

Evaluation of two tools used for waitlist prioritisation  
for planned care in Health New Zealand – Te Whatu Ora

## Appendix 4: Description of analyses

March 2024

### Background and context

The introduction of the adjustment tools in Auckland Te Toka Tumai, Northland Te Tai Tokerau and Southern districts occurred as part of a suite of interventions and initiatives to improve delivery and timeliness of planned care during and following the COVID-19 pandemic. The Planned Care Taskforce Reset and Restore plan that was released in October 2022 also influenced planned care delivery over the last year. The plan led to the directive in mid-2022 by the Chief Executive of Health New Zealand – Te Whatu Ora outlining timeframes for booking patients waiting longer than 12 months for First Specialist Appointments and elective planned care procedures, with priority given to Māori and Pacific patients as well as P1 and P2 patients.<sup>207</sup>

The implementation of the Northern and Southern tools in this context, without a clear prospective plan for evaluation, precludes robust assessment of the effectiveness of and potential harm from the tools. It is also difficult to quantify other relevant issues that influence the referral and waitlisting process such as surgical need and systemic barriers to accessing healthcare. Meaningful interpretation of any trends in elective planned care procedure and waiting list data before and after introduction of the tools is therefore not possible.

Both tools incorporate consideration of priority category and target waiting times, ethnicity, deprivation, some metric of rural/urban status and specialty-specific features. As a result, simple descriptive analyses that considered socio-demographic characteristics, priority category and specialty were undertaken with the aim of providing context regarding: a) waiting times on the First Specialist Appointment (FSA) and elective planned care procedure waiting lists; and b) the number of elective planned care procedures undertaken across New Zealand in recent years.

## Methods

### Inclusion and exclusion criteria

For FSA and elective planned care waiting list data, all individuals who were on a waiting list with a service in the Northern region as at 1 July 2022 were included.

For the elective planned care procedure data, all recorded procedures undertaken by a former District Health Board or (since 1 July 2022) by a Health NZ district with an admission date in the financial years of interest across New Zealand were included.

A small number of procedures undertaken in mobile surgical units were excluded as these are not recorded against a former DHB or a current Health NZ district.

No age exclusion criterion was applied (i.e. individuals of all ages were included for both the waiting list and elective planned care procedure volume data).

### Data sources and data access

Data regarding FSA and elective planned care procedure waiting lists for the Northern region were obtained from the Northern Region Waitlist data stores, and accessed through the Northern Region Snowflake platform. The elective planned care procedure waiting list is also sometimes called the 'inpatient' waiting list as those included generally have procedures that required a hospital admission.

Data regarding elective planned care procedures across New Zealand was obtained from NMDS, accessed through the Ministry of Health – Manatū Hauora Qlik NMDS datastore. There was general consensus among the health analytics personnel consulted that procedures undertaken as a result of being included on the elective planned care procedure waiting list are recorded in the National Minimum Dataset (NMDS) that captures

hospital admissions, including procedures that are undertaken as a day case. There are likely to be inter-district differences across the country, however, in the inclusion of patients waitlisted for specific procedures (such as interventional radiology) on the elective planned care waiting list.

Referral data were only available for Metro-Auckland, precluding presentation of data for the entire Northern region or for the other three regions. Waiting list data outside of the Northern region was unable to be accessed in time to include.

### Data definitions

Level 1 and Level 2 prioritised ethnicity, age and sex were used as recorded in the NMDS data on the date of admission, and as recorded on 1 July 2022 in the Northern Region Waitlist data.

Deprivation decile was assigned based on the domicile of residence code available in NMDS and Northern Region Waitlist data, using the publicly available concordance file for New Zealand Index of Deprivation 2018 (NZDep2018). NZDep2018 is a small area based measure derived from nine 2018 national Census variables. Deprivation deciles were then converted to deprivation quintiles ranging from 1 (least deprived) to 5 (most deprived).<sup>28</sup>

Rural/urban status was assessed using the Geographic Classification for Health 2018 (GCH 2018) metric, that includes two urban categories and three rural categories.<sup>100</sup> Rural/urban status was also assigned based on the domicile of residence code obtained from NMDS and waiting list data, using a publicly available concordance file.<sup>208</sup>

Individuals with missing deprivation decile or rural/urban data were considered as a separate category in the analyses.

## Analyses

Simple descriptive analyses with counts and proportions were undertaken using Excel 365. Cross-sectional data from 1 July 2022 were presented by priority category and ethnicity, deprivation and rural/urban status for individuals on an FSA waiting list and, separately, an elective planned care procedure waiting list with all services in the Northern region. Data from 1 July 2022 was presented as this date is the start of the most recent financial year and preceded introduction of the Northern region tool. Days already waited were categorised into  $\leq 120$  days, 121–180 days, 181–270 days, 271–365 days and  $>365$  days. The first category cut-off was chosen as waiting  $>120$  days is a standard Elective Services Patient Flow (ESPI) indicator for reporting both FSA and elective planned care waiting list data nationally, and the last category was chosen given the Health NZ CE directive in mid-2022 related to booking in all individuals waiting more than 12 months on FSA and elective planned care procedure waiting lists.

Volumes of elective planned care procedures across the country and in regions of New Zealand during financial years of interest (i.e. 1 July–30 June in each financial year of interest) were also presented by socio-demographic characteristics, and by speciality for each of the four regions. Data presented for the most recent financial year (2022/23) included procedures undertaken after introduction of the Northern Equity Adjustor and Southern Waitlist Prioritisation tools. Counts  $\leq 10$  and associated proportions were suppressed, as agreed with the Health NZ National Privacy Office.

