

Projected Needs for Eye Care Services for Indigenous Australians



THE UNIVERSITY OF
MELBOURNE

This report was prepared by Professor Hugh R Taylor AC, Professor David Dunt, Dr Ya Seng (Arthur) Hsueh and Mr Alex Brando.

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Executive Summary

Estimates of the needs for eye care services among Indigenous Australians in different geographic areas were determined and mapped.

Indigenous population data came from the Census and population forecast data of the Australian Bureau of Statistics and the eye care - related data came from National Indigenous Eye Health Survey and other publications of the Indigenous Eye Health Unit.

The needs for eye care services of each area were estimated by the size of the Indigenous population in that area and the national prevalence rates of eye conditions. Mapping those estimates provided better visual description.

This report provides initial targets of the unmet needs for the provision of eye care services to Indigenous Australians and will facilitate the planning of these services. The assumptions that have been made in reaching these targets need to be borne in mind and their limitations recognised.

Introduction

The National Indigenous Eye Health Survey has shown that although Indigenous children have better vision than mainstream children, Indigenous Australians aged 40 and above have six times the rate of blindness compared to mainstream (1). Over 90 per cent of their vision loss is preventable or treatable, but a third of adults have never had an eye exam. There is a significant shortfall in the provision of eye care services especially in outback Australia (3). Well co-ordinated and organised services provide both a measurably better service and save money (4). There seem to be many urban ophthalmologists and optometrists who would be prepared to provide these badly needed outreach eye care services if the visiting outreach services were well organised.

Before new or expanded eye care services can be planned an understanding of the unmet need for eye care is required. This report contributes to this process by calculating estimates of the patient numbers for a range of leading eye health conditions using data from the Australian Bureau of Statistics and the findings of the National Indigenous Eye Health Survey (1). In addition it examines the numbers of eye health professionals required to reach levels of coverage equivalent to the national average (4). These estimates are mapped into health regions for each state/territory and illustrate the current needs for eye health services for Indigenous people in different areas.

DATA COLLECTION

Indigenous population data were retrieved from Australian Bureau of Statistics (ABS) Census 2006 data according to Statistical Subdivisions (SSD) and Local Government Areas (LGA) via CData Online service provided by ABS (5). Population data by ABS Australian Standard Geographical Classification (ASGC) - Remoteness Areas (RA) were also extracted at the state level. Subjects with Indigenous status as “Not Stated” were excluded. ABS also provides an experimental estimate for the Indigenous population, attempting to solve undercoverage in remote areas (5). This estimate was not chosen due to its relatively uncertain nature, although it is more than 10% higher in Indigenous population comparing to Census data. Census data were chosen knowing that they may under estimate the Indigenous population (Table 1).

DISEASE PREVALENCE RATES

The conditions chosen to represent the current status of eye health and eye care in each area were blindness, diabetes and hence the need for an annual eye exam, trachomatous scarring and trichiasis (1). Apart from these eye disease prevalence rates, the rate of those with sight-threatening diabetic retinopathy who require laser surgery was also chosen. These rates are based on National Indigenous Eye Health Survey (1). National prevalence rates were used to reflect overall status rather than the less stable state/territory specific rates.

Cataract surgery rate (CSR) is an important indicator of eye care and the national average (9,500 per million population per year) was chosen as standard (4).

PRACTITIONER DATA

Practitioner availability rates per population were obtained from published data (4). As for the disease prevalence rates, national rates were used to reflect the wholly service level requirement rather than the less stable state/territory specific rates. These practitioner estimates did not factor in travel time or disease burden or complexity and relate solely to the provision of care to Indigenous persons.

Methods

MAPPING DATA

ESRI ArcGis 10 was used to generate maps of estimated patient or practitioner number. Digital boundaries of Australian geographical classifications were obtained from ABS website (5). Maps of each state/territory were then derived from these boundary files and merged according to health regions defined by state/territory governments (7-13). To match health region boundaries, the appropriate classification were chosen for each jurisdiction. The SSD classification was used for NT, QLD, SA, TAS and WA while the LGA classification was used for NSW and VIC.

CALCULATIONS

Estimated patient/ operation/ practitioner numbers were calculated with the indigenous population and appropriate prevalence rates. Some projections were calculated for the Indigenous population aged 40 years and above (Table 2).

To provide support on policy and decision making, more specific estimates of required practitioners by remoteness defined by ABS ASGC-RA are also included. For each state or territory, Indigenous population of each RA classification (Table 3) is retrieved and required ophthalmologists and optometrists for different combination of remote areas are estimated (Table 4).

For the calculation for the requirements for glasses we have assumes that half of those who require distance correction would also required near correction and so would receive a pair of bifocal glasses. Moreover we have assumed that a new pair of glasses would be required only every second year.

The projected numbers of people requiring eye care for various eye conditions, estimated need for cataract and laser eye surgery and the numbers of eye care providers have been calculated for each state (Table 5).

More detailed estimates and maps for each health region have also been produced and enclosed (Table 6-12, and maps).

A more detailed analysis of the needs by region show the two most need regions in each state/ territory are: Hunter & New England and Greater Western regions for New South Wales, Darwin and Alice Springs regions for Northern Territory, Far North and Metro regions for Queensland, Adelaide and Mid North regions for Southern Australia, Southern and North West areas for Tasmania, Metro and Loddon Mallee regions for Victoria and Perth and Kimberley regions for Western Australia. The areas with the highest need for eye care are those that have the largest Indigenous populations and typically include the capital city.

Discussion

This report presents the first estimates of the need for eye care services in Indigenous Australians on a state/territory basis. Regional data have also been prepared and are available online. This report also provides projections for the number of eye care providers required in each area. These data are likely to be important in planning the development of eye care services that are required to meet the unmet need in eye care.

This study has a number of limitations. The estimates in this report are relatively conservative since they were calculated based on 2006 Census data, and so may underestimate actual needs. The estimates would be more than 10% higher if the experimental estimates of the Indigenous population were used (33,517 versus 30,145 for Victoria and 517,403 versus 455,027 for Australia) (5). In addition these estimates reflect the service requirements for the 2006 population as the projection for further years was not used (15). A new Census will take place in the year 2011 from which updated estimates could be calculated.

The estimates apply national prevalence rates across each area rather than using state or region specific rates. This is because the data collected by the National Indigenous Eye Health Survey were collected to give national prevalence rates and did not have a sufficient sample size to calculate stable rates for states or regions (1).

The eye care provider data have taken the national average as a bench mark. These estimates make no allowance for the time taken to travel to the more remote centres and clinics. Nor do they account for the prevalence, severity or complexity of the unmet eye care needs. In both instances the estimates given are likely to give an underestimate of the need for Indigenous people exclusive of care giving to others.

However, these data do have a number of strengths. They do present for the first time estimates of unmet need for eye care. They do mark out clearly what is, at least, an initial target of what would be required to meet the unmet need in the provision of eye care to Indigenous Australians. This provides a good basis for planning of services and the capacity such services are likely to have. The provision of these data at a state/territory and at a regional level allows the planning to be more specific at these more appropriate and local levels.

In the more remote areas there is clearly a shortage on eye care providers and some estimates suggest that their availability needs to be increased some 4 fold or so (4). In more urban areas there may be a sufficiency of eye care providers but these services are not fully utilised by Indigenous Australians (1). In each case, different methods may be needed to overcome the short fall in services delivered, although these data in this report will be useful in planning these improved services.

Table 1: Indigenous population of each State/Territory

	Aboriginal	Torres Strait Islander	Both Aboriginal and Torres Strait Islander	Total
New South Wales	130,786	4,772	2,949	138,507
Queensland	98,717	18,374	10,488	127,579
Western Australia	56,648	1,059	1,007	58,714
Northern Territory	51,703	614	1,346	53,663
Victoria	27,073	2,218	854	30,145
South Australia	24,082	1,043	433	25,558
Tasmania	14,878	1,257	630	16,765
Australian Capital Territory	3,603	163	104	3,870
Other Territories	211	15	0	226
Total	407,701	29,515	17,811	455,027

Note: The population data will be slightly different each time they are retrieved from CData Online service due to deliberately introduced random error to avoid release of individual information (14).

Tables

Table 2: Prevalence rates for eye conditions and service requirement

	Rate	Multiplied by
Estimated Number Who Are Blind	2.79%	40 years old or above
Estimated Number of Glasses Required Each Year	24.6%	40 years old or above
Number of Cataract Operations to Reach National CSR(9500)	0.95%	Total indigenous population
Estimated Number with Diabetes Requiring Annual Eye Exam	37.0%	40 years old or above
Estimated Number with Diabetes Requiring Laser Surgery	11.6%	Patients with diabetes
Estimated Number with Trachomatous Scarring at Risk for Developing Trichiasis	16.0%	40 years old or above
Estimated Number with Inturned Eyelashes (Trichiasis)	1.40%	40 years old or above
Number of Ophthalmologists Required to Meet National Average (1:28,000)	0.00357%	Total indigenous population
Number of Optometrists Required to Meet National Average (1:5400)	0.0184%	Total indigenous population

Table 3: Indigenous population by State/Territory and Remoteness

	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote	Migratory	No Usual Address	Total
NSW	59,270	46,187	25,573	5,936	1,102	7	437	138,512
VIC	14,770	10,591	4,652	39	-	-	91	30,143
QLD	36,384	26,206	36,157	10,611	17,719	8	496	127,581
SA	12,441	2,339	5,924	1,074	3,687	-	87	25,552
WA	20,586	4,799	8,745	9,132	15,214	8	220	58,704
TAS	-	8,982	7,104	394	201	3	49	16,769
NT	-	-	10,458	12,227	30,812	3	164	53,664
ACT	3,846	4	-	-	-	-	28	3,878
Other Territories	-	208	-	-	17	-	-	225
Total	147,297	99,316	98,649	39,413	68,752	29	1,572	455,028

Note: The population data will be slightly different each time they are retrieved from CData Online service due to deliberately introduced random error to avoid release of individual information (14).

Table 4: Number of practitioners working weeks required by remoteness

		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Other Territories	Total
Required Ophthalmologists working weeks	Inner Regional to Very Remote	135	26	155	22	65	29	92	0	0	525
	Outer Regional to Very Remote	56	8	111	18	57	13	92	0	0	355
	Remote and Very Remote	12	0	49	8	42	1	74	0	0	185
Required Optometrists working weeks	Inner Regional to Very Remote	696	135	801	115	335	148	472	0	2	2,704
	Outer Regional to Very Remote	288	41	570	94	292	68	472	0	0	1,827
	Remote and Very Remote	62	0	250	42	215	5	380	0	0	955

Note: One year is assumed to be 48 working weeks.

Table 5: Projected eye care needs for Australia

	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Total
Estimated number of Indigenous People who are Blind	23	920	331	835	165	115	203	370	2,962
Estimated number of Indigenous people who require Glasses each year	204	8,105	2,914	7,354	1,426	1,011	1,789	3,263	26,066
Number of Indigenous people requiring Cataract Surgery each year to reach National CSR(9,500)	37	1,312	508	1,283	242	159	285	556	4,382
Estimated number of Indigenous people with Diabetes who require an annual eye examination	308	12,202	4,388	11,072	2,194	1,522	2,694	4,912	39,292
Estimated number of Indigenous people with Diabetes who require Laser Surgery each year	36	1,415	509	1,284	255	177	312	570	4,558
Estimated Number with Trichomatous Scarring at Risk for Developing Trichiasis	133	5,277	1,897	4,788	949	658	1,165	2,124	16,991
Estimated number of Indigenous people with Inturned Eyelashes (Trichiasis)	12	462	166	419	83	58	102	186	1,488
Number of full time equivalent Ophthalmologists required to service Indigenous population to reach National average (1:28,000)	0.14	4.93	1.91	4.82	0.91	0.60	1.07	2.09	16.47
Number of full time Optometrists required to service Indigenous population to reach National average (1:5,400)	0.71	25.40	9.84	24.84	4.68	3.08	5.53	10.76	84.84

Table 6: Projected eye care needs for New South Wales & ACT

	Greater Southern	Greater Western	Hunter & New England	North Coast	North Sydney & Central Coast	Sydney South East	Sydney South West	Sydney West	ACT	Total
Estimated number of Indigenous People who are Blind	88	160	207	117	58	88	103	100	23	920+23
Estimated number of Indigenous people who require Glasses each year	772	1,410	1,822	1,027	509	779	907	881	204	8,105+204
Number of Indigenous people requiring Cataract Surgery each year to reach National CSR (9,500)	126	227	293	166	79	121	143	158	37	1,312+37
Estimated number of Indigenous people with Diabetes who require an annual eye examination	1,162	2,122	2,744	1,547	765	1,172	1,365	1,326	308	12,202+308
Estimated number of Indigenous people with Diabetes who require Laser Surgery each year	135	246	318	179	89	136	158	154	36	1,415+36
Estimated Number with Trachomatous Scarring at Risk for Developing Trichiasis	502	918	1,186	669	331	507	590	573	133	5,277+133
Estimated number of Indigenous people with Inturned Eyelashes (Trichiasis)	44	80	104	59	29	44	52	50	12	462+12
Number of full time equivalent Ophthalmologists required to service Indigenous population to reach National average (1:28,000)	0.47	0.85	1.10	0.62	0.30	0.45	0.54	0.59	0.14	4.93+0.14
Number of full time Optometrists required to service Indigenous population to reach National average (1:5,400)	2.43	4.39	5.68	3.21	1.53	2.33	2.77	3.06	0.71	25.40+0.71

Table 7: Projected eye care needs for Northern Territory

	Darwin	Darwin Rural	Melville	Daly	East Arnhem	Katherine	Barkly	Alice Springs	Total
Estimated number of Indigenous People who are Blind	66	28	13	14	53	49	21	88	331
Estimated number of Indigenous people who require Glasses each year	578	247	115	120	463	434	188	772	2,914
Number of Indigenous people requiring Cataract Surgery each year to reach National CSR(9,500)	97	45	18	28	81	79	31	129	508
Estimated number of Indigenous people with Diabetes who require an annual eye examination	870	371	172	181	697	653	282	1,162	4,388
Estimated number of Indigenous people with Diabetes who require Laser Surgery each year	101	43	20	21	81	76	33	135	509
Estimated Number with Trachomatous Scarring at Risk for Developing Trichiasis	376	160	75	78	302	282	122	502	1,897
Estimated number of Indigenous people with Inturned Eyelashes (Trichiasis)	33	14	7	7	26	25	11	44	166
Number of full time equivalent Ophthalmologists required to service Indigenous population to reach National average (1:28,000)	0.37	0.17	0.07	0.11	0.31	0.30	0.12	0.48	1.91
Number of full time Optometrists required to service Indigenous population to reach National average (1:5,400)	1.89	0.87	0.36	0.54	1.57	1.52	0.60	2.49	9.84

Table 8: Projected eye care needs for Queensland

	TSI	Far North	Mt Isa	Townsville	Central West	Mackay	Central QLD	South West	Darling Downs	Sunshine Coast Wide Bay	Metro	Gold Coast	Total
Estimated number of Indigenous People who are Blind	55	219	45	73	5	35	52	19	71	75	152	34	835
Estimated number of Indigenous people who require Glasses each year	482	1,931	397	643	46	308	456	163	628	662	1,336	303	7,354
Number of Indigenous people requiring Cataract Surgery each year to reach National CSR(9,500)	76	315	67	123	7	52	85	26	123	110	246	55	1,283
Estimated number of Indigenous people with Diabetes who require an annual eye examination	726	2,908	598	968	68	464	686	246	945	996	2,011	456	11,072
Estimated number of Indigenous people with Diabetes who require Laser Surgery each year	84	337	69	112	8	54	80	29	110	116	233	53	1,284
Estimated Number with Trachomatous Scarring at Risk for Developing Trichiasis	314	1,257	258	418	30	201	297	106	409	431	870	197	4,788
Estimated number of Indigenous people with Inturned Eyelashes (Trichiasis)	27	110	23	37	3	18	26	9	36	38	76	17	419
Number of full time equivalent Ophthalmologists required to service Indigenous population to reach National average (1:28,000)	0.28	1.18	0.25	0.46	0.03	0.20	0.32	0.10	0.46	0.42	0.92	0.21	4.82
Number of full time Optometrists required to service Indigenous population to reach National average (1:5,400)	1.46	6.09	1.29	2.37	0.13	1.01	1.64	0.50	2.38	2.14	4.76	1.06	24.84

Table 9: Projected eye care needs for South Australia

	Adelaide	Adelaide Rural	Kangaroo Island	Wakefield	Riverland	Murray Mallee	South East	Eyre	Mid North	Northern and Far Western	Total
Estimated number of Indigenous People who are Blind	76	7	0	6	9	7	6	12	26	16	165
Estimated number of Indigenous people who require Glasses each year	673	58	3	54	84	53	49	109	225	120	1,426
Number of Indigenous people requiring Cataract Surgery each year to reach National CSR(9,500)	118	9	0	7	14	10	7	18	33	23	242
Estimated number of Indigenous people with Diabetes who require an annual eye examination	1,013	87	4	81	126	94	74	164	338	213	2,194
Estimated number of Indigenous people with Diabetes who require Laser Surgery each year	118	10	1	9	15	11	9	19	39	25	255
Estimated Number with Trachomatous Scarring at Risk for Developing Trichiasis	438	37	2	35	54	41	32	71	146	92	949
Estimated number of Indigenous people with Inturned Eyelashes (Trichiasis)	38	3	0	3	5	4	3	6	13	8	83
Number of full time equivalent Ophthalmologists required to service Indigenous population to reach National average (1:28,000)	0.45	0.04	0.00	0.03	0.05	0.04	0.03	0.07	0.13	0.09	0.91
Number of full time Optometrists required to service Indigenous population to reach National average (1:5,400)	2.29	0.18	0.01	0.13	0.27	0.20	0.14	0.35	0.64	0.45	4.68

Tables

Table 10: Projected eye care needs for Tasmania

	Southern Area	Northern Area	North West Area	Total
Estimated number of Indigenous People who are Blind	53	23	39	115
Estimated number of Indigenous people who require Glasses each year	466	204	342	1,011
Number of Indigenous people requiring Cataract Surgery each year to reach National CSR(9,500)	74	33	52	159
Estimated number of Indigenous people with Diabetes who require an annual eye examination	702	306	514	1,522
Estimated number of Indigenous people with Diabetes who require Laser Surgery each year	81	36	60	177
Estimated Number with Trachomatous Scarring at Risk for Developing Trichiasis	304	132	222	658
Estimated number of Indigenous people with Inturned Eyelashes (Trichiasis)	27	12	19	58
Number of full time equivalent Ophthalmologists required to service Indigenous population to reach National average (1:28,000)	0.28	0.12	0.19	0.60
Number of full time Optometrists required to service Indigenous population to reach National average (1:5,400)	1.43	0.64	1.00	3.08

Table 11: Projected eye care needs for Victoria

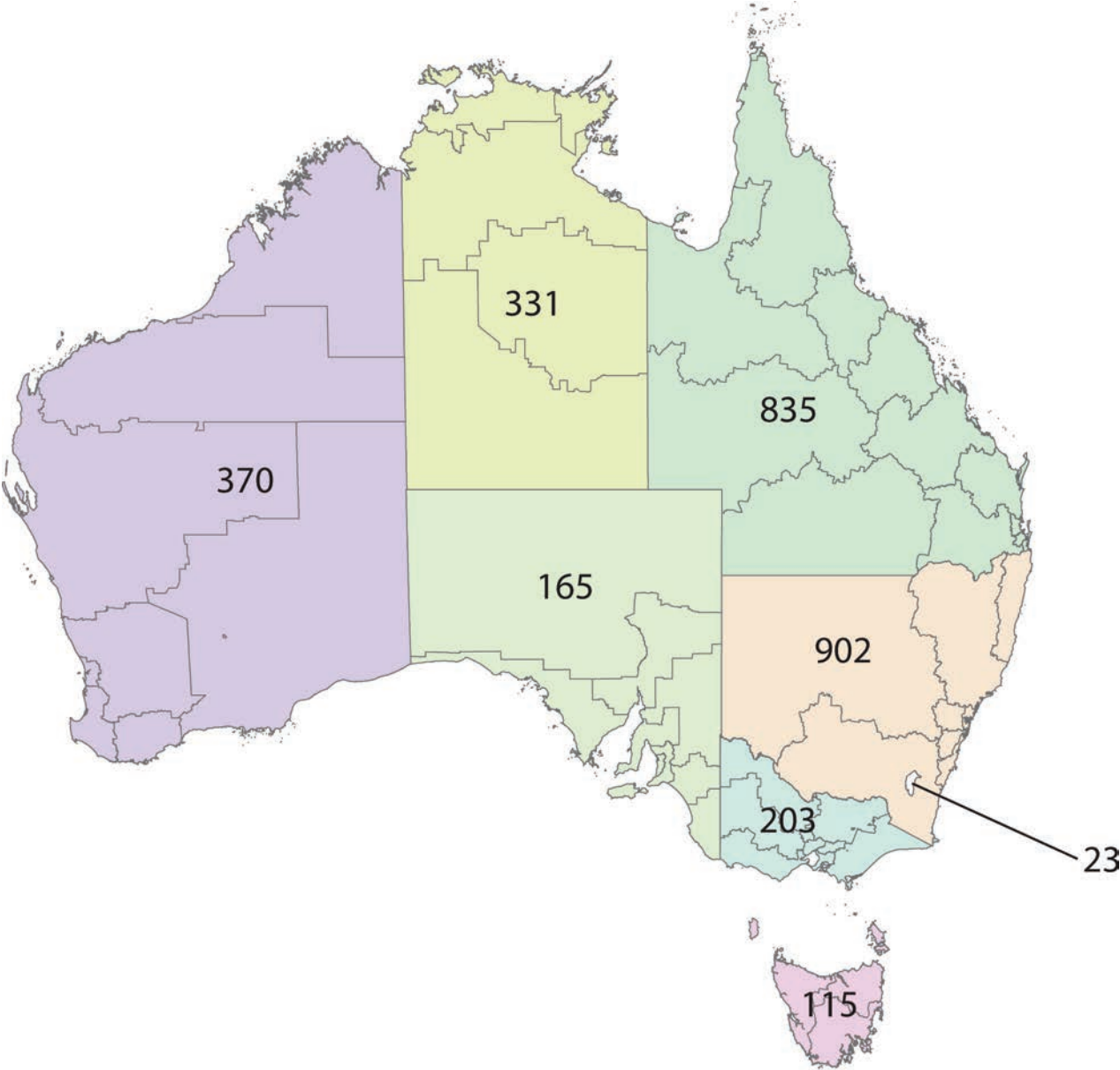
	Loddon Mallee	Grampians	Barwon South Western	Hume	Gippsland	Metro NW	Metro S	Metro E	Total
Estimated number of Indigenous People who are Blind	30	14	19	24	20	46	30	19	203
Estimated number of Indigenous people who require Glasses each year	262	126	170	214	177	407	264	170	1,789
Number of Indigenous people requiring Cataract Surgery each year to reach National CSR(9,500)	44	17	26	35	29	69	41	25	285
Estimated number of Indigenous people with Diabetes who require an annual eye examination	394	189	255	323	266	613	397	256	2,694
Estimated number of Indigenous people with Diabetes who require Laser Surgery each year	46	22	30	37	31	71	46	30	312
Estimated Number with Trachomatous Scarring at Risk for Developing Trichiasis	171	82	110	140	115	265	172	111	1,165
Estimated number of Indigenous people with Inturned Eyelashes (Trichiasis)	15	7	10	12	10	23	15	10	102
Number of full time equivalent Ophthalmologists required to service Indigenous population to reach National average (1:28,000)	0.16	0.06	0.10	0.13	0.11	0.26	0.15	0.09	1.07
Number of full time Optometrists required to service Indigenous population to reach National average (1:5,400)	0.85	0.33	0.51	0.68	0.57	1.34	0.79	0.47	5.53

Table 12: Projected eye care needs for Western Australia

	Perth	South West	Great Southern	Wheatbelt	Goldfields	Midwest	Pilbara	Kimberley	Total
Estimated number of Indigenous People who are Blind	125	22	11	22	34	40	38	79	370
Estimated number of Indigenous people who require Glasses each year	1,100	197	94	192	296	354	337	694	3,263
Number of Indigenous people requiring Cataract Surgery each year to reach National CSR(9,500)	203	35	16	29	47	55	54	117	556
Estimated number of Indigenous people with Diabetes who require an annual eye examination	1,656	296	142	288	445	533	508	1,045	4,912
Estimated number of Indigenous people with Diabetes who require Laser Surgery each year	192	34	16	33	52	62	59	121	570
Estimated Number with Trachomatous Scarring at Risk for Developing Trichiasis	716	128	61	125	192	230	220	452	2,124
Estimated number of Indigenous people with Inturned Eyelashes (Trichiasis)	63	11	5	11	17	20	19	40	186
Number of full time equivalent Ophthalmologists required to service Indigenous population to reach National average (1:28,000)	0.76	0.13	0.06	0.11	0.18	0.21	0.20	0.44	2.09
Number of full time Optometrists required to service Indigenous population to reach National average (1:5,400)	3.92	0.68	0.32	0.56	0.91	1.07	1.04	2.27	10.76

