

**New Zealand
Dialysis Audit**

2009

**Report for New Zealand Nephrology Services on behalf of
the National Renal Advisory Board**

**Grant Pidgeon
Standards and Audit Subcommittee**

March 2011

***Establishment of a national quality assurance framework to improve the
delivery of dialysis services to the New Zealand dialysis population.***

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Introduction

The National Renal Advisory Board (NRAB) presents its sixth annual audit report of the New Zealand dialysis care standards. This data is predominantly derived from the annual return to the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA), but also includes specific data sets provided by individual renal services. Unfortunately it has not been possible to include any data from the New Zealand Peritoneal Dialysis (NZPD) registry as this is currently undergoing a major overhaul. It is hoped that future reports will be able to include more complete data from the NZPD registry.

The Standards and Audit Subcommittee of the NRAB has made a number of changes to the reported data and has adjusted some of the standards in light of recent changes to recommended best practice guidelines. The reporting of haemoglobin concentrations has been adjusted to reflect the recent lowered haemoglobin targets.

The collection and collation of data for this report is critically dependent on the goodwill and hard work of renal units and the staff of the ANZDATA and NZPD Registries. For the first time comparative data relating to transplantation rates has been reported.

The dialysis care standards have been appended to the Tier Two Renal Service Specifications in the Ministry of Health's National Service Framework library. The standards are also available for review by health professionals and the public on the Kidney Health New Zealand website <http://www.kidneys.co.nz/>.

The section of the report incorporating data provided directly from renal units to the Subcommittee is much more complete than in previous years and most units are now able to report against the specific standards.

The process of data collection

The 2009 Report includes data from the 2009 ANZDATA Registry Report and individual renal units' audit programmes. The timing of data collection and reporting from ANZDATA means that the New Zealand Audit Report cannot be distributed until their work is completed in the second half of the year following original data collection. Previous reports have been greatly delayed due to the late return of some NZ unit data to ANZDATA. This has been much improved for the 2009 data collection but unfortunately there have been delays in the ability of the ANZDATA organisation to process the data and analyse the specific NZ unit data against the recommended standards.

The audit data is shown in tabular and graphic form in the following pages. You may note minor changes in the data from previous years which result from corrections and updates to the ANZDATA and NZPD databases. It has been decided to remove the raw data from the report but this is available to Heads of Renal departments on request.

The National Renal Advisory Board would appreciate feedback on this report. Comments can be sent to Mark Marshall, Chair of NRAB MRMarshall@middlemore.co.nz , or Grant Pidgeon grant.pidgeon@ccdhb.org.nz .

Renal Service Demographic Data 2009

	Northland	Auckland	Middlemore	Hamilton	Hawkes Bay	Palm Nth	Taranaki	Wellington	Christchurch	Dunedin	New Zealand
Population*	156,310	969,380	478,570	717,715	154,760	230,645	109,170	610,130	588,170	300,515	4,315,365
% Maori	31.8%	9.0%	16.9%	25.9%	24.6%	20.2%	16.7%	12.2%	7.9%	8.8%	15.2%
% Pacific	1.6%	9.2%	22.0%	2.1%	3.1%	2.2%	1.0%	5.8%	2.0%	1.5%	6.3%
% Asian	1.9%	21.3%	19.3%	4.5%	2.5%	4.1%	2.5%	7.6%	6.3%	3.7%	10.3%
% Other	64.7%	60.5%	41.8%	67.5%	69.8%	73.6%	79.9%	74.4%	83.8%	86.1%	68.2%
Age 0-29yr	39.0%	42.8%	47.1%	41.7%	40.1%	41.5%	39.4%	40.6%	39.0%	40.4%	41.7%
Age 30-49yr	25.4%	30.6%	28.1%	26.4%	26.5%	25.4%	26.5%	29.0%	28.1%	26.7%	28.1%
Age 50-69yr	25.3%	19.4%	18.7%	22.2%	23.3%	22.4%	23.1%	21.6%	22.7%	22.8%	21.4%
Age 70+	10.4%	7.2%	6.1%	9.7%	10.1%	10.7%	11.0%	8.8%	10.1%	10.1%	8.8%
Incident numbers	35	115	105	108	30	35	9	72	39	19	567
Incidence rate (pmp)	224	119	219	151	194	152	82	118	66	63	131
Prevalent numbers	154	534	467	429	83	116	60	212	126	79	2,260
Prevalence rate (pmp)	985	551	976	598	536	503	550	348	214	263	524

* Estimate from 1996 census (Ministry of Health)

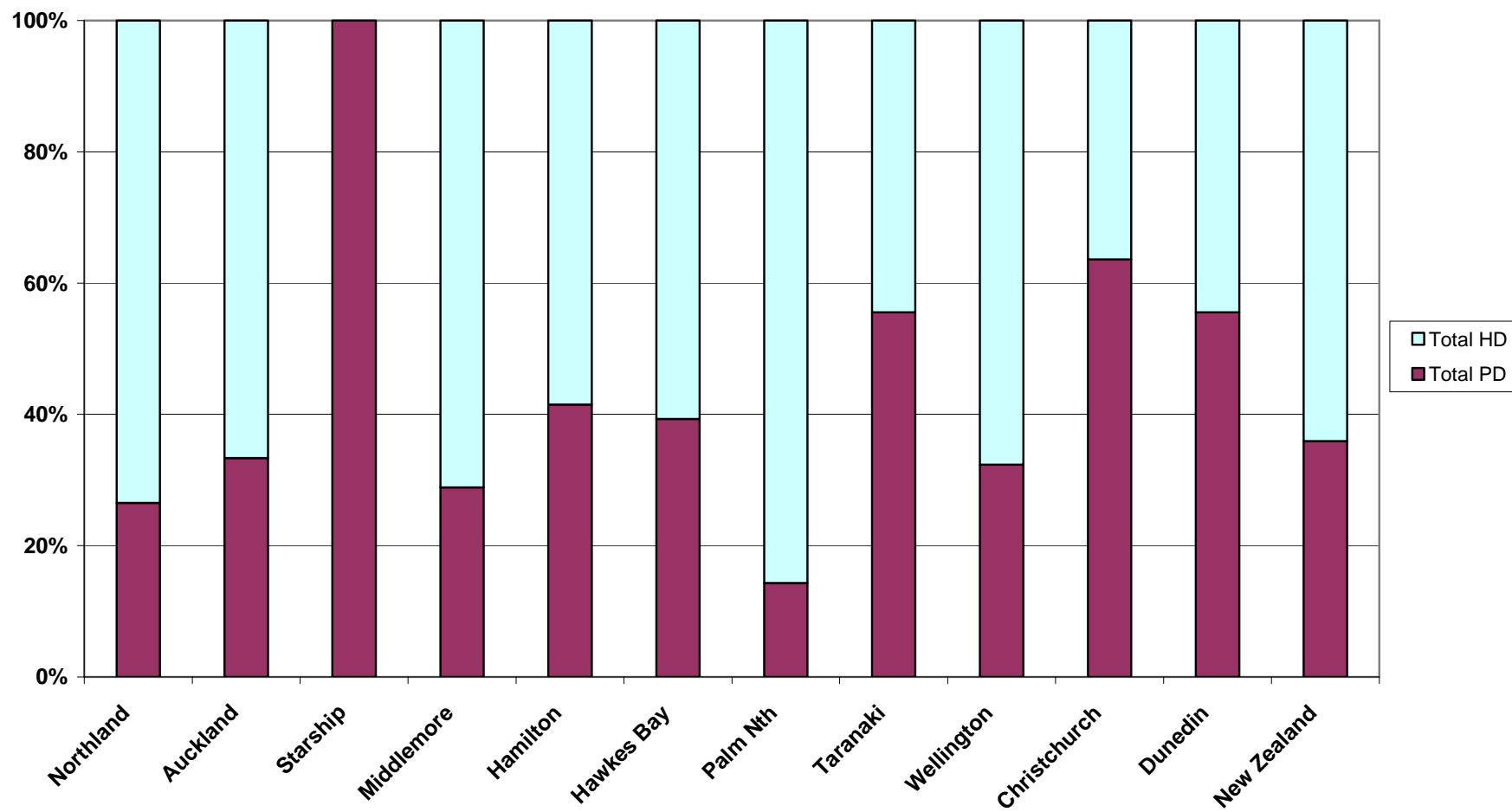
Incidence – number of new patients commencing dialysis treatment during the calendar year – per million population (pmp)

Prevalence – number of patients receiving dialysis treatment at the end of the calendar year ie. 31 December 2009 – per million population (pmp)

