

Productivity measurement case study: Ministry of Social Development

Research Note 2017/07

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Te Kōmihana Whai Hua o Aotearoa¹

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Abstract

The Productivity Commission worked with the Ministry of Social Development (MSD) to develop a simple productivity measure for income support benefit application processes. It uses MSD's individualised Cost Allocation Model (iCAM). The iCAM uses existing administrative data to calculate staff time on frontline case management activities using information from various client management IT systems, estimating direct staff costs, other input costs and a contribution towards overheads.

This case study compares client applications for four main benefit types: jobseeker support, sole parent support, supported living payment and retired (comprising New Zealand Superannuation and Veterans benefits). The Commission has also calculated measures for processing second and third tier benefit applications, such as accommodation supplements, disability allowances, and temporary grants.

This analysis could be expanded to measure productivity of other activity groups, such as payments, suspensions, cancellations and transfers. It could also be expanded to analyse productivity in delivering services for specific groups of clients – a “cost to serve” analysis.

Further analysis would be required to understand how to interpret these measures, before they could be used for operational purposes. However, this case study demonstrates one way that routinely collected data can be used as an input into the development of productivity measures in a service of a transactional nature. It also confirms the usefulness of MSD's iCAM as a tool.

Box 1 **Productivity measurement case studies**

This case study supplements the New Zealand Productivity Commission's draft inquiry report *Measuring and improving state sector productivity*. The terms of reference for the inquiry ask the Productivity Commission to provide guidance and recommendations on:

- how to measure productivity in “core” public services (health, education, justice, social support) at the sector and service level;
- what role productivity measures should play in public sector performance frameworks; and
- how to develop the culture, capability and systems needed within government agencies to measure, understand and improve productivity.

This paper is one of a series of case studies illustrating how to measure state sector productivity and how to overcome measurement difficulties. The Commission's website provides access to the full suite of case studies.

Readers should not view any of the case studies as a definitive description of productivity in the relevant state sector agency. Rather, the case studies aim to demonstrate different aspects of productivity measurement. The Commission hopes the results of the studies will stimulate further discussion about what is driving the identified productivity trends, how productivity measurement could be improved, and how productivity measures could be incorporated into the wider performance frameworks of state sector organisations.

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1 Using MSD's Individual Cost Allocation Model (iCAM) to measure productivity

1.1 Introduction

This case study considers how the Ministry of Social Development (MSD) could develop productivity measures for their income support services, using work they have already done to build an Individual Cost Allocation Model (iCAM)². It also considers options for further work to develop more accurate and useful productivity measures for MSD using the iCAM, and potential "next steps" for MSD to develop the iCAM itself.

This case study provides an example of how productivity could be measured in government services of a more transactional³ nature, using data that is already collected for administrative 'business' purposes. Therefore, it is relevant both to the issues involved in measuring services of a transactional nature, and those involved in the 'reuse' of administrative data for secondary purposes.

The measures developed in this case study are intended to demonstrate measurement methods, and are not designed to be used as performance measures and would need further refinement and interpretation to be able to be used for operational decision making.

1.2 MSD's individual Cost Allocation Model (iCAM)

MSD has developed (and is continuing to build on) an individualised Cost Allocation Model (iCAM). Its goal is to help MSD to better understand where their costs fall, the nature of their client needs and the effectiveness of their services to meet those needs.⁴

Why the iCAM was developed

The iCAM was developed as part of wider work to improve MSD's assessment of the costs and benefits of different decisions. This supports MSD to take an investment approach, which has included modelling future costs (of MSD services) for the people in MSD's current client base. It is intended to help MSD to understand trends in the efficiency and cost effectiveness of MSD services and how well these services are targeting different groups of clients. In other words, to identify which cohorts of people are most likely to gain the most benefit from which services.

