Report prepared for the Ministry of Health

Review of the rural and tertiary adjusters

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Sapere Research Group is one of the largest expert consulting firms in Australasia and a leader in provision of independent economic, forensic accounting and public policy services. Sapere provides independent expert testimony, strategic advisory services, data analytics and other advice to Australasia’s private sector corporate clients, major law firms, government agencies, and regulatory bodies.

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Contents

Executive summary..........................................................................................................vii

1. Introduction and approach .........................................................................................10
   1.1 Purpose of the review...............................................................................................10
   1.2 Scope of the review .................................................................................................10
   1.3 Our approach to the review .................................................................................10
   1.4 A framework of common principles......................................................................11

2. Overview of current arrangements ...........................................................................12
   2.1 Population-based funding system........................................................................12
   2.2 Basis for the adjusters.............................................................................................13
   2.3 Comparison with other funding systems .............................................................14

3. Rural adjuster ............................................................................................................15
   3.1 Overview of the adjuster and method................................................................15
   3.2 Key findings and analysis – rural adjuster................................................................18
      3.2.1 Financial impacts are material for smaller boards ............................................18
      3.2.2 The policy intent may disincentivise service change .....................................20
      3.2.3 Scope of the rural adjuster has been questioned ............................................20
      3.2.4 Insufficient visibility of the rural adjuster.......................................................22
      3.2.5 Some questions regarding face validity of the results .....................................23
      3.2.6 Facility diseconomy model lacks an efficiency focus ......................................24
   3.3 Policy options for the rural adjuster......................................................................25
      3.3.1 Enhanced status quo – tidying up the current model ......................................25
      3.3.2 A population-based adjustment ....................................................................26
      3.3.3 Assessment of options against principles .......................................................28

4. Tertiary adjuster ........................................................................................................31
   4.1 Overview of the adjuster and method....................................................................31
   4.2 Key findings and analysis – tertiary adjuster.......................................................35
      4.2.1 Intent and scope of the adjuster could be clearer .............................................35
      4.2.2 Role Delineation Model needs to be updated ...............................................37
      4.2.3 Robustness of cost data................................................................................38
      4.2.4 Volatility in results causing uncertainty .........................................................39
      4.2.5 Underlying cost growth a concern for affordability ......................................40
      4.2.6 Services with lower throughput may be an issue .........................................41
   4.3 Policy options for the tertiary adjuster ................................................................43
      4.3.1 Enhanced status quo – a set of sensible refinements .......................................43
      4.3.2 Extended model – a two-part unit price........................................................45
      4.3.3 A policy-based cap?........................................................................................47
      4.3.4 Assessment against principles ......................................................................48

5. Concluding remarks..................................................................................................51
   5.1 Recommendations .................................................................................................52
Appendices
Appendix 1: Bibliography ............................................................................................................... 53
Appendix 2: Urban/Rural classification ......................................................................................... 54
Appendix 3: International perspective: Scotland NHS ............................................................... 57

Tables
Table 1: A set of principles for assessing alternative models .................................................... 11
Table 2: Cost of supply adjustments in population-based funding models ............................... 14
Table 3: Components of the rural adjuster .................................................................................. 15
Table 4: Rural adjuster components, by DHB, 2014/15 ............................................................. 23
Table 5: Assessment of options relative to current model – rural adjuster ................................. 29
Table 6: Top 10 DRG margins by volume delivered and by margin size, 2012/13 data ............. 33
Table 7: Assessment of options relative to current model – tertiary adjuster ......................... 49
Table 8: Urban/Rural Profile Classification, 2014 ................................................................. 54
Table 9: Classification of rural populations by DHB, 2014 (cumulative view) ......................... 55
Table 10: Rural populations as a share of DHB population, 2014 (cumulative view) ............. 55
Table 11: Impact on rural adjuster allocations from using rural populations, 2014/15 ............ 56

Figures
Figure 1: Placing the adjusters within the context of the funding system ............................... 12
Figure 2: Rural adjuster by component, 2014/15 ................................................................. 16
Figure 3: Rural adjuster funding allocation by DHB, 2014/15 .................................................. 16
Figure 4: Facilities modelled as having a diseconomy, by DHB ................................................ 17
Figure 5: Net impact of rural adjuster, 2014/15 – relative to PBFF allocation ......................... 18
Figure 6: Net impact in dollars and as a % of population funding, by DHB, 2014/15 .............. 19
Figure 7: Facility-specific costs per case-weighted discharge, 2002/03 ..................................... 24
Figure 8: Scatterplot of rural adjuster and ‘highly rural/remote’ population, by DHB ............... 27
Figure 9: Steps in quantifying the tertiary adjuster ............................................................... 31
Figure 10: Illustration of DRG-level tertiary margins .............................................................. 32
Figure 11: Average cost per DRG among tertiary services, 2012/13 costs ............................... 32
Figure 12: Top 10 DRG margins by volume delivered and by margin size, 2012/13 data .. 33
Figure 13: Share of tertiary adjuster received by tertiary providers, 2014/15 ....................... 34
Figure 14: Tertiary adjuster – net financial impact, 2014/15 .................................................... 34
Figure 15: Role Delineation Levels 6 & 5, by speciality and facility ........................................ 37
Figure 16: DHB submissions of 2010/11 cost data for 2013/14 pricing work 38
Figure 17: Tertiary adjuster – modelled versus implemented, 2013/14 - 2015/16 39
Figure 18: Average cost per case weight, secondary and tertiary services 40
Figure 19: Annual average change in average cost per case weight 41
Figure 20: Comparison of DRG margins and associated service volumes, 2012/13 42
Figure 21: Two-part price per DRG – stylised version 45
Figure 22: Tertiary adjuster growth compared with a capped path, 2012/13 – 2015/16 47
Executive summary

This review has considered two ‘adjusters’ within the publicly-funded health system: the rural adjuster, which allocates funding to district health boards (DHBs) for the unavoidable extra costs of providing health services to rural communities; and the tertiary adjuster, or price premium that all DHBs pay to ensure that there is tertiary-level hospital capacity available for their populations.

Our approach has been to engage with DHB stakeholders through a series of targeted interviews, an online survey and two workshops. This was supplemented with an appraisal of documentation and analysis of the financial models and their impacts. We also engaged with the PBFF Technical Advisory Group to test our approach, findings and analysis. We then developed alternate options for each adjuster and, following Advisory Group feedback, assessed those options against a principles-based framework comprising six dimensions – transparency, value for money, equity, responsiveness, feasibility, and financial impacts.

Rural adjuster

The rural adjuster is not sufficiently well understood by sector stakeholders in terms of its aims, modelling method, and financial impacts. Limited access to the detail of the method and results, along with infrequent reviews of the modelling, have contributed to some stakeholders having the impression that some DHBs may be under (or over) compensated for the differences in cost they face in delivering services to rural communities. The question of whether funding should be linked to a DHB’s current costs was also raised, and whether this approach risks sending a signal of compensation for status quo arrangements and costs.

We identified two high-level directions for the rural adjuster: (1) an ‘enhanced status quo’ package of refinements to the current approach – including a clearer statement of policy intent, modelling improvements (e.g. updated cost data, sense-checks for anomalies, an efficiency element to the facilities component) and more visibility of the modelled amounts; and (2) an alternate ‘population-based adjuster’, which involves building up a general model of extra costs due to rurality and travel distances and time, and allocating funding on a per capita basis, using differences in population and geography rather than current costs.

While both options would represent an improvement over the current model, our appraisal against agreed principles suggests that the population-based adjustment would be preferable over the enhanced status quo option. This is because the population-based adjustment:

• is more likely to support value for money improvements in the long run, given that funding is not directly tied to a DHB’s current service model or cost structures – particularly for rural facilities and community-based services; and

• offer greater fairness among DHBs because funding for the extra unavoidable is determined on the same basis, being linked to enduring features of rural population size or dispersion and geography rather than a DHB’s current patterns of cost.

We conclude that the option of the population-based adjustment should be developed with a view to implementation. As a way to manage debate and financial risks, consideration could also be given to concurrently modelling the rural adjuster under the enhanced status quo option to provide a comparator. Ideally, this work would build sector confidence with the models showing a similar scale of extra costs – even though DHB-specific allocations differ.
Tertiary adjuster

Several stakeholders pointed to a lack of clarity around the intent and method of the tertiary adjuster. A key theme related to whether the tertiary adjuster is to support current service capacity or to nudge the system towards a more efficient and sustainable network of services. Stakeholders also referred to the adjuster as being ‘compensation’ for providers’ costs rather than incentivising efficiency. Areas identified as lacking in clarity include the calculation of the pool, what DHBs receive for their contributions, and the IDF payment mechanism.

The volatility of the modelled results was also raised as an issue. In 2013/14 and 2014/15, policy decisions were taken to smooth the impact of the large ‘jump’ in modelled results by implementing a lower amount. Affordability and concerns about cost data robustness were factors. In 2015/16, the modelled result was lower than had been expected and was fully implemented. As the method has been stable over this period, the drivers of this volatility are likely to be movements in secondary or tertiary cost data for the following reasons:

- changes in real world costs – such as greater movements in secondary DHB cost structures relative to tertiary costs (or vice versa). More analysis was seen as being to understand these year-on-year changes and to explain the drivers to decision makers;
- changes in the cost data – changes in data measurement/reporting, such as changes in the way that tertiary (or secondary) DHBs allocate their costs. Overall, 12 out of 20 DHBs provide event-level cost data with those not contributing mostly being secondary-level boards. Several stakeholders commented that getting better quality cost data and having all DHBs submit event-level cost data is vital for improving the pricing work.

In general, we found that the tertiary adjuster is poorly understood and, indeed, much more poorly understood than we would have expected. Aspects that were not well understood include the method to quantify the pool (which is inherently technical) and how the adjuster fits together with the wider pricing and funding system. This current lack of clarity suggests there would be utility in a summary statement that outlines, in plain English, the intent and approach of the tertiary adjuster and how it fits with casemix-based IDF.

Nevertheless, we did not detect a strong message that the current approach – working within the national pricing framework to estimate the cost of supporting tertiary capacity – is unworkable. We therefore identified three broad options for the future direction of the tertiary adjuster that address legitimate issues raised while supporting the health system’s long-run need for better cost information to underpin service planning and efficient and sustainable national prices. The three options are as follows.

1. Enhanced status quo – a package of refinements to clarify the purpose of the tertiary adjuster, improve building blocks such as the Role Delineation Model and cost data, and to reduce volatility via additional analysis and multi-year smoothing of DRG margins;

2. An extended model – converting the tertiary adjuster pool to DRG-level margins on top of the casemix base to form a two-part unit price for DRGs provided by tertiary services and to set a clearer price signal for purchasers and providers;

3. A policy-based cap – limiting annual growth in the tertiary adjuster pool to no more than the percentage increase in the population-based funding pool so as to encourage ongoing efficiency gains within tertiary services and ensure the services are affordable.

These options are not mutually exclusive; option 1 is a ‘base’ option of refinements and it would be possible to also pursue either option 2 or 3.
The enhanced status quo option is essentially a ‘base’ package of low-risk refinements. Our assessment suggests that, collectively, these changes would be an improvement over the current approach. The question is whether this package is sufficient to address the concerns identified by stakeholders – such as volatility of results, and underlying cost growth and affordability. The two additional options have a slightly different focus:

- the two-part unit price offers greater transparency to inform decision-making by providers and referrers, and thereby, offers potential for improving efficiency over time;
- the policy based cap offers more certainty for referring DHBs and may force efficiency gains within providers, with the trade-off being less flexibility to manage costs.

Overall, our assessment leads us to prefer the option of the two-part unit price adjustment being developed alongside the enhanced status quo package. This is because a clearer price signal for tertiary services that allows service-level costs to be compared against total revenue has the potential to engender debate that leads to more informed decision-making over time. A policy-based cap to smooth results is something that can be considered, as needed, on a year-by-year basis – as has effectively been the case in 2013/14 and 2014/15.

Concluding remarks

There is some limited crossover between the two adjusters in that each adjuster considers hospital cost structures. The small facilities component of the rural adjuster, which accounts for just over 40% of the pool, is focused on compensating DHBs for the extra costs of running smaller base hospitals and/or multiple small facilities in rural areas. These costs are modelled as diseconomies of small scale, in that service volumes are low relative to fixed costs – as compared with a larger facility with higher throughput.

Conversely, the tertiary adjuster is a price premium to ensure that tertiary-level capacity is available for all boards. It covers the observable higher costs of those services which are likely driven by a combination of higher input costs (e.g. a more senior mix of clinical staff, expensive equipment and consumables) and various scale diseconomies (e.g. lower volumes in some specialties relative to fixed costs; management overheads in larger organisations).

It makes sense to retain the tertiary adjuster as a service payment, given that all DHBs pay into the adjuster pool to ensure tertiary-level capacity and that payments from the pool are based on expected throughput. In contrast, the rural adjuster fits more naturally within the bulk funding allocated to DHBs than as a nationally-priced service payment between boards. This is because the rural adjuster is about the extra costs of providing for local services, such as rural facilities and community-based services in rural communities which are, in the main, accessed by a board’s own population.

We would also note that there are limits to that these adjusters can achieve, in terms of supporting cost control within provider arms and ensuring a nationwide network of tertiary services that is efficient and sustainable. The changes proposed here need to be supported with stronger institutions to encourage sustainable and efficient and services and to control sector cost growth. These could include, for example, National Health Committee scrutiny of the uptake and diffusion of new technology, a programme of rolling service reviews, and an agreed nationwide plan for a sustainable network of tertiary services.
1. Introduction and approach

1.1 Purpose of the review
We have been commissioned by the Ministry of Health to review: (i) the rural adjuster funding allocated to district health boards (DHBs) for the unavoidable extra costs of providing health services to rural populations; and (ii) the tertiary adjuster, or price premium, that all DHBs pay to ensure that there is tertiary-level capacity available for their populations.

The purpose of the review is to provide independent and evidence-based policy advice on the appropriate models for funding rural and tertiary health care services within the current population-based funding system.

As part of the process of conducting the review, emphasis has been placed on engaging sector stakeholders so as to understand the different perspectives on the rural adjuster and the tertiary adjuster.

1.2 Scope of the review
This report addresses the policy choices for any additional funding or payments over and above the standard population-based funding to DHBs.

While the technical development of refined or alternate models is outside of the agreed scope of the review, our analysis considers the practicality of developing and implementing of those policy choices in the New Zealand context – given currently available data.