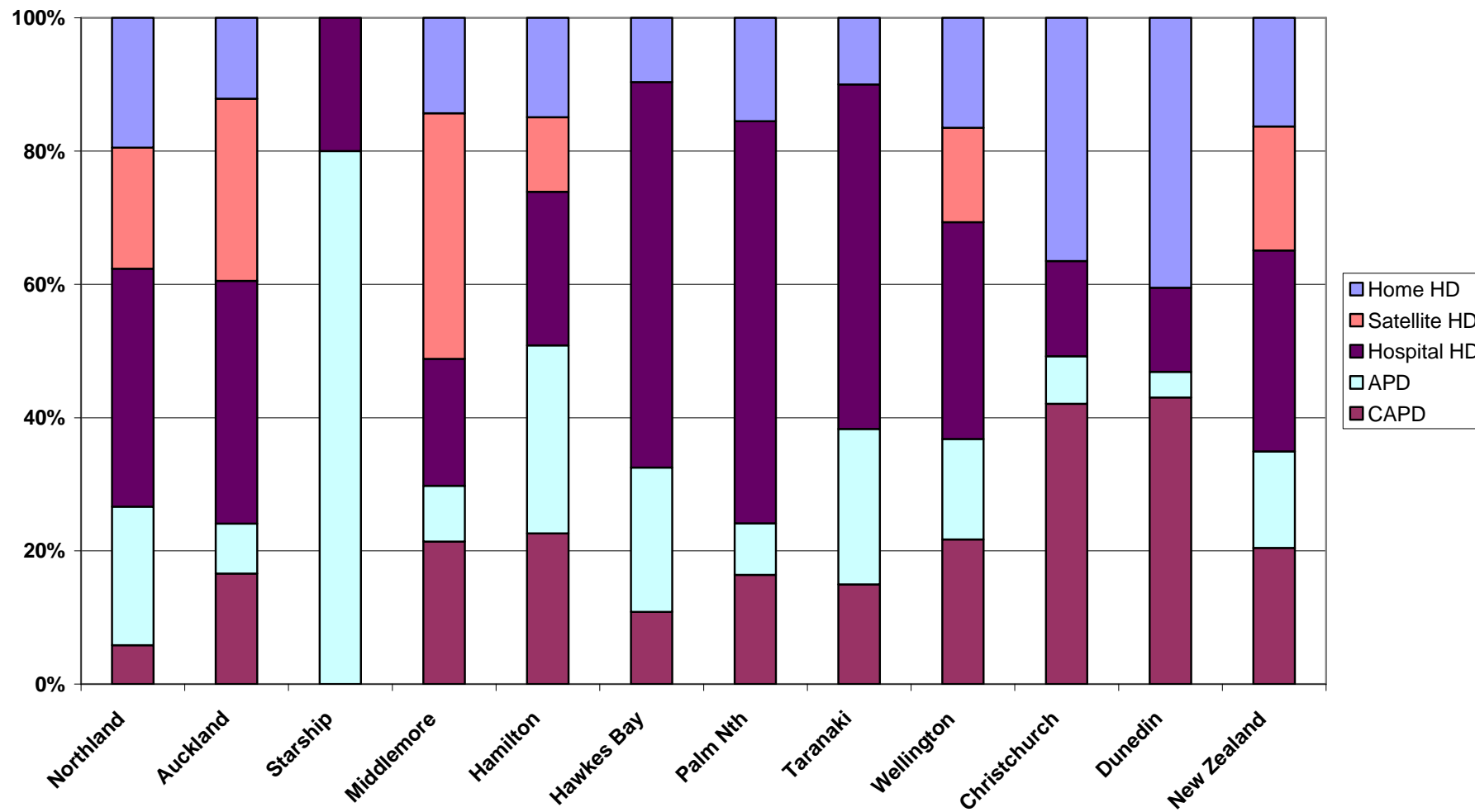
Unit Coverage

Northland	Northland DHB	Auckland	Waitemata and Auckland DHBs
Middlemore	Counties Manakau DHB	Hamilton	Waikato, Bay of Plenty, Lakes and Tarawhiti DHBs
Hawkes Bay	Hawke's Bay DHB	Palmerston North	Whanganui and MidCentral DHBs
Taranaki	Taranaki DHB	Wellington	Capital & Coast, Hutt, Wairarapa and Nelson Marlborough DHBs
Dunedin	Otago and Southland DHBs	Christchurch	West Coast, Canterbury and South Canterbury DHBs

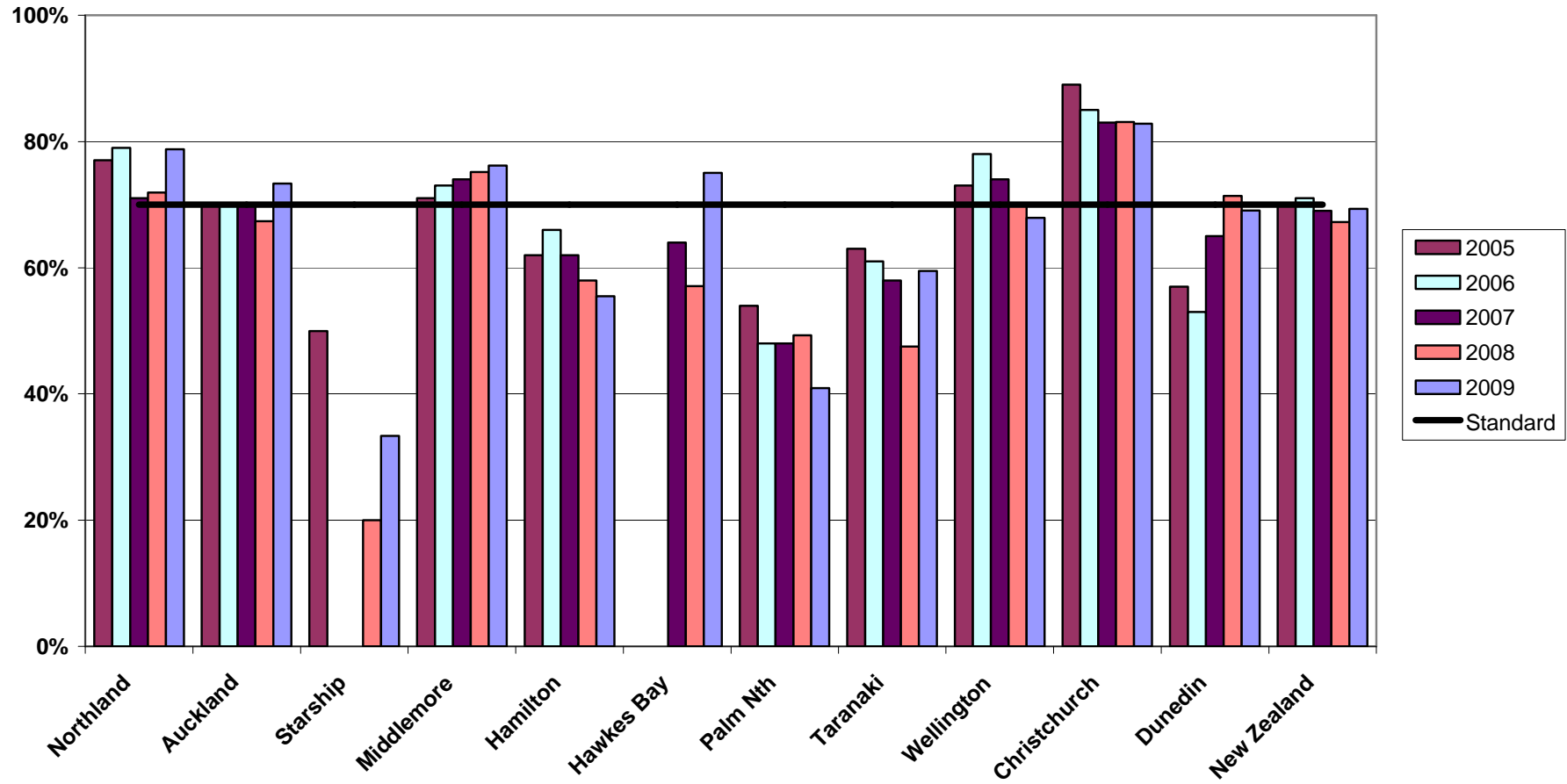
Treatment modality of incident patients in New Zealand in 2009



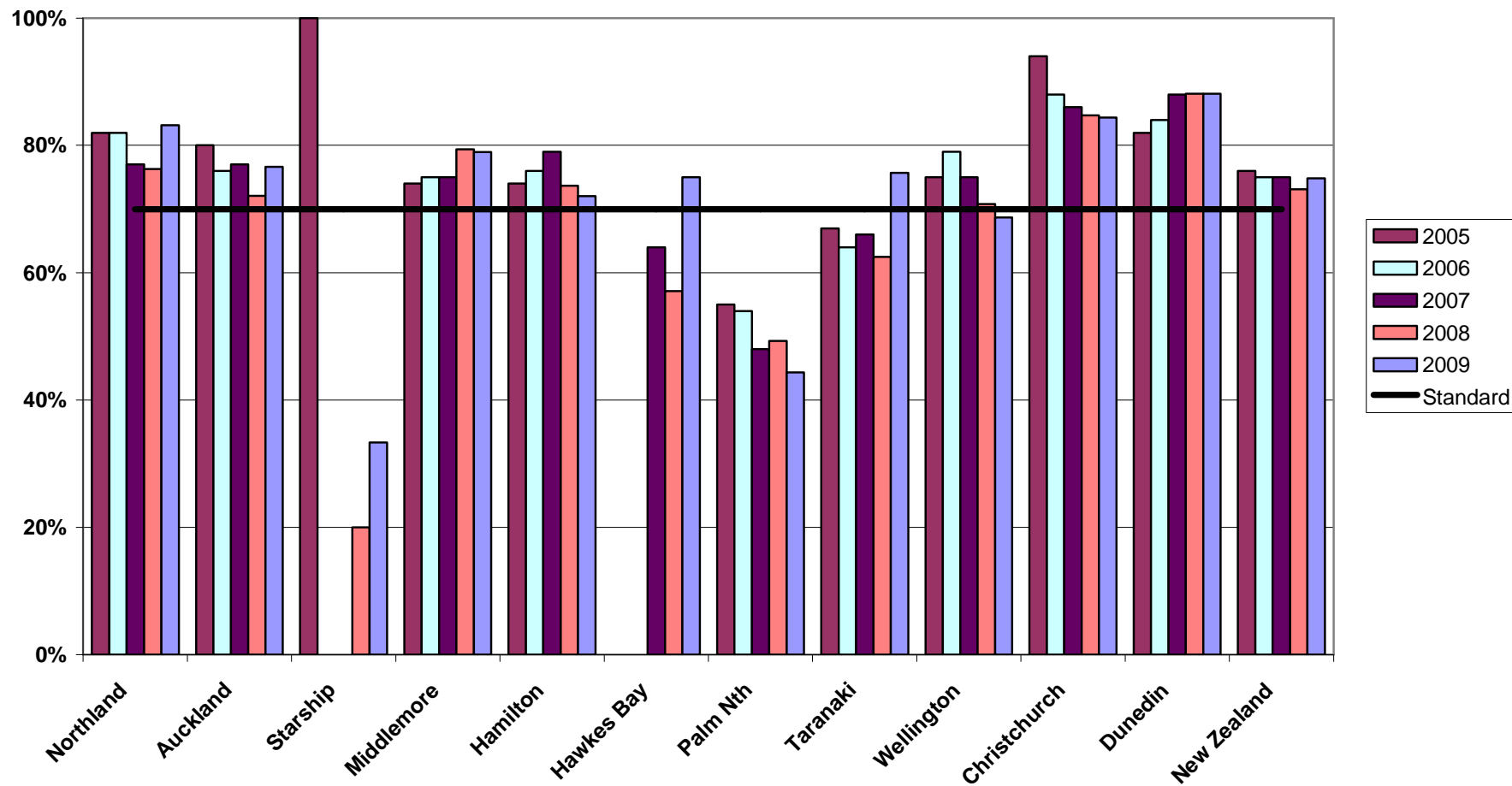
Treatment modality of prevalent patients in New Zealand in 2009