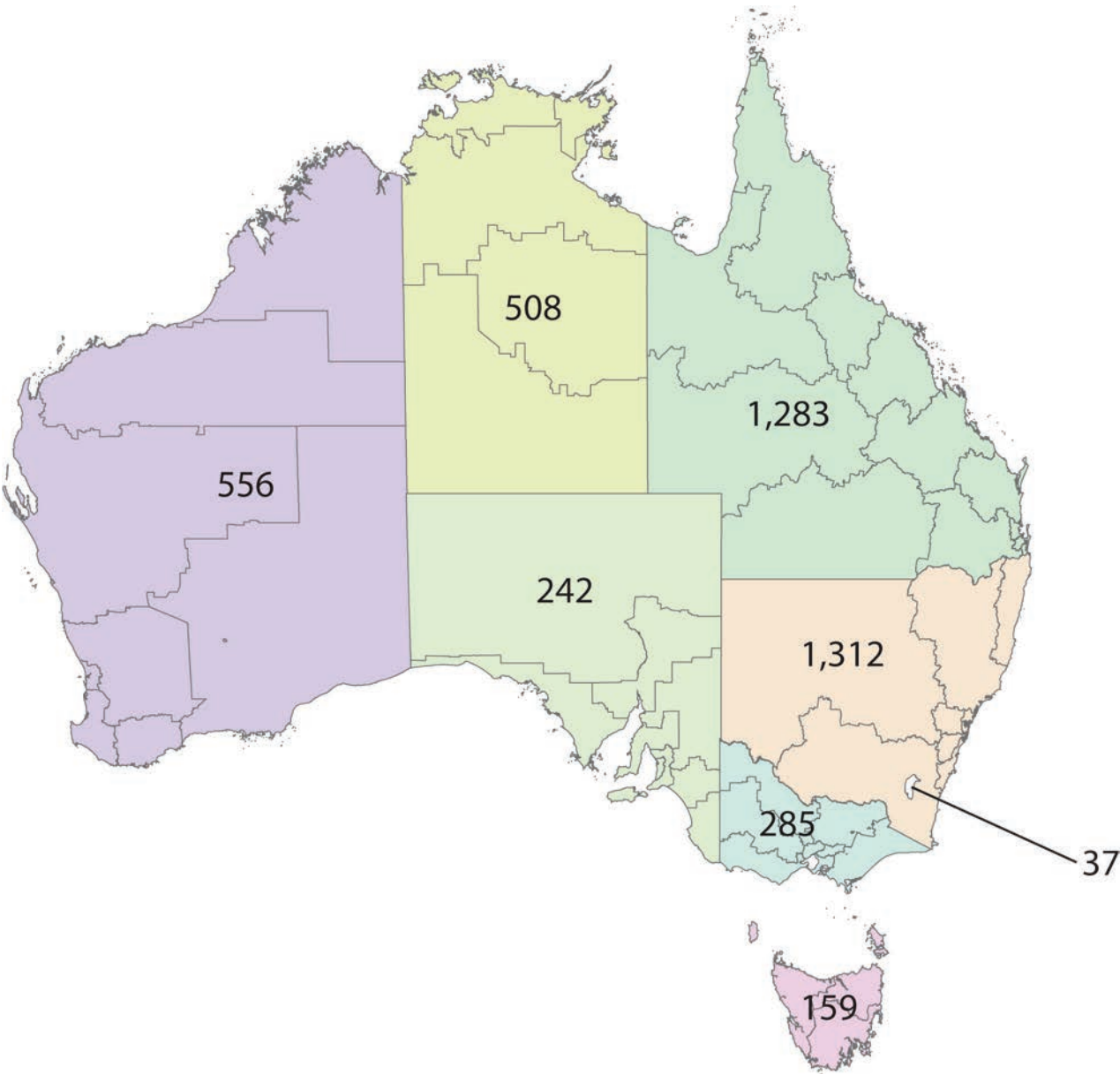
Map 1: AUSTRALIA 1

Estimated number of Indigenous people who are **Blind**
Total: 2,944



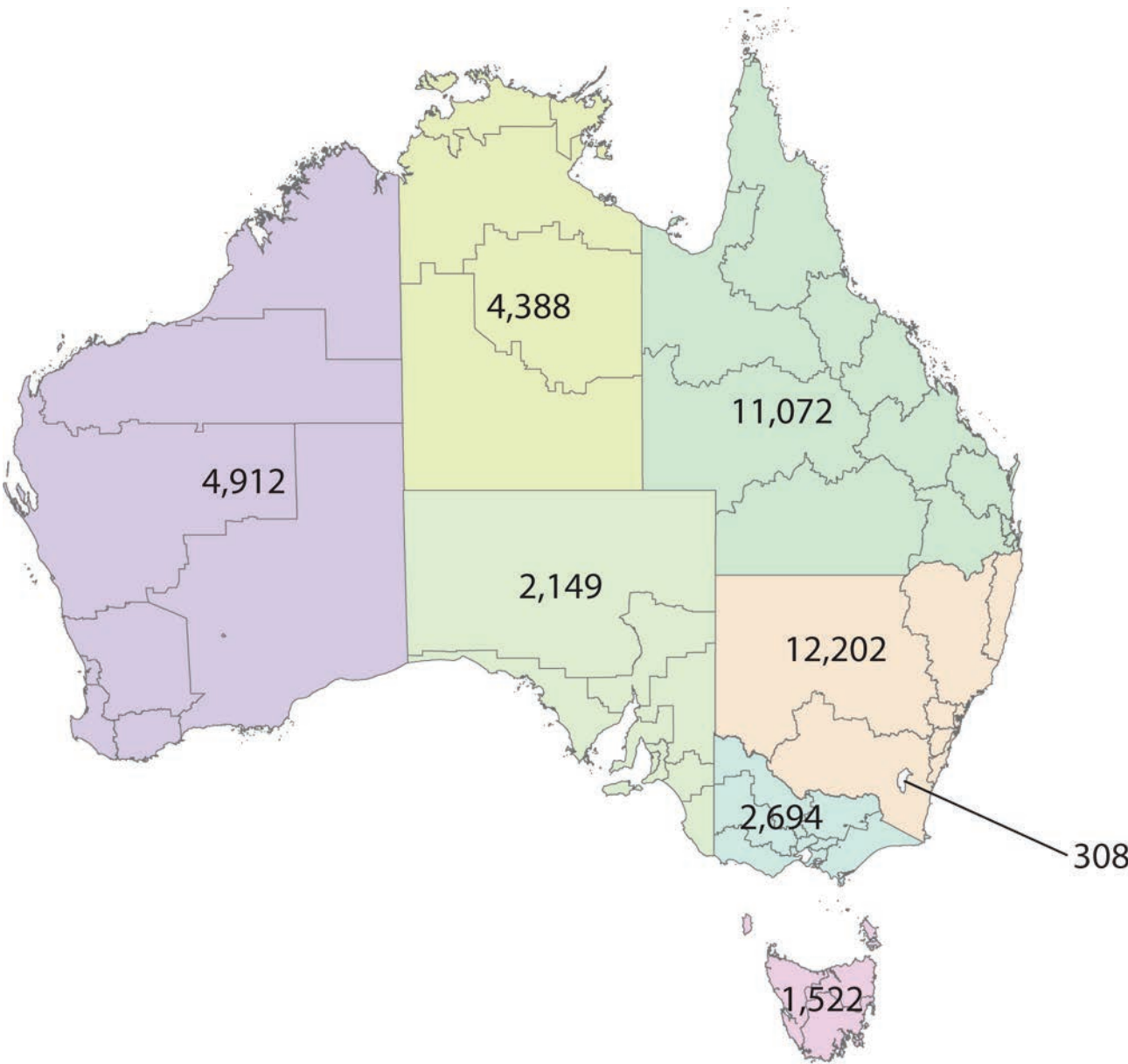
Map 2: AUSTRALIA 2

Number of Indigenous people requiring **Cataract Surgery** each year to reach the National CSR (9500)
Total: 4,382



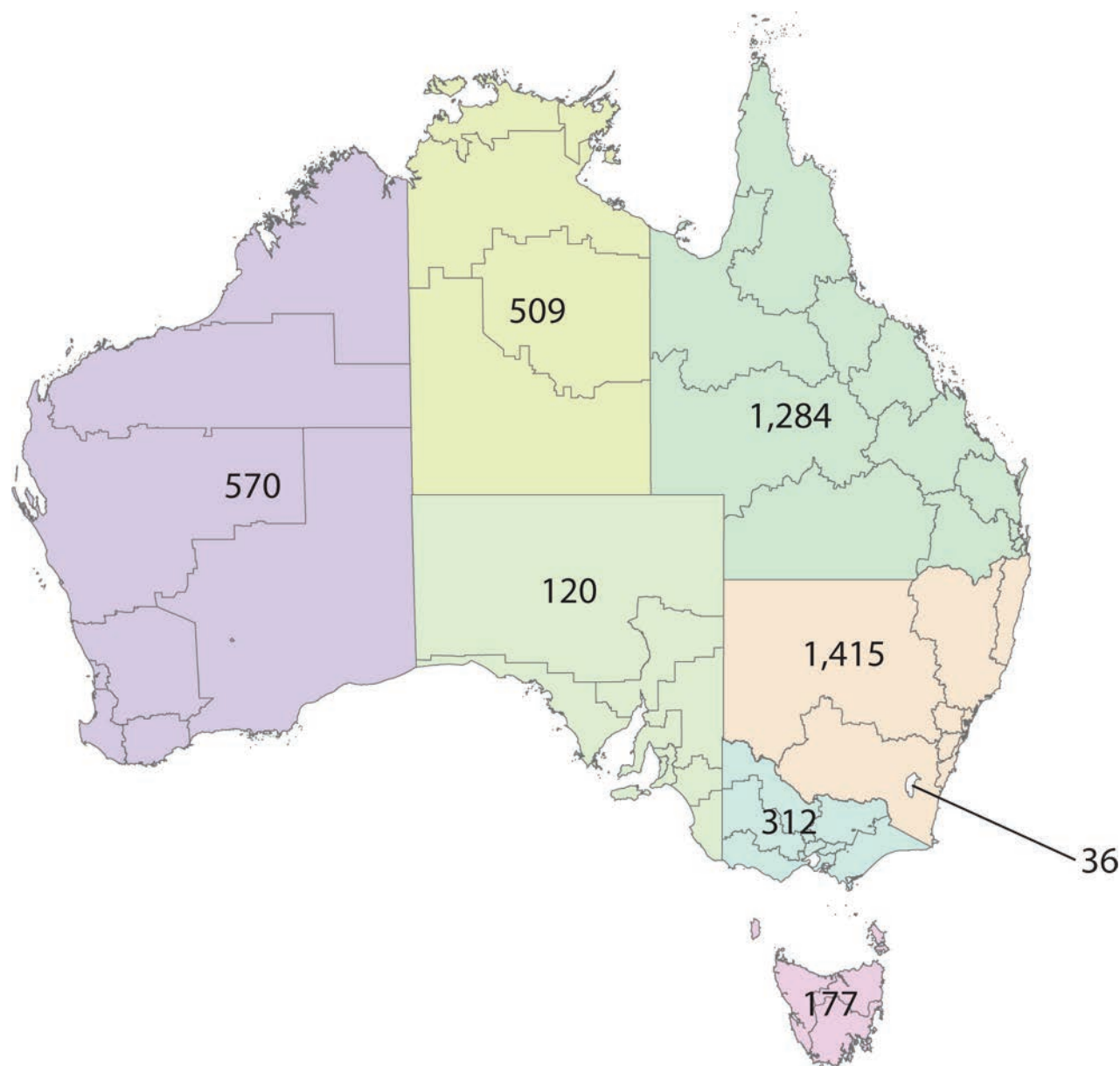
Map 3: AUSTRALIA 3

Estimated number of Indigenous people with **Diabetes** who require an annual eye examination
Total: 39,247



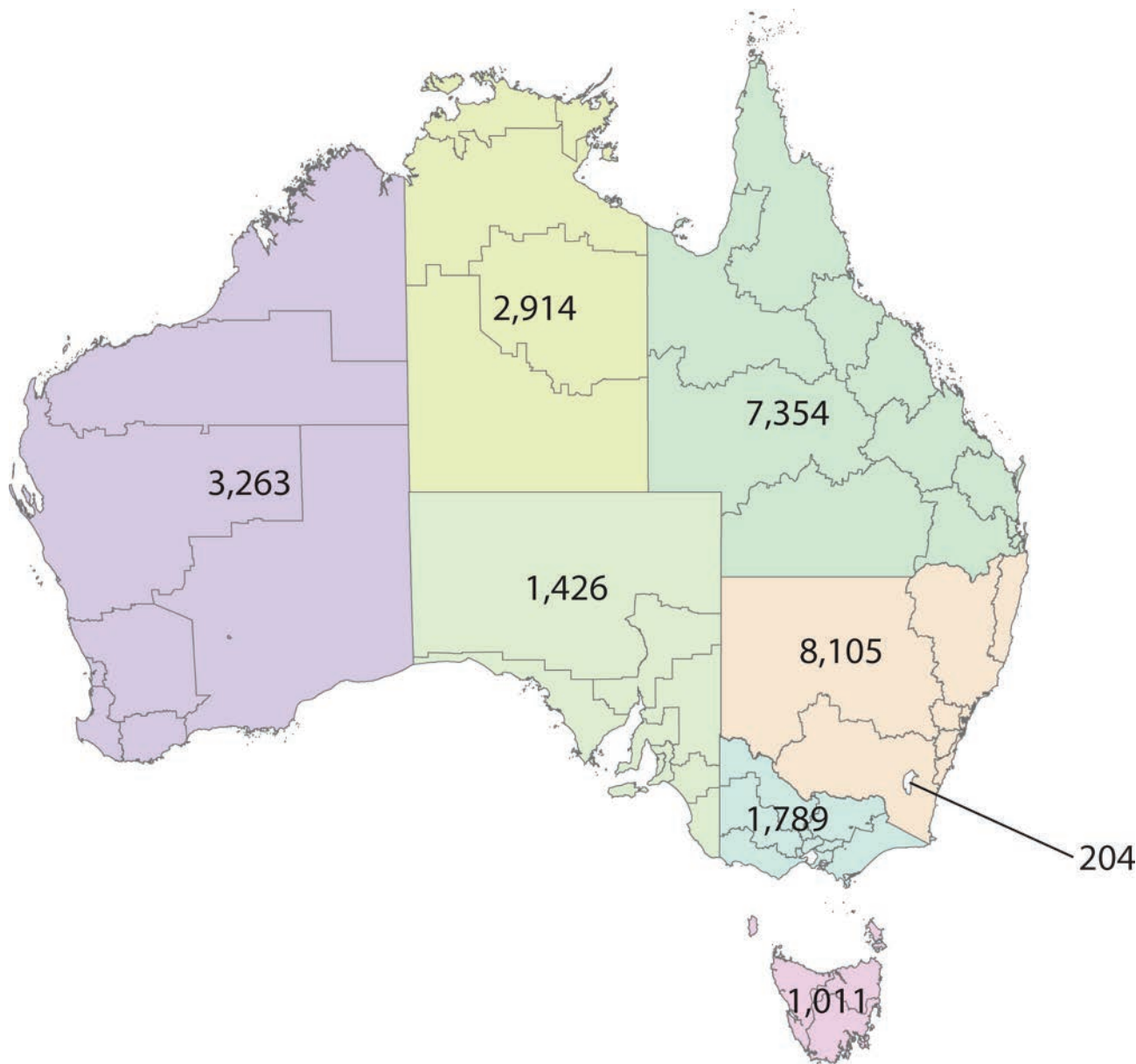
Map 4: AUSTRALIA 4

Estimated number of Indigenous people with Diabetes who require **Laser Surgery** each year
Total: 4,423



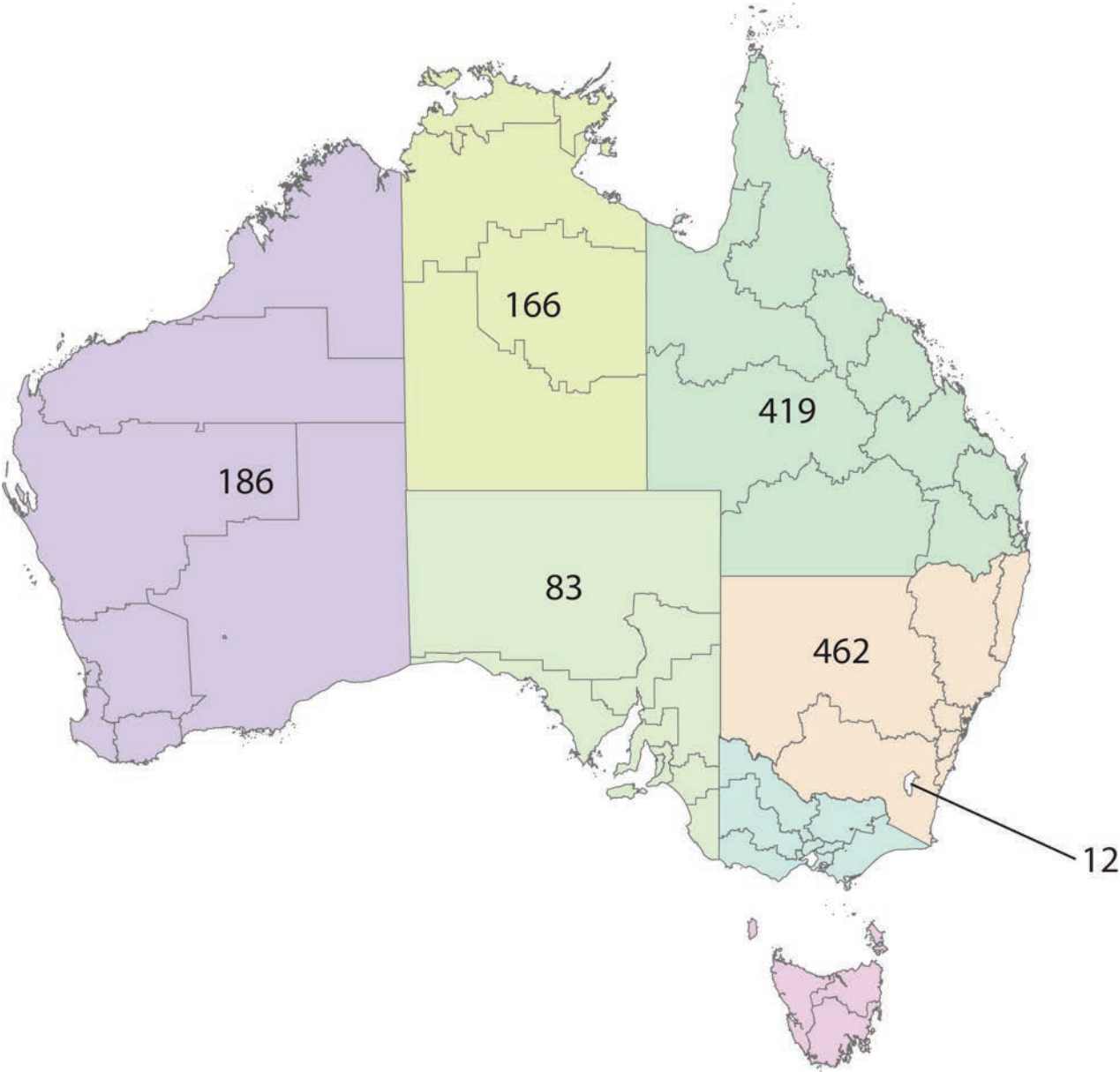
Map 5: AUSTRALIA 5

Estimated number of Indigenous people who require **Glasses** each year
Total: 26,066



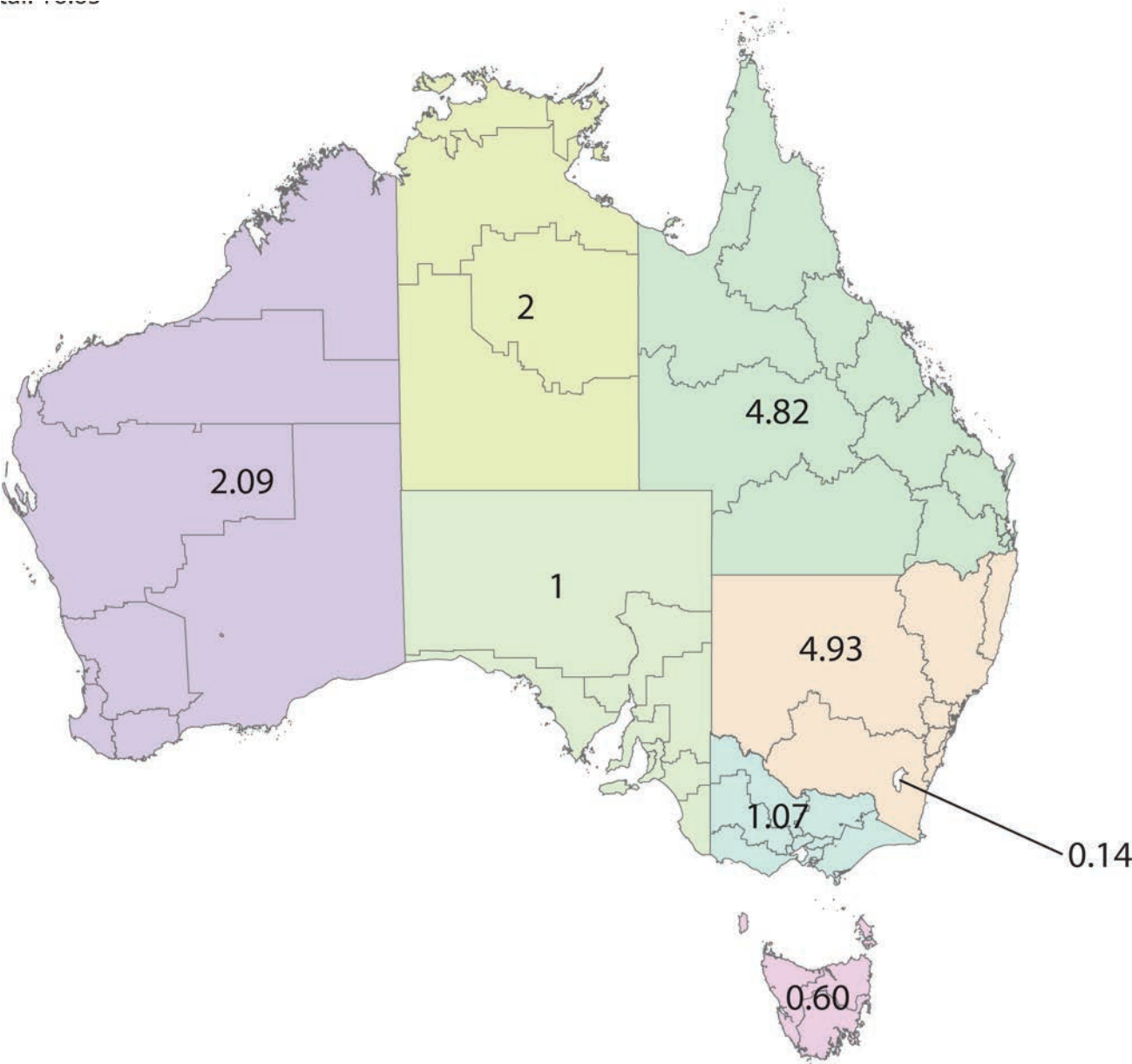
Map 6: AUSTRALIA 6

Estimated number of Indigenous people with **Inturned Eyelashes (Trichiasis)**
Total: 1,328



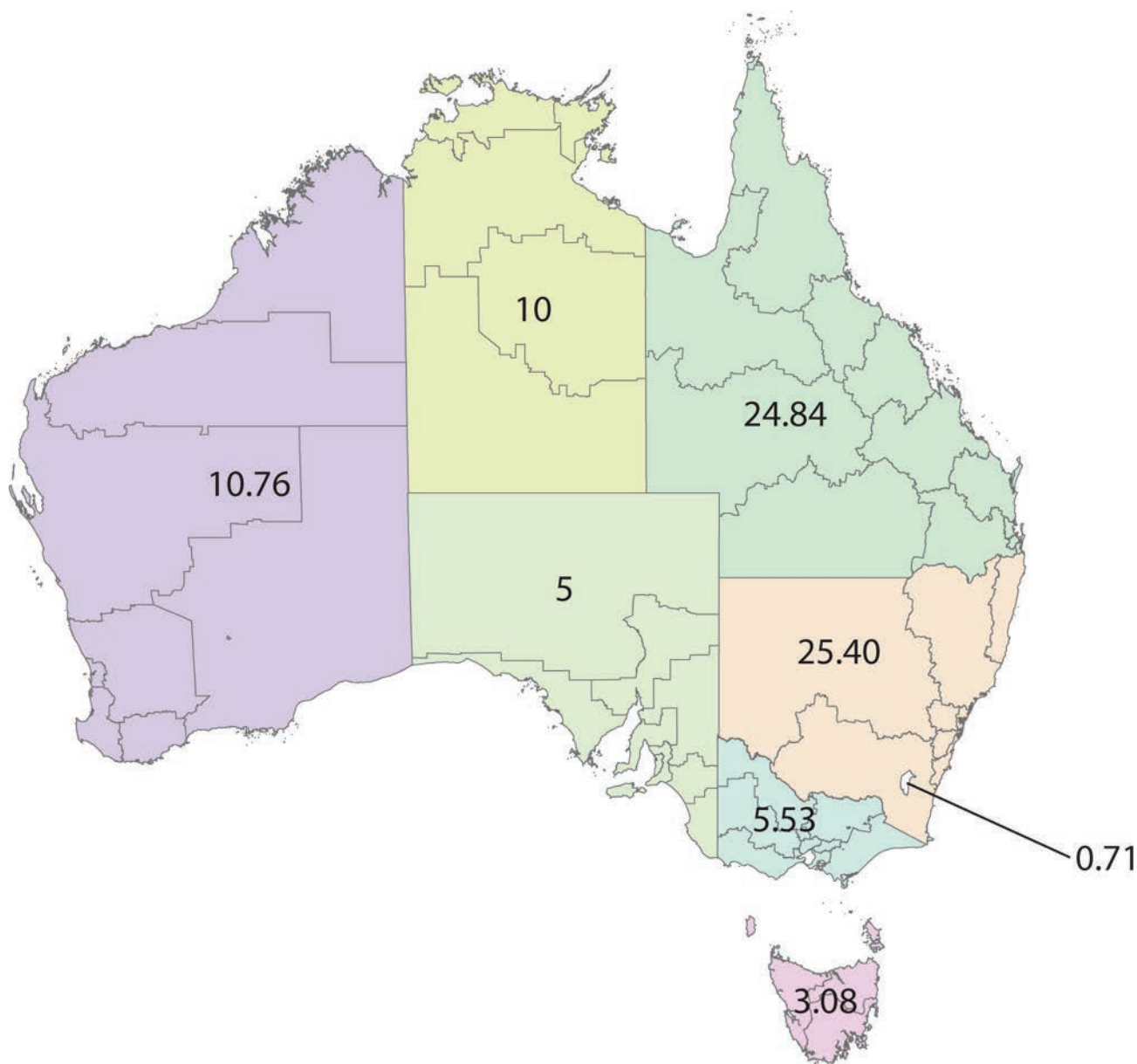
Map 7: AUSTRALIA 7

Number of full time equivalent **Ophthalmologists** required to service Indigenous population to reach National average (1: 28,000)
Total: 16.65



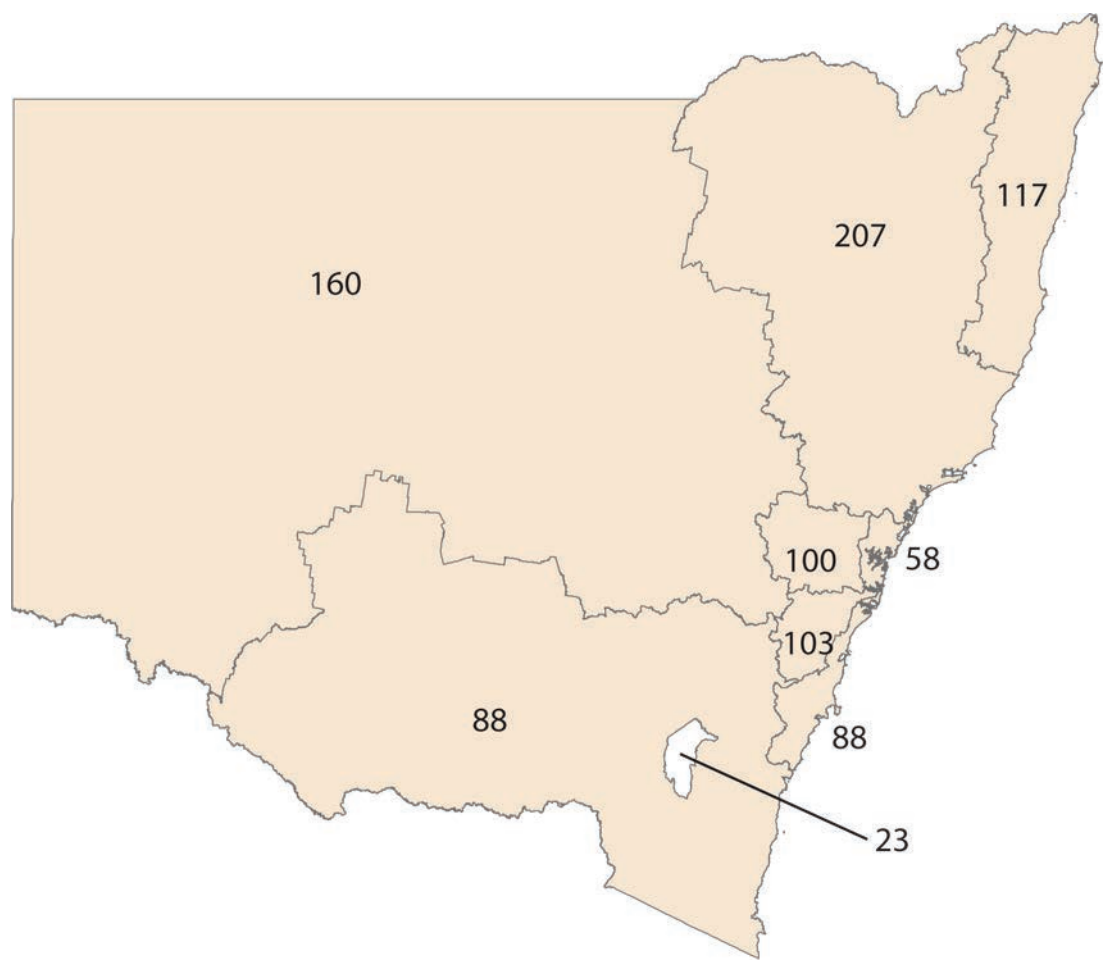
Map 8: AUSTRALIA 8

Number of full time equivalent **Optometrists** required to service Indigenous population to reach
National average (1: 5,400)
Total: 85.32



