

Analysis of District Health Board Performance to 30 June 2015

June 2016



THE TREASURY
Kaitohutohu Kaupapa Rawa



The Treasury is the Government's lead advisor on economic, financial and regulatory policy. We provide strategic policy advice on the New Zealand economy and produce a range of publications and economic data. We also monitor and manage the financial affairs of the Government; assess public sector proposals which have economic and financial implications; and deliver a number of operational services. In addition we are one of three central agencies, along with the Department of the Prime Minister and Cabinet and the State Services Commission, that are jointly responsible for providing leadership, coordination and monitoring across the public sector.

This report analyses the performance of District Health Boards (DHBs) against a set of financial and non-financial indicators. The analysis informs our risk assessment of DHBs and the advice we are required to give, jointly with the Ministry of Health, to the Ministers of Finance and Health on annual plans. Documenting this analysis in the form of annual overview reports provides a systematic and transparent way for us to offer our perspective on the sector, and inform our budget and other advice.

However, this report is not a substitute for the performance monitoring of the sector carried out the Ministry of Health or the formal accountability arrangements that apply to DHBs. Nor does it purport to provide a comprehensive view of health sector performance.

[Withheld under s.9(2)(a)]

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Executive Summary

This report provides an overview of the financial and non-financial performance of district health boards (DHBs) up to the last complete financial year (2015). Table 1 provides a dashboard of performance against key indicators, which are discussed below. Summary comments and an overall rating for each DHB are provided in the Appendix.

Key performance indicators

Table 1: Summary of performance against key indicators

Overall rating	Financial management & efficiency				Acute care		Primary / community	
	Net deficit	Balance sheet	Planning	Productivity	ED wait	AMI	ASH	Mental health
Auckland								
Bay of Plenty								
Canterbury								
Capital and Coast								
Counties Manukau								
Hawke's Bay								
Hutt								
Lakes								
MidCentral								
Nelson Marlborough								
Northland								
South Canterbury								
Southern								
Tairāwhiti								
Taranaki								
Waikato								
Wairarapa								n/a
Waitemata								
West Coast				n/a				
Whanganui								

Financial management and efficiency

The overall financial performance of the sector deteriorated in 2015, following several years of improvement. Aggregate net deficits increased from \$7 million in 2014 to \$66 million in 2015 (\$76 million if additional revenue for Auckland is backed out). Several DHBs hold few liquid assets, raising questions about their financial resilience and the likely requirement for deficit support from the centre.

A number of DHBs reported a net financial result for 2015 that was materially adverse to plan. Almost every DHB overspent on its own provider arm, while the majority underspent on external providers. This is part of a larger trend: most DHBs have shifted the balance of their expenditure towards supporting their own provider arm, with only a handful spending proportionately more on external providers in 2015 than in previous years.

Hospital productivity has been fairly stable since 2009, with a modest improvement in 2014 and 2015. There continues to be a relatively long tail of lower productivity.

Health outcomes

We use a limited set of metrics to get a sense of population health outcomes across the country. Emergency department waiting times serve as a proxy for secondary care outcomes and the overall functioning of the health system. These continued to improve, with all DHBs achieving performance of at least 90% of patients waiting fewer than six hours. Rates of in-hospital mortality following a heart attack provide a measure of acute care quality. Performance appears to be fairly stable across DHBs and over time.

We use ambulatory sensitive hospitalisations (ASH rates) as a measure of the accessibility and quality of primary and community care. Rates for Māori and Pasifika are markedly higher than overall rates for other ethnicities, with no sign of this gap closing. At DHB level, the story is mixed. A number of DHBs have seen increases in their child and/or adult ASH rates over the last ten years including, in some cases, recent deteriorations in performance. There are also a few examples of improved performance.

Finally, we look at the proportion of new mental health clients who are acute admissions, as a proxy for the overall coverage of primary mental health services. Although there are noticeable differences between DHBs, we did not find many rates that were both significantly higher than the norm and getting worse.

Section 1: Introduction

References to years throughout this report are to financial years (ending 30 June). Figures for years up to and including 2015 are actuals. Figures for 2016 are taken from annual plans.

This report provides an overview of the financial and non-financial performance of district health boards (DHBs). We focus mainly on performance up to the last complete financial year (2015), although in some areas we also take account of financial plans for the current year (2016). This is the second report we have produced. The first report (November 2014) looked at historical performance over the period 2009-13.

The underlying analysis was undertaken as part of the Treasury's monitoring of health sector performance and will inform our analysis of DHB annual plans for the coming financial year (2017). Our work is intended to complement more detailed monitoring undertaken by the Ministry of Health, which has primary oversight of the sector. Alongside various financial and efficiency metrics, we also look at a small number of non-financial indicators with the aim of providing a more rounded picture of overall sector performance.

Throughout this report, we use a simple traffic light system to rate DHB performance. In many cases, we measure performance relative to other DHBs rather than against an objective standard. A green rating indicates that we have no particular concerns about a DHB's performance. An amber rating indicates that we have some concerns. A red rating indicates that a DHB was amongst the worst performers against a particular metric or that we have concerns about its overall performance.

This report is not part of the formal performance management and accountability framework for DHBs. Nor are many of the metrics we use. The report is structured as follows:

- ▶ Section 2 looks at the population characteristics of DHBs.
- ▶ Section 3 looks at financial performance (net result), financial position (balance sheet), financial management (variance to plan), and hospital productivity.
- ▶ Section 4 looks at key indicators of quality for hospital and non-hospital services.
- ▶ The Appendix provides summary comments and an overall rating for each DHB.

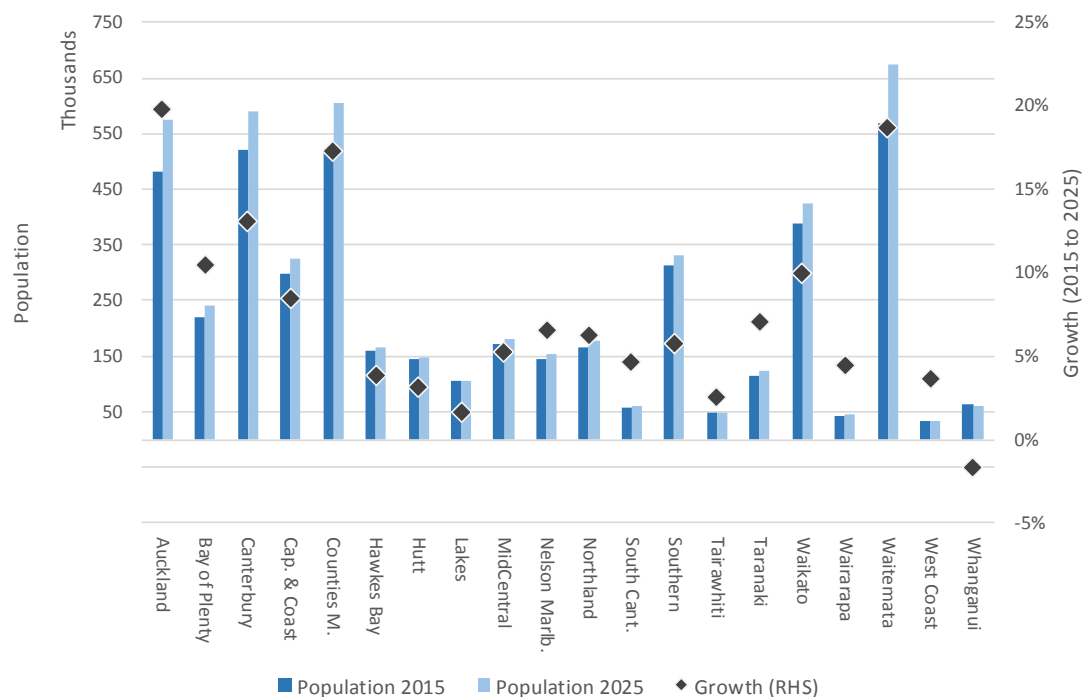
Section 2: Population Characteristics

DHBs vary considerably in terms of the size, growth rate, and demographic characteristics of the populations they serve.

Population size

Figure 1 shows population size for each DHB in 2015 and projected population size by 2025. DHBs with rapidly growing populations will face pressure on existing facilities and need to plan to manage these sustainably. (We expect this to become a particular issue for the Auckland region over the next decade or so.) At the same time, rising shares of PBFF funding should give these DHBs some flexibility about how to respond. DHBs with slow growing, static or declining populations face a different challenge: achieving service improvements under a constrained funding path while managing, or making structural adjustments to reduce, relatively fixed overheads.