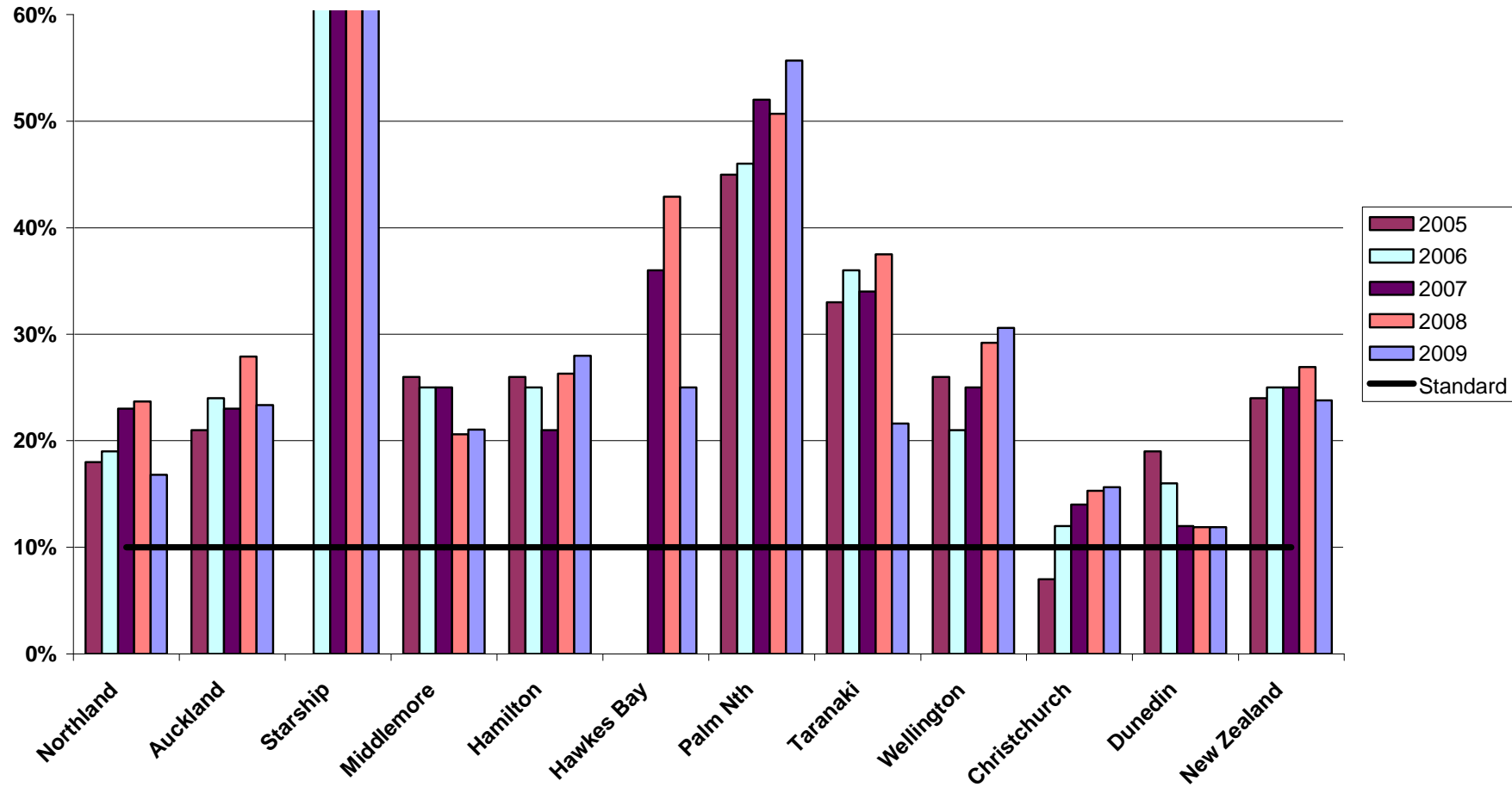
Vascular access of prevalent HD patients in New Zealand at the end of 2005 - 2009
 - percentage of AV fistulae



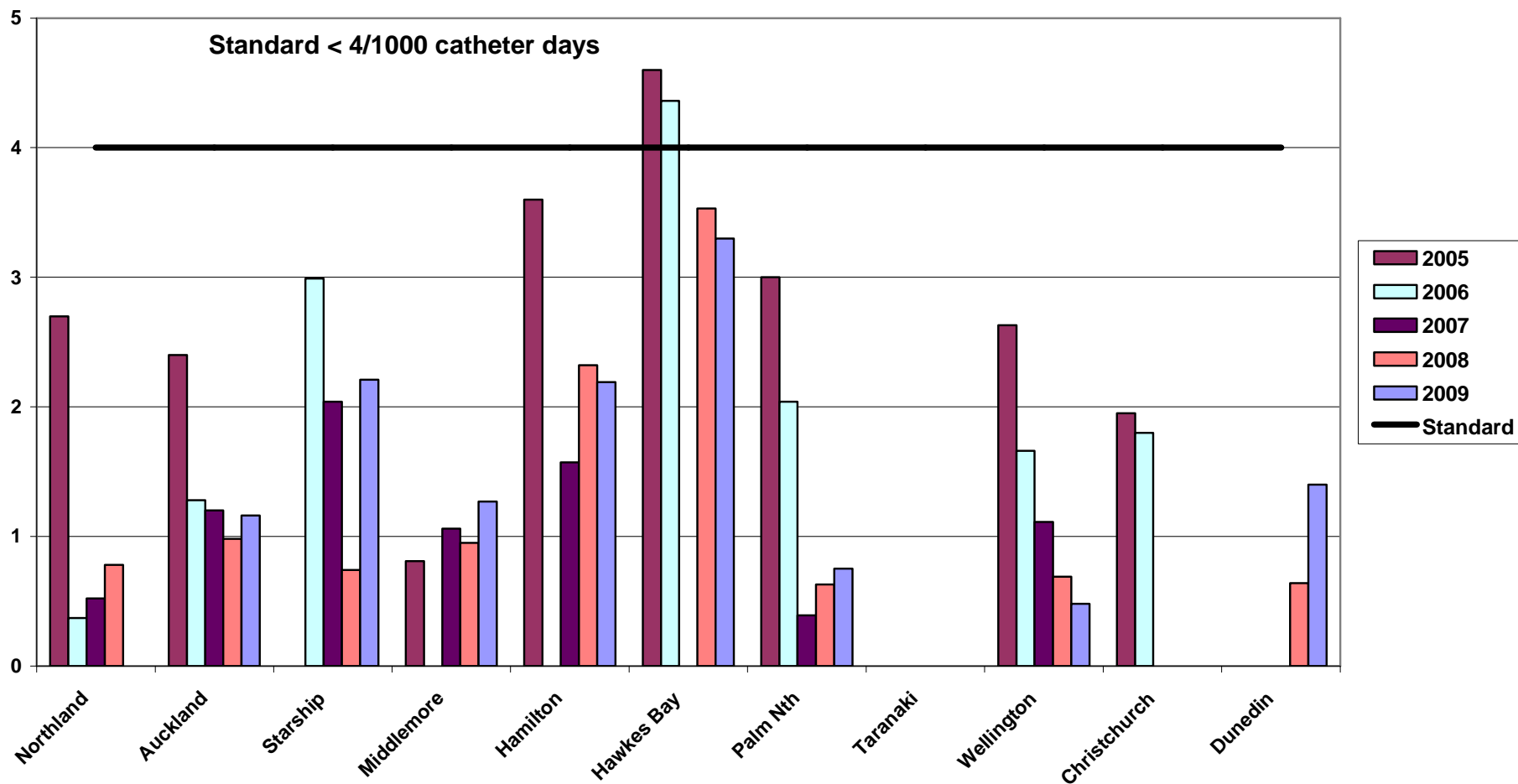
Vascular access of prevalent HD patients in New Zealand at the end of 2005 - 2009
 - percentage of AV grafts and fistulae



