



## SECTION 2

### Overview of Organ Donation Activity in Australia and New Zealand

#### SUMMARY

*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 2020 in comparison to previous years.*

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## Executive Summary

Since its inception in 1989 in Australia and 1993 in New Zealand, the Australian and New Zealand Organ Donation Registry (ANZOD) continues to record and report on organ donation within Australia and New Zealand.

Data related to organ donation and transplantation activity is essential in identifying opportunities for improving the care of donors, informing on the quality of transplant organs and transplant recipient outcomes.

One organ donor can benefit a number of recipients suffering from end stage organ disease. One donor could donate up to 9 organs including, kidneys (left and right), liver (split left and right), heart, lungs (left and right), pancreas and intestine, improving the lives of people wait listed for an organ transplant.

Of importance for this reporting period was the emergence of COVID-19 that spread across the world, with the first reported case in Australia on 25<sup>th</sup> January 2020. Rapid evolution of the pandemic saw precautionary steps taken by the transplant sector which effected the organ donation programs in Australia and New Zealand. During the peak emergence of COVID-19 (late-March through to mid-May 2020) the COVID-19 National Transplantation and Donation Rapid Response Taskforce was established, comprised of members from the Transplantation Society of Australia and New Zealand (TSANZ) and Organ Tissue Authority (OTA). Recommendations from the Taskforce saw transplant programs for kidney, pancreas and islets transplants suspended and restrictions placed on liver, heart, lung, pediatric and multi-organ transplant programs to consider only recipients likely to die within four months if not transplanted. This was subject to case-by-case review of donor-recipient characteristics at a unit level. Limitations on movement of organs between states was also observed during this period due to challenges faced including border closures, flight restrictions and COVID-19 restrictions. Consideration of the effect of the COVID-19 pandemic should be given when analysing the data included in this chapter.

## Suggested Citation

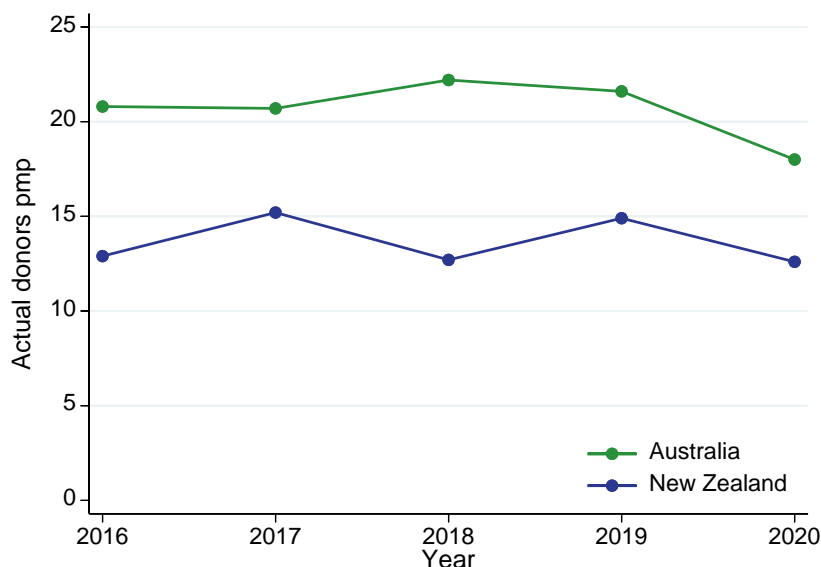
ANZOD Registry, 2021 Annual Report, Section 2: Overview of Organ Donation Activity in Australia and New Zealand. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2021. Available at [www.anzdata.org.au](http://www.anzdata.org.au)

## 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) fell in Australia to 18.0 dpmp in 2020, from 21.6 dpmp in 2019. In New Zealand, the rate fell to 12.6 dpmp in 2020, from 14.9 dpmp in 2019.

**Figure 2.1 - Number of Actual Deceased Donors Per Million Population - Australia and New Zealand, 2016–2020**



In Australia, there remains variation in organ donation rates between jurisdictions (Table 2.1). In 2020, rates varied from 12.2 dpmp in NT to 26.0 dpmp in SA.

