org.au](http://www.anzdata.org.au)

## Actual Deceased Organ 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/](http://www.who.int/ethics/topics/human_transplant/en/)). These are termed “actual donors”

The rate of deceased organ donors per million population (dpmp) remained stable in Australia at 20.7 dpmp in 2017. In New Zealand, the rate rose to 15.2 dpmp in 2017, from 13.0 dpmp in 2016.

Figure 2.1 - Number of Actual Deceased Donors Per Million Population - Australia and New Zealand, 2013 – 2017



In Australia, there remains variation in organ donation rates between jurisdictions (Table 2.1). In 2017, rates varied from 12.2 dpmp in the Northern Territory to 36.5 dpmp in Tasmania.

Table 2.1 Number of Actual Deceased Donors (rate per million population) - Australia and New Zealand, 2013 - 2017

State/Country	2013	2014	2015	2016	2017
QLD	77 (16.5)	71 (15.0)	72 (15.0)	106 (21.9)	105 (21.3)
NSW <sup>3</sup>	102 (14.2)	92 (12.6)	127 (17.2)	133 (17.7)	135 (17.7)
ACT <sup>3</sup>	6 (10.0)	11 (18.0)	13 (21.0)	20 (31.9)	14 (22.0)
VIC	110 (19.0)	117 (19.8)	126 (20.9)	140 (22.7)	148 (23.4)
TAS	8 (15.6)	9 (17.5)	9 (17.5)	11 (21.3)	19 (36.5)
SA	34 (20.3)	36 (21.3)	42 (24.7)	40 (23.4)	32 (18.6)
NT	7 (28.8)	7 (28.7)	4 (16.3)	6 (24.4)	3 (12.2)
WA	47 (18.9)	35 (13.9)	42 (16.5)	47 (18.4)	54 (20.9)
<b>AUS</b>	<b>391 (16.9)</b>	<b>378 (16.1)</b>	<b>435 (18.2)</b>	<b>503 (20.8)</b>	<b>510 (20.7)</b>
<b>NZ</b>	<b>36 (8.1)</b>	<b>46 (10.2)</b>	<b>53 (11.5)</b>	<b>61 (13.0)</b>	<b>73 (15.2)</b>

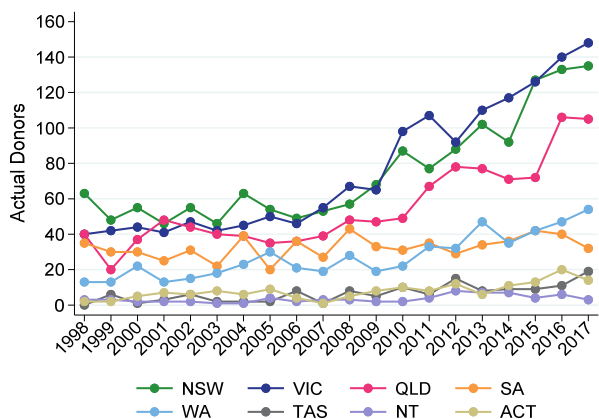
<sup>1</sup> This table relates to the number of donors for whom the retrieval operation commenced for the purpose of transplantation. It includes donors who may have been deemed medically unsuitable at the time of the surgery or after removal of organs.

<sup>2</sup> Refers to retrieval State (i.e. Albury-NSW donors are retrieved by Victoria)

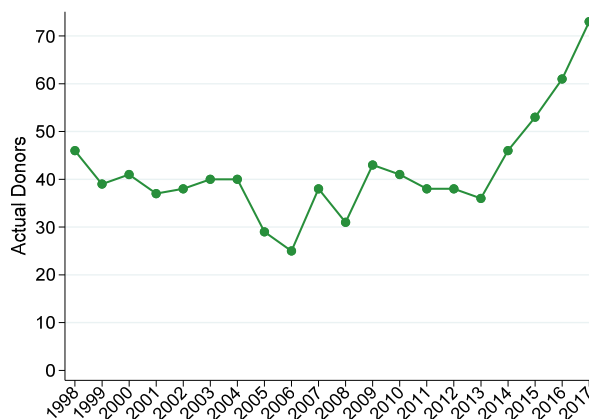
<sup>3</sup> NSW population excludes residents of the NSW Southern Area Health Service (included in ACT population) Population Data - June 2017. Please refer to methodology section of this report for detail.