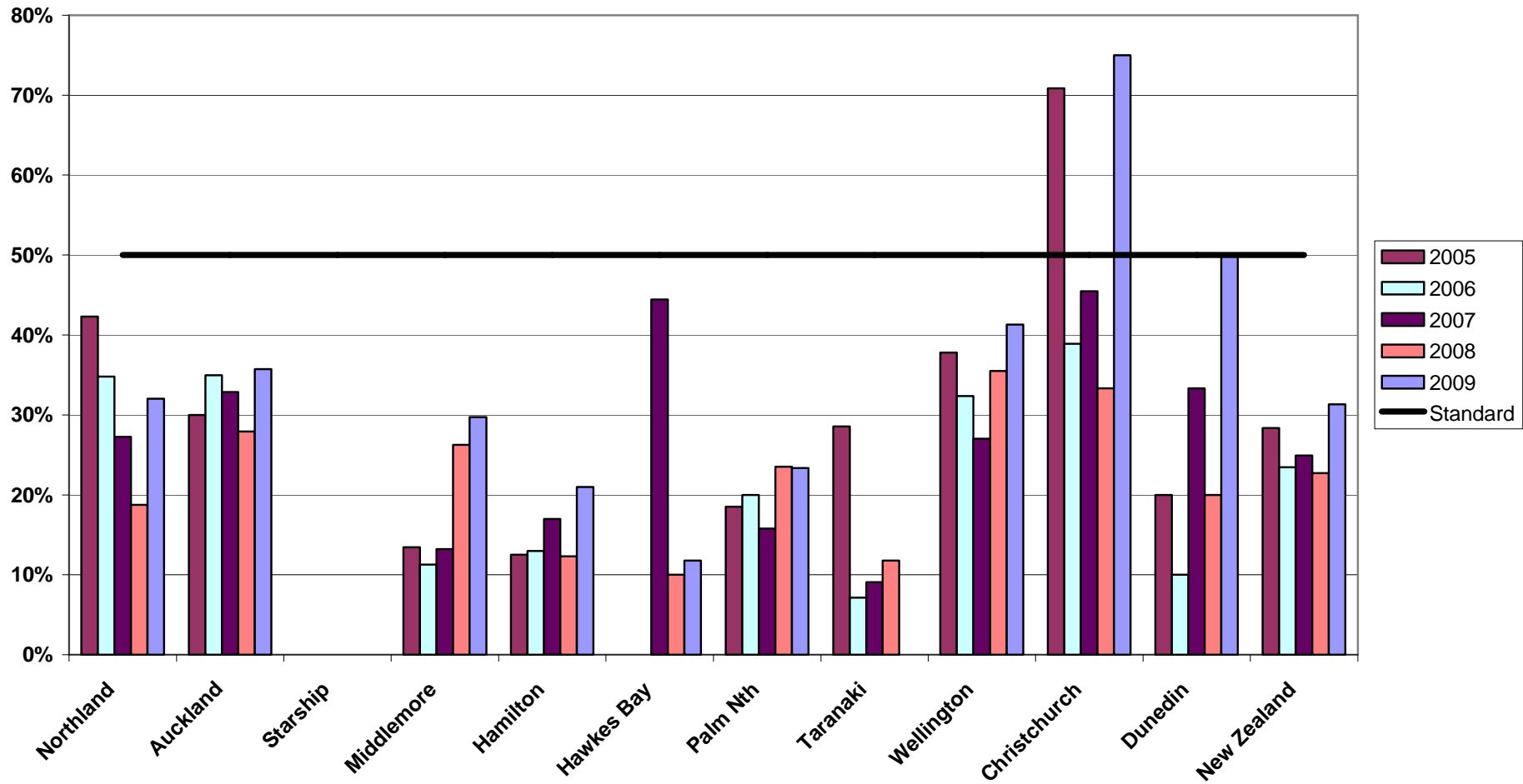
Vascular access in prevalent New Zealand HD patients at the end of 2005 - 2009
 - use of catheters (Includes tunnelled and non-tunnelled catheters)



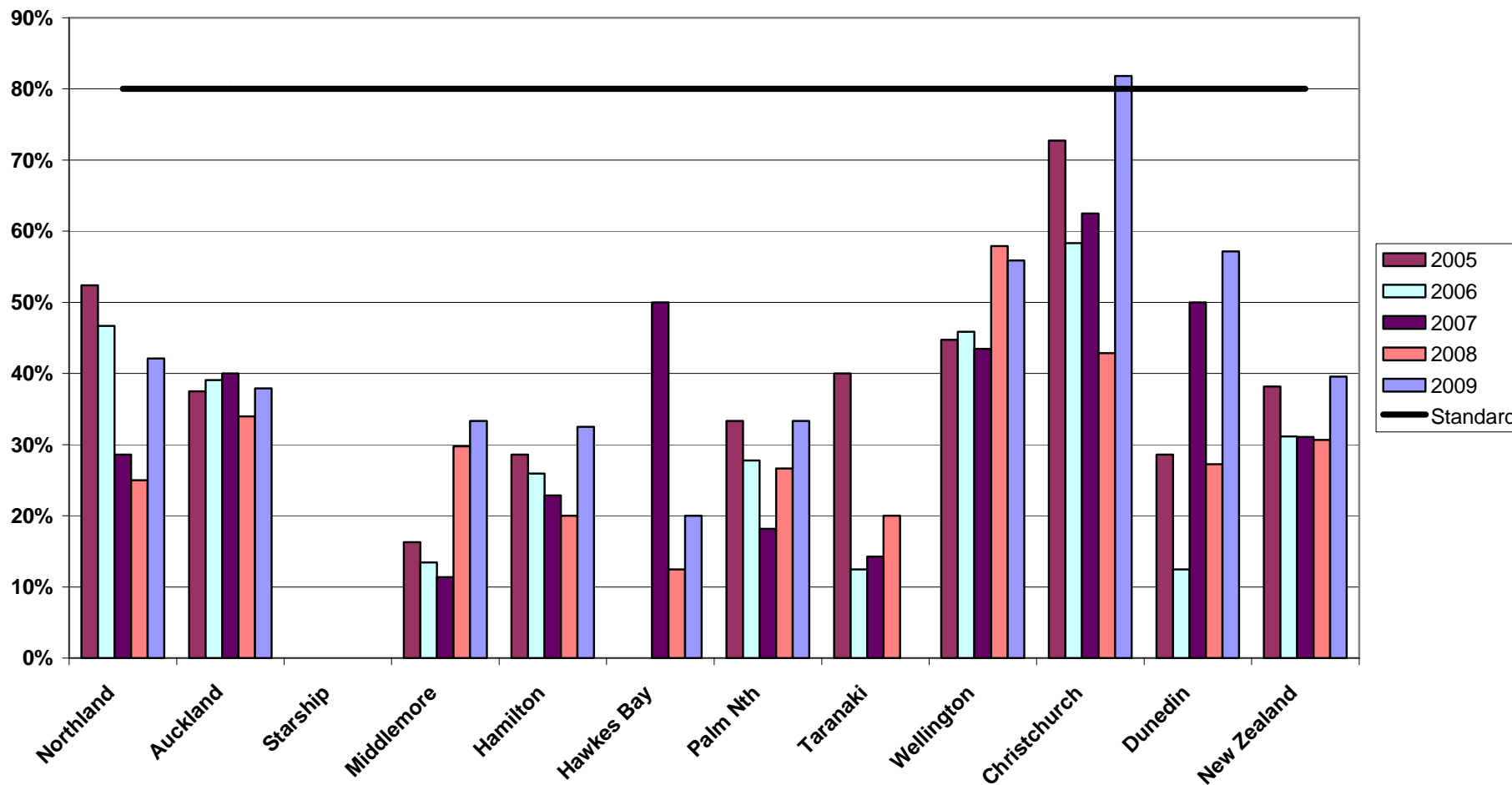
CVC-related bacteraemia rates 2005 to 2009
(/1000 catheter days)



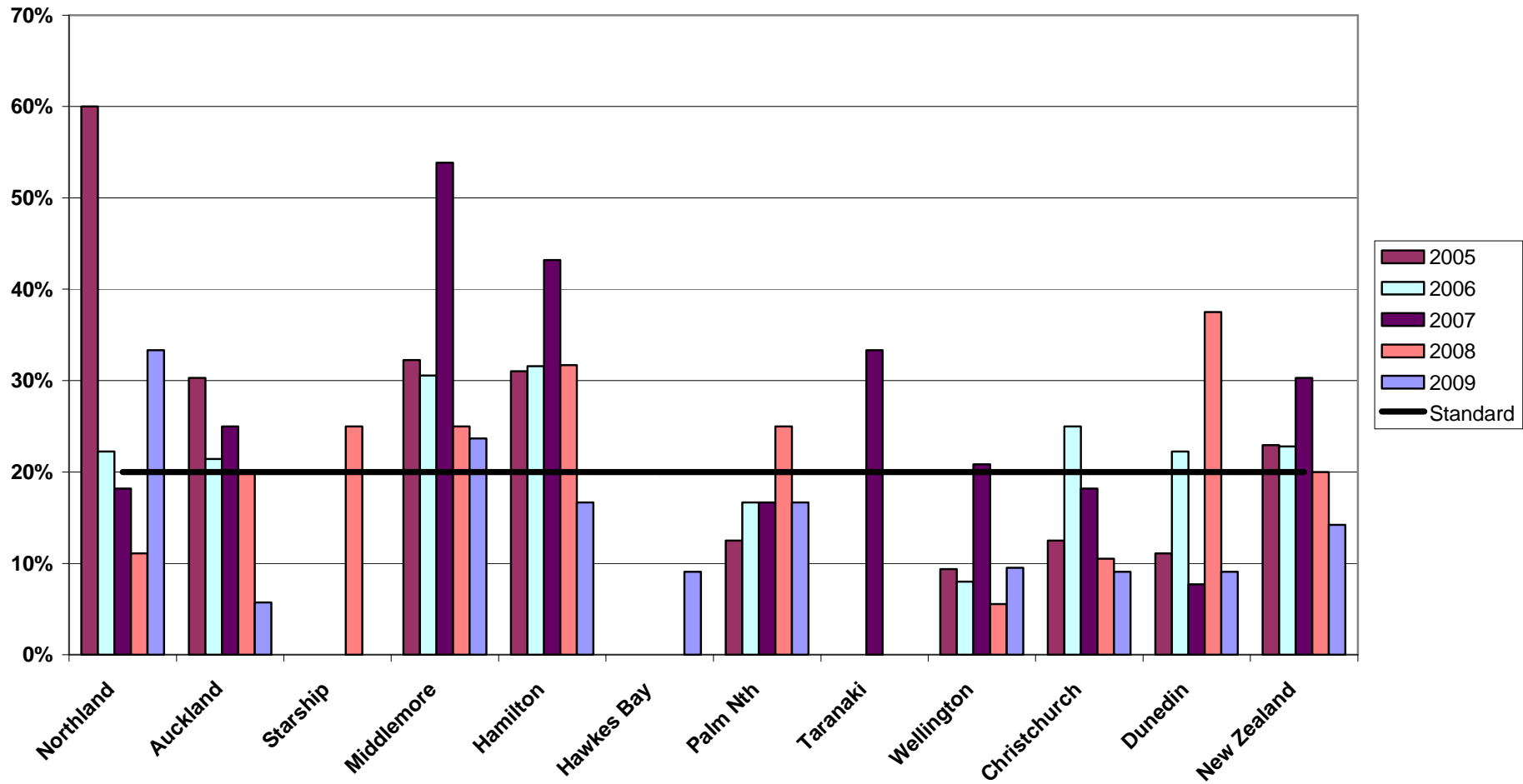
Percentage of incident New Zealand HD patients starting HD with permanent vascular access in 2005 - 2009 - AV fistula or AV graft



