



# Measuring and improving state sector productivity



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Issues paper – July 2017

## The New Zealand Productivity Commission

Te Kōmihana Whai Hua o Aotearoa<sup>1</sup>

The Commission – an independent Crown entity – completes in-depth inquiry reports on topics selected by the Government, carries out productivity-related research, and promotes understanding of productivity issues. The Commission aims to provide insightful, well-informed and accessible advice that leads to the best possible improvement in the wellbeing of New Zealanders. The New Zealand Productivity Commission Act 2010 guides and binds the Commission.

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<sup>1</sup> The Commission that pursues abundance for New Zealand

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# The issues paper

This issues paper aims to assist individuals and organisations to participate in the inquiry. It outlines the background to the inquiry, the Commission's intended approach, and the matters about which the Commission is seeking comment and information.

This paper contains specific questions to which responses are invited. These questions are not intended to limit comment. Participants should choose which (if any) questions are relevant to them. The Commission welcomes information and comment on all issues that participants consider relevant to the inquiry's terms of reference.

## Key inquiry dates

Receipt of terms of reference:	23 May 2017
Due date for initial submissions:	8 September 2017
Release of draft report:	14 December 2017
Draft report submissions due:	1 March 2018
Final report to Government:	30 August 2018

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## Why you should make a submission

The Commission aims to provide insightful, well-informed and accessible advice that leads to the best possible improvement in the wellbeing of New Zealanders. Submissions help the Commission to gather ideas, opinions and information to ensure that inquiries are well-informed and relevant, and that its advice is relevant, credible and workable.

Submissions will help shape the nature and focus of this inquiry. Inquiry reports may cite or directly incorporate relevant information from submissions. There will be an opportunity to make further submissions in response to the draft report.

## How to make a submission

Anyone can make a submission. It may be in written, electronic or audio format. A submission can range from a short letter on a single issue to a more substantial document covering many issues. Please provide supporting facts, figures, data, examples and documentation where possible. Every submission is welcome; however, identical submissions will not carry any more weight than the merits of the arguments presented. Submissions may incorporate relevant material provided to other reviews or inquiries.

Submissions may be lodged at [www.productivity.govt.nz](http://www.productivity.govt.nz) or emailed to [info@productivity.govt.nz](mailto:info@productivity.govt.nz). Word or searchable PDF format is preferred. Submissions may also be posted. Please email an electronic copy as well, if possible.

Submissions should include the submitter's name and contact details, and the details of any organisation represented. The Commission will not accept submissions that, in its opinion, contain inappropriate or defamatory content.

## What the Commission will do with submissions

The Commission seeks to have as much information as possible on the public record. Submissions will become publicly available documents on the Commission's website shortly after receipt unless accompanied by a request to delay release for a short period.

The Commission is subject to the Official Information Act 1982, and can accept material in confidence only under special circumstances. Please contact the Commission before submitting such material.

## Other ways to participate

The Commission welcomes engagement on its inquiries. Please telephone or send an email, or get in touch to arrange a meeting with inquiry staff.



# Commonly used terms

Term	Description <sup>1</sup>
Activities	Activities are the actions associated with delivering project goals (in this case, government services).
Allocative efficiency	Allocative efficiency is concerned with the appropriate distribution of resources to different activities (ie, that resources are allocated to doing the right things).
Input	Inputs are the financial, human and other resources that are used to carry out activities.
Labour productivity	Labour productivity reflects the amount of output produced from each unit of labour employed.
Multifactor productivity	Multifactor productivity reflects the efficiency with which a combination of productive inputs is used to produce output. As such, it is often considered a proxy for broad technological advances that increase the amount of output produced from a given amount of labour and capital.
Output	Outputs are the completed goods or services produced and ready for use or consumption. They are immediate results directly attributable to an organisation's activities.
Outcome	An outcome represents the intermediate or long-term effects that outputs are intended to achieve.
Sector	In this inquiry, sector means one of the four broad areas of government services that the Commission has been asked to examine: the health sector, the education sector, the justice sector, and the social services sector. This is different to the way Statistics New Zealand uses sector to refer to industry classes or institutional sectors.
Technical efficiency	Technical efficiency is where each individual output is produced with the smallest possible amount of inputs.
Total factor productivity	See <i>multifactor productivity</i>

## Notes:

1. This table reflects the Commission's proposed interpretation of terms used in the inquiry's terms of reference. The Commission seeks feedback on these interpretations.



# 1 About the inquiry

## Focus of the inquiry

Public services make up around twenty percent of the economy, so if the productivity of the state sector is poor, it can be a drag on the economy as a whole. The resources that families can draw on, the choices that governments can make, and our standard of living as a nation, are all helped by having more productive public services. With this in mind the government has asked the Commission to carry out an inquiry into “state sector productivity.”

The focus of the inquiry’s terms of reference is on how to measure efficiency in core areas of the state sector, and how these measures can form part of effective performance management systems. Specifically, the government has asked the Commission to:

- provide advice on how to measure the efficiency of the health, education, justice and social support sectors, at both a sector (meso) and service (micro) level;
- provide advice on the appropriate role of these measures in public sector performance frameworks; and
- provide advice on any capability, culture or systems issues that will support agencies to measure, understand, and improve productivity.

In doing this, the terms of reference ask the Commission to:

- focus on narrow output/input definitions (although the inquiry can consider how changes in quality or effectiveness are captured in efficiency measures);
- consider public and private sector best practice from New Zealand and around the world;
- provide advice and guidance that is practical, and that considers the roles of Ministers, Chief Executives, and service managers; and
- focus on core services such as teaching, hospitals and primary healthcare, policing, courts, corrections and work and income services.

## What this inquiry is not about

The terms of reference say that the Commission “should not carry out in depth analysis or provide detailed recommendations on specific policies relating to service access or provision in sectors”, and that it “should not duplicate work on issues like where to invest, or service effectiveness, being developed as part of the social investment approach”.

Additionally, the Commission “should not focus advice on the contribution of services to longer-term outcomes, prioritisation of interventions, or other performance dimensions already being developed through social investment or other work programmes”.

This means that the Commission’s inquiry will focus on the *technical efficiency* of core state services, rather than their allocative efficiency, or effectiveness in achieving ultimate outcomes

## The context of this inquiry

The Commission acknowledges that productivity is not the only measure of how well government services are performing. Other measures, such as how effectively outputs translate into desired outcomes, equity of access, user satisfaction and public confidence in New Zealand's public services are undoubtedly important.

Yet ensuring that government spending delivers good results for New Zealanders does require government to pay attention to the technical efficiency with which inputs produce the outputs that lead to desired outcomes.

## Why the inquiry is important

Developing better measures of public sector productivity is important for several reasons.

More productive state services means that more public services are produced for a given level of public investment (eg, more hip operations). Alternatively, more productive state services provide government and the public with choices about how to reinvest efficiency dividends in other public services, in debt repayment, or in tax reductions.

Public services account for a considerable share of the economies of developed nations. Any change in the productivity of the state sector has an impact on the productivity of the national economy. And public services provide important social and economic infrastructure that supports the wider economy and society.

Over the long term, New Zealand can only improve its standard of living through productivity improvement. Understanding how the productivity of the state sector is changing, and how it can be improved, is as important to improving the long-term living standards of New Zealanders as much as improvements in other parts of the economy.

Although new spending and specific programmes are examined in detail as part of Government's annual budget process, the same level of scrutiny is not always given to "core" spending, which is often a larger volume of funding, but can simply be rolled over each year in the budget. For example, the Commission's 2015 report into *More effective social services* found that little was known about the efficiency or effectiveness of government spending on social services, with a large stock of programmes that faced little review.

The Commission has observed that a large stock of existing social services continues to be funded and run in much the same way as in past decades, with little evaluation of their impact or cost-effectiveness. Further, budget processes typically place strong emphasis on the flow of new initiatives, focusing the attention of Ministers and officials on marginal expenditure that has had little effect on the existing stock or lasting impact on the performance of the system. (p. 65)

In a 2017 paper, McKinsey and Company argue that public sector productivity matters more than ever. The report says that citizens are increasing their expectation of what public services can provide, at a time when many countries face significant constraints on public spending:

Governments have never been asked to do so much, yet their sources of funding are under real pressure. To close the gap, they must urgently find ways to deliver more, and better, for less. (p. 12)

New Zealand is in a better fiscal position than many other developed countries. But Treasury forecasts that fiscal pressures will build over the next 40 years. Even small improvements in productivity can make a big difference over a long period of time.

Box 1 provides an example of how improved productivity can result in the more efficient delivery of public services, and free up resources for reinvestment in other important areas.

### **Box 1 Technology-assisted productivity improvement in the New Zealand Police**

From April 2013, iPads and iPhones were rolled out to frontline response, investigation and community Police officers. The New Zealand Police report that this technology has fundamentally changed the way that officers work and greatly increased their productivity.

Greater mobility has enabled officers to carry out a wide range of functions that, in the past, would have necessitated returning to a police station, or reliance on other workgroups to complete...

Mobility enables frontline staff to more readily access police-specific applications that provide core information relating to people, vehicles, locations, items and organisations. Officers can perform important tasks on the go at a crime scene or in a vehicle, including looking up victim/offender/location information; assigning themselves tasks; taking photos; txt messaging; using email; reading and sharing documents; and dictating information for later data-entry...

Further benefits of mobility include:

- Improved decision-making through better, faster access to the right information.
- Increased officer safety through improved situational awareness and tactical management.
- Better matching of resources to demand.

In the year to June 2014, frontline officers used their iPads and iPhones to perform nearly three million queries of people, vehicles and locations. The Police estimate that the use of mobile devices generates 30 minutes of productivity per officer per shift. This equates to 520 000 hours per year for reinvestment into prevention-focused policing.

Source: New Zealand Police, 2014, pp. 14; 34–35.

## **The Commission's approach**

The Commission is committed to a transparent inquiry process that provides opportunities for government agencies, other stakeholders and the general public to participate. The Commission's inquiry model provides multiple opportunities for interested parties to make submissions and speak to the inquiry team.

The Commission hopes that the outputs of this inquiry will become a valuable resource for public officials tasked with developing performance/productivity measures, and for decision-makers at different levels of government. We anticipate that the final report will provide guidance to officials on key design questions in developing efficiency measures.

The Commission will also work directly with government agencies and other stakeholders in developing quantitative examples of productivity measures across a selection of core state sector activity. Examples will be chosen based on availability of data, willing partners, or because they shed light on a particular characteristic of government services or technique of productivity measurement.

The terms of reference for the inquiry requires the Commission to think about how productivity measures should be designed to be useful to Ministers, chief executives, and public service managers. The Commission's guidance and recommendations will focus on how productivity measures can best serve these different decision-makers.

The Commission will also work with government agencies to understand how to develop the capability, culture and systems to measure and improve productivity in the state sector.

# 2 Measuring state sector productivity

## What is productivity?

Productivity refers to how well people or organisations convert inputs – resources such as labour and capital – into outputs of goods and services. Improvements in productivity allow a given quantity of output to be produced using fewer resources, or more and better outputs to be produced from the same resource base. Strong productivity growth allows countries to enjoy higher material living standards, including improved health and education services (Conway and Meehan, 2013; Conway, 2016).

A raw measure of productivity – the ratio of inputs to outputs – is not particularly useful by itself: it is only meaningful as part of a comparison (Statistics New Zealand, 2010). Two comparisons are common:

- A comparison of an organisation's productivity **growth**. This type of comparison looks at how productivity rates change over time. To understand how productivity changes over time, growth rates need to be calculated. A productivity growth rate is often expressed as the increase in the productivity index in one year compared with the productivity index in the previous year.
- A comparison in productivity **levels**. This type of comparison involves comparing the productivity rate of different organisations or decision-making units. For example, Boser (2014) examined differences in the productivity of education systems within specific states in America and found vastly different outputs among districts that spend the same amount of money per pupil. The OECD (2012) noted the same when comparing education outcomes between countries. Comparative studies can be useful for service providers that are seeking to improve their productivity by highlighting units or providers that are getting greater outputs with the same (or less) input (Hanushek and Ettema, 2015).

## Labour productivity and multifactor productivity

Measures of labour productivity compare the output produced with the number of hours that are worked to produce the output. Labour productivity can vary across time and across countries depending on how labour is combined with other productive inputs, such as capital, to produce output. For example, the addition of more capital – sometimes referred to as capital intensity or capital deepening – can result in a growth in output for a given input of labour hours.

Multifactor productivity (MFP), is a measure that compares the output produced with a 'unit bundle' of capital and labour inputs used in the production of the output. MFP reflects how efficiently a combination of productive inputs is used to produce output and is often thought of as a proxy for broad technological advances that increase the output from a bundle of inputs. This can include new technology embodied in the capital input, improvements in management and production processes, increased scale and improved skills. Often these improvements come together, for example, a new IT system not only provides workers with increased capital but also more advanced technology enabling improved work processes (Conway, 2016).

## Public sector productivity: outputs/inputs

Core public services combine diverse inputs (labour, capital, etc) to deliver a range of outputs – for example, hospital operations, early childhood education and benefit payments. In turn, these *outputs* contribute towards government’s desired *outcomes* – for example, a healthy population, safe communities, a well-educated population, and people being able to live in dignity.