**Table 2.1 Number of Actual Deceased Donors (Rate Per Million Population) 2016–2020**

State*/Country	2016	(dpmp)	2017	(dpmp)	2018	(dpmp)	2019	(dpmp)	2020	(dpmp)
NSW**	133	(17.7)	135	(17.7)	151	(19.5)	144	(18.3)	122	(15.4)
VIC	140	(22.7)	148	(23.4)	193	(29.9)	162	(24.6)	131	(19.6)
QLD	106	(21.9)	105	(21.3)	94	(18.8)	106	(20.8)	86	(16.6)
SA	40	(23.4)	32	(18.6)	36	(20.7)	52	(29.7)	46	(26.0)
WA	47	(18.4)	54	(21.0)	41	(15.8)	52	(19.8)	49	(18.4)
TAS	11	(21.3)	19	(36.4)	14	(26.5)	18	(33.7)	13	(24.0)
NT	6	(24.4)	3	(12.1)	4	(16.2)	4	(16.3)	3	(12.2)
ACT**	20	(31.9)	14	(22.0)	21	(32.4)	10	(15.2)	13	(19.6)
<b>AUS</b>	<b>503</b>	<b>(20.8)</b>	<b>510</b>	<b>(20.7)</b>	<b>554</b>	<b>(22.2)</b>	<b>548</b>	<b>(21.6)</b>	<b>463</b>	<b>(18.0)</b>
<b>NZ</b>	<b>61</b>	<b>(12.9)</b>	<b>73</b>	<b>(15.2)</b>	<b>62</b>	<b>(12.7)</b>	<b>74</b>	<b>(14.9)</b>	<b>64</b>	<b>(12.6)</b>

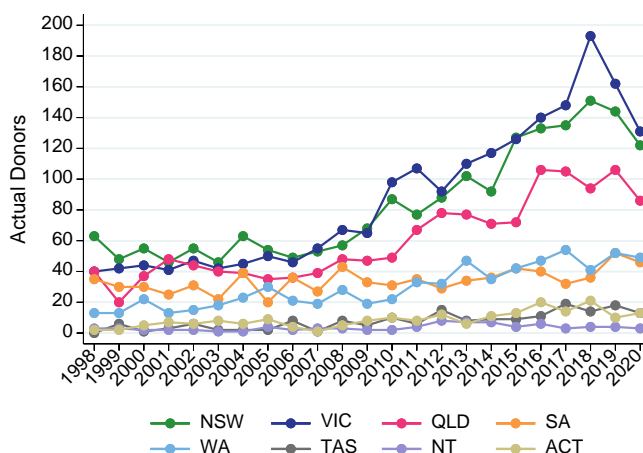
*This table relates to the number of donors for whom the retrieval operation commenced for the purpose of transplantation. It includes donors who may have been deemed medically unsuitable at the time of the surgery or after removal of organs.*

*\* Refers to retrieval State (i.e. Albury-NSW donors are retrieved by Victoria)*

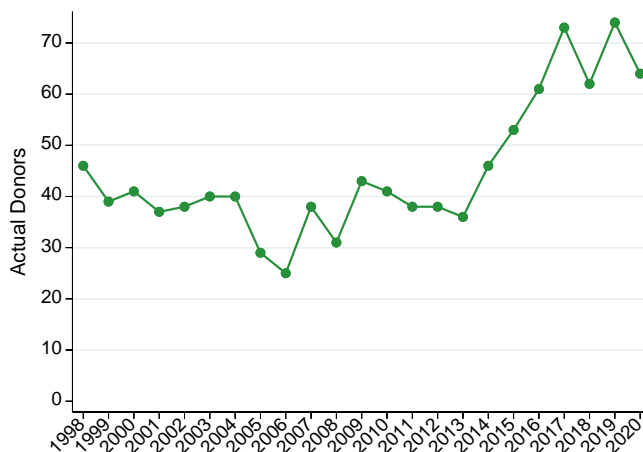
*\*\* NSW population excludes residents of the NSW Southern Area Health Service (included in ACT population). Population Data - June 2020. Please refer to methodology section of this report for detail.*

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 1998–2020**

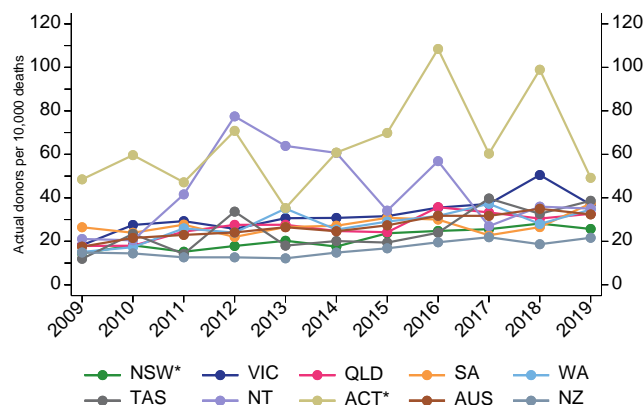


**Figure 2.2.2 - Number of Actual Deceased Donors New Zealand, 1998–2020**



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, 2009–2019**



\* NSW and ACT values are not adjusted for the NSW Southern Area Health Service, as death data were not available. Australian data on deaths 2019 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, 2015–2019 ( ) is the % Deaths < 75 years as a proportion of all deaths\***