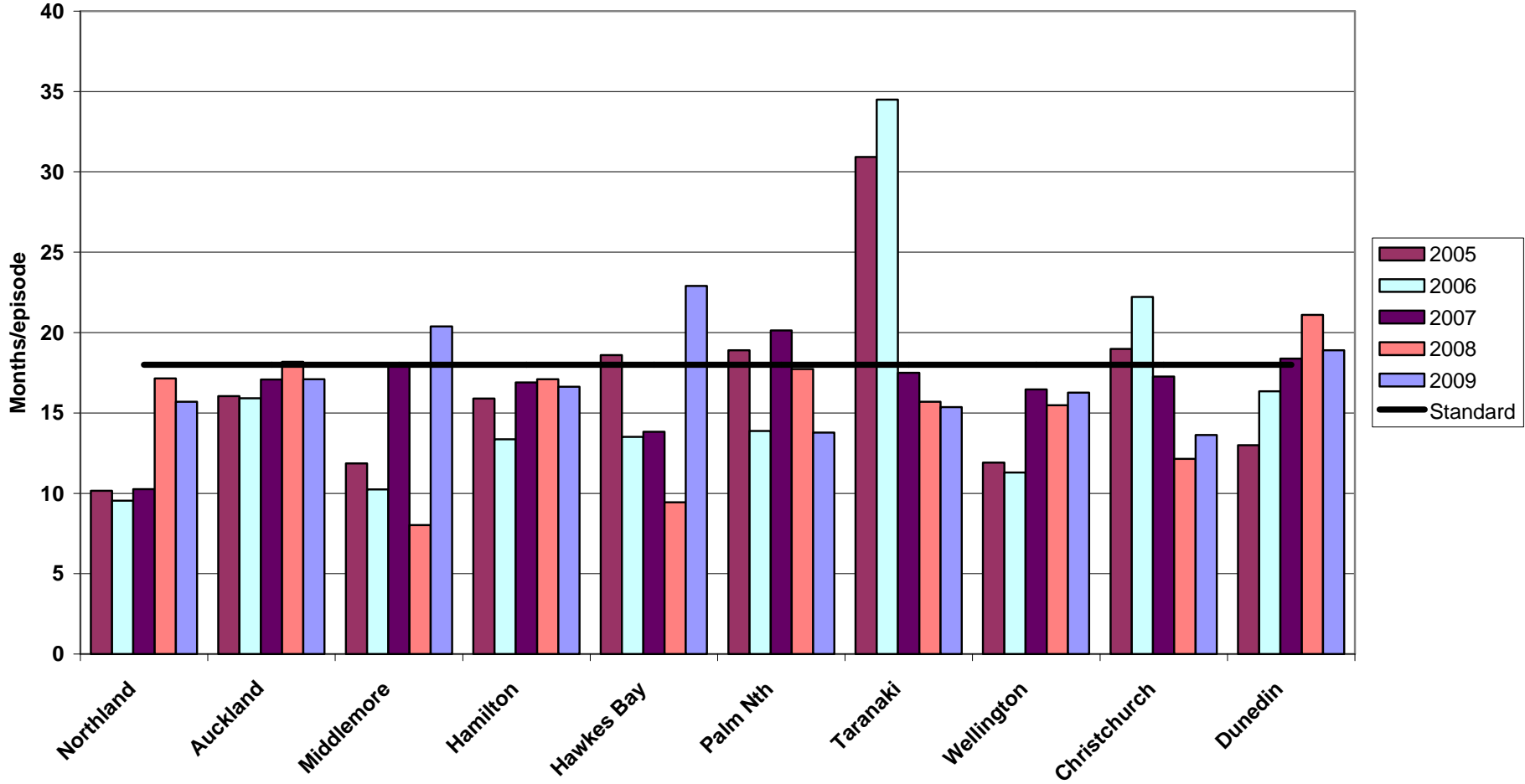
Percentage of non-late referred (>3 months) New Zealand HD patients starting HD with permanent access in 2005 - 2009 - AV fistula or AV graft



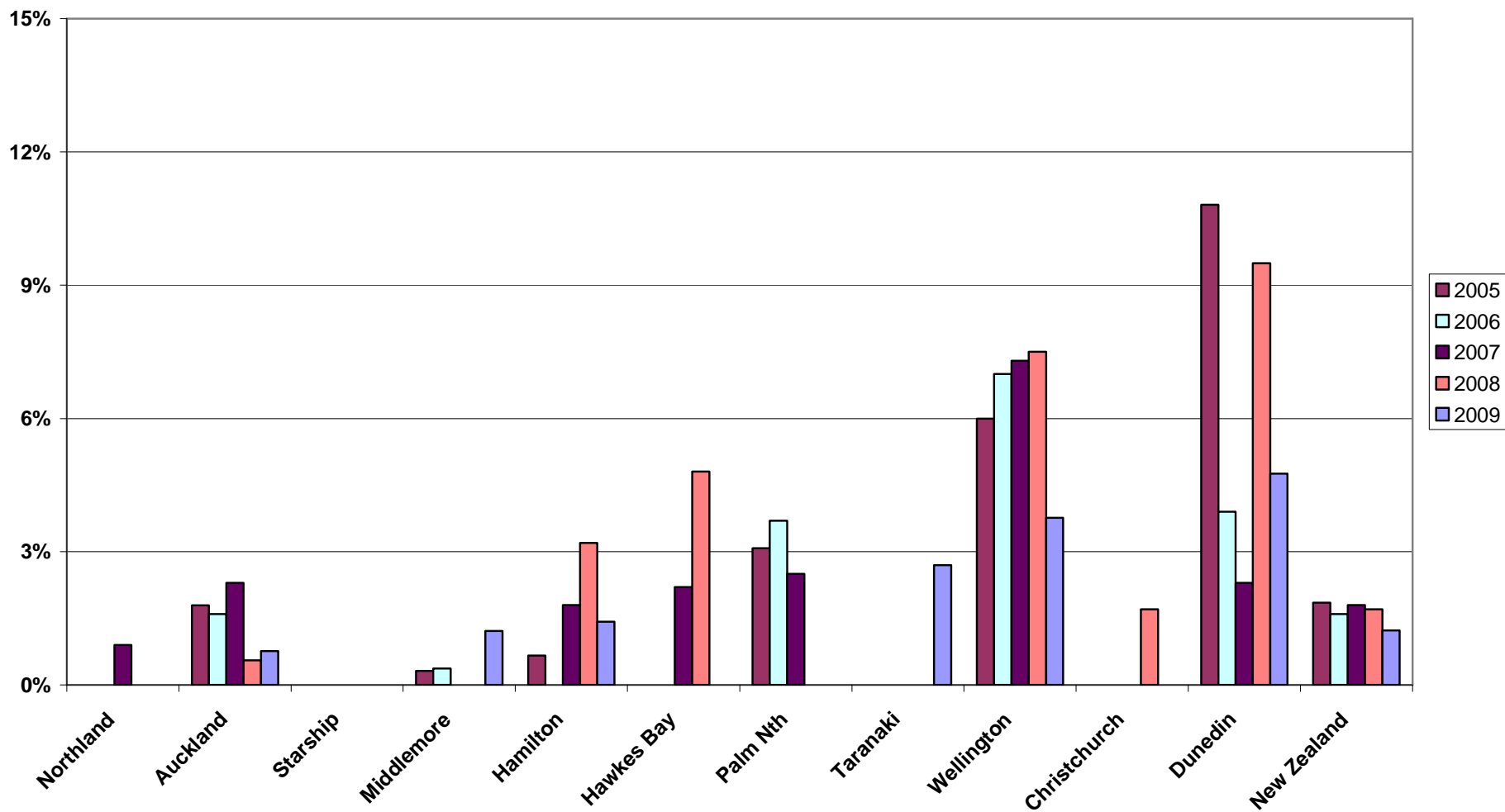
Percentage of incident New Zealand dialysis patients requiring HD for ≤ 90 days via a temporary CVC before starting PD in 2005 - 2009 (non-late start patients)