Outputs and outcomes are easily confused, and the labels are sometimes misapplied both inside and outside government. *Outputs* are final goods and services that are produced by one organisation for use by another organisation or individual; *outcomes* are the changes in society, the economy, or the environments that result from outputs (State Services Commission and New Zealand Treasury, 2008). In the context of this inquiry, outputs are *what* government does, and outcomes are *why* government does it.<sup>2</sup> Table 2.1 provides some examples of the differences between inputs, activities, outputs and outcomes.<sup>3</sup>

**Table 2.1 Examples of inputs, activities, outputs and outcomes in the core state services**

Hospitals			
Inputs	Activities	Outputs	Outcomes
Labour supplied by doctors, nurses, technicians and others  Capital such as hospital buildings, x-ray machines and other diagnostic equipment  Consumables such as medicines, inpatients meals and surgical instruments.  Non-medical services such as facilities management	Patient consultations with physicians and surgeons  Diagnostic tests  Surgical operations  Administering medicines and changing dressings	Hospital discharges for different diagnosis related groups  Number of courses of treatment for specific medical conditions	Healthy population through, for example, recovery from injury or illness and reduction in preventable diseases.
Schools			
Inputs	Activities	Outputs	Outcomes
Labour supplied by teachers, teacher aids and administration staff  Capital such as school grounds, buildings, play equipment,	Developing lesson plans and teaching classes  Conducting and marking assessments  Enrolment of students and administration of	Number of students meeting national standards  Measures of student progression during a year	Young people who are confident, connected, actively-involved lifelong learners

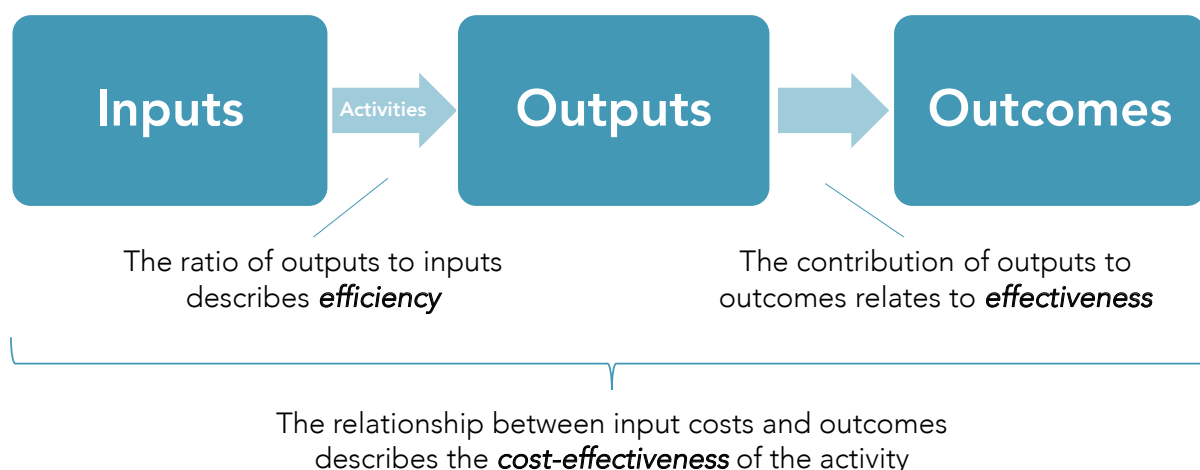
<sup>2</sup> Outputs rarely translate neatly into outcomes, and there are usually many other external influences on outcomes. The outcomes that result from government outputs may or may not be the intended outcomes of government.

<sup>3</sup> What is classified as an output (or an input) will inherently depend on the level of the analysis. For example, examining the efficiency of a hospital operating theatre will use different inputs and outputs to an analysis of the entire hospital. The production of a chest x-ray could be viewed as an output unto itself, or it could be viewed as an intermediate input into the treatment for lung cancer. This is discussed more in Chapter 3.



electronic whiteboards and computers Consumables such as pens, paper and electricity Other services such as school maintenance and cleaning	school finances (payroll, etc)		Well-educated population
Courts			
Inputs	Activities	Outputs	Outcomes
Labour supplied by judges, Justices of the Peace, administrative staff, lawyers, juries, police, and expert witnesses Operational inputs such as transportation and court security services Capital such as court buildings, computers and audio-visual equipment	Mediation sessions, intake hearings, trials, processing of court documents, probation counselling, collection of court-ordered fines	Number of cases heard, hearings held, mediation sessions conducted and fines collected	Cases are resolved in a procedurally fair and just manner Safe communities Public trust and confidence in the justice system
Work and income services			
Inputs	Activities	Outputs	Outcomes
Labour supplied by case managers, back office staff and security staff Capital such as offices, computers and data infrastructure Operational inputs such as maintenance of online application systems	Processing benefit applications Payment of benefits and supplements Career seminars and training sessions Providing information to assist with job applications Managing contracts with community service providers Investigating fraud and recovering overpayments	Number of individuals that move off support and into sustainable employment Number of applications processed in a given period Number of young people moved off benefits and into education, training, or work-place learning Number of people accessing emergency housing	More people are in sustainable work and out of welfare dependency Fewer people commit fraud and the system operates with fairness and integrity More people are able to participate and contribute positively to their communities and society

The simplified relationship between inputs, outputs and outcomes is shown in Figure 2.1.

**Figure 2.1 Production process**

Efficiency can be broken down into two components.

- *Technical efficiency* is where each individual output is produced with the smallest possible amount of inputs. It is closely related to the concept of productivity (the ratio with which inputs can be converted into outputs).
- *Allocative efficiency* is concerned with the appropriate distribution of resources to different activities (eg, doing the right thing, not just doing it in the most technically efficient way).

The terms of reference for this inquiry require the Commission to focus on the technical efficiency with which state services are produced. The inquiry is not to examine in detail allocative decisions, or the effectiveness with which outputs lead to desired outcomes.

However, it is not sensible to completely ignore the effectiveness of outputs. In many cases it is desirable that productivity measures should take into account changes in the quality of the outputs over time.

### Traditional approaches to measuring public sector productivity

It is *relatively* straightforward to measure the productivity of firms in the private sector. The value of outputs can be determined by their market price, are aggregated, and then divided by total costs. Prices (and the assumption of functioning markets) allow the volume of diverse outputs to be compared and weighted. They also provide an avenue through which changes in quality can be observed.

In general, public sector outputs are harder to measure for a number of reasons.

- First, many outputs are consumed collectively. While some public service outputs are directed to individuals and are easily countable (such as the administration of benefit payments), others are delivered to society collectively (such as defence). For collective services it is especially hard to measure outputs and who consumes them. Some sectors of government involve both; personal health outputs are directed at individual patients, and public health outputs are directed at a wider population.
- Second, public sector outputs are difficult to put a monetary value on. Most services are provided free, or with nominal fees/co-payments that do not reflect the value of the output

to recipients of the service. Because the outputs cannot be valued, they cannot be aggregated in the way that private sector outputs can. For example, in aggregating outputs in the health system, it doesn't make sense to treat ten heart operations as equivalent to ten x-rays.

Challenges in measuring public sector outputs are discussed in more detail in Chapter 3.

Due to these measurement difficulties, national accounts have traditionally valued public sector outputs at their cost of production. The convention that "inputs=outputs" meant public sector productivity was assumed to be constant through time. But this was a convenient fiction; clearly improvements could result in, for example, the public service delivering more outputs for a given level of public spending. Additionally, it implied that all spending was equally worthwhile; each dollar spent anywhere in government was assumed to create a dollar of value, regardless of what was delivered.

### **Direct measurement of outputs**

One way to avoid having to assume that inputs=outputs is to attempt to directly count the outputs in a given area of the state services – for example, to count the number of court trials, and divide it by the total cost of administering trials.

This approach does not put a value on outputs in these areas of government activity, but it does allow the volume of outputs to change over time. So if costs to administer court trials are constant over time, but the number of trials is increasing, then productivity in the courts might be said to be increasing.

In the 1950s and 1960s, the UK statistics office attempted to directly count outputs such as the number of court trials or the number of hospital patients. Its view was "even a crude measure of output is assumed to be preferable to an index based on total cost" (Central Statistical Office, 1956, p. 42, cited in Atkinson, 2005, p. 17). But the indicators developed at that time were criticised and later abandoned. A later review wrote

From this earlier experience, we draw two main conclusions. The first is that the design of direct output measures needs considerable care. It is not necessarily the case that 'even a crude measure of [government] output is ... preferable to an index based on total cost'. The fact that it is not easy to obtain direct indicators means that better measures are likely to require significant investment of resources. Direct measures of output need to be continuously monitored to ensure that they are capturing changes in quality. The second conclusion is that ONS [the Office of National Statistics] has to steer a careful course with regard to changes in government policy, guaranteeing the independence of the approach to measuring government output while ensuring that its implementation reflects the realities of public spending and circumstances. (Atkinson, 2005, p. 17)

In 1998, the UK Office of National Statistics (ONS) attempted to directly count government output, first in the health, education and social security sectors, and later in other areas of government activity. For example, in social security, the ONS counted the number of benefit claims for the 12 largest benefits.

Through the early 2000s, the EU's Eurostat agency introduced guidance and requirements that member countries begin directly measuring output. In 2005, the UK's Atkinson Report also concluded that the direct measurement of outputs was best practice.

Q1

**Which types of government services most readily lend themselves to the direct measurement of outputs? Which services don't lend themselves to this?**

## Statistics New Zealand's 2010 Feasibility Study

In 2006, Statistics New Zealand released the first official measures of annual labour, capital and multifactor productivity, covering the years 1988–2005. This initial series excluded government administration and defence; health; and education, along with several market service industries.

From 2008, Statistics New Zealand began to explore options to measure the productivity of government services, and in 2010 published a *feasibility study* on measuring government health and education sector productivity in New Zealand. The report examined how changes in government productivity in New Zealand could be measured. Statistics New Zealand focused on health and education for three reasons:

- for many people these are the most important services;
- these are the services which receive the highest public expenditure; and
- these are the government services which have been studied the most by other countries and international organisations.

The main conclusion of the study was that it was possible to estimate change in the productivity of government health and education services in New Zealand, using the world's best (then) current practice. The study said that the statistical quality of existing estimates of health and education services was already as good as in many other countries.

The study identified several significant challenges in compiling productivity measures and recommended approaches for dealing with them (Table 2.2).

**Table 2.2 Recommended approaches for dealing with productivity measurement challenges, Statistics New Zealand**

Measurement challenge	Recommended approach
Scope — there are three main ways of looking at the scope of government productivity estimates: the industry perspective (how much does the industry contribute to total economic output?); the public/private perspective (how do publicly-owned parts of the health care and education contribute to the economy?); and the financing perspective (how well are taxpayer funds, or government controlled funds, being used in delivering health care and education?).	Use the industry perspective to provide estimates of government productivity that are consistent with Statistics New Zealand's existing market sector productivity estimates.
<i>Level of disaggregation for selecting outputs</i> – defining at what level to disaggregate outputs can matter a great deal. To avoid an unmanageable number of outputs, disaggregation should not be too fine, but should distinguish activities that are different in terms of their value to consumers. Typically, the decision on the level of disaggregation is based on what information and classifications are already available, rather than on purity of concept.	Further work was required by Statistics New Zealand and the Ministries of Health and Education to determine what level of disaggregation was appropriate for defining outputs.

Measurement challenge	Recommended approach
<i>Dealing with quality change</i> — while there are many sources on the number of health care and education services, there is a relative dearth of systematically-available information on how the quality of those services is changing over time (and how the different aspects of quality can be drawn together into a single whole).	Estimates of change in the quality of services should not be combined with estimates of change in the quantity of services, until there is an international consensus on how this should be done.
<i>Lack of prices</i> — in the government sector, there are either no prices, as services are typically provided for free, or the amounts paid do not reflect the relative value given by the price in a competitive market (due, for example, to subsidisation).	Costs of production are the most suitable way of establishing the relative value of these goods and services.

Source: Statistics New Zealand, 2010.

In total, the report made 18 recommendations about measuring government productivity in New Zealand generally, 13 about the health system, and 23 about the education system.

Q2

**What progress has been made in implementing the recommendations of Statistics New Zealand's 2010 report, *Measuring government sector productivity in New Zealand: a feasibility study*?**

Q3

**Which, if any, of the recommendations in Statistics New Zealand's 2010 feasibility study should the Commission re-examine?**

## Recent estimates of public sector productivity in New Zealand

This section presents some recent estimates of state sector productivity in New Zealand at the sector or service level. The estimates are presented for illustrative purposes, but is not an exhaustive list of public sector productivity estimates.

### Statistics New Zealand productivity series

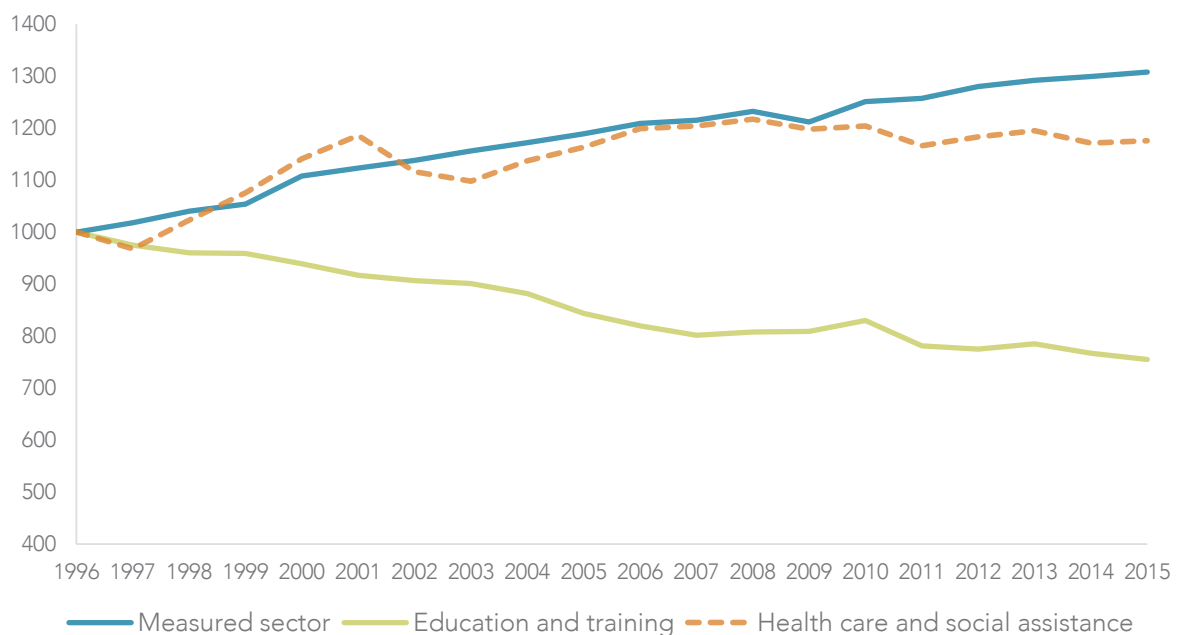
In 2013, drawing on their *feasibility study*, Statistics New Zealand presented the first official estimates of productivity for the education and training, and health care and social assistance industries. The initial series covered the period 1996–2011, and has subsequently been updated each year.