Year	NSW	VIC <sup>†</sup>	QLD	SA	WA	TAS	NT	ACT	AUS	NZ
2015	72 (33%)	102 (31%)	65 (37%)	99 (31%)	77 (38%)	56 (35%)	47 (72%)	190 (37%)	81 (34%)	46 (36%)
2016	76 (32%)	113 (31%)	95 (37%)	96 (31%)	88 (36%)	65 (37%)	80 (71%)	313 (35%)	94 (34%)	53 (37%)
2017	79 (32%)	120 (31%)	90 (37%)	72 (32%)	100 (37%)	112 (35%)	37 (72%)	179 (34%)	94 (34%)	61 (36%)
2018	85 (33%)	160 (32%)	81 (37%)	83 (32%)	74 (38%)	94 (35%)	53 (68%)	292 (34%)	102 (34%)	51 (37%)
2019	78 (33%)	111 (33%)	88 (37%)	118 (32%)	95 (36%)	109 (35%)	52 (68%)	151 (33%)	94 (34%)	59 (37%)

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

<sup>†</sup> In 2019, death registrations increased in Victoria as a result of the identification of deaths from 2017 and 2018 that had previously not been identified

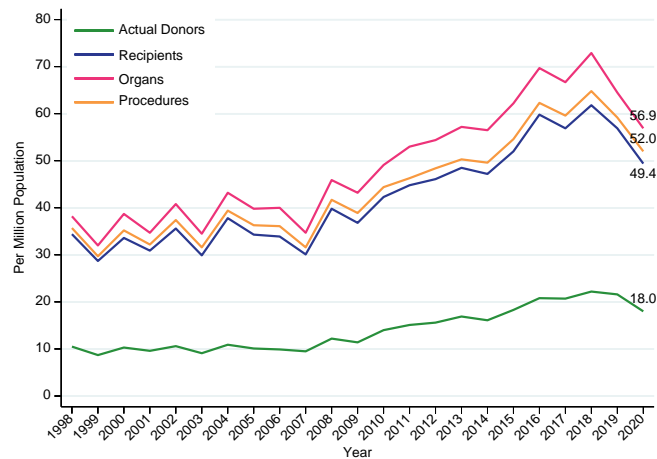
Australian Bureau of Statistics - Deaths 3302.0 and Statistics New Zealand.

Australian data on deaths in 2019 was the latest release at the time of this publication

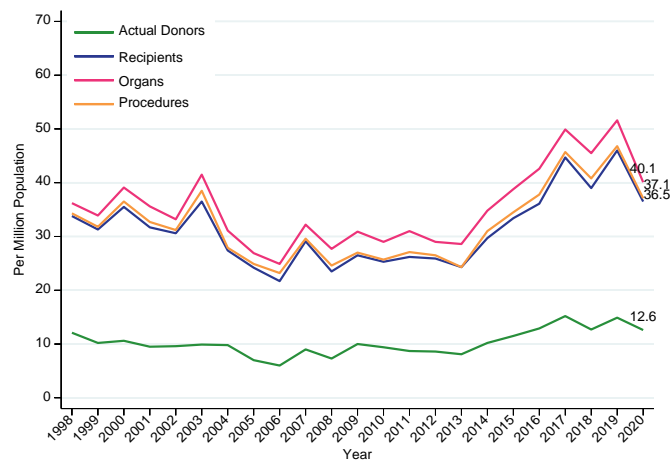
## Organ Donation Activity

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

**Figure 2.4.1 - Total Number of Actual Deceased Organ Donors, Procedures, Recipients and Organs Transplanted Per Million Population, Australia, 1998–2020**



**Figure 2.4.2 - Total Number of Actual Deceased Organ Donors, Procedures, Recipients and Organs Transplanted Per Million Population, New Zealand, 1998–2020**



