SECTION 10

Eye and Tissue Donation

SUMMARY

Summarising data on eye and tissue donation and transplant outcomes in 2021. The data presented here is provided by eye and tissue banks across Australia, in conjunction with data collected within the solid organ donation sector.

Contents

Suggested Citation

ANZOD Registry. 2022 Annual Report, Section 10: Eye and Tissue Donation and Outcome Data. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2022. Available at: www.anzdata.org.au

Eye and Tissue Reporting

The collaboration between the Australian Organ and Tissue Authority (OTA), jurisdictional eye and tissue banks and the ANZOD Registry continues to strengthen the national reporting of tissue data. Reported datasets and analyses produced by the Registry inform the discussions held by health care professionals, policy makers, consumers and individual agencies to optimise every potential donation opportunity and to increase access to life-transforming transplantation for Australians - See more at: http://www.donatelife.gov.au/organ-and-tissue-authority-ota

Eye and Tissue Banks

Eye and tissue banks across Australia provide data for eye, cardiovascular, musculoskeletal and skin tissue donations.

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, 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.

Eye tissue donation can restore sight, prevent blindness, and dramatically change the quality of an individual's life. Donor tissue is also crucial to advancing research and developing surgical techniques. Eye banks in Australia provide data for eye donation including corneal and sclera tissue donations.

Table 10.1 summarises the number of tissue donors by donation pathway and jurisdiction from 2017 to 2021.

Table 10.1 Number of Tissue Donors by Donation Pathway and Jurisdiction 2017-2021

Donation Type	Jurisdiction	2017	2018	2019	2020	2021
Living Donor	NSW	2139 (51.5%)	2303 (60.4%)	2054 (57.9%)	1528 (56.1%)	1603 (53.5%)
	VIC	309 (7.4%)	323 (8.5%)	336 (9.5%)	175 (6.4%)	182 (6.1%)
	QLD	741 (17.8%)	419 (11%)	230 (6.5%)	256 (9.4%)	341 (11.4%)
	SA	292 (7%)	155 (4.1%)	213 (6%)	138 (5.1%)	167 (5.6%)
	WA	608 (14.6%)	578 (15.2%)	705 (19.9%)	619 (22.7%)	701 (23.4%)
	TAS	67 (1.6%)	32 (.8%)	7 (.2%)	10 (.4%)	0 (0%)
	NT	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	ACT	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total Living Donors	**AUS**	**4156 (100%)**	**3810 (100%)**	**3545 (100%)**	**2726 (100%)**	**2994 (100%)**
Deceased Donor	NSW	108 (30.2%)	120 (35.4%)	86 (27.6%)	73 (25.3%)	67 (21.4%)
	VIC	89 (24.9%)	79 (23.3%)	86 (27.6%)	81 (28%)	89 (28.4%)
	QLD	126 (35.2%)	100 (29.5%)	108 (34.6%)	102 (35.3%)	133 (42.5%)
	SA	10 (2.8%)	11 (3.2%)	10 (3.2%)	11 (3.8%)	12 (3.8%)
	WA	15 (4.2%)	19 (5.6%)	14 (4.5%)	15 (5.2%)	9 (2.9%)
	TAS	3 (.8%)	4 (1.2%)	3 (1%)	1 (.3%)	2 (.6%)
	NT	1 (.3%)	1 (.3%)	0 (0%)	2 (.7%)	0 (0%)
	ACT	6 (1.7%)	5 (1.5%)	5 (1.6%)	4 (1.4%)	1 (.3%)
Total Deceased Donors	**AUS**	**358 (100%)**	**339 (100%)**	**312 (100%)**	**289 (100%)**	**313 (100%)**
Total Donors	NSW	2247 (49.8%)	2423 (58.4%)	2140 (55.5%)	1601 (53.1%)	1670 (50.5%)
	VIC	398 (8.8%)	402 (9.7%)	422 (10.9%)	256 (8.5%)	271 (8.2%)
	QLD	867 (19.2%)	519 (12.5%)	338 (8.8%)	358 (11.9%)	474 (14.3%)
	SA	302 (6.7%)	166 (4%)	223 (5.8%)	149 (4.9%)	179 (5.4%)
	WA	623 (13.8%)	597 (14.4%)	719 (18.6%)	634 (21%)	710 (21.5%)
	TAS	70 (1.6%)	36 (.9%)	10 (.3%)	11 (.4%)	2 (.1%)
	NT	1 (0%)	1 (0%)	0 (0%)	2 (.1%)	0 (0%)
	ACT	6 (.1%)	5 (.1%)	5 (.1%)	4 (.1%)	1 (0%)
Total Donors	**AUS**	**4514 (100%)**	**4149 (100%)**	**3857 (100%)**	**3015 (100%)**	**3307 (100%)**

Figure 10.1 shows the tissue donors per million population (pmp) across each donation pathway from 2017 to 2021. Figure 10.2 shows the tissue donors (pmp) across each jurisdiction from 2017 to 2021.