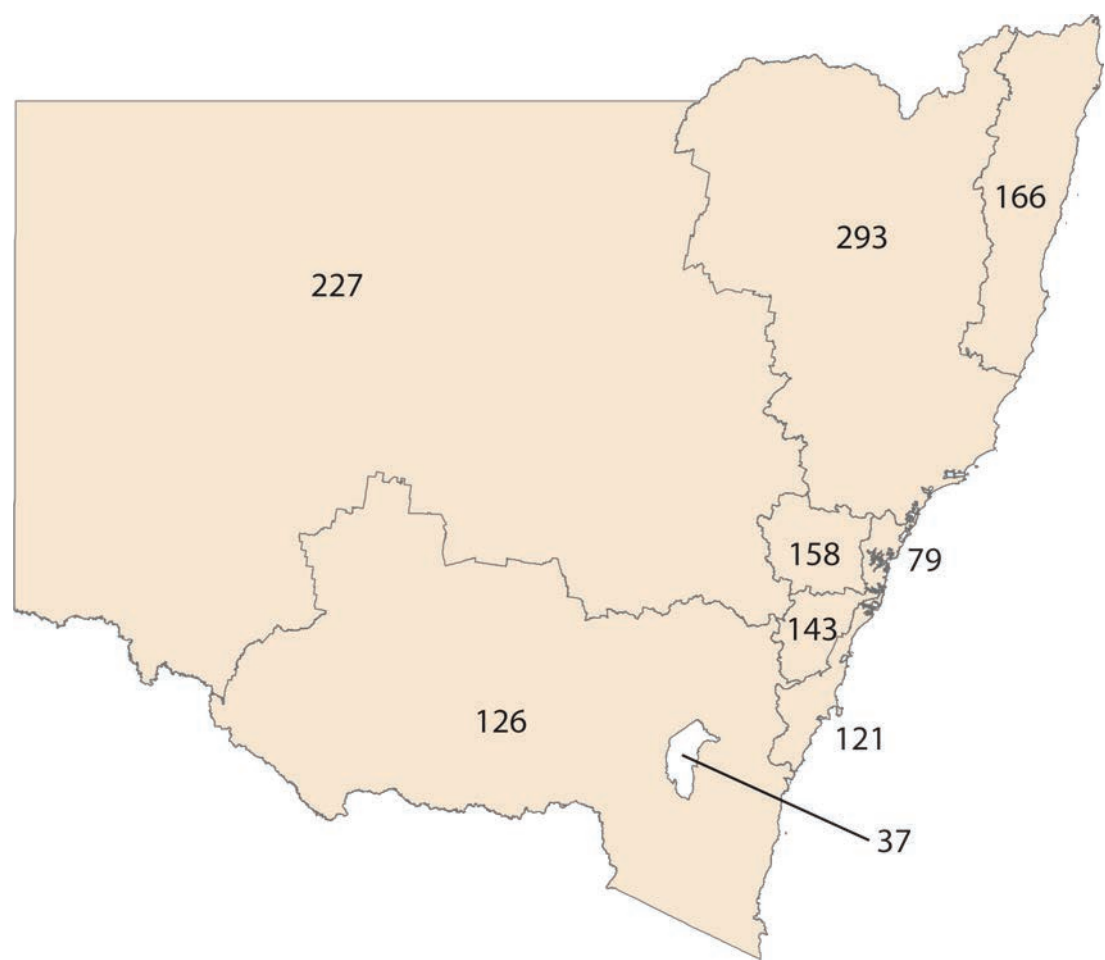
Map 9: NSW & ACT 1

Estimated number of Indigenous people who are **Blind**
Total: 902 + 23



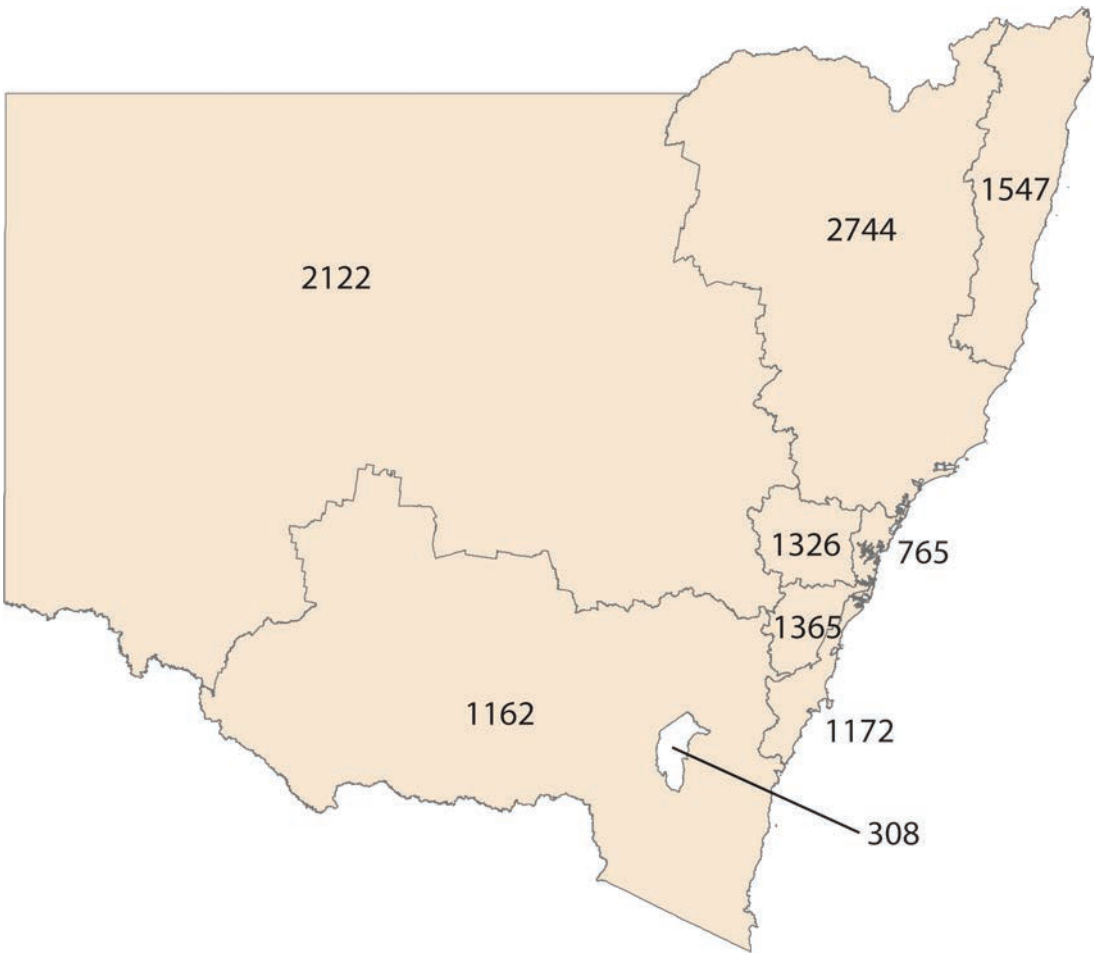
Map 10: NSW & ACT 2

Number of Indigenous people requiring **Cataract Surgery** each year to reach the National CSR (9,500)
Total: 1,312 + 37



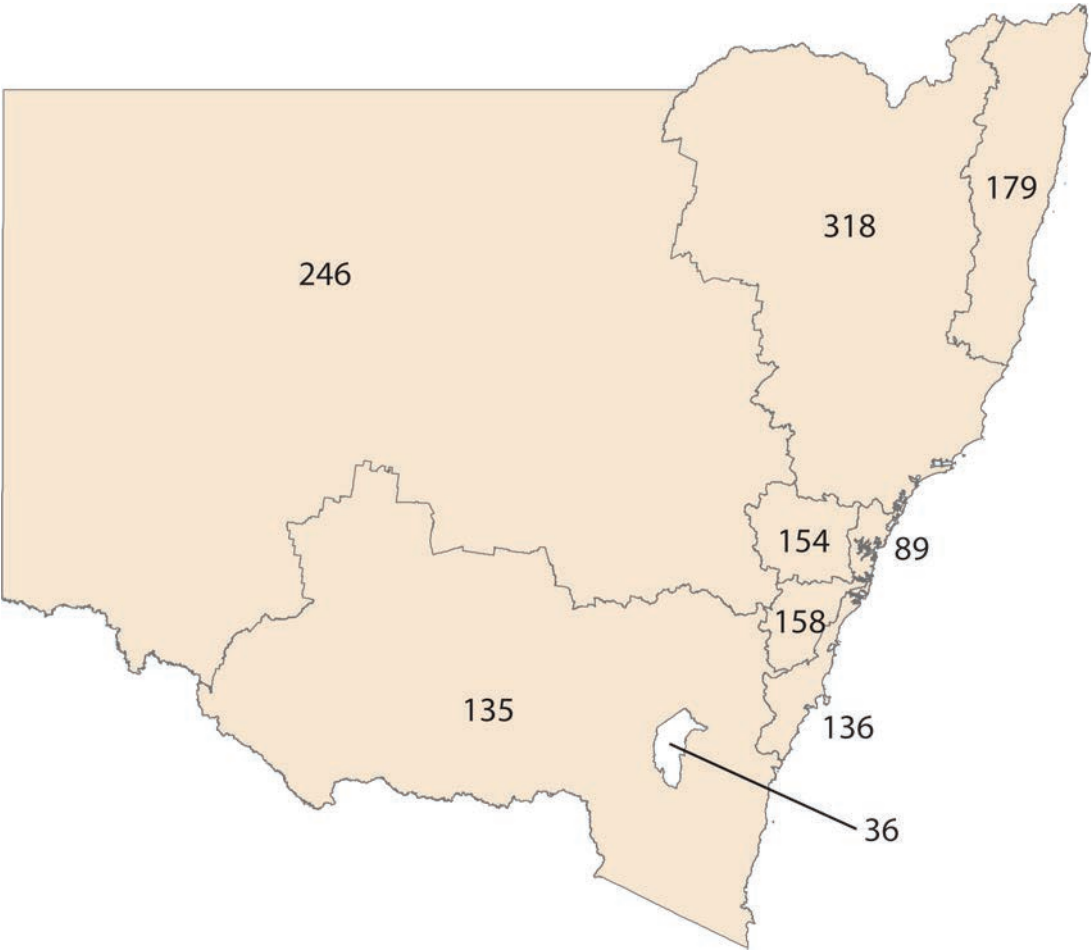
Map 11: NSW & ACT 3

Estimated number of Indigenous people with **Diabetes** who require an annual eye examination
Total: 12,202 + 308



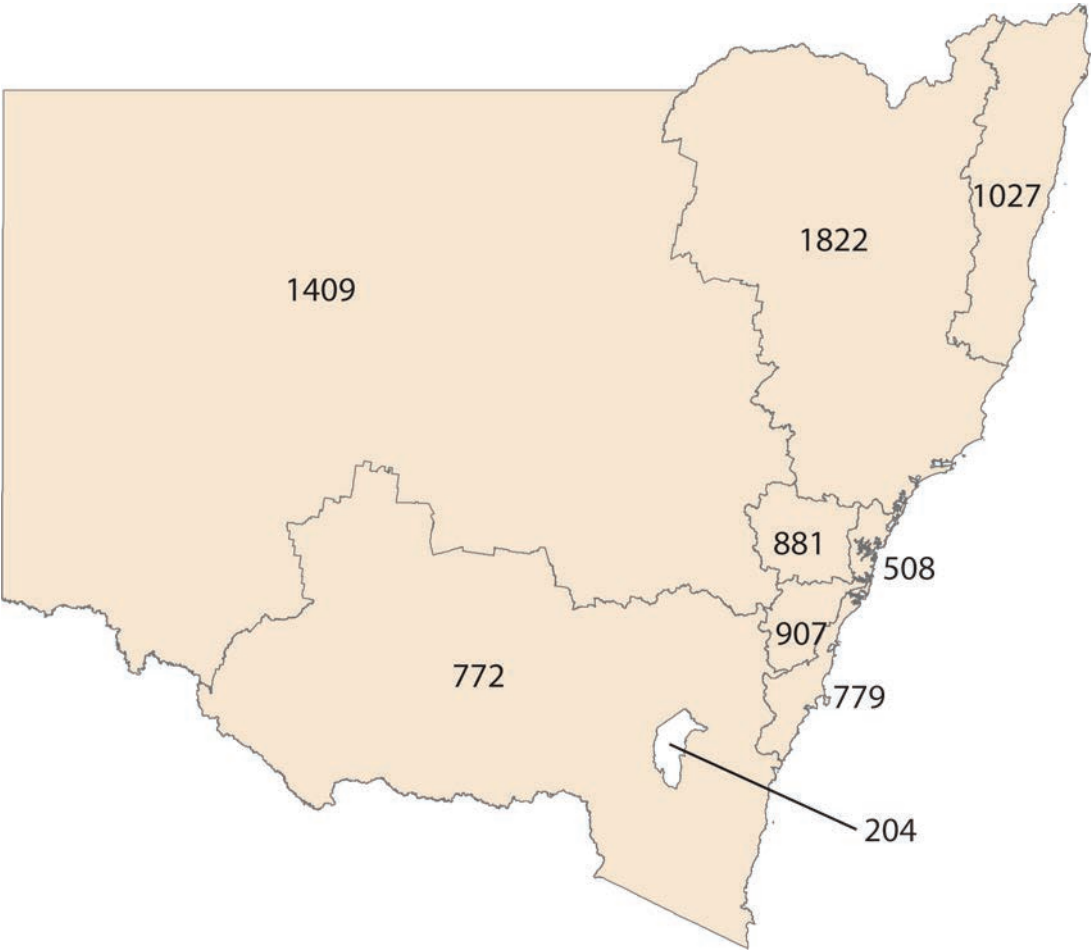
Map 12: NSW & ACT 4

Estimated number of Indigenous people with Diabetes who require **Laser Surgery** each year
Total: 1,415 + 36



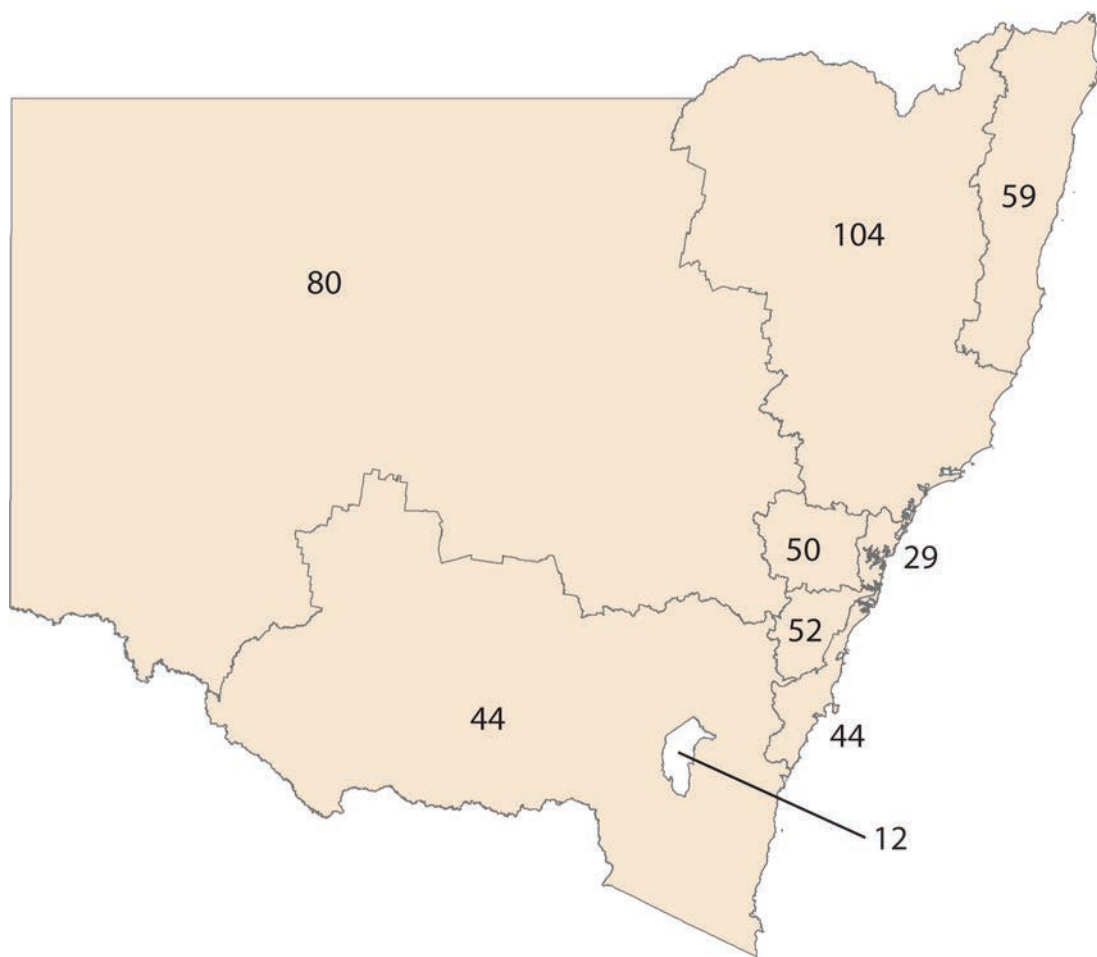
Map 13: NSW & ACT 5

Estimated number of Indigenous people who require **Glasses** each year
Total: 8,105 + 204



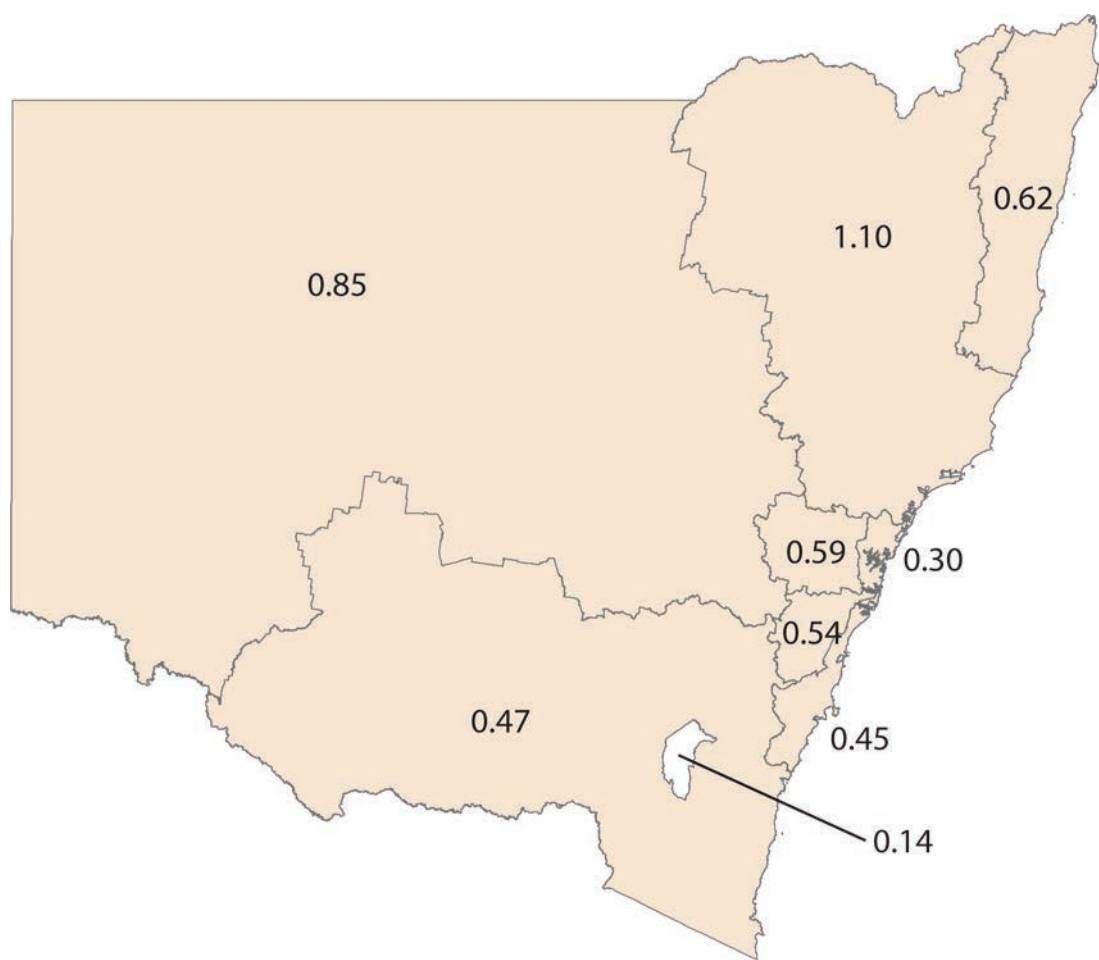
Map 14: NSW & ACT 6

Estimated number of Indigenous people with **Inturned Eyelashes (Trichiasis)**
Total: 462 + 12



Map 15: NSW & ACT 7

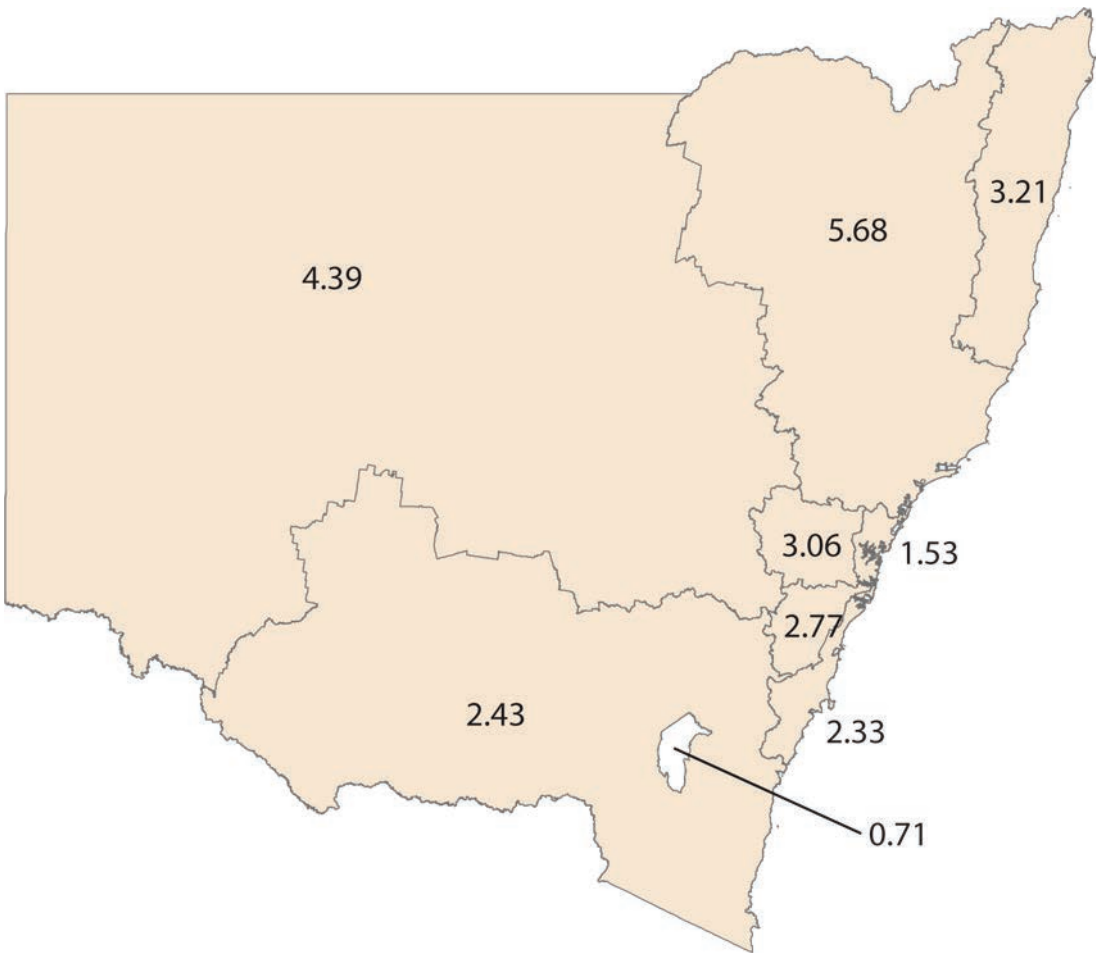
Number of full time equivalent **Ophthalmologists** required to service Indigenous population to reach National average (1: 28,000)
Total: 4.93 + 0.14 (8 weeks FTE)



3-6 month FTE (0.25-0.50)
0.5-1 year FTE (0.50-1.00)
1-2 year FTE (1.00-2.00)

Map 16: NSW & ACT 8

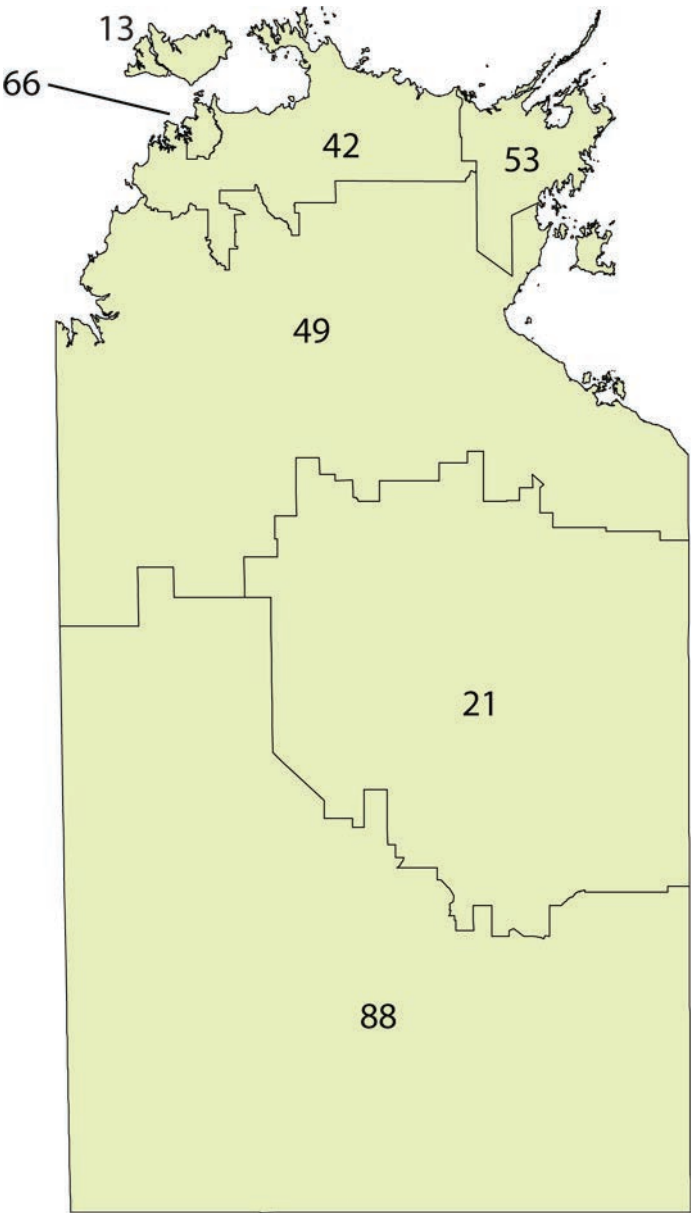
Number of full time equivalent **Optometrists** required to service Indigenous population to reach National average (1: 5,400)
Total: 25.40 + 0.71 (8.5 months FTE)



1-2 year FTE (1.00-2.00)
2-4 year FTE (2.00-4.00)
4-6 year FTE (4.00-6.00)