## Organ Donation Pathway

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

Figure 2.5.1 - Organ Donation Pathway Australia 1998–2020

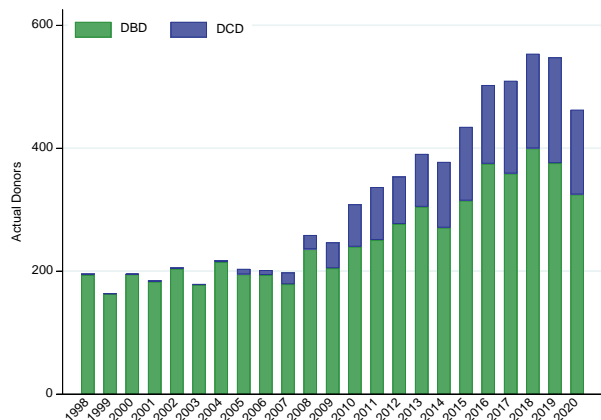
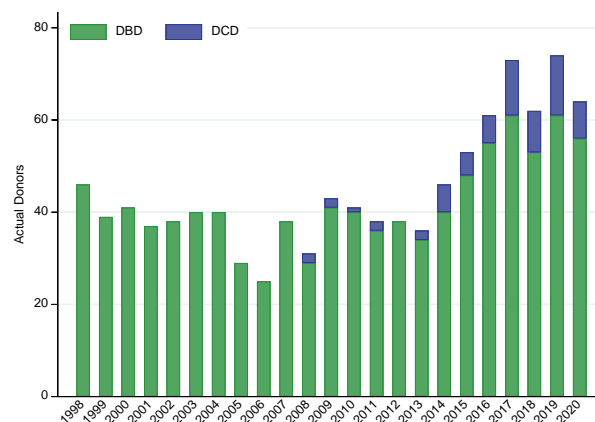


Figure 2.5.2 - Organ Donation Pathway New Zealand 1998–2020



## Organ Donation Overview

Tables 2.3 and 2.4 show the number (and rate) of recipients who received various organs from donors in 2020.

Table 2.3 Australia Overview - 2020 (pmp) per million population\*

<b>Population (million)</b>	<b>25.7</b>
<b>Actual Deceased Organ Donors (pmp)</b>	<b>463 (18.0)</b>
Kidney Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>704 (27.4)</b>
Liver Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>279 (10.9)</b>
Heart Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>148 (5.8)</b>
Lung Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>157 (6.1)</b>
Pancreas Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>47 (1.8)</b>
Intestine Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>1 (0.0)</b>
<b>Total Number of Transplanted Recipients (pmp)**</b>	<b>1269 (49.4)</b>
<b>Total Number of Organs Transplanted (pmp)***</b>	<b>1462 (56.9)</b>

\*By donor country, recipients/organs from Australian donors

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

\*\*\*The total number of transplanted organs differs from total number of transplant recipients as each organ is counted as a single organ transplant.

Table 2.4 New Zealand Overview - 2020 (pmp) per million population\*

<b>Population (million)</b>	<b>5.1</b>
<b>Actual Deceased Organ Donors (pmp)</b>	<b>64 (12.6)</b>
Kidney Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>100 (19.6)</b>
Liver Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>49 (9.6)</b>
Heart Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>13 (2.6)</b>
Lung Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>24 (4.7)</b>
Pancreas Transplant Recipients from deceased donors- includes all combinations (pmp)	<b>3 (0.6)</b>
<b>Total Number of Transplanted Recipients (pmp)**</b>	<b>186 (36.5)</b>
<b>Total Number of Organs Transplanted (pmp)***</b>	<b>204 (40.1)</b>

\*By donor country, recipients/organs from New Zealand donors

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

\*\*\*The total number of transplanted organs differs from total number of transplant recipients as each organ is counted as a single organ transplant.

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

**Table 2.5 Number of Organs Transplanted in 2020 by State & Country (pmp) in Australia and New Zealand**

Organs	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUS		NZ	
Kidney	190	200	133	71	79	18	6	18	715 <sup>1</sup>	(27.8)	103 <sup>2</sup>	(20.2)
Liver	71	65	59	21	24	9	0	7	256 <sup>3</sup>	(10.0)	42 <sup>4</sup>	(8.2)
Heart	43	38	27	13	15	5	0	7	148	(5.8)	13	(2.6)
Lung	61	91	56	27	38	13	0	9	295 <sup>5</sup>	(11.5)	43 <sup>6</sup>	(8.4)
Pancreas	14	8	9	3	5	5	0	3	47	(1.8)	3	(0.6)
Intestine	0	0	0	0	0	1	0	0	1	(0.0)	0	(0.0)
<b>Total</b>	<b>379</b>	<b>402</b>	<b>284</b>	<b>135</b>	<b>161</b>	<b>51</b>	<b>6</b>	<b>44</b>	<b>1,462</b>	<b>(56.9)</b>	<b>204</b>	<b>(40.1)</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 693 single kidney, 6 double adult kidney and 5 en-bloc kidney transplant procedures in Australia.