MSD states that the purpose of the iCAM model is to support them to make decisions in the following areas:

- **Cost effectiveness:** to accurately estimate the costs of programmes and services
- **Targeting assistance:** to enable the Service Delivery Group to better identify which groups of clients they are investing in
- **Efficiency:** to track and assess the efficiency of delivering individual outputs (iMSD 2017b)

Because the raw data in MSDs iCAM is based on time estimates derived from MSD's administrative data transaction history it is not subject to any gaming or manipulation. Neither does it create 'extra work' or load extra compliance activity onto front-line staff in terms of reporting requirements.

² This case study is focussed on potential uses for the iCAM as a tool, it does not examine other ways MSD might be measuring productivity. For example, the Commission has been informed that some efficiency measures such as appointments per case manager and calls per person in the call centre, are reported on at the local level.

³ Transactional services are discussed in more detail in Chapter 3 of the New Zealand Productivity Commission's draft inquiry report [Measuring and improving state sector productivity](#)

⁴ The iCAM model needs to be distinguished from MSDs finance Cost Allocation Model, which allocates costs at an aggregate level, to help MSD make decisions about future budget allocations for service lines and specific interventions (p. 9, iMSDb 2017).

How the iCAM was built and what it comprises

The iCAM uses activity information from MSDs administrative datasets to estimate how much time front line case management staff are spending on each of a range of different (computer-based) activities. It records the time staff spend on each screen in the various case management IT systems by recording the time each system action is completed and comparing it with the time the next action is completed. To this is added estimates of other costs, such as staff time that is not allocated to an activity (either doing non-computer based work or taking breaks) and indirect costs such as overheads and corporate support.

Costs (including overheads) are broken-down into specified individual service outputs or activities (for example, applications for a benefit, use of an employment service, benefit payment etc.). The assignment of costs to individual components is at the core of the model, with the total cost of each service output being built up from a set of cost components – specific tasks involved in delivering a service. For example a wage subsidy placement would include five components: referral, vacancy placement, subsidy amount, subsidy administration and overhead (iMSD 2017b).

Table 1 provides some examples of how MSD calculates costs associated with each of their activities (or components of outputs). For example, MSD uses the amount of staff time spent on benefit administration to then apportion labour and other costs to this activity.

Table 1 Example service delivery cost components

Component	Definition	Metric
Appointment	Scheduling an appointment with a client	Staff time
Benefit administration	Assessing and maintaining entitlement to income support assistance	Staff time
Benefit payments	Bank fees for payment of income support benefits	Pay weeks
Client contact	Contact with clients to help them plan and move into employment or updating their records	Staff time
Seminar	Staff time in administering and running seminars	Staff time
Overhead costs	IT, corporate services, property, and support staff costs	Departmental cost of each output

Source: iMSD 2017b

The most robust data in the iCAM goes back to the 2010/2011 financial year. Earlier data is difficult to compare due to service and IT changes that have occurred and the limitations of the coding.

By allocating this input based expenditure to different outputs using the iCAM model, MSD is able to produce a picture of how their spending is allocated at the individual client and staff output level. This can be a basis for developing a number of productivity measures.

1.3 How the iCAM Model is currently used

The iCAM data-set is still at an experimental stage, and its parts are constantly being built on as time and resources allow. Despite this, it is already being used inside MSD, and potential options for wider use are being tested. Two examples of how the iCAM is currently being used inside MSD are to:

- assess the cost of MSD's employment assistance services (e.g. work training programmes, work focussed case management etc.); and
- gain a better region-level and site-level understanding of the type of activities case managers are undertaking and how their time is divided across these different types of activities.

These two existing uses of the iCAM are described briefly below.

Assessing the cost of MSD's employment assistance programmes

The iCAM was used for the first time in 2017 to calculate the full costs of MSD's employment assistance interventions, more accurately than has been done in the past. The employment services included in the analysis covered programmes and services that are directly delivered by MSD, and those that are purchased from external service providers.

This work is summarised in MSD's recent report on the *Effectiveness of MSD employment assistance* (September 2017). The report is essentially an evaluation of employment services. It aims to help MSD understand which of its employment interventions are effective, promising, mixed, neutral or negative, in terms of achieving three key organisational outcomes, as follows:

- increased employment;
- increased income; and
- independence from welfare.