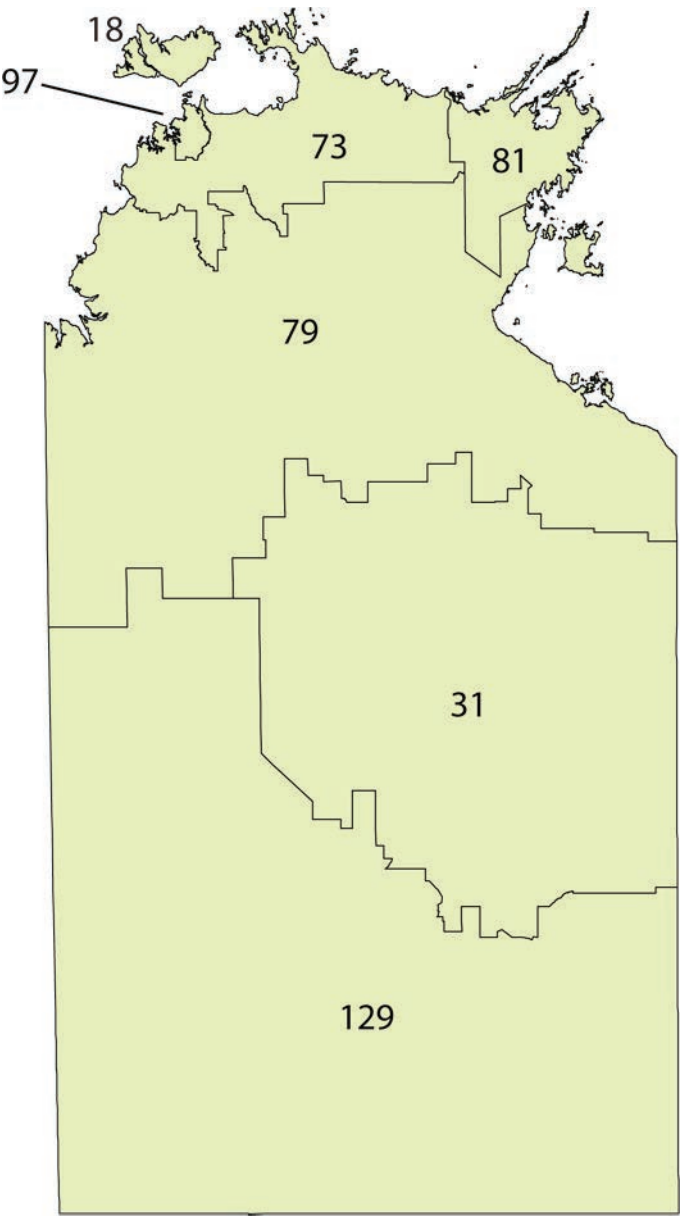
Map 17: NT 1

Estimated number of Indigenous people who are **Blind**
Total: 331



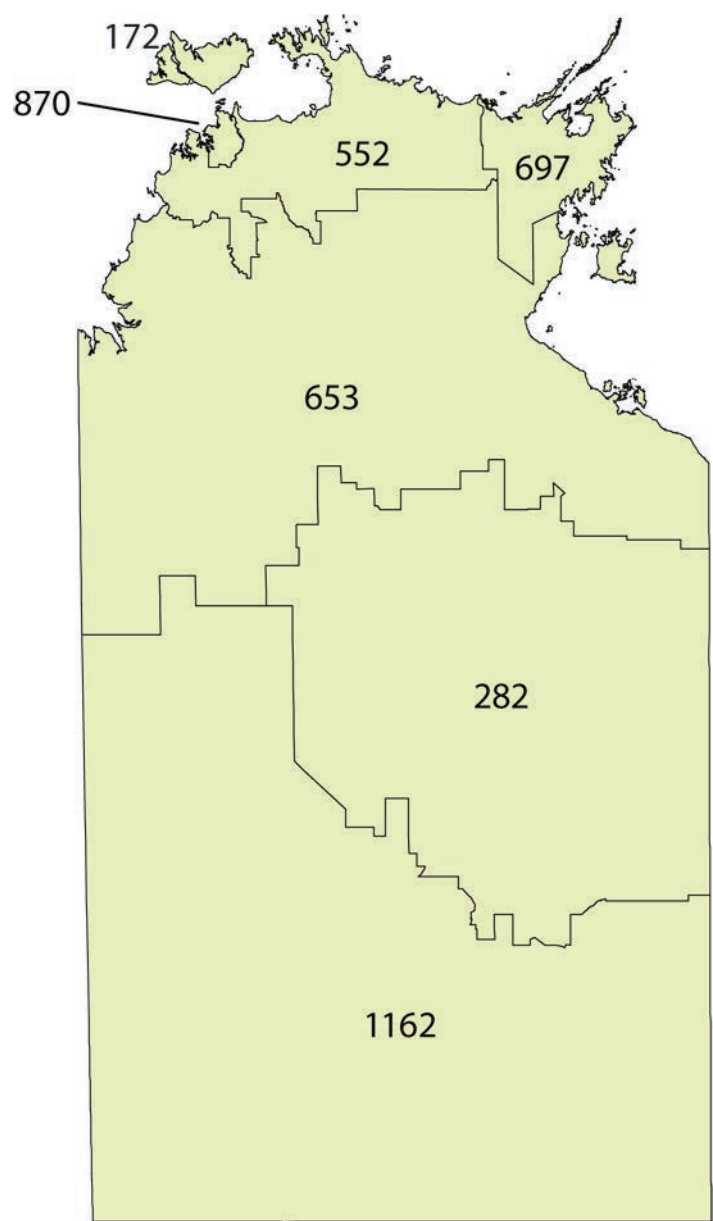
Map 18: NT 2

Number of Indigenous people requiring **Cataract Surgery** each year to reach the National CSR (9500)
Total: 508



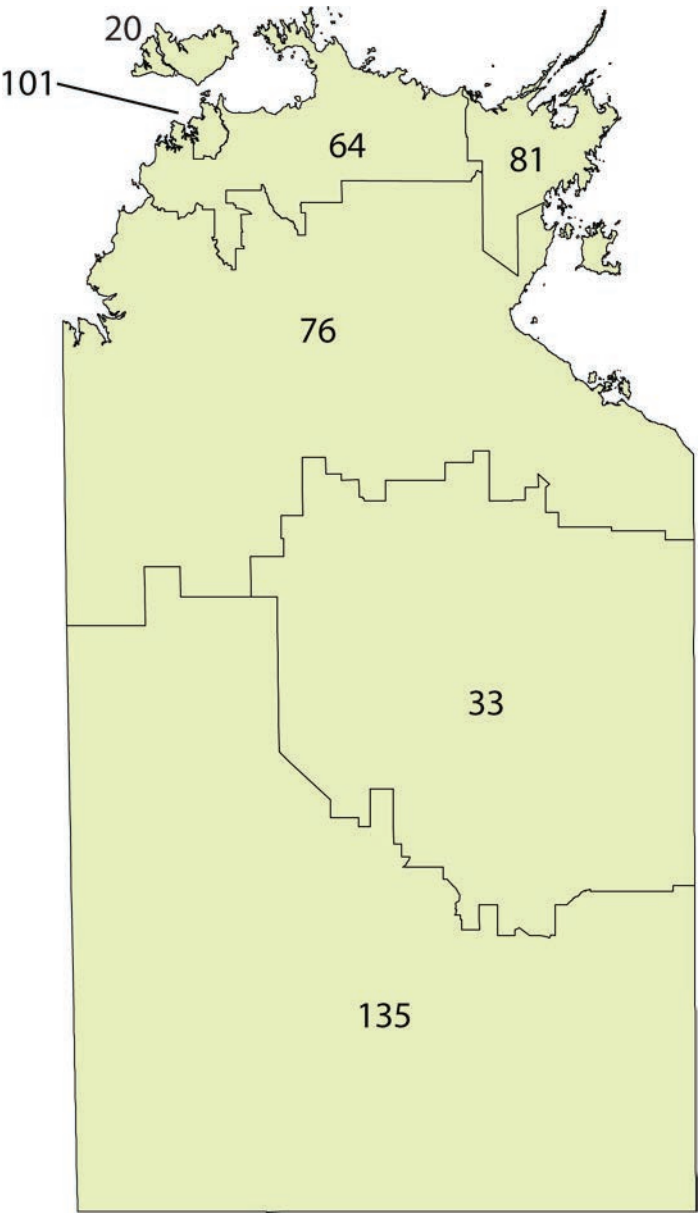
Map 19: NT 3

Estimated number of Indigenous people with **Diabetes** who require an annual eye examination
Total: 4,388



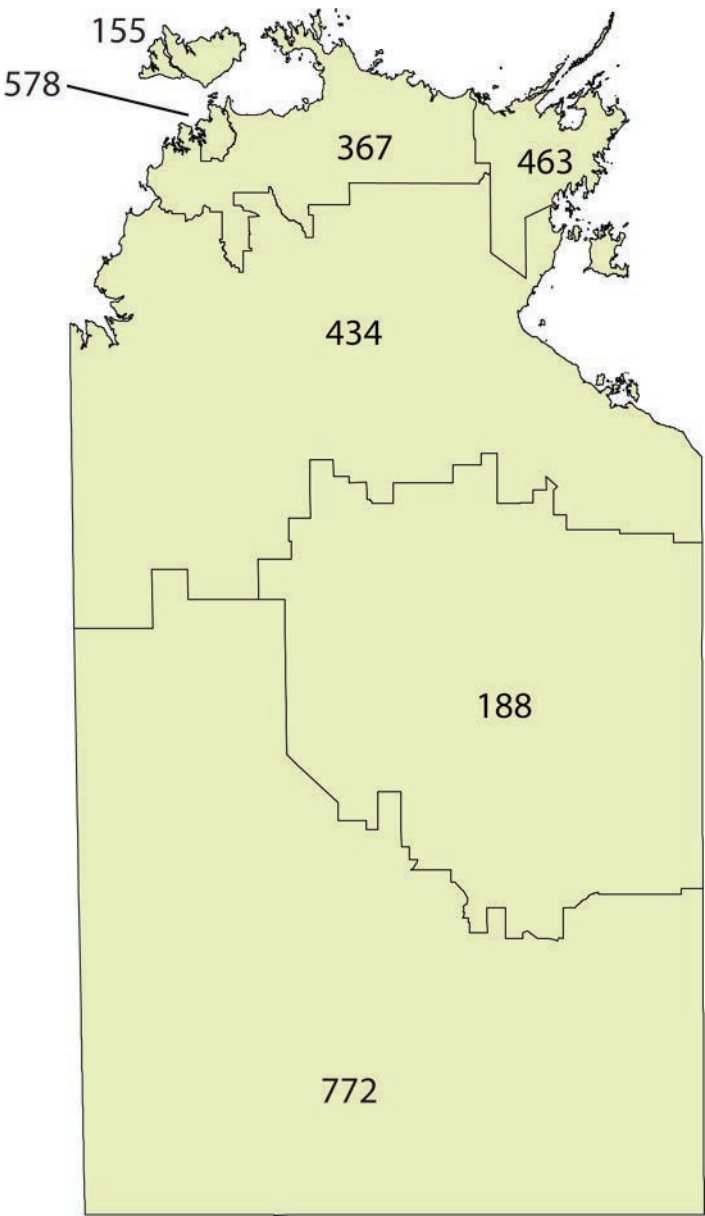
Map 20: NT 4

Estimated number of Indigenous people with Diabetes who require **Laser Surgery** each year
Total: 509



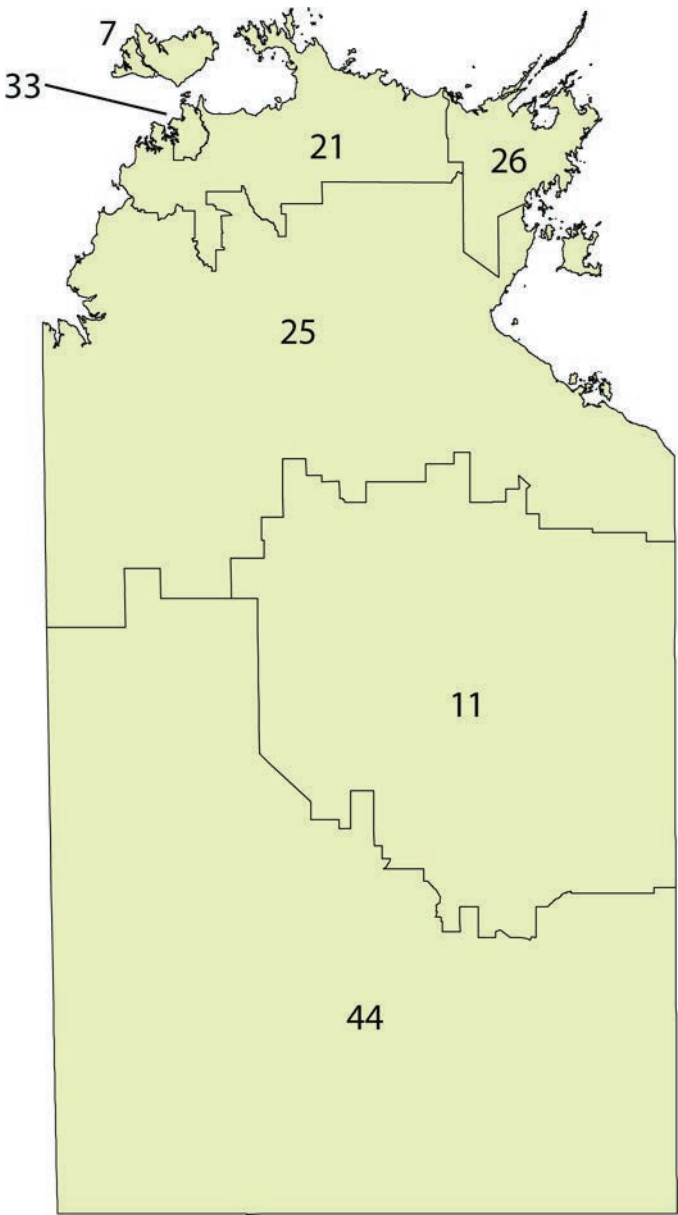
Map 21: NT 5

Estimated number of Indigenous people who require **Glasses** each year
Total: 2,914



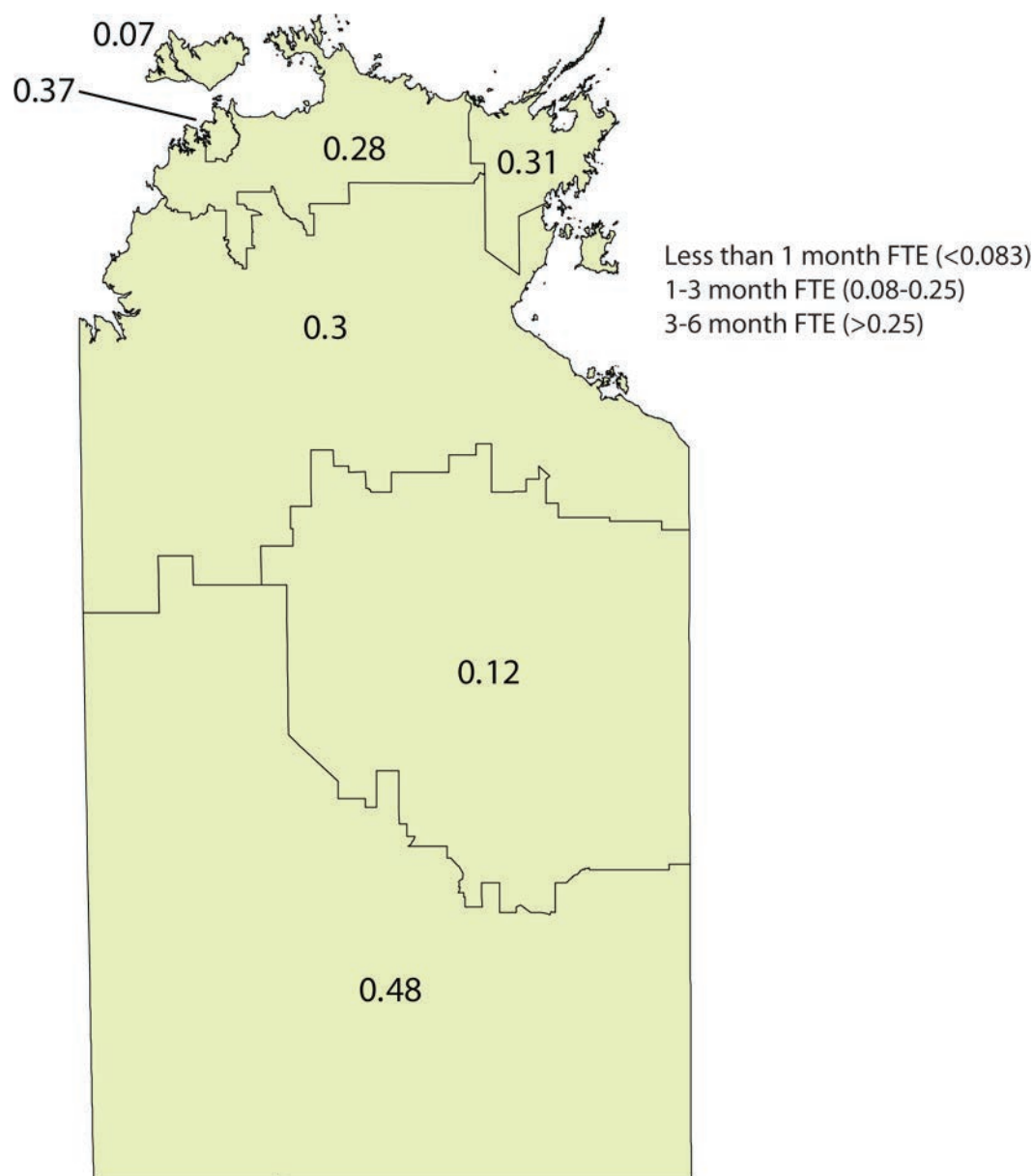
Map 22: NT 6

Estimated number of Indigenous people with **Inturned Eyelashes (Trichiasis)**
Total: 166



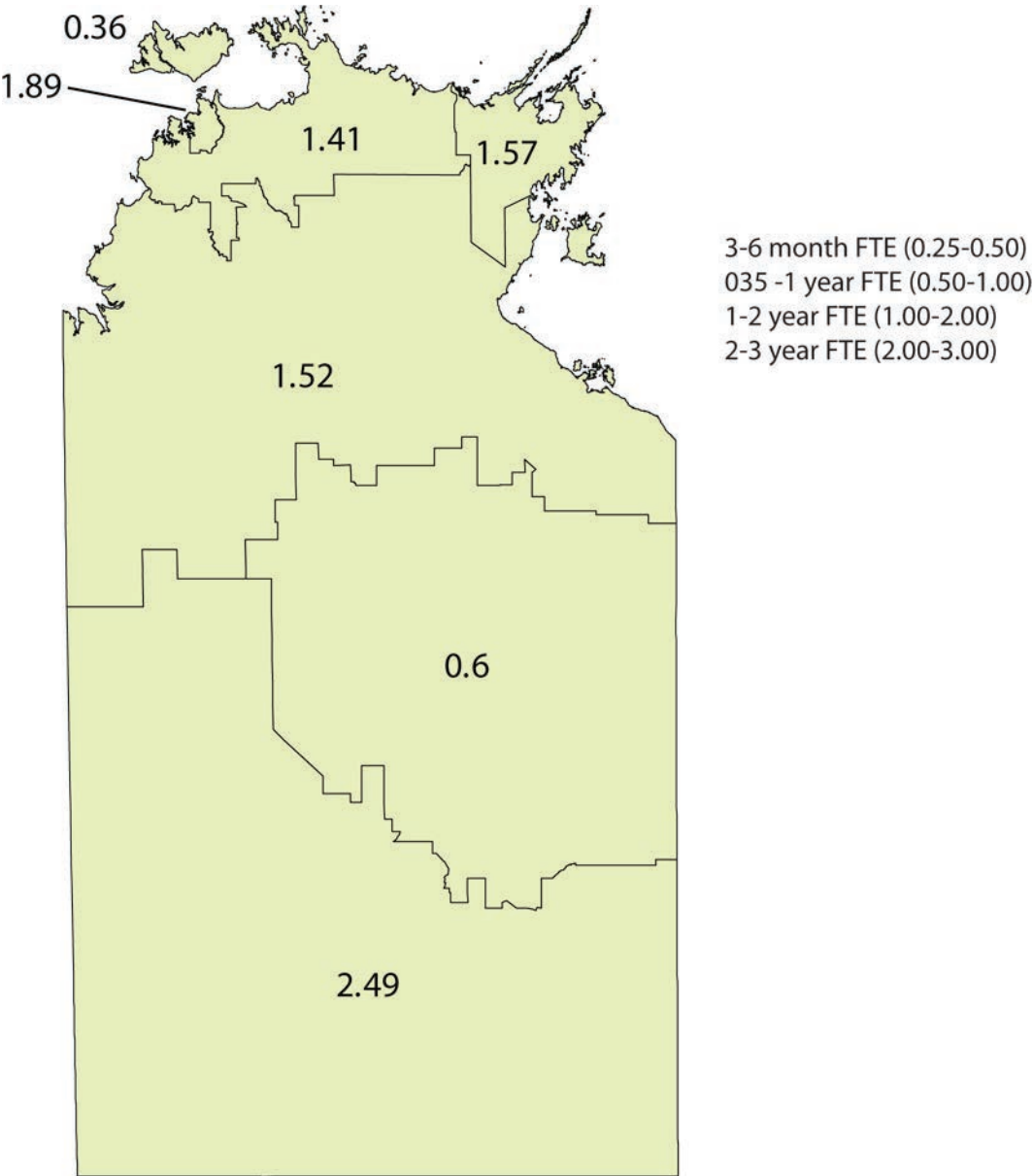
Map 23: NT 7

Number of full time equivalent **Ophthalmologists** required to service Indigenous population to reach National average (1: 28,000)
Total: 2



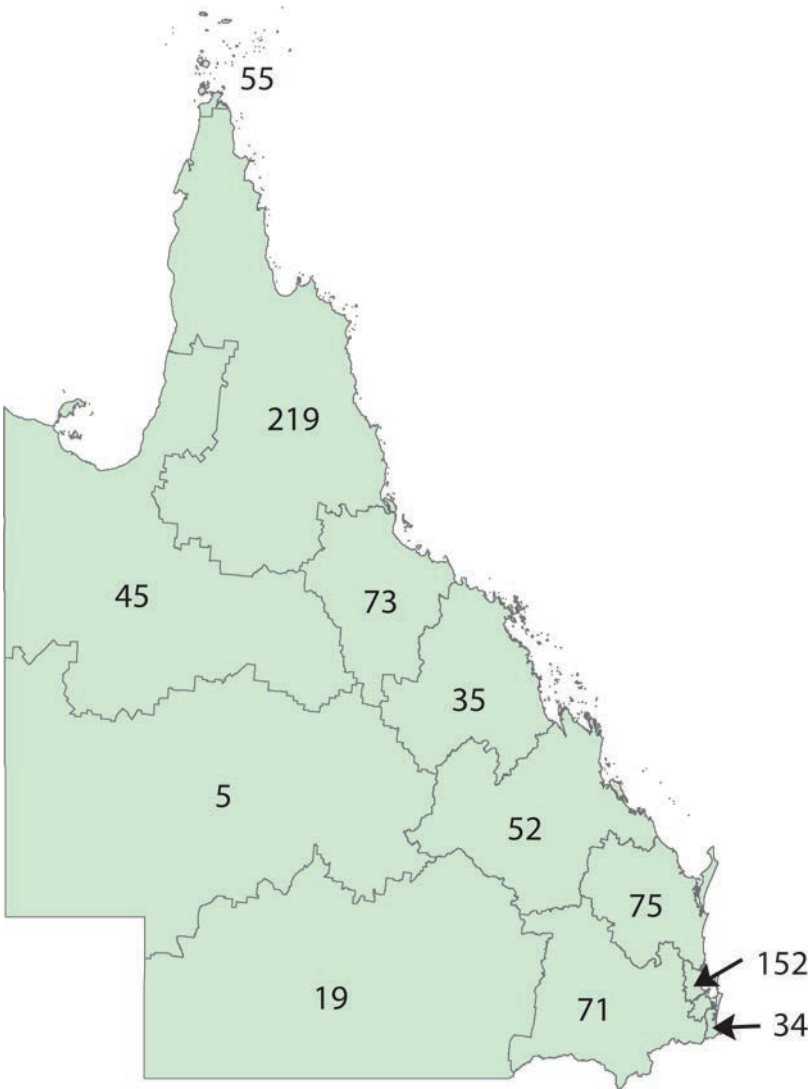
Map 24: NT 8

Number of full time equivalent **Optometrists** required to service Indigenous population to reach National average (1: 5,400)
Total: 10



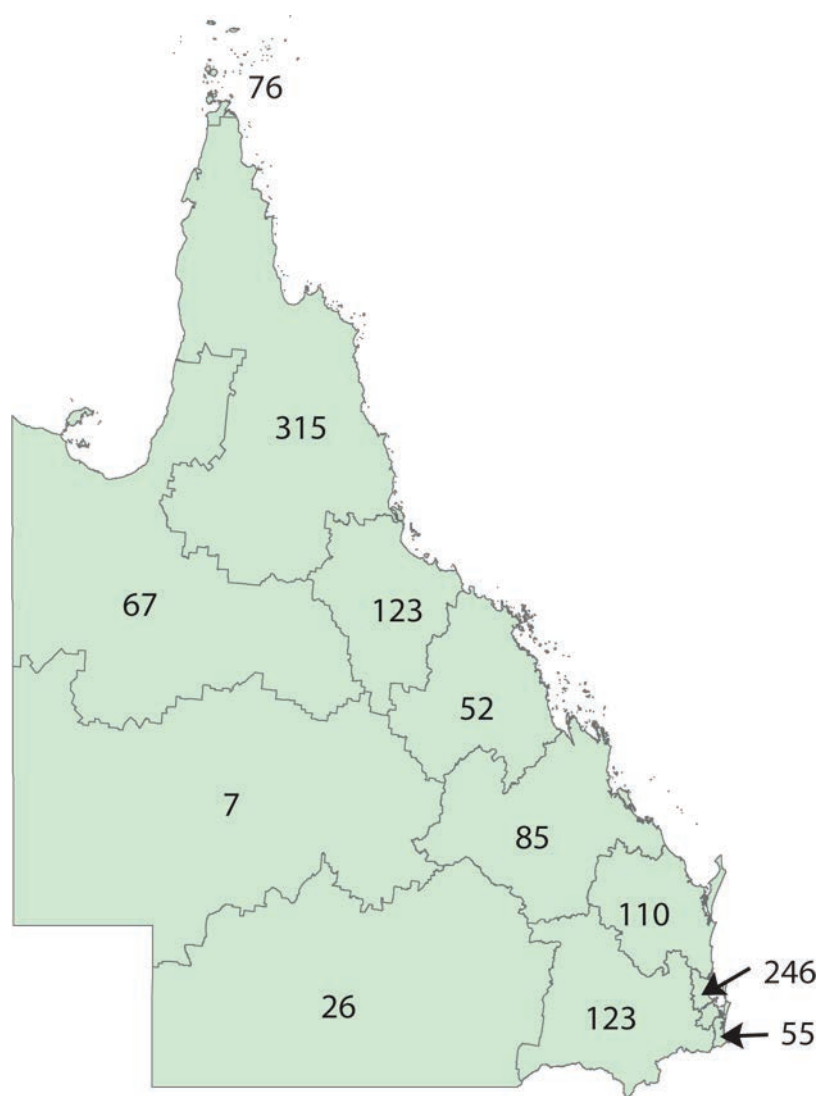
Map 25: QLD 1

Estimated number of Indigenous people who are **Blind**
Total: 835



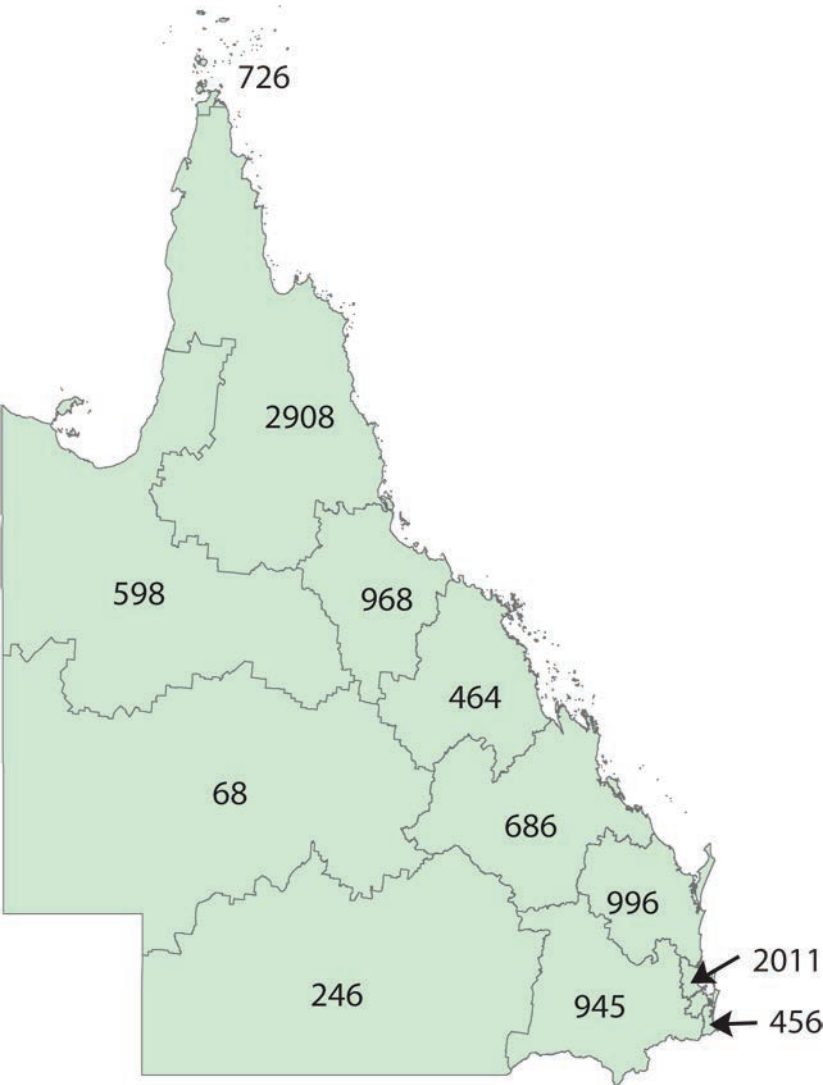
Map 26: QLD 2

Number of Indigenous people requiring **Cataract Surgery** each year to reach the National CSR (9,500)
Total: 1,283