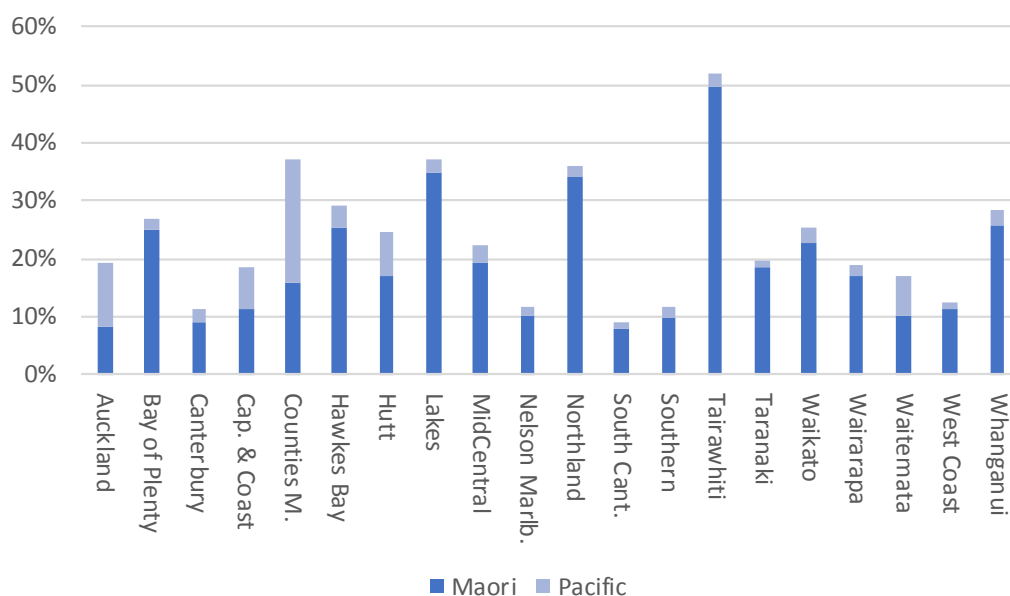
Figure 1: Current population size and forecast growth (2015 to 2025)



Age and ethnicity

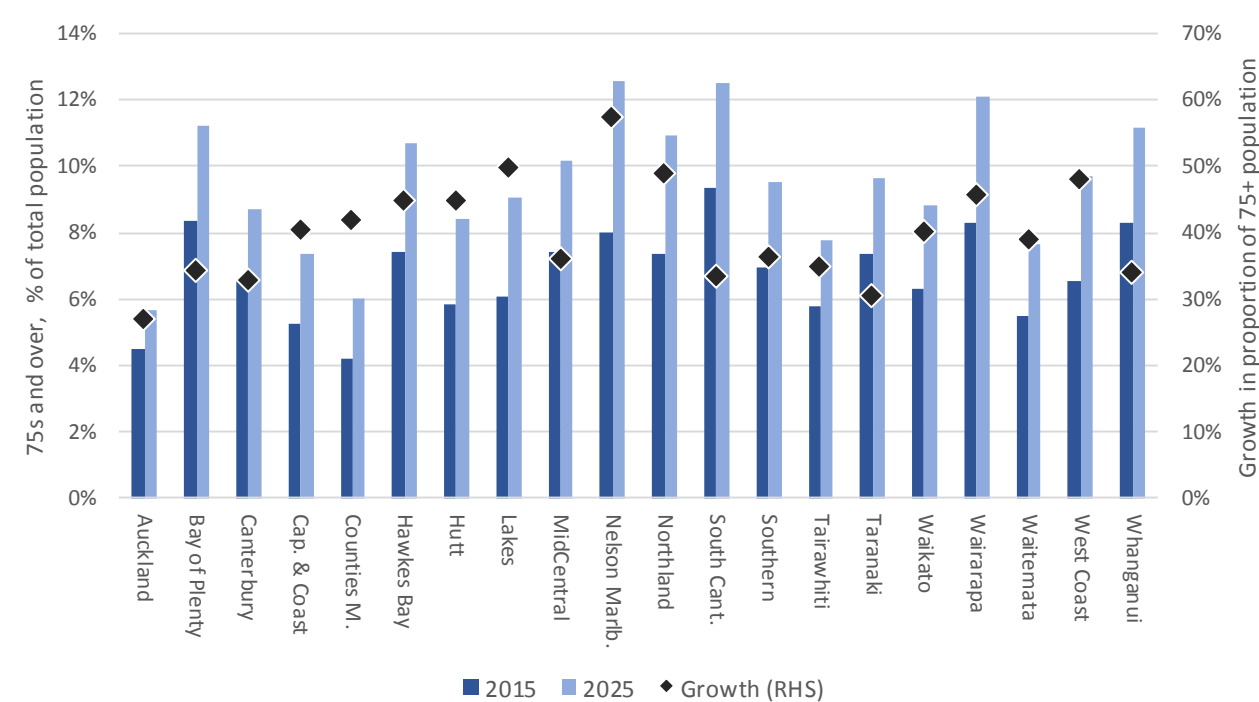
Population characteristics also influence the particular challenges that DHBs face. Māori have higher rates of most health conditions, while Pasifika have particularly high rates of obesity and diabetes. Figure 2 shows the relative significance of these population groups for individual districts. DHBs in the Wellington and Auckland metropolitan areas have significant Pasifika populations. There tends to be a higher proportion of Māori in small, rural DHBs, particularly Lakes, Northland, Tairāwhiti and Whanganui.

Figure 2: Māori and Pasifika as a percentage of total population in 2015



DHBs with older populations are likely to face higher levels of demand for aged care and the management of chronic conditions. All DHBs will see an increase in the relative size of their older population over the next ten years (figure 3). Bay of Plenty, South Canterbury, Wairarapa and Whanganui already have a relatively high proportion of their population aged 75 or older. Population ageing over the next ten years will be most pronounced for Nelson Marlborough.

Figure 3: 75-plus age group as percentage of total population



Section 3: Financial Management and Efficiency

Financial performance

Net results

Our core metric for financial performance is net surplus / deficit as a proportion of total revenue. Table 2 summarises performance on this measure over the last 5 years, and includes planned results for the current year. Overall performance deteriorated in 2015, after several years of improvement.

Table 2: Net surplus / deficit as % of total revenue

	2011	2012	Years used for rating			
			2013	2014	2015	2016 plan
Auckland	0.01%	0.04%	0.01%	0.01%	0.02%	0.12%
Bay of Plenty	0.01%	0.00%	0.01%	0.11%	(0.14%)	0.20%
Canterbury	(0.01%)	(0.00%)	16.01%	0.00%	(1.15%)	0.00%
Capital and Coast	(3.66%)	(2.17%)	(1.15%)	(0.60%)	(0.40%)	0.14%
Counties Manukau	0.38%	0.39%	0.21%	0.21%	0.20%	0.18%
Hawkes Bay	1.18%	0.43%	0.44%	0.66%	0.62%	0.78%
Hutt	(0.68%)	0.02%	(0.65%)	(0.39%)	(1.57%)	(1.37%)
Lakes	(1.11%)	(1.01%)	(0.56%)	0.83%	(1.22%)	0.19%
MidCentral	1.81%	1.21%	1.10%	0.34%	(0.31%)	0.35%
Nelson Marlborough	0.06%	(1.28%)	(0.70%)	1.01%	0.39%	0.84%
Northland	0.14%	0.06%	0.08%	0.07%	0.07%	0.20%
South Canterbury	0.61%	0.17%	0.41%	0.37%	0.09%	0.23%
Southern	0.03%	(1.58%)	(1.40%)	(2.04%)	(3.08%)	(4.01%)
Tairāwhiti	(2.14%)	0.02%	(0.96%)	0.09%	(1.81%)	0.19%
Taranaki	0.48%	0.06%	0.00%	(0.98%)	(1.10%)	0.21%
Waikato	0.95%	0.82%	0.18%	0.31%	(0.23%)	0.17%
Wairarapa	(2.82%)	(5.22%)	(2.53%)	(1.04%)	(2.41%)	(1.36%)
Waitemata	0.33%	0.35%	0.48%	0.24%	0.20%	0.18%
West Coast	(5.24%)	(3.75%)	(2.65%)	(0.79%)	(0.75%)	(0.62%)
Whanganui	(1.31%)	(0.08%)	(0.84%)	(0.43%)	0.02%	0.00%
Total deficit, % revenue	(0.12%)	(0.18%)	1.89%	(0.05%)	(0.45%)	(0.13%)
Total net result (\$m)	(15.83)	(23.42)	268.12	(7.36)	(65.84)	(19.39)

Note 1. Aggregate figures, and the numbers for Canterbury, are skewed in 2013 by one-off items associated with the rebuild.