The report has been produced previously, but 2017 was the first year the iCAM was used to attach costings to the services covered. Having accurate costings allows MSD to identify how much of its employment assistance funding is directed to the activities they know are effective in the outcome domains above.

This also means the iCAM model can identify much more accurately whether projected gains exceed programme and service costs. This makes it a useful input to MSD's service evaluation and targeting. It can also support decisions about budget allocations to service lines and programme interventions.

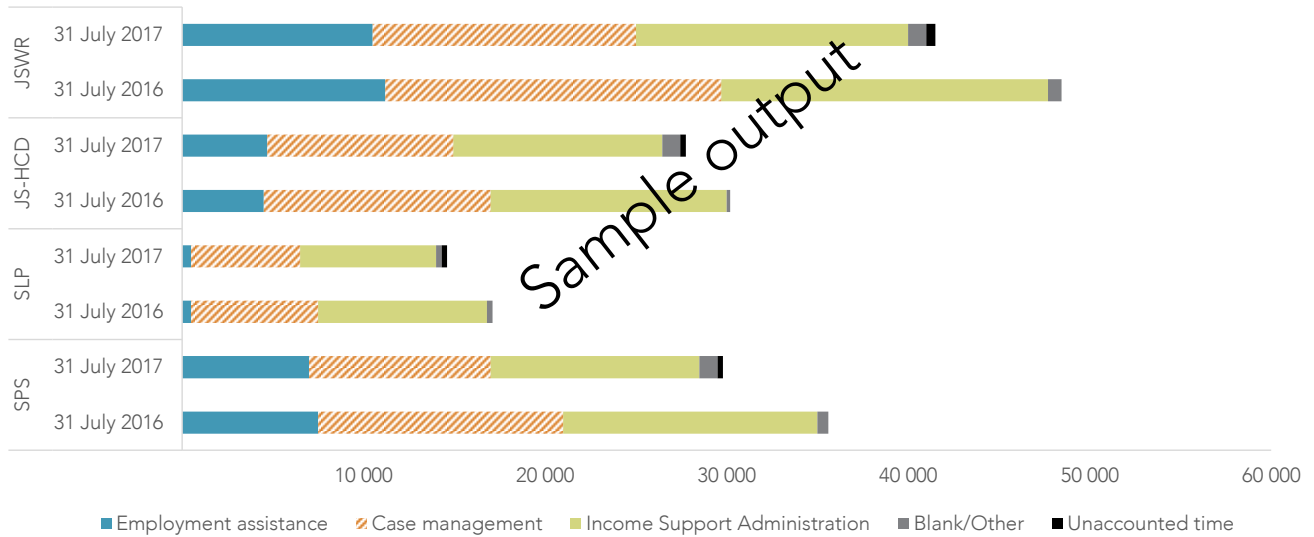
Using the iCAM to help MSD regions understand labour productivity

Work is underway inside MSD's Service Delivery Group to use the iCAM data to look more closely at how staff time is being used in front line services. This work is still in early stages, but it could allow for comparisons over time, or across regions, sites, service types and client types (or benefit types). This type of analysis focusses more on labour productivity which is only one part of the productivity picture.

MSD has begun using data drawn from the iCAM to understand better the types of activities case managers are undertaking with clients, and the amount of time spent on these activities.

Figure 1 below contains a sample output view of case management activity that can be generated from iCAM data. MSD is currently working to refine these views from the iCAM data so that accurate time and activity reporting can be disseminated to key stakeholders within the Service Delivery Group, including the Service Delivery Performance Committee, Regional Commissioners, Regional Directors and regional level Business Analysts.

Figure 1 MSD client time spent with case managers by client type (hours): 2016–2017



Source: Provided by the Ministry of Social Development.

Notes:

1. In the chart above “Client type” refers to the type of benefit the client receives, as follows: Jobseeker Support, Work Ready (JSWR); Jobseeker Support, Health and Disability (JSHCD); Supported Living Payment (SLP); Sole Parent Support (SPS).