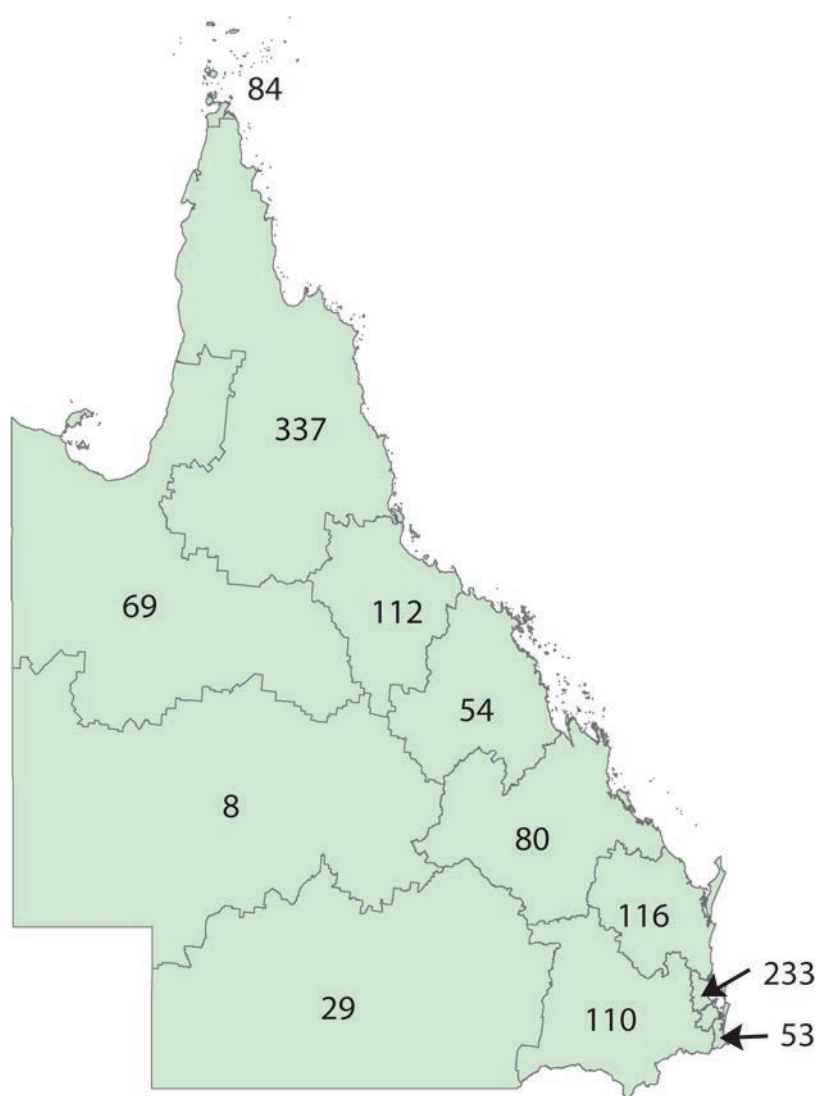
Map 27: QLD 3

Estimated number of Indigenous people with **Diabetes** who require an annual eye examination
Total: 11,072



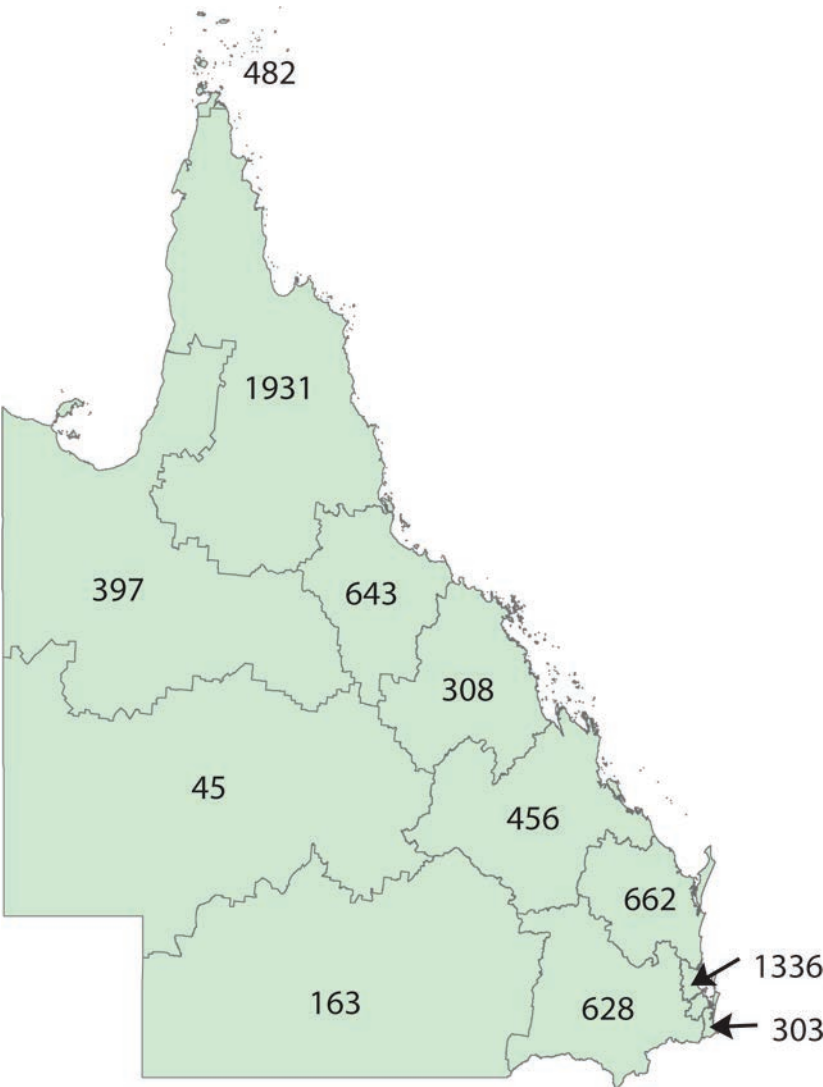
Map 28: QLD 4

Estimated number of Indigenous people with Diabetes who require **Laser Surgery** each year
Total: 1,284



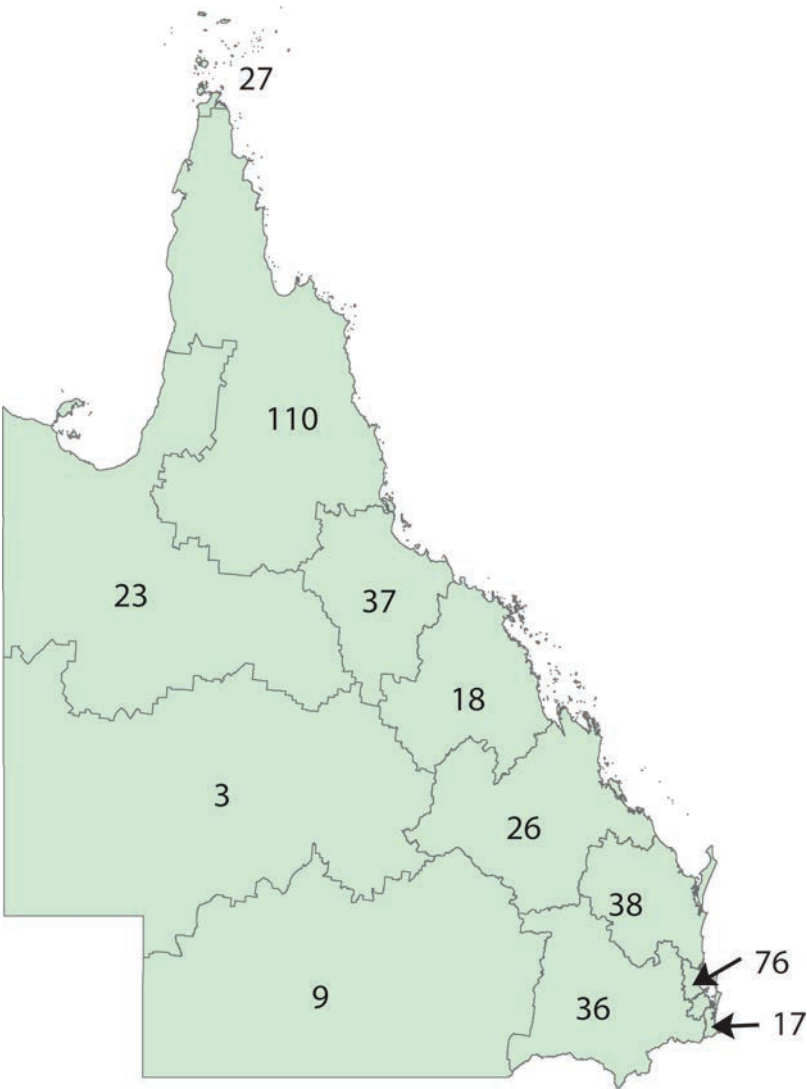
Map 29: QLD 5

Estimated number of Indigenous people who require **Glasses** each year
Total: 7,354



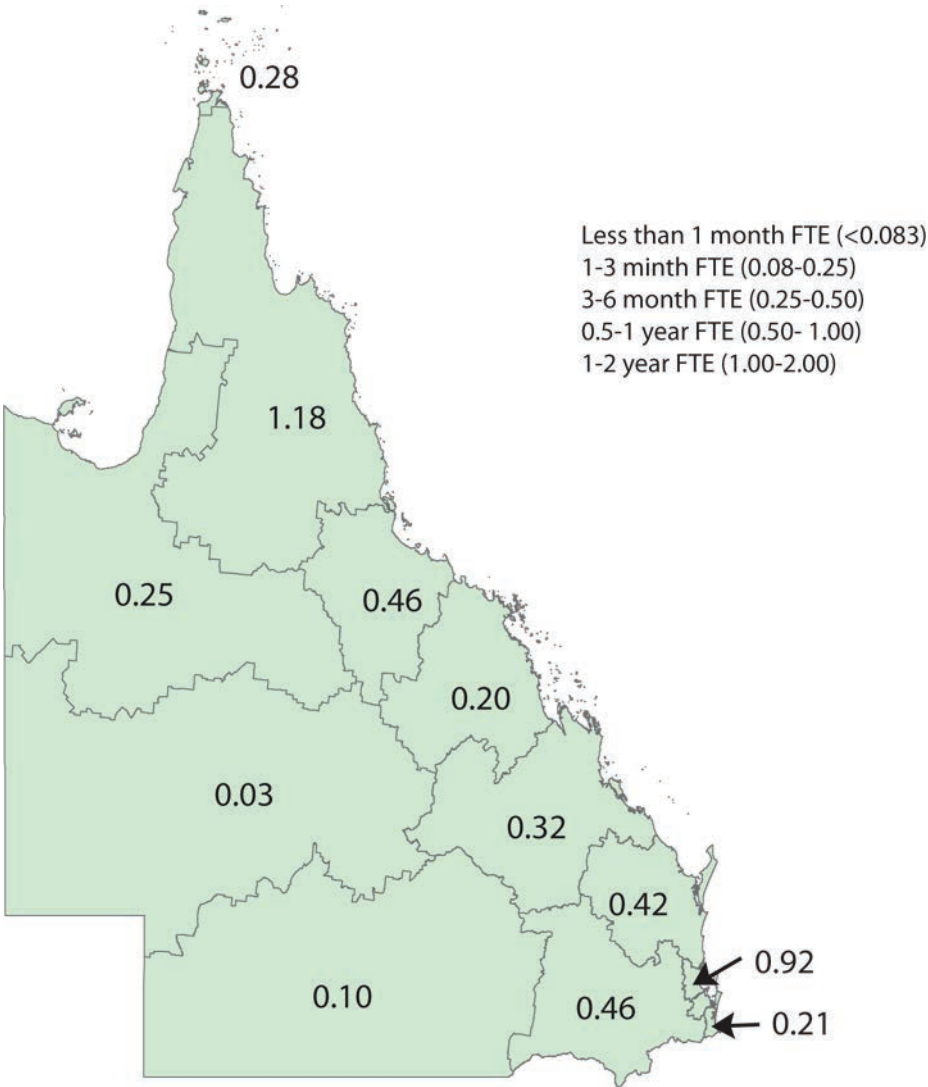
Map 30: QLD 6

Estimated number of Indigenous people with **Inturned Eyelashes (Trichiasis)**
Total: 419



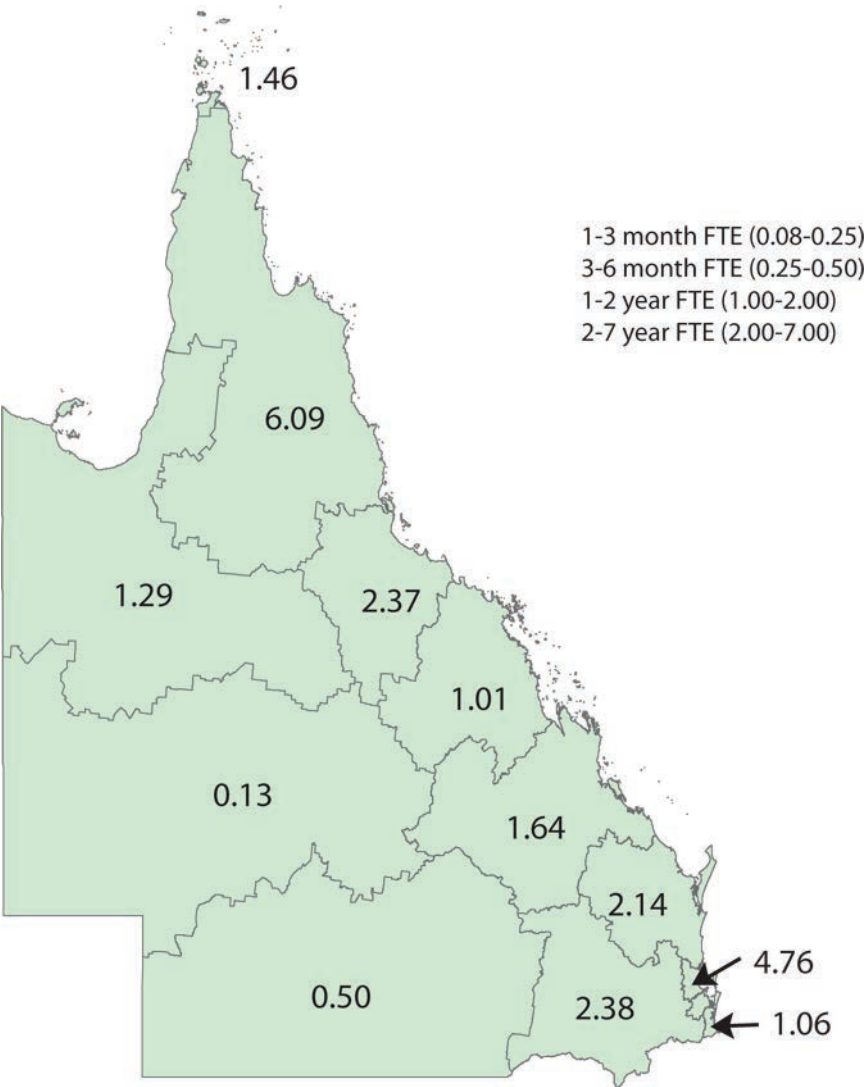
Map 31: QLD 7

Number of full time equivalent **Ophthalmologists** required to service Indigenous population to reach National average (1: 28,000)
Total: 4.82



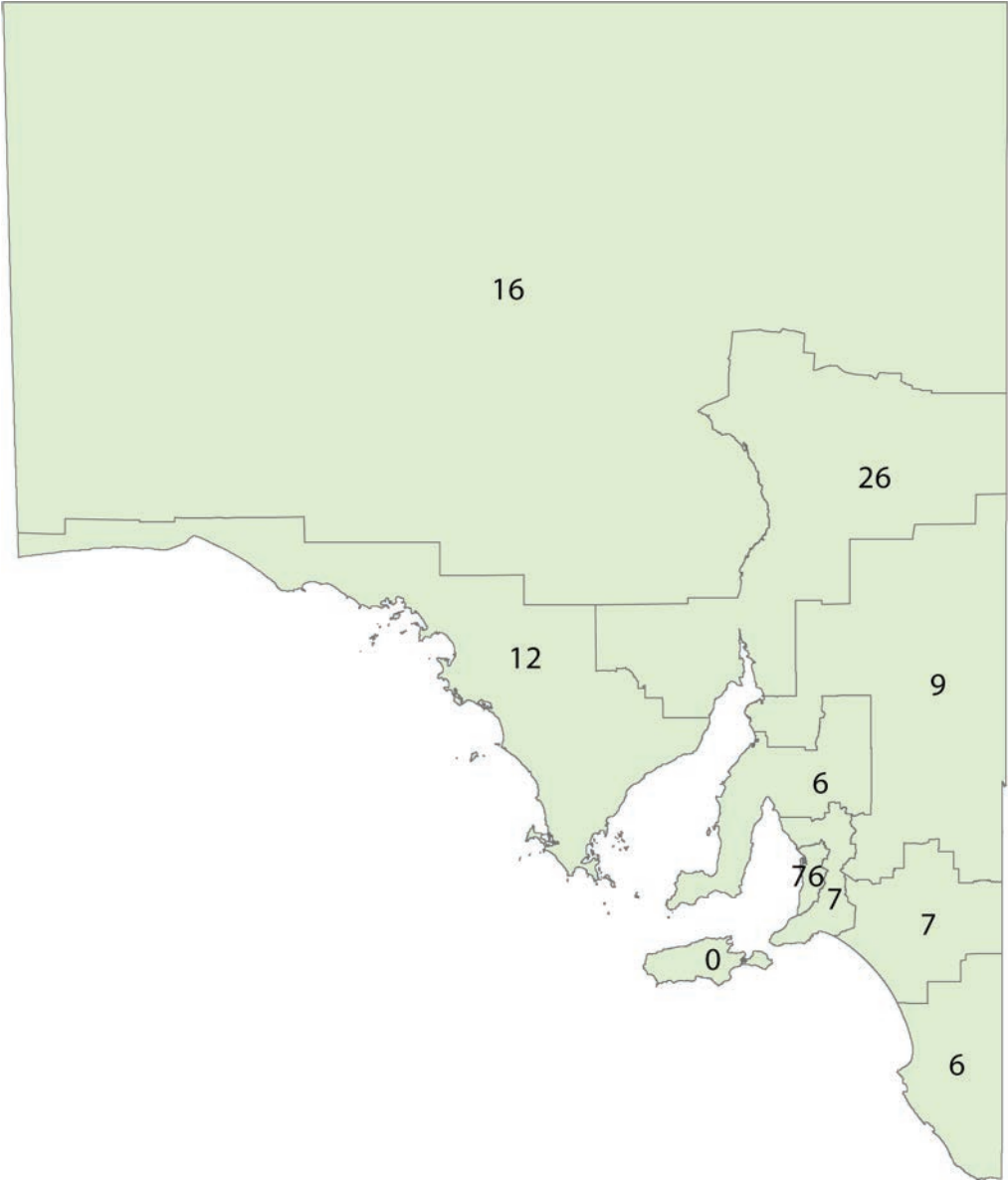
Map 32: QLD 8

Number of full time equivalent **Optometrists** required to service Indigenous population to reach National average (1: 5,400)
Total: 24.84



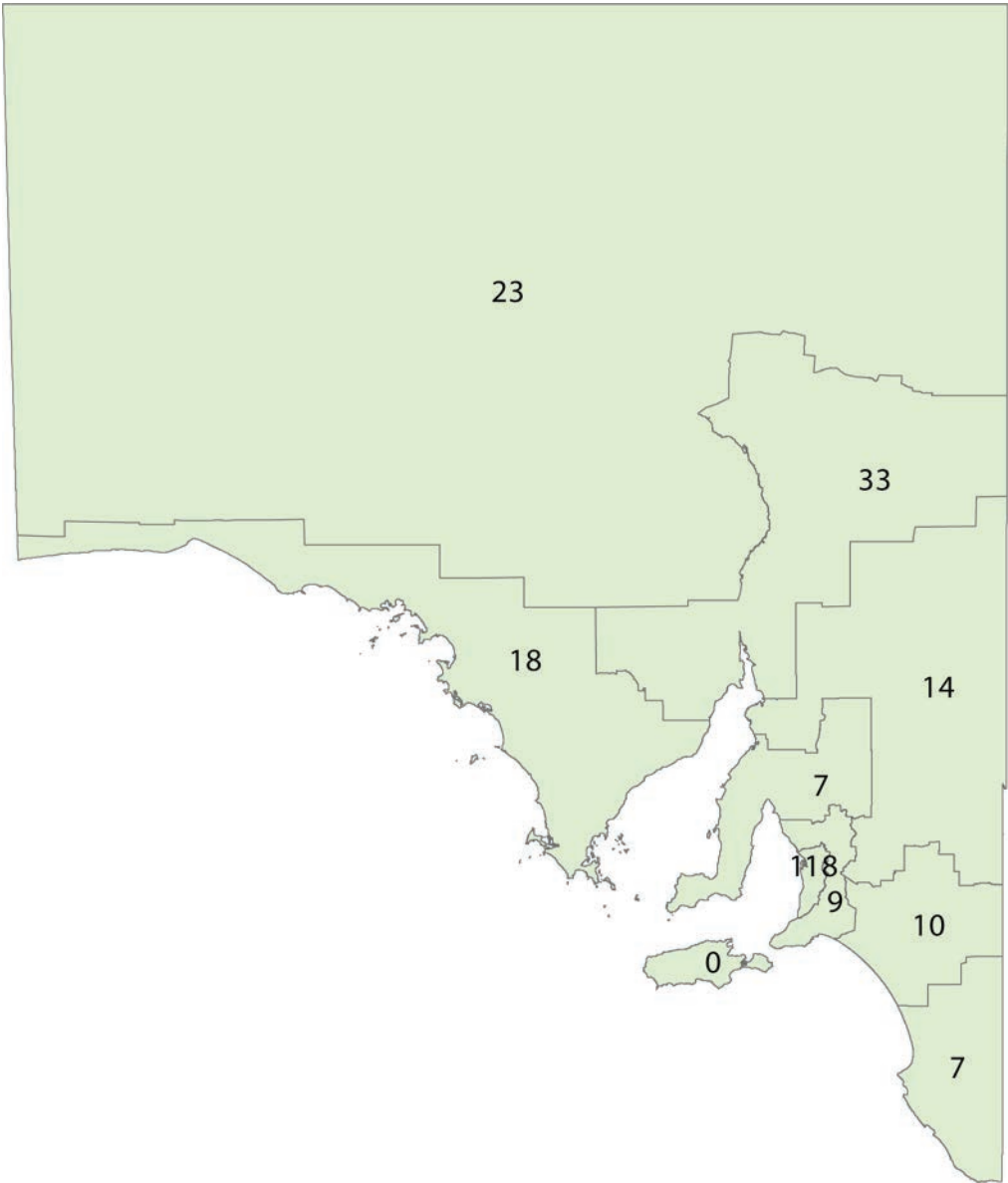
Map 33: SA 1

Estimated number of Indigenous people who are **Blind**
Total: 165



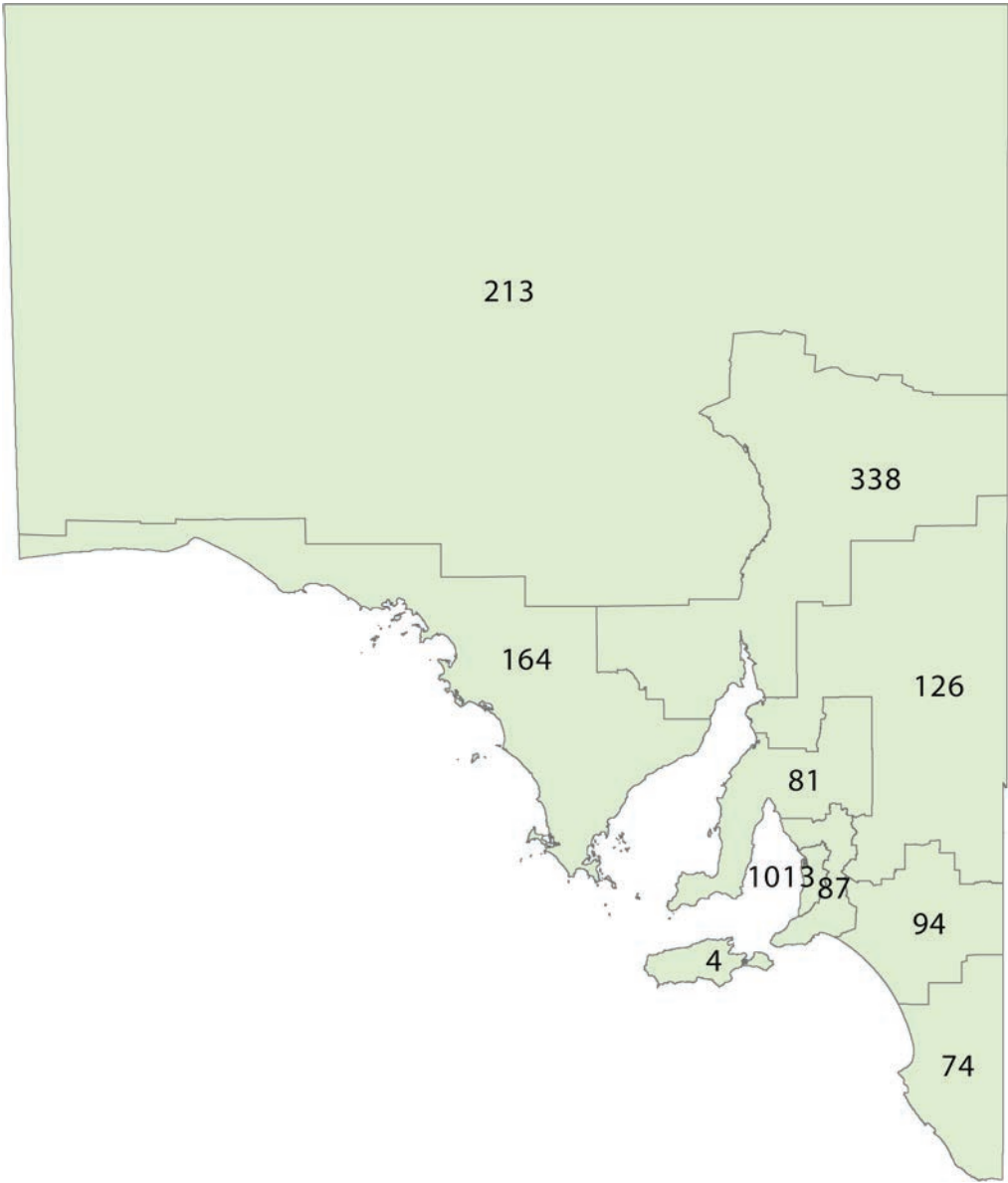
Map 34: SA 2

Number of Indigenous people requiring **Cataract Surgery** each year to reach the National CSR (9,500)
Total: 242