## Ethics and privacy

Ethics approval was not required. Privacy considerations, including methods to safeguard all data accessed for the analyses, were outlined in a privacy impact assessment that was completed and approved by the Health NZ National Privacy Office on 27 October 2023.

## Results

For FSA waiting list, elective planned care procedure waiting list and elective planned care procedure volume data, there was considerable variation in the proportion of procedures undertaken in different socio-demographic groups between districts (tables not presented). However, it is difficult to meaningfully interpret the difference in patterns across districts, given the lack of data regarding surgical need.

Table 1a, 1b and 1c, show categories of days already waited on the **FSA waiting list** among individuals in the Northern region as at 1 July 2022 by priority category and ethnicity, deprivation quintile and rural/urban status respectively. Overall, there were 55,679 people on the FSA waiting lists in the Northern region on that date, with 2,625 in the P1 category, 23,208 in the P2 category, 22,182 in the P3 category and 7,664 in the P4 category. Across all four priority categories, 41,258 (74%) had waited  $\leq 120$  days and 1,957 (4%) had already waited  $>365$  days.

Table 1a indicates that in the P1, P2 and P3 categories, Māori had the lowest proportions of all ethnic groups examined who had waited ≤120 days and, in the P2 and P3 categories, slightly higher proportions waiting >365 days. For deprivation (Table 1b), there was a general trend of slightly lower proportions waiting ≤120 days with increasing deprivation quintile in P1, P2 and P3 categories and

a slightly higher proportion waiting >365 days among those residing in deprivation quintile 5 for the P2 and P3 categories. Table 1c indicates that individuals residing in the most urban areas (U1) had the highest proportions waiting ≤120 days in the P1-P3 categories, and those residing in the most rural areas (R2 and R3) had the highest proportions waiting >365 days in the P2 and P3 categories.

**TABLE 1A: DAYS ALREADY WAITED ON THE FIRST SPECIALIST APPOINTMENT WAITLIST IN THE NORTHERN REGION AS AT 1 JULY 2022 BY PRIORITY CATEGORY AND PRIORITISED ETHNICITY**

Priority Category and Ethnicity		Northern Region Total	Days Already Waited									
			≤120 days		121-180 days		181-270 days		271-365 days		>365 days	
			n	% of total	n	% of total	n	% of total	n	% of total	n	% of total
P1 Urgent	Māori	484	435	90%	22	5%	S	S	12	2%	S	S
	Pacific	373	362	97%	S	S	S	S	S	S	S	S
	Asian	379	367	97%	S	S	S	S	S	S	S	S
	Other including MELAA	58	55	95%	S	S	S	S	S	S	S	S
	European	1331	1256	94%	36	3%	16	1%	S	S	14	1%
	<b>P1 TOTAL</b>	<b>2625</b>	<b>2475</b>	<b>94%</b>	<b>75</b>	<b>3%</b>	<b>30</b>	<b>1%</b>	<b>23</b>	<b>1%</b>	<b>22</b>	<b>1%</b>
P2 Semi Urgent	Māori	3577	2634	74%	381	11%	272	8%	136	4%	154	4%
	Pacific	3227	2524	78%	343	11%	205	6%	94	3%	61	2%
	Asian	3854	2968	77%	441	11%	267	7%	116	3%	62	2%
	Other including MELAA	695	553	80%	77	11%	41	6%	17	2%	S	S
	European	11855	8992	76%	1352	11%	847	7%	384	3%	280	2%
	<b>P2 TOTAL</b>	<b>23208</b>	<b>17671</b>	<b>76%</b>	<b>2594</b>	<b>11%</b>	<b>1632</b>	<b>7%</b>	<b>747</b>	<b>3%</b>	<b>564</b>	<b>2%</b>
P3 Routine	Māori	3953	2527	64%	465	12%	346	9%	239	6%	376	10%
	Pacific	2666	2110	79%	304	11%	151	6%	54	2%	47	2%
	Asian	3505	2666	76%	453	13%	241	7%	76	2%	69	2%
	Other including MELAA	653	517	79%	59	9%	42	6%	21	3%	14	2%
	European	11405	7621	67%	1536	13%	1028	9%	520	5%	700	6%
	<b>P3 TOTAL</b>	<b>22182</b>	<b>15441</b>	<b>70%</b>	<b>2817</b>	<b>13%</b>	<b>1808</b>	<b>8%</b>	<b>910</b>	<b>4%</b>	<b>1206</b>	<b>5%</b>
P4 Low priority/ Unknown/ Others	Māori	865	652	75%	80	9%	53	6%	64	7%	16	2%
	Pacific	1029	796	77%	104	10%	72	7%	44	4%	13	1%
	Asian	1731	1266	73%	215	12%	138	8%	77	4%	35	2%
	Other including MELAA	316	226	72%	46	15%	26	8%	S	S	S	S
	European	3723	2731	73%	462	12%	262	7%	177	5%	91	2%
	<b>P4 TOTAL</b>	<b>7664</b>	<b>5671</b>	<b>74%</b>	<b>907</b>	<b>12%</b>	<b>551</b>	<b>7%</b>	<b>370</b>	<b>5%</b>	<b>165</b>	<b>2%</b>
<b>Northern Region Total</b>		<b>55679</b>	<b>41258</b>	<b>74%</b>	<b>6393</b>	<b>11%</b>	<b>4021</b>	<b>7%</b>	<b>2050</b>	<b>4%</b>	<b>1957</b>	<b>4%</b>