MSD is also exploring how the iCAM might eventually be able to be used to monitor or measure the impact of changes to service provision and the efficiency of different service channels. Examples of this are the “Simplification” work programme (described in Chapter 8 of the New Zealand Productivity Commission’s draft inquiry report *Measuring and improving state sector productivity*).

Performance metrics currently used by MSD

While tracking efficiency is stated as one of the iCAM’s purposes, the two examples of how it is used described above are not measures of productivity or effectiveness. The second example described above starts to move towards measuring labour productivity, but does not measure the efficiency of delivering individual outputs.

MSD’s Annual Report (2017) contains two headline outcomes targets, by which it states that its performance will be assessed⁵. These are also Better Public Services (BPS) result areas, and are mentioned in MSD’s Statement of Intent and Four Year Plan. They are:

- “a reduction in the total number of people receiving benefit by 25 %, from 295 000 in June 2014 to 220,000 by June 2018; [and]
- a reduction in the long-term cost of benefit dependency by \$13 billion by June 2018 ... by June 2018” (MSD, 2017a, p. 90).

The Annual Report also contains a range of other performance measures that sit under these two BPS Targets. These measures focus on outcomes rather than efficiency. Some of these are shown in Table 2.

Table 2 Example of performance metrics for MSD Income support services

Output area	Quantity measure	Timeliness measures	Quality measures
Administering income support		The proportion of benefit entitlement assessments completed within five working days	The proportion of benefit entitlement assessments completed accurately

⁵ The Productivity Commission understands that these targets are currently under review in order to make sure that they reflect the new Government’s priorities.

Output area	Quantity measure	Timeliness measures	Quality measures
Improving employment outcomes	The proportion of clients who are not on a main benefit eight weeks following completion of an employment intervention programme		
Improving work readiness outcomes	The proportion of clients who are not on a main benefit 16 weeks after completing a work readiness intervention		

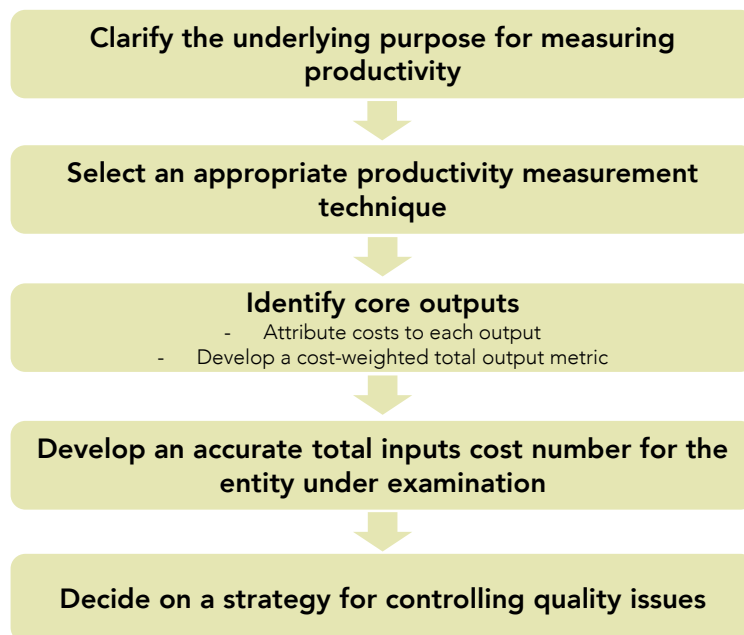
Source: MSD 2017a

In addition, the Productivity Commission has been advised that MSD (Service Delivery group) does a significant amount of efficiency reporting. This includes things like appointments per case manager and calls per staff member (Full Time Equivalent) in the call centre. However, this reporting is not reflected in MSD's Annual report or Statement of Intent, nor is it likely that MSD's iCAM is used in this reporting.