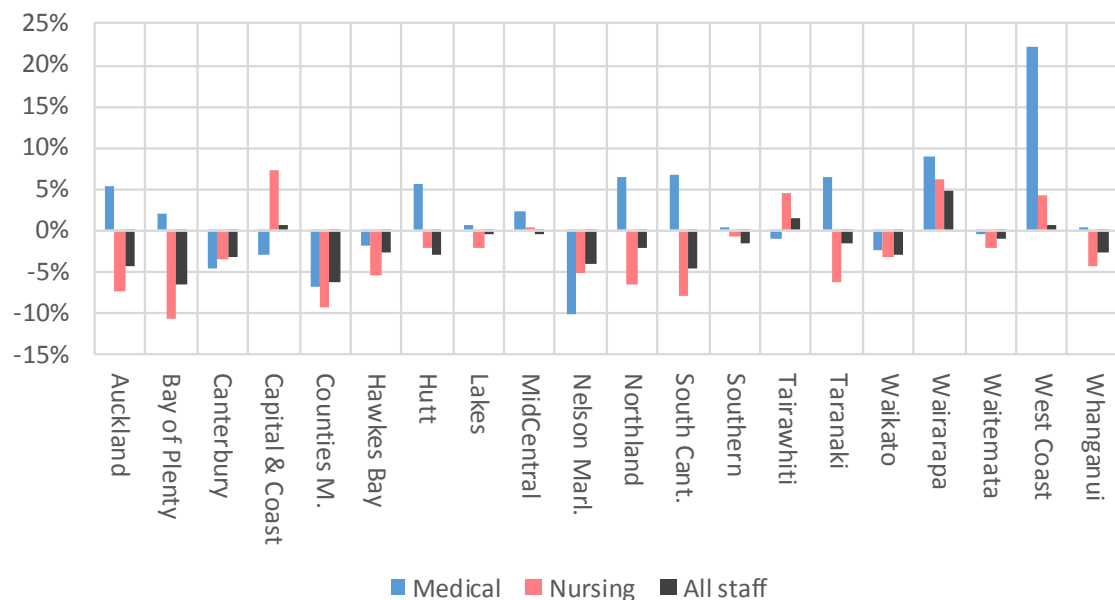
Note 2. Capital & Coast received \$8 million in additional revenue in 2013, reducing its reported deficit, Auckland received \$10 million in 2015, and Canterbury received \$16 million in 2016, similarly reducing their reported deficits. We have not adjusted (increased) reported deficits to account for this.

We rated DHBs according to their actual results over the three years to 2015 and their planned results for 2016. Amber-rated DHBs reported a deficit of at least 0.5% of total revenue in at least one of those years. In general, red-rated DHBs reported an actual or planned deficit of more than 1% of total revenue in at least two years, although Tairāwhiti was marginally below this threshold in 2014. Canterbury has been red rated in view of wider questions about financial management and sustainability, which are being reviewed by PWC, and the fact that \$16 million of additional Crown funding was provided to offset a planned deficit in the current year (approximately 1% of total revenue).

Provider arm staffing levels

We do not use provider-arm staffing levels as a performance measure, but they may serve as one indicator of clinical or financial risk. We noted in our last report that most DHBs had increased per capita numbers of nursing and medical FTEs over the period 2009-13. Per capita FTE numbers have been fairly stable over the three year period 2014-16 (figure 4). In fact, total per capita FTEs have fallen slightly in most DHBs over this period. The only notable exception to the trend is Wairarapa, which nevertheless continues to have lower FTE numbers than other DHBs.

Figure 4: Change in per capita FTE numbers, 2014 to 2016 (planned figures for 2016)*



* We have not adjusted this analysis to account for outsourcing to healthAlliance or NZ Health Partnerships. We doubt this has much impact on the overall numbers. For example, healthAlliance employs about 600 staff, compared to about 60,000 provider-arm FTEs.

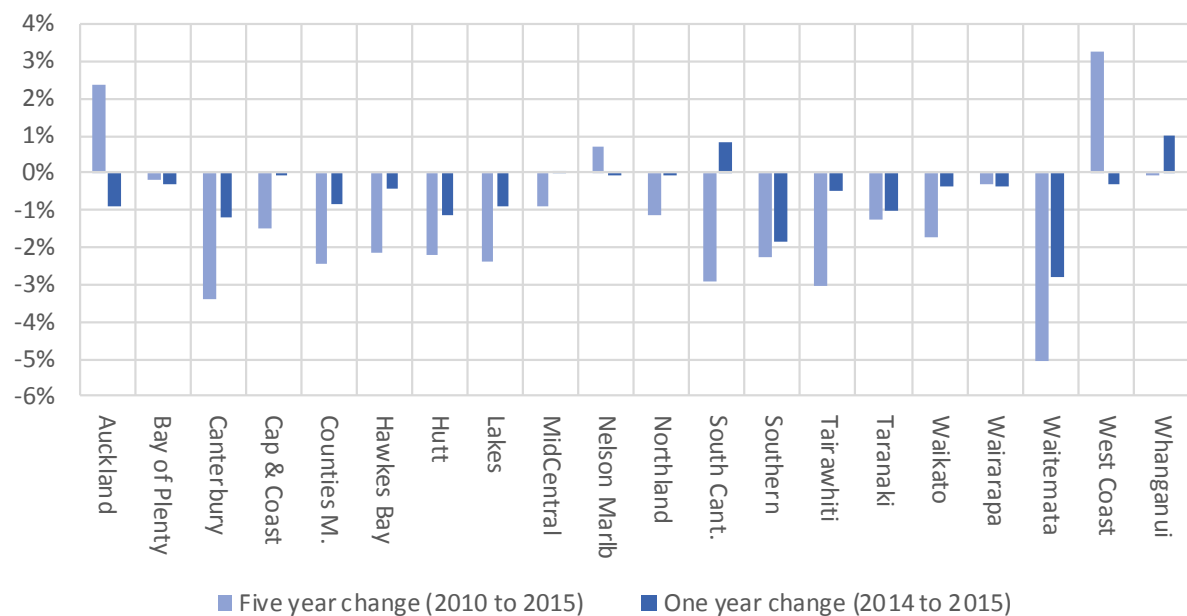
It is possible that recent changes in FTE numbers reflect a policy of shifting services from hospitals to primary or community providers, but we are cautious about such claims. FTE numbers generally increased over the period 2009-13, despite the policy of shifting services having been in place throughout that period. There also appears to have been no corresponding shift of funding to the non-hospital sector (see below).

Provider-arm vs non-provider arm expenditure

DHBs perform the dual function of operating the district hospital and contracting for, and funding, non-hospital services from external providers. Under a capitated funding model this should, in principle, create an incentive for DHBs to shift services into primary and community settings, and to fund non-hospital interventions that prevent conditions escalating to an acute level, where this is cost effective. On the other hand, it may be expedient for them in the short term to prioritise the funding needs of their own provider arm.

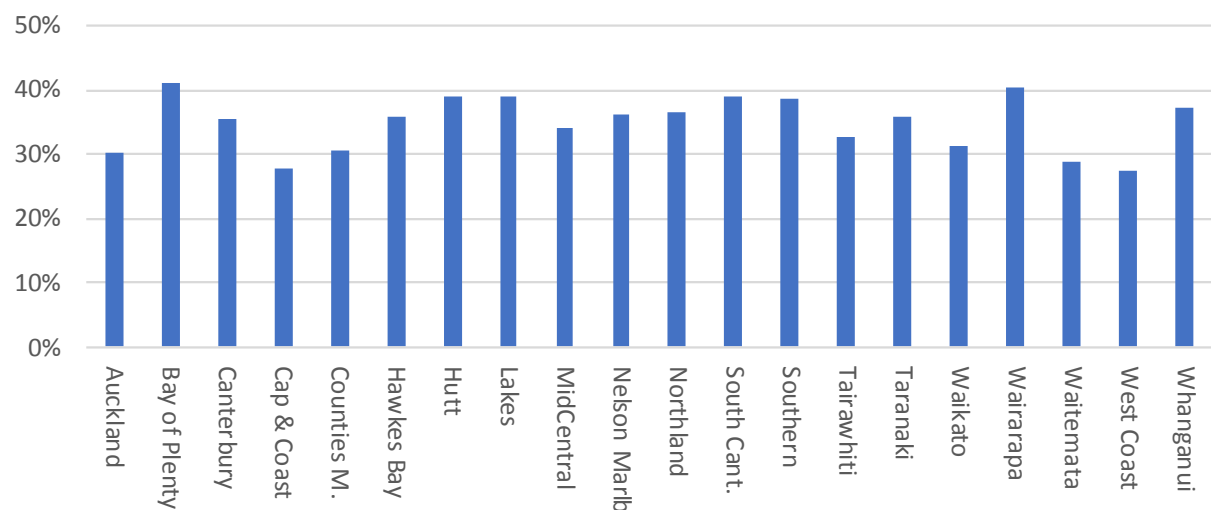
It is therefore instructive to look at how the balance of DHB expenditure on provider-arm (hospital) and non-provider arm services has changed over time. Figure 5 shows the percentage point change in the proportion of total expenditure allocated to external providers. It shows the one-year change (from 2014 to 2015), and also the change over five years (from 2010 to 2015). Not many DHBs have increased this proportion over either time frame. For context, figure 6 shows the actual proportion of expenditure allocated to external providers in 2015.

Figure 5: Percentage point change in external expenditure as a proportion of total expenditure*



* Inter-district flow payments are excluded.

Figure 6: External expenditure as a percentage of total expenditure in 2015*



* Inter-district flow payments are excluded.