Figure 10.1 - Tissue Donors (pmp) by Donation Pathway, 2017-2021

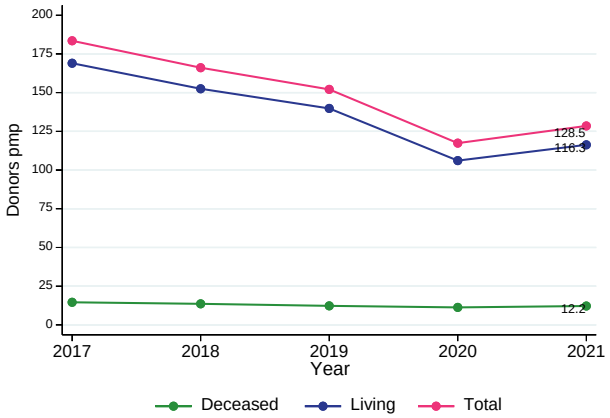
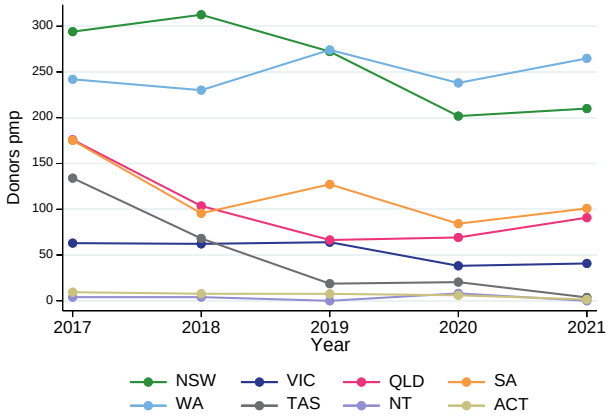


Figure 10.2 - Tissue Donors (pmp) by Jurisdiction, 2017-2021



Tissue Donor Characteristics

Tissue donor characteristics between 2017 – 2021 are described in Table 10.2.

Table 10.2 Donor Characteristics Profile, 2017-2021

Donor Profile	2017	2018	2019	2020	2021
Gender					
Female	2300 (51%)	2100 (50.6%)	2012 (52.2%)	1493 (49.5%)	1740 (52.6%)
Male	2214 (49%)	2049 (49.4%)	1845 (47.8%)	1522 (50.5%)	1567 (47.4%)
Age					
<50y	458 (10.1%)	486 (11.7%)	433 (11.2%)	356 (11.8%)	410 (12.4%)
50-59y	890 (19.7%)	868 (20.9%)	841 (21.8%)	654 (21.7%)	673 (20.4%)
60-69y	1492 (33.1%)	1374 (33.1%)	1308 (33.9%)	1020 (33.8%)	1164 (35.2%)
70-79y	1299 (28.8%)	1089 (26.2%)	964 (25%)	774 (25.7%)	811 (24.5%)
80y+	375 (8.3%)	332 (8%)	311 (8.1%)	211 (7%)	249 (7.5%)

Figure 10.3 shows the tissue donors (pmp), across age ranges from 2017 to 2021.

Figure 10.3 - Tissue Donors (pmp) by Age Range, 2017-2021

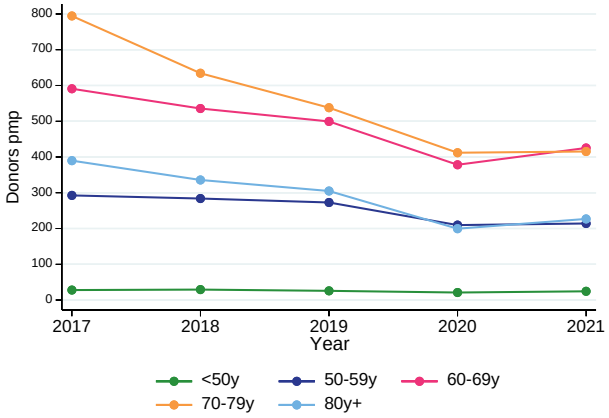
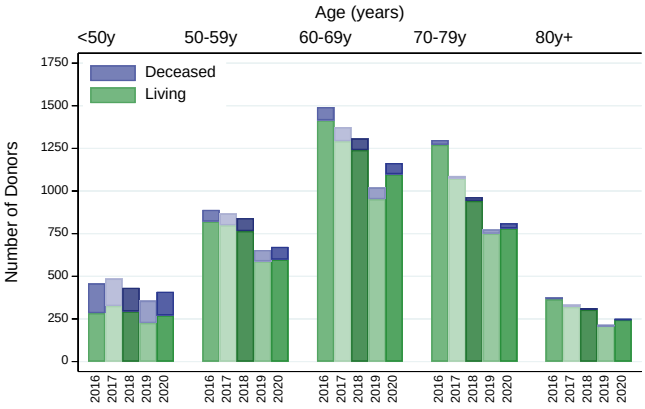


Figure 10.4 shows the number of tissue donors, by age range and donation type from 2017 to 2021.