1.3 Our approach to the review
Our fact-finding engaged stakeholders in the following manner:

• an online survey seeking views about the adjusters was sent to DHB chief financial officers (CFOs) and planning and funding managers on 13 November 2014. Three responses were received (Canterbury, Nelson Marlborough and South Canterbury);

• a series of 11 targeted interviews undertaken in a semi-structured format, with CFOs, planning and funding managers and business analysts at five DHBs during November-December 2014. The interviews were undertaken in-person (Auckland, Capital & Coast, and Southern) and via teleconferences (Taranaki and Tairawhiti);

• stakeholder workshops, held on 25 November 2014 and 27 January 2015, to allow for issues to be raised and debated among a group of DHB representatives. All DHBs were invited to nominate a representative, with those attending being from nine boards (Auckland, Capital & Coast, Counties Manukau, Nelson Marlborough, Northland, Southern, Waikato, Waitemata and Whanganui); and

• interviews with technical experts and policy advisors at the Ministry of Health.

This engagement was supported with an appraisal of documentation from prior reviews of the rural and tertiary adjusters and material on relevant concepts in overseas territories.
Our quantitative approach involved data gathering, including population data, the current models, assessing models inputs such as service volumes and costs, and analysing the financial impacts of the models.

We then tested our approach and emerging findings at the two stakeholder workshops and with the PBFF Technical Advisory Group at three meetings across December 2014 to February 2015.

1.4 A framework of common principles

To guide our analysis of alternative options for the rural and tertiary adjusters, we developed a framework of common principles. A draft set was tested with the Advisory Group and at the stakeholder workshops, which led to the version outlined in Table 1.

Table 1: A set of principles for assessing alternative models

<table>
<thead>
<tr>
<th>Principle</th>
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<tbody>
<tr>
<td>Transparency</td>
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<td>Value for money</td>
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<tr>
<td>Equity</td>
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<tr>
<td>Responsiveness</td>
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<tr>
<td>Feasibility</td>
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<tr>
<td>Financial impacts</td>
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</table>
2. Overview of current arrangements

This chapter outlines how the rural and the tertiary adjuster fit within the funding system.

2.1 Population-based funding system

Resources are allocated to DHBs under the Population-Based Funding Formula (PBFF) which aims to “…fairly distribute available funding between DHBs according to the relative needs of their populations and the cost of providing… services to meet those needs.” The PBFF allocates funding to DHBs based on their population size – adjusted for differences in health care utilisation among demographic groups. It also includes the rural adjuster to recognise differences in cost faced by DHBs in delivering services to rural populations.

DHBs receive their funding via the annual funding package, which in the main comprises the bulk funding of their population-based share as well as several non-PBFF line items. These items include new initiatives, which are often initially funded on an actual cost basis before being rolled into PBFF and a land adjuster to cover the valuation increases impacts on Auckland DHBs land portfolio and associated increases in capital charge.

The funding package also includes forecast inter-district flows (IDFs) between boards, priced using national prices. The tertiary adjuster is a price premium that all DHBs pay for certain hospitals to maintain tertiary-level capacity to treat their patients.

Figure 1: Placing the adjusters within the context of the funding system

<table>
<thead>
<tr>
<th>Population-Based Funding Formula</th>
<th>Annual Funding Package</th>
<th>Inter-district flows – service pricing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural Adjuster model of extra costs</td>
<td>Population-based funding shares for DHBs</td>
<td>Tertiary Adjuster</td>
</tr>
<tr>
<td>PBFF cost weights for relative health need among demographic groups</td>
<td>Non-PBF lines</td>
<td>Inpatient IDF volumes under casemix price</td>
</tr>
<tr>
<td>Rural adjuster – 1% top sliced off the pool – quantified and allocated using models for 7 service areas. PBFF shares integrate need-based cost weights and adjuster allocation.</td>
<td>Package delivers bulk funding to DHBs, largely comprising their population-based funding. Other lines include new policy initiatives and a land adjustment.</td>
<td>Non-inpatient IDF volumes</td>
</tr>
<tr>
<td></td>
<td>IDF payments for services DHBs provide for each other – determined under national prices. Tertiary adjuster – a price premium paid for tertiary services.</td>
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</tbody>
</table>
2.2 Basis for the adjusters

Rural adjuster

The basis of the rural adjuster is laid out in the 2001 Cabinet paper on the implementation of the PBFF. The paper states the aim of the PBFF as being to “…give each DHB the same opportunity, in terms of resources, to respond to the needs of its population.” In response to differences in costs that DHBs may face, Cabinet also agreed to an adjustment for:

- “… the unavoidable differences in costs that DHBs face in providing or funding some community services to rural communities”; and
- “the diseconomies of scale involved in maintaining a reasonable level of access to hospital services for rural communities”.

This funding adjustment was to be based on actual extra costs incurred. The resulting rural adjuster quantifies these differences in costs on a DHB-by-DHB basis and operates within the PBFF as a top-slice off the main population-based funding pool. Each board’s share of the rural adjuster is then integrated into its overall PBFF share.

Tertiary adjuster

The tertiary adjuster, in contrast to the rural adjuster, is a feature of the national pricing programme. The National Cost Collection and Pricing Programme (NCCP) prices inpatient discharges to enable boards to pay each other for the services they provide for each other’s populations. These national prices are based on relative cost weights applied to diagnostic-related groups (DRG) of discharges with similar diagnoses and procedures.

The tertiary adjuster and can be seen as a response to the following:

- inpatient discharges have one national price, based on the relative resources consumed by secondary-level services across DRGs being signified by case weights (i.e. weighted for average costs);
- tertiary services may not only handle higher levels of complexity within a given DRG, but are typically maintaining higher levels of capability on a 24/7 (including onsite rosters and higher salaries of a senior mix of specialists) that patients referred from other boards may access;
- simply averaging all DHB cost structures to derive a national price would mean tertiary providers being systematically under-paid for services to patients from other boards. So there is a need for a tertiary premium to cover the capacity provided by tertiary level services.

The tertiary adjuster is therefore quantified as a bulk capacity-based payment, quantified for each tertiary provider. Each DHB pays into the tertiary adjuster pool on the basis of their PBFF share – essentially a risk-sharing type of arrangement.

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2.3 Comparison with other funding systems

A look across other health systems shows that it is not unusual for jurisdictions with population-based funding models to include adjustments for the cost of supply. Table 2 draws on Penno et al (2013) and summarises the approaches in several territories – England, Scotland, New South Wales and Ontario. England is an exception in that the focus is on urban-ness as a driver of higher costs in the South-east of England; the other territories all include adjustments for differences in cost because of rurality.

Ontario and NSW include adjustments for the additional costs of providing facilities in remote areas. In Scotland, concerns about rural issues had driven the development excess costs of supply index; however the index reflects differences in the cost of supply regardless of geographical classifications of urban or rural (see Appendix 3 for more detail).

Table 2: Cost of supply adjustments in population-based funding models

<table>
<thead>
<tr>
<th>Territory</th>
<th>Financing system</th>
<th>Cost of supply adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Zealand</td>
<td>Universal access funded by General Taxation</td>
<td>Rural adjuster</td>
</tr>
<tr>
<td>England</td>
<td>Universal access funded by General Taxation</td>
<td>Market Forces Factor, comprising:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Staff cost index (55%)</td>
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<tr>
<td></td>
<td></td>
<td>• Medical and dental London weighting (14%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Building cost index (3%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Land valuation index (0.4%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Other cost index (28%)</td>
</tr>
<tr>
<td>Scotland</td>
<td>Universal access funded by General Taxation</td>
<td>Unavoidable excess costs of supply factor, comprising:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hospital services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Community clinic-based services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Community travel-based services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• GP prescribing</td>
</tr>
<tr>
<td>New South Wales</td>
<td>Universal access funded by federal and state taxation mixed with optional private insurance coverage</td>
<td>• Teaching and Research</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• State-wide and Selected Specialty Services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Dispersion Costs Factor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Small hospitals factor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Public/Private Hospital Mix</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Private Hospital Activity Substitution</td>
</tr>
<tr>
<td>Ontario</td>
<td>Universal access funded by General Taxation</td>
<td>Differences in unit costs (facility expenses, facility type, weighted service activity, teaching, specialised services, rural geography, size of facility)</td>
</tr>
</tbody>
</table>

Source: Penno et al (2013)
3. Rural adjuster

3.1 Overview of the adjuster and method

The rural adjuster comprises seven components, as outlined in Table 3. Largely established during a review in 2004, the components were remodelled in 2008 with the exception of facilities and community services – due to a lack of cost data. The extra costs faced by DHBs in providing services for rural communities are generally modelled by comparing the difference between each DHB’s incurred cost with a predicted cost based on a national average or regression model. The drivers of these extra costs can be broadly categorised as:

- **higher fixed costs** – diseconomies of small scale at facilities with low service volumes;
- **dispersed rural population** – leading to longer travel times and higher costs for delivering services in the community (e.g. community services, offshore islands);
- **distance from tertiary services** – leading to higher use of inter-hospital transfers and higher uptake of travel and accommodation allowances for rural patients; and
- **population size** – smaller boards have smaller budgets to meet fixed governance costs.

Table 3: Components of the rural adjuster

<table>
<thead>
<tr>
<th>Component</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small hospital facilities</td>
<td>For the diseconomies of small scale incurred where fixed costs of a facility are spread over fewer units of output than would possible at an urban facility with higher throughput.</td>
</tr>
<tr>
<td>Community services</td>
<td>For the extra costs of delivering services to homes and schools, due to distance and travel times. Covers district nursing, home support, well child and school dental services.</td>
</tr>
<tr>
<td>Offshore islands</td>
<td>For the extra costs in providing community-based services to populations of offshore islands (i.e. Great Barrier Island, Chatham Islands and Stewart Island) relative to the national average cost per capita for providing community services.</td>
</tr>
<tr>
<td>Travel and accommodation</td>
<td>For the differences in costs incurred by DHBs in providing assistance, under a national policy, to patients for who travel and accommodation costs are a barrier to accessing treatment. Rural populations tend to drive costs due to longer travel distances.</td>
</tr>
<tr>
<td>Inter-hospital transfers</td>
<td>For the differences in road and air ambulance costs that DHBs face in transporting patients – often from a rural facility to a base hospital or from a provincial base to a tertiary facility.</td>
</tr>
<tr>
<td>Governance</td>
<td>A modelled diseconomy related to population size, based on smaller DHBs having less flexibility than larger DHBs to meet the fixed costs of core governance and management functions.</td>
</tr>
<tr>
<td>Rural GP/PHO payments</td>
<td>DHBs are funded for actual costs incurred in making payments to rural practices that are entitled under a national policy to:</td>
</tr>
<tr>
<td></td>
<td>• a <em>rural bonus</em> to compensate for additional costs incurred;</td>
</tr>
<tr>
<td></td>
<td>• a <em>rural premium</em> to help with staff recruitment and retention; or</td>
</tr>
<tr>
<td></td>
<td>• a <em>reasonable roster payment</em> to ensure on-call staff have to work no more than a 1:3 rotation.</td>
</tr>
</tbody>
</table>
The rural adjuster totalled $119.7 million in 2014/15 – equivalent to 1.08% of the population-based funding pool of $11.069 billion in that year. Figure 2 shows the relative size of the seven components. The facilities component is the largest, being $44.1 million or 37% of the rural adjuster pool in 2014/15, followed by the governance component ($19.2 million or 16%) and the community services component ($17.8 million or 15%).

All 20 DHBs received funding via the adjuster in 2014/15, as shown in Figure 3. Southern received the largest amount ($16.2 million), followed by Northland ($12.0 million) and West Coast ($11.7 million). A further 10 boards each received $5-10 million. Large urban DHBs tended to receive funding for components such as governance (e.g. Hutt, $860k), rural GPs (e.g. Waitemata, $590k; Counties Manukau $160k) or offshore islands (e.g. Auckland, $580k).

**Figure 2: Rural adjuster by component, 2014/15**

<table>
<thead>
<tr>
<th>Component</th>
<th>Amount ($ million)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities</td>
<td>44.1</td>
<td>37%</td>
</tr>
<tr>
<td>Governance</td>
<td>19.2</td>
<td>16%</td>
</tr>
<tr>
<td>Community services</td>
<td>17.8</td>
<td>15%</td>
</tr>
<tr>
<td>Rural GP/PHO payments</td>
<td>16.8</td>
<td>14%</td>
</tr>
<tr>
<td>Travel &amp; Accommodation</td>
<td>9.8</td>
<td>8%</td>
</tr>
<tr>
<td>Inter-hospital Transfers</td>
<td>9.4</td>
<td>8%</td>
</tr>
<tr>
<td>Offshore Islands</td>
<td>2.5</td>
<td>2%</td>
</tr>
</tbody>
</table>

**Source:** Ministry of Health data; Sapere analysis

**Figure 3: Rural adjuster funding allocation by DHB, 2014/15**

- Southern: $16.2 million
- Northland: $12.0 million
- West Coast: $11.7 million

**Source:** Ministry of Health data; Sapere analysis
The facility component comprises diseconomies of small scale modelled at 44 facilities in 16 DHBs, as shown in Figure 4. These sites include very small rural facilities as well as the base or secondary-level hospital of several boards. Two regression models were developed to explain the personal health costs provided by DHBs: the main model covered sites with >500 case weighted discharges; the smallest sites were modelled using annual bed days.