Source: Northern Region Waitlist data

S Suppressed result due to count ≤10

\*Prioritised ethnicity has been used, according to the prioritisation order outlined in the 2017 HISO Ethnicity Data Protocols. (Ministry of Health. 2017. HISO 10001:2017 Ethnicity Data Protocols. Wellington: Ministry of Health)

**TABLE 1B: DAYS ALREADY WAITED ON THE FIRST SPECIALIST APPOINTMENT WAITLIST IN THE NORTHERN REGION AS AT 1 JULY 2022 BY PRIORITY CATEGORY AND DEPRIVATION QUINTILE**

Priority Category and Deprivation Quintile		Northern Region Total	Days Already Waited									
			≤120 days		121-180 days		181-270 days		271-365 days		>365 days	
			n	% of total	n	% of total	n	% of total	n	% of total	n	% of total
P1 Urgent	1 (Least deprived)	331	324	98%	S	S	S	S	S	S	S	S
	2	497	483	97%	S	S	S	S	S	S	S	S
	3	496	474	96%	11	2%	S	S	S	S	S	S
	4	566	531	94%	17	3%	S	S	S	S	S	S
	5 (Most deprived)	733	661	90%	34	5%	15	2%	15	2%	S	S
	<b>P1 TOTAL</b>	<b>2625</b>	<b>2475</b>	<b>94%</b>	<b>75</b>	<b>3%</b>	<b>30</b>	<b>1%</b>	<b>23</b>	<b>1%</b>	<b>22</b>	<b>1%</b>
P2 Semi Urgent	1 (Least deprived)	3407	2719	80%	344	10%	214	6%	93	3%	37	1%
	2	4481	3520	79%	509	11%	272	6%	108	2%	72	2%
	3	4647	3573	77%	485	10%	337	7%	157	3%	95	2%
	4	4667	3529	76%	530	11%	334	7%	150	3%	124	3%
	5 (Most deprived)	5988	4315	72%	725	12%	475	8%	237	4%	236	4%
	<b>P2 TOTAL</b>	<b>23208</b>	<b>17671</b>	<b>76%</b>	<b>2594</b>	<b>11%</b>	<b>1632</b>	<b>7%</b>	<b>747</b>	<b>3%</b>	<b>564</b>	<b>2%</b>
P3 Routine	1 (Least deprived)	2864	2098	73%	359	13%	227	8%	107	4%	73	3%
	2	4020	2921	73%	499	12%	327	8%	128	3%	145	4%
	3	4596	3092	67%	602	13%	403	9%	214	5%	285	6%
	4	4691	3309	71%	569	12%	360	8%	202	4%	251	5%
	5 (Most deprived)	6003	4015	67%	787	13%	491	8%	259	4%	451	8%
	<b>P3 TOTAL</b>	<b>22182</b>	<b>15441</b>	<b>70%</b>	<b>2817</b>	<b>13%</b>	<b>1808</b>	<b>8%</b>	<b>910</b>	<b>4%</b>	<b>1206</b>	<b>5%</b>
P4 Low priority/ Unknown/ Others	1 (Least deprived)	1144	846	74%	135	12%	75	7%	58	5%	30	3%
	2	1721	1249	73%	228	13%	137	8%	71	4%	36	2%
	3	1722	1270	74%	204	12%	116	7%	92	5%	40	2%
	4	1617	1219	75%	186	12%	115	7%	72	4%	25	2%
	5 (Most deprived)	1458	1085	74%	154	11%	108	7%	77	5%	34	2%
	<b>P4 TOTAL</b>	<b>7664</b>	<b>5671</b>	<b>74%</b>	<b>907</b>	<b>12%</b>	<b>551</b>	<b>7%</b>	<b>370</b>	<b>5%</b>	<b>165</b>	<b>2%</b>
<b>Northern Region Total</b>		<b>55679</b>	<b>41258</b>	<b>74%</b>	<b>6393</b>	<b>11%</b>	<b>4021</b>	<b>7%</b>	<b>2050</b>	<b>4%</b>	<b>1957</b>	<b>4%</b>

Source: Northern Region Waitlist data

Abbreviations: NZDep 2018; New Zealand Index of Deprivation 2018

S Suppressed result due to count ≤10

Please note that there were 30 individuals in total in the Northern region with missing deprivation quintile data who are not shown in the table above as the counts were all suppressed

**TABLE 1C: DAYS ALREADY WAITED ON THE FIRST SPECIALIST APPOINTMENT WAITLIST IN THE NORTHERN REGION AS AT 1 JULY 2022 BY PRIORITY CATEGORY AND RURAL/URBAN STATUS**