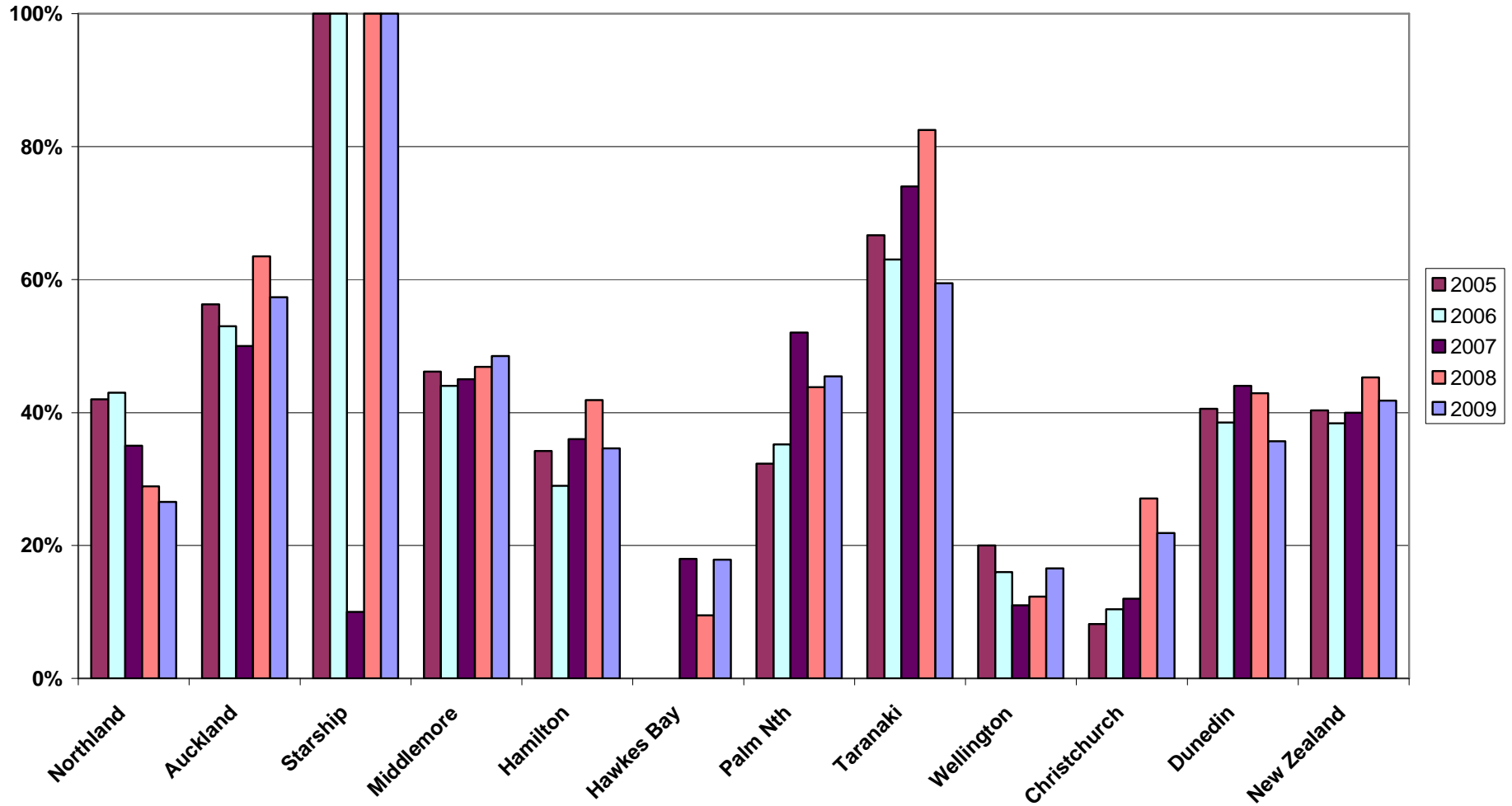
Peritonitis rates in New Zealand PD patients (months/episode) for 2005 to 2009
(ANZDATA)



Percentage of HD patients - Less than 3 sessions per week for 2005 - 2009



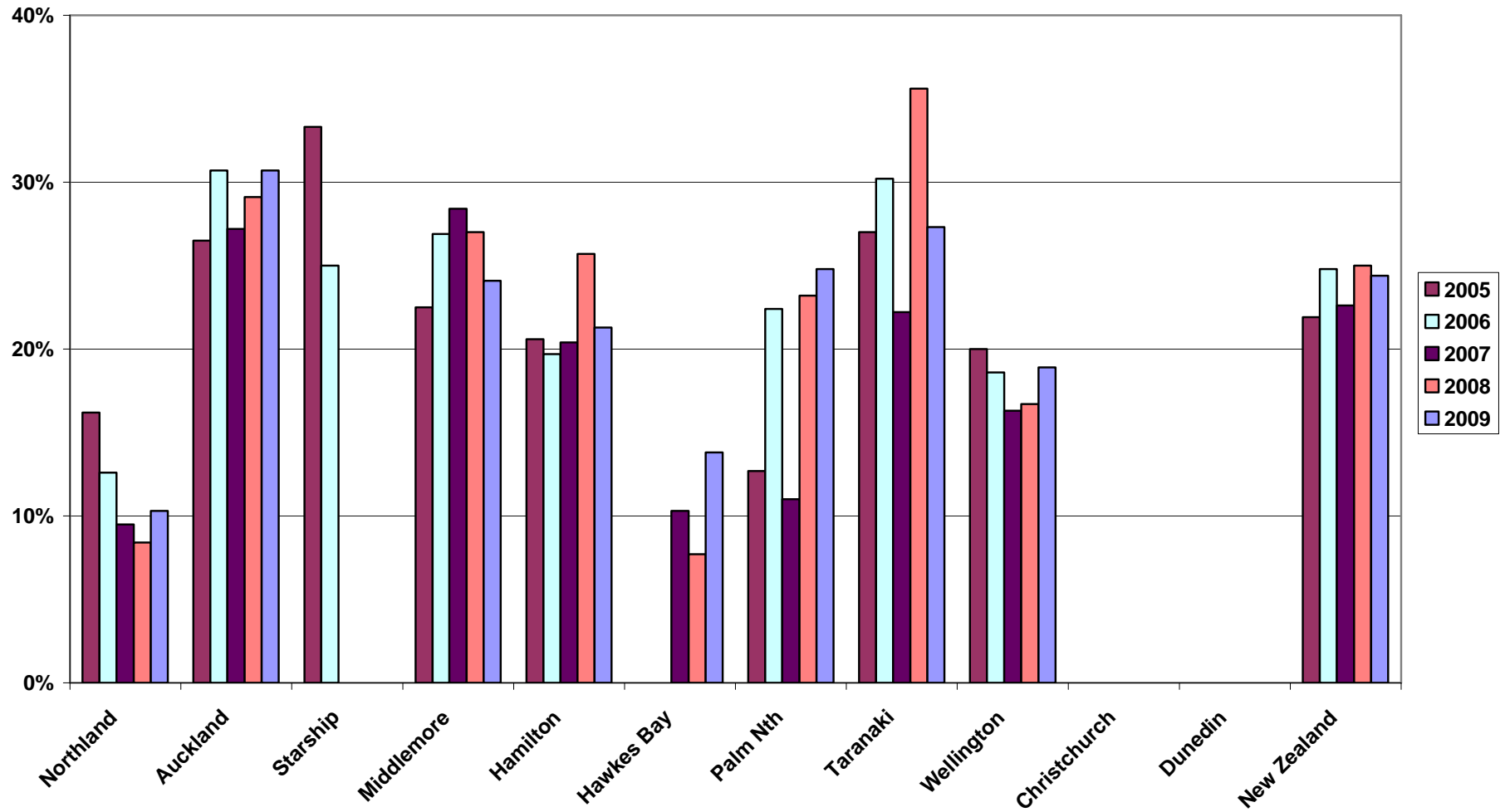
Percentage of HD patients - Session Length (< 4.5h/session) for 2005 - 2009



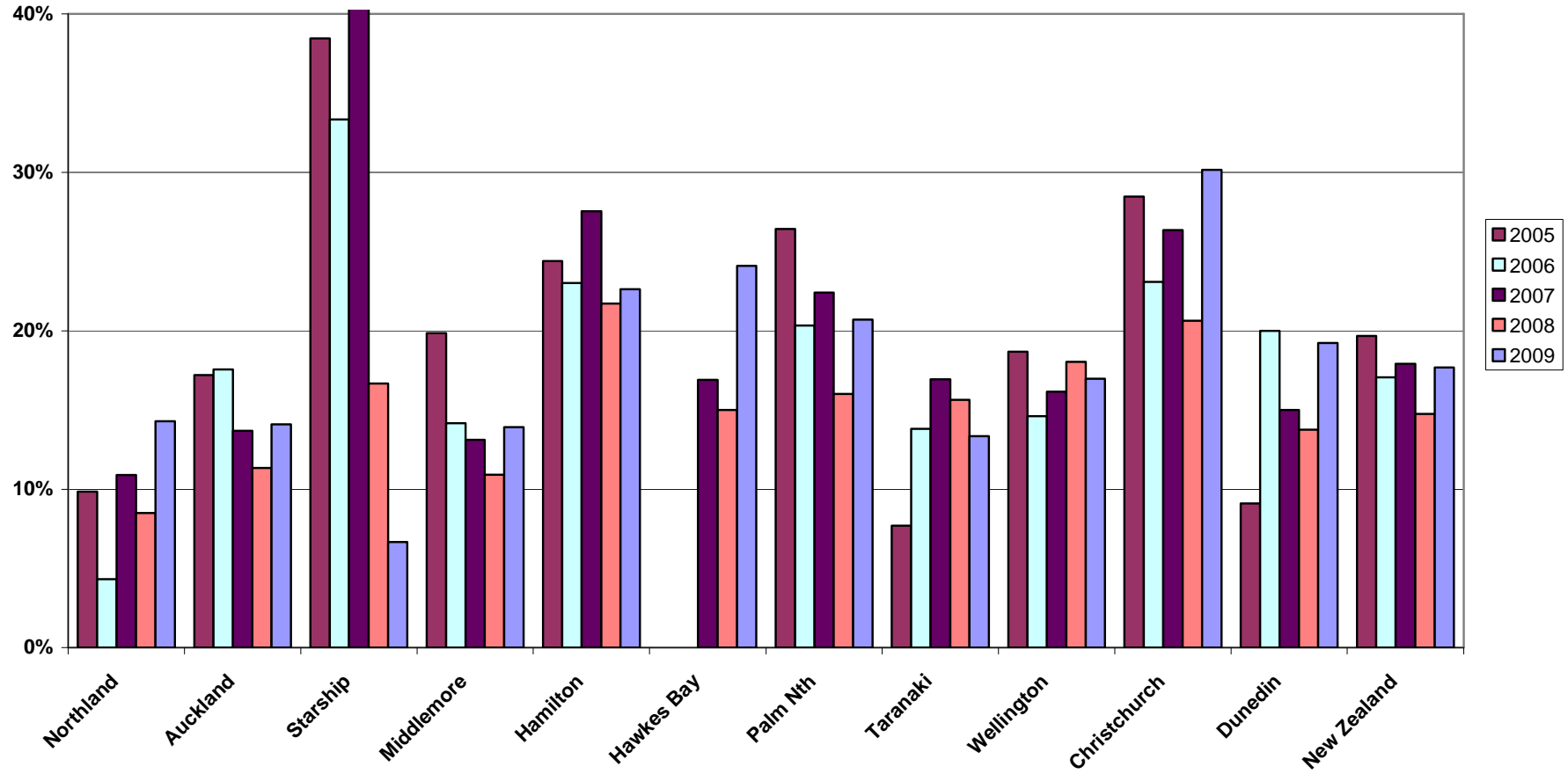
Dialysis frequency and duration of session 2005 to 2009