<sup>2</sup> Includes 97 single kidney, 3 double adult kidney and 0 en-bloc kidney transplant procedures in New Zealand.

<sup>3</sup> Includes 233 whole liver, 46 split liver and 0 reduced size liver transplant procedures in Australia.

<sup>4</sup> Includes 35 whole liver, 14 split liver and 0 reduced size liver transplant procedures in New Zealand.

<sup>5</sup> Includes 138 double lung and 19 single lung transplant procedures in Australia.

<sup>6</sup> Includes 19 double lung and 5 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 to 2020 in Australia and New Zealand is shown in Figure 2.6. The mean number of transplant organs per deceased donor across Australia ranged from 2.0 in NT to 3.9 in TAS.

**Figure 2.6 - Number of Organs Transplanted per Donor 2004–2020**

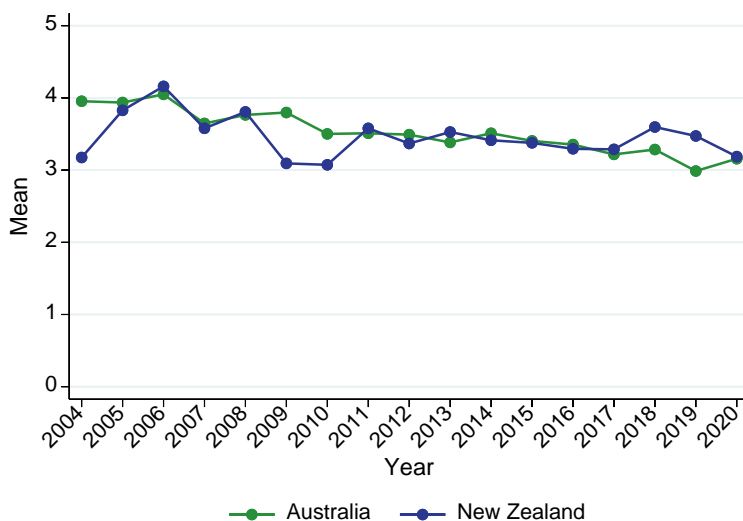
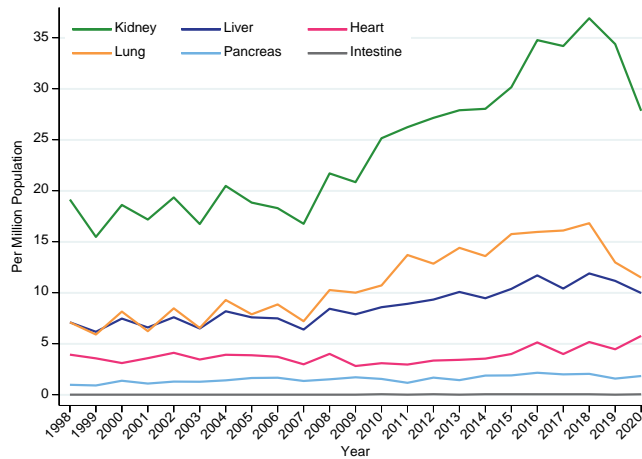


Figure 2.7 shows the organ-specific transplant rates for Australia and New Zealand over the period 1998–2020 (rates are of organ transplants per million population).