**Figure 4: Facilities modelled as having a diseconomy, by DHB**

<table>
<thead>
<tr>
<th>DHB</th>
<th>Facility name</th>
<th>Modeled diseconomy in 2014/15 ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay of Plenty</td>
<td>Whakatane</td>
<td>800,000</td>
</tr>
<tr>
<td></td>
<td>Opopuki</td>
<td>540,000</td>
</tr>
<tr>
<td>Canterbury</td>
<td>Ashburton</td>
<td>1,250,000</td>
</tr>
<tr>
<td></td>
<td>Ellesmere</td>
<td>820,000</td>
</tr>
<tr>
<td></td>
<td>Akaroa</td>
<td>810,000</td>
</tr>
<tr>
<td></td>
<td>Darfield</td>
<td>770,000</td>
</tr>
<tr>
<td></td>
<td>Waikari</td>
<td>280,000</td>
</tr>
<tr>
<td></td>
<td>Kaikoura</td>
<td>140,000</td>
</tr>
<tr>
<td></td>
<td>Rangiora</td>
<td>80,000</td>
</tr>
<tr>
<td>Capital and Coast</td>
<td>Kenepuru</td>
<td>1,140,000</td>
</tr>
<tr>
<td>Hawkes Bay</td>
<td>Wairau</td>
<td>1,480,000</td>
</tr>
<tr>
<td></td>
<td>Waipukurau</td>
<td>1,050,000</td>
</tr>
<tr>
<td></td>
<td>Napier Health Centre</td>
<td>580,000</td>
</tr>
<tr>
<td>Lakes</td>
<td>Taupo</td>
<td>1,380,000</td>
</tr>
<tr>
<td></td>
<td>Rotoma</td>
<td>220,000</td>
</tr>
<tr>
<td>MidCentral</td>
<td>Honowhenua</td>
<td>1,510,000</td>
</tr>
<tr>
<td>Nelson Marlborough</td>
<td>Motueka</td>
<td>1,520,000</td>
</tr>
<tr>
<td></td>
<td>Waitau</td>
<td>970,000</td>
</tr>
<tr>
<td></td>
<td>Murchison</td>
<td>490,000</td>
</tr>
<tr>
<td></td>
<td>Nelson</td>
<td>340,000</td>
</tr>
<tr>
<td></td>
<td>Golden Bay</td>
<td>60,000</td>
</tr>
<tr>
<td>Northland</td>
<td>Dargaville</td>
<td>1,470,000</td>
</tr>
<tr>
<td></td>
<td>Bay of Islands</td>
<td>1,410,000</td>
</tr>
<tr>
<td></td>
<td>Kaitaia</td>
<td>1,290,000</td>
</tr>
<tr>
<td>Southern</td>
<td>Lakes District</td>
<td>1,490,000</td>
</tr>
<tr>
<td></td>
<td>Gore</td>
<td>1,480,000</td>
</tr>
<tr>
<td></td>
<td>Balclutha</td>
<td>1,460,000</td>
</tr>
<tr>
<td></td>
<td>Dunstan</td>
<td>1,420,000</td>
</tr>
<tr>
<td></td>
<td>Oamaru</td>
<td>1,410,000</td>
</tr>
<tr>
<td></td>
<td>Southland</td>
<td>200,000</td>
</tr>
<tr>
<td>South Canterbury</td>
<td>Timaru</td>
<td>650,000</td>
</tr>
<tr>
<td>Tairawhiti</td>
<td>Te Puia Springs</td>
<td>1,480,000</td>
</tr>
<tr>
<td></td>
<td>Gisborne</td>
<td>840,000</td>
</tr>
<tr>
<td>Taranaki</td>
<td>Hawera</td>
<td>1,450,000</td>
</tr>
<tr>
<td></td>
<td>Taranaki Base</td>
<td>&lt; $1,500</td>
</tr>
<tr>
<td>Waikato</td>
<td>Te Kuiti</td>
<td>1,480,000</td>
</tr>
<tr>
<td></td>
<td>Tokoroa</td>
<td>1,470,000</td>
</tr>
<tr>
<td></td>
<td>Taumanuani</td>
<td>1,450,000</td>
</tr>
<tr>
<td></td>
<td>Thames</td>
<td>1,200,000</td>
</tr>
<tr>
<td>Waitarapa</td>
<td>Masterton</td>
<td>980,000</td>
</tr>
<tr>
<td>West Coast</td>
<td>Buller</td>
<td>2,240,000</td>
</tr>
<tr>
<td></td>
<td>Grey Base</td>
<td>1,110,000</td>
</tr>
<tr>
<td>Whanganui</td>
<td>Taihape</td>
<td>1,510,000</td>
</tr>
<tr>
<td></td>
<td>Wangamui</td>
<td>450,000</td>
</tr>
</tbody>
</table>

**Source:** Ministry of Health - Rural Adjuster Model (2004); **note** - sites shaded grey are base hospitals
3.2 Key findings and analysis – rural adjuster

3.2.1 Financial impacts are material for smaller boards

The presence of the rural adjuster results in reallocations of funding from DHBs with large or medium populations to those with smaller populations. Figure 5 shows the net impacts of the rural adjuster in 2014/15 – i.e. the difference between what a DHB receives through the adjuster and the amount it would receive if the adjuster pool was instead rolled into the main population-based funding pool and distributed via PBFF shares.

This perspective shows that although all DHBs notionally receive funding from the adjuster, 11 out of 20 boards benefit financially – compared with a counterfactual of no adjuster. The positive net impacts of the adjuster range from West Coast (+$10.8 million) to Lakes DHB (+$2.4 million). These DHBs tend to have smaller populations, mostly ranging in size from West Coast (33,300) to Northland (160,600), with Southern being an outlier (311,100).

DHBs with a negative net impact are those with a share of the rural adjuster funding pool that is lower than their PBFF share – typically those boards with a relatively large population. Although this group comprises DHBs with largely urban populations, such as Auckland, Counties Manukau and Hutt, it also includes boards with sizeable rural populations and multiple small rural facilities, such as Bay of Plenty, Canterbury and Waikato. This latter group receives funding under the facility and rural GP/PHO components but their larger population size and proximity to tertiary-level hospital services mean they tend not receive funding under other components.

The insight here is that top-slicing a rural adjuster from the PBF pool to reallocate for the extra unavoidable costs of delivering services to rural communities will generally be more beneficial, in a net sense, to boards with smaller populations. This is because larger boards would need to incur a high share of those modelled extra costs to balance the amounts that they notionally contribute to the adjuster pool via their relatively large PBFF shares.

Figure 5: Net impact of rural adjuster, 2014/15 – relative to PBFF allocation

Source: Ministry of Health data; Sapere analysis
Figure 6 plots the net impact of the rural adjuster in dollar terms (vertical axis) alongside that impact as a percentage of that DHB’s population-based funding in 2014/15 (horizontal axis). This approach shows that the reallocation of funding via the rural adjuster tends to be material for the 11 DHBs with a positive net financial impact – being equivalent to between 2.6% and 3.9% for four of those boards (South Canterbury, Whanganui, Wairarapa and Tairawhiti). West Coast DHB is an outlier with the net impact of the rural adjuster being equivalent to +11.7% of its population-based funding.

All of these boards tend to have rural populations that form a large share of their total population. Using Statistics New Zealand’s experimental Urban/Rural Profile Classification (see Table 10, Appendix 2), between 25% and 44% of the population in these boards can be classified as rural – with varying degrees of urban influence.

Conversely, among the nine DHBs with a negative net financial impact, the impact of the rural adjuster was between -0.3% and -1.1% of their population-based funding in 2014/15. This reflects the fact that these boards tend to have larger populations and, accordingly, larger PBF shares. Therefore, even though these boards notionally ‘contribute’ larger amounts into the rural adjuster pool, those contributions are relatively small as a proportion of their overall funding.

**Figure 6: Net impact in dollars and as a % of population funding, by DHB, 2014/15**

**Net impact $mn**

<table>
<thead>
<tr>
<th>Net impact as a percent of population-based funding</th>
</tr>
</thead>
</table>

**Source:** Ministry of Health data; Sapere analysis
3.2.2 The policy intent may disincentivise service change

The Cabinet paper that established the PBFF provided for an adjustment for “the unavoidable differences cost” in providing services for rural communities and for “the diseconomies of scale” in maintaining a reasonable level of access to hospital services for those communities. This adjustment was to be based on actual extra costs incurred.

Several stakeholders commented this on policy intent. The key theme relates to the balance between recognising actual costs of current service models and the need to signal a future direction for the health system that involves efficient and sustainable services. It was argued that linking funding to actual costs risks sending a signal of compensation for retaining an inefficient mix of services and facilities, rather than looking at other options. One written submission argued that the adjuster should instead be linked to population and geography.

We found no evidence, in feedback via interviews and the online survey, of the rural adjuster directly informing DHB planning or purchasing decisions for rural communities. Nor did we find any examples of the current approach hindering useful changes to services or facilities. This is not unexpected, given that there seems to be a lack of visibility and awareness among DHB stakeholders of the method and results of the rural adjuster.

However, workshop discussions noted that this signal of compensation for current costs could become an issue if steps were taken to increase visibility of the amounts allocated under each component of the rural adjuster. Improved awareness could, potentially, dissuade some boards from reconfiguring services in areas where they have some flexibility – e.g. small facilities and community-based services – if they would lose funding as a result.

3.2.3 Scope of the rural adjuster has been questioned

Two issues of scope for the rural adjuster were debated in the stakeholder workshops.

- Should any extra costs associated with small population size be included?
- Should any extra costs associated with urban settings be included?

Small population size

The first issue relates to whether small population size in itself should be a consideration for the adjuster. The governance component of the adjuster, which relates to core governance, management and planning functions, models a diseconomy of small population size that represents the higher burden faced by smaller DHBs on a per capita basis for financing these functions – relative to larger boards. It is based on the argument that boards with smaller populations, and therefore small budgets, have fewer resources to absorb these relatively fixed costs of these core functions.

Group discussion in the second workshop was weighted against in favour of not including governance costs within a revised rural adjuster, based on the following points:

- the issue is related to population size rather than the size or dispersion of rural communities and so does not fit with the original intention for the rural adjuster;
• the costs are not unavoidable as boards can collaborate to share core governance services (e.g. West Coast and Canterbury DHBs have adopted this approach); and
• small boards have scope to run more efficient in-house processes and may merge roles.

One counter argument is that not all DHBs have the same opportunity to share these roles and costs, because there may be no obvious partner board due to geography – examples may be Nelson Marlborough or Northland. Another argument is that even in cases where DHBs are able to share these functions, it is not clear that this arrangement would entirely address any diseconomy associated with small population size.

On balance, it appears that there is a case for excluding the governance component from a revised version of the rural adjuster. That decision should be dependent on a close look at the accuracy of the existing diseconomy model and some analysis of the extent to which the West Coast-Canterbury shared governance arrangement has led to costs being avoided. If the governance component is to be retained then, ideally, the policy intent of the rural adjuster would be refined to allow for small population size to be referenced.

**Urban settings**

The second issue of scope relates to whether extra costs are incurred in urban settings, and if so, whether these costs should be part of a revised rural adjuster or similar supply-side cost adjustment. Examples of potential costs were raised in the stakeholder workshops and included language barriers and the cost of translation services and lost time in metropolitan areas due to longer travel times in traffic.

The issue of differential land costs was also raised, in terms of land valuations driving the capital charge payable by DHBs to the government. The one-line adjustment for land paid to Auckland DHB through the annual funding package was cited as an example of a board that is already being funded for unavoidable differences in costs – albeit outside the rural adjuster. We understand that Auckland has been an outlier with land valuation increases being 20% per annum in the last two years. However, questions were also raised about the relative differences in capital charge costs faced by other urban boards.

The main rationale for considering any such extra costs within the scope of a revised rural adjuster is that it would be consistent with original intent of PBFF – i.e. giving DHBs an equal chance to provide for their populations. Furthermore, there is precedence in that some overseas territories that use population-based funding approaches also factor in supply-side costs differences that encompass urban and rural settings (e.g. England, Scotland).

The case against changing the scope of the rural adjuster to include urban costs comprises the following points:

• in the absence of evidence about the quantum of costs involved, larger urban boards tend to have economies of scale and larger budgets to absorb any extra urban-related costs that may arise (e.g. due to translation costs, delays due to traffic congestion);
• increasing the top-sliced adjustment to include any urban-related costs will weaken the redistribution effects of the current model towards DHBs that incur extra costs associated with rural communities – typically small-to-medium sized boards.

We would conclude that, in the face of needing a high threshold of evidence as the basis for substantial change, there is no strong case for widening the scope to include urban-related costs. However, the issue of high capital charge on DHB land could be looked at more closely by the Technical Advisory Group to consider the differentials in capital charge paid by other metropolitan boards and the policy basis for the current land adjustment.
3.2.4 Insufficient visibility of the rural adjuster

Awareness of the method and results of the rural adjuster among DHB stakeholders appears to be low. Stakeholders typically mentioned that they were unaware of how much funding their DHB receives via the rural adjuster and how the allocations change from year-to-year. Some were unsure of the method for estimating the adjuster and, for example, whether all of their board’s rural facilities were included. The following quotes from interviews and the online survey are illustrative of these points.

The rural adjuster lacks transparency as it is buried in the PBFF… it hasn’t been reviewed for nearly a decade… so I don’t know the extent of current support compared to justifiable support. It is timely to review, and also an increase transparency is required.

I don’t think there’s a lot of transparency around the rural adjuster. We’ve tried to find out how much we’re getting… The strategic intent of the rural adjuster isn’t clear to us. I know it’s based around hospital services but the cost of rural services isn’t just the hospital, particularly when you have very sparse populations.

I’m not sure that the rural adjuster picks up all the extra rural costs… how does the inter-hospital transfer cost pool get adjusted? Has the pool been adjusted each year?

We do not have the details of the rural/diseconomy adjuster as these have been unavailable to DHBs so knowledge is based on the original development and PBFF review 5 or 6 years ago when, although the rural adjuster wasn’t really reviewed, there was a lot of discussion. … [it’s] hard to comment on what existing components should remain when we don’t have the details.

The views around the lack of transparency appear to be linked, in part, to the rural adjuster being integrated within the PBFF. Therefore it is not visible within a DHB’s PBFF share or as separate line in the annual funding package.

Another factor is that time has passed since the adjuster was last reviewed in 2008. That review quantified the rural adjuster was quantified at $99.7 million – to be top-sliced off the PBF pool and adjusted in line with that pool to maintain relativity over time. The Ministry of Health had circulated a technical paper that outlined changes to the method and amounts for each component following the 2008 review – however this document is not published on the Ministry’s website and does not appear to be is not widely available.

One stakeholder commented in workshop discussion that the awareness of the rural adjuster was higher at the time of the last review, but has since declined – in part due to time passing and also due to staff changes.

The transparency was there – it’s just been lost over time.

Taken together, this all suggests that more could be done to make information about the rural adjuster more accessible to DHB stakeholders and to ensure the results are more visible within the annual funding package.
3.2.5 Some questions regarding face validity of the results

We mapped the value of each component of the rural adjuster in 2014/15 for each DHB as a heat map, as shown in Table 4. While it is reasonable to expect that any model will have ‘unders and overs’, several results appear counterintuitive, for example:

- community services – Hutt, with its largely urban population, receives funding for the extra cost of delivering community-based services to rural communities whereas Bay of Plenty does not, despite its sizeable rural population and remote areas (see Appendix 2);
- travel and accommodation allowance – Northland receives funding for incurring costs under this policy that is more than double that received by almost any other DHB;
- inter-hospital transfers – Hawke’s Bay received double that of Northland even though their populations are similar in size and Northland has a much larger rural population;
- small facilities – site-specific amounts within this component can seem counterintuitive at DHB level. As an example, Tairawhiti receives more funding for its site at Te Puia, which has a scope of care that is similar to a primary care centre, than for its relatively small base hospital at Gisborne (as in Figure 4). This is, in part, due to the use of two models for facility diseconomies – as explained further in the next section.

These anomalies may arise from the generalised nature of the models used to predict an expected cost for each DHB – these may be a good fit for most DHBs but not all. Another factor may be the variations in the cost data provided by DHBs, for example, patterns of claims under the rolled-out national travel and accommodation policy may not have fully matured at the time of the 2008 review. Any revised modelling may therefore benefit from further analysis of outliers in the data and cross checks for odd-looking results.