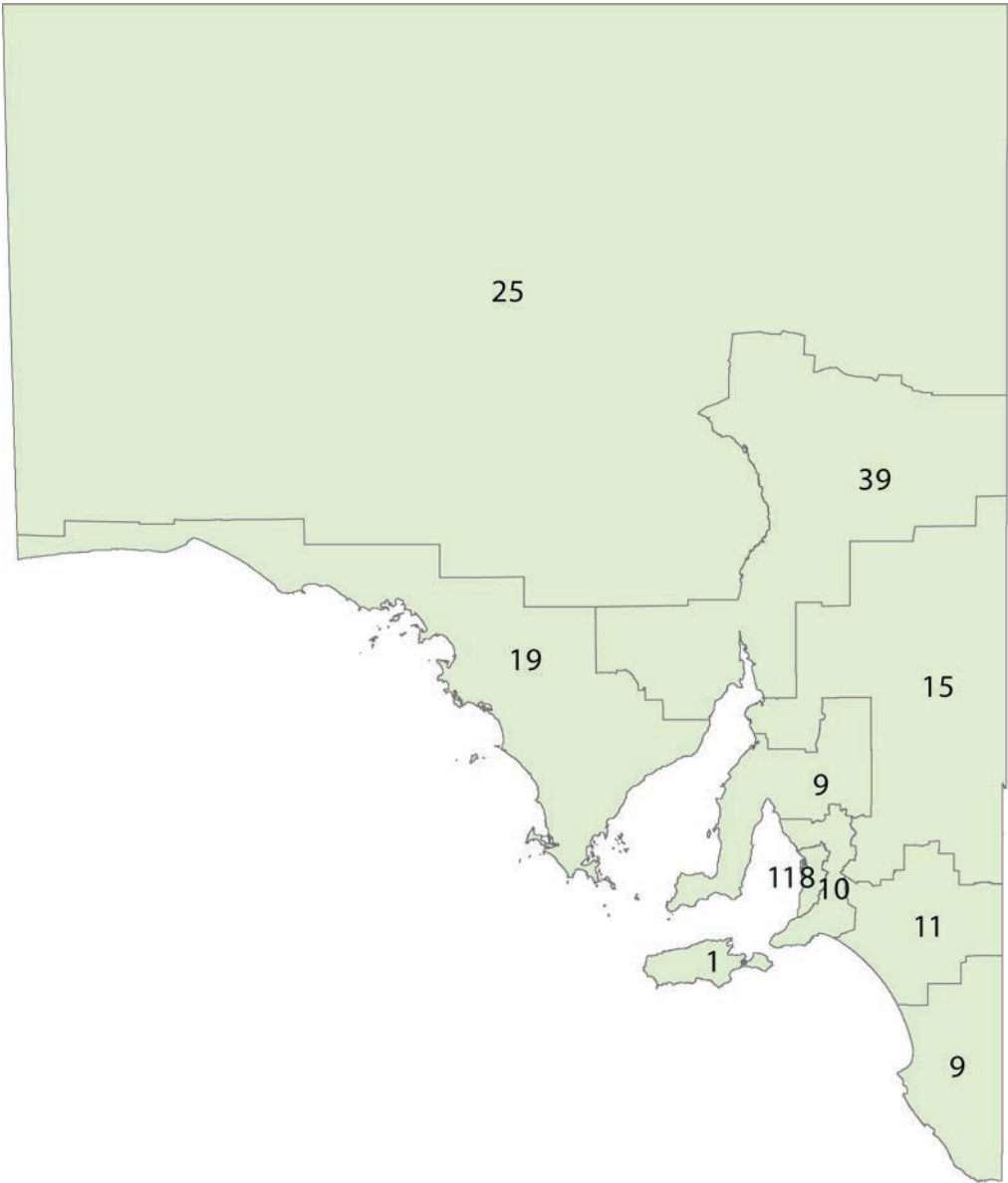
Map 35: SA 3

Estimated number of Indigenous people with **Diabetes** who require an annual eye examination
Total: 2,149



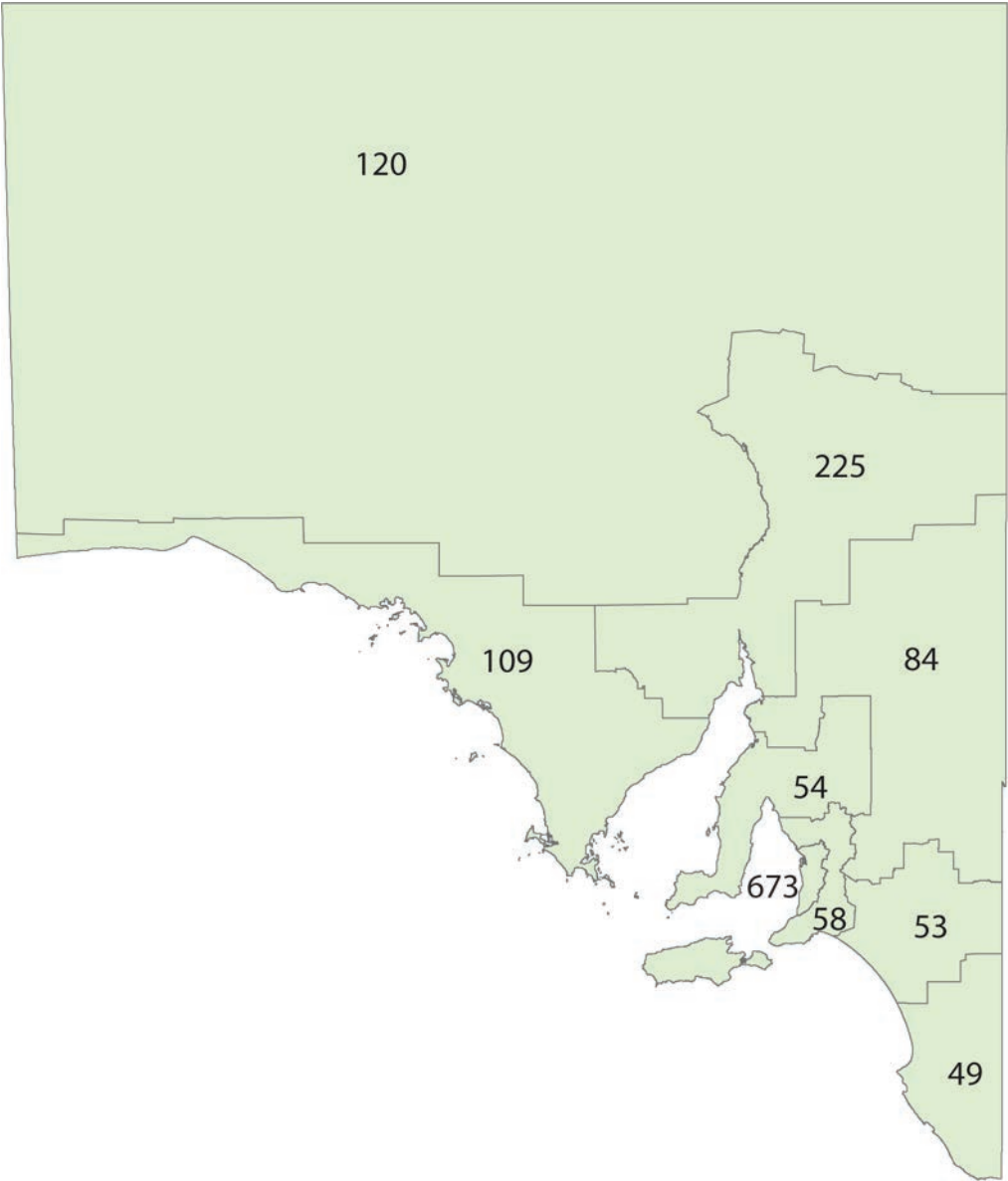
Map 36: SA 4

Estimated number of Indigenous people with Diabetes who require **Laser Surgery** each year
Total: 120



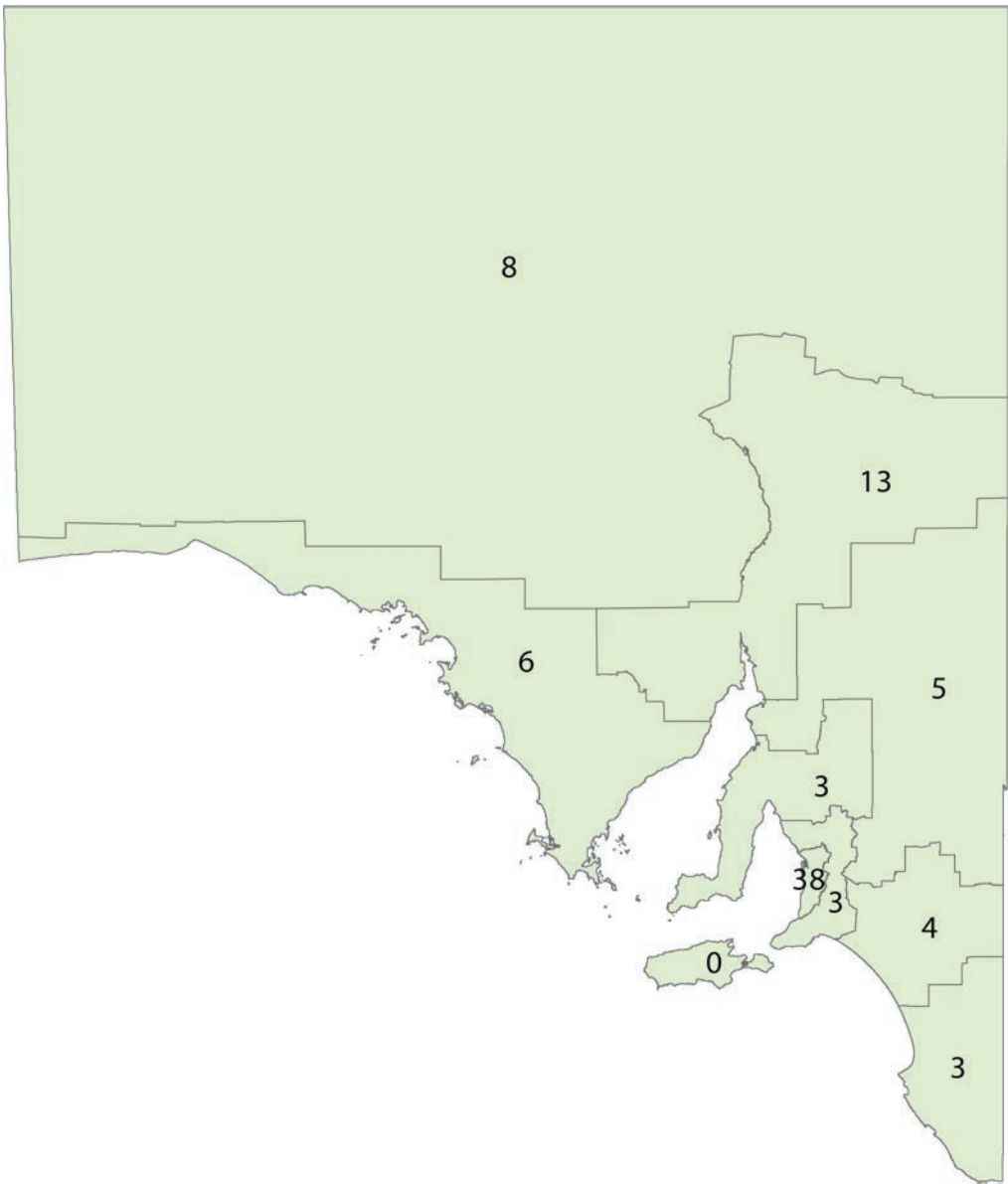
Map 37: SA 5

Estimated number of Indigenous people who require **Glasses** each year
Total: 1,426



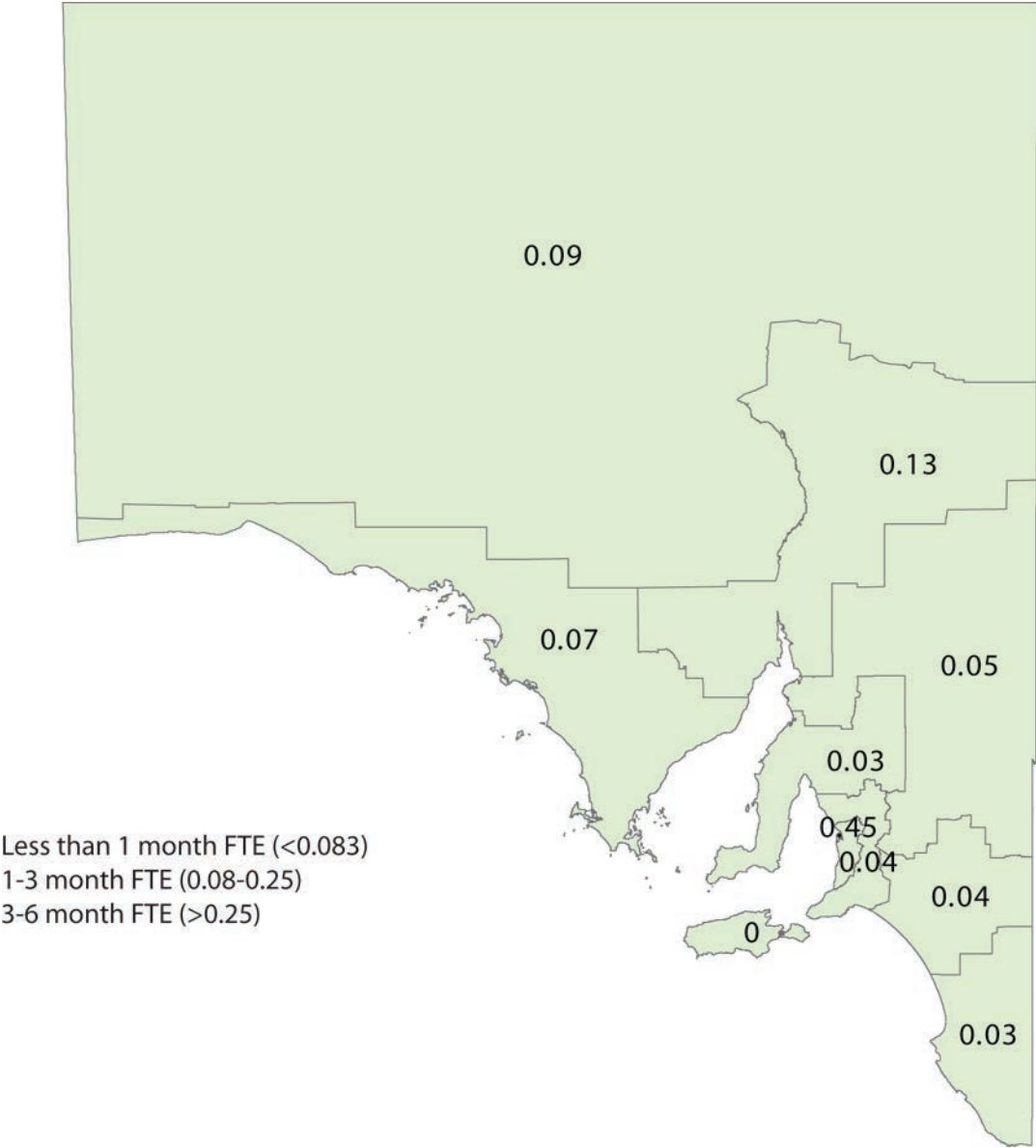
Map 38: SA 6

Estimated number of Indigenous people with **Inturned Eyelashes (Trichiasis)**
Total: 83



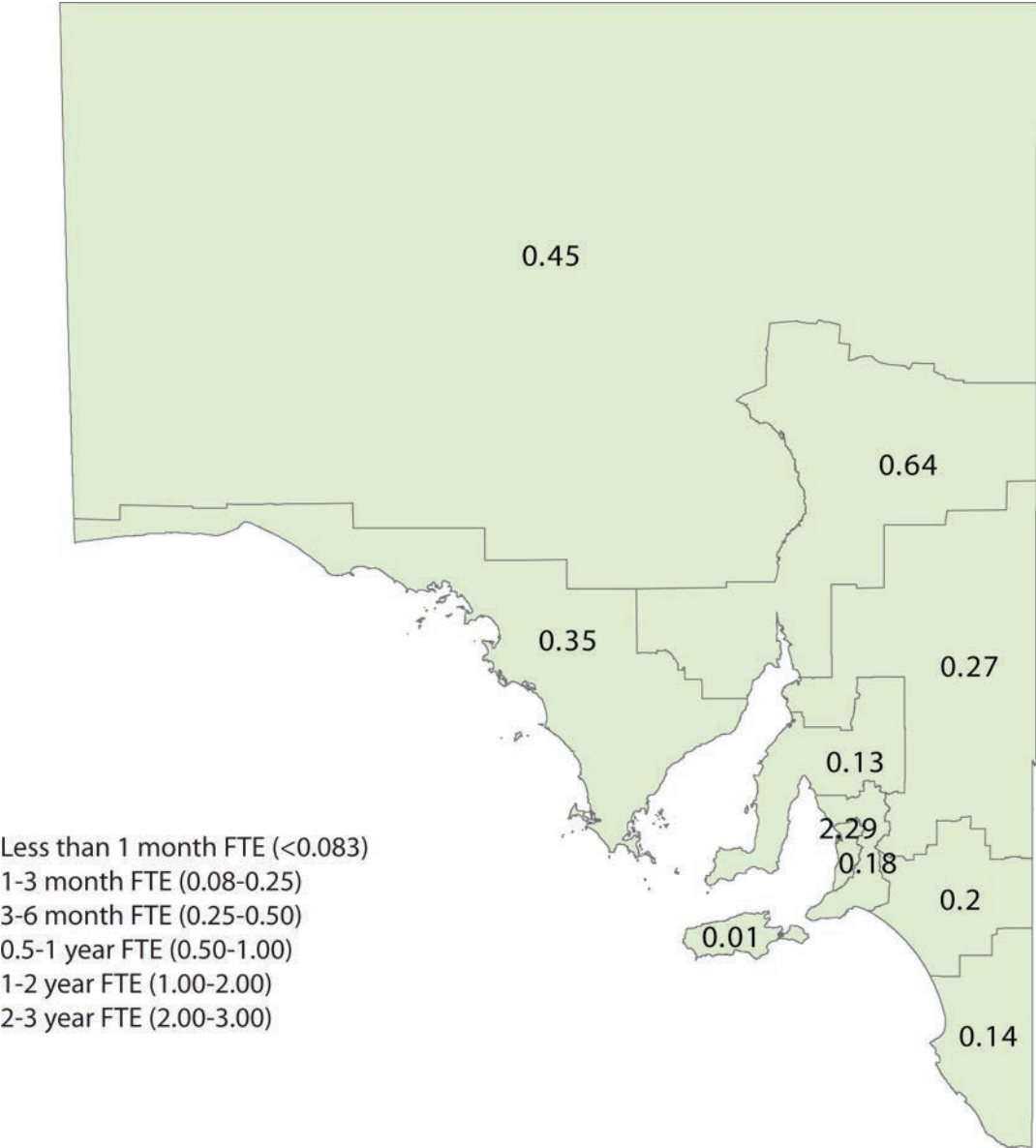
Map 39: SA 7

Number of full time equivalent **Ophthalmologists** required to service Indigenous population to reach National average (1: 28,000)
Total: 1



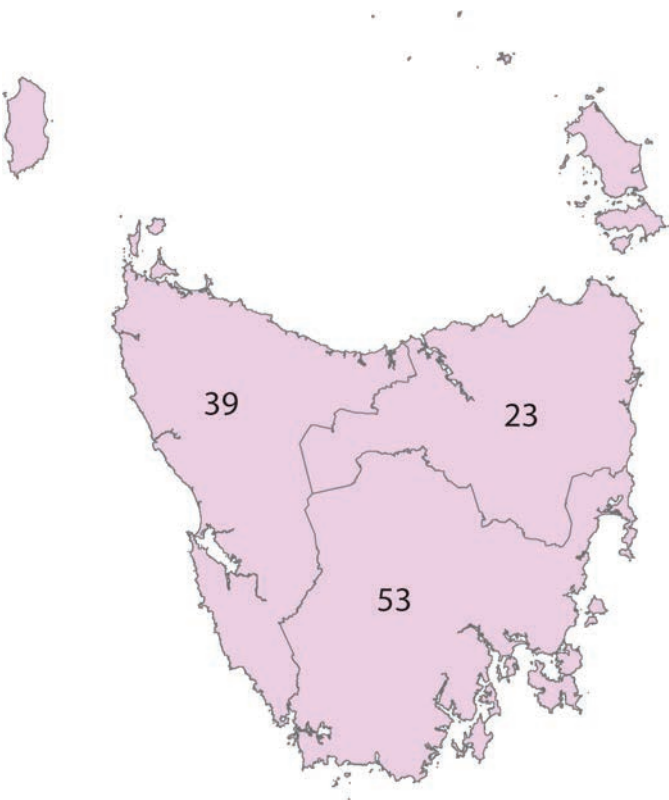
Map 40: SA 8

Number of full time equivalent **Optometrists** required to service Indigenous population to reach National average (1: 5,400)
Total: 5



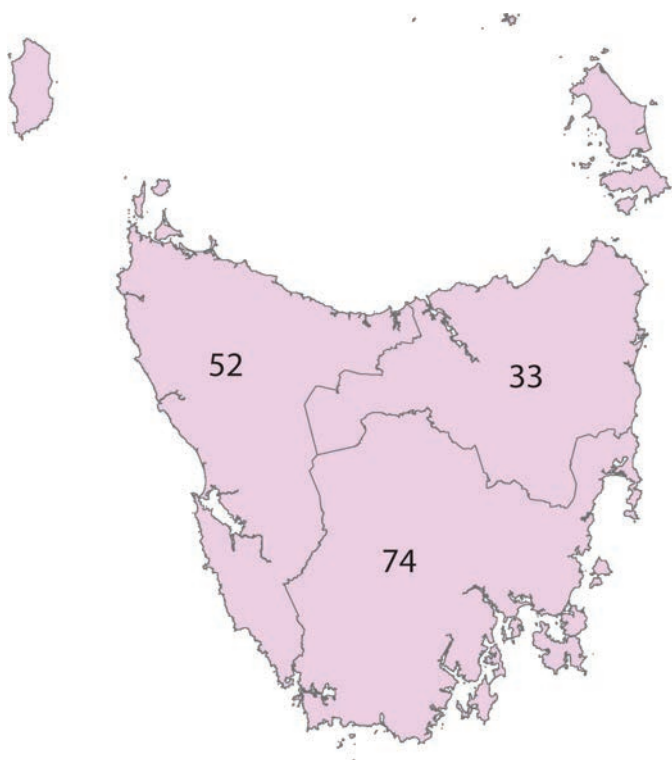
Map 41: TAS 1

Estimated number of Indigenous people who are **Blind**
Total: 115



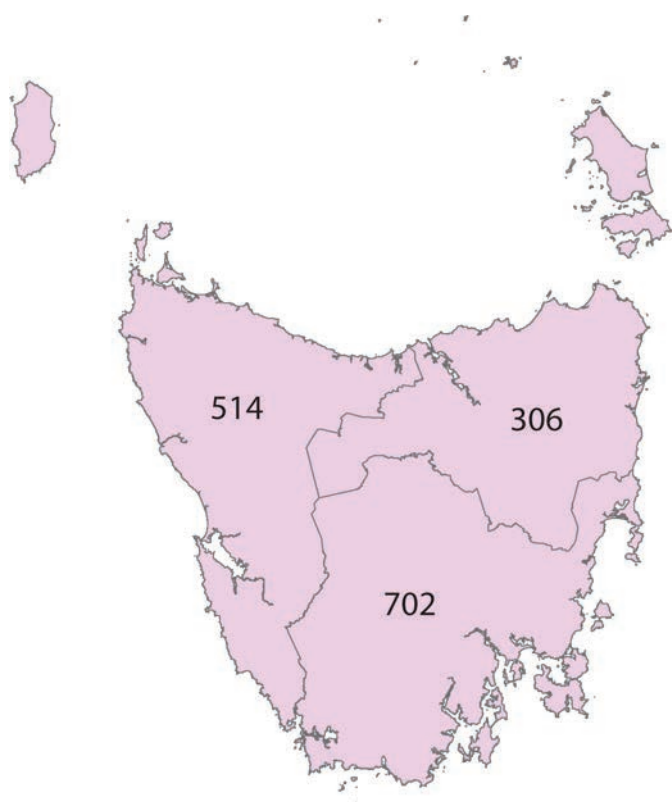
Map 42: TAS 2

Number of Indigenous people requiring **Cataract Surgery** each year to reach the National CSR (9,500)
Total: 159



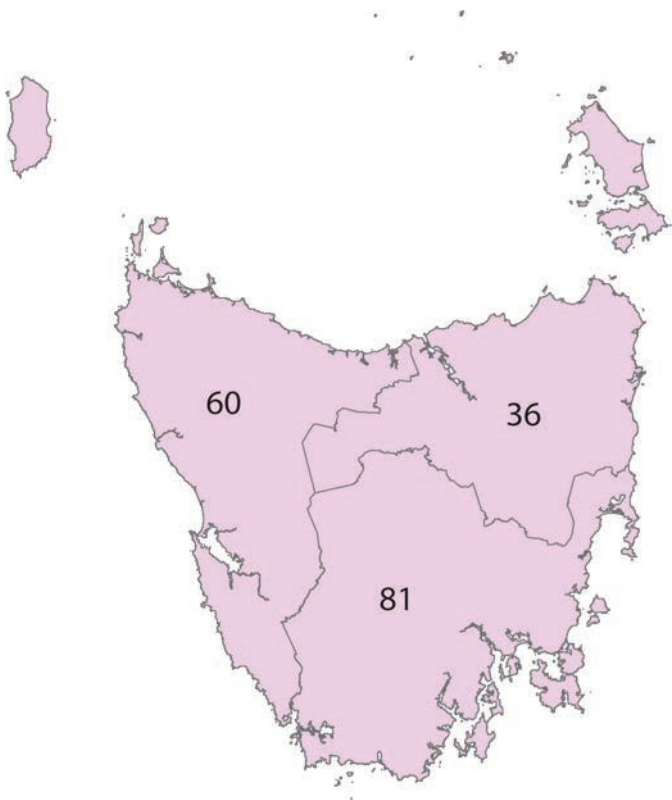
Map 43: TAS 3

Estimated number of Indigenous people with **Diabetes** who require an annual eye examination
Total: 1,522



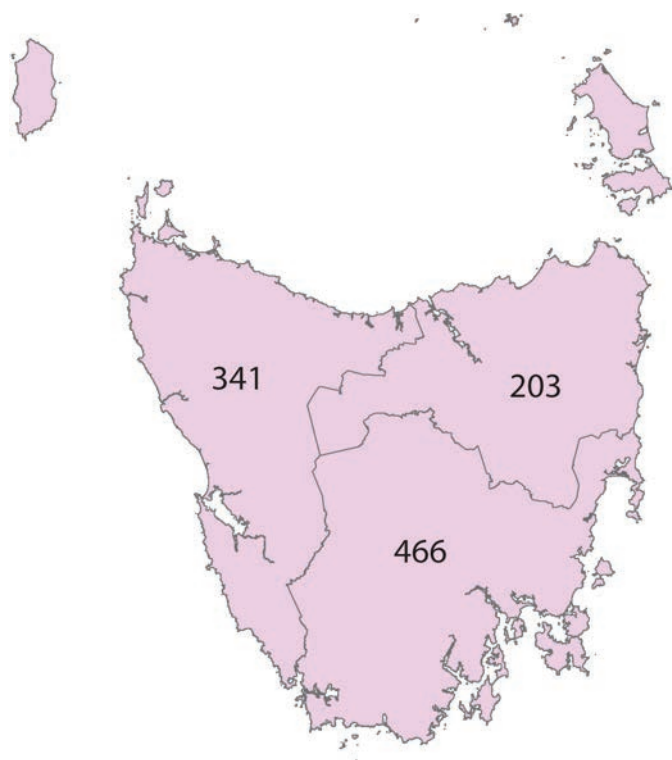
Map 44: TAS 4

Estimated number of Indigenous people with Diabetes who require **Laser Surgery** each year
Total: 177