1.4 Measuring productivity in 'transactional' services

It is reasonably straightforward to measure productivity in services of a transactional nature, such as MSD's income support (benefit assessment and payment) functions. The five main steps are set out in Figure 2 below, and more detail can be found in Chapters 2 – 5 of the New Zealand Productivity Commission's draft inquiry report *Measuring and improving state sector productivity*.

Figure 2 Steps involved in developing a productivity measure



Source: Adapted from Dunleavy, 2016

The basic requirements are to be able to identify and measure core outputs, understand the inputs and attribute costs to them both. MSD's benefit payment services have visible outputs (applications processed, payments made, changes in circumstances actioned) and standardised processes are used to produce them. So as long as the allocation of costs is reasonably accurate (bearing in mind that it will necessarily be quite arbitrary for things like capital and overheads) a measure of multi-factor productivity should be both possible and useful.

MSD has tended to focus most explicitly on labour productivity in the context of the Simplification programme of work, monitoring the levels of Full Time Equivalent (FTE) staff and volumes of work those staff are processing.

However, to analyse productivity over the longer-term multi-factor measures would be more useful. Part of the aim of the simplification programme - and a more likely way of improving long term productivity - is to identify ways to improve productivity by re-engineering business processes to shift the mix of inputs – and labour is only one input.

1.5 Measuring outputs using the iCAM

A core output or activity, according to Dunleavy (2016), “is one that gives rise to other activities, which are created as a result of it”. He provides some examples including the following:

In a taxing agency, having staff members in call centres answer queries from income tax payers would not be a core activity, but counting the number of existing taxpayers and of new taxpayers (because they are more costly to handle) would be core. (Dunleavy, 2016, p. 5)

Therefore, he notes that “Core outputs or activities for each agency need to be restricted to complete activity packages (not parts of operations) or to fully delivered services (akin to end-products in firms)” (Dunleavy, 2016, p. 5).

MSD’s iCAM data is broken down to a very granular level because the case management systems record the time staff spend on each screen. This means the activities recorded in much greater detail than ‘complete packages’. They include things like making an appointment, searching client details, updating client details and making referrals.

Therefore, to estimate output costs the activity data must be aggregated into an estimate of one (or more likely a set of) useful output measures. This can potentially be done in a whole range of different ways and to any number of different levels. For example, an output could be an application for, or payment of, a main benefit⁶ compared to supplementary benefits, or for different types of main benefits. It could be a ‘change in circumstances’ report for example, a change of address, or a report of earnings. It can also be cut different ways, for example to identify costs per output, (for example, applications, payments, transfers or cancellations) or to identify ‘costs to serve’ for identified cohorts of service users.

Benefit ‘applications’ have been used as the output measure

For this case study, the Commission used the activity required to process a benefit application as the output measure. The iCAM data can be used to produce an aggregate figure of total costs of all activity that is related to benefit applications (for specified benefit types).

Table 3 shows the total number of granted applications for main, supplementary and third tier benefits. The number of applications for some benefits such as Retired and Sole Parent are relatively consistent across years, however there have been decreases in the number of granted applications for the Job Seeker and Accommodation Supplement benefits, and substantial increases in the number of granted applications for Supported Living Payments and Temporary Additional Support.

Table 3 Number of granted applications by MSD benefit type

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Job Seeker	182 193	174 026	167 351	144 821	139 440	153 803
Retired	50 467	50 553	50 293	51 882	51 373	53 920
Sole Parent	24 945	23 149	22 670	22 316	22 220	24 250
Supported Living Payment	6 393	6 131	13 431	10 340	9 949	10 266
Accommodation Supplement	343 267	337 749	510 359	256 951	240 850	249 408

⁶ “Main benefits” are first tier benefits such as jobseeker, sole parents, supported living payments, while second tier are ongoing supplementary benefits such as accommodation supplements and disability allowances, and third tier are one-off benefits such as Temporary Additional Support (TAS).