Figure 10.4 - Number of Donors by Age Range and Donor Pathway, 2017-2021



Tissue Donation

Figure 10.5 - Donations by Donation Pathway: Overall Australia, 2017-2021

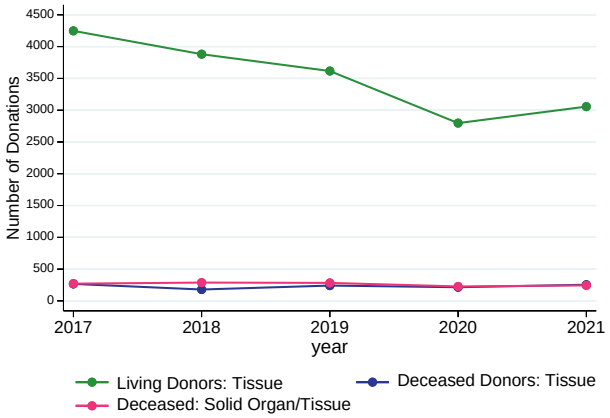


Figure 10.6 - Total Tissue Donations (pmp) by Jurisdiction, 2017-2021

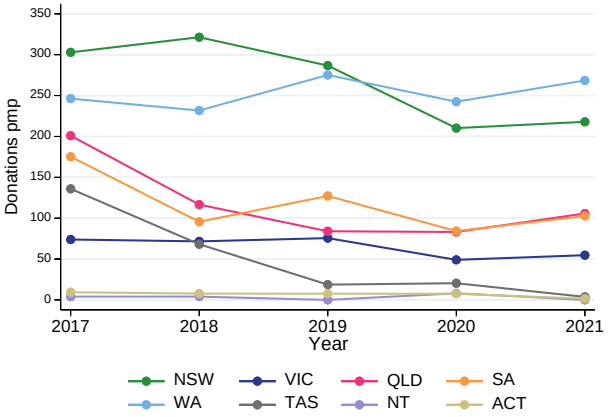


Figure 10.7 - Tissue Donations (pmp) from Living Donors by Jurisdiction, 2017-2021

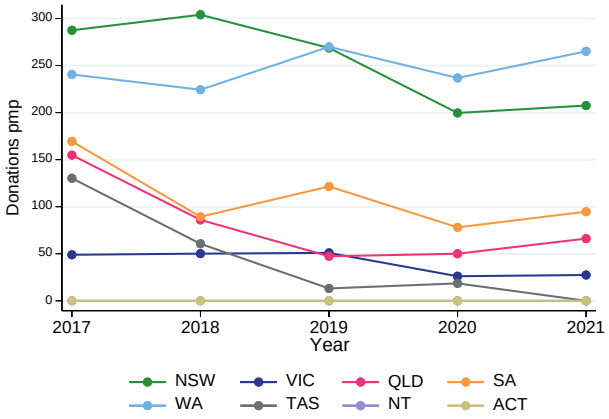


Table 10.3 shows the total number and percentage of tissue donations, by donation pathway and jurisdiction from 2017 to 2021.

Table 10.3 Number of Tissue Donations by Donor Type and Jurisdiction 2017-2021

Donation Type	Jurisdiction	2017	2018	2019	2020	2021
Living Donor Donations	NSW	2197 (51.7%)	2357 (60.7%)	2111 (58.4%)	1584 (56.6%)	1650 (54%)
	VIC	309 (7.3%)	324 (8.3%)	336 (9.3%)	175 (6.3%)	182 (6%)
	QLD	763 (18%)	431 (11.1%)	241 (6.7%)	259 (9.3%)	345 (11.3%)
	SA	292 (6.9%)	155 (4%)	213 (5.9%)	138 (4.9%)	168 (5.5%)
	WA	619 (14.6%)	582 (15%)	708 (19.6%)	631 (22.6%)	711 (23.3%)
	TAS	68 (1.6%)	32 (.8%)	7 (.2%)	10 (.4%)	0 (0%)
	NT	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	ACT	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Living Donor Donations	**AUS**	**4248 (100%)**	**3881 (100%)**	**3616 (100%)**	**2797 (100%)**	**3056 (100%)**
Deceased Donor Donations	NSW	118 (21.9%)	135 (28.9%)	142 (27.1%)	84 (19%)	83 (16.7%)
	VIC	158 (29.4%)	139 (29.8%)	163 (31.1%)	153 (34.6%)	182 (36.5%)
	QLD	227 (42.2%)	153 (32.8%)	187 (35.7%)	171 (38.7%)	207 (41.6%)
	SA	10 (1.9%)	11 (2.4%)	10 (1.9%)	11 (2.5%)	14 (2.8%)
	WA	15 (2.8%)	19 (4.1%)	14 (2.7%)	15 (3.4%)	9 (1.8%)
	TAS	3 (.6%)	4 (.9%)	3 (.6%)	1 (.2%)	2 (.4%)
	NT	1 (.2%)	1 (.2%)	0 (0%)	2 (.5%)	0 (0%)
	ACT	6 (1.1%)	5 (1.1%)	5 (1%)	5 (1.1%)	1 (.2%)
Deceased Donor Donations	**AUS**	**538 (100%)**	**467 (100%)**	**524 (100%)**	**442 (100%)**	**498 (100%)**
Total Donations	NSW	2315 (48.4%)	2492 (57.3%)	2253 (54.4%)	1668 (51.5%)	1733 (48.8%)
	VIC	467 (9.8%)	463 (10.6%)	499 (12.1%)	328 (10.1%)	364 (10.2%)
	QLD	990 (20.7%)	584 (13.4%)	428 (10.3%)	430 (13.3%)	552 (15.5%)
	SA	302 (6.3%)	166 (3.8%)	223 (5.4%)	149 (4.6%)	182 (5.1%)
	WA	634 (13.2%)	601 (13.8%)	722 (17.4%)	646 (19.9%)	720 (20.3%)
	TAS	71 (1.5%)	36 (.8%)	10 (.2%)	11 (.3%)	2 (.1%)
	NT	1 (0%)	1 (0%)	0 (0%)	2 (.1%)	0 (0%)
	ACT	6 (.1%)	5 (.1%)	5 (.1%)	5 (.2%)	1 (0%)
Total Donations	**AUS**	**4786 (100%)**	**4348 (100%)**	**4140 (100%)**	**3239 (100%)**	**3554 (100%)**

Table 10.4 shows the breakdown of donation from living donors by tissue type and jurisdiction.