The productivity measures reflect output growth relative to input growth, they do not reflect other performance indicators such as effectiveness or quality. And the measures reflect the productivity of the industries as a whole, and hence cannot be used to attribute productivity change to a particular part of the industry. There could be considerable differences in productivity performance across the producers in a given industry (Statistics New Zealand, 2013).

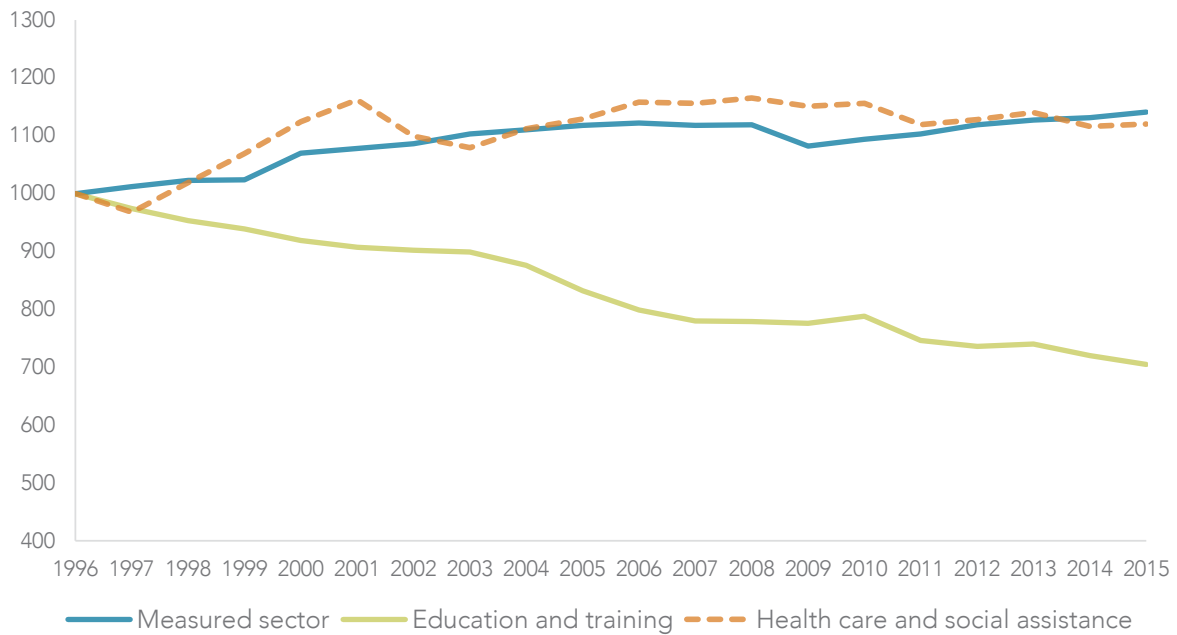
Figure 2.2 and Figure 2.3 show an index of productivity growth for education and training, health care and social assistance, and the measured sector:

- The education and training industry includes preschool, school, tertiary, and adult, community and other education. Both market and non-market activities are included in the measure, with non-market activity accounting for 87% of industry GDP in 2010. School education is the largest sub-industry (accounting for 50% of industry GDP), followed by tertiary education (33%), preschool education, and then adult community and other education.
- The health care and social assistance industry includes hospitals, medical and other health care services, and residential care services and social assistance. Non-market activity accounted for 57% of industry GDP in 2010. Hospitals are the largest component, accounting for 45% of industry GDP, followed by medical and other health care services (eg, general practitioners and dentists, which accounts for a further 34%) and residential care services and social assistance (21%) (Statistics New Zealand, 2013).
- The measured sector includes industries comprised of enterprises that sell their products for economically significant prices (for example the manufacturing industry and the retail trade industry).

**Figure 2.2 Labour productivity index, 1996–2015**



Source: Statistics New Zealand, 2017.

**Figure 2.3 Multifactor productivity index, 1996–2015**

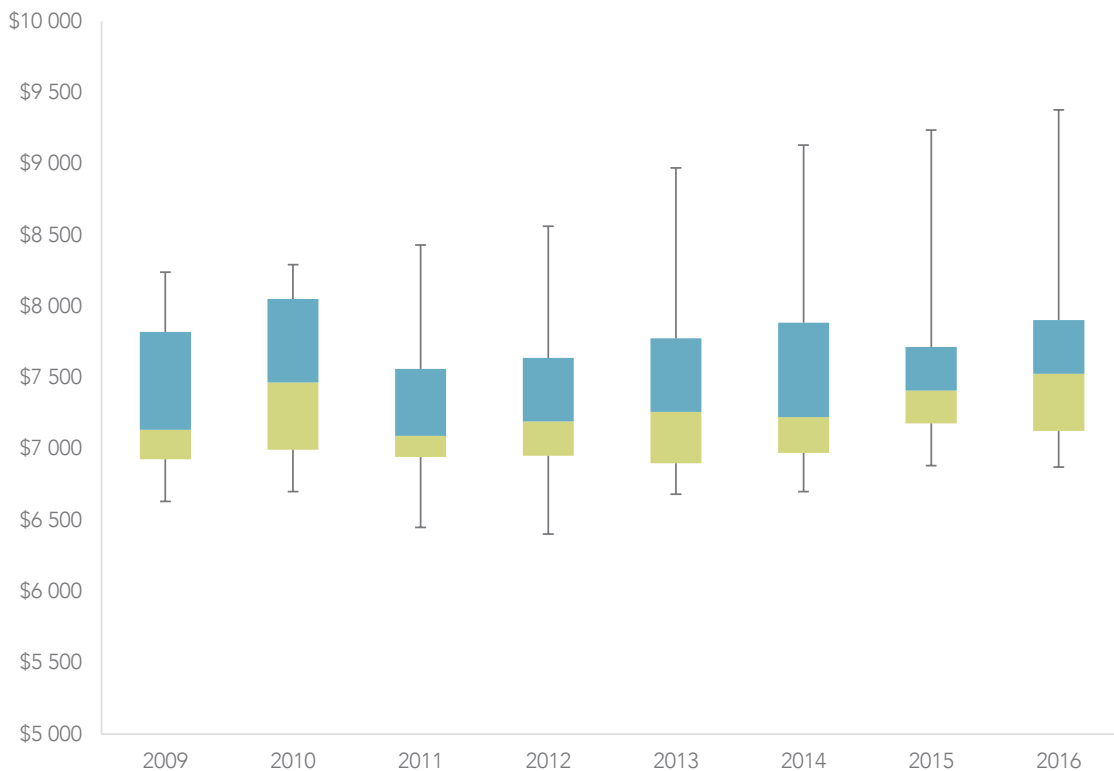
Source: Statistics New Zealand, 2017.

### Productivity measures for District Health Boards

The Treasury has developed two measures to assess DHB productivity: trends in case weighted discharges (CWDs), and average length of inpatient hospital stay (ALOS).

CWDs provide a standardised measure of the volume of hospital inpatient activity, excluding mental health and disability support. It measures total output (assigning greater weight to more complex procedures) per total cost of production (expenditure on medical and nursing personnel, clinical supplies, interest, depreciation and capital charge).

Figure 2.4 shows the distribution of real average cost per CWD by DHB over time. Median performance has been relatively stable over time. There is a large degree of variation between DHBs with the highest costs sitting about 25% above the median in 2016 – indicating a long tail of low productivity.

**Figure 2.4 Distribution of real average cost per CWD across DHBs, 2009 – 2016****Notes:**

1. The median DHB performance is shown by the middle line within the box. The box represents the distribution of the nine middle performing DHBs and the bars show the distribution of the five top- and five bottom-performing DHBs.
2. Costs presenting in 2016 dollars.

Source: New Zealand Treasury, 2017a.

The widening of the 'whisker' in Figure 2.4 raises questions about whether the diffusion of best practice or technology across DHBs is getting worse.

The Treasury also uses average length of hospital stays (ALOS) as a measure of hospital efficiency.

ALOS can be reduced by measures such as advances in treatment technologies, more effective drugs, improved community and follow-up care, and more effective hospital administration. (New Zealand Treasury, 2017a, p. 41)

Shorter hospital stays are generally considered to be a positive, as longer stays tend to reduce patient wellbeing and increase costs. But Treasury acknowledges that ALOS is incomplete as an indicator of DHB productivity:

There is a mismatch between inputs and outputs because inpatient CWDs are a subset of hospital activity and we are not able to exclude provider-arm inputs that relate to other (non-CWD) activity... [The measure] tells us nothing about service quality and does not recognise the benefits of DHB programs such as "releasing time to care" which aim to improve hospital processes allowing staff to spend more time with patients. Our ALOS analysis could be strengthened by assessment of hospital readmission rates (readmission



rates would be expected to remain the same or fall as length of stay reduces if the system is working well). (2017a, p. 42)

More broadly, Treasury suggest a more comprehensive monitoring framework covering the entire health system is required, noting that existing measures may:

- Often focus on one specific area and provide limited information around wider context.
- Cover only one part of performance (for example volume or cost).
- Rarely measure health outcomes for patients (volume measures normally count service output units).
- Not be used systematically at the centre to manage performance. (New Zealand Treasury, 2017a, p. 43)

### Quality adjusting productivity data for schools

Gemmell, Nolan and Scobie (2017) developed productivity measures for New Zealand schools using teacher FTEs as the labour input, revenue as an indicator of total inputs, and student places provided as the output. The authors then applied adjustments to account for changes in the composition of the labour input, changes in student attainment, and changes in student outcomes (measured by their earnings) (Table 2.3).

**Table 2.3 Examples of quality adjustments for school productivity**

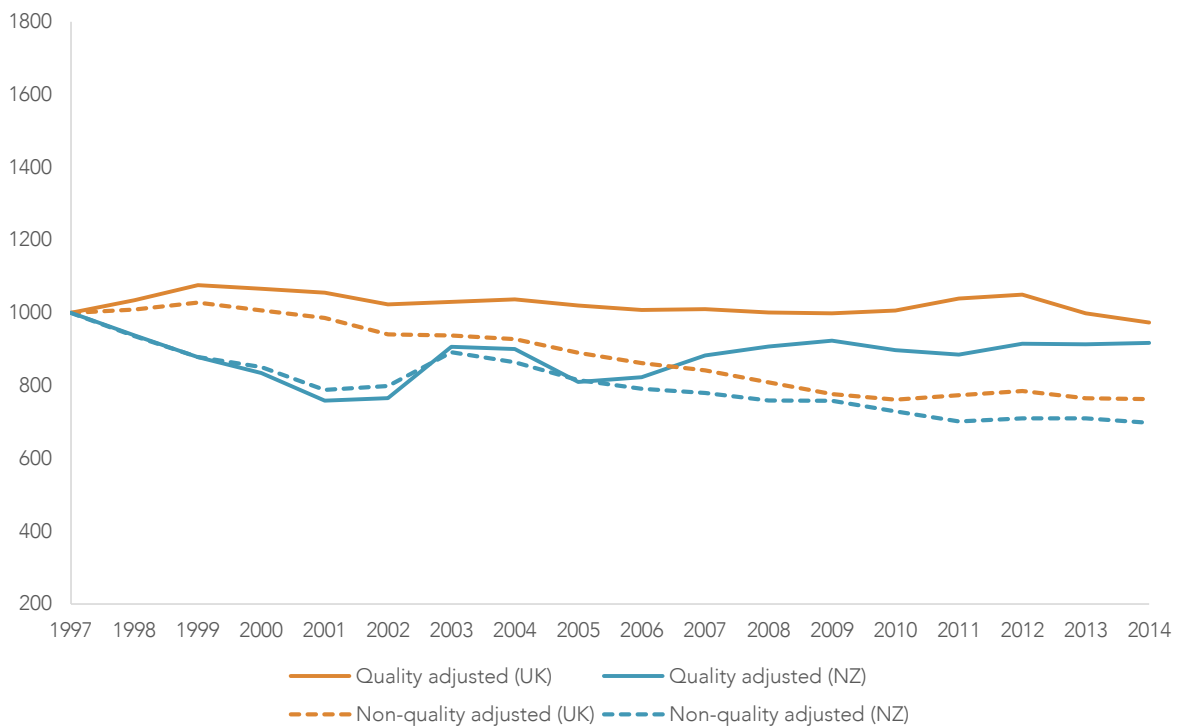
Adjustment	Measures	Results
Basic labour productivity (no adjustment)	Total Student Places/ Teacher FTEs	Declined by 1.0% on average between 2002 and 2014
Basic multifactor productivity (no adjustment)	Total Student Places/School Revenue	Declined by 1.7% on average between 2002 and 2014
Adjustment for labour input composition	Total Student Places/ Teacher Salaries	Declined by an average of 2.0% between 2002 and 2014
Adjustments for student attainment	Aggregate PISA Points/Teacher FTEs	1.1% average decline between 2003 and 2015
	Students Achieving Domestic Standard/Teacher FTEs	0.8% average increase between 2002 and 2014
	Students Achieving Domestic Standard (NCEA level 2)/ School Revenue	0.5% average decrease between 2002 and 2014.
Adjustments for outcomes (earnings)	Total Student Places Weighted by Average Real Expected Income/Teacher FTEs	0.2% average decline between 2002 and 2014 (if only using secondary FTEs the decline was 0.7%)
	Total Student Places Weighted by Average Real Expected Income/Teacher Salaries	Declined by an average of 1.1% between 2002 and 2014

Adjustment	Measures	Results
	Total Student Places Weighted by Average Real Expected Income/School Revenue	Declined by an average of 0.9% between 2002 and 2014

Source: Gemmell, Nolan and Scobie, 2017

The quality adjustment for student attainment that uses achievement of NCEA level 2 is broadly comparable with a productivity measurement developed by the Office of National Statistics (ONS) in the United Kingdom (Figure 2.5). In both countries the unadjusted series show decreasing productivity reflecting policy choices regarding smaller class sizes and more support staff. Quality adjustment based on student attainment leads to average labour productivity growth around zero in both countries between 1997 and 2014. Gemmell, Nolan and Scobie’s study illustrates both the importance and the difficulty of quality adjusting sector-level productivity data.