Table 4: Rural adjuster components, by DHB, 2014/15

<table>
<thead>
<tr>
<th>DHB</th>
<th>Facilities</th>
<th>Governance</th>
<th>Community services</th>
<th>Rural GP payments</th>
<th>Travel and accommodation</th>
<th>Inter-hospital transfers</th>
<th>Offshore islands</th>
<th>Total funding ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern</td>
<td>7.63</td>
<td>1.55</td>
<td>1.47</td>
<td>2.78</td>
<td>1.69</td>
<td>0.75</td>
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<td>16.18</td>
</tr>
<tr>
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<td>4.27</td>
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<td>0.66</td>
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<td>1.00</td>
<td>0.98</td>
<td>0</td>
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</tr>
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<td>2.11</td>
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</tr>
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<td>1.23</td>
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<td>5.92</td>
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<td>South Canterbury</td>
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<td>0.14</td>
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<tr>
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<td>1.32</td>
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<td>Capital &amp; Coast</td>
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<td>0</td>
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<td>1.31</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>1.13</td>
</tr>
<tr>
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<td>0</td>
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<tr>
<td>Counties Manapau</td>
<td>0</td>
<td>0</td>
<td>0.16</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Total ($ million)</strong></td>
<td><strong>45.19</strong></td>
<td><strong>18.84</strong></td>
<td><strong>17.47</strong></td>
<td><strong>16.53</strong></td>
<td><strong>9.63</strong></td>
<td><strong>9.28</strong></td>
<td><strong>2.73</strong></td>
<td><strong>119.66</strong></td>
</tr>
</tbody>
</table>

Source: Ministry of Health data; Sapere analysis
3.2.6 Facility diseconomy model lacks an efficiency focus

The data used in the facility diseconomy modelling appears to point to diseconomies of small scale being present. Facilities with the lowest volumes of throughout tend to have higher costs per unit of output, as can be seen in Figure 7. This chart shows the personal health costs per case weight in 2002/03, used to build the diseconomy model for facilities with annual throughput of more than 500 case-weighted discharges. The key steps involved are:

- facility cost and output data are used in a regression model to predict an expected cost per case weight;
- where the predicted for a facility is more than $5,502 per case weight, a diseconomy of small scale is identified. This inflection point is appears to have been a policy-based decision that no more than 30% of facilities in the cost sample would be determined as having a diseconomy of small scale;
- the total diseconomy is quantified by taking the dollar difference between the predicted cost and the inflection point and multiplying it by the case-weighted discharge volumes delivered at that facility in 2002/03.

A couple of observations are worth making. Firstly, the number facilities determined to have a diseconomy of small scale is heavily determined by the position of the inflection point. Moving this point higher or lower affects the number of facilities that are deemed to have a diseconomy and the level of the diseconomy payment for those facilities. Secondly, there is no explicit efficiency element associated with the diseconomy payment, such as a percentage-based discount, to signal an expectation of ongoing DHB efforts to find efficiency gains.

Any revised facility diseconomy model would, ideally, offer more analysis around the choice of the inflection point, along with some alternate scenarios and their implications. Options for factoring in an efficiency gain element could also be considered and, to the extent that the method and the results are more visible, this may help to avoid an impression that these diseconomy payments simply about retaining ‘status quo’ models of care.

Figure 7: Facility-specific costs per case-weighted discharge, 2002/03

3.3 Policy options for the rural adjuster

We have identified two high-level directions for the rural adjuster: an ‘enhanced status quo’ package of refinements and an alternate ‘population-based adjuster’ in which funding is based on differences in population and geography rather than current cost structures.

3.3.1 Enhanced status quo – tidying up the current model

This option involves retaining the essential elements of the current approach – i.e. a PBFF top-slice with multiple components that model extra costs – but with several improvements.

4. Clarify the policy intent – by setting a clear definition of the “unavoidable costs” related to providing services for rural communities and to facility diseconomies. A refined definition could specify that the adjuster is to be based on evidence of extra costs of ensuring access to services for rural communities – where these are costs are unavoidable due to features of a district’s population dispersion or geography.

5. Improved modelling of costs – with consideration of the following suggestions:
   (a) using recent cost data to update the modelling, with emphasis on obtaining a robust sample of costs from DHBs for small facilities and community services;
   (b) investigating the extent to which measures of a district’s population dispersion or geography can be used to explain costs incurred by DHBs with rural communities that are remote and/or dispersed, and then factoring any explanatory power into the current models of unavoidable cost;
   (c) factoring in an explicit efficiency expectation into the components where there is scope to innovate in service delivery (e.g. small facilities and community services);
   (d) adding a ‘sense check’ stage during model development to avoid odd-looking results, so that, for example, DHBs with similar rural populations receive similar funding for community-based services.

6. Improved transparency – the amounts allocated to DHBs via the rural adjuster being made visible within the annual funding package. This change is presentational, and to be meaningful to DHBs, the amounts for each component could be added in an appendix. A technical paper should be added online (e.g. Nationwide Service Framework Library).

7. Improved responsiveness – reflect changes in costs by updating the adjuster more frequently. A low-cost approach would be to regularly update the components that have simple and accessible cost data (e.g. inter-hospital transfers, travel & accommodation).

Advantages

This option responds to the issues of policy intent, robust cost modelling, transparency and responsiveness to changes in costs. The advantages are that DHBs would have a greater understanding of their allocation, and potentially, more confidence that the results are fair. The proposed refinements are feasible in terms of the technical work and implementation.

Risks

Improved visibility of the results may risk sending a signal of funding being compensation for current services and costs at smaller hospital facilities – thereby reinforcing the status quo. Another risk is that smaller boards will lose relatively more funding if governance costs are excluded on the basis that the previously modelled diseconomies are not unavoidable.
3.3.2 A population-based adjustment

This option involves building a general model of extra costs that is linked to enduring measures of rural population (e.g. size, dispersion) and geography (e.g. distance to hospitals). This represents a move away from facility and service-based costings and funding allocations. The rationale is that if greater visibility around the method and results of the rural adjuster is desirable then it should avoid sending a signal about compensation for current service models or tying funding to current cost structures and models of care. This approach could follow some general steps to estimate extra costs and allocate funds among boards.

1. **Build a general cost model** – to approximate the cost of funding or delivering community-based services (including those to offshore islands), rural GP/PHO services, travel & accommodation and inter-hospital transfers. This would involve working with a small sample of DHBs with robust costing systems and a mix of urban and rural populations. Rural and urban delivery costs could be compared to identify the ‘extra’ costs associated with ensuring access to services for rural communities. Some judgements would be needed to determine which types of cost are unavoidable.

2. **Test for links with population and geography** – the next step would be to examine the extent to which these extra costs can be explained by measures of rural population (e.g. size or dispersion) or geography (e.g. distance to hospitals). The variable or mix of variables that best explains the distribution of these extra costs among the sample DHBs would be used to refine the general model of extra costs on a per capita basis, e.g. $x of extra cost per capita, on average, for populations that fit those measures.

3. **Allocate funding on a population basis** – funding would then be allocated among DHBs, on a capita basis, for the people within their populations that fit the measures of rural population and geography that were associated with extra costs. The results would be subjected to a sense check, to ensure that no obvious anomalies arise among boards.

**Advantages**

It should be noted that this option could be paired with some of the elements proposed in the enhanced status quo option, such as a clearly policy intent (e.g. being linked to enduring features of population dispersion and geography rather than actual costs) and better visibility of the adjuster within the PBFF and annual funding package. Overall, the main advantages of pursuing this population-based approach would include:

- improved visibility of the adjuster’s method and results leading to improved understanding among DHBs;
- funding being unhitched from current service costs, thereby avoiding a sending signal or creating an expectation for compensation being linked to costs;
- funding being linked to ‘unavoidable’ elements of DHB population and geography; and
- a model that is straightforward to update over time in response to population changes.

**Risks**

The main risks associated with this option are technical in nature and relate to: (i) the amount of work to build a general model of unavoidable extra costs; and (ii) the technical challenge to determine if there is a suitable mix of population of geographic measures to explain those costs. A further risk relates to changes in funding for some DHBs if a model based on population and geographic measures does not deliver funding that approximates current facility diseconomies. We suggest some options for managing these risks:
allocate sufficient resources to undertake the technical work and taking steps to secure costing assistance from a sample of DHBs beforehand;

- avoid creating an expectation that there is a combination of population and geographic measures that fully explains the modelled extra costs. A combination that explains most of these costs should be sufficient given that the modelled costs are an approximation;

- consider undertaking a concurrent workstream to remodeled the adjuster under the enhanced status quo option to provide a comparator and to build sector confidence;

- consider smoothing the results over 2-3 years if some DHBs face sizeable changes in the amount of funding they receive via the rural adjuster.

**A feasibility test**

As an initial feasibility test for this population-based approach, we plotted current rural adjuster allocations against the ‘highly rural/remote’ population within each DHB – using the experimental urban-rural classification from Statistics New Zealand (see Appendix 2). Figure 8 shows a moderate positive relationship between the current allocations and the ‘highly rural/remote’ population in each board ($R^2=0.61$). The fitted line is a polynomial model and suggests that an allocation model that includes a measure of rural population size could partly explain current DHB allocations, and therefore, underlying differences in costs.

This example also illustrates that a model based on measures of rural population size alone is unlikely to fully explain the current model of extra costs among DHBs. One reason is that components such as travel and accommodation and inter-hospital transfers are affected by travel distance to base and tertiary-level hospitals for rural and urban populations. Another factor is that modelled diseconomies at rural facilities may be determined by a mix of wider factors, including remoteness of location, travel times, and service scope and associated costs – in addition to rural population size. Other explanatory factors would therefore need to be considered for inclusion in this population-based approach.

**Figure 8: Scatterplot of rural adjuster and ‘highly rural/remote’ population, by DHB**

![Scatterplot of rural adjuster and ‘highly rural/remote’ population, by DHB](image)

**Source:** Ministry of Health and Statistics New Zealand data; Sapere analysis
3.3.3 Assessment of options against principles

We considered these two options against a principles-based framework that comprises six dimensions – transparency, value for money, equity, responsiveness, feasibility, and financial impacts. As outlined earlier, this framework was tested in the stakeholder workshops and with the Technical Advisory Group. In each case the assessment considers whether the option would represent a potential improvement over the status quo (i.e. “a bit better” or “much better”), a potential deterioration (“a bit worse” or “much worse”) or no change (“about the same”). The results are shown in Table 5, overleaf.

The enhanced status quo option is rated as being “a bit better” than the current model on three of the six principles (transparency, equity and responsiveness) and “about the same” on two principles (value for money and feasibility). The financial impacts are unknown at this point, but if funding for core governance costs is no longer included in the rural adjuster then the impact would tend to be felt among smaller DHBs, with rural adjuster funding being reduced by around by $2 million per annum for each of the five smallest boards.

The population-based adjustment is rated as being “much better” or “a bit better” than the current model on four of the six principles. It is expected to be much better in terms of transparency and equity and a bit better in terms of value for money and responsiveness. The risks involved in carrying out the technical work mean that is was rated as being a bit worse than the current model in terms of feasibility; this is a relative assessment and does not mean that the technical work is not feasible. Although the financial impacts are unknown at this point, this option would be expected to impact some DHBs quite differently, given the different approach to modelling and the use of more up-to-date cost information. In particular, DHBs that currently receive facility diseconomy payments would instead receive a more general amount that is not tied to specific sites. Ideally, that amount would roughly approximate the current level of funding in the short term.

Conclusion

While both options would represent an improvement over the current model, this high-level appraisal against the six agreed principles suggests that the population-based adjustment would be preferable over the enhanced status quo option. This is because the population-based adjustment:

• is more likely to support value for money improvements in the long run, given that funding is not directly tied to a DHB’s current service model or cost structures – particularly for rural facilities and community-based services; and

• offer greater fairness among DHBs because funding for the extra unavoidable is determined on the same basis, being linked to enduring features of rural population size or dispersion and geography rather than a DHB’s current patterns of cost.

This assessment leads us to conclude that the option of the population-based adjustment should be developed with a view to implementation. As a way to inform sector debate and financial risks, consideration could also be given to concurrently modelling the rural adjuster under the enhanced status quo option to provide a comparator. Ideally this additional work would build sector confidence by showing that the models provide a similar magnitude of extra costs even though the specific allocation among DHBs may differ.
### Table 5: Assessment of options relative to current model – rural adjuster

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Transparency</strong></td>
<td>Rural adjuster funding for each DHB would be visible as a single line in the annual funding package; an appendix could show how much each DHB receives under each adjuster component. This may lead to more debate about the results; it may also send a signal about compensation for maintaining current arrangements.</td>
<td>Amounts for each DHB would also be visible as a single line in the annual funding package. An appendix or technical report would explain the quantification of extra costs under a general model and method for allocating rural adjuster funding on a per capita basis, using a mix of population and geographic measures.</td>
</tr>
<tr>
<td>the model should be intuitive and easily understood by DHBs</td>
<td>Net effect: A bit better</td>
<td>Net effect: Much better</td>
</tr>
<tr>
<td><strong>Value for money</strong></td>
<td>Funding is still tied to current costs and this will be more apparent with improved visibility. This may drive debate about affordability and efficiency in areas where DHBs have purchasing control (e.g., rural facilities, community services) but the funding could be seen as compensation for current arrangements. Adding an efficiency factor to the facilities component may set an expectation for gains.</td>
<td>Funding is no longer based on DHBs’ current costs. Along with improved visibility, this change would signal that DHBs have the flexibility to reorganise their services without affecting funding, e.g., in areas where they have some control, such as rural facilities and community services. While this may not drive changes in the short term, this model will not inhibit any planned efficiency gains.</td>
</tr>
<tr>
<td>supporting affordable and cost-effective service delivery, and ideally, encourage rather than inhibit efficiency gains.</td>
<td>Net effect: About the same</td>
<td>Net effect: A bit better</td>
</tr>
<tr>
<td><strong>Equity</strong></td>
<td>Fairness among DHBs would be improved through the use of more recent cost data, reflecting current uptake of the national travel and accommodation policy and current service and costs among small facilities and community-based services.</td>
<td>Fairness is improved as DHBs receive rural adjuster funding on the same basis – i.e., according to measures of rural population and geography – rather than for historic service models and associated cost structures. While the model supports fair access it does not determine that these funds are used to support rural communities.</td>
</tr>
<tr>
<td>the model should support fair access to services for populations.</td>
<td>Net effect: A bit better</td>
<td>Net effect: Much better</td>
</tr>
<tr>
<td><strong>Responsiveness</strong></td>
<td>Several components could be updated on an annual basis, based on modelling additional costs from the most recent year of expenditure data (e.g., inter-hospital transfers, travel and accommodation allowances). Updating other components would involve more work and may not be necessary on an annual basis.</td>
<td>The adjuster would be updated annually for revised population projections. This means that the adjuster would be responsive to population changes over time. Updating the general cost model to reflect any real world changes would involve substantial work and may only be undertaken periodically – as is currently the case.</td>
</tr>
<tr>
<td>to material costs while also enabling DHBs to plan with reasonable certain</td>
<td>Net effect: A bit better</td>
<td>Net effect: A bit better</td>
</tr>
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</table>
## Feasibility

The changes proposed are feasible, i.e. definitional work, more frequent of updates, more visible presentation. Improved modelling of diseconomies for community services and facilities will rely on costs data and needs to be investigated further; the presumption is that if modelling was possible in 2004, then an improved model should be possible now.