Table 10.4 Tissue Donations from Living Donors by Tissue Type and Jurisdiction, 2021

Jurisdiction	Musculoskeletal	Cardiovascular	Amnion	Total
NSW	1605	22	23	1650
VIC	180	2	0	182
QLD	345	0	0	345
SA	168	0	0	168
WA	711	0	0	711
TAS	0	0	0	0
NT	0	0	0	0
ACT	0	0	0	0
AUS	**3009**	**24**	**23**	**3056**

Figures 10.8 and 10.9 show the breakdown of deceased tissue only and solid organ and tissue donation, by jurisdiction, for the period 2017 to 2021.

Figure 10.8 - Tissue Donations from Deceased Donors by Jurisdiction, 2017-2021

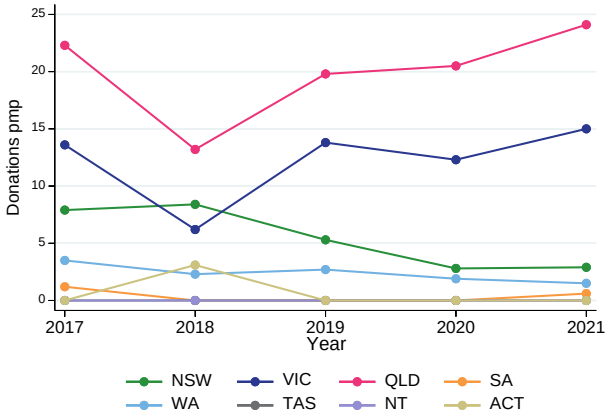


Figure 10.9 - Solid Organ and Tissue Donations (pmp) from Deceased Donors by Jurisdiction, 2017-2021

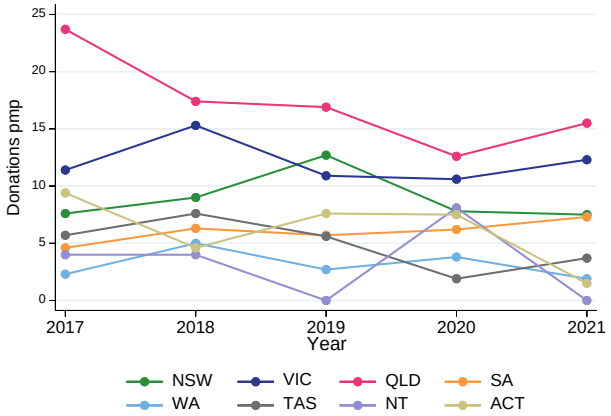


Table 10.5 shows the breakdown of donation from deceased donors by tissue type, donation sector and jurisdiction.

Table 10.5 Tissue Donations (pmp) from Deceased Donors by Jurisdiction and Donation Sector, 2021

	Tissue Only Sector				Solid Organ/Tissue Sector				Tissue Total			
State	**ms**	**cv**	**skin**	**pi**	**ms**	**cv**	**skin**	**pi**	**ms**	**cv**	**skin**	**pi**
NSW	17	4	2	0	17	39	4	0	34	43	6	0
VIC	33	21	46	0	28	28	24	2	61	49	70	2
QLD	67	2	57	0	30	29	22	0	97	31	79	0
SA	0	1	0	0	0	10	0	3	0	11	0	3
WA	4	0	0	0	5	0	0	0	9	0	0	0
TAS	0	0	0	0	0	2	0	0	0	2	0	0
NT	0	0	0	0	0	0	0	0	0	0	0	0
ACT	0	0	0	0	0	1	0	0	0	1	0	0
AUS	**121**	**28**	**105**	**0**	**80**	**109**	**50**	**5**	**201**	**137**	**155**	**5**

ms = musculoskeletal tissue | cv = cardiovascular tissue | pi = pancreas islets

Tissue Donation

Tissue Donations are reported by donation pathway for musculoskeletal, cardiovascular, skin and pancreas islet tissue.

Musculoskeletal Donation

Figures 10.10 and 10.11 show the number of musculoskeletal tissue donations by jurisdiction (2017 to 2021) from living and deceased donors.

Figure 10.10 - Musculoskeletal Tissue Donations (pmp) from Living Donors by Jurisdiction, 2017-2021

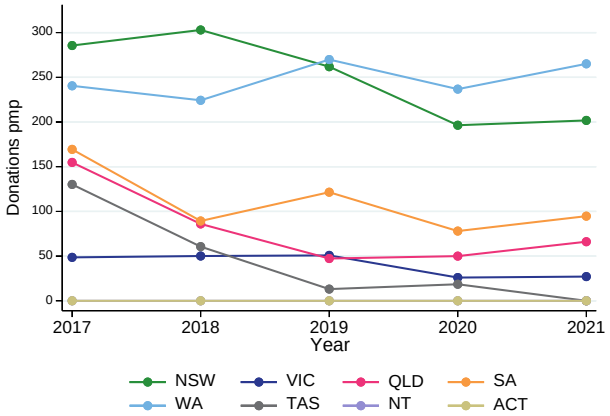
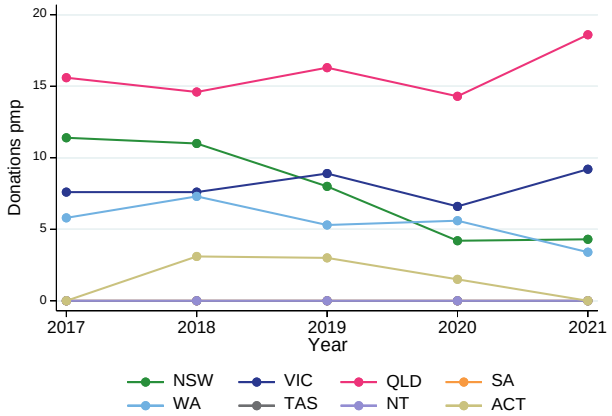