Priority Category and Rural/Urban Status		Northern Region Total	Days Already Waited									
			≤120 days		121-180 days		181-270 days		271-365 days		>365 days	
			n	% of total	n	% of total	n	% of total	n	% of total	n	% of total
P1 Urgent	U1	1935	1883	97%	31	2%	11	1%	S	S	S	S
	U2	255	211	83%	21	8%	S	S	S	S	S	S
	R1	197	180	91%	S	S	S	S	S	S	S	S
	R2	171	145	85%	S	S	S	S	S	S	S	S
	R3	65	54	83%	S	S	S	S	S	S	S	S
	<b>P1 TOTAL</b>	<b>2625</b>	<b>2475</b>	<b>94%</b>	<b>75</b>	<b>3%</b>	<b>30</b>	<b>1%</b>	<b>23</b>	<b>1%</b>	<b>22</b>	<b>1%</b>
P2 Semi Urgent	U1	18587	14708	79%	2040	11%	1107	6%	488	3%	244	1%
	U2	1653	1028	62%	200	12%	211	13%	98	6%	116	7%
	R1	1505	1099	73%	166	11%	116	8%	60	4%	64	4%
	R2	1075	609	57%	142	13%	147	14%	74	7%	103	10%
	R3	370	212	57%	45	12%	51	14%	25	7%	37	10%
	<b>P2 TOTAL</b>	<b>23208</b>	<b>17671</b>	<b>76%</b>	<b>2594</b>	<b>11%</b>	<b>1632</b>	<b>7%</b>	<b>747</b>	<b>3%</b>	<b>564</b>	<b>2%</b>
P3 Routine	U1	15736	11998	76%	1907	12%	1095	7%	402	3%	334	2%
	U2	2546	1362	53%	346	14%	313	12%	204	8%	321	13%
	R1	1528	941	62%	219	14%	142	9%	102	7%	124	8%
	R2	1751	810	46%	257	15%	206	12%	156	9%	322	18%
	R3	613	324	53%	87	14%	52	8%	46	8%	104	17%
	<b>P3 TOTAL</b>	<b>22182</b>	<b>15441</b>	<b>70%</b>	<b>2817</b>	<b>13%</b>	<b>1808</b>	<b>8%</b>	<b>910</b>	<b>4%</b>	<b>1206</b>	<b>5%</b>
P4 Low priority/ Unknown/ Others	U1	7184	5305	74%	857	12%	524	7%	347	5%	151	2%
	U2	125	99	79%	14	11%	S	S	S	S	S	S
	R1	284	211	74%	30	11%	20	7%	14	5%	S	S
	R2	48	38	79%	S	S	S	S	S	S	S	S
	R3	21	16	76%	S	S	S	S	S	S	S	S
	<b>P4 TOTAL</b>	<b>7664</b>	<b>5671</b>	<b>74%</b>	<b>907</b>	<b>12%</b>	<b>551</b>	<b>7%</b>	<b>370</b>	<b>5%</b>	<b>165</b>	<b>2%</b>
<b>Northern Region Total</b>		<b>55679</b>	<b>41258</b>	<b>74%</b>	<b>6393</b>	<b>11%</b>	<b>4021</b>	<b>7%</b>	<b>2050</b>	<b>4%</b>	<b>1957</b>	<b>4%</b>

Source: Northern Region Waitlist data

\*Rural/urban status is classified according to the Geographic Classification for Health

S Suppressed result due to count ≤10

Please note that there were 30 individuals in total in the Northern Region with missing rural/urban status who are not shown in the table above as the counts were all suppressed

Table 2a, 2b and 2c show categories of days already waited on **the elective planned care procedure waiting list** among individuals in the Northern region as at 1 July 2022 by priority category and ethnicity, deprivation quintile and rural/urban status respectively. P3 and P4 categories were considered together given the small number (n=543) of people across the Northern region specialties assigned to the P4 category at this time. Overall, there were 23,954 people on the elective planned care procedure waiting list in the Northern region on 1 July 2022, with 2,412 in the P1 category, 7,205 in the P2 category and 14,337 people in the P3 and P4 categories combined. Across all priority categories, 14,933 people (62%) had waited  $\leq 120$  days and 7% (n=1,770) had waited more than a year.

Table 2a indicates that in the P1 category, Pacific people had the lowest proportion (77%) of the ethnic groups examined who had waited  $\leq 120$  days for their elective planned care procedure, followed by

Māori (81%). In the P1 grouping, Pacific people also had slightly higher proportions in the categories of days already waited between 121 and 365 days than other ethnic groups. In the P2 and P3/P4 combined categories, Māori had the lowest proportions who waited  $\leq 120$  days and also had slightly higher proportions waiting greater than one year than the other ethnic groups examined. Regarding deprivation (Table 2b), similar to the FSA waiting list data, there was a general trend of decreasing proportions waiting  $\leq 120$  days with increasing deprivation quintile. In relation to rural/urban status (Table 2c), those residing in the most urban areas (U1), surprisingly, had the lowest proportion waiting  $\leq 120$  days and higher proportions in the other categories of days waited than the other four rural/urban categories. However, those residing in the most urban areas in the P2 and P3/P4 combined categories had the highest proportions waiting  $\leq 120$  days, and the lowest proportions waiting  $> 365$  days compared to the other rural/urban categories.

**TABLE 2A: DAYS ALREADY WAITED ON THE ELECTIVE PLANNED CARE PROCEDURE WAITLIST IN THE NORTHERN REGION AS AT 1 JULY 2022 BY PRIORITY CATEGORY AND PRIORITISED ETHNICITY**