The variation, since 1998, in the number of actual deceased donors by Australian state/territory and for New Zealand is shown in Figure 2.2.

**Figure 2.2.1 - Number of Actual Deceased Donors Australian States and Territories 1998 - 2017**

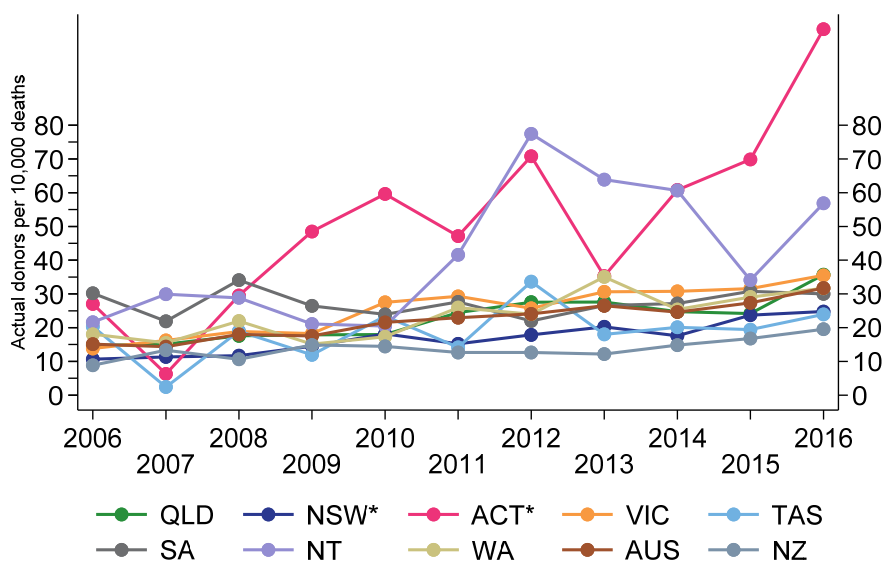


**Figure 2.2.2 - Number of Actual Deceased Donors New Zealand, 1998 - 2017**



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 meaningful comparator. Rates for various jurisdictions using this metric are shown in Figure 2.3 and Table 2.2.

**Figure 2.3 - Number of Actual Deceased Donors Per 10,000 Deaths - Australian States/Territories and New Zealand, 2006 - 2016**



\* NSW and ACT values are not adjusted for the NSW Southern Area Health Service, as death data were not available. Australian data on deaths 2016 was the latest release at the time of this publication. Australian Bureau of Statistics - Deaths 3302.0 and Statistics New Zealand

**Table 2.2 Actual Deceased Donors per 10,000 Deaths Aged < 75 Years, 2012 - 2016 ( ) is the % Deaths < 75 years as a proportion of all deaths\***

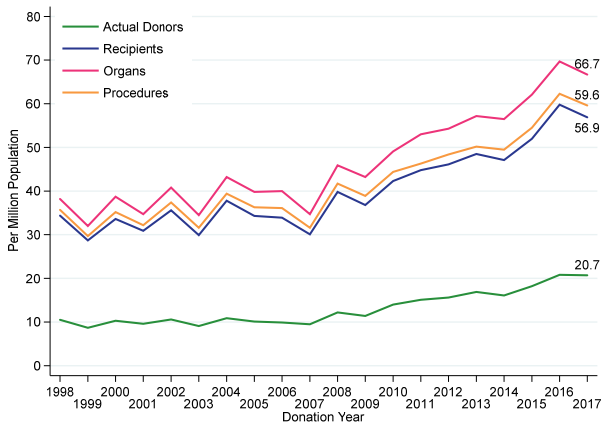
Year	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUS	NZ
2012	74 (37%)	54 (33%)	211 (34%)	84 (31%)	98 (34%)	72 (30%)	102 (76%)	64 (37%)	71 (34%)	34 (37%)
2013	72 (38%)	61 (33%)	91 (39%)	98 (31%)	51 (36%)	84 (32%)	88 (73%)	93 (38%)	77 (34%)	33 (37%)
2014	67 (37%)	53 (33%)	171 (36%)	95 (32%)	56 (36%)	89 (31%)	82 (74%)	67 (38%)	72 (34%)	41 (36%)
2015	65 (37%)	72 (33%)	190 (37%)	102 (31%)	56 (35%)	99 (31%)	47 (72%)	77 (38%)	81 (34%)	46 (36%)
2016	95 (37%)	76 (32%)	313 (35%)	113 (31%)	65 (37%)	96 (31%)	80 (71%)	88 (36%)	94 (34%)	53 (37%)