**Figure 2.5 Comparison with ONS estimates of education productivity, 1997–2014 (1997=1000)**



Source: Gemmell, Nolan and Scobie, 2017.

Q4

**What do government agencies currently do to measure their productivity? How do government agencies use productivity measurement to improve the productivity of core services?**

# 3 Challenges in measuring government productivity

This chapter explores in more detail some of the challenges in measuring government productivity, both in terms of outputs (selecting the level of aggregation, weighting, and adjusting outputs) and in terms of inputs.

## Selecting outputs

Outputs are the completed goods or services produced and ready for use or consumption. Dunleavy (2016) recommends that the first step in measuring public agency productivity is to define the output:

Core outputs or activities for any agency need to be restricted to complete ‘activity packages’ (not parts of operations) or to finally-delivered services (akin to end-products in firms). Different core activities should have different origins, rules and practices governing them. For example, in a taxation agency each kind of tax will need to be treated as a separate ‘product’ and in a welfare agency each type of benefit similarly. (2016, p. 5)

Whether a particular output is treated as a final output or as an input into the production of another (perhaps final) output, will depend on the purpose of the analysis. It is likely that the definition of the outputs will be different depending on the level of the service that is being measured, or depending on the use of the information.

Using a health sector example, from a national accounts perspective an x-ray is only one activity that makes up the output of a whole course of treatment for a broken leg. However, for the manager of a radiography service in a public hospital interested in the efficiency of their department, it may be more appropriate to treat the x-ray as the output.

**Q5**

**How should the selection of outputs differ for different users of productivity data (Ministers, chief executives and managers)? What principles should guide these decisions?**

In some instances, the efficiency with which an agency produces a subset of core outputs can provide a strong indicator of the organisation’s overall efficiency. Dunleavy notes

The number of core outputs we distinguish per agency needs to be limited to a few outputs, perhaps only one or two for small or single-purpose agencies. For very large agencies with diverse activity streams (such as national tax or social security organizations) there might be ten or fifteen main outputs, with some of these also showing new clients and existing clients as having different cost profiles. (2016, p. 5)

The Commission is also interested in views on how complete output measurement needs to be, in order to gain useful and accurate information about efficiency.

Q6

**Are there instances where a subset of core outputs would provide a reasonable indicator of the efficiency of a state sector organisation or programme? For what services or organisations is this most likely to be the case?**

## Weighting outputs

In the market economy, prices signal the value placed on goods and services by consumers, and allows disparate products to be aggregated.

Consider the familiar hypothetical example of an economy that produces only guns and butter. Estimating productivity requires a measure that combines the output of both these products. But just how many kilos of butter are equivalent to one gun? In the private sector prices can be used to make these comparisons. (Gemmell, Nolan & Scobie, 2017, p. 13)

Valuing and then aggregating the outputs of government is hard because of the lack of market prices. The standard way around this problem is to cost-weight the outputs. This allows the outputs of the organisation to be aggregated, weighted by what it cost to produce them.

Theoretically, there might be other ways of determining how the public values a government output in a way that would allow comparison between different government outputs and comparisons over time. For example, in the health sector, quality-adjusted life years (QALYs) are used to value the health benefits of different kinds of health interventions (Pharmac, 2012).

A major limitation of QALYs, however, is that they only measure people's preferences about the health consequences of a health intervention (increased length of life adjusted for improvements in quality of life). It does not say anything about the trade-offs people might make between receiving a health benefit and forgoing other choices (Hammit, 2002). This contrasts with willingness-to-pay (WTP) measures which attempt to measure value by asking what someone would be prepared to pay in order to receive a health intervention, for example, and forgoing income that could be spent on some other good or service.

Although the WTP methodology is sometimes used in eliciting the value of different health outputs, activities or interventions, WTP measures are more commonly used in New Zealand to estimate the value New Zealanders place on preventing road injuries (Clough, Guria and Bealing, 2015).

There are methodological issues associated with WTP, especially in establishing an "average value" willingness to pay. What people are prepared to pay to reduce the risk of a road fatality, for example, changes as they become older and wealthier.

The problem with attempting to measure how much the public values government outputs by these sorts of methods is that there is a lack of such standardised measures across the range of government activities.

Q7

**Should the Commission explore willingness-to-pay methodologies further for the purpose of valuing government non-market outputs? Are there any other viable alternatives to cost-weighting as a way of valuing and aggregating public sector outputs?**

## Adjusting outputs

### Quality adjustment

The quality of outputs produced by public services can change over time. For example, the number of children who receive early childhood education may be stable over time, but if the children leave early childhood education better prepared for school academically or socially, then it can be said that the quality of outputs has increased. Ideally, productivity measures would take account of these changes in quality.

Dunleavy and Carrera (2013) highlights three circumstances where perverse effects may arise when quality is not adjusted:

- Unmeasured improvements in quality trigger an apparent fall in productivity. For example, a doctor spends more time seeing patients and therefore makes a more accurate diagnosis yet productivity falls because the doctor sees fewer people. Conversely, measures of productivity that do not account for quality can create perverse incentives (ie, to pad out productivity figures). In this case, productivity estimates mask worsening performance.
- For many local services, exactly *how* and *when* people receive a service can matter a great deal, to *what* output is being received. For example, the condition of a person on a waiting list may worsen, requiring more serious intervention when they finally are admitted to hospital. The time police take to respond to a call can influence the type of crime they deal with. As a result, comparing across agencies solely on the basis of output numbers without adjusting for quality can lead to inaccuracies and unfairness.
- Poor quality increases productivity figures by boosting the demand for the service. For example, a hospital with poor quality care may have a greater level of readmission leading to greater output and, seemingly, higher productivity.

Dunleavy (2016) recommends that different approaches to quality adjustment be used for different types of public services.

- Treat core outputs as being of uniform quality over time across agencies, unless there is strong evidence suggesting quality lapses. Where service quality is bureaucratized it is reasonable to consider that quality is uniform in the normal course of operations. For example, taxation, social security payments and many regulatory functions (such as issuing licences and passports). Yet failures do occur and when they do productivity figures will need to be adjusted.
- Apply an additional quality-weighting to the *“total outputs weighted by unit costs”* metric. Across most professionalised services, especially those delivered personally to clients and run by decentralised local or sometimes regional agencies, quality variations may be more important. Output numbers that are not quality adjusted or standardised may especially create the capacity for misleading signals on organisational performance.

Past attempts to measure public sector efficiency have been criticised for not taking account of quality improvements (especially where the results show declining productivity). But quality is usually hard to measure. Done badly, attempts at quality adjustment may make productivity estimates less reliable.

Q8

**For which services would it be reasonable to assume quality remains unchanged over time?**

Q9

**What services need to be quality adjusted? What indicators of quality should be used for the different state sector services?**

### Case mix adjustment

Two hospitals that produce the same number of operations for the same quantity of inputs might appear to have equal productivity. But if one hospital is treating patients with more complex conditions then the value it is adding is higher. So it can be important to account for differences in the complexity of activity in measuring the output of the two hospitals.

Case mix adjustments are sometimes used in health to allow comparisons to take account of this. Patients are classified into groups known as diagnosis-related groups (DRGs) based on their diagnosis and the severity of their condition. This system was originally developed to reimburse hospitals for their activity, but it has a range of other statistical applications, including for adjusting measures of productivity.

In principle, a type of case mix adjustment might be applied to productivity measures for other public services. One way of doing this is to measure the outputs of different population sub-groups separately, where those sub-groups have significantly different needs, and treat them as different outputs. There are also a number of other statistical techniques for accounting for these external influences (Gemmell, Nolan & Scobie, 2017). These approaches allow the difference in population complexity to be accounted for, including when outputs for the different subgroups are aggregated. The Commission is interested to understand how feasible case mix adjustment might be in other sectors, and whether there is sufficiently robust data to support this approach.

Q10

**Is case mix adjustment of productivity measures feasible in state services other than for the outputs of hospitals?**

### Services collectively consumed

The complexity of some state sector outputs makes it difficult to measure productivity. Some government activity is not directed at individual citizens or groups of people, but at the population at large. The classic example is defence. Defence is outside the scope of this inquiry, but some services in the core public sectors listed in the terms of reference (health, education, justice and social development) are also collectively consumed. Examples may include public health measures, and social marketing/awareness campaigns.

To date, efforts to measure public sector productivity have focused on services consumed by individuals. The Commission is interested in submissions on how productivity measures should be developed for public services that are collectively consumed.

Q11

**How should the Commission think about developing productivity measures in areas of the state sector where services are collectively consumed?**

## Challenges in measuring inputs

### Attributing inputs

The other key component in calculating productivity is determining and calculating the inputs associated with outputs. New Zealand's shift to output- and accrual-based budgeting in the 1980s and 1990s led to a great deal of effort by departments and other agencies to re-cost their activities along service lines, rather than by their inputs (eg, staff, office equipment etc). Although some commentators raised concerns about the appropriateness and robustness of some output prices (eg, Dangerfield, 1997), the quality of input data at the level of departments does not seem to have had as much focus.<sup>4</sup>

Input information for devolved services (eg, schools, DHBs) appears to vary in terms of quality and its links to outputs. Van Kesteren (2014) notes that some district health boards have introduced

sophisticated costing systems that enable them to better understand their cost structures, provide cost and volume information to the NCCPP [national cost collection and pricing programme] (to inform National Price for IDFs) and plan and provide health services to achieve the MOH's directives and desired outcomes. (p.117)

DHBs with these more sophisticated systems can "cost at the patient-event level." (p.118)

Likewise, in education, schools report annually to the Government on their revenue and expenditure. Aggregate data on school financial performance is, for instance, published in the *Schools Sector Report* (Table 3.1).

**Table 3.1 School financial performance, 2015**

Revenue		Expenditure	
Government grants	\$6 266.3m	Learning resources	\$4 534.6m
Local funds	\$529.6m	Administration	\$441.9m
International students	\$126.8m	Property	\$1 514.2m
Investments	\$47.9m	Local funds	\$239.9m
Hostels	\$35.4m	Depreciation	\$180.7m

<sup>4</sup> Possible exceptions to this are agencies that were subjects of baseline or output reviews (eg, Child Youth and Family in 2002-3)

Revenue		Expenditure	
Other revenue	\$106.6m	International students	\$63.9m
		Hostel	\$29.8m
		Loss on asset disposal	\$6.5m
		Amortisation of equitable leasehold interest	\$0.8m
		Amortisation of software	\$0.3m
		Finance costs	\$2.9m
		Impairment	\$1.6m
		Other expenses	\$14.1m
<b>Total revenue</b>	<b>\$7 112.5m</b>	<b>Total expenditure</b>	<b>\$7 031.2m</b>

Source: Ministry of Education, 2016.

One challenge is how to attribute overhead costs between service lines to better reflect the total costs of providing a service. 'Activity-based costing' can be used for this. 'Cost to serve' further disaggregates costs, including overhead costs, at the level of the individual recipient of services. Depending on the level of productivity measure being developed, good information about both may be required. This level of information about inputs could also underpin a social investment approach to allocating resources. As noted earlier, raw measures of service provision may need to be adjusted for quality to accurately measure productivity change (Table 2.3).

**Q12**

**How well are agencies and service providers (eg, schools, DHBs) able to cost their activity at an output level?**

**Q13**

**How good are government agencies at 'activity-based costing'? How well do they understand 'cost-to-serve'? What are the barriers to agencies doing this well?**

**Q14**

**How well do agencies' financial management systems line up with their outputs?**

## Co-financing

Many public services are provided free of charge. But a large number also have co-payments. These are usually monetary, but are sometimes donations of labour (eg, volunteers in the Department of Conservation or parents volunteering in schools). Where there is a financial charge, this can be compulsory (eg, in the case of most tertiary education) or voluntary (as in



schools<sup>5</sup>). It can be a universal charge, or it may be targeted on the basis of means. In primary healthcare, co-payments can vary significantly within and across providers, or for care provided outside business hours.

If productivity measurement does not account for this co-financing, then it can create a misleading picture.

- A government agency could appear more productive than it is (ie, the cost of producing its outputs will be artificially low and its productivity will appear high).
- It may create perverse incentives. Agencies can improve apparent productivity by cost-shifting to the public (eg, by increasing the proportion of costs covered by co-payments) without any real improvement in efficiency.

One approach in the UK has been to effectively split outputs directly in proportion to the share of inputs. Where a service is 70% government-funded, then 70% of the outputs are attributed to government (Statistics New Zealand, 2010). But this approach relies on having good information about the share of private financing.

**Q15**

**For which state services are co-payments most common? For these services, does good data exist on the share of cost covered by co-payments? How should the Commission take co-payments into account when developing productivity measures?**

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<sup>5</sup> Some schools have been known to misrepresent voluntary donations as compulsory fees.