Financial resilience

Standard ratios for measuring liquidity and solvency do not seem particularly useful for monitoring DHBs, given the regularity and reliability of their main revenue stream and

the artificial nature of the boundary between debt and equity funding provided by the Crown. In practical terms, we want to know two things. First, whether DHBs are able to manage for the time being without the need for injections of new Crown equity (or additional revenue). Second, the extent to which high financing and depreciation costs affect financial performance and operating flexibility.

To assess the risk that DHBs might require new Crown equity or additional revenue, we compare the amount of cash and accessible investments on the balance sheet to annual expenditure. This forms the basis of our risk rating for financial resilience. The results are summarised in table 3. DHBs reporting cash and investments of less than 0.5% of total expenditure are red rated. DHBs reporting cash and investments of less than 2% of total expenditure are rated amber. Other DHBs are rated green. Where a DHB has a planned deficit in the current year (right-hand column), this has been taken into account in determining its rating: this is why Hutt has been rated amber.

Table 3: Cash and investments as a percentage of expenditure in 2015, and planned net result for 2016

	Cash & investments (< 12m)	Long-term investments (> 12m)	Total cash & investments		Planned result 2016
	\$m	\$m	\$m	% expend	
Auckland	84.688	-	84.688	4.1%	2.379
Bay of Plenty	20.036	-	20.036	2.9%	1.388
Canterbury	4.040	-	4.040	0.3%	-
Capital and Coast	19.101	-	19.101	1.9%	1.440
Counties Manukau	55.256	-	55.256	3.7%	2.702
Hawkes Bay	13.548	-	13.548	2.7%	3.990
Hutt	13.400	-	13.400	2.8%	(6.725)
Lakes	4.197	0.750	4.947	1.5%	0.619
MidCentral	52.884	-	52.884	8.8%	2.110
Nelson Marlborough	43.712	-	43.712	9.9%	3.856
Northland	11.569	15.000	26.569	4.8%	1.124
South Canterbury	19.474	-	19.474	10.3%	0.428
Southern	3.658	-	3.658	0.4%	(35.955)
Tairāwhiti	0.016	-	0.016	0.0%	0.316
Taranaki	2.959	0.056	3.015	0.9%	0.737
Waikato	0.016	-	0.016	0.0%	2.226
Wairarapa	0.011	-	0.011	0.0%	(1.960)
Waitemata	146.837	5.170	152.007	9.9%	2.811
West Coast	5.640	-	5.640	4.0%	(0.878)
Whanganui	16.276	-	16.276	7.0%	-

* The following investments are excluded due to illiquidity: trusts, subsidiaries, associates, HBL & loans

To understand how costs of capital might affect individual DHBs, we look at interest and capital charge as a percentage of total revenue (table 4, left hand columns). We found less variation than we expected between DHBs, with a range between 1.1% and 2.7%, although this could still impact materially on net results and funding requirements. Differences between DHBs increase once depreciation costs are included (table 4, right hand columns). Depreciation expenses affect the bottom line but do not directly impact cash flow.

Table 4: Interest, financing and depreciation expenditure in 2015

	Interest & capital charge		Interest, cap chrg & depn	
	\$m	% of revenue	\$m	% of revenue
Auckland	56.4	2.7%	97.8	4.8%
Bay of Plenty	13.7	2.0%	33.5	4.8%
Canterbury	18.7	1.2%	79.9	5.1%
Capital and Coast	24.5	2.5%	62.3	6.3%
Counties Manukau	27.8	1.8%	56.2	3.7%
Hawkes Bay	6.2	1.2%	20.3	4.1%
Hutt	11.3	2.4%	23.6	4.9%
Lakes	9.1	2.8%	19.7	6.0%
MidCentral	14.3	2.4%	29.5	4.9%
Nelson Marlborough	10.5	2.4%	21.6	4.9%
Northland	10.0	1.8%	21.2	3.8%
South Canterbury	2.5	1.3%	6.4	3.4%
Southern	14.7	1.7%	35.5	4.0%
Tairāwhiti	3.5	2.1%	6.4	3.9%
Taranaki	9.3	2.7%	25.3	7.4%
Waikato	27.9	2.2%	68.8	5.5%
Wairarapa	1.8	1.3%	3.5	2.5%
Waitemata	31.1	2.0%	54.7	3.5%
West Coast	1.5	1.1%	5.7	4.1%
Whanganui	4.7	2.0%	9.4	4.1%

Financial management and planning

To assess financial management and planning, we compare actual financial results for 2015 to figures in DHBs' annual plans.

Headline figures: revenue, expenditure, net result

Table 5 shows variances to plan for total revenue, total expenditure and net result. Negative numbers represent an outcome adverse to plan. This means: expenditure higher than planned; revenue lower than planned; a net surplus (deficit) that is smaller (larger) than planned.

Most DHBs underestimated their revenue for the year, often by a considerable margin. Canterbury substantially overestimated its revenue for the year, due to the progress and timing of earthquake recovery work. Total expenditure was generally higher than planned. Note that this analysis looks at gross variances, without adjusting for wash-ups (for inter-district flows and electives) and changes that are funded during the year. These in-year adjustments will contribute to the under (over) estimates of revenue (expenditure). We will look at whether it is possible to identify net variances for next year's report.

In the meantime, our metric for assessing performance is whether the net result for 2015 was materially adverse to plan. This should not be affected by funded adjustments during the year. Five DHBs (Hutt, Lakes, Southern, Tairāwhiti and Wairarapa) are red rated: they reported a net result that was adverse to plan by more than 1% of their total revenue (all five also reported an actual net deficit for the year). Other DHBs with a net result adverse to plan are rated amber.

Table 5: Positive (adverse) variances to plan in 2015: consolidated results

	Revenue		Expenditure		Net result	
	variance \$m	var as % of rev.	variance \$m	var as % of exp.	variance \$m	var as % of rev.
Auckland	1.9	0.1%	(1.6)	(0.1%)	0.3	0.0%
Bay of Plenty	12.1	1.7%	(13.3)	(1.9%)	(1.2)	(0.2%)
Canterbury	(43.2)	(2.8%)	37.9	2.4%	(5.4)	(0.3%)
Capital and Coast	18.5	1.9%	(18.4)	(1.8%)	0.0	0.0%
Counties Manukau	11.4	0.8%	(11.4)	(0.8%)	0.0	0.0%
Hawkes Bay	4.0	0.8%	(3.9)	(0.8%)	0.1	0.0%
Hutt	0.9	0.2%	(8.5)	(1.7%)	(7.5)	(1.6%)
Lakes	4.0	1.2%	(8.0)	(2.4%)	(4.0)	(1.2%)
MidCentral	(0.5)	(0.1%)	(3.4)	(0.6%)	(3.9)	(0.6%)
Nelson Marlborough	3.6	0.8%	(3.4)	(0.8%)	0.2	0.0%
Northland	9.0	1.6%	(8.6)	(1.5%)	0.4	0.1%
South Canterbury	6.6	3.5%	(6.4)	(3.4%)	0.1	0.1%
Southern	4.4	0.5%	(16.8)	(1.8%)	(12.4)	(1.4%)
Tairāwhiti	1.8	1.1%	(4.7)	(2.8%)	(3.0)	(1.8%)
Taranaki	5.1	1.5%	(7.9)	(2.3%)	(2.9)	(0.8%)
Waikato	20.3	1.6%	(23.2)	(1.8%)	(2.9)	(0.2%)
Wairarapa	1.7	1.2%	(3.5)	(2.5%)	(1.8)	(1.3%)
Waitemata	13.6	0.9%	(11.6)	(0.8%)	2.0	0.1%
West Coast	0.7	0.5%	(0.7)	(0.5%)	(0.0)	(0.0%)
Whanganui	3.0	1.3%	(3.0)	(1.3%)	0.0	0.0%
Negative number means actuals adverse to plan (expenditure higher, revenue and net surplus lower)						

Provider-arm and non-provider arm variances

Table 6 shows variances for, respectively, expenditure on DHBs' own provider arms and expenditure on non-provider arm services. Every DHB, except Canterbury, overspent on its own provider arm, as indicated by the negative numbers. (Again, Canterbury's underspend is related to the timing of earthquake repairs.) By contrast, the majority of DHBs underspent on non-provider arm services (positive numbers).

We understand that about half of the aggregate non-provider arm underspend (\$50 million of \$94 million) was driven by lower than planned expenditure in the following demand-driven items: inter-district flows, community pharmaceuticals, and aged residential care. It will be interesting to see whether these items are similarly over-budgeted in future years. Generally, the excess funds appear to have been reallocated to (and spent by) the provider arm.

Perhaps half the adverse variances (overspends) in the provider arm shown in table 6 result from in-year adjustments, as discussed above. The balance may be due to a failure to achieve budgeted efficiencies and/or higher than expected demand pressures for secondary and tertiary services.