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Temporary Additional Support	350 992	350 180	390 771	333 512	346 612	392 090
Third Tier Application	866 858	820 849	826 824	839 551	872 079	1 076 866

Source: Data supplied by Ministry of Social Development

1.6 Inputs

The iCAM provides comprehensive information on staff costs, and estimates of the other costs such as overheads. For this case study, the Commission has used total costs of each benefit application type, adjusted for changes in the Consumer Price Index.

Costs are allocated to outputs within the iCAM by first calculating each cost component for each financial year, either through direct financial data or estimates based on the proportion of staff time. These costs are then allocated to individual events.

The allocation of costs to outputs depends on the type of activities involved. The simplest method of allocating costs is to base this on the number of activities or outputs, and assign the same average cost to all component events. However, in most instances, the iCAM uses supplementary information that helps account for differences in the cost of delivering different services. For example, the staff time for running a jobseeker seminar (a service provided to people receiving the jobseeker support benefit) will vary according to the seminar's duration and the number of participants.

Table 4 shows the total cost of granted applications by benefit type prior to the adjustment for inflation. The costs of these benefits show similar changes to those of the outputs. This case study combines these two sets of information to show how the productivity of granted applications by benefit type is changing over time.

Table 4 Cost of granted applications by MSD benefit type

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Job Seeker	\$25 637 460	\$27 838 286	\$27 380 583	\$21 851 596	\$20 947 390	\$21 773 875
Retired	\$7 064 695	\$8 004 799	\$8 681 337	\$7 906 579	\$8 286 355	\$10 286 847
Sole Parent	\$3 827 018	\$4 067 370	\$4 349 560	\$3 674 320	\$3 638 860	\$3 860 807
Supported Living Payment	\$1 077 742	\$1 135 476	\$2 389 431	\$1 975 764	\$1 933 687	\$1 991 622
Accommodation Supplement	\$37 621 677	\$40 170 895	\$55 260 153	\$29 922 434	\$27 738 439	\$29 329 648
Temporary Additional Support	\$29 190 589	\$30 621 527	\$33 411 546	\$26 527 535	\$27 143 518	\$34 628 570
Third Tier Application	\$85 372 884	\$79 739 961	\$79 676 856	\$71 515 148	\$81 648 974	\$97 044 665

Source: Data supplied by Ministry of Social Development

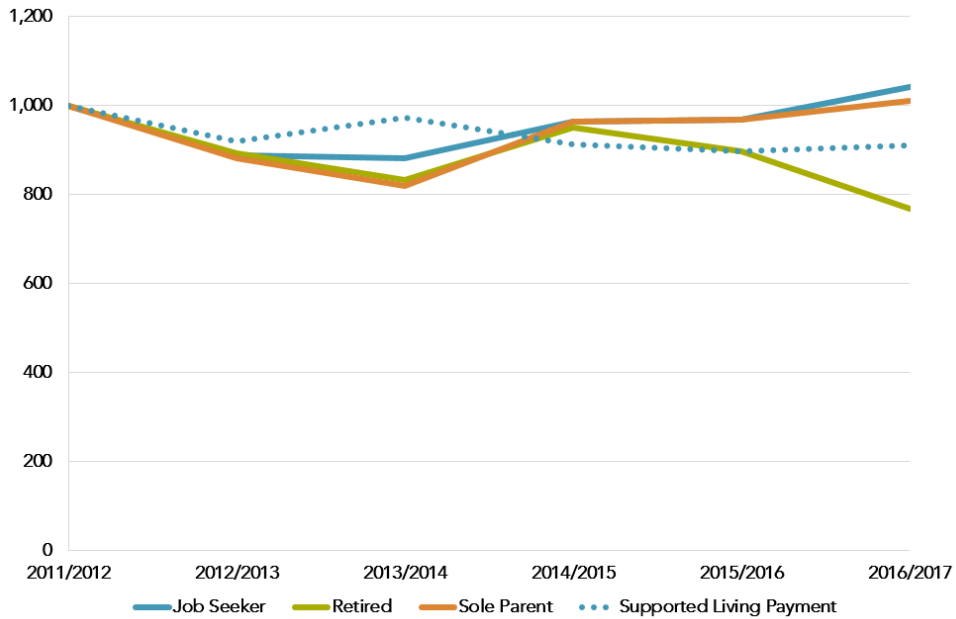
1.7 Initial productivity measures

This case study starts with calculating a simple estimate of multi-factor productivity for benefit applications, based on the last six years data for the four largest types of 'main benefits'. These are: Jobseeker support, retired (including Veterans and New Zealand Superannuation), Sole Parents Support and Supported Living Payments.