Net effect: About the same

While this option would be informed by data and fit well with the PBFF, there are risks around the technical work – both in the amount of work involved and the challenge of determining the best set of explanatory variables for allocating funding. For this reason we rate this option as being riskier or ‘a bit worse’ on the feasibility dimension – relatively to current modelling approaches.

Net effect: A bit worse

## Financial Impacts

The financial impacts on DHBs are largely unknown at this point, but the model would continue to be based on actual cost data. If the governance component is wholly discarded, the impact would tend to be felt among smaller DHBs, with rural adjuster funding being reduced by approximately $2 million per annum for each of the five smallest boards.

Net effect: Not able to be determined

It is intended that the resulting financial impacts on DHBs would be supported by the data and by a clear explanation of method. We are not able to estimate the impacts ahead of the technical work being undertaken, but it would be expected that DHBs that currently receive facility diseconomy payments would instead receive a more general amount that, ideally, approximates those payments without being tied to specific sites.

Net effect: Not able to be determined

### Key to symbols – overall assessment relative to the current model

<table>
<thead>
<tr>
<th>Much worse</th>
<th>A bit worse</th>
<th>About the same</th>
<th>A bit better</th>
<th>Much better</th>
<th>Not able to be determined</th>
</tr>
</thead>
<tbody>
<tr>
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</table>
4. **Tertiary adjuster**

4.1 **Overview of the adjuster and method**

The tertiary adjuster is a capacity payment that supplements base casemix payments to support the provision of high levels of capability among tertiary services. The adjuster is quantified by comparing the average costs at DRG level for a defined set of tertiary services within the average cost per case weight for non-tertiary or secondary-level services. The steps in determining the tertiary adjuster are outlined in Figure 5 and can be summarised as:

8. ‘tertiary’ services are defined after assessment against the Role Delineation Model and consideration of cost structures;
9. DHBs submit data on the costs of their services and an average cost per case weighted discharge (CWD) is calculated for non-tertiary services (i.e. secondary-level services);
10. a ‘margin’ is determined for each DRG by comparing the average cost per DRG among tertiary-level services with the average cost per case weight for secondary-level services;
11. these tertiary margins are then multiplied by the volume of case weights delivered in a DRG and then summed to produce the tertiary adjuster pool;
12. all DHBs contribute into the pool according to their PBFF share and DHBs with tertiary-level services receive a share of the pool on the basis of their service volumes.

**Figure 9: Steps in quantifying the tertiary adjuster**

- **Building blocks**
  - Tertiary-level services within facilities are defined using the Role Delineation Model, adapted to a New Zealand setting and last reviewed in 2010;
  - DHBs submit event-level cost data annually to the NCCP Programme

- **Set average secondary cost**
  - Costs of ‘secondary’ services (i.e. non-tertiary) are divided by case weighted discharges (CWD) for all secondary events to derive an average secondary-level cost per CWD
  - Eventually set as the national price for casemix events

- **Quantify tertiary pool**
  - Difference between average cost per CWD per DRG for all costed events in tertiary services and average cost per CWD for all costed secondary events is calculated
  - This tertiary margin for each DRG is applied to cost weights for all tertiary events
  - The summed tertiary margins on tertiary DHB volumes produce the tertiary amount for each DHB and the pool overall

- **Payments made via IDFIs**
  - All DHBs contribute into the tertiary adjuster pool on PBFF share basis
  - Tertiary adjuster is paid monthly through the Inter-District Flow mechanism
A stylised view of how the tertiary margins are derived is shown in Figure 10 and it is clear that they are a function of the difference between the average cost per DRG among tertiary services and the average cost per case weight among secondary services. Figure 11 shows how these margins were derived for cost data from 2012/13 – to inform the tertiary adjuster for 2015/16. Average tertiary costs were higher than the average secondary cost per case weight ($4,756) for 569 of the 702 DRGs (81%), with the average margin above the average secondary cost being 17% ($811). However, some of these margins were much higher.

**Figure 10: Illustration of DRG-level tertiary margins**

![Diagram showing DRG-level tertiary margins](image)

**Figure 11: Average cost per DRG among tertiary services, 2012/13 costs**

![Graph showing cost per DRG](image)

**Source**: National Health Board data; Sapere analysis

Looking at the top 10 DRGs by case weight volume in 2012/13, Figure 12 shows that the average tertiary cost for these services tend to be relatively close (i.e. within ±20%) to the average secondary cost of $4,756. As a comparator, the top 10 DRGs by tertiary cost are also shown and, on average, these costs were 58% above the average secondary cost. Table 6 shows that the volumes for these high cost DRGs tend to be much lower, which suggests that higher volume services may secure economies of scale and therefore lower unit costs.
These margins were multiplied by volumes delivered by each tertiary service in 2012/13 to determine the size of the tertiary adjuster to be paid to the relevant DHB in 2014/15. The tertiary adjuster pool implemented in 2014/15 amounted to $120.0 million, with the amount for the six DHBs providing tertiary services shown in Figure 13. Auckland DHB received the largest amount ($51.5 million, or 43%), followed by Canterbury ($25.3 million, or 21%), Waikato ($19.8 million or 16%), and Capital & Coast ($15.0 million or 13%). Southern and Counties Manukau received smaller amounts (<$5.0 million).
Given that all DHBs contribute into the tertiary adjuster pool on a PBFF basis, it is useful to consider the net financial impact of the adjuster. Figure 14 shows each board’s contribution to the pool in 2014/15 along with amounts paid to tertiary providers. Four DHBs had a positive net financial flow, including a sizeable amount for Auckland DHB ($40.4 million), followed by Canterbury ($12.0 million), Waikato ($9.3 million), and Capital & Coast ($7.9 million). While Southern and Counties Manukau receive inflows for tertiary services, these amounts are less than their contributions into the pool and so each has a negative net financial flow (-$3.8 million and -$9.2 million, respectively).

**Figure 14: Tertiary adjuster – net financial impact, 2014/15**

<table>
<thead>
<tr>
<th>Region</th>
<th>$ million</th>
<th>Contribution %</th>
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</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>$51.5</td>
<td>43%</td>
</tr>
<tr>
<td>Canterbury</td>
<td>$25.3</td>
<td>21%</td>
</tr>
<tr>
<td>Waikato</td>
<td>$19.8</td>
<td>16%</td>
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<tr>
<td>Capital &amp; Coast</td>
<td>$15.0</td>
<td>13%</td>
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<tr>
<td>Southern</td>
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<td>Counties Manukau</td>
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<tr>
<td>Southern</td>
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<td>4%</td>
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<tr>
<td>Counties Manukau</td>
<td>$3.9</td>
<td>3%</td>
</tr>
</tbody>
</table>

**Source:** National Health Board data; Sapere analysis
4.2 **Key findings and analysis – tertiary adjuster**

This section groups the issues that were raised during interviews and workshop discussions and groups them into themes, which relate to the objectives, method and impacts of the tertiary adjuster. These issues are then tested against available evidence.

4.2.1 **Intent and scope of the adjuster could be clearer**

Several stakeholders pointed to a lack of clarity around the intent and the logic of the tertiary adjuster. A key theme related to whether the tertiary adjuster is to support current service capacity or to nudge the system towards a more efficient and sustainable network of services. Some stakeholders also referred to the tertiary adjuster as being compensation for tertiary providers’ costs rather than incentivising efficiency. The following quote is illustrative.

> I support the tertiary adjuster concept with consideration of the process of how it is calculated with... a clear efficiency expectation – not based on costs. Providers other than provider arms are not funded based on costs.

This quote suggests a clear statement of intent is needed, and in particular, an explanation of how the tertiary adjuster method is expected to deal with the issue of 'cost plus' and incentives for efficiency gains. This statement could build on, and extend, the arguments in the NCCP advice for 2015/16, which contends two strengths of the current model are that:

- it mitigates cost plus incentives by using averaging; and
- it reduces the impacts of an inefficient DHB by averaging costs over all facilities in each DRG, rather than rewarding one inefficient facility.²

This explanation should also be linked back to the IDF pricing principles set up in 2005 (see overleaf) to guide the national pricing work. We identified that these principles are not referenced as part of the annual pricing programme work. This lack of referencing may mean that the principles are not used and/or may need to be debated and refreshed.

Several stakeholders commented they perceived a lack of transparency or logic around the tertiary adjuster. Some of the areas they identified as lacking in clarity include the calculation of the pool, what DHBs receive for their contributions, and the IDF payment mechanism.

> We don’t have any issue with the principle, it’s just the detail – going back to transparency, we could make an investment choice to send more/less. At the moment we put in a contribution and we don’t know what we get for it – it’s like a contribution contract...

> The tertiary adjuster payment mechanism, in which every DHB makes a payment to the recipients monthly makes the adjuster very visible and [but it] raises questions about the logic of the adjuster. For example, Northern and Auckland make payments to Southern DHB when neither would be utilised at more than a miniscule level by their residents.

> In other jurisdictions, rather than a tertiary adjuster, they have a tertiary case weight price. The tertiary adjuster makes things a little more opaque – any transparency around what they are getting and buying – prices, volumes... Anything that creates the right debate over what we should or shouldn’t fund, rather than burying the problem, is a good system.

² National Health Board and NCCP (2014) “Tertiary and National Paediatric Adjuster Poo...
In general, we found that the tertiary adjuster is poorly understood and, indeed, much more poorly understood than we would have expected. Aspects that were not well understood include the method to quantify the pool (which is inherently technical) and how the adjuster fits together with the wider pricing and funding system. This current lack of clarity suggests there would be utility in a summary statement that outlines, in plain English, the intent and approach of the tertiary adjuster and how it fits with casemix-based IDFs.

**NCCP Programme – Pricing Principles (2005)**

**Objective**

To develop a set of IDF prices, which if applied to all services provided by a relatively efficient provider, would allow that provider to breakeven. Hence the IDF prices provide a basis for both the funding of IDFs and a reference price for funding a DHBs provider-arm services.

**Principles**

In meeting the above objective (eg in establishing the IDF price book) the following principles should be observed.

1. IDF prices (including any adjusters) should appropriately compensate providing DHBs with both reasonable direct cost of providing a services and the reasonable share of the availability cost associated with maintaining appropriate levels of access to services.

2. IDF prices should reflect the long run sustainable cost of service delivery.

3. Price path adjustment from historical relative efficient cost to estimate future efficient costs should occur in a transparent manner that ensures that sustainable pricing is on average achieved.

4. Uses both a ‘top-down’ and ‘bottom-up’ approach with all DHBs contributing information concerning production costs & volume of activity. This combined approach providing a broader and more robust process for managing data quality issues and variability, while allowing for both macro and micro perspective.

5. The ‘top-down’ approach should be used to enables aspects of efficiency, forecast price movements and inter-provider differences such as tertiary or rural costs to be considered.

6. The bottom up approach should be used to allow detailed cost information to inform the process of determining cost weights (Case-mix (inpatient) and non-case-mix (outpatient)).

7. Technical work should seek to use the best available information, however it must be explicitly recognised that the available information is imperfect and hence:

8. Technical work should seek to provide incremental improvement in information quality, methodologies and results.

9. The sector explicitly recognises the constraints presented imperfect information and supports incremental improvement.

10. In establishing IDF prices there must be explicit understanding of the gap between efficient prices and IDF prices. Ideally such a gap should not exist.

11. The validity of the technical results, as opposed to the fiscal impact on an individual DHB, should provide the primary driver for decision making. Namely where the technical results are robust and support an action, they should be adopted. The adoption of these results should however take into account appropriate transition periods to provide sector stability.

**Source:** National Health Board, “Pricing Principles 2005”
4.2.2 Role Delineation Model needs to be updated

The Role Delineation Model (RDM) is used to define which services provided at a ‘tertiary’ level – the aim being to objectively differentiate higher levels of capability among specialties to inform the estimation of the tertiary adjuster. Determinants that differentiate the ability of a service to manage clinical complexity include the availability and seniority of medical staff and access to clinical support services.

The NCCP Programme commissioned a review of the RDM in 2010, which included input from expert clinicians, DHB self-assessment, and review by a clinical moderation panel. Of the six role delineation levels (RDL), specialities at RDL6 were defined as ‘tertiary’ for the purpose of the tertiary adjuster along with RDL5 in paediatric sub-specialties, neonatal care and plastic surgery. The inclusion of these RDL5 specialties was in recognition of their higher cost structures, with costs per case weight being similar at RDL5 and RDL6. These specialities, shown in Figure 15, have been used in the tertiary adjuster from 2012/13.

Several stakeholders commented that the RDM needs to be updated and services reassessed. The reasoning is that the capability of services is likely to have evolved in the five years since the RDM was last reviewed. One stakeholder questioned the usefulness of the RDM for defining and funding tertiary-ness.

Figure 15: Role Delineation Levels 6 & 5, by speciality and facility

Source: National Health Board (2010) “NZ Role Delineation Model” May 2010; Sapere formatting

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3 National Health Board and NCCP (2011) “NCCP Tertiary Adjuster Pool Advice for 2012/13”
4.2.3 Robustness of cost data

The completeness and robustness of the cost data was a theme raised during stakeholder interviews and workshop discussions. The point was made that a number of DHBs do not submit event-level cost data, despite this being a requirement of the Operational Policy Framework. Figure 16 below shows that the number of boards providing event-level cost data was 12 out of 20 in 2012/13.

I don’t understand how some DHBs can get away without having costing information, especially if they’re facing financial difficulties.

The current system is overly dependent costs submitted by 2 or 3 large secondary DHBs. Preferably all secondary DHBs should be required to contribute their costs.

Not all DHBs submit costs, whereas it’s mandatory in New South Wales – you’ll lose your job if you don’t make your costing submission.

Most of the boards not providing event-level data were secondary level service providers, many of which were smaller provincial boards: Hutt, Nelson Marlborough, MidCentral South Canterbury, Wairarapa, West Coast, and Whanganui. Southern is the tertiary board that does not submit cost data.

Discussions at the workshop acknowledged the upfront resourcing costs involved focused on the potential benefits to the national pricing programme, in terms of more complete data and reduced volatility. The internal benefits of having a robust costing system in house were also pointed out, such as being able to track cost changes over time and to benchmark against other providers.