Table 6: Positive (adverse) variances to plan, 2015: internal and external expenditure

	Provider arm		Non-provider arm	
	variance \$m	var as % of rev.	variance \$m	var as % of exp.
Auckland	(27.2)	(2.0%)	25.6	3.5%
Bay of Plenty	(10.0)	(2.8%)	(3.4)	(1.0%)
Canterbury	30.0	2.9%	7.8	1.3%
Capital and Coast	(20.4)	(3.1%)	1.9	0.6%
Counties Manukau	(22.9)	(2.8%)	11.5	1.8%
Hawkes Bay	(11.5)	(4.2%)	7.6	3.5%
Hutt	(9.4)	(4.0%)	1.0	0.4%
Lakes	(9.2)	(5.5%)	1.2	0.8%
MidCentral	(1.1)	(0.3%)	(2.3)	(0.9%)
Nelson Marlborough	(1.6)	(0.6%)	(1.8)	(1.0%)
Northland	(13.7)	(4.6%)	5.1	2.0%
South Canterbury	(4.4)	(4.6%)	(2.0)	(2.3%)
Southern	(7.3)	(1.4%)	(9.5)	(2.6%)
Tairāwhiti	(6.3)	(6.8%)	1.6	2.2%
Taranaki	(7.2)	(3.8%)	(0.7)	(0.5%)
Waikato	(26.3)	(3.3%)	3.0	0.7%
Wairarapa	(2.7)	(4.3%)	(0.8)	(1.0%)
Waitemata	(56.6)	(7.1%)	45.0	6.2%
West Coast	(6.0)	(7.0%)	5.2	9.5%
Whanganui	(0.6)	(0.5%)	(2.4)	(2.2%)
<i>Negative number means adverse to plan (expenditure higher)</i>				

Hospital productivity

To assess productivity, we analyse trends in case weighted discharges (CWDs). This provides a standardised measure of the volume of hospital activity, assigning greater weight to more complex procedures. From 2009 to 2015, the overall volume of CWDs increased by around 14%.

We measure productivity using CWD output per total cost of production (expenditure on medical and nursing personnel, clinical supplies, interest, depreciation and capital charge). Productivity values prior to 2015 are indexed using nominal GDP per labour force member as a proxy for non-demographic inflation across the economy. West Coast DHB is excluded from the analysis as its service delivery model is substantially different from other DHBs.

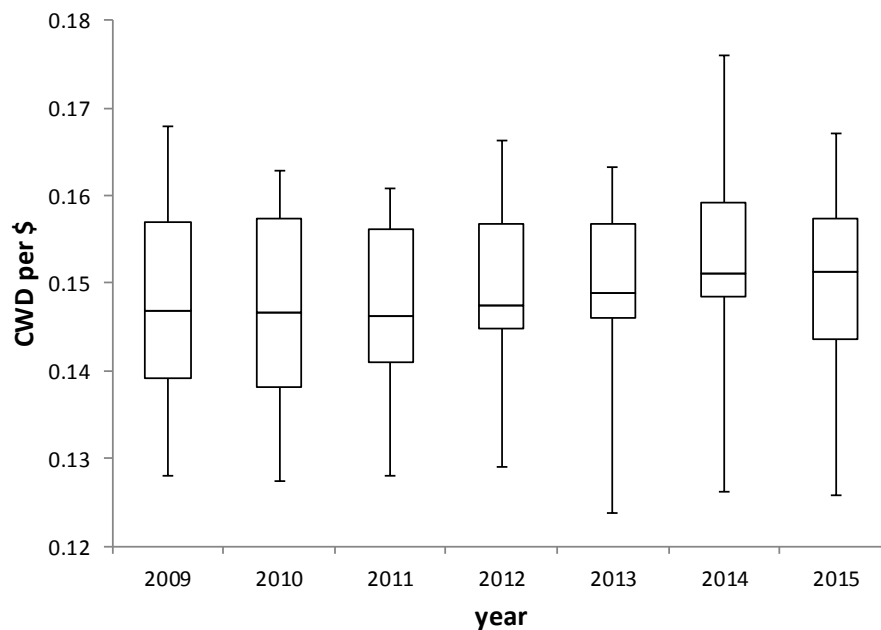
The Ministry of Health considers that the productivity figures in this report do not represent an accurate measurement of hospital productivity. We agree that our analysis provides an incomplete and imperfect picture of productivity. It does not capture non-hospital activity, or non-surgical activity within hospitals. There is a mismatch between inputs and outputs, because CWDs are a subset of hospital activity and we are not able to exclude provider-arm inputs that relate to other (non-CWD) activity. It may be misleading in some instances: for example, a procedure previously performed as an inpatient case that is now delivered on a day-case basis (a *prima facie* increase in efficiency) will attract a lower-case weight than before, reducing measured productivity. This measure of productivity also tells us nothing about the quality of outcomes.

Nevertheless, we consider that a comparison of CWDs with provider-arm inputs provides the best currently available measure of productivity in the New Zealand health sector. Similar measures were reported by the Ministry of Health until quite recently. The Ministry's preferred alternative measure of productivity is now the volume of elective discharges (the health target). These have been increasing. However, this is a similarly incomplete measure of hospital activity (excluding non-surgical and non-hospital outputs). It says nothing about quality. And it does not tell us about productivity because it does not reflect inputs.

It may be that we are able to incorporate alternative measures of productivity and efficiency as the Ministry of Health develops its own sector performance story ahead of Budget 17. We will also think about whether it would be useful to include supplementary measures in future reports. For example, data about the average length of hospital stays might tell us something about changes in the efficiency of the service model. Data about waiting times for specialist assessment and surgery are used as one dimension of service quality in other countries.

Figure 7 summarises performance against our current measure over a seven year period. Median DHB performance is represented by the middle line within the box. The box itself represents the distribution of the nine middle performing DHBs, while the bars represent the distribution of the five top- and five bottom-performing DHBs. Median productivity has been broadly stable over the period, with a modest improvement in the last two to three years. There continues to be a relatively long tail of low productivity.

Figure 7: DHB hospital productivity (CWD per \$ cost of production)



We have rated individual DHBs based on performance in 2015. Green rated DHBs were either in, or within 5% of, the top five performers in that year. Red rated DHBs were in the bottom five performers and more than 5% worse than the remaining DHBs, which were rated amber. Table 7 summarises these ratings, and shows the ranking (from most to least productive on this measure) for individual DHBs in each of the last seven years.

Table 7: DHB hospital productivity, rating and ranking

DHB	2009	2010	2011	2012	2013	2014	2015
Auckland	12	13	13	12	9	14	11
Bay of Plenty	3	3	3	3	1	2	1
Canterbury	13	10	14	10	13	10	13
Capital and Coast	18	19	18	18	17	17	14
Counties Manukau	5	4	1	2	4	3	5
Hawkes Bay	8	5	4	5	6	7	9
Hutt	10	11	12	9	7	6	8
Lakes	4	2	8	6	5	4	3
MidCentral	14	16	16	17	18	18	18
Nelson Marlborough	17	18	17	16	16	16	12
Northland	9	12	10	14	11	11	7
South Canterbury	1	1	6	7	12	15	17
Southern	16	14	11	11	8	8	10
Tairāwhiti	11	15	19	19	19	19	19
Taranaki	6	7	7	8	10	12	15
Waikato	7	6	5	4	3	5	4
Wairarapa	2	9	2	1	2	1	2
Waitemata	19	17	15	15	15	9	16
Whanganui	15	8	9	13	14	13	6
In each year:	Bottom five shaded grey.			Top five shaded blue.			

Section 4: Health Outcomes

This section looks at performance in terms of particular health outcome measures. We focus on four metrics. The first two relate mainly to secondary healthcare. The others relate to primary and community services.

- Emergency department waiting times.
- Mortality rates following acute myocardial infarction (heart attack).
- Ambulatory sensitive hospitalisation (ASH) rates.
- The proportion of new mental health clients who are acute admissions.

The reason we look at outcome measures is to balance the preceding discussion of financial and efficiency indicators. In particular, we want to avoid a narrow focus on net deficits as our only measure of success, and to provide a more rounded view of how the health system is functioning. We do not pretend that these four indicators provide a comprehensive picture of population health outcomes. Nor do we consider that Treasury officials are best placed to develop an outcomes-based performance framework for the sector.

Resources permitting, we may try to broaden and/or refine our analysis in future reports.

Emergency department waiting times

The emergency department waiting time target is based on the percentage of people who wait less than 6 hours to be assessed and then admitted, transferred or discharged. The measure is a proxy for secondary care quality, since long stays and overcrowding in emergency departments have been linked to negative clinical outcomes. It also provides an indicator of overall flow across the health system, since a bottleneck at other points will be reflected in longer emergency department waiting times.

Table 8 summarises performance against the target since 2010. Overall performance continues to improve, with all DHBs achieving at least 90% in 2015. A green rating indicates performance of 95% (12 DHBs in 2015). An amber rating indicates performance in the 90-95% range (eight DHBs). No DHBs are red rated in 2015 (performance below 90%).