Priority Category and Ethnicity		Northern Region Total	Days Already Waited									
			≤120 days		121-180 days		181-270 days		271-365 days		>365 days	
			n	% of total	n	% of total	n	% of total	n	% of total	n	% of total
P1 Urgent	Māori	402	325	81%	38	9%	19	5%	S	S	11	3%
	Pacific	425	327	77%	49	12%	28	7%	11	3%	S	S
	Asian	304	258	85%	24	8%	15	5%	S	S	S	S
	Other including MELAA	52	44	85%	S	S	S	S	S	S	S	S
	European	1229	1098	89%	63	5%	29	2%	19	2%	20	2%
	<b>P1 TOTAL</b>	<b>2412</b>	<b>2052</b>	<b>85%</b>	<b>177</b>	<b>7%</b>	<b>93</b>	<b>4%</b>	<b>45</b>	<b>2%</b>	<b>45</b>	<b>2%</b>
P2 Semi Urgent	Māori	1141	708	62%	153	13%	135	12%	63	6%	82	7%
	Pacific	1070	775	72%	124	12%	109	10%	33	3%	29	3%
	Asian	975	729	75%	131	13%	69	7%	28	3%	18	2%
	Other including MELAA	191	133	70%	22	12%	21	11%	S	S	S	S
	European	3828	2799	73%	443	12%	308	8%	133	3%	145	4%
	<b>P2 TOTAL</b>	<b>7205</b>	<b>5144</b>	<b>71%</b>	<b>873</b>	<b>12%</b>	<b>642</b>	<b>9%</b>	<b>266</b>	<b>4%</b>	<b>280</b>	<b>4%</b>
P3 Routine and P4 Low priority/Unknown/Others	Māori	2189	1056	48%	333	15%	315	14%	170	8%	315	14%
	Pacific	1559	935	60%	230	15%	207	13%	91	6%	96	6%
	Asian	2350	1402	60%	354	15%	295	13%	162	7%	137	6%
	Other including MELAA	416	265	64%	63	15%	40	10%	28	7%	20	5%
	European	7823	4079	52%	1118	14%	1085	14%	664	8%	877	11%
	<b>P3 and P4 TOTAL</b>	<b>14337</b>	<b>7737</b>	<b>54%</b>	<b>2098</b>	<b>15%</b>	<b>1942</b>	<b>14%</b>	<b>1115</b>	<b>8%</b>	<b>1445</b>	<b>10%</b>
<b>Northern Region Total</b>		<b>23954</b>	<b>14933</b>	<b>62%</b>	<b>3148</b>	<b>13%</b>	<b>2677</b>	<b>11%</b>	<b>1426</b>	<b>6%</b>	<b>1770</b>	<b>7%</b>

Source: Northern Region Waitlist data

\*Prioritised ethnicity has been used, according to the prioritisation order outlined in the 2017 HISO Ethnicity Data Protocols. (Ministry of Health. 2017. HISO 10001:2017 Ethnicity Data Protocols. Wellington: Ministry of Health)

S Suppressed result due to count ≤10

**TABLE 2B: DAYS ALREADY WAITED ON THE ELECTIVE PLANNED CARE PROCEDURE WAITLIST IN THE NORTHERN REGION AS AT 1 JULY 2022 BY PRIORITY CATEGORY AND DEPRIVATION QUINTILE**

Priority Category and Deprivation Quintile		Northern Region Total	Days Already Waited									
			≤120 days		121-180 days		181-270 days		271-365 days		>365 days	
			n	% of total	n	% of total	n	% of total	n	% of total	n	% of total
P1 Urgent	1 (Least deprived)	291	252	87%	19	7%	11	4%	S	S	S	S
	2	421	370	88%	24	6%	15	4%	S	S	S	S
	3	462	407	88%	30	6%	S	S	S	S	S	S
	4	499	428	86%	39	8%	18	4%	S	S	S	S
	5 (Most deprived)	737	593	80%	65	9%	41	6%	16	2%	22	3%
	<b>P1 TOTAL</b>	<b>2412</b>	<b>2052</b>	<b>85%</b>	<b>177</b>	<b>7%</b>	<b>93</b>	<b>4%</b>	<b>45</b>	<b>2%</b>	<b>45</b>	<b>2%</b>
P2 Semi Urgent	1 (Least deprived)	996	746	75%	104	10%	93	9%	23	2%	30	3%
	2	1352	1007	74%	155	11%	109	8%	34	3%	47	3%
	3	1444	1057	73%	154	11%	118	8%	63	4%	52	4%
	4	1443	1020	71%	179	12%	141	10%	56	4%	47	3%
	5 (Most deprived)	1965	1311	67%	280	14%	181	9%	89	5%	104	5%
	<b>P2 TOTAL</b>	<b>7205</b>	<b>5144</b>	<b>71%</b>	<b>873</b>	<b>12%</b>	<b>642</b>	<b>9%</b>	<b>266</b>	<b>4%</b>	<b>280</b>	<b>4%</b>
P3 Routine and P4 Low priority/Unknown/Others	1 (Least deprived)	1953	1103	56%	272	14%	267	14%	146	7%	165	8%
	2	2857	1592	56%	432	15%	373	13%	221	8%	239	8%
	3	3180	1727	54%	473	15%	432	14%	225	7%	323	10%
	4	2958	1616	55%	439	15%	381	13%	242	8%	280	9%
	5 (Most deprived)	3387	1699	50%	482	14%	487	14%	281	8%	438	13%
	<b>P3 and P4 TOTAL</b>	<b>14335</b>	<b>7737</b>	<b>54%</b>	<b>2098</b>	<b>15%</b>	<b>1940</b>	<b>14%</b>	<b>1115</b>	<b>8%</b>	<b>1445</b>	<b>10%</b>
<b>Northern Region Total</b>		<b>23954</b>	<b>14933</b>	<b>62%</b>	<b>3148</b>	<b>13%</b>	<b>2677</b>	<b>11%</b>	<b>1426</b>	<b>6%</b>	<b>1770</b>	<b>7%</b>