\* The number of actual donors is compared to the number of deaths that are aged less than 75 years. Australian Bureau of Statistics - Deaths 3302.0 and Statistics New Zealand. Australian data on deaths in 2016 was the latest release at the time of this publication.

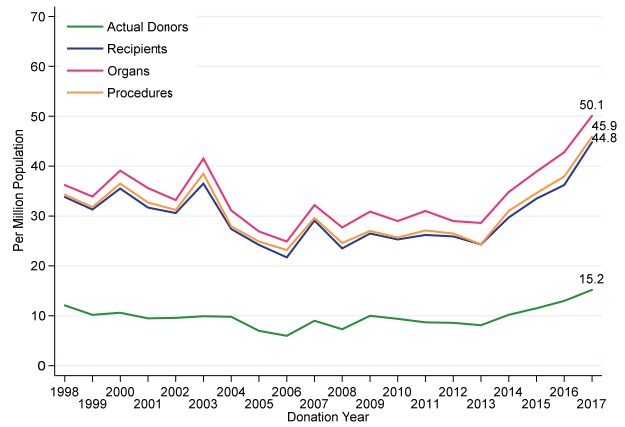
## Organ Donation Activity

Figure 2.4 shows the number of actual deceased organ donors, organs transplanted, transplant recipients and transplantation procedures per million population over time for Australia and New Zealand.

**Figure 2.4.1 - Total Number of Actual Deceased Organ Donors, Procedures, Recipients and Organ Transplanted Per Million Population, Australia, 1998 – 2017**



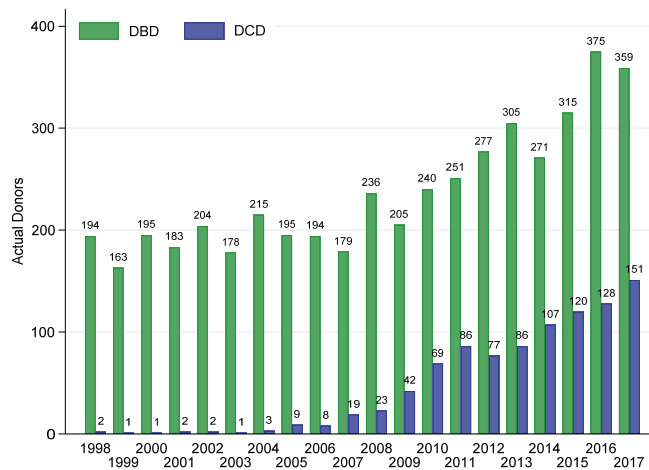
**Figure 2.4.2 - Total Number of Actual Deceased Organ Donors, Procedures, Recipients and Organ Transplanted Per Million Population, New Zealand, 1998 – 2017**



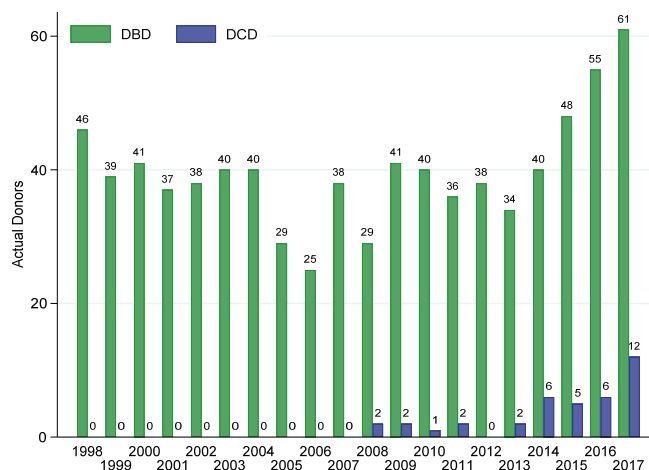
## Organ Donation Pathway

Much of the increase in donor numbers has arisen from changes in rates of donors after circulatory death (DCD), demonstrated in Figure 2.5.