	Duration of dialysis treatment														
Dialysis frequency	< 4 hours					> 4 hours					Total				
	2005	2006	2007	2008	2009	2005	2006	2007	2008	2009	2005	2006	2007	2008	2009
< 3/week	3	3	7	5	3	18	14	17	18	15	21	17	24	23	18
3 x weekly	32	27	33	28	29	1,010	1,080	1,162	1,155	1,265	1,042	1,107	1,195	1,183	1,294
> 3/week	16	18	27	22	16	54	65	77	109	141	70	83	104	131	157
Total	51	48	67	55	48	1,082	1,159	1,256	1,282	1,421	1,133	1,207	1,323	1,337	1,469

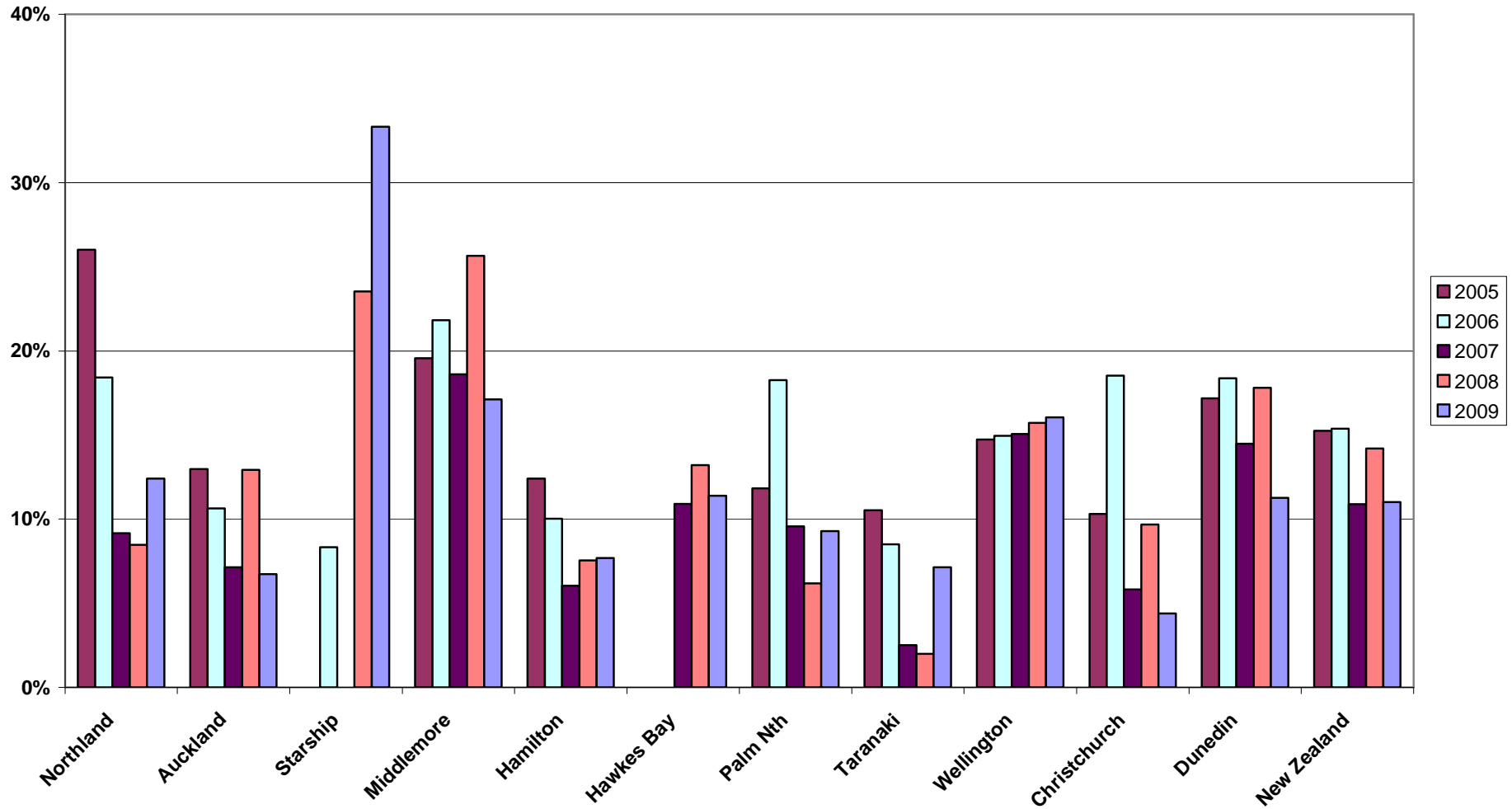
Haemodialysis Patients with Urea Reduction Ratio < 65%



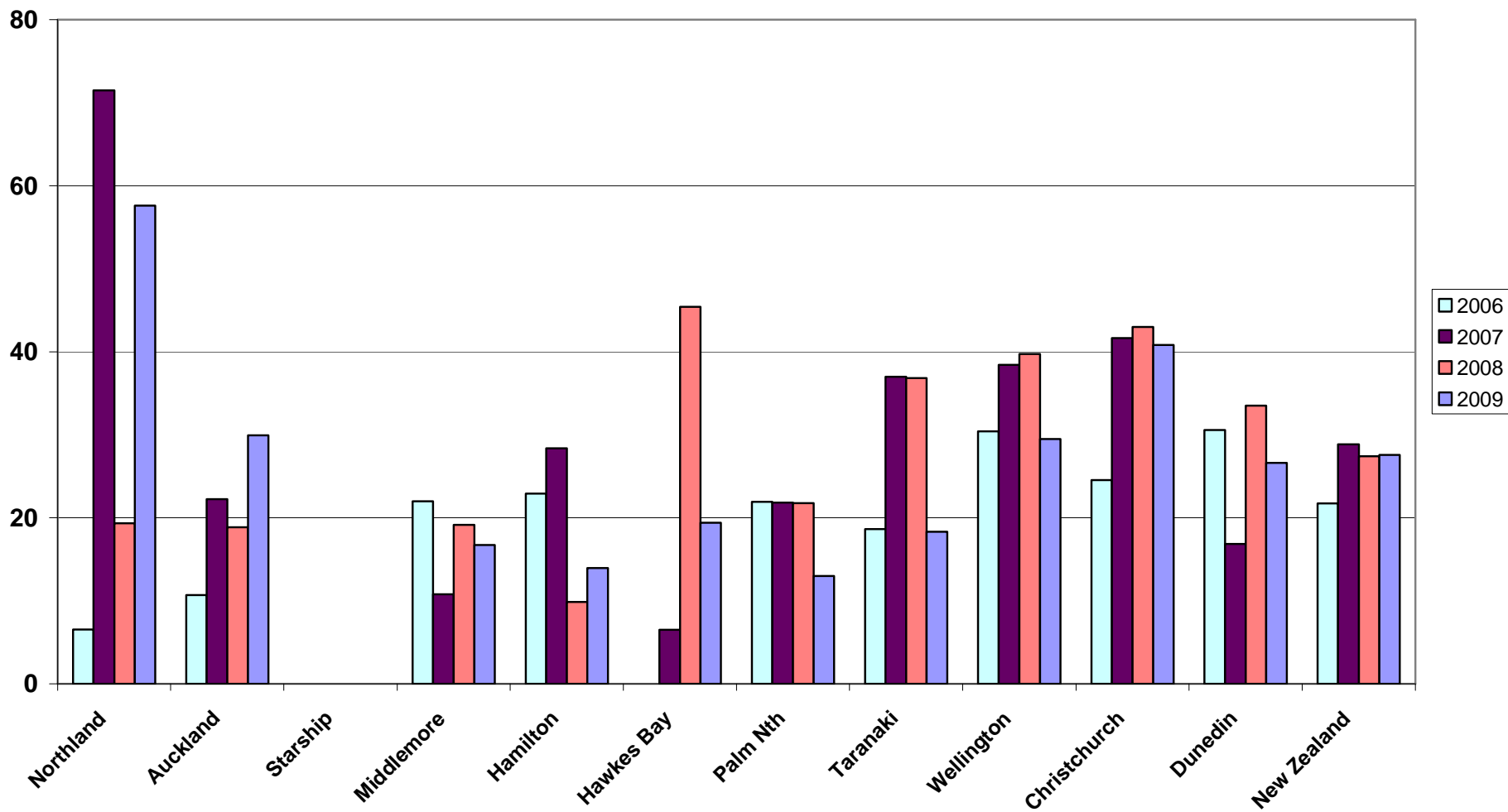
Percentage of dialysis patients with Hb Concentration (< 100g/l) at end of 2005 - 2009