# 4 The state sector

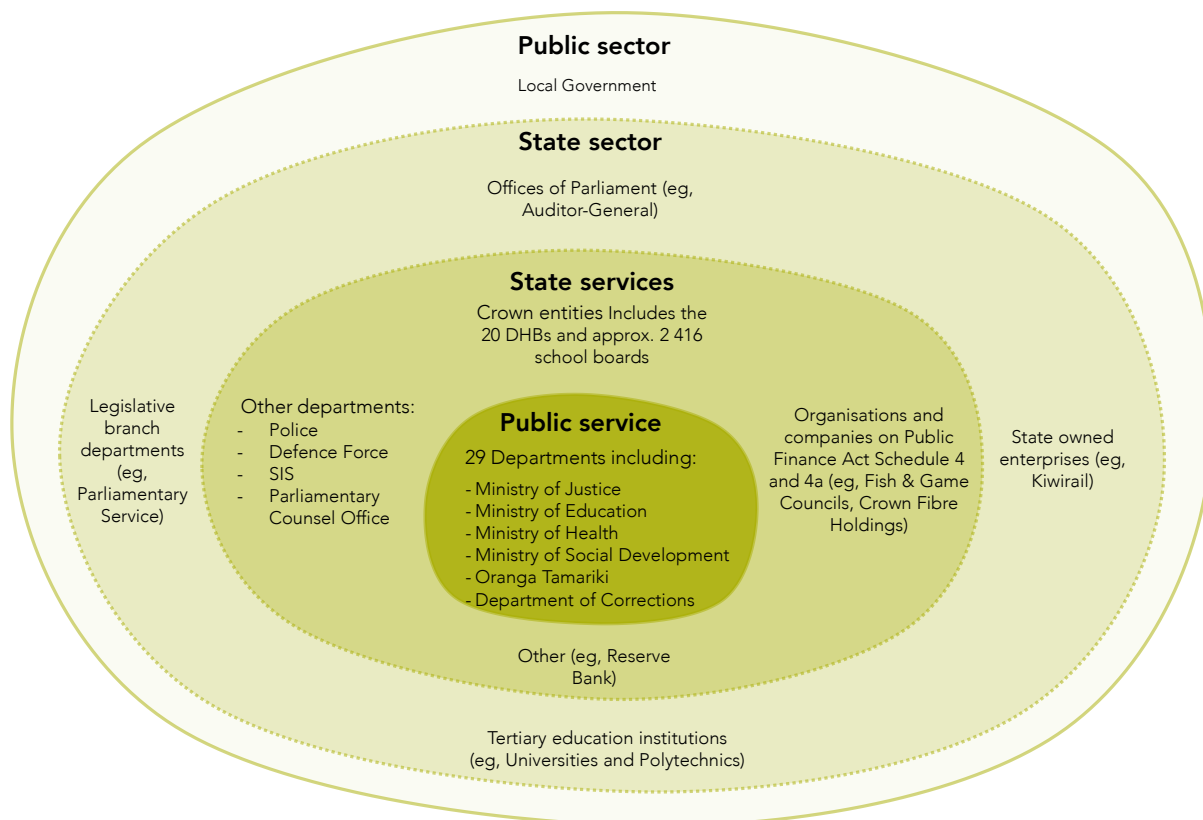
## What is the state sector?

The “state sector” is a term used to cover all organisations that report to the Crown. It includes:

- Public service departments such as the Ministry of Health;
- Crown entities such as District Health Boards; and
- Offices of Parliament.

The state sector is separate from local government (city, district and regional councils), which manages the infrastructure and local services in particular areas (Figure 4.1).

**Figure 4.1 Composition of New Zealand's state sector**



Source: Adapted from State Services Commission, 2014.

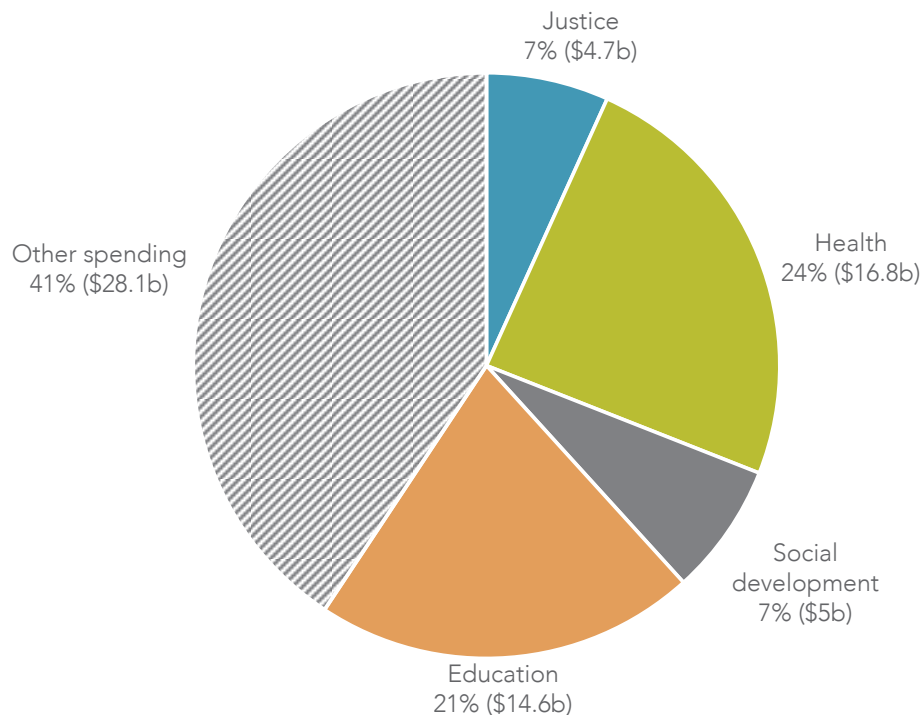
## What are “core services”?

Within the state sector, the Commission was asked to focus on four sectors: health, education, justice and social support. The terms of reference states that productivity measures should consider both the meso level (sectoral performance) and the micro level (service or function).

Although the inquiry will develop guidance on measuring and improving productivity with these sectors in mind, the Commission anticipates that most advice will be applicable across any state service.

At the sector-wide level, government expects to spend \$41 billion on services delivered by these sectors in 2017/18 (excluding transfer payments such as New Zealand superannuation), (Figure 4.2).

**Figure 4.2 Government funding for the health, education, justice and social support sectors, 2017/18**



Source: New Zealand Treasury, 2017b.

**Notes:**

1. This figure excludes \$25 billion of expenditure that is classified as "benefits or related expenses". As such, transfers such as New Zealand Super are excluded.
2. Education includes vote education (which includes the compulsory education sector and early childhood education) and vote tertiary education.
3. Social development includes expenditure from three votes: social development; social housing; and vulnerable children, *oranga tamariki*.
4. Justice includes expenditure from votes police; courts; corrections and justice.

Within these four sectors, the terms of reference states that the inquiry should focus on productivity measurement for "core" services such as: teaching, hospitals and primary healthcare, policing, courts, corrections, and work and income services. Table 4.1 sets out some of the core services that the education, health, justice and social support sectors were funded for in the 2017 budget.

**Table 4.1 Selected services within the education, health, justice and social support sectors**

Vote	Service	Appropriation (\$million)
<b>Education</b>	Delivering the curriculum for Years 0 to 8	3 210
	Delivering the curriculum for Years 9 to 13	2 251
<b>Health</b>	Funding provided to 20 district health boards (DHBs)	12 683
	Health and disability services, funded at a national level, and managed by the Ministry of Health.	2 698
<b>Corrections</b>	Provision of custodial services	938
	Management and delivery of sentences and orders served in the community, and electronic monitoring of people on bail.	217
	Provision of case management and interventions designed to address the underlying causes of criminal re-offending	202
<b>Courts</b>	Purchasing services (mostly support for managing cases, claims and applications through courts and tribunals, and the collection and enforcement of fines and civil debts) from the Ministry of Justice	456
<b>Police</b>	Investigation	419
	Police primary response management	428
	Road safety programme	321
	General crime prevention services	182
	Specific crime prevention services and maintenance of public order	166
<b>Social development</b>	Improved employment and social outcomes support	662

Source: New Zealand Treasury, 2017b.

The Commission is interested in views about what particular state sector or service should be the focus of case studies in this inquiry.

**Q16**

**What public sectors/services should the Commission focus on as case studies for developing productivity measures? Why?**

## Measurement challenges in specific sectors

This section considers whether there are specific challenges associated with measuring productivity in each of the four core state sectors that are the focus of this inquiry.

### Health

Techniques for measuring productivity in health systems are relatively more developed than in other areas of public services.

Statistics New Zealand (2010) noted that health outputs should be defined from the perspective of the consumer; that is, a unit of output is a whole course of treatment for a particular condition or disease, rather than individual activities that make up the treatment. It also noted challenges to this approach:

- A course of treatment for disease or condition often involves multiple interactions with several different providers, such as community pharmacy, general practice and various hospital departments. Yet health information systems may not be able to track this patient journey well.
- It is conceptually difficult to identify the outputs of public health services, preventative care, the treatment of people with multiple health conditions, or where people require services to manage long-term chronic illness or disability.

Chapter 2 outlined an existing productivity measure for DHBs, based on in-patient stays; but this is only one aspect of a DHB's activities. It appears that the UK has progressed further in developing productivity measures for the hospital care (Statistics New Zealand, 2010). There is less information on approaches to measuring productivity in other areas of the health system in New Zealand.

**Q17**

**What challenges are there to measuring productivity of the health system, or the productivity of health services? How can those challenges be overcome?**

## Education

Among the many challenges associated with measuring state sector productivity, two particular challenges stand out in the education sector; adjusting for changes in quality and determining what changes in productivity can be attributed to the school environment.

A range of different approaches have been used to adjust productivity measures for quality, including stratifying different types of education to compare like with like, explicit quality adjustments based for example on test results, and adjustments based on indirect outcome measures such as future earnings (Schreyer, 2010).

Reflecting the difficulty of capturing rich productivity data through a single quality adjustment measure, Gemmell, Nolan and Scobie (2017) use a range of explicit quality adjustments for school productivity, including exam scores, as well as measures of expected future earnings.

Attribution is particularly challenging when attempting to measure productivity in the education sector. Hanushek and Ettema (2015) note that the cumulative nature of education, and the importance of factors outside the schooling system to students' success each influence outputs and student outcomes:

The outputs that we measure are the result of a lengthy schooling process. It would not make sense to attribute the 12<sup>th</sup> grade knowledge of a student just to the schooling of the last year of high school. Indeed, it makes sense to consider the entire flow of inputs that went into a student at the point where outcomes are measured.

But once we think more broadly about the relevant inputs, we also realize that there are more than just schools that influence students and their outcomes. Families, other students, and neighborhoods are important as is the motivation and effort of the individual student. To the extent that we want to attribute any productivity changes to schools, it is important to ensure that changes in other inputs are not important – and confused with measures of productivity in the schools. (p. 7)

**Q18**

**What challenges are there to measuring productivity of the education system, or the productivity of education services? How can those challenges be overcome?**

## Justice

There are several challenges to measuring productivity in the justice system, and in interpreting and using results. While the UK has made progress in moving past an inputs=outputs approach following the Atkinson Report, productivity measures have not been a priority in New Zealand.

Many resource allocation decisions are not under the control of ministers or departmental officials. There are good constitutional reasons for the judiciary to be independent from government control, and for the police to have operational independence from politicians. Compared to other sectors, much activity in the justice system is governed and regulated by statute at a more detailed level. These factors do not themselves present challenges to the measurement of productivity, but are important in considering possibilities to improve it.

As in other sectors, some justice sector outputs are easier to measure than others. While it may be easy to count prisoner numbers, reported and resolved crimes, and the progress of cases through the courts, it may be more difficult to count activity around crime prevention and the promotion of public safety.

In the New Zealand justice system, the split between the Police, Court and Corrections services may pose challenges to measuring whole of system outputs, yet the outputs of policing have a direct flow on effect to the activity of the courts and into the corrections system.

**Q19**

**What challenges are there to measuring productivity of the justice system, or the productivity of justice services? How can those challenges be overcome?**

## Social services

The terms of reference refer to both the “social support” sector and the “social development” sector but does not define these terms. For the purposes of the inquiry, the Commission proposes using the term social services to refer to state sector activities funded by Vote Social Housing; Vote Social Development; and Vote Vulnerable Children, Oranga Tamariki.

Social services provide a diverse range of services including:

- the assessment of entitlements and the payment of income support;
- care and protection of children and young people and the provision of adoption services;

- social housing assessment services;
- services to uphold the integrity of the welfare system;
- campaigns aimed at changing antisocial attitudes and behaviours;
- services supporting access to concessions and discounts for seniors, families and low-income New Zealanders;
- services aimed at preventing child vulnerability and reducing the likelihood of negative life outcomes; and
- youth justice services aimed at preventing children and young people from reoffending.

While some are transactional in nature with inputs and outputs easily defined, others are more complex, requiring services tailored to individual needs. Positive outcomes often hinge on intangible factors (inputs) such as trusted relationships between service providers and service recipients. Such factors are difficult to reflect in productivity estimates.

In many instances, people interacting with the social services have multiple inter-dependent needs that require a bundle of services drawn from different government agencies. There can be important synergies between these services – meaning that the quality of one service can impact the likelihood that other services will achieve their desired objectives.

**Q20**

**What challenges are there to measuring productivity of the social services system, or the productivity of particular social services? How can those challenges be overcome?**

## 5 Performance management in the state sector

The terms of reference for this inquiry require the Commission to provide advice on the role of efficiency measures in public sector performance management frameworks. There is a wide range of existing initiatives in place to measure and monitor performance and productivity in the state sector. In a 2008 report on the quality of performance reporting in New Zealand, the Auditor-General emphasised the need to consider how performance information is used.

In my view, there has not been enough debate about who information is for and how different audiences might obtain information relevant to their needs. Public entities need to explore the needs and interests of their different users, how these influence their use of performance reports, and how to provide reports to better meet different needs. (p. 18)

This chapter provides an outline of:

- the uses of performance information;
- public sector performance frameworks and recent performance initiatives; and
- performance frameworks within the core services that are the focus of this inquiry.

### The use of performance information

Most of the existing guidance on developing productivity measures for government activity is focused on improving the quality and completeness of National Accounts (eg, Atkinson, 2005 and Statistics New Zealand, 2010). National Accounts are important for understanding the performance of the economy in aggregate, and for informing macroeconomic decision-making. But this is a different purpose to providing Ministers with assurance, or providing agencies with incentives to improve performance. Understanding the different needs and perspectives of decision-makers is important to designing appropriate efficiency metrics that they can use for performance management/improvement.

Behn (2003) considered that there were eight managerial purposes for measuring performance, but that the first seven were subordinate to the eighth: performance improvement.

Whenever public managers use performance measures to evaluate, control, budget, motivate, promote, celebrate or learn, they do so only because these activities – they believe or hope – will help to improve the performance of government. (p. 600)

In a 2009 speech, the outgoing Auditor-General described the quality of non-financial performance reporting in the public sector as “crap”. He emphasised accountability as the primary purpose of such reporting:

Why does reporting matter? It is so basic and fundamental that it goes, at times, almost unstated – we are accountable because we use resources taken from people and impose restrictions on their actions by force of law. I don’t think there is a single person in this room



who would disagree that there is a moral duty on us all to use and account for our use of public resources and our exercise of powers as well as we can. (Brady, 2009)

**Q21**

**How are current performance indicators used in the state sector? Are performance indicators used for different purposes in different parts of the state sector? If so, what factors explain the different uses?**

## Users of performance information

The terms of reference for this inquiry require the commission to consider the perspectives, roles and needs of diverse public sector decision-makers, including Ministers, Chief Executives and managers.<sup>6</sup> The focus in the terms of reference is on the needs of decision-makers within the Executive, rather than on external stakeholders.