Table 8: Percentage of people waiting less than 6 hours in the emergency department

DHB	2010	2011	2012	2013	2014	2015
Auckland	80.10%	94.60%	94.80%	95.40%	94.70%	95.20%
Bay of Plenty	83.80%	90.30%	89.40%	90.20%	93.30%	93.90%
Canterbury	91.50%	95.60%	95.70%	95.40%	95.30%	96.00%
Capital and Coast	80.00%	73.80%	87.40%	87.50%	95.00%	94.60%
Counties Manukau	96.70%	96.80%	97.00%	95.90%	95.80%	96.70%
Hawke's Bay	92.60%	93.90%	95.80%	93.30%	90.60%	94.80%
Hutt	87.00%	87.00%	91.20%	96.50%	93.50%	92.70%
Lakes	90.90%	92.00%	88.90%	91.80%	90.70%	90.10%
MidCentral	83.70%	86.50%	90.20%	86.30%	89.00%	95.70%
Nelson Marlborough	97.70%	97.20%	97.70%	96.70%	95.80%	96.00%
Northland	86.20%	89.50%	94.90%	91.90%	92.90%	93.20%
South Canterbury	96.60%	96.90%	98.10%	96.40%	96.20%	97.10%
Southern	79.20%	82.70%	89.90%	91.40%	90.50%	93.60%
Tairāwhiti	92.30%	96.10%	97.70%	94.60%	95.70%	95.80%
Taranaki	93.10%	89.50%	90.40%	95.50%	94.00%	95.90%
Waikato	82.70%	88.80%	91.90%	88.40%	92.70%	93.90%
Wairarapa	97.20%	97.60%	96.60%	97.40%	95.70%	96.00%
Waitemata	74.10%	93.60%	97.30%	96.20%	95.90%	96.40%
West Coast	99.60%	99.80%	99.60%	99.60%	99.60%	99.60%
Whanganui	79.10%	91.00%	98.20%	96.90%	95.50%	96.20%

In-hospital mortality rates following acute myocardial infarction (heart attacks)

Acute myocardial infarction (AMI) in-hospital mortality rates show the frequency with which people die in hospital following a major heart attack. They provide a measure of the overall quality of acute care.

Figure 8 shows AMI rates for 2015 (columns), along with the average of each DHB's annual rate over the period 2013-15 (circles). The upper and lower quartile of these 3-year averages are also shown. AMI rates fluctuate from year to year, but performance using three-year averages appears to be fairly stable across DHBs and over time. We think this means that the overall quality of acute care is reasonably consistent. While short-term fluctuations could reflect clinical factors, we think they are more likely to reflect natural variations in the rate (noise). When we last did this analysis, for 2013, the highest rates were in Capital & Coast, Hawke's Bay and Tairāwhiti, none of which are outliers in 2015.

Therefore, we assess performance using both the annual (2015) rate and the three year average (2013-15). We compare the numbers for individual DHBs to the interquartile range of the 3-year averages for all DHBs, taking this as our benchmark for reasonable, steady-state performance. We give DHBs a red rating if both their 2015 rate and their 3-year average is above this interquartile range. We give DHBs an

amber rating if they meet one of those conditions. Other DHBs are rated green. Table 9 provides a summary.

Figure 8: Acute myocardial infarction rates, 2015 rate and average of 2013-2015 rates

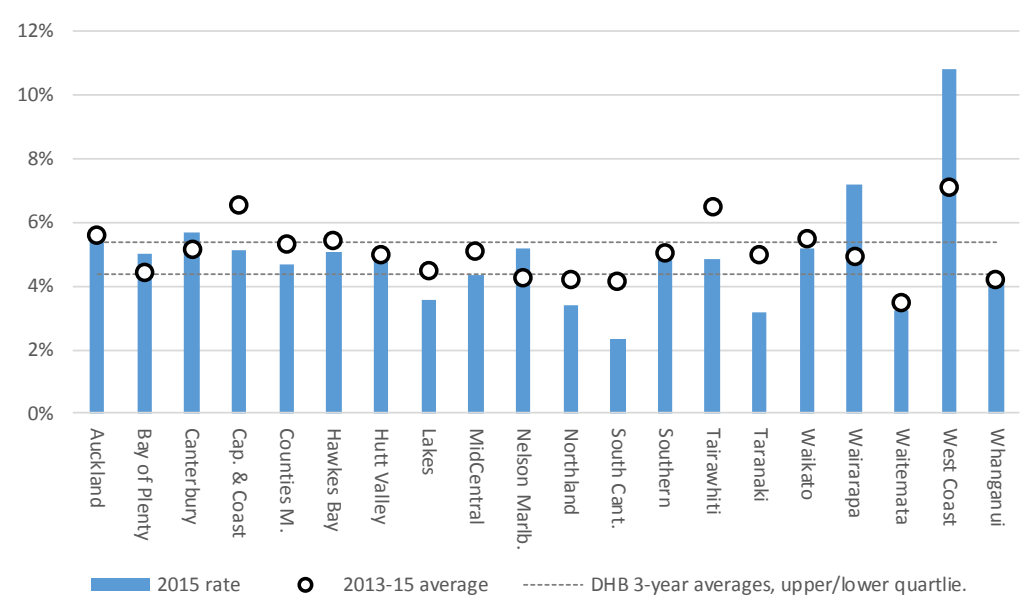


Table 9: Performance rating against AMI measure

Bay of Plenty	Canterbury	Auckland
Counties Manukau	Capital & Coast	West Coast
Hawkes Bay	Tairāwhiti	
Hutt	Waikato	
Lakes	Wairarapa	
MidCentral		
Nelson Marlborough		
Northland		
South Canterbury		
Southern		
Taranaki		
Waitemata		
Whanganui		

Ambulatory sensitive hospitalisation (ASH) rates

Ambulatory sensitive hospitalisations are acute hospital admissions that could have been avoided through interventions delivered in primary or community care settings. Thus, ASH rates are typically used as a proxy for the accessibility and quality of primary and community care, although they may also be influenced by other factors (including the supply and configuration of hospital services).

National ASH rates show marked and persistent ethnic disparities for both adults and children, with rates being highest for Pasifika (figures 9 and 10). There has been no reduction in ASH rates over the last decade or so. Nor have ethnic disparities narrowed.

Figure 9: Ambulatory sensitive hospitalisations per 100,000 population: adults (45-64s): age-standardised

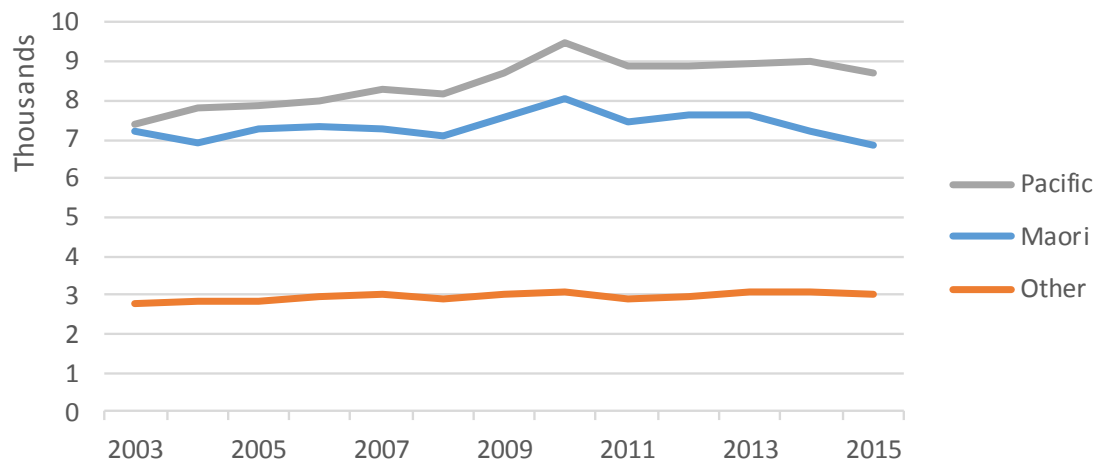


Figure 10: Ambulatory sensitive hospitalisations per 100,000 population: children (0-4s)

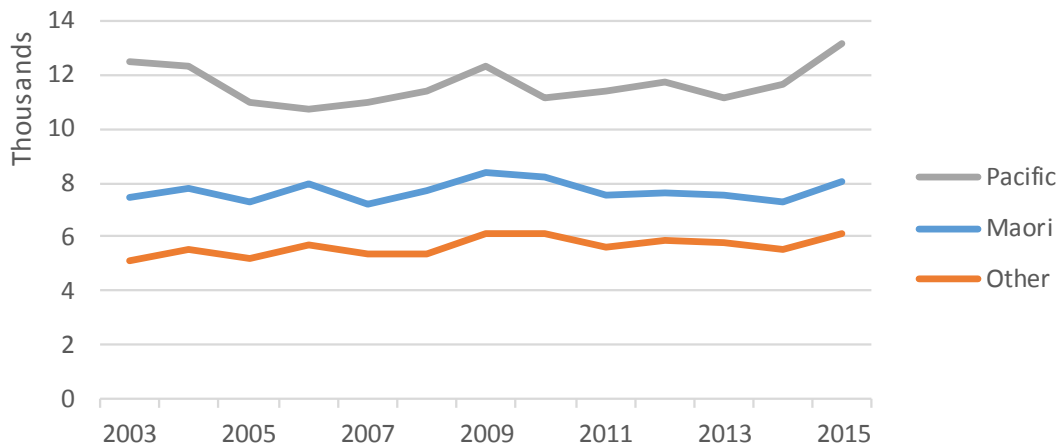


Figure 11 shows ASH rates for individual DHBs. These will be influenced by demographic factors, including deprivation rates and ethnicity. This is reflected in the high rates for Counties Manukau, Hutt, Lakes, Northland and Whanganui, all of which have pockets of high deprivation and relatively large Māori and Pasifika populations.