Figure 3 shows that there is some variation in productivity for the four benefit types, with improvements in the productivity of processing jobseeker support and sole parent support applications and a drop in

the productivity of retirement benefits (a combined figure that includes both New Zealand Superannuation and veteran’s pensions) over time. This trend seems relatively consistent over the last three to four years of data, despite far more variation in the raw output numbers.

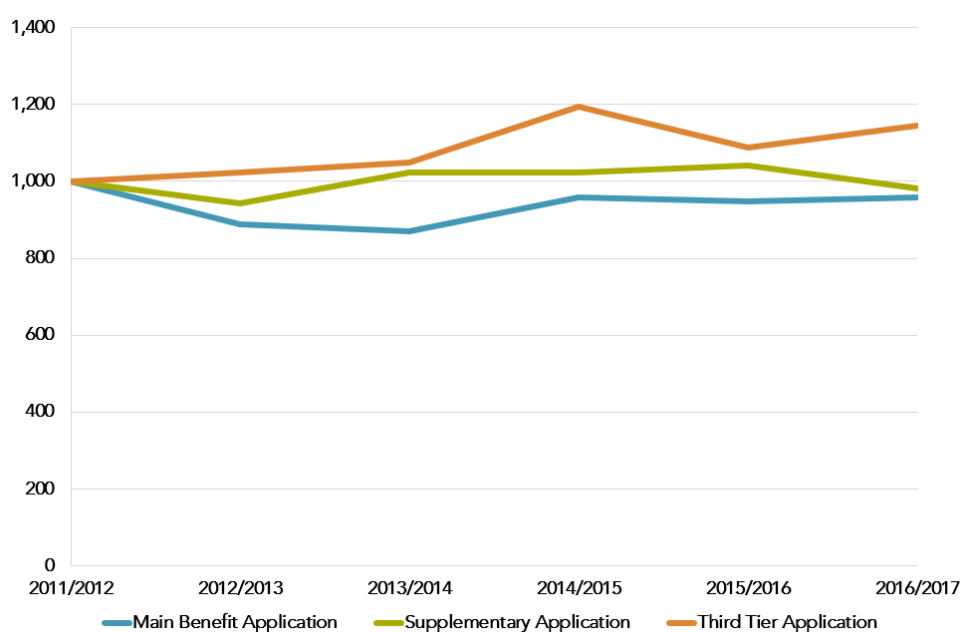
Figure 3 Productivity of applications processes for four different ‘main’ benefit types



The Commission also developed a metric to compare ‘main’ benefit applications (as a group) with supplementary (second tier) and third tier applications Figure 4. Supplementary benefits are ongoing supplements to ‘main’ benefits, such as accommodation supplements, disability allowances and childcare subsidies, while third tier benefits are (primarily) for one-off payments for emergencies such as food, power and medical costs.

The results show some improvement in the productivity of processing third tier applications, while the others remain fairly static. However, this result should be treated with caution, as one-off third tier applications (and payments) can be influenced by a lot of external factors.

Figure 4 Productivity of applications processes for main, supplementary and third tier benefits



Limitations of this initial analysis

There are a number of potential limitations of this analysis that need to be understood and considered before any action would be taken based on this data.

- Outputs are counted using granted applications rather than all applications. As a result, there is an undercount of outputs, and some unallocated staff time would not be allocated to a specific output.
- It is not clear how business process changes that reduce the volume of activity that make up an output is accounted for. For example, whether applications made online are accounted for in the same way as applications that are made in person.
- The iCAM still contains quite a large volume of "unallocated" staff time, so reducing that would make any conclusions drawn from the data more robust.