**Q22**

**What are the different needs of ministers, chief executives and managers in using productivity measures?**

## What determines the use of performance data?

The existence of performance indicators does not guarantee the indicators will influence decision-making. Gill (2011) points to longstanding concerns that performance information is not actually used by decision-makers, including Ministers.

The seeming irrelevance of much performance information for decision-makers seems to have contributed to a vicious cycle in which low-quality information results in limited use, which leads to the production of performance information becoming a low-priority compliance task for officials, which leads to a further devaluation of the performance information in the minds of users. (p. 3)

Kroll (2015) reviewed the literature around what drives the use of performance information. His study highlights the importance of six factors:

1. System maturity and sophistication: Managers are more likely to use performance information when performance systems go beyond simply collecting and reporting data. For instance, when there is a clear link between the indicator and the strategic goals of the organisation, when the measures address specific management challenges or when indicators are used to benchmark performance against similar organisations.
2. Stakeholder involvement: Stakeholders can encourage governments to take performance information seriously – adding political weight to the development and use of measures. If the community places weight on a performance measure, politicians are more likely to signal to managers the importance of being on top of their data and performance trends. Stakeholders can also help officials to interpret results.

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<sup>6</sup> These are not the only potential users of information about the productivity and performance of state services; Parliament, the media, and the public also use this information.

3. **Leadership support:** The actions of Ministers and agency leaders send powerful signals to officials about the importance they should place on performance indicators. If managers suspect Ministers and agency leaders are not placing importance on performance measures, then attention and effort will gravitate towards other more pressing problems and priorities.
4. **Supporting infrastructure:** Managers are more likely to use performance information when resources, capabilities and technology are made available to support the operation of the performance system. The availability of resources is also a strong signal of leaders support for the measure.
5. **Organisational and professional culture:** Performance information is more likely to be used in public sector workplaces with innovative or developmental cultures. Such cultures are open to change, value knowledge, and are willing to learn from mistakes. In these workplaces, officials view performance information as facilitating success through the provision of useful feedback. Further, an innovative culture can also promote data use because these cultures tend to emphasise dialogue and discussion rather reward and punishment. Consequently, performance information is less threatening to staff.
6. **Goal clarity:** Strong goal orientation influences the importance and use of performance information within an organisation. Where officials are clear about organisational goals, it is more likely that teams will regularly discuss progress towards achieving those goals – adding weight to performance information.

The Commission is interested in understanding the factors that may influence the use of efficiency measures. That is, assuming reliable measures can be developed, what factors would influence the use of the measures by decision makers within the state sector?

**Q23**

**Assuming reliable efficiency measures can be developed, what factors would influence the use of these measures by decision makers within the state sector? How could the use of efficiency measures be promoted?**

## Public sector performance frameworks

### Legislative reporting requirements

The legislative requirements for government departments to provide information about strategic intentions and report on their performance are set out in Public Finance Act 1989.

Section 38 of the Act requires departments to set out the strategic objectives that it intends to achieve or contribute to in the forthcoming financial year and at least the following three financial years. The *Statement of Intent* is the document currently used to present this information.

The information presented in a Statement of Intent should reflect the key decisions made by a department through its internal planning processes, taking account of the department's functions, operating environment and all relevant Government decisions. The process of developing a Statement of Intent should involve discussions between a department, its Responsible Minister, and the other Ministers and agencies with whom the department needs to collaborate. It should lead to understanding and buy-in to the department's plans, and ensure that the Government's interests and priorities are appropriately incorporated

into those plans. From a department's perspective, the Statement of Intent is one of the key external outputs of the planning cycle. (New Zealand Treasury, 2005, p. 59)

The information required on a department's future operating intentions falls into two broad categories:

- a longer-term set of information, covering at least three financial years into the future, that provides an explanation of what the department is trying to achieve, how it intends to achieve this, and how it will measure progress made (section 40), and
- an annual set of information, for the first financial year only, that provides more detailed performance information in the form of forecast financial statements and statements of forecast service performance, against which the department must report and be formally audited at the end of that financial year (section 41).

As soon as practicable after the end of each financial year, each department must prepare an Annual Report. The Annual Report provides a way for departments to explain their accomplishments and performance over the past year. In particular, the Annual Report must include an assessment of the department's performance against the intentions and measures set out in the Statement of Intent. The Annual Report must also include a statement of service performance that includes

- a description of each class of outputs supplied by the department;
- information on performance delivery in relation to each class of outputs (both forecast and actual); and
- revenue and expenses for each class of outputs (both forecast and actual).

## Other performance initiatives

Alongside the legislative planning and reporting framework are several other initiatives designed to improve state sector performance.

### Better Public Services

The Better Public Services initiative was launched in 2012, following the advice of the Better Public Services Advisory Group. Subsequently, in 2013 the government identified ten problems for the public sector to address over five years. For each problem, the cabinet chose a result (the desired outcome), a target (the degree of change to be achieved), and a measure (how that change would be assessed). The responsibility for each result spanned several agencies and required those agencies to work collaboratively. Ministers and public sector chief executives are responsible for the achievement of specific results, and for publicly reporting on progress at regular intervals (Scott and Boyd, 2017). In May 2017, the Government released a new set of 10 BPS targets. None of the BPS targets has an efficiency component.

### Functional leadership programme

Alongside the adoption of the ten BPS result areas, functional leadership roles were allocated to three chief executives to lift performance in ICT, procurement and property. Functional leadership aims to maximise benefits and reduce overall costs of common government business activities which may not be achieved by individual agencies. This includes benefits through scale economies, the development of expertise, and improved service delivery through sharing and coordinating activities.

## Performance improvement framework

The Performance Improvement Framework (PIF) was developed six years ago by a team from across the State services, including chief executives, to support continuous performance improvement across the State services. The PIF process employs external reviewers to investigate if an agency is fit for purpose and how well it is placed to respond to issues it is likely to confront in the short to medium term. The method of enquiry is qualitative, using a combination of desk-top analysis, one-on-one interviews, and focus groups. To date, every Public Service department and most major Crown Entities have had PIF Reviews, and many have had PIF Follow-up Reviews (State Services Commission, 2016).

## Benchmarking initiatives

Regular monitoring and reporting of government service and programme results has been acknowledged for some time as a key component of evidence-based public management and identification of opportunities for improved public sector performance (Wholey and Hatry, 1992).

There are numerous examples of benchmarking initiatives in New Zealand's core public services, such as health targets (discussed below), and reporting on the performance of government-funded tertiary education organisations published annually by the Tertiary Education Commission. New Zealand also participates in international comparative studies such as the OECD's *Education at a Glance*.

For the past six years Treasury has undertaken benchmarking of administrative and support services across the state sector. The benchmarking report provides information on the cost, efficiency and effectiveness of five administrative and support service functions: information and communications technology; corporate and executive services; human resources; finance; and procurement. An individual report for each participating agency is published annually along with consolidated results.

## Performance frameworks in core state sector services

### Health

#### System Level Measures Framework in the health system

System Level Measures (SLMs) are high level aspirational goals for the health system. They were designed to align with the New Zealand Health Strategy and other national strategic priorities such as Better Public Services targets. There are four SLMs that seek to promote better understanding and use of health information, engagement with people in the design and delivery of health services and better health investment in models of care based on local population needs (Ministry of Health, 2017).

#### District Health Board performance reporting

The Ministry of Health reports quarterly on progress towards achieving six health targets with each district health board. The results are published in a league-table format online and in major newspapers with each district health board ranked relative to the overall sector goal. The reporting has been in place for ten years.

#### Ministry of Health reporting

The Ministry of Health publishes a wide range of data and data reports on their website. This includes statistics on incidence of different types of cancer, emergency department admissions, publicly funded hospital discharges, and publicly-funded health services weighted by the

complexity of the case. Many of these statistics are available for specific DHBs, and can be sorted by demographic characteristics.

The Ministry of Health also publishes the results of their national health survey, which has been conducted periodically between 1992 and 2006, and every year since 2011. The 2015/16 survey collected information from 4 721 children aged 0–14 years, and 13 781 adults aged 15 years and over. The survey collects data (which can be sorted by age, deprivation index and ethnicity) for: self-rated health; tobacco and alcohol use; nutrition and physical activity; body size; cardiovascular health; mental health; primary health care use; barriers to accessing health care; patient experience; and oral health. Periodically, the Ministry of Health conducts more detailed surveys on specific health issues, such as amphetamine use, and nutrition.

### **Treasury analysis of district health board performance**

Treasury has compiled an overview of the financial and non-financial performance of district health boards using a series of indicators relating to financial management and efficiency; acute care; and primary and community care. Two productivity measures—the cost of case-weighted hospital discharges, and the average length of hospital stays—are included in the measure of financial management and efficiency (discussed above).

## **Education sector performance frameworks**

### **Education Review Office (ERO)**

ERO reviews all schools and early childhood education centres to establish how they reach “positive learning outcomes – knowledge, skills, attitude and habits – for all children and young people” (ERO, 2016). The reviews provide an overall assessment of how well placed schools/ECE centres are to promote positive learning outcomes, and this result determines the length of time before the next ERO review (between one and four years).

School reviews are based around a set of four outcome indicators and six process indicators, which focus on the capability of the school to deliver social, cultural and academic outcomes for students.

### **Ministry of Education reporting**

The Ministry of Education publishes a *School Sector Report* each year. The report contains:

- descriptive statistics about the compulsory schooling system;
- data on funding and expenditure;
- summarised results of specific teaching initiatives, eg, reading recovery;
- aggregate national standards results over the past three years for primary schools, by subject area, ethnicity and gender;
- aggregate NCEA results for secondary schools over the past five years, by subject area, ethnicity and gender;
- NCEA achievement rates for school leavers;
- measures of student engagement with learning, such as retention, attendance, stand-downs and suspensions; and
- data on teaching staff and professional development initiatives for teachers.

## School reporting requirements

School boards of trustees, as Crown entities, must meet the requirement in the Public Finance Act 1989 to prepare an annual report, including a statement of objectives specifying what the school will achieve over the ensuing year (boards have been granted an exemption from preparing a statement of service performance).

Along with their annual report, all schools must also submit annually to the Ministry of Education:

- a *charter*, which outlines the key aims and targets that the board will focus on in the coming year; and
- *analysis of variance*, which is a statement from the board about progress toward aims and targets in their charter. It should show parents, whānau and the community the actions taken to achieve aims and targets and how successful these actions have been for improving student achievement.

Primary schools (years one to eight) must also submit commentary on achievement data and school level data broken down by specific cohorts (National Administration Guidelines reporting).

## Justice sector

### Department of Corrections Prison Performance metrics

Department of Corrections grades the performance of all prisons within the Corrections network on a quarterly basis. There are two main categories of performance indicators, custodial performance and industry, treatment and learning performance.

- Custodial performance is based on results for core security (for example breakout escapes, escapes from escort and significant disorder events) and internal procedures (for example assaults on staff and prisoners, and the results of random drugs tests).
- Industry, treatment and learning performance is comprised of indicators that measure the delivery of programmes that provide offenders with the skills and opportunities that they need to take greater control of their lives. These include measures such as the percentage of prisoners completing a programme and hours spent in structured activity per prisoner.

On the basis of results in these two categories, each prison is graded as exceptional, exceeding, effective, or needs improvement. Under the most recent ratings nine prisons are exceptional, two are exceeding, five are effective, and none need improvement.

### Court system National Performance Measures

Performance information relating to the court system is published by the Ministry of Justice through their statutory reporting documents. The Ministry of Justice Statement of Intent includes numerous targets relating to the performance of the courts system. The targets focus on:

- increasing public satisfaction with the quality of courts and fines services;
- decreasing the average age of active cases in the Family Court and criminal trials in the District Court; and
- making it easier for people to gain information about courts services and facilities.

## Police

The New Zealand Police Annual Report sets out performance across seven output areas, such as investigations and road safety programme (New Zealand Police, 2016). For each area, output expenses are reported, along with results for a range of performance measures. Three different types of measures are included:

- *Quantity measures* – eg, the number of foot patrols; the number of non-criminal investigations relating to reports of missing persons; and the number of prisoners escorted and/or held in custody.
- *Quality measures* – eg, percentage of cases resolved by prosecution that are withdrawn/dismitted at defended hearing (judge alone trial) due to Police providing insufficient evidence; and percentage of licensed premises checks at risk times and locations.
- *Timeliness measures* – eg, percentage of 111 calls answered within 10 seconds; median response time to emergency events; and the percentage of people who have reported offences that are advised of results or updated on the investigation within 21 days of reporting that offence.

## Social sector

### Work and income services

The Ministry of Social Development is the lead agency for the BPS target to reduce unemployment (a 25% reduction in working-age client numbers from 295 000 in June 2014 to 220 000 in June 2018, and an accumulated actuarial release of \$13 billion by June 2018).

The main MSD budget appropriation relating to work and income services is “improved employment and social outcomes support”.

The single overarching purpose of this appropriation is to operate the benefit system and associated interventions in such a way as to improve client outcomes (employment and social) by moving them closer to independence, with a focus on those at risk of long term benefit receipt. (Ministry of Social Development, 2016)

Three main service outputs are included in the scope of this appropriation, each with quantitative performance targets that are reported against in MSD’s annual report (Table 5-1).

**Table 5-1 Performance metrics for improved employment and social outcomes**

Measure	2015/2016 Target	2015/2016 Result
<i>Administering Income Support</i>		
The proportion of benefit entitlement assessments completed accurately will be no less than	90%	90.1%
The proportion of benefit entitlement assessments completed within five working days will be no less than	90%	91.5%
<i>Improving Employment Outcomes</i>		
The proportion of clients with full-time work obligations who remain independent of benefit for at least 26 weeks will be no less than	60%	64.3%

Measure	2015/2016	2015/2016
	Target	Result
The proportion of clients with full-time work obligations who are engaged will be no less than	80%	89.1%
The proportion of clients who are not on a main benefit eight weeks following completion of an employment intervention will be no less than	50%	57.3%
<i>Improving Work Readiness Outcomes</i>		
The proportion of clients with part-time, preparation or deferred obligations who remain independent of benefit for at least 26 weeks will be no less than	60%	62.0%
The proportion of clients with part-time, preparation or deferred work obligations who are engaged will be no less than	70%	79.7%
The proportion of clients who are not on a main benefit 16 weeks after completing a work readiness intervention will be no less than	35%	38.7%

Source: Ministry of Social Development, 2016.