Figure 16: DHB submissions of 2010/11 cost data for 2013/14 pricing work

Source: National Health Board and NCCP (2012)
4.2.4 Volatility in results causing uncertainty

The volatility of the modelled results was raised as an issue by stakeholders. Figure 12 shows the recent results of the modelling versus what was implemented. In 2013/14 and 2014/15, policy decisions were taken to smooth the impact of the modelled results by implementing a lower amount. Affordability and concerns about volatility were factors. In 2015/16, the modelled result was lower than had been expected in the prior year, and was fully implemented. As the method has been stable over this period, the drivers of this volatility are likely to be movements in secondary or tertiary cost data for the following reasons:

- **changes in real world costs** – such as movements in secondary DHB cost structures relative to tertiary costs (or vice versa). These could be DHB specific changes (e.g. changes in technology uptake, referral patterns or service scope), or the impact of system wide changes such as multi-employer collective agreements (MECAs).

- **changes in the cost data** – changes in data measurement/reporting, such as changes in the way that tertiary (or secondary) DHBs allocate their costs; or the impact of DHBs joining or leaving the cost pool. Some DHBs have left or been excluded on the basis of anomalies in their cost data. Overall, 12 out of 20 DHBs provide event-level cost data to the NCCP but the most of those not contributing are secondary-level boards.

Workshop attendees agreed that more analytical work is needed to understand the drivers of volatility and that, clearly, better quality cost data is important, as is a bigger sample of boards. Smoothing (e.g. in three year blocks) might also help bring some stability in terms of the amount boards pay into the pool and the amounts paid out to tertiary providers.

**Figure 17: Tertiary adjuster – modelled versus implemented, 2013/14 - 2015/16**

![Tertiary adjuster graph](image)

**Source:** Ministry of Health data; Sapere analysis
4.2.5 Underlying cost growth a concern for affordability

Some stakeholders pointed to tertiary service costs growing more quickly – this may be linked to the volatility of the tertiary adjuster pool and the large increases in 2013/14 and 2014/15.

We've had concerns about the growth in prices compared with CCP and it puts pressure on us… we don’t know how much we are cross-subsidising others… we’d like some clarity around what we’re getting for our investment…

There have been problems in controlling the costs of services… It does lead to some ‘cost-plus’ but there’s not mechanism to determine what is affordable… it’s partly driven by scope changes – a new technology can be approved for one thing and then suddenly it’s being used for other purposes.

Looking at average costs per case weight in time series, as in Figure 13 below, the data does not consistently show the average tertiary cost per case weight as growing substantially more quickly than the average secondary cost per case weight. Looking at the period 2006/07 to 2012/13, the average tertiary cost per case weight grew by 19.7% – slightly less than the comparable increase in the average secondary cost (24.1%).

Focusing on the three most recent years, (i.e. data from 2010/11 to 2012/13, which informed the tertiary adjuster pools for 2013/14 through to 2015/16), the equivalent increases were slightly higher for tertiary unit costs – being 5.7% for tertiary and 5.0% for secondary providers.

Overall, secondary and tertiary unit costs grown more quickly than the annual adjustments to the PBF pool for price pressures, which were adjusted by 15.5% from 2006/07 to 2012/13, and 5.1%), although over the more recent period of 2010/11 to 2012/13 5.1%.

Figure 18: Average cost per case weight, secondary and tertiary services
Figure 19 shows the annual changes in average cost per case weight for tertiary and secondary services for the six years between 2006/07 and 2012/13. In most years, the tertiary has grown more quickly than the secondary cost, but in two out of six years – 2008/09 and 2012/13 – the secondary cost growth has been higher.

Also of note, the annual changes have reduced for secondary and tertiary services across this period – reflecting a time of smaller funding increases and associated steps to manage cost growth within DHB provider arms.

**Figure 19: Annual average change in average cost per case weight**

4.2.6 Services with lower throughput may be an issue

Some stakeholders pointed to there being too many tertiary centres and to services struggling financially because of lower volumes than desirable for scale economies.

*We have too many tertiary centres… it’s another issue that never gets discussed – the more volumes, the better the result for tertiary services.*

*If secondary DHBs want to repatriate some volumes then it can end up costing the sector more, if tertiary providers are losing critical mass needed for their services… They take back the casemix revenue and there is a lagged flow-on effect on the tertiary adjuster.*

*We’re not getting the inflow to pay for the tertiary-ness of our hospital… if we run a tertiary service 24/7 and if there’s not enough volume to pay for it and it’s not our decision to retain it… then we should be compensated via the tertiary adjuster.*

Some stakeholders commented that the tertiary adjuster method, which relies on average costs, may not support services with low volumes. For example, boards with a smaller population catchment may not obtain the higher volumes, and therefore the economies of scale, that might be possible elsewhere.
We therefore examined the extent to which the size of DRG-level margins, as variance from the average secondary cost, are associated with the size of service volume. The scatterplot below compares the DRG margins (vertical axis) with case weights delivered (horizontal axis) from the 2012/13 data set. The following points are apparent.

- DRG margins that are very high or very low (i.e. ± $2,000) relative to $0 (i.e. the proxy secondary base price) tend to be associated with low volumes of case weights (i.e. <1,000 per annum).

- The highest DRG margins are exclusively associated lower volumes low volumes of case weights; however, lower volumes are not exclusively associated with higher margins, as many low-volume DRGs have low DRG margins.

- As volumes increase, the DRG margins tends to vary less form the average secondary service cost – suggesting the presence of economies of scale.

The key insight here, that economies of scale are possible among tertiary-level services, means that it is plausible that a DHB offering a series of services with relatively low volumes may well be disadvantaged – relatively to a DHB with large volumes. Therefore, if a DHB with larger volumes has a lower per-unit cost for a given tertiary service, this relatively efficient cost will influence the average ‘DRG margin’ for that service more than the higher per-unit cost of a DHB with lower volumes. This is because of the averaging effect. It seems plausible that a DHB than systematically offers low-volume services will struggle more than a high-volumes DHB to cover its fixed tertiary-capacity costs via the tertiary adjuster. On the other hand, there is also an argument that this kind of cost averaging among providers creates a pressure for efficiency gains to be found.

This is not a definitive conclusion; much will depend on how these DRG margins are bundled up within a given tertiary service. But this perspective suggests that it would be worth digging into this issue with further analysis as part of the annual pricing programme.

Figure 20: Comparison of DRG margins and associated service volumes, 2012/13

Source: National Health Board data; Sapere analysis
4.3 Policy options for the tertiary adjuster

We have not heard a strong message that the current approach – working within the national pricing framework to estimate the cost of supporting tertiary capacity – is unworkable. We have therefore identified three broad options for the future direction of the tertiary adjuster that address legitimate issues raised while supporting the health system’s long-run need for better cost information to underpin service planning and efficient and sustainable national prices. The three options are as follows.

1. **Enhanced status quo** – a package of refinements to clarify the purpose of the tertiary adjuster, improve building blocks such as the RDM input cost data, and reduce volatility through additional analysis and multi-year smoothing of DRG margins;

2. **An extended model** – converting the tertiary adjuster pool to DRG-level margins on top of the casemix base to form a two-part unit price for DRGs provided by tertiary services and to set a clearer price signal for purchasers and providers;

3. **A policy-based cap** – limiting annual growth in the tertiary adjuster pool to no more than the percentage increase in the population-based funding pool so as to encourage ongoing efficiency gains within tertiary services and ensure the services are affordable.

We also note that these options are not mutually exclusive; option 1 is a ‘base’ option of refinements and it would be possible to also pursue either option 2 or 3. The following sections outline these options and assess each against a principles-based framework.

4.3.1 Enhanced status quo – a set of sensible refinements

This option is focused on improving the current approach to the tertiary adjuster through a series of sensible, low-risk changes to each stage of the methodology, namely:

- **clarify the purpose and approach** of the adjuster in a simple easy to understand statement for DHB stakeholders (e.g. to support tertiary capacity, given evidence of costs being higher than the national casemix price);

- **improve the building blocks** – the inputs data provided by the Role Delineation (RDM) model and DHB costing systems;

- **smoothing of DRG margins** across years – to address volatility and build sector confidence in the results;

- **additional analysis of cost data** – to interpret the results and improve sector support for implementation.

The NCCP Programme would develop a statement of purpose for the tertiary adjuster that also outlines the quantification method. Following consideration from the Ministry of Health, the statement would be circulated to DHBs with the annual funding package. This would mean that all boards are on the same page as to the intent of the adjuster.

The RDM would be reviewed and services reassessed, which is consistent with the intention at the time the RDM was incorporated into the tertiary adjuster. This element matters for building confidence among tertiary providers – given that five years have passed since the RDM was last examined and that the definition of which services are ‘tertiary’ is a critical driver of the results. This revision would need to be a clinically-driven process, possibly owned by regional CMO committees. It would also improve DHB confidence that services are being fairly classified as ‘tertiary’.
Costing systems are the other crucial building block. Pricing that is fair and sustainable and supportive of efficient services requires a foundation of robust cost data. The pricing work would benefit from an increase in the number of contributing DHBs. The quality of the data being submitted also needs to be maintained. However, DHBs may not prioritise resources to invest in establishing and or maintaining costing systems if they can simply rely on other boards to submit costs to inform national prices – despite being required to do so under the Operating Policy Framework.

One way to achieve greater DHB participation in service costing would be to establish an additional costing resource, in the form of regional-level costing advisors to work with DHBs in sharing knowledge and standards within regions. This could be a centrally-funded and time-limited resource, contingent on all DHBs putting up their own FTE or contributing 50-50 to the regional advisors. This would also allow more boards to benchmark their services against peer services to assess relative efficiency.

In terms of the method for quantifying the tertiary adjuster pool, the volatility of the results could be addressed in the short term by using a rolling average of the DRG-level margins. These averages could be based on rolling periods of either two or three years. This would dampen the impact of any ‘odd’ results in a given year, either due to changes in costing method or real world cost changes. This could help to improve sector confidence in the results and mean that the results would be more likely to be implemented in full. Longer term, this underlying volatility may be addressed by improvements in the costing data (as discussed above).

Additional analysis of the results of the tertiary adjuster modelling work is also needed. Reports to the NCCP explain why the results vary from year to year in high-level, theoretical terms. If more resource is put into interpreting the results, then it will be possible to dig into the cost data to explain the extent to which changes are driven by secondary versus tertiary changes, or whether changes may be due to data noise or real world change. Boards that are outliers in their cost growth in specific services could also be identified and discussed. Again, this would help to improve sector confidence in the results and mean that the results would be more likely to be implemented.

Advantages

The advantage of this option is that it works within the current approach to pricing to improve the analysis and understanding of which services represent tertiary-level capacity and the additional costs of those services relative to the average cost of those specialties being provided at secondary level.

In terms of the results, it would help to reduce year-on-year volatility, ensure that sector leaders have an improved understanding of how the tertiary adjuster was quantified and the drivers of the results, and improved its acceptance.

Better cost information may support value for money improvements. If more DHBs invest in costing systems then more analysis of their relative efficiency, at service level, will be possible – potentially leading to steps being taken to improve service efficiency.

Risks

Securing sector support to prioritise more resources to establish and improve costing systems will be challenging. If a large secondary provider were to stop providing cost data, the sample of secondary-level costs would become less robust, leading to ongoing volatility in the overall results – potentially undermining sector confidence in the tertiary adjuster.
4.3.2  Extended model – a two-part unit price

This option builds on the refinements outlined above and goes further by establishing a clearer price signal. The aim is to set up an incentive for DHBs to focus more on actual total revenue at service-level and for providers to compare the total revenue associated with service delivery, and so that decisions about referral and service scope and capacity are informed by that information.

The core of this approach is to convert to tertiary adjuster from merely being a bulk amount allocated to each DHB with tertiary-level services to a DRG-specific price premium. Tertiary provider DHBs would, in the short-run, receive the same amount that would otherwise be the case. However, the allocation would be disaggregated at a service level on the basis of each DRG having:

- a ‘base’ casemix price (i.e. case weight x the national secondary-level price); and
- a ‘tertiary premium’ component for services determined to be ‘tertiary under’ the RDM (and its supporting analysis).

The tertiary premium would be based on the DRG-level margins or differentials between the average secondary-level unit cost and the average tertiary-level cost per DRG. In most cases, these are a mark-up, but in some cases, a mark-down where tertiary providers are collectively more efficient. These margins could take the form of a percentage or absolute dollar amount in a look-up table – thereby showing the full price at a unit level.

Figure 21 presents a stylised view of this proposed approach alongside the current approach to the tertiary adjuster.

**Figure 21: Two-part price per DRG – stylised version**

**Current approach**

<table>
<thead>
<tr>
<th>Average secondary-level cost per CWD</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
</table>

**Proposed approach**

<table>
<thead>
<tr>
<th>Average secondary-level cost per CWD</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
</table>

Two-part price per DRG
Implementation

Implementing the tertiary adjuster as a two-part unit price need not happen immediately. To begin with, the DRG margins or ‘prices’ could be estimated and compared alongside the enhanced status quo position; this ‘dry-run’ option would show that providers would receive the same amount as otherwise and that purchaser boards would have a shadow or notional payment based on their expected utilisation – alongside their PBFF-based contribution.

This ‘dry-run’ approach could be used to stimulate sector discussion about the total revenue (for providers) and total cost (for referrers) of tertiary-level services and used to gauge sector acceptability for implementation as the mechanism for quantifying DHB payments into the tertiary adjuster pool.

Advantages

The potential benefits of this approach include:

• providers receive a clearer and more comprehensive price signal with respect to the revenue implications of their current activity;
• providers, having seen the full revenue implications of current service offerings, can make informed decisions about any planned changes at the margin, with respect to increasing the volume and scope of work, the uptake of new technologies, or other changes to service models. This may assist with internal cost control discussions;
• referring DHBs (i.e. the purchasers) see the total cost of their referral behaviour, and make informed decisions about future referrals, where there are options that are equally appropriate in a clinical sense (e.g. in-house provision versus referral); and
• the increase transparency might mean the results of the tertiary adjuster are more likely to be implemented, as opposed to recent cases of non-implementation or smoothing of the modelled results.

Risks

The potential risks of this approach arise from the tertiary adjuster include:

• some tertiary services may lose referred volumes and revenue if they are viewed as being expensive by referring DHBs, relative to their other options (e.g. repatriation of their volumes);
• DHBs may decide to repatriate their referred volumes if they believe they can establish a relatively less expensive service in-house, which could lead to service duplication that may not be efficient from a longer-term system point of view; and
• the financial risk for both referral and provider boards may increase if volumes move around from year to year; this would increase if the annual wash-up on inpatient volumes is extended to the tertiary premium, in addition to the current practice of washing up on the casemix component.
4.3.3 A policy-based cap?

This option involves the addition of an annual cap on the growth of the tertiary adjuster pool. The idea of a cap was suggested during discussions with the Advisory Group as being a potential way to reduce year-to-year volatility in the size of the pool and provide more certainty for DHBs in terms of their contributions to the pool. A further reason was that it could give more guidance to managers of tertiary services, for them to manage year-to-year growth in costs (for example, by finding cost efficiencies improving productivity, or managing changes in service scope).