To assess how effectively DHBs have managed ambulatory sensitive hospitalisations, we look at the extent to which ASH rates have changed over time. Figures 12 and 13 show cumulative movements in ASH rates since 2005. Darker columns represent later years. The total growth (reduction) in ASH rates between 2005 and 2015 is given as percentage for each DHB.

Figure 11: Ambulatory sensitive hospitalisations per 100,000 population (age standardised for adults)

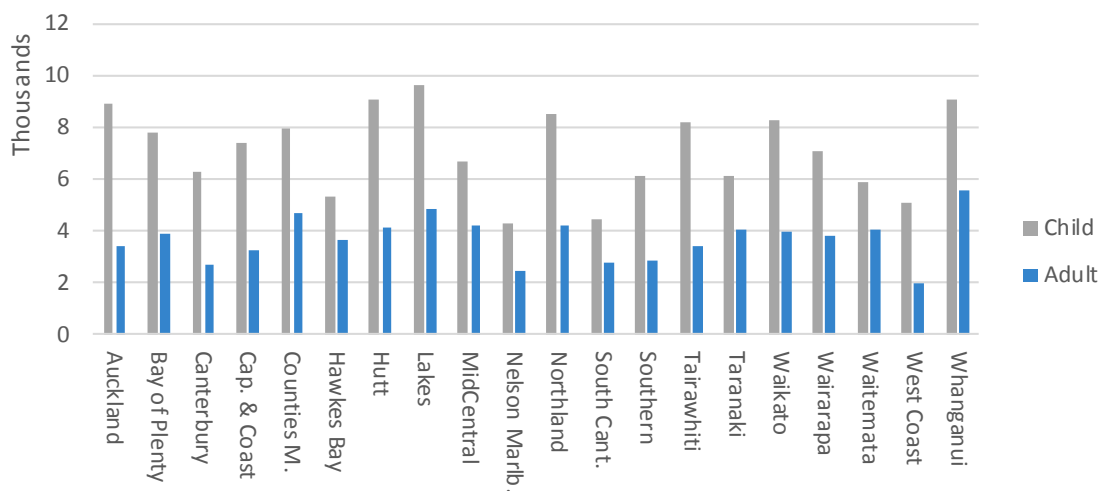


Figure 12: Cumulative growth in age standardised ASH rates per 100,000 population: adults

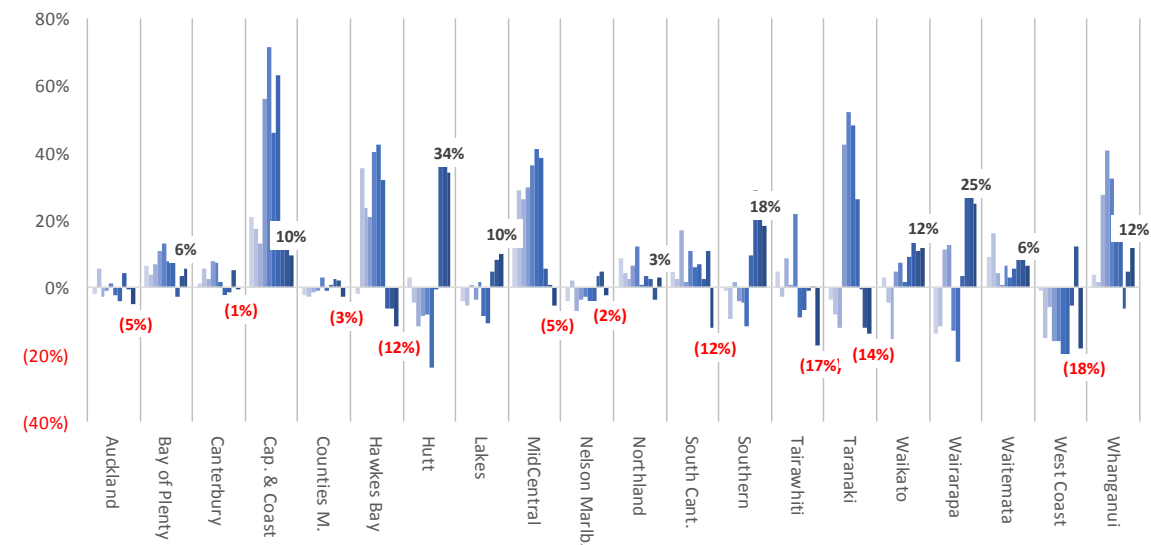


Figure 13: Cumulative growth in ASH rates per 100,000 population: children

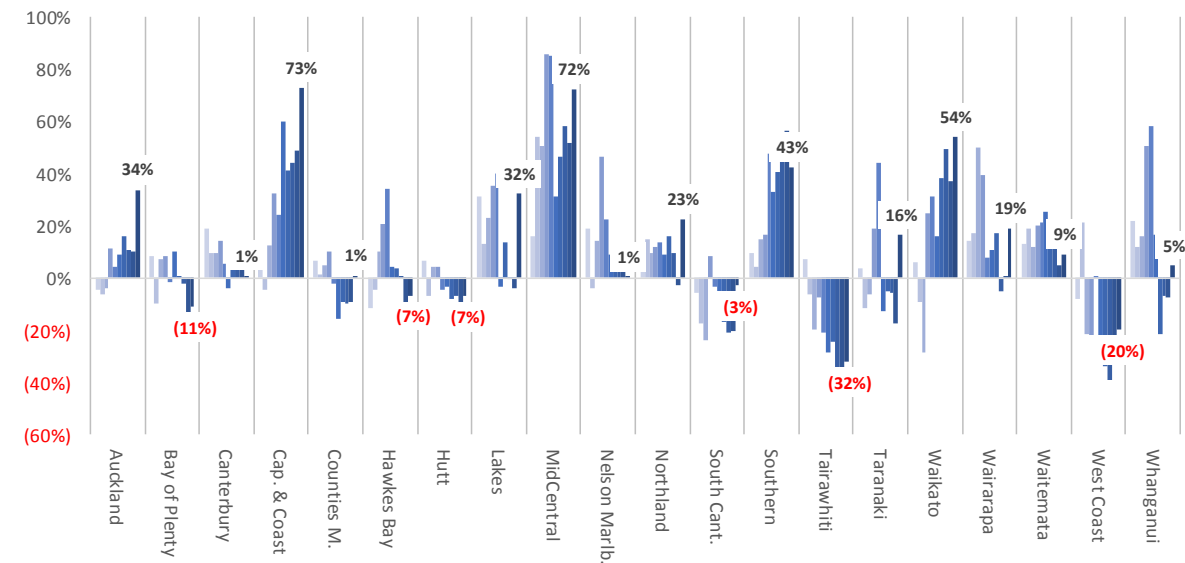


Table 10 summarises how we have rated DHBs. This is based on movements in child and adult ASH rates. It is somewhat subjective. We have taken the following points into account:

- Adult ASH rates.** Hutt has seen a 34% increase in adult ASH rates over the period, with a marked deterioration in performance in recent years. Wairarapa and Southern have seen 25% and 18% increases respectively, again with a deterioration in recent years. Lakes, Waikato, and Whanganui have also experienced higher ASH rates in recent years.

- *Child ASH rates.* A number of DHBs have seen pronounced increases in child ASH rates over the period: Capital & Coast (73%), MidCentral (72%), Southern (43%), and Waikato (54%). Auckland, Lakes, Northland, Taranaki and Wairarapa have seen smaller increases over the period, but a marked increase in the most recent year.

Table 10: Performance rating against ASH measure

Bay of Plenty	Auckland	Capital & Coast
Canterbury	Lakes	Hutt
Counties Manukau	Northland	MidCentral
Hawkes Bay	Taranaki	Southern
Nelson Marlborough	Whanganui	Waikato
South Canterbury		Wairarapa
Tairāwhiti		
Waitemata		
West Coast		

New mental health clients who are acute admissions

We use the proportion of new mental health clients who are acute admissions as a proxy for the overall coverage of specialist community mental health and addiction services. These “new acute admissions” are assumed to represent (or at least reflect) instances where mental health issues have not been managed through community-based services before becoming acute. Wairarapa outsources its mental health services to Hutt and is therefore excluded from this analysis.