**Q24**

**Would measures of efficiency strengthen the existing performance framework? Why/why not? Which aspects of the existing performance framework would gain most from the inclusion of efficiency measures?**

**Q25**

**How could measures of efficiency augment existing performance measures?**



# 6 Supporting agencies to measure and improve productivity

The inquiry will explore the capability, culture and systems needed to:

- support agencies measuring and understanding productivity; and
- improve their productivity.

Measurement for its own sake has little point. Agencies need the capability to understand how to measure productivity and why. Their institutional framework will largely determine what gets measured and how it is used.

The terms of reference ask the Commission to consider New Zealand and international public and private sector best practice in understanding and improving productivity.

**Q26**

**What other countries have good processes in place to measure and improve state sector productivity?**

**Q27**

**What examples from the private sector illustrate best practice in understanding and improving productivity?**

## Agency capability to measure productivity

While the high-level concept of productivity is relatively straightforward, actually developing productivity estimates can be a difficult exercise. For instance, agencies must clarify the scope of analysis, decide whether to focus on value added or gross output, decide how to assign shared costs to individual activities, choose how to account for changes in service quality, and select the best deflator to adjust for inflation. Having completed the analysis, agencies need to interpret the result and diagnose issues on the basis of productivity estimates.

These tasks require technical skills, particularly in the areas of statistical analysis, financial management and economics. The Commission is interested in understanding the capability of agencies to undertake and interpret productivity estimates, and steps the government could take to help state sector organisations to measure and understand their productivity.

The OAG (2012) has recently expressed concerns about the quality of some aspects of central government financial management, noting that:

- Output specifications are often not linked with the planning and budgeting process.

- VFM [value for money] and cost-effectiveness projects are often set up as one-off initiatives rather than part of core (business as usual) accountabilities....
- Few CFOs and finance teams have the mandate, capability or capacity to carry out some more sophisticated financial management, such as cost-benefit analysis, VFM or efficiency assessments, process design, or re-engineering techniques....
- Few public entities seek to collect reliable data about how and where resources are used and the cost of the services delivered, meaning that VFM cannot be understood (pp. 27, 29, 31).

These shortcomings would also prevent agencies from undertaking even relatively straightforward productivity measurement.

**Q28**

**Does the capability exist within the state sector to measure and interpret productivity? Where is capability strong and weak?**

**Q29**

**What actions could the government take to help state sector organisations measure and understand their productivity?**

Effective systems and processes are required to support the regular and rigorous measurement of state sector productivity. For example, systems need to maintain the quality and reliability of data and to ensure consistent methodologies, definitions and assumptions are used when calculating productivity. Incentives to undertake productivity calculations may need strengthening, and processes for auditing agencies productivity estimates introduced.

In some cases, only minor changes to existing systems and processes may be required. In others, new systems and processes will be necessary. The Commission is interested in hearing submitter's views on the systems and processes needed to support regular and rigorous productivity measurement.

**Q30**

**What systems and processes would support the regular and rigorous measurement of productivity (at a sector and service level)?**

## Improving the productivity performance of the state sector

Improving measurement of public sector productivity should serve performance improvement; but measuring productivity better is not the same as improving productivity. The Commission is interested in understanding the track record of the New Zealand state sector in achieving productivity improvements, and any barriers or enablers to productivity improvement in public services.

Innovation is a key driver of productivity – both in the public and private sector. In the public sector, innovation involves creating, developing and implementing practical ideas that achieve a net public benefit (Mulgan, 2014).

The direct and indirect rewards/sanctions for success/failure may deter public sector innovation. Risk aversion is often suggested as a barrier to innovation in the public sector. Risk-aversion may arise because of the high levels of political and public scrutiny around public services, where tolerance for failure is low. It can also arise from cultural factors; productivity enhancing innovations often run counter to accepted practices and cultures, or may be seen as threatening to staff.

The Commission is interested in understanding the level of innovation within the state sector and the extent to which cultural factors (such as risk aversion) influence agency's willingness to experiment with new, potentially more efficient, ways of producing or delivering public services.

**Q31**

**How innovative are New Zealand's state sector agencies? What are the barriers to innovation in the state sector? What examples or case studies are there of successful attempts to change government processes to improve efficiency?**

New technology is often a source of productivity improvement. In particular, information and communication technology (ICT) can enable productivity improvement in the services sector, including government services. Yet in its inquiries into *Boosting services sector productivity* (2014) and *New models of tertiary education* (2017), the Commission found that ICT will only lead to significant productivity improvements where it is used to reshape business models, rather than grafted onto existing ways of doing things. Significant investment in ICT to reshape government services may be difficult because of risk aversion, and in particular because of some high profile government ICT projects that failed.

**Q32**

**How effective is the state sector in using ICT to realise productivity improvements? What are the barriers to government doing this well?**

In the private sector, firm entry and exit is an important driver of productivity improvement. Less efficient firms are competed out by more efficient firms, and overall productivity increases. This doesn't happen in the public sector, although government agencies can attempt to gain some of these benefits through contracting. This absence of competitive pressure may reduce incentives to seek efficiencies.

Another difference between the public and private sector is the absence of a profit motive. Private firms have the opportunity to increase profits from efficiency gains, which provides a strong incentive to improve productivity. In the public sector, agencies could reinvest efficiency gains in additional public services. But in practice, any gains may be returned to the centre rather than retained for reinvestment.

**Q33**

**What are the incentives that encourage and discourage productivity improvement in the state sector?**

**Q34**

**How do public sector cultures support or discourage efforts to improve productivity in the state sector?**

Because of the need to rigorously and transparently account for public expenditure, state sector agencies typically have less flexibility in redirecting expenditure than private organisations do. New Zealand's public finance system has a comparatively large number of detailed appropriations compared to other countries. This may inhibit the ability of agencies to redirect expenditure to more efficient ways of delivering outputs, or mean that these decisions are taken through a political process.

**Q35**

**Does the public finance management system inhibit agencies from redirecting their activity to more productive ways of delivering public services?**

**Q36**

**What other barriers are there to government agencies taking steps to improve the efficiency of their operations?**

# Summary of questions

**Q1**

Which types of government services most readily lend themselves to the direct measurement of outputs? Which services don't lend themselves to this?

**Q2**

What progress has been made in implementing the recommendations of Statistics New Zealand's 2010 report, *Measuring government sector productivity in New Zealand: a feasibility study*?

**Q3**

Which, if any, of the recommendations in Statistics New Zealand's 2010 feasibility study should the Commission re-examine?

**Q4**

What do government agencies currently do to measure their productivity? How do government agencies use productivity measurement to improve the productivity of core services?

**Q5**

How should the selection of outputs differ for different users of productivity data (Ministers, Chief Executives and managers)? What principles should guide these decisions?

**Q6**

Are there instances where a subset of core outputs would provide a reasonable indicator of the efficiency of a state sector organisation or programme? For what services or organisations is this most likely to be the case?

**Q7**

Should the Commission explore willingness-to-pay methodologies further for the purpose of valuing government non-market outputs? Are there any other viable alternatives to cost-weighting as a way of valuing and aggregating public sector outputs?

**Q8**

For which services would it be reasonable to assume quality remains unchanged over time?

**Q9**

What services need to be quality adjusted? What indicators of quality should be used for the different state sector services?

**Q10**

Is case mix adjustment of productivity measures feasible in state services other than for the outputs of hospitals?

- Q11** How should the Commission think about developing productivity measures in areas of the state sector where services are collectively consumed?
- Q12** How well are agencies and service providers (eg, schools, DHBs) able to cost their activity at an output level?
- Q13** How good are government agencies at “activity-based costing”? How well do they understand “cost-to-serve”? What are the barriers to agencies doing this well?
- Q14** How well do agencies’ financial management systems line up with their outputs?
- Q15** For which state services are co-payments most common? For these services, does good data exist on the share of cost covered by co-payments? How should the Commission take co-payments into account when developing productivity measures?
- Q16** What public sectors/services should the Commission focus on as case studies for developing productivity measures? Why?
- Q17** What challenges are there to measuring productivity of the health system, or the productivity of health services? How can those challenges be overcome?
- Q18** What challenges are there to measuring productivity of the education system, or the productivity of education services? How can those challenges be overcome?
- Q19** What challenges are there to measuring productivity of the justice system, or the productivity of justice services? How can those challenges be overcome?
- Q20** What challenges are there to measuring productivity of the social services system, or the productivity of particular social services? How can those challenges be overcome?
- Q21** How are current performance indicators used in the state sector? Are performance indicators used for different purposes in different parts of the state sector? If so, what factors explain the different uses?
- Q22** What are the different needs of ministers, chief executives and managers in using productivity measures?

- Q23** Assuming reliable efficiency measures can be developed, what factors would influence the use of these measures by decision makers within the state sector? How could the use of efficiency measures be promoted?
- Q24** Would measures of efficiency strengthen the existing performance framework? Why/why not? Which aspects of the existing performance framework would gain most from the inclusion of efficiency measures?
- Q25** How could measures of efficiency augment existing performance measures?
- Q26** What other countries have good processes in place to measure and improve state sector productivity?
- Q27** What examples from the private sector illustrate best practice in understanding and improving productivity?
- Q28** Does the capability exist within the state sector to measure and interpret productivity? Where is capability strong and weak?
- Q29** What actions could the government take to help state sector organisations measure and understand their productivity?
- Q30** What systems and processes would support the regular and rigorous measurement of productivity (at a sector and service level)?
- Q31** How innovative are New Zealand's state sector agencies? What are the barriers to innovation in the state sector? What examples or case studies are there of successful attempts to change government processes to improve efficiency?
- Q32** How effective is the state sector in using ICT to realise productivity improvements? What are the barriers to government doing this well?
- Q33** What are the incentives that encourage and discourage productivity improvement in the state sector?
- Q34** How do public sector cultures support or discourage efforts to improve productivity in the state sector?

**Q35**

**Does the public finance management system inhibit agencies from redirecting their activity to more productive ways of delivering public services?**

**Q36**

**What other barriers are there to government agencies taking steps to improve the efficiency of their operations?**



# References

- Atkinson, T. (2005). *Atkinson Review: Final report. Measurement of Government Output and Productivity for the National Accounts*. Retrieved 7 July 2017 from [www.ons.gov.uk/ons/guide-method/method.../atkinson-review-final-report.pdf](http://www.ons.gov.uk/ons/guide-method/method.../atkinson-review-final-report.pdf)
- Behn, R. (2003). Why Measure Performance? Different Purposes Require Different Measures. *Public Administration Review*, 63(5), 586–606.
- Boser, U. (2014). *Return on Educational Investment 2014. A district-by-district evaluation of U.S. educational productivity*. Retrieved 8 June 2017 from <https://cdn.americanprogress.org/wp-content/uploads/2014/07/ROI-report.pdf>
- Brady, K. (2009). *What is the state of public sector reporting, and what is it saying about public sector management?* Retrieved 3 July 2017 from <http://oag.govt.nz/speeches-and-papers/state-of-public-sector-reporting>
- Clough, P., Guria, J., and Bealing, M. (2015). Approaches to valuing injury and mortality risk in transport assessments. *New Zealand Transport Agency research report 571*. Retrieved 5 July 2017 from [www.nzta.govt.nz/assets/resources/research/reports/571/docs/571.pdf](http://www.nzta.govt.nz/assets/resources/research/reports/571/docs/571.pdf)
- Conway, P. and Meehan, L. (2013). *Productivity by the numbers: The New Zealand experience*. Retrieved 10 July 2017 from [www.productivity.govt.nz/research-paper/productivity-by-the-numbers-the-new-zealand-experience](http://www.productivity.govt.nz/research-paper/productivity-by-the-numbers-the-new-zealand-experience)
- Conway, P. (2016). *Achieving New Zealand's productivity potential*. Retrieved 10 July 2017 from [www.productivity.govt.nz/research-paper/achieving-new-zealands-productivity-potential](http://www.productivity.govt.nz/research-paper/achieving-new-zealands-productivity-potential)
- Dangerfield, G. (1998). *Estimating the Cost of Capital for Crown Entities and State-Owned Enterprises*. Retrieved 10 July 2017 from [www.treasury.govt.nz/publications/guidance/reporting/costcapital/costcapital-oct97.pdf](http://www.treasury.govt.nz/publications/guidance/reporting/costcapital/costcapital-oct97.pdf)
- Dunleavy, P. and Carrera, P. (2013). *Growing the productivity of government services*. Cheltenham, United Kingdom: Edward Elgar.
- Dunleavy, P. (2016). *Public Sector Productivity – Measurement Challenges, Performance Information and Prospects for Improvement*. Paper to the Annual Meeting of the OECD Senior Budget Officers' Network OECD, Paris, 24–25 November 2016.
- ERO (Education Review Office). (2016). *About ERO reviews*. Retrieved 10 July 2017 from [www.ero.govt.nz/how-ero-reviews/information-for-parents/](http://www.ero.govt.nz/how-ero-reviews/information-for-parents/)
- Gemmell, N., Nolan, P., and Scobie, G. (2017). *Public sector productivity. Quality adjusting sector-level data on New Zealand schools*. Retrieved 10 July 2017 from [www.productivity.govt.nz/sites/default/files/170515%20FINAL%20Public%20Sector%20Productivity%20School%20Quality%20Adjustment.pdf](http://www.productivity.govt.nz/sites/default/files/170515%20FINAL%20Public%20Sector%20Productivity%20School%20Quality%20Adjustment.pdf)