1.8 Adjustments for price and quality

The productivity metrics in this study have been adjusted for inflation. However, they have not been adjusted for changes in the quality of the service outputs. In the absence of adjustment for quality it is difficult to interpret trends on the productivity metrics. For example, if there is a decrease in the productivity metric trend-line, it is not possible to know whether this is due to a real reduction in productivity or whether it was due to an increase in complexity of cases being processed.

Metrics that could be used to adjust for changes in quality include accuracy and complaints. Both payment errors and complaints will create additional costs in the form of staff time to correct errors or to respond to complaints. Dunleavy (2013) cites the Atkinson review as suggesting "that the extent of fraud and error in paying benefits was the most appropriate element to consider in quality weighting" (Dunleavy, 2013, p 143). Some potential options are discussed below.

Accuracy measures

Quality adjustors could include the number of errors made that require fixing, such as overpayments or underpayments. These could be derived from direct observation of corrections or through survey or quality assurance procedures that are used by MSD.

The cost of correcting errors can be implicitly captured in the calculation of inputs of some processes, as the need to correct errors results in more time and a higher cost to process the application or other output.

Timeliness measures

Timeliness measures, such as the time taken to answer a call, can be set arbitrarily and measured relatively easily. However, these already exist in the MSD service, for example, times to approve benefits, answer phones etc. These are worth keeping in sight, as they might signal when things are going off track, but they are likely to offer limited ongoing information as they are generally set at levels where they will be met regularly.

Complaints

The numbers of complaints received could be another quality metric, if the data available on them is adequate. Complaints about MSD's services can be made directly to the site office manager, or electronically to the national office level via MSD's website. They can also be directly addressed to the Chief Executive or the Minister. Sometimes complaints are upheld and rework is done, and sometimes apologies are issued where errors have been made. There is also a formal decision review process.

To use complaints as a quality metric, they could be categorised by seriousness and/or by what action was taken. However, it is not known whether the data on complaints is currently comprehensive or accurate enough for it to be tracked as a quality measure.

Other quality measures

Client surveys could be done at regular intervals, and in different site office locations to identify variation and fluctuations in client's satisfaction with the service provided by MSD. However, survey data should be treated with caution. The Productivity Commission's case study on Courts (Genet 2017) quotes Bouckaert and Van de Walle (2003) as stating that satisfaction measures are not always a good indicator of quality due to:

- differences in producer and consumer views on quality;
- changes in consumer expectations; and
- variations related to service characteristics (eg, satisfaction levels often depend on whether respondents have sympathy for what the agency in question does).

Quality measures could potentially also be developed for integrity. A measure of fraud would be reasonably easy to establish. It might also be worth looking at data protection/privacy breaches, but presumably the goal would be to eliminate those entirely. In addition, it is not clear what such data would reveal about day to day activity.

1.9 Next steps: Options to further develop and use the iCAM

This analysis has used the iCAM data to produce draft productivity measures for benefit applications processes for the four 'main benefit' types, and to measure the productivity of the applications processes for supplementary benefits, temporary additional support and third tier benefits (one off payments). There are a number of other 'cuts' or angles by which the same basic data set could be examined.

- **Develop a measure that includes the full cost of each benefit type:** Further refine the output definitions by aggregating costs into outputs that include a wider range of components (beyond just the cost of benefit applications).
- **Examine the breakdown of functions within a specific benefit type:** For example, main benefit data is broken down into: applications, cancellations, payments, resumptions, suspensions, transfers, and medical certificates. If the productivity of these functions were measured against each other it might help to identify bottlenecks, and points in the administrative processes where there is potential to mechanise activities or remove extra processes to save staff time.
- **A 'cost to serve' measure:** That looks at the total costs to support cohorts of benefit recipients or individual clients, over a set period of time. For example, this could be monthly or quarterly, or for the first six months the client receives a benefit, or from the time they enter the system until they leave (for people who receive a benefit for shorter time periods).

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