**Figure 2.7.1 - Organs Transplanted 1998–2020 Per Million Population, Australia**



**Figure 2.7.2 - Organs Transplanted 1998–2020 Per Million Population, New Zealand**

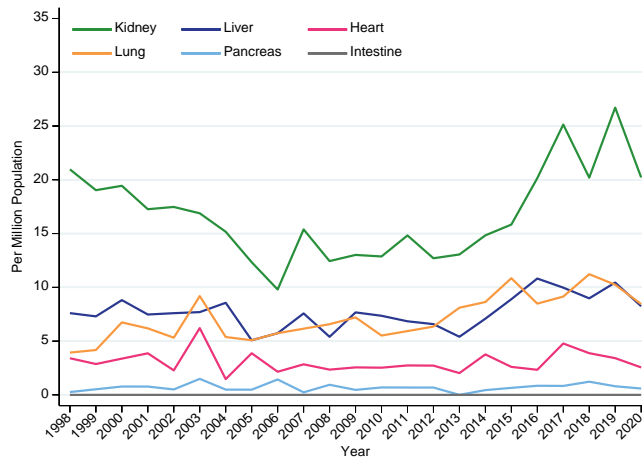
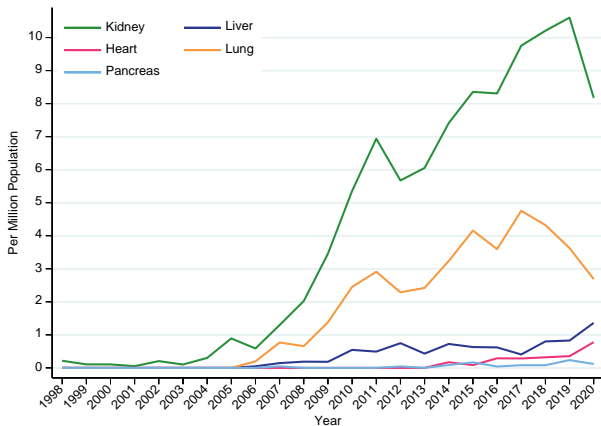
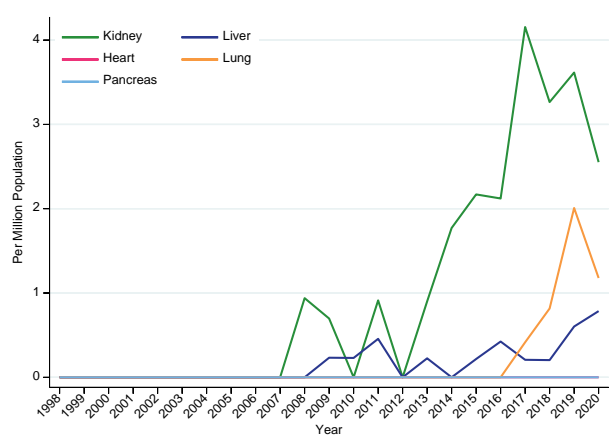


Figure 2.8 shows the corresponding rates for donation after circulatory death for Australia and New Zealand. Transplantation of organs from DCD donors has contributed to a significant increase in the rate of kidney transplantation and, in Australia, lung transplantation.

**Figure 2.8.1 - Organs Transplanted from DCD Donors, 1998–2020 Per Million Population, Australia**



**Figure 2.8.2 - Organs Transplanted from DCD Donors, 1998–2020 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 2016 to 2020 by the remoteness category of their postcode of residence. "Overseas" refers to donors who usually reside outside of Australia. The Australian Bureau of Statistics (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 2020, there were 5 deceased donors in Australia who were considered overseas visitors.

**Table 2.6 Location of Postcodes of Deceased Donors 2016–2020**

Remoteness Area of Postcode	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUS
<b>Major Cities of Australia</b>	482 (71%)	531 (69%)	279 (56%)	135 (66%)	196 (81%)	1 (1%)	1 (5%)	50 (65%)	<b>1,675</b> <b>(65%)</b>
<b>Inner Regional Australia</b>	153 (22%)	195 (25%)	124 (25%)	36 (18%)	13 (5%)	50 (67%)	1 (5%)	21 (27%)	<b>593</b> <b>(23%)</b>
<b>Outer Regional Australia</b>	38 (6%)	36 (5%)	75 (15%)	24 (12%)	17 (7%)	20 (27%)	14 (70%)	5 (6%)	<b>229</b> <b>(9%)</b>
<b>Remote Australia</b>	0 (0%)	0 (0%)	7 (1%)	6 (3%)	5 (2%)	2 (3%)	2 (10%)	0 (0%)	<b>22</b> <b>(1%)</b>
<b>Very Remote Australia</b>	0 (0%)	0 (0%)	4 (1%)	1 (<1%)	7 (3%)	2 (3%)	1 (5%)	0 (0%)	<b>15</b> <b>(1%)</b>
<b>Overseas</b>	10 (1%)	7 (1%)	7 (1%)	3 (1%)	5 (2%)	0 (0%)	1 (5%)	1 (1%)	<b>34</b> <b>(1%)</b>
<b>Total</b>	<b>683</b>	<b>769</b>	<b>496</b>	<b>205</b>	<b>243</b>	<b>75</b>	<b>20</b>	<b>77</b>	<b>2,568</b>