- Gill, D. (2011). Introduction, in Gill, D. (ed.), *The Iron Cage Recreated. The Performance Management of State Organisations in New Zealand*. Wellington: Institute of Policy Studies.
- Gregory, R. (1995). The peculiar tasks of public management: Toward conceptual discrimination. *Australian Journal of Public Administration*, 54(2), 171–183.
- Hammit, J. (2002). QALYs Versus WTP. *Risk Analysis*, 22(5), 985–1001.
- Hanushek, E. and Ettema, E. (2015). *Defining Productivity in Education: Issues and Illustrations*. Retrieved 8 June 2017 from <http://hanushek.stanford.edu/sites/default/files/publications/Hanushek%2BEttema%20Productivity.pdf>
- Kroll, A. (2015). Drivers of performance information use: Systematic literature review and directions for future research. *Public Performance & Management Review*, 38(3), 459–486.
- McKinsey. (2017). *Government Productivity: Unlocking the \$3.5 Trillion Opportunity*. Retrieved 7 June 2017 from [www.mckinsey.com/industries/public-sector/our-insights/the-opportunity-in-government-productivity](http://www.mckinsey.com/industries/public-sector/our-insights/the-opportunity-in-government-productivity)
- Ministry of Education. (2016). *New Zealand Schools Ngā Kura o Aotearoa 2015*. Retrieved 7 July 2017 from [www.educationcounts.govt.nz/\\_data/assets/pdf\\_file/0012/176889/New-Zealand-schools-2015.pdf](http://www.educationcounts.govt.nz/_data/assets/pdf_file/0012/176889/New-Zealand-schools-2015.pdf)
- Ministry of Education. (2017). *The New Zealand Curriculum*. Retrieved 7 June 2017 from <http://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum#collapsible9>
- Ministry of Health. (2017). *System Level Measures Framework questions and answers*. Retrieved 9 May 2017 from [www.health.govt.nz/new-zealand-health-system/system-level-measures-framework/system-level-measures-framework-questions-and-answers#18](http://www.health.govt.nz/new-zealand-health-system/system-level-measures-framework/system-level-measures-framework-questions-and-answers#18)
- Ministry of Justice. (2015). *Statement of Intent, 2015–2019*. Retrieved 12 June 2017 from [www.justice.govt.nz/assets/Documents/Publications/2015-19-moj-statement-of-intent.pdf](http://www.justice.govt.nz/assets/Documents/Publications/2015-19-moj-statement-of-intent.pdf)
- Ministry of Social Development. (2016). *Annual Report, 2015/2016*. Retrieved 18 May 2017 from [www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/corporate/annual-report/2015-2016/annual-report-2015-2016.pdf](http://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/corporate/annual-report/2015-2016/annual-report-2015-2016.pdf)
- Mulgan, G. (2014). *Innovation in the Public Sector. How can public institutions better create, improve and adapt?* Retrieved 2 July 2017 from [www.nesta.org.uk/sites/default/files/innovation\\_in\\_the\\_public\\_sector\\_-\\_how\\_can\\_public\\_organisations\\_better\\_create\\_improve\\_and\\_adapt.pdf](http://www.nesta.org.uk/sites/default/files/innovation_in_the_public_sector_-_how_can_public_organisations_better_create_improve_and_adapt.pdf)
- New Zealand Police. (2014). *Policing Excellence. The Transformation of New Zealand Police 2009–2014*. Retrieved 4 July 2017 from [www.police.govt.nz/sites/default/files/publications/policing-excellence-closure.pdf](http://www.police.govt.nz/sites/default/files/publications/policing-excellence-closure.pdf)
- New Zealand Police. (2016). *Annual Report 2015/2016*. Retrieved 10 July 2017 from [www.police.govt.nz/sites/default/files/publications/plc448\\_ann\\_rep\\_web.pdf](http://www.police.govt.nz/sites/default/files/publications/plc448_ann_rep_web.pdf)

- New Zealand Productivity Commission. (2017). *New models of tertiary education*. Retrieved 21 June 2017 from [www.productivity.govt.nz/inquiry-content/2683?stage=4](http://www.productivity.govt.nz/inquiry-content/2683?stage=4)
- New Zealand Productivity Commission. (2015). *More effective social services*. Retrieved 7 June 2017 from [www.productivity.govt.nz/inquiry-content/2032?stage=4](http://www.productivity.govt.nz/inquiry-content/2032?stage=4)
- New Zealand Treasury. (2005). *A Guide to the Public Finance Act*. Retrieved 9 May 2017 from [www.treasury.govt.nz/publications/guidance/publicfinance/pfaguide/guide-pfa.pdf](http://www.treasury.govt.nz/publications/guidance/publicfinance/pfaguide/guide-pfa.pdf)
- New Zealand Treasury. (2016). *Analysis of District Health Board Performance to 30 June 2015*. Retrieved 12 June 2017 from [www.treasury.govt.nz/publications/informationreleases/health/dhb-performance](http://www.treasury.govt.nz/publications/informationreleases/health/dhb-performance)
- New Zealand Treasury. (2017a). *District Health Board Financial Performance to 2016 and 2017 Plans*. Retrieved 12 June 2017 from [www.treasury.govt.nz/publications/informationreleases/health/dhb-performance](http://www.treasury.govt.nz/publications/informationreleases/health/dhb-performance)
- New Zealand Treasury. (2017b). *The Estimates of Appropriations for the Government of New Zealand for the Year Ending 30 June 2018*. Retrieved 10 July 2017 from [www.treasury.govt.nz/budget/2017/estimates](http://www.treasury.govt.nz/budget/2017/estimates)
- OAG (Office of the Auditor General). (2008). *The Auditor-General's observations on the quality of performance reporting*. Retrieved 4 July 2017 from [www.oag.govt.nz/2008/performance-reporting/docs/performance-reporting.pdf](http://www.oag.govt.nz/2008/performance-reporting/docs/performance-reporting.pdf)
- OAG (Office of the Auditor General). (2012). *Reviewing financial management in central government*. Retrieved 4 July 2017 from [www.oag.govt.nz/2012/financial-management/docs/financial-management.pdf](http://www.oag.govt.nz/2012/financial-management/docs/financial-management.pdf)
- OECD. (2012). *Does money buy strong performance in PISA?* Retrieved 10 July 2017 from [www.oecd.org/pisa/pisaproducts/pisainfocus/49685503.pdf](http://www.oecd.org/pisa/pisaproducts/pisainfocus/49685503.pdf)
- Pharmac. (2012). *Cost-utility analysis (CUA) explained*. Retrieved 5 July 2017 from [www.pharmac.govt.nz/assets/economic-assessment-guide.pdf](http://www.pharmac.govt.nz/assets/economic-assessment-guide.pdf)
- Schreyer, P. (2010). *Toward measuring the volume of output in health and education services: A handbook*. OECD Statistics Working Papers 2010/02, Paris. Retrieved from <http://dx.doi.org/10.1787/5kmd34g1zk9x-en>
- Scott, R. and Boyd, R. (2017). *Interagency Performance Targets, A Case Study of New Zealand's Results Programme*. Retrieved 4 May 2017 from <https://ssc.govt.nz/sites/all/files/Case-Study-Interagency-Performance-Targets-IBMCCAG-2017.pdf>
- State Services Commission and New Zealand Treasury. (2008). *Performance Measurement. Advice and examples on how to develop effective frameworks*. Retrieved 7 July 2017 from [www.ssc.govt.nz/upload/downloadable\\_files/performance-measurement.pdf](http://www.ssc.govt.nz/upload/downloadable_files/performance-measurement.pdf)
- State Services Commission. (2014). *What is the 'public sector'?* Retrieved 5 May 2017 from [www.ssc.govt.nz/what-is-the-public-sector](http://www.ssc.govt.nz/what-is-the-public-sector)
- State Services Commission. (2016). *Performance Improvement Framework. How does PIF fit with other business improvement tools?* Retrieved 10 July 2017 from

[www.ssc.govt.nz/sites/all/files/How%20does%20PIF%20fit%20with%20other%20business%20improvement%20tools\\_0.pdf](http://www.ssc.govt.nz/sites/all/files/How%20does%20PIF%20fit%20with%20other%20business%20improvement%20tools_0.pdf)

Statistics New Zealand. (2010). *Measuring government sector productivity in New Zealand: a feasibility study*. Retrieved 9 June 2017 from [www.stats.govt.nz/browse\\_for\\_stats/economic\\_indicators/productivity/measuring-govt-productivity.aspx](http://www.stats.govt.nz/browse_for_stats/economic_indicators/productivity/measuring-govt-productivity.aspx)

Statistics New Zealand. (2013). *Education and health industry productivity, 1996–2011*. Retrieved 9 June 2017 from [www.stats.govt.nz/browse\\_for\\_stats/economic\\_indicators/productivity/education-health-industry-productivity-1996-2011.aspx](http://www.stats.govt.nz/browse_for_stats/economic_indicators/productivity/education-health-industry-productivity-1996-2011.aspx)

Statistics New Zealand. (2015). *National Accounts (Industry Benchmarks): Year ended March 2013*. Retrieved 1 May 2017 from [www.stats.govt.nz/browse\\_for\\_stats/economic\\_indicators/NationalAccounts/NationalAccountsIndustryBenchmarks\\_HOTPYeMar13.aspx](http://www.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/NationalAccountsIndustryBenchmarks_HOTPYeMar13.aspx)

Statistics New Zealand. (2017). *Productivity Statistics: 1978–2016*. Retrieved 9 June 2017 from [www.stats.govt.nz/browse\\_for\\_stats/economic\\_indicators/productivity/ProductivityStatistics\\_HOTP78-16.aspx](http://www.stats.govt.nz/browse_for_stats/economic_indicators/productivity/ProductivityStatistics_HOTP78-16.aspx)  
[www.stats.govt.nz/browse\\_for\\_stats/economic\\_indicators/NationalAccounts/NationalAccountsIndustryBenchmarks\\_HOTPYeMar13.aspx](http://www.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/NationalAccountsIndustryBenchmarks_HOTPYeMar13.aspx)

van Kesteren, M. (2014). *Activity-Based Costing and Inter-District Flows in the New Zealand Public Health Sector*. A thesis submitted to Victoria University of Wellington in fulfilment of the requirements for the degree of Master of Commerce, Victoria University of Wellington.

Wholey, J. and Hatry, H. (1992). The case for performance monitoring. *Public Administration Review*, 52(6), 604–10.

Wilson, J. Q. (1989). *Bureaucracy: What government agencies do and why they do it*. New York, NY: Basic Books, Inc.

# Terms of reference

Issued by the Minister of Finance (the “referring Minister”). Pursuant to sections 9 and 11 of the New Zealand Productivity Commission Act 2010, I hereby request that the New Zealand Productivity Commission (“the Commission”) undertake an inquiry into how the New Zealand State sector can effectively measure and improve productivity in core public services, with a particular focus on health, education, justice and social support.

## Context

Improving the productivity of the state sector, the value we are realising from our resources, helps improve the prosperity of the country, and allows for better outcomes to be achieved from scarce tax payer resource.

Recent progress has been made in improving value across the different dimensions of value for money performance. The Better Public Services Results determine priority areas for improvement. Social Investment and other effectiveness work is getting better at identifying where to invest and tracking what the impact of investment is.

A third dimension of performance is efficiency/productivity. For many of the core public services that constitute a large proportion of existing expenditure, there are still opportunities to better understand efficiency and how to optimise inputs/resources in delivering quality products and services. Current gaps in good measures of productivity limit assurance Ministers have on performance and innovation of current delivery models, and Chief Executives ability to understand and improve their business. It also suggests an opportunity to achieve more from current resources, and better engage the State sector workforces on opportunities to do things better.

Public services are often complex covering a range of services, clients, and different mechanisms to achieve a range of desired outcomes. This can make it more difficult than private sector industries to capture performance, and to take actions to improve it. Internationally, there are few common productivity measures that capture quality dimensions in key sectors like education and health. But, there are lessons on how to better understand dimensions like quality in inputs and outputs, leverage innovation and economies of scale, and improve productivity and efficiency in the public sector.

## Scope

The Productivity Commission (the Commission) is to consider New Zealand and international public and private sector best practice in understanding and improving productivity. This should focus on the narrower definition of productivity as how efficiently inputs/resources are being utilised to generate quality outputs/services.

The Commission should take account of broader definitions of performance and productivity, in considering how to capture elements like quality, and how efficiency measures can complement dimensions like effectiveness. However, the Commission should not focus advice on the contribution of services to longer-term outcomes, prioritisation of interventions, or other

performance dimensions already being developed through social investment or other work programmes.

The inquiry should focus on developing practical guidance and recommendations that consider perspectives and roles of different state sector decision-makers such as Ministers, Chief Executives, and managers, and how these different needs can be balanced.

The inquiry is to focus on guidance that is relevant to decision-makers across the “core” services in the health, education, justice and social development sectors, such as: teaching, hospitals and primary healthcare, policing, courts, corrections, and work and income services.

Having regard to the above, the Commission should undertake an inquiry that considers and provides advice on:

- a) How to measure efficiency/productivity in each of the identified core public service sectors: health, education, justice, social support. This should focus on meso (sector) and micro (function or service) level measures. Guidance should consider key measurement and accuracy issues, and how imperfect measures are most appropriately and usefully employed.
- b) The appropriate role of identified efficiency/productivity measures in public sector performance frameworks, with the goal of improving assurance to Ministers and incentives on agencies for improvement. This should draw on theory and evidence of incentive and disincentive effects of measurement and other performance approaches on different workforces.
- c) Developing the capability, culture and systems that can support agencies to better measure, understand and improve productivity.

The Commission should prioritise its effort by using its judgement as to the degree of depth and sophistication of analysis it applies to satisfy each part of the Terms of Reference; and to the degree of depth in each specific sector, while providing advice on best measures in the identified sectors.

### **Exclusions**

The Commission should not carry out in depth analysis or provide detailed recommendations on specific policies relating to service access or provision in sectors.

The Commission should not duplicate work on issues like where to invest, or service effectiveness, being developed as part of the social investment approach.

### **Consultation requirements**

In undertaking this inquiry the Commission should consult with key interest groups and affected parties relevant to the identified sectors and particular services where efficiency measures are identified. Consultation should include public sector agencies, those in receipt of public services, and private sector agents who may have relevant insights.

**Timeframe**

The Commission must publish a draft report and/or discussion document, for public comment, followed by a final report that must be presented to the Minister of Finance as Referring Minister by 30 August 2018.





NEW ZEALAND  
PRODUCTIVITY COMMISSION  
Te Kōmihana Whai Hua o Aotearoa