Figure 10.11 - Musculoskeletal Tissue Donations (pmp) from Deceased Donors by Jurisdiction, 2017-2021



Cardiovascular Donation

Figures 10.12 and 10.13 show the breakdown cardiovascular tissue donation by jurisdiction (2017 to 2021) from living and deceased donors.

Figure 10.12 - Cardiovascular Tissue Donations (pmp) from Living Donors by Jurisdiction, 2017-2021

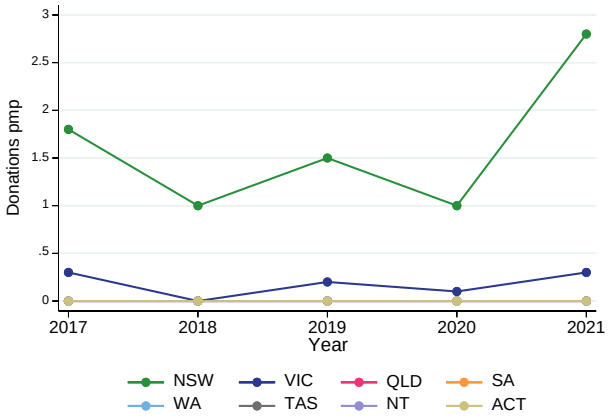
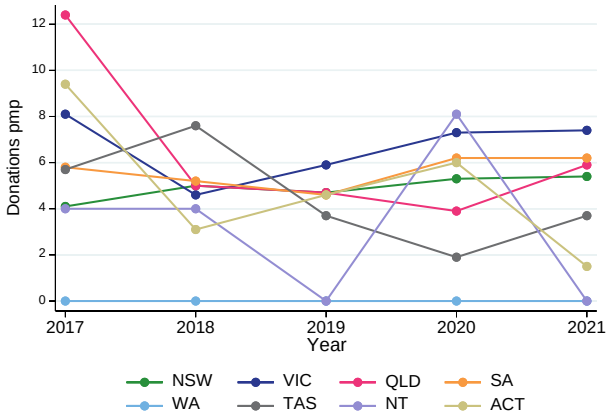


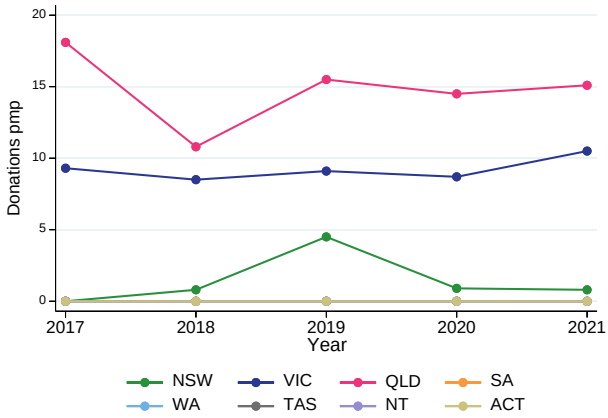
Figure 10.13 - Cardiovascular Tissue Donations (pmp) from Deceased Donors by Jurisdiction, 2017-2021



Skin Donation

Figure 10.14 shows the breakdown of skin donations by jurisdiction from 2017 to 2021.

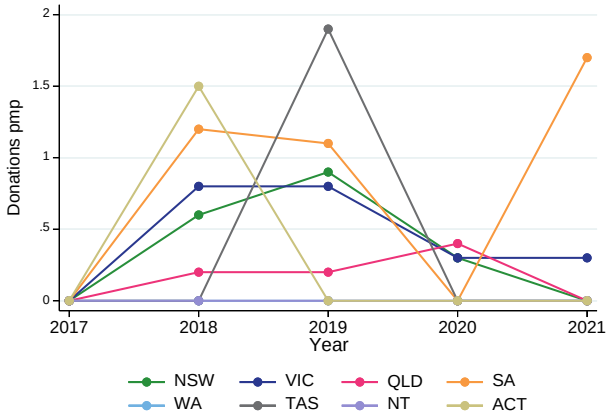
Figure 10.14 - Skin Tissue Donations (pmp) from Deceased Donors by Jurisdiction, 2017-2021



Pancreas Islet Donation

Figure 10.15 shows the breakdown of pancreas islet donations by jurisdiction from 2017 to 2021.

Figure 10.15 - Pancreas Islet Donations (pmp) from Deceased Donors by Jurisdiction, 2017-2021



Outcome of Tissue Donation

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.