**Figure 2.5.1 - Organ Donation Pathway Australia 1998 – 2017**



**Figure 2.5.2 - Organ Donation Pathway New Zealand 1998 – 2017**



## Organ Donation Overview

Tables 2.3 and 2.4 show the number (and rate) of recipients who received various organs from donors in 2017.

**Table 2.3 Australia Overview - 2017 (pmp) per million population**

<b>Population (million)</b>	<b>24.6</b>
Actual Deceased Organ Donors - both DBD & DCD included (pmp)	<b>510 (20.7)</b>
Kidney Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>832 (33.8)</b>
Liver Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>281 (11.4)</b>
Heart Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>98 (4.0)</b>
Lung Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>206 (8.4)</b>
Pancreas Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>51 (2.1)</b>
Intestine Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>1 (&lt;1.0)</b>
<b>Total Number of Transplanted Recipients (pmp)<sup>1</sup></b>	<b>1402 (57.0)</b>
<b>Total Number of Organs Transplanted (pmp)<sup>2</sup></b>	<b>1643 (66.8)</b>

**Table 2.4 New Zealand Overview - 2017 (pmp) per million population**

<b>Population (million)</b>	<b>4.8</b>
Actual Deceased Organ Donors - both DBD & DCD included (pmp)	73 (15.2)
Kidney Transplant Recipients from deceased donors- includes all combinations (pmp)	118 (24.6)
Liver Transplant Recipients from deceased donors- includes all combinations (pmp)	51 (10.6)
Heart Transplant Recipients from deceased donors- includes all combinations (pmp)	23 (4.8)
Lung Transplant Recipients from deceased donors- includes all combinations (pmp)	24 (5.0)
Pancreas Transplant Recipients from deceased donors- includes all combinations (pmp)	4 (0.8)
<b>Total Number of Transplanted Recipients (pmp)<sup>1</sup></b>	<b>215 (44.8)</b>
<b>Total Number of Organs Transplanted (pmp)<sup>2</sup></b>	<b>240 (50.1)</b>

<sup>1</sup> The total number of recipients includes all combinations of multi-organ transplants as a single count of transplantation.

<sup>2</sup> The total number of transplanted organs differs from total number of transplant recipients as each organ is counted as a single organ transplant.

## Organ Transplants

Table 2.5 shows the number (and rate) of various organs by jurisdiction of donation.

**Table 2.5 Number of Organs Transplanted in 2017 by Donor State & Country (pmp) in Australia and New Zealand**

Organs	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUS	NZ
<b>Kidney</b>	184	216	22	234	36	46	6	97	841 <sup>1</sup> (34.2)	121 <sup>2</sup> (25.2)
<b>Liver</b>	56	69	4	58	12	20	3	34	256 <sup>3</sup> (10.4)	48 <sup>4</sup> (10.0)
<b>Heart</b>	15	33	2	20	7	7	0	14	98 (4.0)	23 (4.8)
<b>Lung</b>	84	87	6	137	15	25	0	42	396 <sup>5</sup> (16.1)	44 <sup>6</sup> (9.2)
<b>Pancreas</b>	6	15	3	16	0	1	1	9	51 (2.1)	4 (0.8)
<b>Intestine</b>	0	0	0	0	0	0	0	1	1 (0.0)	0 (0.0)
<b>Total</b>	<b>345</b>	<b>420</b>	<b>37</b>	<b>465</b>	<b>70</b>	<b>99</b>	<b>10</b>	<b>197</b>	<b>1643 (66.8)</b>	<b>240 (50.1)</b>

The kidneys and lungs are counted as two separate organs (i.e. left and right kidney; left and right lung).

<sup>1</sup> Includes 823 single kidney, 4 double adult kidney and 5 en-bloc kidney transplant procedures in Australia.

<sup>2</sup> Includes 115 single kidney, 3 double adult kidney and 0 en-bloc kidney transplant procedures in New Zealand.