As a starting point, the cap could be linked to annual growth in the PBF pool, which is typically adjusted for demographic changes and cost growth. The tertiary adjuster pool would be quantified and year-on-year growth subjected to the cap – and then linked to the PBF pool in the accompanying funding package. Figure 22 shows this cap would have led to a much lower growth path for the tertiary adjuster if applied in 2013/14. The adjuster pool in 2015/16 would instead be $127.5 million or $19.7 million lower than implemented ($147.1 million). Over the three years to 2015/16, growth would have been $8.5 million (7.1%) or around one-third of the growth path in the implemented pool over this period.

**Figure 22: Tertiary adjuster growth compared with a capped path, 2012/13 – 2015/16**

![Figure 22: Tertiary adjuster growth compared with a capped path, 2012/13 – 2015/16](image)

Source: Ministry of Health data; Sapere analysis

**Advantages**

The main advantages of the cap are that it would be simple to determine and implement and that it would provide a smoother and more certain path for boards paying into the tertiary adjuster pool. It would align the price path of the tertiary adjuster on a similar trajectory to the casemix price and could also be expected to provide some cost control in the short term, although this may place additional pressure in DHB provider arms that offer tertiary services.

**Risks**

A cap may lack legitimacy in that it overrides the bottom-up pricing of the tertiary adjuster using unit-level cost data from tertiary and secondary providers. Placing this payment for tertiary-level capacity may not be compatible with sector expectations regarding access to complex, tertiary-level treatments. Longer term, it may prove unsustainable.
4.3.4 Assessment against principles

We considered these three options against an agreed principles-based framework. This assessment, shown in Table 7 (overleaf) considers whether the option would represent a potential improvement over the status quo (i.e. “a bit better” or “much better”), a potential deterioration (“a bit worse” or “much worse”) or no change (“about the same”).

- The **enhanced status quo** option is rated as being “a bit better” than the current model on three of the six principles (transparency, value for money and responsiveness) and “about the same” in terms of equity (no change to population access is expected). The option is rated as being “a bit worse” the current model on the dimension of feasibility because although the proposed changes are largely about refining the current methodology, securing DHB support to prioritise improvements in costing systems is expected to be challenging. No rating is applied for financial impacts, given that the future size and distribution of the adjuster, relative to the status quo, is not known.

- The **two-part unit price** option is rated as being “much better” than the current model in terms of transparency and “a bit better” in relation to three other principles (value for money, equity and responsiveness). Feasibility is rated as “about the same” because the development of DRG-specific price premia should be possible in a technical sense and it is proposed that the prices be initially introduced as a dry run. If implemented in full, boards will end up paying different amounts into the pool and, possibly, some making decisions to repatriate volumes over time. No rating has been applied for these financial impacts, as further analysis is required to determine their scale and distribution.

- The **policy-based cap** option is rated as being “a bit better” than the current model on two of the six principles (value for money and equity) and “about the same” on two principles (transparency and feasibility). The option is rated as being “a bit worse” in terms of responsiveness, on the basis that it would be less responsive to legitimate cost pressures and may limit the ability of tertiary providers to manage material cost changes in future (given that tertiary adjuster IDF revenue would likely be lower than otherwise). In terms of the financial impacts, a mixed rating was applied, recognising that a cap is likely to be “a bit better” for referring DHBs and “a bit worse” for provider DHBs.

**Conclusion**

The enhanced status quo option is essentially a ‘base’ package of low-risk refinements. The assessment here suggests that, collectively, these changes would be an improvement over the current approach. The question is whether this package is sufficient to address the concerns identified by stakeholders – such as volatility of results, cost growth and affordability. The two additional options have a slightly different focus:

- the two-part unit price offers greater transparency to inform decision-making by providers and referrers, and thereby, offers potential for improving efficiency over time;
- the policy based cap offers more certainty for referring DHBs and may force efficiency gains within providers, with the trade-off being less flexibility to manage costs.

Overall, this assessment leads us to prefer the option of the two-part unit price adjustment being developed alongside the enhanced status quo package. This is because a clearer price signal for tertiary services that allows service-level costs to be compared against total revenue has the potential to engender debate that leads to more informed decision-making over time. A policy-based cap to smooth results is something that can be considered, as needed, on a year-by-year basis – as has effectively been the case in 2013/14 and 2014/15.
### Table 7: Assessment of options relative to current model – tertiary adjuster

<table>
<thead>
<tr>
<th>Dimension</th>
<th>1. Enhanced status quo</th>
<th>2. Two-part unit price</th>
<th>3. A policy-based cap</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transparency</strong>&lt;br&gt; the model should be intuitive and easily understood by DHBs</td>
<td>A clear statement of policy that outlines the method. The role of RDM and the definition of ‘tertiary’ services are reviewed and clarified. Net effect: A bit better</td>
<td>Both purchaser and provider DHBs can see the total price of tertiary-level volumes and the cost and revenue implications. Net effect: Much better</td>
<td>In itself, a policy-based cap on the growth of the tertiary adjuster is not expected to improve transparency of the model or results. Net effect: About the same</td>
</tr>
<tr>
<td><strong>Value for money</strong>&lt;br&gt; supporting affordable and cost-effective service delivery, and ideally, encourage rather than inhibit efficiency gains.</td>
<td>Does not directly impact on underlying drivers of costs. If more DHBs are encouraged and supported to provide better quality cost data, this may lead to more benchmarking and comparative efficiency analysis that leads, over time, to better value for money. Net effect: A bit better</td>
<td>Providers receive a clearer signal with respect to the revenue implications of their current and planned activity and can compare this with their costs. Referring DHBs, where they have a choice, can make informed decisions about their volumes. These signals may support more cost-effective care over time. Net effect: A bit better</td>
<td>The cap would likely lead to a tighter price path than observed over the last three years. This would be more affordable for referring DHBs. In the short term, it could lead to more pressure for efficiency gains within tertiary-level services; longer-term it may place tertiary boards under financial pressure. Net effect: A bit better (short term)</td>
</tr>
<tr>
<td><strong>Equity</strong>&lt;br&gt; the model should support fair access to services for populations.</td>
<td>No change to population access. Net effect: About the same</td>
<td>No change in population access to care. If implemented the two-part unit price would lead to referring boards paying into the tertiary adjuster pool on the basis of utilisation – arguably fairer than a PBFF basis. Net effect: A bit better</td>
<td>A cap would place the tertiary adjuster on a similar price path to that used for other national prices, such as casemix volumes. If it proves unsustainable for tertiary providers, there may be impacts on some services. Net effect: A bit better</td>
</tr>
<tr>
<td><strong>Responsiveness</strong>&lt;br&gt; to material costs while also enabling DHBs to plan with reasonable certainty</td>
<td>Better cost data means results are more reflective of real world change. Applying a rolling average to year-on-year DRG margins helps to smooth volatility, provides more certainty Net effect: A bit better</td>
<td>The tertiary adjuster should still be responsive to material changes in costs, in an average sense. Payments into the pool reflect utilisation Net effect: A bit better</td>
<td>The cap will provide certainty for referring DHBs but will be less responsive to tertiary-specific cost pressures and may limit the ability of tertiary providers to manage material cost changes in future. Net effect: A bit worse</td>
</tr>
<tr>
<td>Dimension</td>
<td>1. Enhanced status quo</td>
<td>2. Two-part unit price</td>
<td>3. A policy-based cap</td>
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<tr>
<td>----------------------------</td>
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<td>----------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td><strong>Feasibility</strong></td>
<td>The changes are largely about focusing on current research and analysis activities and doing them better. Securing DHB support to prioritise improvements in costing systems will be the most challenging element.</td>
<td>Converting the adjuster from a bulk amount into DRG-specific prices should be possible in a technical sense; DRG-level ‘margins’ are already used in the current method. These prices will be informed by actual cost data. This approach could begin as a dry run for 1-2 years, with full implementation following any necessary refinements.</td>
<td>Development and implementation of the cap would be feasible. The cap would be based on the annual increase in the PBF pool, and in this respect is linked to general, sector-wide changes in demographics and costs. The cap would be an additional step in the method for determining the tertiary adjuster.</td>
</tr>
<tr>
<td>Financial impacts</td>
<td>Additional analysis of drivers of results will build confidence and help support implementation. The financial impacts on DHBs, in terms of the future size of the tertiary adjuster relative to the counterfactual of the status quo, are unknown at this point.</td>
<td>If implemented, payments to tertiary providers would not initially change but the allocation of payments into the pool will vary among DHBs, according to utilisation. Full implementation with the IDF wash-up could increase volatility for referring boards. There is also a risk of ‘cherry picking’ if referring boards can repatriate volumes that seem expensive – thereby potentially undermining tertiary capacity.</td>
<td>Recent trends suggest the cap would mean a smaller tertiary adjuster than would otherwise be the case. This improves affordability of tertiary services for referring boards, but concentrates financial risk with the provider DHBs. The cap may not be sustainable if long-run tertiary costs pressures are higher than those for the sector as a whole.</td>
</tr>
<tr>
<td><strong>Net effect</strong></td>
<td>Net effect: A bit worse ●</td>
<td>Net effect: About the same ○</td>
<td>Net effect: About the same ○</td>
</tr>
<tr>
<td><strong>Key to symbols – overall assessment relative to the current model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Much worse</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>A bit worse</td>
<td>●</td>
<td>●</td>
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<tr>
<td>About the same</td>
<td>○</td>
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<tr>
<td>A bit better</td>
<td>●</td>
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<td>●</td>
</tr>
<tr>
<td>Much better</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Not able to be determined</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
5. Concluding remarks

The options considered for the rural adjuster and the tertiary adjuster have been developed to fit within the context of the existing population-based funding system. The different purpose of each adjuster has also been taken into account, namely:

- the rural adjuster modifies the main capitation-based funding of the PBFF to account for unavoidable extra supply-side costs faced by some DHBs in ensuring access to services for their rural communities. The aim is to give DHBs the same chance, via the PBFF, of purchasing and providing services for their own populations; and
- the tertiary adjuster is a price premium paid in addition to the national casemix price to maintain tertiary-level capacity to handle complex cases at some DHBs. All boards pay into the tertiary adjuster pool via the IDF payment according to their PBFF share, as a form of risk sharing to ensure their patients have access to these services.

There is some limited crossover in that each adjuster considers hospital cost structures. The small facilities component of the current rural adjuster, which accounts for just over 40% of the pool, is focused on compensating DHBs for the extra costs of running small base hospitals and/or multiple small facilities in rural areas. These costs are modelled as diseconomies of small scale, in that service volumes are low relative to fixed costs – as compared with a larger facility with higher throughput.

Conversely, the tertiary adjuster is a price premium to ensure that tertiary-level capacity is available for all boards. It covers the observable higher costs of those services which are likely to be driven by a combination of higher input costs (e.g. a more senior mix of clinical staff, expensive equipment and consumables) and various scale diseconomies (e.g. lower volumes in some specialties relative to fixed costs; higher management overheads in larger organisations).4

It makes sense to retain the tertiary adjuster as a service payment, given that all DHBs pay into the adjuster pool to ensure tertiary-level capacity and that payments from the pool are based on expected throughput. In contrast, the rural adjuster fits more naturally within the bulk funding allocated to DHBs than as a nationally-priced service payment between boards. This is because the rural adjuster is about the extra costs of providing for local services, such as rural facilities and community-based services in rural communities which are, in the main, accessed by a board’s own population.

We would also note that there are limits to that these adjusters can achieve, in terms of supporting cost control within provider arms and ensuring a nationwide network of tertiary services that is efficient and sustainable. The changes proposed here need to be supported with stronger institutions to encourage sustainable and efficient services and to control sector cost growth. These could include, for example, National Health Committee scrutiny of the uptake and diffusion of new technology, a nationally-agreed programme of rolling service reviews, and an agreed nationwide plan for a sustainable network of tertiary services.

---

5.1 Recommendations

We recommend that the Ministry of Health:

**Rural adjuster**

1. undertake a technical work programme to develop a population-based approach to the rural adjuster with a view to implementing the results as part of the Population-Based Funding Formula from 1 July 2016;

2. develop an accompanying statement of policy intent that confirms that adjuster is to be based on evidence of extra costs of ensuring access to services for rural communities – where these are costs are clearly unavoidable due to features of a district’s population dispersion or geography;

3. give consideration to making the revised, population-based rural adjuster more visible within the annual funding package to district health boards;

4. concurrently remodel the rural adjuster under the ‘enhanced status quo’ option to provide a comparator for the population-based approach to modelling the adjuster;

5. refer the issue of unavoidable extra costs that may occur in an urban setting (i.e. higher costs of capital charge of urban land) to the Technical Advisory Group for a further discussion about whether this issue warrants a separate investigative workstream;

**Tertiary adjuster**

6. undertake a set of refinements to the building blocks that underpin the tertiary adjuster:
   
   (a) produce a simple statement of policy intent that outlines the purpose and approach of the tertiary adjuster;

   (b) review the Role Delineation Model and reapply to DHB services;

   (c) encourage all DHBs to produce and submit event-level costing data by establishing an additional costing resource, in the form of time-limited regional advisor roles to work with DHBs in sharing knowledge and standards;

7. introduce rolling, year-on-year smoothing of DRG-level margins into the estimation method for the tertiary adjuster to address volatility and build sector confidence;

8. undertake further analysis within the NCCP programme in 2016 to:

   (a) explain the extent to which year-on-year changes in the overall result is driven by data issues versus real word change, and by changes in secondary versus tertiary services;

   (b) better understand the extent to which tertiary services with relatively low volumes are impacted under the tertiary adjuster method due to diseconomies of small scale;

9. develop the DRG margins to produce a notional two-part unit price for tertiary services as part of the NCCP programme in 2016;

10. use the two-part unit price, on a ‘dry run’ basis, for 2016/17 with a view to encouraging sector-wide discussion about this pricing signal and testing its acceptability for implementation in 2017/18.
Appendix 1: Bibliography

Frontier Economics and BCG (2012) *A study investigating the extent to which there are economies of scale and scope in healthcare markets and how these can be measured by Monitor.*

Ministry of Health (2005) “Pricing Principles 2005”; developed for the National Pricing Programme and provided by the National Health Board


New Zealand Government (2001) Cabinet paper CAB (00) M 42/5 C


Appendix 2: Urban/Rural classification

Statistics New Zealand has produced an experimental Urban/Rural Profile Classification, with seven main categories, ranging from “highly rural/remote area” to “main urban area”. It differs from the official urban area classification, in which urban areas are classified by population size, and rural areas those not classified as urban. Instead, rural areas are split into four categories largely based on the level of dependence on urban areas, such the extent to which the rural population is employed in, and travels to, urban centres. Table 8 shows there are four rural categories with varying degrees of urban influence – equating to 14% of the population in 2014.