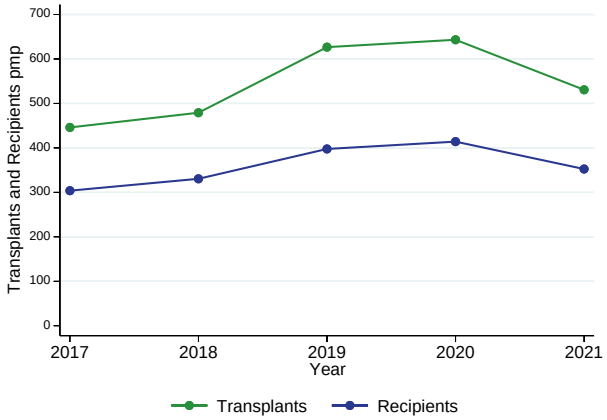
A tissue transplant recipient can receive one or more tissue grafts in one or more transplant events. Tissue transplantation counts are reported by tissue banks as the number of notified transplants and notified recipients from tissue retrieved by that tissue bank. Table 10.6 shows the overall number of notified[1,2] tissue transplants (grafts) and recipients for 2017-2021.

Table 10.6 Notified Tissue Transplants and Recipients, 2017-2021

	2017	2018	2019	2020	2021
Transplants	10973	11969	15895	16527	13660
Recipients	7474	8258	10086	10640	9072

Figure 10.16 shows the number of notified[1,2] tissue transplants (grafts) and recipients per million population for 2017-2021.

Figure 10.16 - Notified Tissue Transplants and Recipients (pmp), 2015-2021



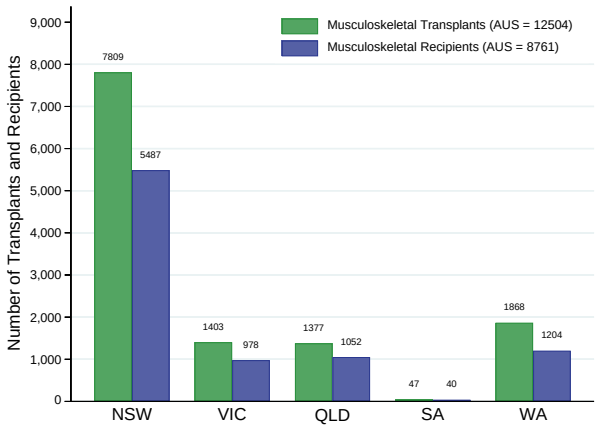
[1] *Notified tissue transplant is defined as the 'Number of grafts implanted into recipients, that banks have been notified of.'*
[2] *Notified tissue recipient is defined as the 'Number of recipients notified to the bank, who receive one or more graft implants during a single transplant event'.*

Outcome of Tissue Donation by Tissue Type

The following graphs represent the outcome of tissue donation by tissue type and the number of recipients who received tissue graft transplant by tissue type. (Figures 10.17 to Figure 10.20)

Figure 10.17 shows the number of notified[1,2] musculoskeletal tissue transplants and recipients by jurisdiction for 2021.

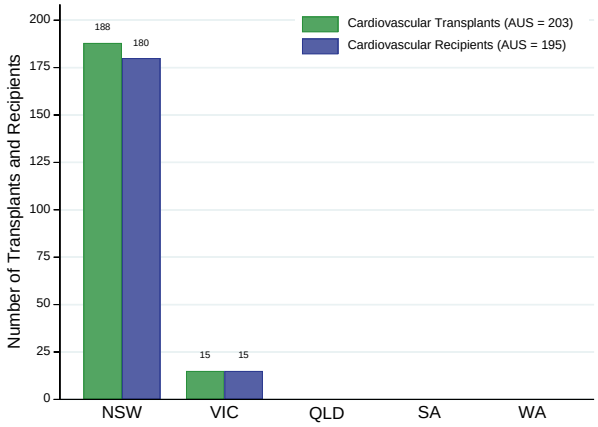
Figure 10.17 - Number of Notified Musculoskeletal Transplants and Recipients by Jurisdiction, 2021



[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 10.18 shows the number of notified[1,2] cardiovascular tissue transplants and recipients by jurisdiction for 2021.

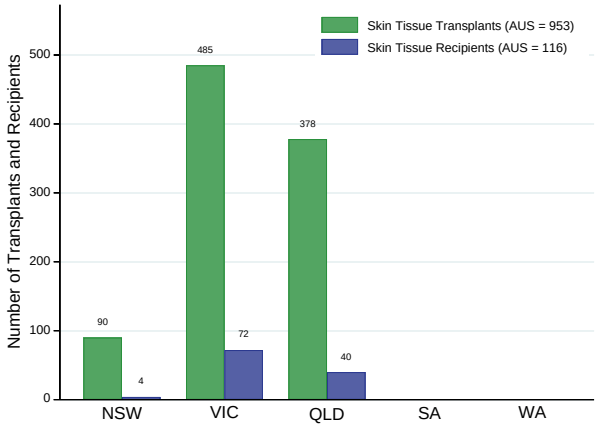
Figure 10.18 - Number of Notified Cardiovascular Transplants and Recipients by Jurisdiction, 2021



[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 10.19 shows the number of notified[1,2] skin tissue transplants and recipients by jurisdiction for 2021.

Figure 10.19 - Number of Notified Skin Tissue Transplants and Recipients by Jurisdiction, 2021



[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'.

In Australia, there are three pancreas islets transplanting units (Westmead in New South Wales, Monash in Victoria and Royal Adelaide Hospital in South Australia). Figure 10.20 shows the number of notified[1,2] pancreas islet transplants and recipients by jurisdiction for 2021.

Figure 10.20 - Number of Pancreas Islet Tissue Transplants and Recipients by Jurisdiction, 2021

[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

The 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 provided from Australian eye banks. Table 10.7 shows the total number of eye donors by jurisdiction from 2017 to 2021.