Source: Northern Region Waitlist data

Abbreviations: NZDep 2018; New Zealand Index of Deprivation 2018

S Suppressed result due to count ≤10

Please note that there were ≤10 individuals in total in the Northern region with missing deprivation quintile data who are not shown in the table above as the counts were all suppressed



**TABLE 2C: DAYS ALREADY WAITED ON THE ELECTIVE PLANNED CARE PROCEDURE WAITLIST IN THE NORTHERN REGION AS AT 1 JULY 2022 BY PRIORITY CATEGORY AND RURAL/URBAN STATUS**

Priority Category and Rural/Urban Status		Northern Region Total	Days Already Waited									
			≤120 days		121-180 days		181-270 days		271-365 days		>365 days	
			n	% of total	n	% of total	n	% of total	n	% of total	n	% of total
P1 Urgent	U1	1869	1569	84%	153	8%	80	4%	33	2%	34	2%
	U2	197	176	89%	S	S	S	S	S	S	S	S
	R1	155	136	88%	11	7%	S	S	S	S	S	S
	R2	135	119	88%	S	S	S	S	S	S	S	S
	R3	54	50	93%	S	S	S	S	S	S	S	S
	<b>P1 TOTAL</b>	<b>2412</b>	<b>2052</b>	<b>85%</b>	<b>177</b>	<b>7%</b>	<b>93</b>	<b>4%</b>	<b>45</b>	<b>2%</b>	<b>45</b>	<b>2%</b>
P2 Semi Urgent	U1	5646	4203	74%	655	12%	464	8%	155	3%	169	3%
	U2	597	352	59%	85	14%	78	13%	42	7%	40	7%
	R1	503	341	68%	57	11%	46	9%	26	5%	33	7%
	R2	333	183	55%	49	15%	39	12%	34	10%	28	8%
	R3	121	62	51%	26	21%	15	12%	S	S	S	S
	<b>P2 TOTAL</b>	<b>7205</b>	<b>5144</b>	<b>71%</b>	<b>873</b>	<b>12%</b>	<b>642</b>	<b>9%</b>	<b>266</b>	<b>4%</b>	<b>280</b>	<b>4%</b>
P3 Routine and P4 Low priority/Unknown/Others	U1	10832	6262	58%	1607	15%	1403	13%	762	7%	798	7%
	U2	1360	531	39%	192	14%	205	15%	145	11%	287	21%
	R1	1016	503	50%	139	14%	145	14%	90	9%	139	14%
	R2	812	304	37%	121	15%	138	17%	77	9%	172	21%
	R3	315	137	43%	39	12%	49	16%	41	13%	49	16%
	<b>P3 and P4 TOTAL</b>	<b>14337</b>	<b>7737</b>	<b>54%</b>	<b>2098</b>	<b>15%</b>	<b>1942</b>	<b>14%</b>	<b>1115</b>	<b>8%</b>	<b>1445</b>	<b>10%</b>
<b>Northern Region Total</b>		<b>23954</b>	<b>14933</b>	<b>62%</b>	<b>3148</b>	<b>13%</b>	<b>2677</b>	<b>11%</b>	<b>1426</b>	<b>6%</b>	<b>1770</b>	<b>7%</b>

Source: Northern Region Waitlist data

\*Rural/urban status is classified according to the Geographic Classification for Health

S Suppressed result due to count ≤10

Please note there were ≤10 individuals in total in the Northern region with missing rural/urban status who are not shown in the table above as the counts were all suppressed

Tables 3, 4, 5 and 6 present national and regional data regarding the **volumes of elective planned care** procedures undertaken in recent years. Table 3 indicates that 162,648 elective planned care procedures were undertaken across New Zealand in the 2018/19 financial year and 153,939 procedures in the 2022/23 financial year, with variation noted in the intervening

financial years that encompassed the COVID-19 pandemic. Table 4 indicates that the proportions of elective planned care procedures undertaken across the country in the 2018/19 and 2022/23 financial years were similar in the financial years immediately pre- and post the COVID pandemic across the socio-demographic characteristics considered.

**TABLE 3: ELECTIVE PLANNED CARE PROCEDURES UNDERTAKEN IN REGIONS OF AOTEAROA NEW ZEALAND BETWEEN 2018/19 AND 2022/23 FINANCIAL YEARS**

Region	Financial years									
	1 July 2018 - 30 June 2019		1 July 2019 - 30 June 2020		1 July 2020 - 30 June 2021		1 July 2021 - 30 June 2022		1 July 2022 - 30 June 2023	
	n	% of total	n	% of total	n	% of total	n	% of total	n	% of total
Northern	58166	36%	54166	36%	60200	36%	50463	36%	58053	38%
Te Manawa Taki	34980	22%	31789	21%	35883	21%	29754	21%	31864	21%
Central	33375	21%	30813	20%	34868	21%	29578	21%	31785	21%
Te Waipounamu	36127	22%	34223	23%	38403	23%	32260	23%	32237	21%
<b>Aotearoa New Zealand Total</b>	<b>162648</b>		<b>150991</b>		<b>169354</b>		<b>142055</b>		<b>153939</b>	

Source: National Minimum Dataset

Please note that the percentages may not add up to 100% due to rounding

**TABLE 4: ELECTIVE PLANNED CARE PROCEDURES IN AOTEAROA NEW ZEALAND DURING 2018/19 AND 2022/23 FINANCIAL YEARS (I.E. BEFORE AND AFTER COVID) BY SOCIO-DEMOGRAPHIC GROUP**

