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Enhancing Performance Management and Service Delivery - Final report

Department of Premier and Cabinet

—

July 2017

Disclaimer

INHERENT LIMITATIONS

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The findings in this report are based on a qualitative study and the reported results reflect a perception of the Department of Premier and Cabinet but only to the extent of the sample surveyed, being the Department of Premier and Cabinet's approved representative sample of stakeholders. Any projection to the wider community and/or stakeholders is subject to the level of bias in the method of sample selection.

No warranty of completeness, accuracy or reliability is given in relation to the statements and representations made by, and the information and documentation provided by, the Department of Premier and Cabinet's stakeholders who were consulted as part of the process.

KPMG have indicated within this report the sources of the information provided. We have not sought to independently verify those sources unless otherwise noted within the report.

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The findings in this report have been formed on the above basis.

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Background

Governments around the world are under increasing pressure to deliver improved outcomes across public services while also ensuring tax payers' dollars are spent effectively. This is at a time when service delivery challenges are becoming more complex. For example, rising demand for services, impacts of disruptive technologies, complexity of need, costs of replacing outdated technology, and the redeployment and re-skilling of the public sector workforce are all significant challenges facing Australian jurisdictions. Specific to Queensland, this is even further exacerbated given decentralisation, a high indigenous population, regional and youth unemployment and innovative industries overtaking traditional and long standing workforces.

In Queensland, the Government has prioritised restoring frontline services. This has involved an investment in lifting the overall number of public servants. The need for transparency, accountability and value for money in a tight fiscal environment raises legitimate questions about the outcomes associated with these increases.

"Performance management framework" (PMF) is the term often used to describe the system governments (and the private sector) use to achieve better outcomes through a focus on results. In Queensland, the Department of the Premier and Cabinet (DPC) has a responsibility for the design and oversight of the "Queensland Government Performance Management Framework".

The Queensland Government PMF "… provides a mechanism to help strengthen public sector accountability, adopting a holistic approach to performance management directed at a Whole-of-Government, Ministerial portfolio, agency and individual level. The PMF focusses on three aspects of public sector performance management: planning, measuring and monitoring performance, and public reporting". (Queensland Government Performance Management Framework – An Overview April 2017).

The PMF is subject to ongoing review and improvement, including in response to Queensland Audit Office reports.

Objectives and Scope

DPC engaged KPMG to make recommendations regarding the enhancement of existing performance management systems and processes with a particular emphasis on improving the measurement of inputs and outputs. The scope includes:

- Designing and testing of a new methodology to improve the tracking of outcomes against changes in service inputs and recommendations for the future rollout of this methodology across the sector;
- Consideration of existing mechanisms to track outcomes against changes in service inputs;
- Consideration of service areas where outcomes can be difficult to identify and assess or where changes to inputs are not well suited to analysis of outcomes – and recommendations to address these challenges;
- Consideration and possible implementation of appropriate, practical and practicable enhancements to existing performance management systems and processes; and
- Critical lessons learned for the successful delivery of (i) through (iv) above.

Approach

In developing this report, KPMG:

- Identified leading practice in public sector performance management through a literature review and internal contact with international subject matter experts. A leading practice '*regime*' consisting of a leading practice '*performance management system*', '*continuous improvement process*' and a '*performance mechanism*' is presented. The validity of this regime is reinforced by insights from a private sector case study based on reform of organisational performance in a major Brisbane-based natural resources company;

Executive Summary

- Interviewed DPC officers and reviewed the PMF Framework document to compare the leading practice regime with current PMF practice and identify how leading practice might be applied in the Queensland context;
- Used publicly available sources to identify input and outcome/output data across the service areas of police, education, health and child safety.
- Analysed publicly available data: input data (Full Time Equivalent – FTE) provided by the Public Sector Commission (PSC); and output/ outcome data sourced from agency annual reports, Service Delivery Statements (SDS), agency websites and the Productivity Commission's Report on Government Services (RoGS). Guidance was provided by DPC on service areas to analyse and possible data sources, but no data was provided directly by departments;
- Developed a performance mechanism in each service area to assist in distinguishing inputs, activities, outputs and outcomes and to provide a hypothesis about how they interrelate;
- Conducted a workshop with DPC Policy Officers to supplement the initial list of outcomes/outputs and to test the general performance mechanism concept, the hypothesised performance mechanisms for each of the policy areas studied and further identify publicly available data sources beyond the initial list, including activity measures; and
- Performed statistical analysis to determine levels of correlation across available data series and for the 2015 and 2016 financial years.