<sup>3</sup> Includes 228 whole liver, 50 split liver and 3 cut down liver transplant procedures in Australia.

<sup>4</sup> Includes 44 whole liver, 6 split liver and 1 cut down liver transplant procedures in New Zealand.

<sup>5</sup> Includes 190 double lung and 16 single lung transplant procedures in Australia.

<sup>6</sup> Includes 20 double lung and 4 single lung transplant procedures in New Zealand.

The mean number of organs transplanted per donor is calculated from 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 2004-2017 in Australia and New Zealand is shown in Figure 2.6. The mean number of transplant organs per deceased donor across Australia ranged from 2.6 in ACT to 3.7 in TAS.

**Figure 2.6 - Number of Organs Transplanted per Donor 2004 - 2017**

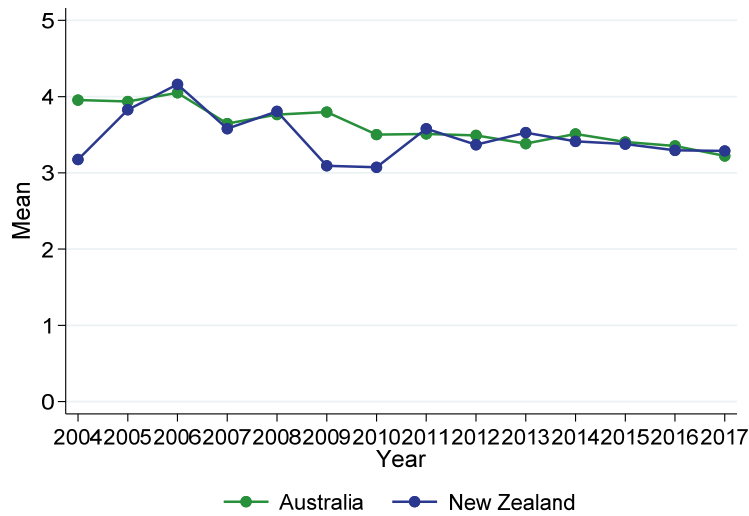
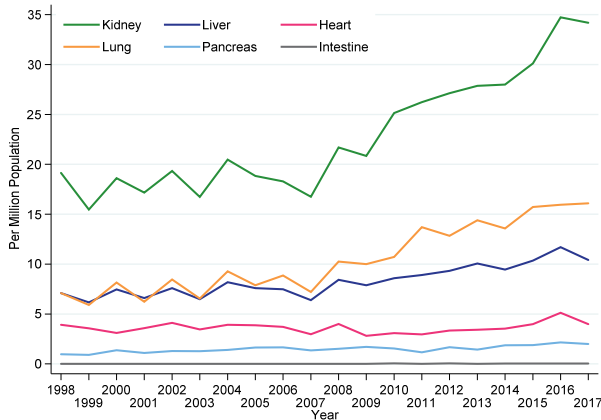


Figure 2.7 shows the organ-specific transplant rates for Australia and New Zealand over the period 1998 - 2017 (shown are rate of organ transplants per million population).