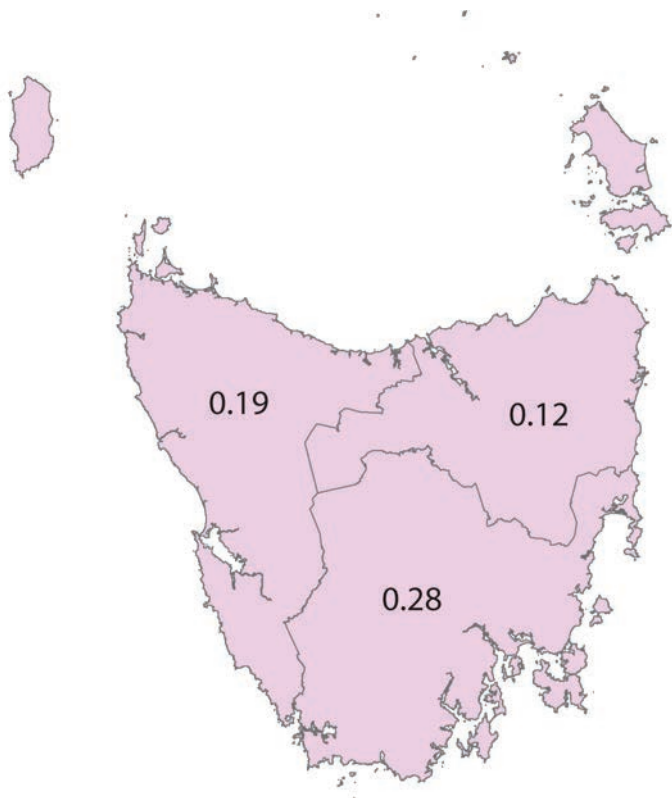
Map 45: TAS 5

Estimated number of Indigenous people who require **Glasses** each year
Total: 1,011



Map 46: TAS 6

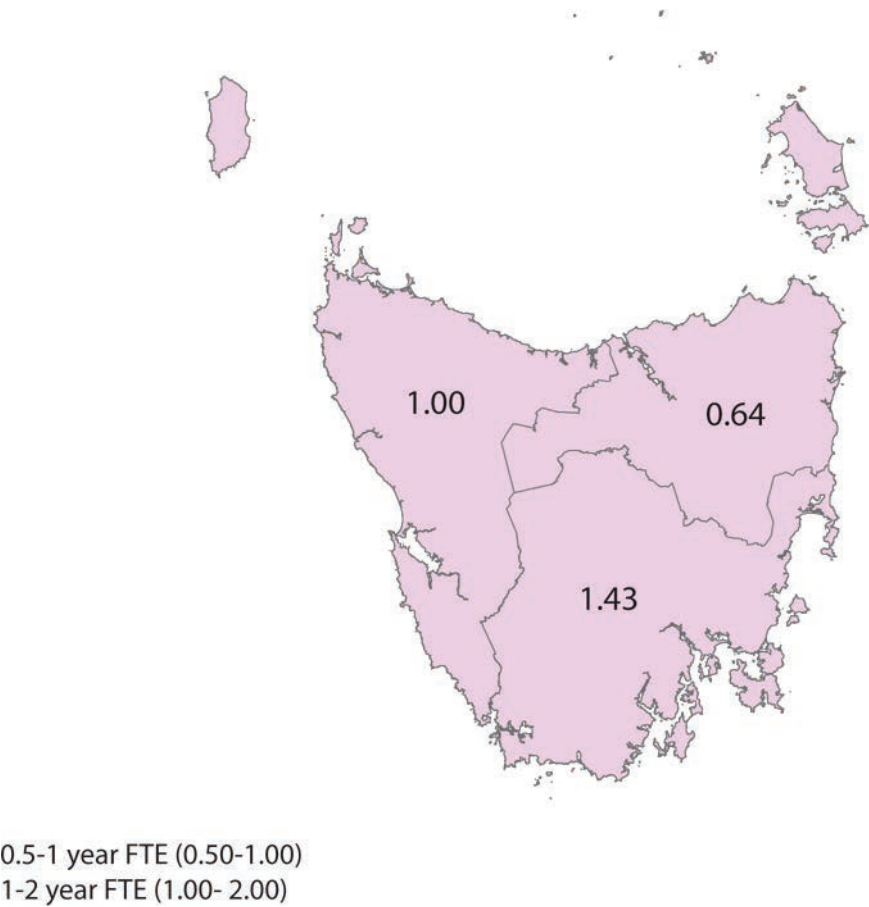
Number of full time equivalent **Ophthalmologists** required to service Indigenous population to reach National average (1: 28,000)
Total: 0.60



1-2 month FTE (0.08-0.25)
3-6 month FTE (>0.25)

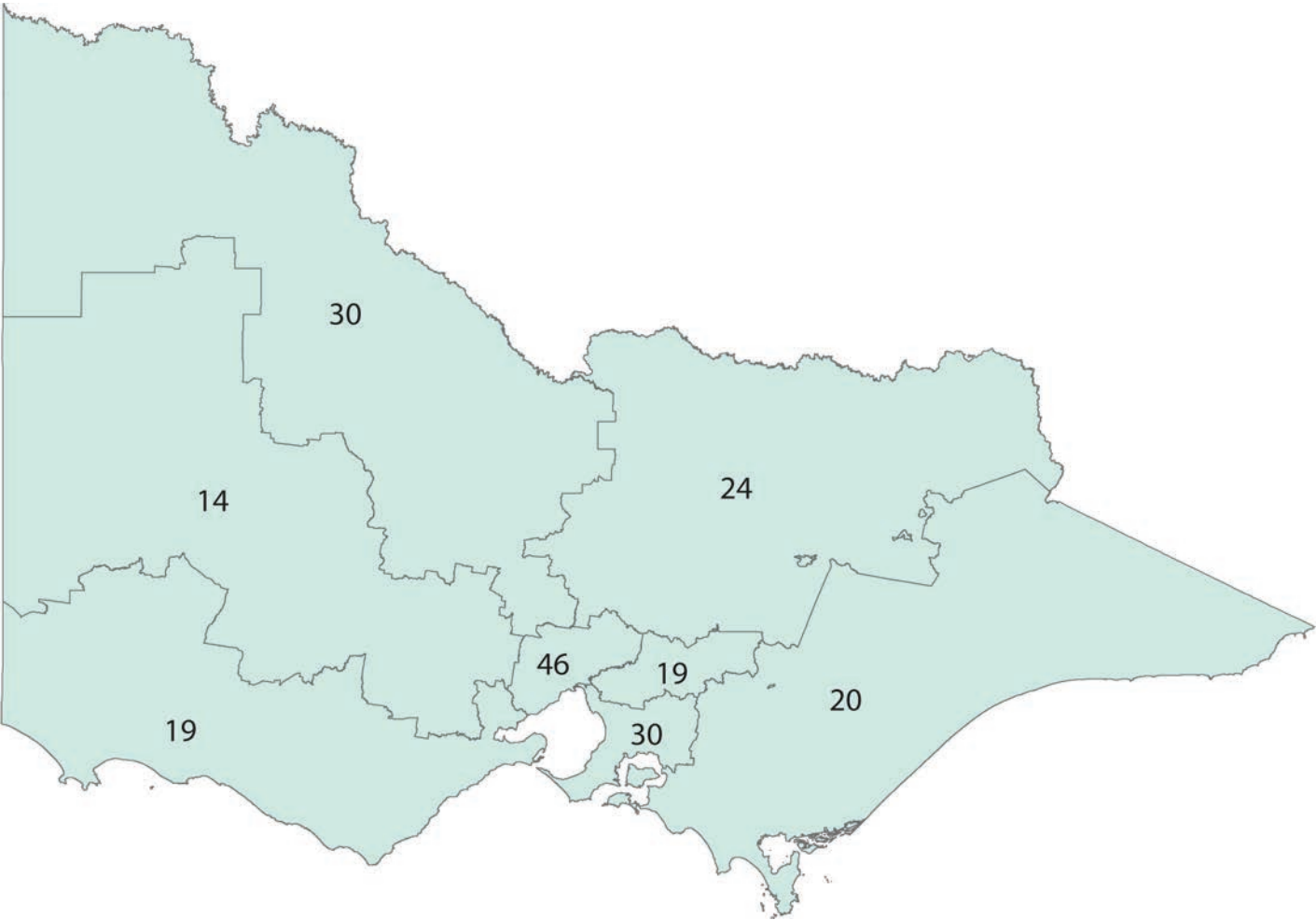
Map 47: TAS 7

Number of full time equivalent **Optometrists** required to service Indigenous population to reach National average (1: 5,400)
Total: 3.08



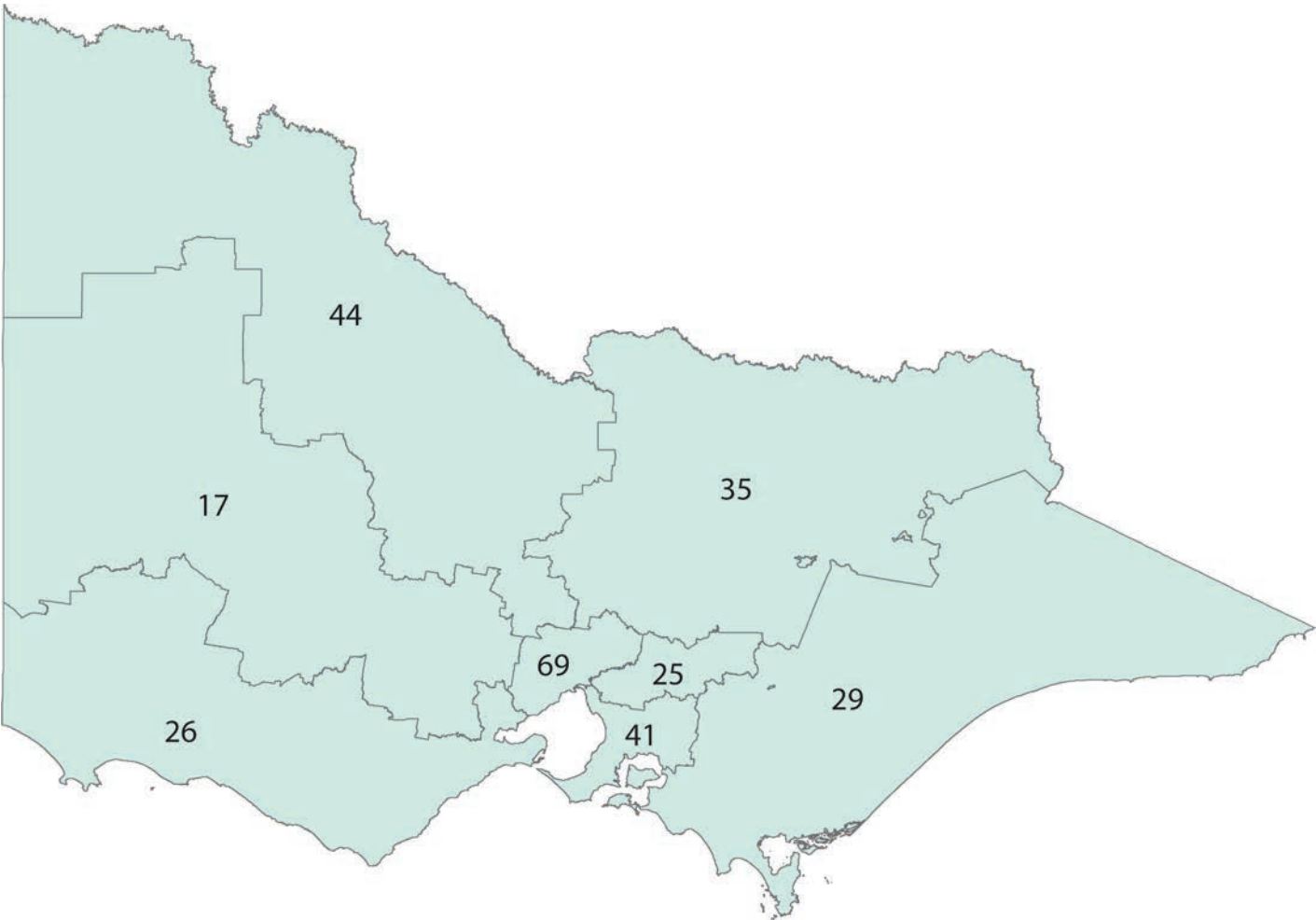
Map 48: VIC 1

Estimated number of Indigenous people who are **Blind**
Total: 203



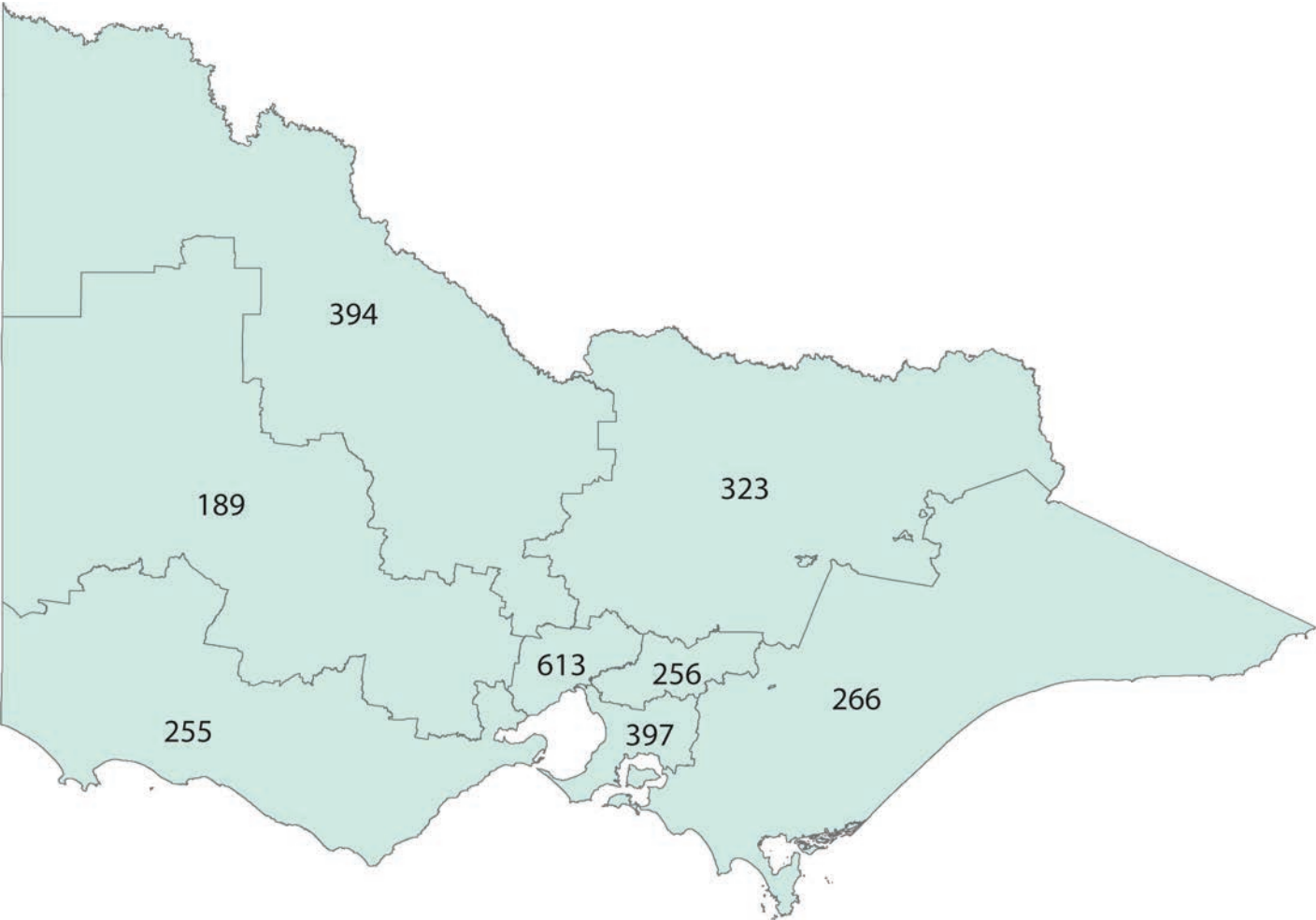
Map 49: VIC 2

Number of Indigenous people requiring **Cataract Surgery** each year to reach the National CSR (9,500)
Total: 285



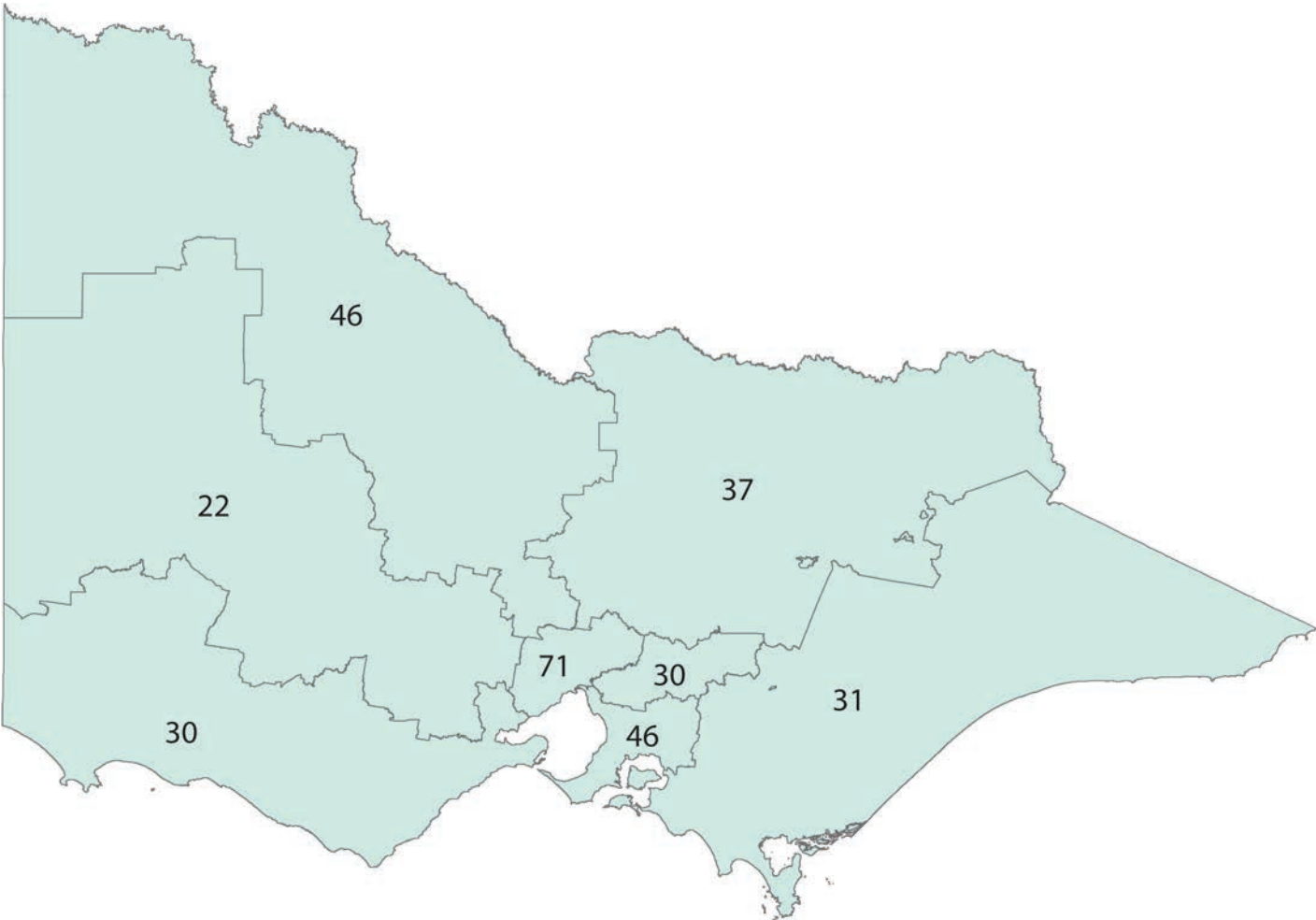
Map 50: VIC 3

Estimated number of Indigenous people with **Diabetes** who require an annual eye examination
Total: 2,694



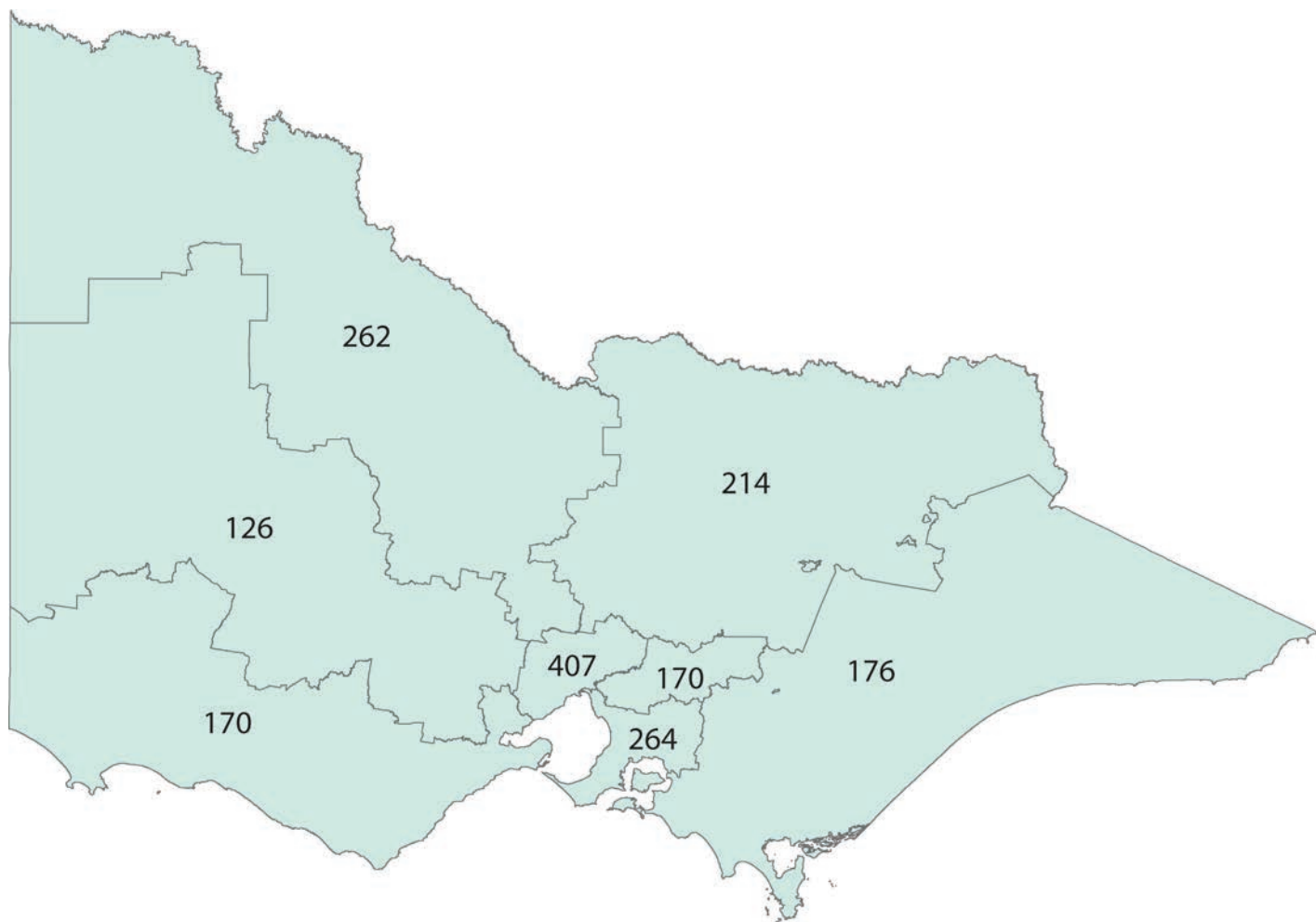
Map 51: VIC 4

Estimated number of Indigenous people with Diabetes who require **Laser Surgery** each year
Total: 312



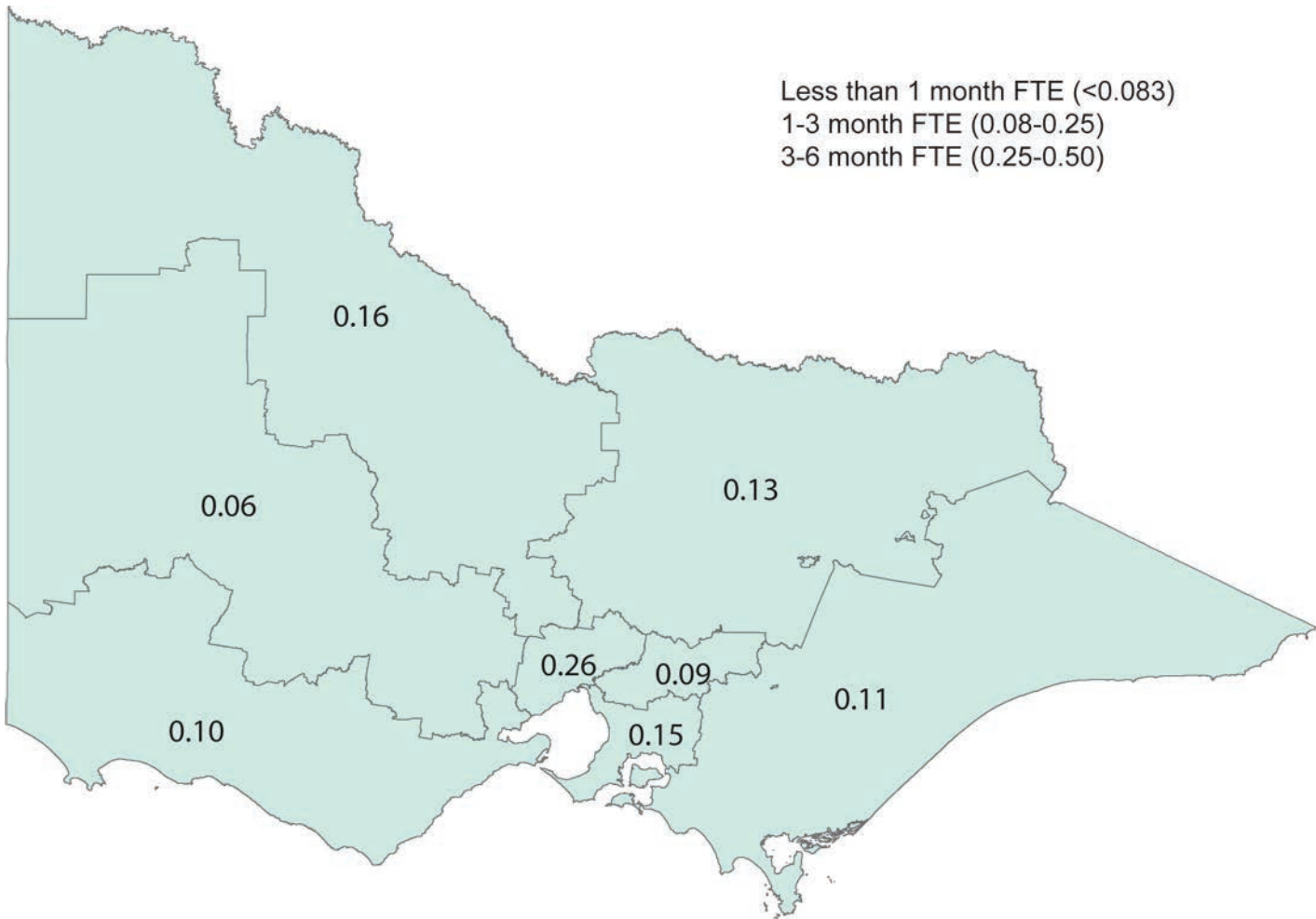
Map 52: VIC 5

Estimated number of Indigenous people who require **Glasses** each year
Total: 1,789