Socio-demographic group		Financial years			
		1 July 2018 - 30 June 2019		1 July 2022 - 30 June 2023	
		n	%	n	%
Ethnicity *	Māori	25108	15%	25110	16%
	Pacific	10368	6%	10723	7%
	Tokelauan	230		261	
	Fijian	1102		1161	
	Niuean	713		615	
	Tongan	1796		1944	
	Cook Island Māori	1662		1736	
	Samoaan	4465		4531	
	Other Pacific Peoples	343		401	
	Pacific Peoples not further defined	57		74	
	Asian	12650	8%	13698	9%
	Southeast Asian	2018		2344	
	Indian	4602		4905	
	Chinese	3575		3740	
	Other Asian	2153		2411	
	Asian not further defined	302		298	
	Middle Eastern/Latin American/African (MELAA)	2098	1%	2194	1%
	Other	576	0%	630	0%
	European	111848	69%	101584	66%
	Deprivation quintile #	1 (Least deprived)	24687	15%	24261
2		29731	18%	28066	18%
3		33549	21%	31698	21%
4		37575	23%	34787	23%
5 (Most deprived)		36958	23%	35047	23%
Missing		148	0%	80	0%
Rural/Urban status ^	U1	34375	21%	33365	22%
	U2	93810	58%	87112	57%
	R1	22400	14%	21594	14%
	R2	10030	6%	9800	6%
	R3	1886	1%	1989	1%
	Missing	147	0%	79	0%
Age	0-14 years	24457	15%	21449	14%
	15-34 years	16235	10%	15085	10%
	35-49 years	20378	13%	18189	12%
	50-64 years	35851	22%	33747	22%
	≥65 years	65727	40%	65469	43%
Sex	Male	77497	48%	73964	48%
	Female	85038	52%	79865	52%
	Unknown/Diverse	113	0%	110	0%
<b>Aotearoa New Zealand Total</b>		<b>162648</b>		<b>153939</b>	

Source: National Minimum Dataset

\*Prioritised ethnicity has been used, according to the prioritisation order outlined in the 2017 HISO Ethnicity Data Protocols. (Ministry of Health. 2017. HISO 10001:2017 Ethnicity Data Protocols. Wellington: Ministry of Health)

#Deprivation quintile is based on deprivation decile assessed according to the New Zealand Index of Deprivation 2018

^ Rural/urban status is classified according to the Geographic Classification for Health  
Please note that the percentages may not add up to 100% due to rounding

Table 5 presents elective planned care procedures in each of the four regions during the 2022/23 financial year by socio-demographic characteristics, with 58,053 procedures performed in the Northern region, 31,864 in Te Manawa Taki, 31,785 in Central region and 32,237 in Te Waipounamu. There was considerable variation in the proportion of procedures performed across ethnic groups in the four regions. The proportion of procedures performed generally increased with increasing deprivation quintile across the regions, with the exception of Te Waipounamu, where a low proportion of procedures was noted in decile 5 (most deprived) and similar proportions in deprivation quintiles 1-4. People residing

in urban areas (U1 and U2 categories) accounted for 87% of procedures performed in the Northern region and 68-80% of procedures in the other three regions. Across the four regions, 63-69% of procedures were performed among people aged  $\geq 50$  years of age and 47-48% among men. Table 6 shows the elective planned care procedures performed in each region by specialty. The largest proportions of procedures were performed by General Surgery and Ophthalmology in each of the four regions, ranging from 22,427 (39%) of procedures by both specialties combined in the Northern region to 10,464 (32%) of procedures in Te Waipounamu.

**TABLE 5: ELECTIVE PLANNED CARE PROCEDURES IN EACH REGION OF AOTEAROA NEW ZEALAND DURING THE 2022/23 FINANCIAL YEAR BY SOCIO-DEMOGRAPHIC GROUP**

Socio-demographic group		Region							
		Northern		Te Manawa Taki		Central		Te Waipounamu	
		n	%	n	%	n	%	n	%
Ethnicity *	Māori	8361	14%	7983	25%	5703	18%	3063	10%
	Pacific	7704	13%	662	2%	1646	5%	711	2%
	Asian	9204	16%	1193	4%	1886	6%	1415	4%
	Other including MELAA	1501	3%	360	1%	532	2%	431	1%
	European	31283	54%	21666	68%	22018	69%	26617	83%
Deprivation quintile #	1 (Least deprived)	8402	14%	3185	10%	5593	18%	7081	22%
	2	11440	20%	4383	14%	5527	17%	6716	21%
	3	12118	21%	6266	20%	5849	18%	7465	23%
	4	11736	20%	7989	25%	7180	23%	7882	24%
	5 (Most deprived)	14334	25%	10028	31%	7614	24%	3071	10%
	Missing	23	0%	13	0%	22	0%	22	0%
Rural/Urban status ^	U1	46339	80%	13773	43%	12052	38%	14948	46%
	U2	4342	7%	8072	25%	13223	42%	7728	24%
	R1	3710	6%	6371	20%	5429	17%	6084	19%
	R2	2602	4%	3335	10%	968	3%	2895	9%
	R3	1037	2%	298	1%	91	0%	563	2%
	Missing	23	0%	15	0%	22	0%	19	0%
Age	0-14	8300	14%	4340	14%	4750	15%	4059	13%
	15-29	6012	10%	3034	10%	3268	10%	2771	9%
	30-49	7285	13%	3786	12%	3665	12%	3453	11%
	50-69	13239	23%	6801	21%	6771	21%	6936	22%
	≥70 years	23217	40%	13903	44%	13331	42%	15018	47%
Sex	Male	28130	48%	15292	48%	15006	47%	15536	48%
	Female	29882	51%	16564	52%	16748	53%	16671	52%
	Unknown/Diverse	41	0%	S	S	31	0%	30	0%
<b>Aotearoa New Zealand Total</b>		<b>58053</b>		<b>31864</b>		<b>31785</b>		<b>32237</b>	