Table 8: Urban/Rural Profile Classification, 2014

<table>
<thead>
<tr>
<th>Category</th>
<th>Population (2014)</th>
<th>Population share (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly rural/remote area</td>
<td>67,720</td>
<td>2%</td>
</tr>
<tr>
<td>Rural area with low urban influence</td>
<td>238,890</td>
<td>5%</td>
</tr>
<tr>
<td>Rural area with moderate urban influence</td>
<td>176,800</td>
<td>4%</td>
</tr>
<tr>
<td>Rural area with high urban influence</td>
<td>150,760</td>
<td>3%</td>
</tr>
<tr>
<td>Independent Urban Area</td>
<td>474,260</td>
<td>11%</td>
</tr>
<tr>
<td>Satellite Urban Area</td>
<td>149,320</td>
<td>3%</td>
</tr>
<tr>
<td>Main urban area</td>
<td>3,251,100</td>
<td>72%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,508,850</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**Source:** Statistics New Zealand; Sapere analysis

Rural populations within district health boards

Table 9 shows how these rural categories are distributed among DHBs from a cumulative perspective – starting with “highly rural/remote” and then progressively adding each category so that the final column (#4) represents the total of the four rural categories.

- Four boards have notably sizeable rural populations overall (column 4) – Canterbury (84,100), Northland (82,200), Waikato (78,500) and Southern (74,800).
- Among the “highly rural/remote” category (column 1), Southern (16,600) stands out as having the largest highly rural/remote population, followed by Canterbury (9,200), Waikato (7,200) and Northland (7,000).

Table 10 presents these rural population categories as a proportion of each DHB’s total population. Northland has a large rural population that also forms a high share of its total population (82,200 or 49.5%). Several smaller DHBs have rural populations that form a high share of their total population, such as West Coast (14,400; 43.8%), South Canterbury (17,600; 30.3%), Wairarapa (10,800; 25.2%) and Tairawhiti (11,700; 24.8%).

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5 Statistics New Zealand “Urban/Rural Profile (experimental) Classification” see [www.stats.govt.nz](http://www.stats.govt.nz)
Table 9: Classification of rural populations by DHB, 2014 (cumulative view)

<table>
<thead>
<tr>
<th>DHB</th>
<th>1: Highly rural/remote area</th>
<th>2: (add) Rural area with low urban influence</th>
<th>3: (add) Rural area with moderate urban influence</th>
<th>4: (add) Rural area with high urban influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canterbury</td>
<td>9,230</td>
<td>28,180</td>
<td>52,180</td>
<td>84,080</td>
</tr>
<tr>
<td>Northland</td>
<td>6,950</td>
<td>49,950</td>
<td>66,650</td>
<td>82,250</td>
</tr>
<tr>
<td>Waikato</td>
<td>7,180</td>
<td>51,780</td>
<td>69,630</td>
<td>78,500</td>
</tr>
<tr>
<td>Southern</td>
<td>16,590</td>
<td>52,790</td>
<td>65,370</td>
<td>74,820</td>
</tr>
<tr>
<td>Bay of Plenty</td>
<td>1,500</td>
<td>15,850</td>
<td>32,950</td>
<td>42,470</td>
</tr>
<tr>
<td>Waitemata</td>
<td>200</td>
<td>4,880</td>
<td>14,470</td>
<td>35,970</td>
</tr>
<tr>
<td>Counties Manukau</td>
<td>70</td>
<td>2,470</td>
<td>19,070</td>
<td>34,170</td>
</tr>
<tr>
<td>Nelson Marlborough</td>
<td>3,280</td>
<td>16,130</td>
<td>27,030</td>
<td>31,080</td>
</tr>
<tr>
<td>Midcentral</td>
<td>1,600</td>
<td>10,220</td>
<td>22,520</td>
<td>30,970</td>
</tr>
<tr>
<td>Tararua</td>
<td>3,430</td>
<td>13,410</td>
<td>21,500</td>
<td>26,170</td>
</tr>
<tr>
<td>Hawke’s Bay</td>
<td>2,700</td>
<td>10,440</td>
<td>16,300</td>
<td>20,340</td>
</tr>
<tr>
<td>Lakes</td>
<td>1,150</td>
<td>7,770</td>
<td>13,060</td>
<td>20,240</td>
</tr>
<tr>
<td>South Canterbury</td>
<td>3,530</td>
<td>13,360</td>
<td>17,590</td>
<td>17,590</td>
</tr>
<tr>
<td>West Coast</td>
<td>4,240</td>
<td>11,640</td>
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<td>14,360</td>
</tr>
<tr>
<td>Whanganui</td>
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<tr>
<td>Taumarumaru</td>
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<td>6,310</td>
<td>9,830</td>
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</tr>
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<td>Wairarapa</td>
<td>630</td>
<td>4,830</td>
<td>10,600</td>
<td>10,780</td>
</tr>
<tr>
<td>Hutt</td>
<td>80</td>
<td>100</td>
<td>180</td>
<td>2,640</td>
</tr>
<tr>
<td>Capital and Coast</td>
<td>910</td>
<td>1,020</td>
<td>1,040</td>
<td>1,040</td>
</tr>
</tbody>
</table>

Table 10: Rural populations as a share of DHB population, 2014 (cumulative view)

<table>
<thead>
<tr>
<th>DHB</th>
<th>1: Highly rural/remote area</th>
<th>2: (add) Rural area with low urban influence</th>
<th>3: (add) Rural area with moderate urban influence</th>
<th>4: (add) Rural area with high urban influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northland</td>
<td>4.2%</td>
<td>30.1%</td>
<td>40.2%</td>
<td>49.6%</td>
</tr>
<tr>
<td>West Coast</td>
<td>12.9%</td>
<td>35.5%</td>
<td>43.8%</td>
<td>43.8%</td>
</tr>
<tr>
<td>South Canterbury</td>
<td>6.1%</td>
<td>23.0%</td>
<td>30.3%</td>
<td>30.3%</td>
</tr>
<tr>
<td>Wairarapa</td>
<td>1.5%</td>
<td>11.3%</td>
<td>24.8%</td>
<td>25.2%</td>
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<tr>
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<td>6.7%</td>
<td>13.4%</td>
<td>20.9%</td>
<td>24.8%</td>
</tr>
<tr>
<td>Southern</td>
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<td>17.0%</td>
<td>21.1%</td>
<td>24.1%</td>
</tr>
<tr>
<td>Tararua</td>
<td>3.0%</td>
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<td>18.7%</td>
<td>22.8%</td>
</tr>
<tr>
<td>Nelson Marlborough</td>
<td>2.3%</td>
<td>11.9%</td>
<td>18.2%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Waikato</td>
<td>1.9%</td>
<td>13.5%</td>
<td>18.9%</td>
<td>21.7%</td>
</tr>
<tr>
<td>Bay of Plenty</td>
<td>0.7%</td>
<td>13.3%</td>
<td>15.2%</td>
<td>19.5%</td>
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<tr>
<td>Lakes</td>
<td>1.1%</td>
<td>7.5%</td>
<td>12.6%</td>
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<tr>
<td>Whanganui</td>
<td>2.1%</td>
<td>8.8%</td>
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<td>19.5%</td>
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<tr>
<td>Midcentral</td>
<td>0.9%</td>
<td>6.0%</td>
<td>13.2%</td>
<td>18.2%</td>
</tr>
<tr>
<td>Canterbury</td>
<td>1.8%</td>
<td>5.5%</td>
<td>10.1%</td>
<td>16.3%</td>
</tr>
<tr>
<td>Hawke’s Bay</td>
<td>1.7%</td>
<td>6.5%</td>
<td>10.2%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Counties Manukau</td>
<td>0.0%</td>
<td>0.5%</td>
<td>3.7%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Waitemata</td>
<td>0.0%</td>
<td>0.9%</td>
<td>2.6%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Hutt</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Capital and Coast</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.1%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Auckland</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
</tbody>
</table>
Fit with current allocations of the rural adjuster

A comparison of these rural population categories with current DHB shares of the rural adjuster confirms that the size of rural population, on its own, is likely to be an insufficient measure of the extra costs of ensuring access to services for rural communities. This is not surprising, given that the modelling for the rural adjuster uses a range of current costs, which are linked to other factors, such as distance from base or tertiary hospital facilities (e.g. inter-hospital transfers, travel and accommodation allowances) and population size (i.e. governance).

Responds to a suggestion from the Advisory Group, Table 11 shows the impacts if the rural adjuster pool – of $119.7 million in 2014/15 – were to be distributed according to each DHB’s share of a given rural population category. The figures shown are the marginal change from each DHB’s allocation in 2014/15. The rural population categories are treated as cumulative, that is, the first column shows the ‘highly rural/remote’ population (i.e. the most remote population) with successive columns representing the addition of the next rural population category – each with an increasing urban influence.

At each level of rural population category, there are some large shifts (i.e. >±$4.0 million) for some boards. It is notable that the smallest boards (South Canterbury, Tairawhiti, Wairarapa, West Coast and Whanganui) would generally receive far less funding on this basis.

Table 11: Impact on rural adjuster allocations from using rural populations, 2014/15

<table>
<thead>
<tr>
<th>DHB</th>
<th>1: Highly rural/remote area</th>
<th>2: Rural area with low urban influence</th>
<th>3: Rural area with moderate urban influence</th>
<th>4: Rural area with high urban influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>$950,000</td>
<td>$260,000</td>
<td>$400,000</td>
<td>$460,000</td>
</tr>
<tr>
<td>Bay of Plenty</td>
<td>$320,000</td>
<td>$3,860,000</td>
<td>$5,380,000</td>
<td>$5,680,000</td>
</tr>
<tr>
<td>Canterbury</td>
<td>$10,950,000</td>
<td>$5,640,000</td>
<td>$7,560,000</td>
<td>$10,510,000</td>
</tr>
<tr>
<td>Capital and Coast</td>
<td>-$1,180,000</td>
<td>$1,290,000</td>
<td>$1,280,000</td>
<td>$830,000</td>
</tr>
<tr>
<td>Counties Manukau</td>
<td>-$40,000</td>
<td>$800,000</td>
<td>$4,560,000</td>
<td>$6,290,000</td>
</tr>
<tr>
<td>Hawke’s Bay</td>
<td>-$4,990,000</td>
<td>$5,680,000</td>
<td>$5,720,000</td>
<td>$5,920,000</td>
</tr>
<tr>
<td>Hutt</td>
<td>-$1,150,000</td>
<td>$1,150,000</td>
<td>$1,140,000</td>
<td>$600,000</td>
</tr>
<tr>
<td>Lakes</td>
<td>-$3,380,000</td>
<td>$2,380,000</td>
<td>$2,180,000</td>
<td>$1,590,000</td>
</tr>
<tr>
<td>Midcentral</td>
<td>-$740,000</td>
<td>$420,000</td>
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<td>$2,280,000</td>
</tr>
<tr>
<td>Nelson Marlborough</td>
<td>-$2,980,000</td>
<td>$2,480,000</td>
<td>$2,090,000</td>
<td>$2,910,000</td>
</tr>
<tr>
<td>Northland</td>
<td>$130,000</td>
<td>$7,340,000</td>
<td>$4,350,000</td>
<td>$3,370,000</td>
</tr>
<tr>
<td>South Canterbury</td>
<td>-$310,000</td>
<td>$720,000</td>
<td>$1,580,000</td>
<td>$2,610,000</td>
</tr>
<tr>
<td>Southern</td>
<td>$12,950,000</td>
<td>$4,240,000</td>
<td>$180,000</td>
<td>$2,250,000</td>
</tr>
<tr>
<td>Tairawhiti</td>
<td>-$4,140,000</td>
<td>$4,520,000</td>
<td>$4,550,000</td>
<td>$4,780,000</td>
</tr>
<tr>
<td>Taranaki</td>
<td>-$40,000</td>
<td>$780,000</td>
<td>$700,000</td>
<td>$1,080,000</td>
</tr>
<tr>
<td>Waikato</td>
<td>$4,720,000</td>
<td>$12,240,000</td>
<td>$9,270,000</td>
<td>$6,850,000</td>
</tr>
<tr>
<td>Wairarapa</td>
<td>-$4,730,000</td>
<td>$3,960,000</td>
<td>$3,220,000</td>
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</tr>
<tr>
<td>Waitangata</td>
<td>-$240,000</td>
<td>$1,310,000</td>
<td>$2,990,000</td>
<td>$6,150,000</td>
</tr>
<tr>
<td>West Coast</td>
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<td>$8,330,000</td>
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</tr>
<tr>
<td>Whanganui</td>
<td>-$5,110,000</td>
<td>$5,290,000</td>
<td>$5,190,000</td>
<td>$5,140,000</td>
</tr>
</tbody>
</table>

Source: Ministry of Health and Statistics New Zealand data; Sapere analysis
Appendix 3: International perspective: Scotland NHS

Scotland’s adjustment within the NRAC formula to compensate remote and rural areas for the higher costs of service delivery is not explicit a rurality adjustment. Instead, it is an adjustment for unavoidably higher costs in different geographical areas. However, this covers all costs, rather than those simply associated with rurality; for example, large urban areas have acute and inpatient costs higher than the national average. This may reflect high land, rent, or staff costs in these areas. This means that the total amount of funding redistributed by the adjustment may not precisely match the amount of funding in theory being redistributed due to rurality. Overall, this adjustment affected £44m out of £7.5bn in 2011/12.

Alongside the adoption of the NRAC formula, the Technical Advisory Group on Resource Allocation (TAGRA) was established in 2008. Their first remit was to review the impact of the NRAC formula on remote and rural areas of Scotland.

They agreed that generally the current treatment of remote and rural areas in the NRAC formula is appropriate, but gave recommendations to consider further review in some areas. Aside from those points, TAGRA concluded that a fair allowance for the cost of providing services in remote and rural areas is made through the existing adjustment for unavoidable excess costs of supply. The methodology was considered robust and the approach to funding was recommended for continued use.

Rurality in Scotland is defined through the Scottish Government’s Urban Rural Classifications. As of 2009/10, 18% of the population lives in rural areas - not dissimilar to New Zealand, where approximately 14% of the population is either highly or somewhat rural.

The ‘unavoidable excess costs of supply’ index within the NRAC formula contains four components:

11. Hospital services – developed at a datazone level, based on the ratio of local to national average costs for the 10 Scottish Executive Urban-Rural Categories in which the datazone lies;

12. Community clinic based services – calculated at a datazone level, representing the excess costs of providing these services to residents of the datazone;

13. Community travel based services – calculated at a datazone level, representing the excess costs of providing these services to residents of the datazone;

14. GP prescribing – set to one for all areas as prescriptions are reimbursed at national fixed prices.