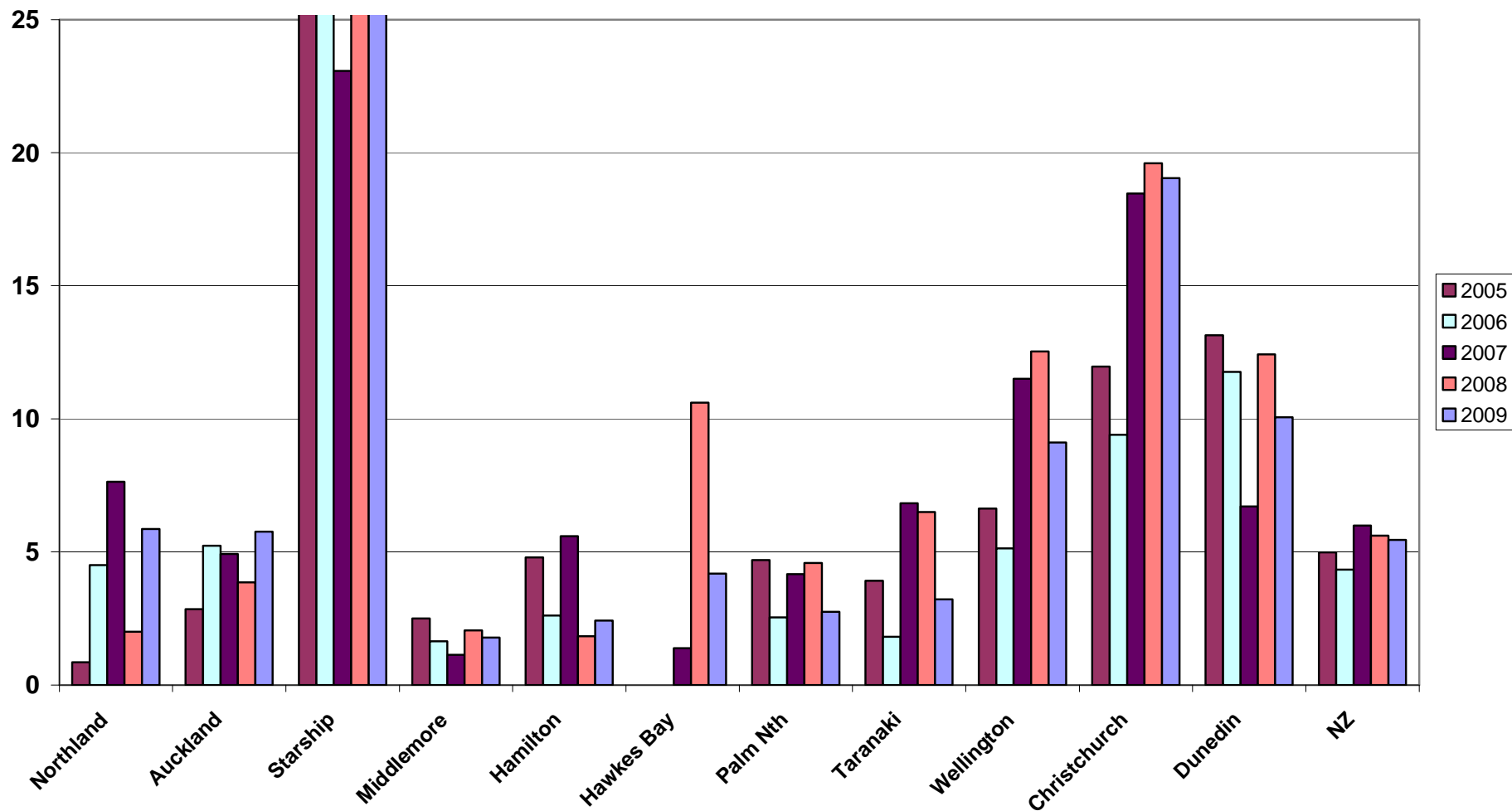
Percentage of dialysis patients prescribed EPO with Hb concentration (> 130g/L) at end of 2005-2009



Transplantation Rate 2006-2009 - per million general population



Transplantation Rate 2005-2009 - per 100 dialysis patients



Commentary

Demography

- The number of incident patients increased markedly to 567 in 2009, having been no higher than 500 over the last five years. This reflects a rise in the incidence rate from a stable 115 per million population (pmp) to 131 pmp. The greatest increase in incidence has been in the > 65 year age group.
- Incidence rates vary markedly across the country from a high of 224 pmp in Northland to only 63 pmp in Dunedin.
- Prevalence rates also vary considerably and are highest in those units serving populations with a high percentages of Maori and Pacific Island people. Most units continue to experience considerable growth in dialysis numbers (average of 8% across NZ), with prevalent numbers in Hawke's Bay increasing by a staggering 38% over the 12 month period. Surprisingly the Taranaki unit has experienced a fall in both dialysis incidence and prevalence.
- Of patients commencing dialysis in 2009 61% initially received some form of haemodialysis, down from 68% in 2008. This varied from only 36% in Christchurch to 86% in Palmerston North.
- Prevalent modality continues to show marked regional variation. The prevalence of peritoneal dialysis across NZ has changed minimally, from 36% in 2008 to 35% in 2009, but ranges from 50% in Hamilton to just 24% in Auckland and Palmerston North. The number of patients performing home haemodialysis continues to increase and is now 16.3% of prevalent patients.
- The use of automated peritoneal dialysis (APD) continues to increase and is now 42% of all PD patients but continues to show marked variation across units.

Vascular access for haemodialysis

- **Eight of eleven units** have now achieved the standard for optimal vascular access (arteriovenous (AV) fistula or graft) for prevalent patients. Most units have shown minimal change but two, Wellington and Palmerston North, had a lower percentage of prevalent patients dialysing with permanent AV access.
- **Only two units, Christchurch and Dunedin**, managed to achieve the standard for incident patients commencing dialysis with permanent access, and there has been no improvement nationally.
- Many units improved their vascular access provision between 2004 and 2006, but in most cases performance has plateaued or declined subsequently.
- The proportion of prevalent haemodialysis patients using a central venous catheter (CVC) for dialysis remains high at 24%, and again **no renal unit** has less than 10% of their patients using this form of vascular access.
- Most units are now reporting catheter related bacteraemia rates and although there is variation across units, none exhibit rates higher than the international standard of 4 episodes per 1000 catheter days and most units show continued decline in their rates.
- Even the best performing units are experiencing difficulty in meeting the vascular access standards, indicating resource issues in providing sufficient vascular access surgical time. Endeavours to establish viable regional vascular surgery services need to be encouraged.

Peritoneal dialysis

- There has been an improvement in the percentage of non-late start patients transferring to PD after beginning dialysis with HD (usually using a CVC).

Nationally this was 14% of all incident PD patients but varied from 33% in Northland to just 6% in Auckland. This may be a reflection of pre-dialysis planning or access to timely placement of PD access, although it is not clear from ANZDATA whether all such patients had chosen PD in the pre-dialysis period.

- Peritonitis rates have been included from ANZDATA, whereas previous reports relied on data from the NZPD registry. The datasets differ and are not directly comparable. **Only three** units achieved a peritonitis rate better than 1 episode every 18 patient months, although most units show steady improvement over the 5 year period. It should be noted however that many overseas units achieve much lower peritonitis rates with standards set at 24 patient months per episode or higher.

Haemodialysis adequacy, frequency and duration of treatment

- The number of haemodialysis patients receiving less than 4.5 hours dialysis per session has reduced slightly from 45% in 2008 to 41% in 2009, and only a small number of patients receive less than 3 sessions per week.
- Few patients, however, receive less than 12 hrs dialysis per week, only 2.2% of total haemodialysis patients.
- One marker of dialysis adequacy is the urea reduction ratio (URR), which ideally should be above 65%. This can be difficult to perform for home based patients and is therefore only reported for in-centre and satellite HD patients. In 2009 across NZ 24% of HD patients had a URR less than 65% and this has changed minimally over the last 5 years. This varied from 31% in Auckland to 10% in Northland.

- Absolute numbers of patients dialysing more than three times each week has continued to increase to 157 patients, 10.7% of all HD patients.

Anaemia management

- It is increasingly accepted that raising haemoglobin (Hb) concentrations with erythropoietin (EPO) can be hazardous, and consequently most international guidelines have recently revised their Hb targets to 100-120g/L. Some commentators believe this to be too tight a guideline. For the purposes of this report, data is presented for all prevalent dialysis patients with Hb concentration less than 100g/L and for those receiving EPO therapy with Hb concentration greater than 130g/L.
- 18% of NZ dialysis patients have Hb concentration less than 100g/L and this figure has changed minimally in recent years, despite the greater availability and lower cost of EPO.
- 11% of patients receiving EPO have Hb concentrations > 130g/L and this has fallen from 15% in 2005. This figure, however, is as high as 17% in some units and greater than 30% at Starship, perhaps reflecting a different recommendation in paediatric patients.

Transplantation Rates

- For the first time data is presented regarding individual unit's transplantation rates. This is a combination of both deceased donor and live donor transplantation rates, and is presented as a rate per million population and per 100 dialysis patients.

- It should be noted that transplantation rates in NZ are low and inevitably there will be considerable year to year variation for individual units.
- Overall the transplant rate in NZ in 2009 was 27.6 pmp. This varied from 57.6 pmp in Northland to just 13 pmp in Palmerston North.
- The rate per 100 dialysis patients was only 5.5 nationally but was as high as 19.0 in Christchurch compared to just 1.8 in Middlemore.
- There are many factors that will influence the transplantation rate for an individual unit, most of which reflect the demography of their dialysis population, and the percentage of their dialysis population accepted for transplantation. In future reports it is hoped that the rate per 100 dialysis patients waitlisted for transplantation will be reported.

Acknowledgments

- **Professor Graeme Russ, Dr Stephen McDonald of the Australia and New Zealand Dialysis and Transplant Registry**
- **Associate Professor John Collins and the staff of the New Zealand Peritoneal Dialysis Registry**
- **Nick Polaschek, Senior Project Manager/Team Leader, New Zealand Ministry of Health**
- **Clinical Directors, data collectors and staff of the Renal Units in New Zealand**
- **Members of the Standards and Audit Sub-committee of the National Renal Advisory Board (Grant Pidgeon (Chair), Mark Marshall, Jenny Walker, Fredric Doss)**
- **The Renal Service at Wellington Hospital provides support for the production of the annual report**

Appendix A: Circulation list

The National Renal Advisory Board

Standards and Audit Subcommittee

Heads of New Zealand Renal Units

Chief Executive Officers of DHBs with Renal Units

New Zealand Peritoneal Dialysis Registry

Australia and New Zealand Dialysis Registry

New Zealand Ministry of Health (Director General)

Australian and New Zealand Society of Nephrology

Renal Society of Australasia, New Zealand Branch

Kidney Health New Zealand

Board of Nephrology Practice New Zealand

Patient support groups/societies