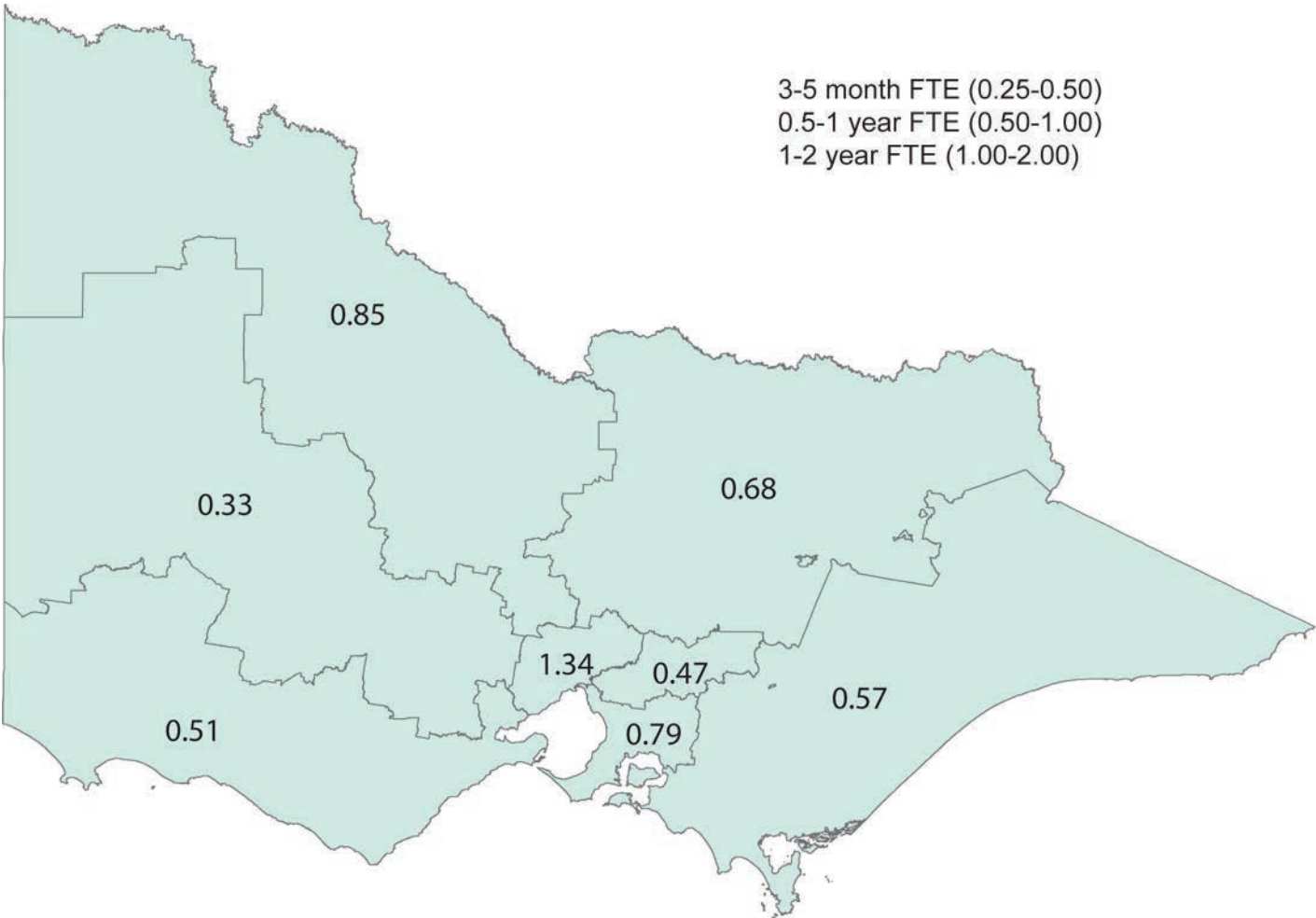
Map 53: VIC 6

Number of full time equivalent **Ophthalmologists** required to service Indigenous population to reach National average (1: 28,000)
Total: 1.07



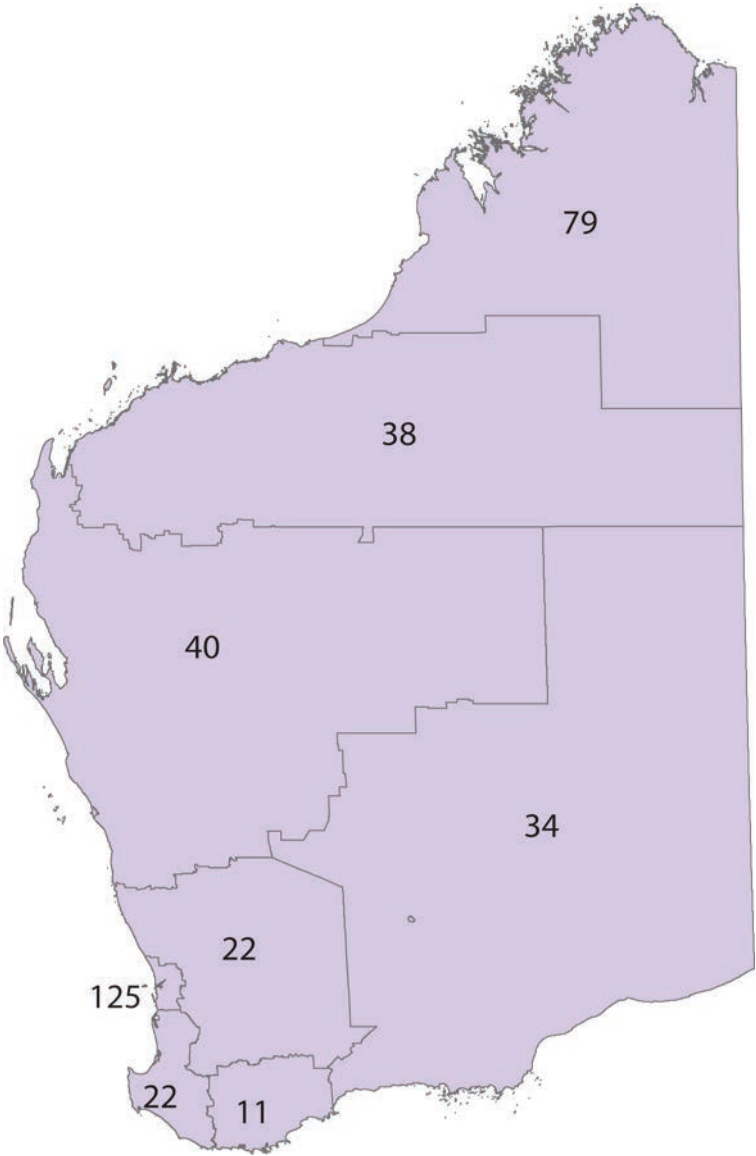
Map 54: VIC 7

Number of full time equivalent **Optometrists** required to service Indigenous population to reach National average (1: 5,400)
Total: 5.53



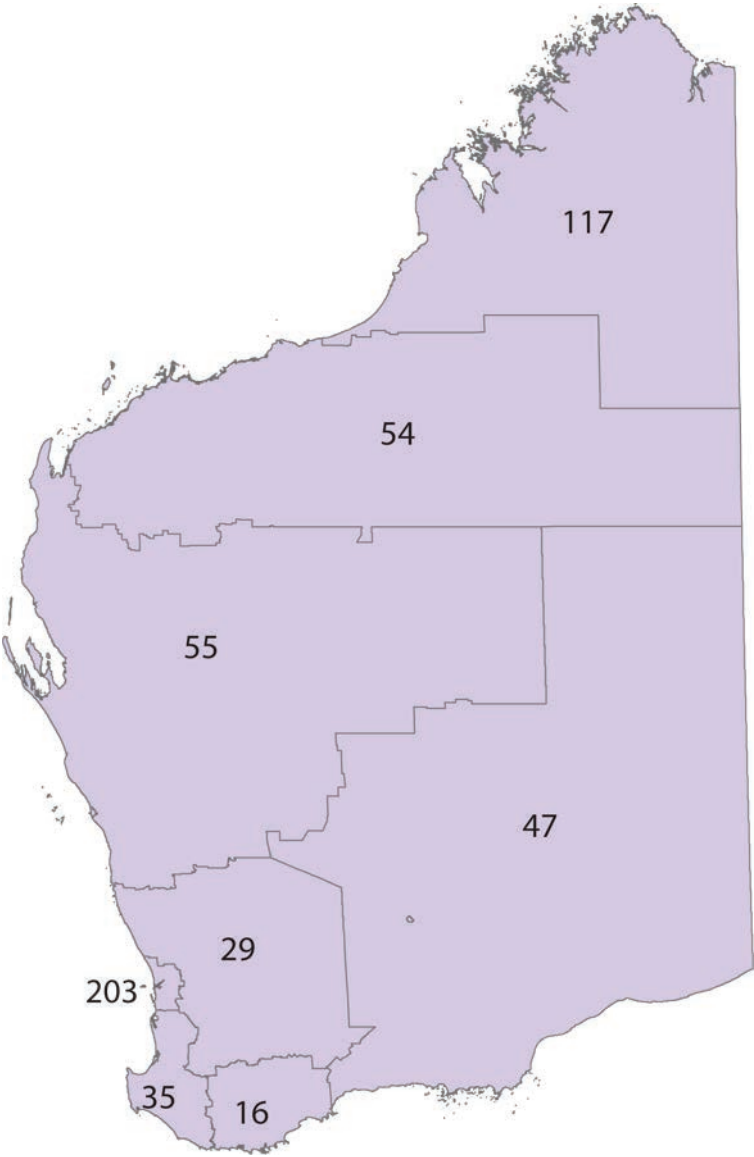
Map 55: WA 1

Estimated number of Indigenous people who are **Blind**
Total: 370



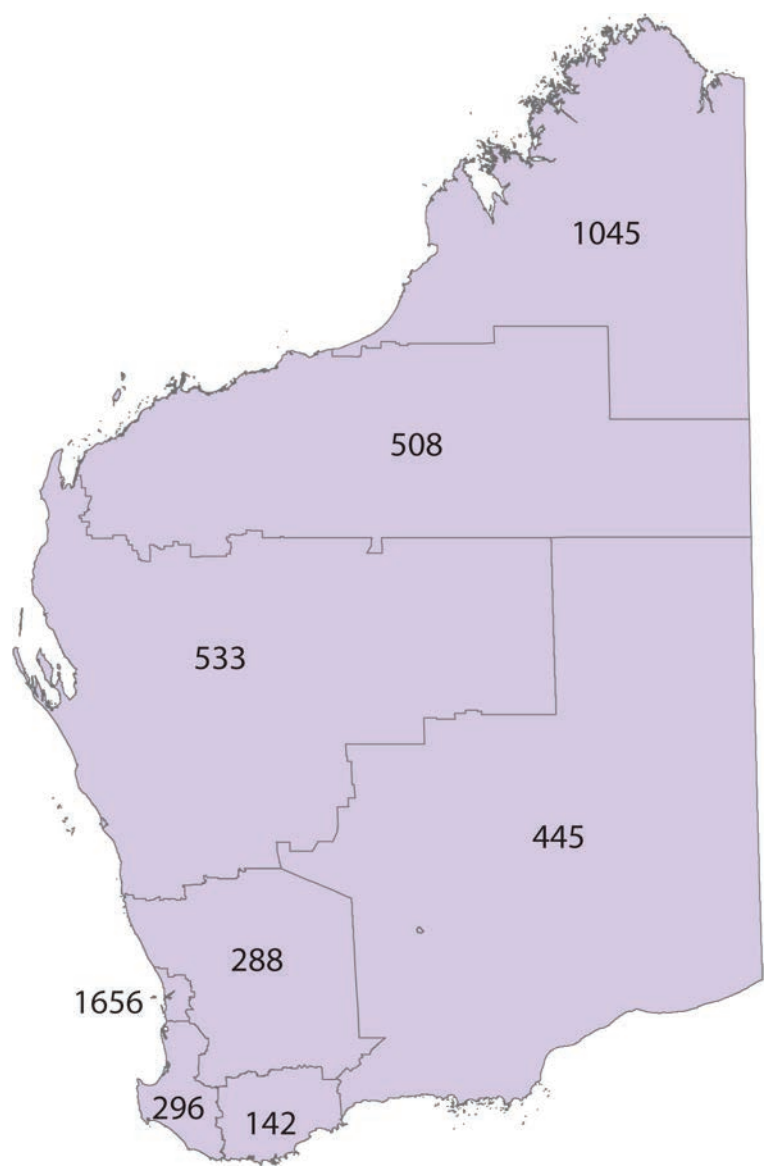
Map 56: WA 2

Number of Indigenous people requiring **Cataract Surgery** each year to reach the National CSR (9,500)
Total: 556



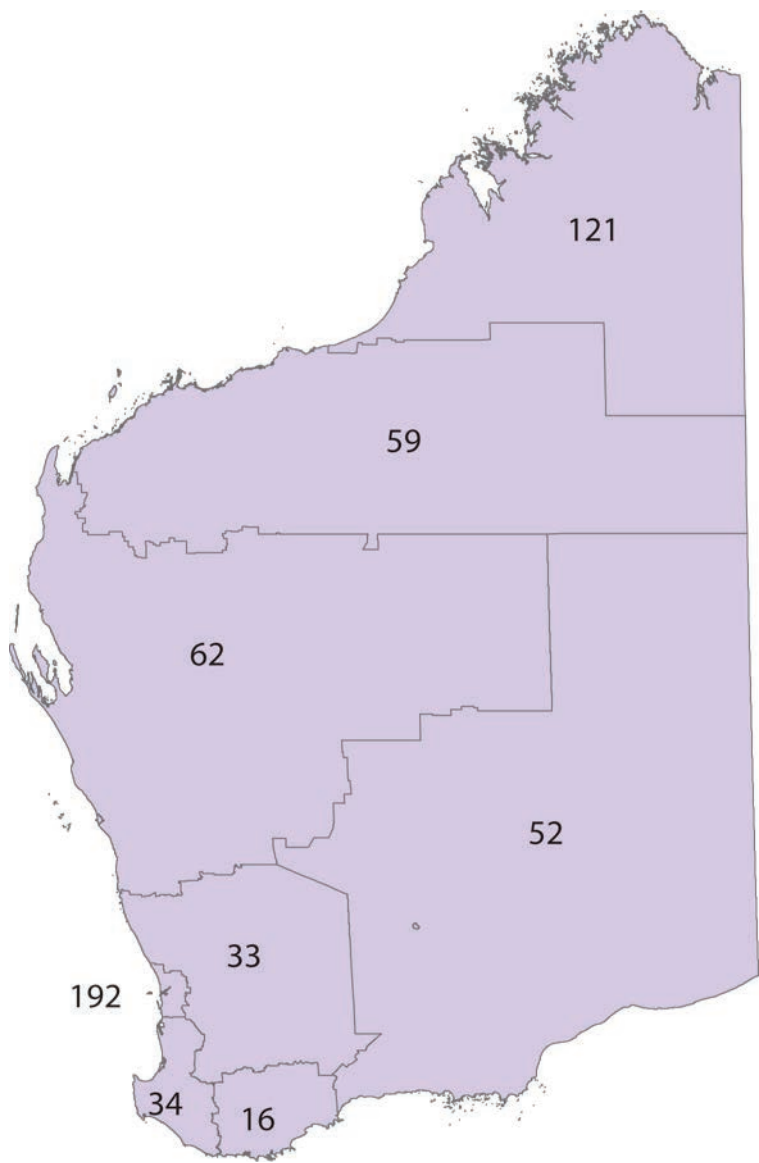
Map 57: WA 3

Estimated number of Indigenous people with **Diabetes** who require an annual eye examination
Total: 4912



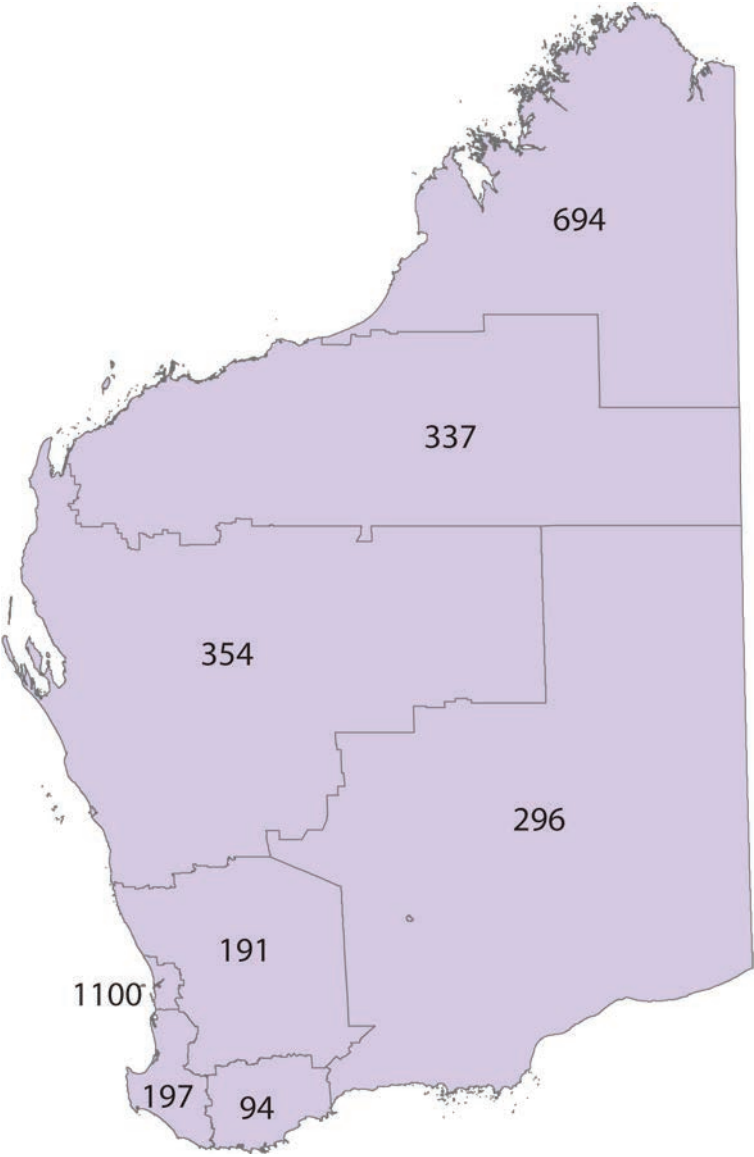
Map 58: WA 4

Estimated number of Indigenous people with Diabetes who require **Laser Surgery** each year
Total: 570



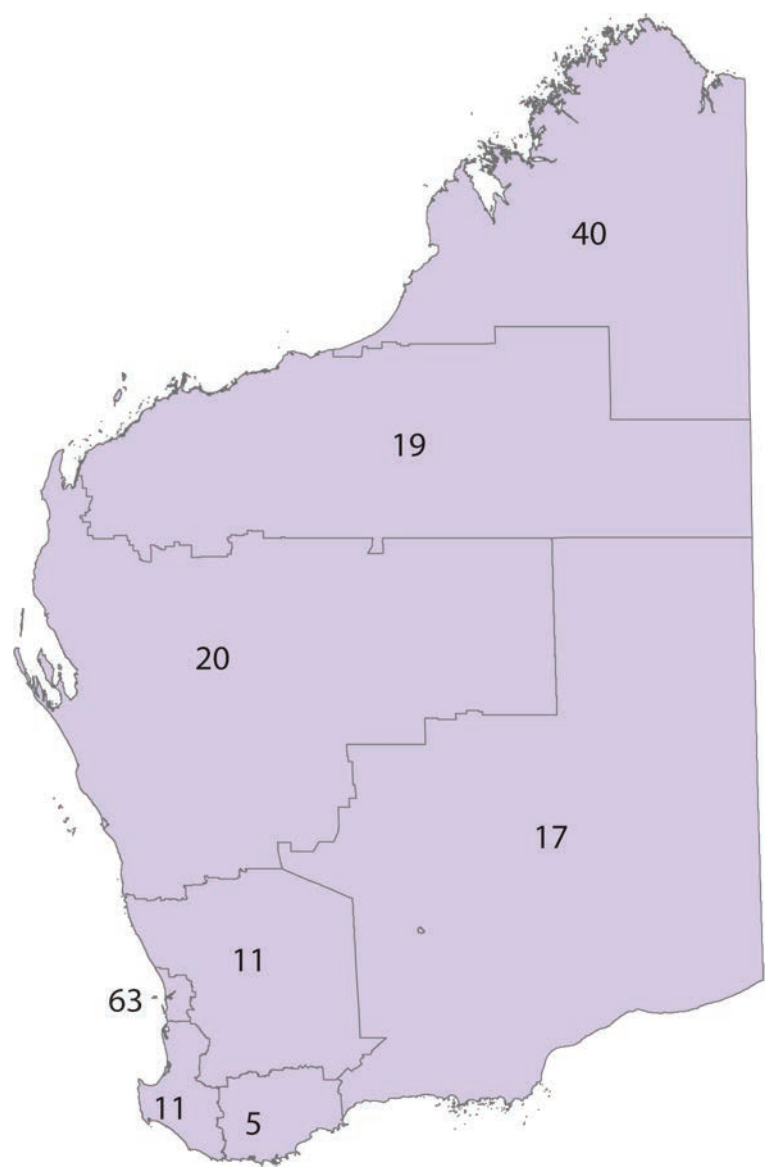
Map 59: WA 5

Estimated number of Indigenous people who require **Glasses** each year
Total: 3,263



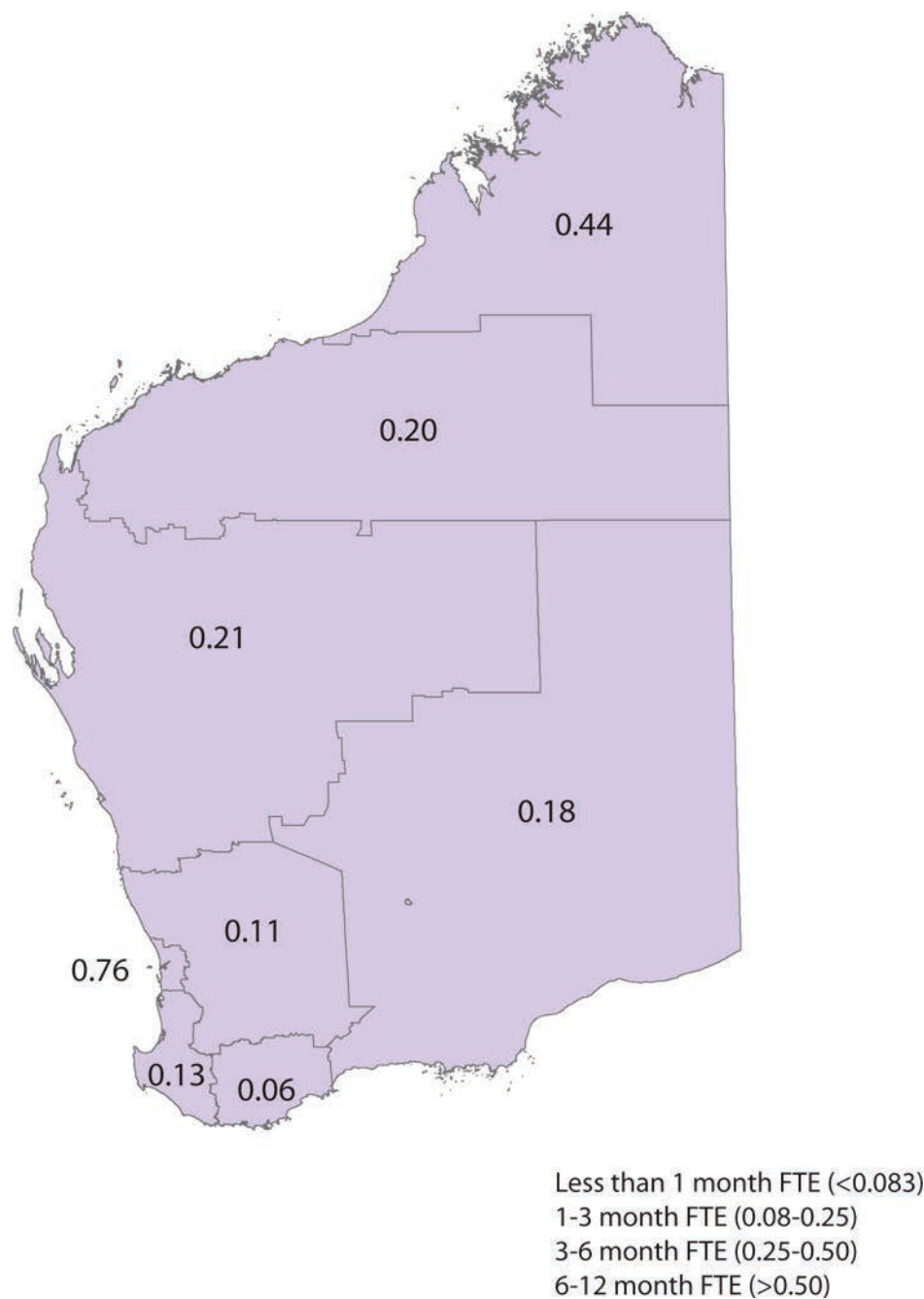
Map 60: WA 6

Estimated number of Indigenous people with **Inturned Eyelashes (Trichiasis)**
Total: 186



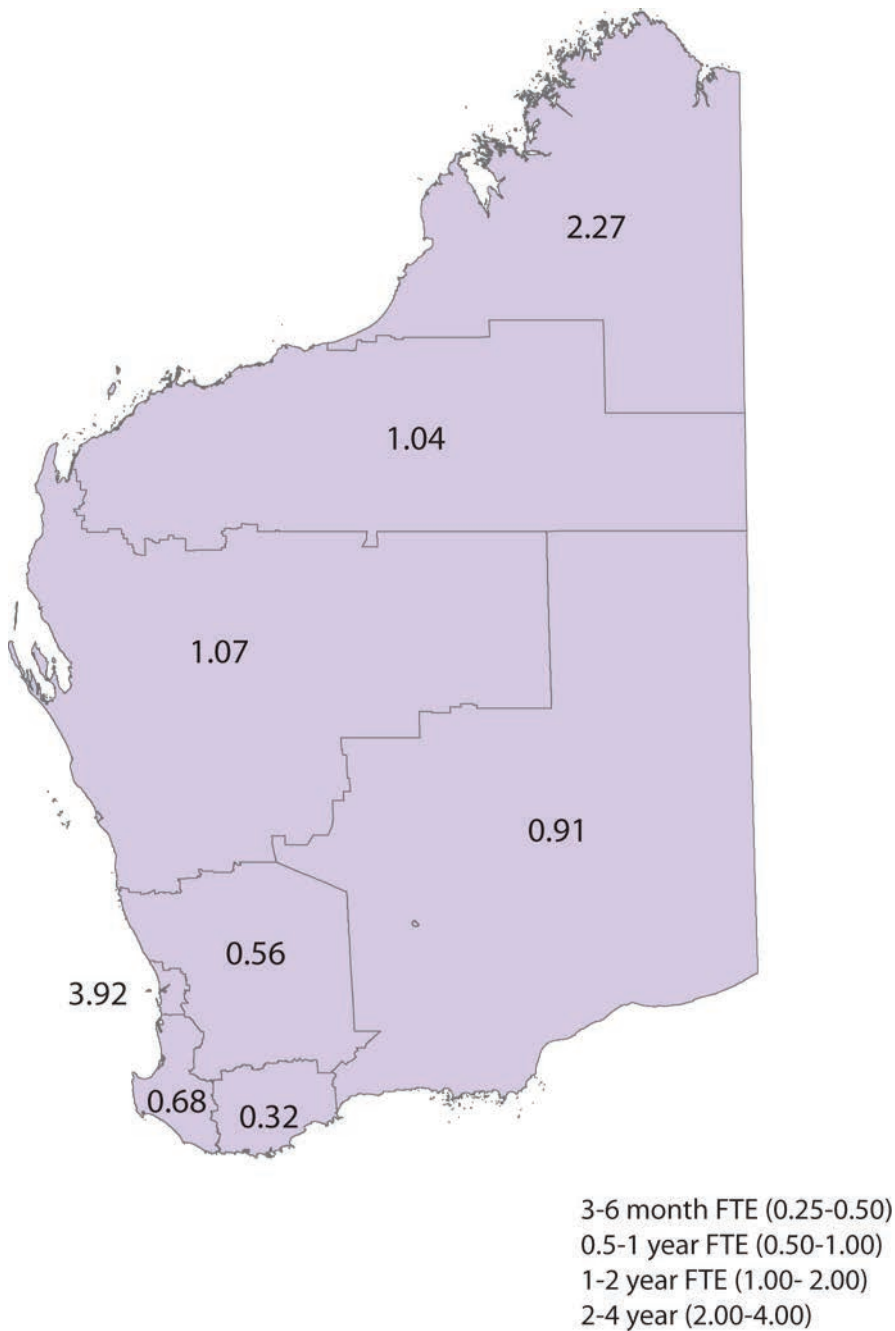
Map 61: WA 7

Number of full time equivalent **Ophthalmologists** required to service Indigenous population to reach National average (1: 28,000)
Total: 2.09



Map 62: WA 8

Number of full time equivalent **Optometrists** required to service Indigenous population to reach National average (1: 5,400)
Total: 10.76



References

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Contact

Professor Hugh R. Taylor AC,
Indigenous Eye Health Unit,
Melbourne School of Population Health,
The University of Melbourne,
Level 5, 207 Bouverie St,
Carlton, Victoria 3053
Website: www.iehu.unimelb.edu.au

Authorised by the Harold Mitchell Chair of
Indigenous Eye Health, Melbourne School
of Population Health.

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