Table 10.7 Number of Eye Donors by Jurisdiction 2017-2021

Jurisdiction	2017	2018	2019	2020	2021
NSW	380	417	406	369	383
VIC	279	282	334	265	300
QLD	415	418	454	419	479
SA	99	111	135	108	147
WA	137	129	138	131	135
TAS	13	5	20	14	16
NT	0	0	0	0	0
ACT	46	32	21	12	12
AUS	**1369**	**1394**	**1508**	**1318**	**1472**

Figure 10.21 represents the number of eye donors from each Australian jurisdiction for the reporting period 2017 to 2021. Figure 10.22 represents the number of eye donors by donation pathway from 2017 to 2021.

Figure 10.21 - Eye Donors (pmp) by Jurisdiction, 2017-2021

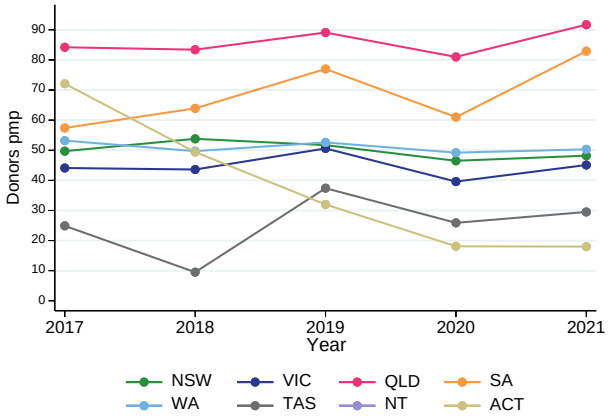
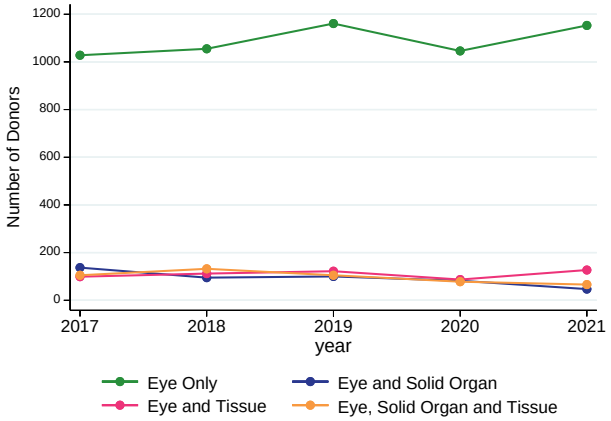


Figure 10.22 - Number of Eye Donors by Donation Pathway, Australia, 2017-2021



Figures 10.23 to Figure 10.26 represent the number of donors by donor type and jurisdiction, for 2021.