Source: National Minimum Dataset

\*Prioritised ethnicity has been used, according to the prioritisation order outlined in the 2017 HISO Ethnicity Data Protocols. (Ministry of Health. 2017. HISO 10001:2017 Ethnicity Data Protocols. Wellington: Ministry of Health)

#Deprivation quintile is based on deprivation decile assessed according to the New Zealand Index of Deprivation 2018

^ Rural/urban status is classified according to the Geographic Classification for Health

S Suppressed result due to count ≤10

Please note that the percentages may not add up to 100% due to rounding

**TABLE 6: ELECTIVE PLANNED CARE PROCEDURES IN EACH REGION OF AOTEAROA NEW ZEALAND DURING THE 2022/23 FINANCIAL YEAR BY SPECIALTY**

Specialty	Region							
	Northern		Te Manawa Taki		Central		Te Waipounamu	
	n	%	n	%	n	%	n	%
M10: Cardiology	3772	6%	2212	7%	1812	6%	2292	7%
M25: Gastroenterology	108	0%	515	2%	90	0%	12	0%
S00: General Surgery	11092	19%	5811	18%	5632	18%	5145	16%
S05: Anaesthesia and Pain Management	99	0%	296	1%	43	0%	124	0%
S15: Cardiothoracic Surgery	684	1%	249	1%	425	1%	335	1%
S20: Dental Surgery	3080	5%	2468	8%	2390	8%	1766	5%
S24: Maxillo-Facial Surgery	374	1%	393	1%	397	1%	159	0%
S25: Otorhinolaryngology (ENT)	6526	11%	2342	7%	2581	8%	3114	10%
S30: Gynaecology	5398	9%	2665	8%	3106	10%	3119	10%
S35: Neurosurgery	670	1%	213	1%	417	1%	325	1%
S40: Ophthalmology	11335	20%	5325	17%	5122	16%	5319	16%
S45: Orthopaedic Surgery	6611	11%	4060	13%	4070	13%	4299	13%
S59: Specialist Paediatric Surgery	1117	2%	524	2%	677	2%	629	2%
S60: Plastic Surgery [excluding burns]	2194	4%	1991	6%	1831	6%	2068	6%
S70: Urology	4305	7%	2175	7%	2510	8%	2787	9%
S75: Vascular Surgery	687	1%	624	2%	680	2%	746	2%
<b>Aotearoa New Zealand Total</b>	<b>58053</b>		<b>31864</b>		<b>31785</b>		<b>32237</b>	

Source: National Minimum Dataset

Please note that the percentages may not add up to 100% due to rounding

### Strengths and limitations

These analyses are based on the same data used to undertake routine reporting of planned care waiting times and elective planned care procedure volumes across Health NZ. The analyst undertaking the analyses accesses and manipulates national NMDS and Northern Region Waitlist data routinely as part of their current 'business as usual' role.

However, there are limitations related to the data that were available during the review process. Data regarding referrals for First Specialist Appointments became available towards the end of the review period for Metro-Auckland only (i.e. not Northland Te Tai Tokerau District or other districts outside of the Northern Region). Furthermore, there were likely to be data quality issues (e.g sub-optimal completeness) of the available Metro-Auckland referrals data that had not been fully quantified at the time of the review, and it was therefore decided not to include these data in the presented analyses. In addition, only Northern region waiting list data were accessible during the time available for the review.

There are also several limitations within the data that were able to be analysed. As noted previously, meaningful interpretation of trends from the data presented is challenging given the range of initiatives introduced during and following the COVID pandemic to improve timely delivery of planned care. Furthermore, the elective planned care procedure volume data available does not enable need for specialist assessment, surgical need and barriers to accessing care to be quantified or accounted for (i.e. the 'denominator' for the volumes presented cannot be quantified). As noted previously, there are also likely to be inter-district differences in the inclusion of some specific procedures (e.g. interventional radiological procedures) on elective planned care waiting lists. While the available waiting list data includes assigned priority category, there are known issues with variability in both the priority categories used and the target times for each priority category across specialties within a district and between districts and regions. There is also an inconsistency in the assignment of priority categories across services within a district and across districts; this is a recognised national problem, with ongoing work to set national standards for clinicians and booking administrators to follow.

The reasons for any extended waiting times are likely to be multifactorial, including disruptions to service provision related to the COVID-19 pandemic, but are unable to be quantified from the data available. There are also likely to be data entry and recording errors, but these have not yet been formally quantified for the Northern Region Waitlist data although a data quality review is apparently in progress.

There is also known misclassification within prioritised ethnicity data available in routine data sources.<sup>209</sup> Deprivation quintile and rural/urban status were quantified based on nationally used metrics and assigned using publicly available concordance files. Nevertheless, deprivation quintile was based on NZ Index of Deprivation 2018 data that is a small area based metric of socio-economic status rather than an individual measure. Both deprivation quintile and rural/urban status were assigned based on domicile code of residence to minimise missing data, but assignment using smaller individual level area data such as meshblock or Statistics New Zealand Statistical Area 1 geographical boundaries would have enabled more accurate assignment of deprivation and rural/urban status for each individual.