On this measure, there is some variation in performance between DHBs, although the performance of individual DHBs seems fairly stable over time. Figure 14 shows rates of new acute admissions for 2015 (columns), along with the average of each DHB's annual rate over the period 2013-15 (circles). The upper and lower quartile of these 3-year averages are also shown.

Table 11 summarises the ratings. We have red rated two DHBs (Waikato and West Coast) that satisfied both of the following conditions: (i) the DHB's 2015 rate was higher than its three-year average, signalling a recent deterioration in performance; and (ii) both its 2015 rate and its 3-year average was above the interquartile range of the 3-year average rates of all DHBs, signalling relatively poor performance overall. We are not sure whether the high rate for West Coast is influenced by its particular service model.

We have given an amber rating to DHBs for which either the 2015 rate or the 3-year average falls outside the upper quartile of the 3-year averages of all DHBs – which we interpreted as meaning there was some indication of relatively poor performance overall. Canterbury is a borderline case: it had the second highest rate of new acute admissions in 2015, but this was still materially lower than the rate in 2013 and 2014, so we gave it an amber rating.

Figure 14: Percentage of new mental health clients who are acute admissions

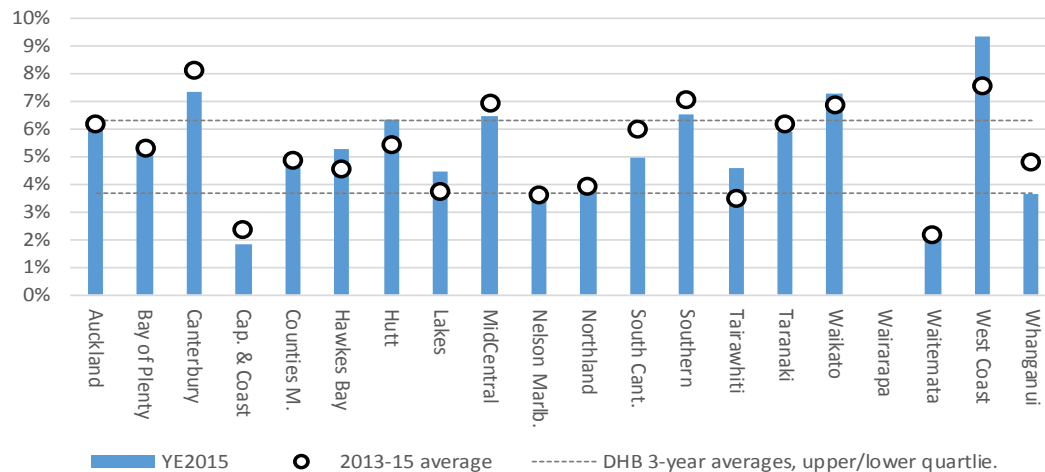


Table 11: Performance rating against mental health measure

Auckland	Canterbury	Waikato
Bay of Plenty	Hutt	West Coast
Capital & Coast	MidCentral	
Counties Manukau	Southern	
Hawkes Bay		
Lakes		
Nelson Marlborough		
Northland		
South Canterbury		
Tairāwhiti		
Taranaki		
Waitemata		
Whanganui		

Appendix: Summary Comments and Overall Rating by DHB

The following comments and overall ratings relate to performance up to and including 2015 (and, in some areas, planned performance in 2016). Final risk ratings for the 2017 planning round may differ. These will also be informed by the Ministry of Health's assessment of year-to-date performance in 2016, as well as issues raised by the draft annual plans themselves.

Auckland. (Green.) Population large and growing, also young. High proportion of Pasifika residents. Consistent financial performance, albeit assisted by additional revenue in 2015. One of only a few DHBs to have increased expenditure on external providers since 2010. Child ASH rates have risen over the last few years. AMI mortality rates are relatively high; they may be influenced by the degree of tertiary activity.

Bay of Plenty. (Green.) Medium-sized DHB with significant numbers of Māori and older residents. A small unplanned deficit in 2015, but consistent financial performance overall. Relatively high allocation of resources to external providers. Scores well for surgical productivity and on most of our outcome measures.

Canterbury. (Red.) Large population with favourable demographics. Financial management is the subject of an external review by PWC. ASH rates are stable. Second-worst on our measure of the adequacy of non-acute mental health provision, although performance has improved over the last couple of years.

Capital and Coast. (Amber.) Large to medium-sized population: quite young, with about average numbers of Māori and Pasifika. Deficits have reduced from 8.6% of revenue in 2009 to 0.4% in 2015. Financing and depreciation costs remain high, and spending is biased towards the provider-arm. Surgical productivity is low and child ASH rates have been increasing. Scores well on our measure of non-acute mental health services.

Counties Manukau. (Green.) Population is large, growing and young. High numbers of Pasifika and Māori. Consistent financial performance. Good or moderate scores for surgical productivity, acute care quality (AMI rates), community mental health services, and emergency department waiting times. ASH rates are high but stable.

Hawkes Bay. (Green.) Medium-sized population: slow growing, ageing, with significant numbers of Māori. Consistent financial performance. Good to moderate scores for surgical productivity and across all our health outcome measures.

Hutt. (Red.) Medium-sized, slow-growing population with significant numbers of Māori and Pasifika. Financial performance has deteriorated, with deficits in each of the last three years and a planned deficit in 2016. Second lowest score on emergency department waiting times. The child ASH rate is high; the adult rate has been increasing.

Lakes. (Amber.) Small to medium-sized and static population with a high proportion of Māori. Financial performance has been hit and miss. Net result was adverse to plan in 2015, raising doubts about the planned surplus for the current year. Financing and depreciation expenses are significant. Worst performer on emergency department waiting times. High ASH rates (and increasing). Surgical productivity is good.

MidCentral. (Green.) Medium-sized population with significant numbers of Māori. Small deficit in 2015 but otherwise consistent financial performance and a robust balance sheet. Surgical productivity is low and child ASH rates have been increasing. Emergency department waiting times improved in 2015.

Nelson Marlborough. (Green.) Medium-sized, ageing population. In deficit for a couple of years (2012 and 2013), but has run surpluses since then. The balance sheet looks healthy. Scores well across other metrics.

Northland. (Green.) Medium-sized population, with high numbers of Māori. Consistent financial performance. Good to moderate scores on most metrics. ASH rates are on the high side but generally stable. Towards the lower end in terms of performance against the emergency department waiting times target.

South Canterbury. (Green.) Small, older population. Consistent financial performance. Scores well across most metrics, although surgical productivity has gradually declined since 2010.

Southern. (Red.) Large to medium-sized population with quite favourable demographics. Has run increasingly large deficits since 2012, with the planned deficit at 4% of total revenue in 2016. The balance sheet is weak and deteriorating. Resources are now being refocused to support the provider arm, although the overall allocation to external providers is still reasonably high. ASH rates remain on the low side, but have been increasing.

Tairāwhiti. (Red.) Small, static population, with a higher proportion of Māori (50%) than any other DHB. Has a weak balance sheet and reported a net deficit in 2013 and 2015. The 2015 result was materially adverse to plan, raising doubts about whether the planned breakeven in 2016 will be achieved. High financing and depreciation costs. Surgical productivity is low. AMI mortality rates seem high using the three-year average, although the 2015 rate was lower. There has been a marked improvement in ASH rates in recent years.

Taranaki. (Amber.) Small to medium-sized and static population, with about average demographics. Ran a deficit in the last two years and has limited liquid assets on its balance sheet. Moderate performance across most of our metrics.

Waikato. (Amber.) Large to medium-sized population, with significant numbers of Māori. Small deficit in 2015 but otherwise steady financial performance. The balance sheet is weak. Scores well for surgical productivity but not a strong performer on other metrics. Child ASH rates have increased. New acute mental health admissions are quite high.

Wairarapa. (Red.) Small, older population. Has run material deficits for a number of years (with another planned deficit in the current year). The balance sheet is weak. Has a high allocation of resources to external providers and relatively low numbers of provider-arm FTEs. FTE numbers have been increasing and there has been a small reduction in the proportion of resources allocated to external providers. Scores well for surgical productivity but only moderately on most of our health outcome measures. Recent increases in ASH rates.

Waitamata. (Green.) Large, relatively young population. Consistent financial performance and a strong balance sheet. There has been a material shift of resources to the provider arm in recent years. Surgical productivity is at the lower end, but scores well on other metrics.

West Coast. (Amber.) Small population. Persistent deficits despite significant “transitional” funding topping up its PBFF share. Scores poorly on AML mortality rates (acute care quality). ASH rates are fairly low, and have been improving. Has high rates of new acute mental health admissions, although this may reflect its particular service model.

Whanganui. (Green.) Small, older population, which includes significant numbers of Māori. Population numbers are expected to decline over the next decade, posing some particular challenges. Returned to breakeven in 2015 without apparently squeezing its external providers. Scores well across most of our outcome measures. ASH rates are high and have not been improving.