Figure 10.23 - Eye Donors only (pmp) by Jurisdiction, 2017-2021

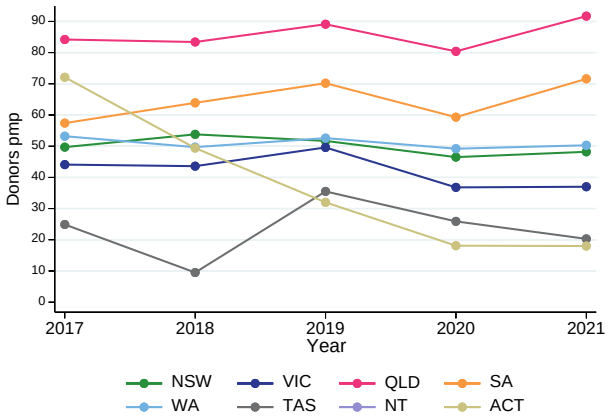


Figure 10.24 - Eye and Tissue Donors (pmp) by Jurisdiction, 2017-2021

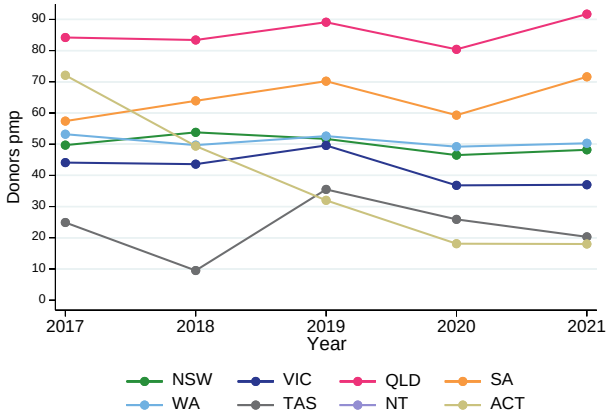


Figure 10.25 - Eye and Solid Organ Donors (pmp) by Jurisdiction, 2017-2021

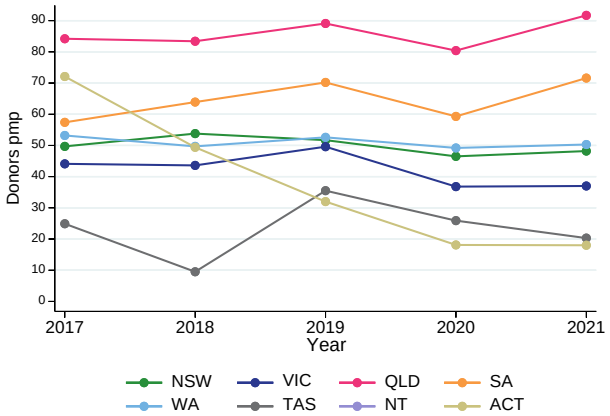
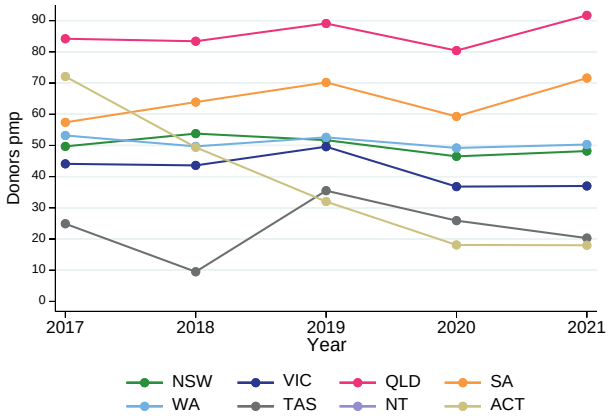


Figure 10.26 - Eye, Tissue and Solid Organ Donors (pmp) by Jurisdiction, 2017-2021



Eye Donor Characteristics

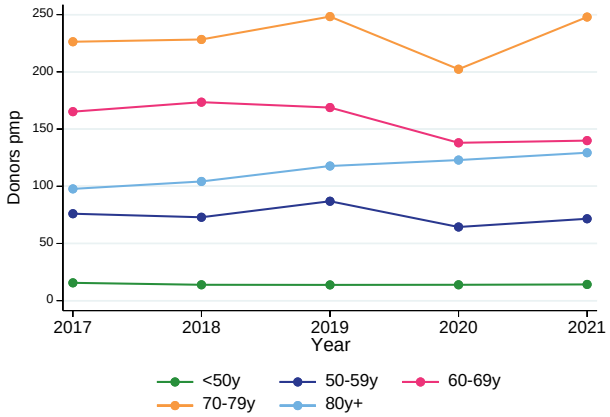
Eye donor characteristics are described in Table 10.8.

Table 10.8 Donor Characteristics Profile, 2017-2021

Donor Profile	2017	2018	2019	2020	2021
Gender					
Female	536 (39.2%)	568 (40.7%)	585 (38.8%)	538 (40.8%)	607 (41.2%)
Male	833 (60.8%)	826 (59.3%)	923 (61.2%)	780 (59.2%)	865 (58.8%)
Age					
<50y	257 (18.8%)	231 (16.6%)	233 (15.5%)	235 (17.8%)	238 (16.2%)
50-59y	231 (16.9%)	223 (16%)	268 (17.8%)	201 (15.3%)	225 (15.3%)
60-69y	417 (30.5%)	445 (31.9%)	442 (29.3%)	372 (28.2%)	383 (26%)
70-79y	370 (27%)	392 (28.1%)	445 (29.5%)	380 (28.8%)	484 (32.9%)
80y+	94 (6.9%)	103 (7.4%)	120 (8%)	130 (9.9%)	142 (9.6%)

Figure 10.27 shows the eye donors (pmp), across age ranges from 2017 to 2021.

Figure 10.27 - Eye Donors (pmp) by Age Range, 2017-2021



Eye Donation Outcome

Figures 10.28 and Figure 10.29 show the number of notified corneal transplants and sclera units transplanted by jurisdiction for 2017-2021. Table 10.9 shows the total number of corneas and sclera units transplanted by jurisdiction from 2017 to 2021.

Table 10.9 Number of Corneas and Sclera Units transplanted by Jurisdiction 2017-2021

Eye Tissue Type	Jurisdiction	2017	2018	2019	2020	2021
Corneas Transplanted	NSW	655	692	727	666	654
	VIC	411	429	455	384	424
	QLD	654	707	730	734	806
	SA	151	144	192	166	190
	WA	249	223	253	270	257
	TAS	32	21	38	33	57
	NT	2	7	1	5	3
	ACT	21	14	18	19	22
Corneas Transplanted	**AUS**	**2175**	**2237**	**2414**	**2277**	**2413**
Sclera Units Transplanted	NSW	297	272	273	257	240
	VIC	204	205	244	221	242
	QLD	107	118	173	128	170
	SA	44	40	75	60	56
	WA	123	161	137	132	139
	TAS	24	14	22	29	26
	NT	0	0	3	31	0
	ACT	13	9	8	12	10
Sclera Units Transplanted	**AUS**	**812**	**819**	**935**	**870**	**883**

Figure 10.28 - Corneas Transplanted (pmp) by Jurisdiction, 2017-2021

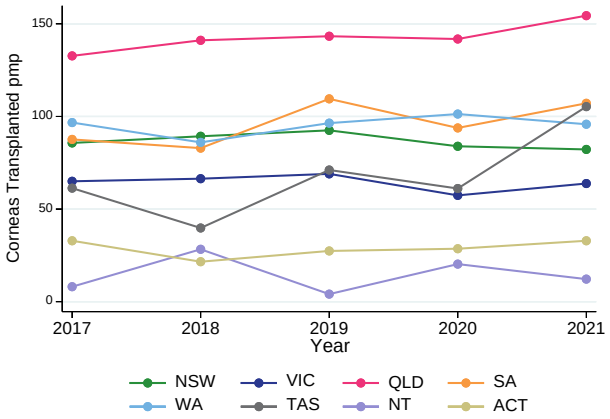


Figure 10.29 - Sclera Units Transplanted (pmp) by Jurisdiction, 2017-2021