**Figure 2.7.1 - Organs Transplanted 1998-2017 Per Million Population, Australia**



**Figure 2.7.2 - Organs Transplanted 1998-2017 Per Million Population, New Zealand**

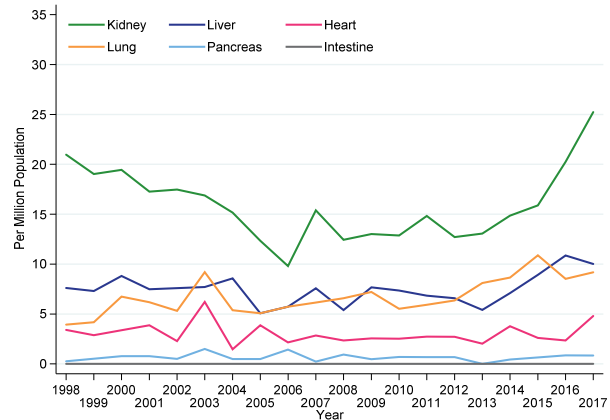
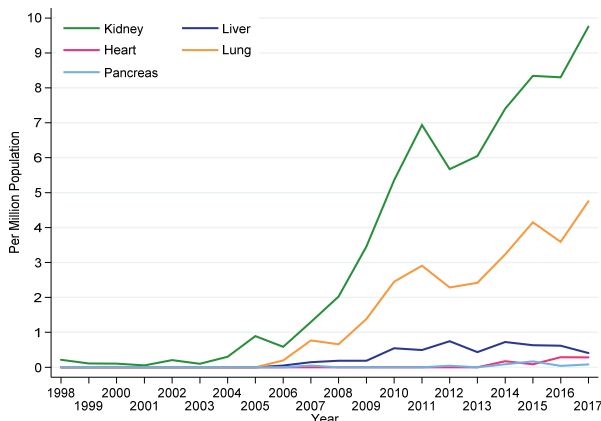
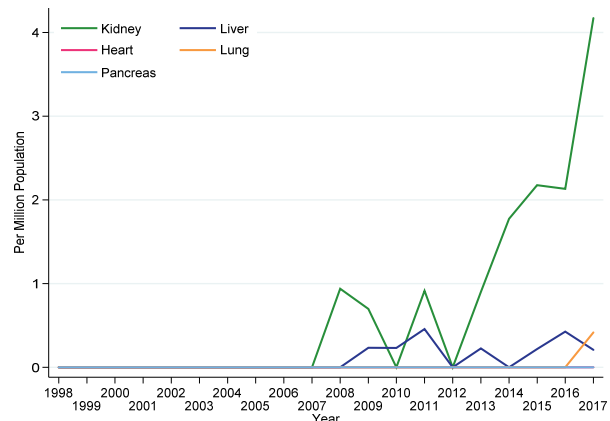


Figure 2.8 shows the corresponding rates for donation after circulatory death for Australia and New Zealand. Transplantation of organs from DCD has contributed to a significant increase in the rate of kidney transplantation and, in Australia, lung transplantation.

**Figure 2.8.1 - Organs Transplanted from DCD Donors, 1998-2017 Per Million Population, Australia**



**Figure 2.8.2 - Organs Transplanted from DCD Donors, 1998-2017 Per Million Population, New Zealand**



## Deceased Organ Donation Location

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

Table 2.6 details the number and proportion of donors in Australia for 2013 - 2017 by the remoteness category of their postcode of residence. "Overseas" refers to donors who usually reside outside of Australia. 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>).

In 2017, there were 10 deceased donors in Australia who were considered overseas visitors.

Postcode information was not collected for deceased donors in New Zealand as of the end of 2017.

**Table 2.6 Location of Postcodes of Deceased Donors 2013 - 2017**

Remoteness Area of Postcode	QLD	NSW	ACT	VIC	TAS	SA	NT	WA	AUS
<b>Major Cities of Australia</b>	240 (56%)	428 (73%)	36 (57%)	436 (68%)	1 (2%)	125 (68%)	2 (7%)	169 (75%)	1437 (65%)
<b>Inner Regional Australia</b>	99 (23%)	115 (20%)	21 (33%)	167 (26%)	35 (63%)	27 (15%)	0 (0%)	23 (10%)	487 (22%)
<b>Outer Regional Australia</b>	75 (17%)	27 (5%)	5 (8%)	29 (5%)	18 (32%)	22 (12%)	20 (74%)	16 (7%)	212 (10%)
<b>Remote Australia</b>	2 (<1%)	3 (1%)	0 (0%)	0 (0%)	1 (2%)	5 (3%)	2 (7%)	7 (3%)	20 (1%)
<b>Very Remote Australia</b>	5 (1%)	1 (<1%)	0 (0%)	0 (0%)	1 (2%)	2 (1%)	1 (4%)	3 (1%)	13 (1%)
<b>Overseas</b>	8 (2%)	12 (2%)	1 (2%)	5 (1%)	0 (0%)	3 (2%)	2 (7%)	6 (3%)	37 (2%)
<b>Total</b>	<b>429</b>	<b>586</b>	<b>63</b>	<b>637</b>	<b>56</b>	<b>184</b>	<b>27</b>	<b>224</b>	<b>2206</b>