Outputs and Findings

A leading practice performance management regime is provided in Section 1.0, consisting of three elements:

- a performance management system;
- a continuous improvement process; and
- a performance mechanism.

These elements are based on evidence from a review of PMFs from a number of jurisdictions and this evidence is provided in Appendix 2. In particular, New Zealand's Better Public Services regime is used to provide supporting evidence of their use in practice.

A private sector case study based on work performed by KPMG is provided on page 18 to demonstrate the use of performance management in a private sector context. Private sector objectives are very different to those of the public sector. Nevertheless, this brief case study assists to demonstrate the wide use of the principles of performance management.

Performance mechanisms linking certain inputs, activities, outputs and outcomes are hypothesised for each of the service areas studied and are provided in Section 2.0. However these should be seen as a starting point to be continuously refined as more data-driven evidence is gathered about the influence of various factors on activity, outputs and outcomes.

Advice is provided on the identification of outcomes and metrics and how this process can drive priority setting across Government in Section 3.0. The Queensland Government has identified its objectives for the community. In terms of driving performance management across Government, these may benefit from a review that ensures the objectives remain relevant to the community and can be monitored and reported publicly.

In order to make recommendations regarding the enhancement of the existing performance management regime, a high-level gap analysis is provided based on a review of the Queensland Government PMF documents and interviews with DPC officers in Section 4.0. The gap analysis demonstrates that policy and guidance documentation is in place. However, weaknesses exist in its implementation of many of the practices of performance management. This work was high-level and would have benefitted from more interviews with DPC and other agency personnel, although it aligns generally to past findings of the Queensland Audit Office.

A technical appendix (Appendix 1) is provided which contains a summary and detailed results of the statistical analysis of publicly available data for each policy area studied.

Executive Summary

This statistical analysis demonstrates evidence of the rise in demand for government services across the service areas studied and that outcomes have generally kept pace with that demand.

However, it is challenging to draw meaningful insight about performance from direct correlation analysis alone due to the complexity of service delivery mechanism and the influence of external forces. For example, improved health outcomes are unlikely to be driven only by the number of nurses or doctors employed, but are also a result of a number of external influences, such as individual behavioural and lifestyle factors, socio-economic status, and bio-medical and genetic factors.

The relevance of the statistical analysis is limited by the fact that correlation does not necessarily imply causation. No evidence was found of attempts in other jurisdictions to directly report on correlations between inputs with outcomes as this report does. Correlation analysis is at best a first-step towards understanding the potential causal relationships between inputs and activities/ outputs/ outcomes.

While outcomes are driven by a number of factors outside the control of government, this is not a valid reason to avoid the implementation of a rigorous Whole-of-Government performance management regime. Monitoring and publicly reporting results against outcome objectives improves accountability and provides the basis for ongoing, data-driven, evidence-based, continuous improvement of government services.

Challenges encountered and lessons learned in attempting to directly correlate outcomes against changes in inputs are discussed (page 79). This commentary covers issues such as data availability and informs our recommendations.

Recommendations

The report findings present opportunities to enhance the implementation of Queensland's Whole-of-Government performance management and reporting regime, particularly around the development, tracking and reporting of Whole-of-Government priorities and outcomes.

Detailed recommendations can be found on page 41. They reflect:

- the lessons learned through undertaking the data analysis of input, activity, output and outcome metrics;
- the literature review; and
- consideration of the leading practice performance management system, continuous improvement process and performance mechanisms developed in this report.

Recommendations are arranged according to four broad topics aligned to elements of the performance management system:

1. Define priorities – there is an opportunity to review the Government objectives for the community with a view to creating a small number of priorities, goals and metrics aligned to the Government's agenda;
2. Report publicly – there is an opportunity to establish a public dashboard of results against goals for each priority, in addition to existing reporting mechanisms, such as Service Delivery Statements (SDS);
3. Drive collaboration and improvement – there is an opportunity to create agency clusters where more than one agency contributes to a priority, with terms of reference that reflect the continuous improvement process; and
4. Create clear roles, accountabilities and responsibilities – there is an opportunity to reflect the performance management system in Ministerial Charter Letters and CEO performance agreements and to cascade accountability down through agencies.

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1.0 Leading Practice Review

Leading Practice Overview

KPMG has conducted a review of PMFs from a number of jurisdictions and other sources which analyse leading practice around public sector performance management.

We have used this review, and KPMG's international experience of advising on performance management, to construct an amalgam of leading practice features which constitutes a leading practice performance management *regime* consisting of;

- a *system*; a
- an underlying *continuous improvement process; and*
- and *a performance mechanism*.

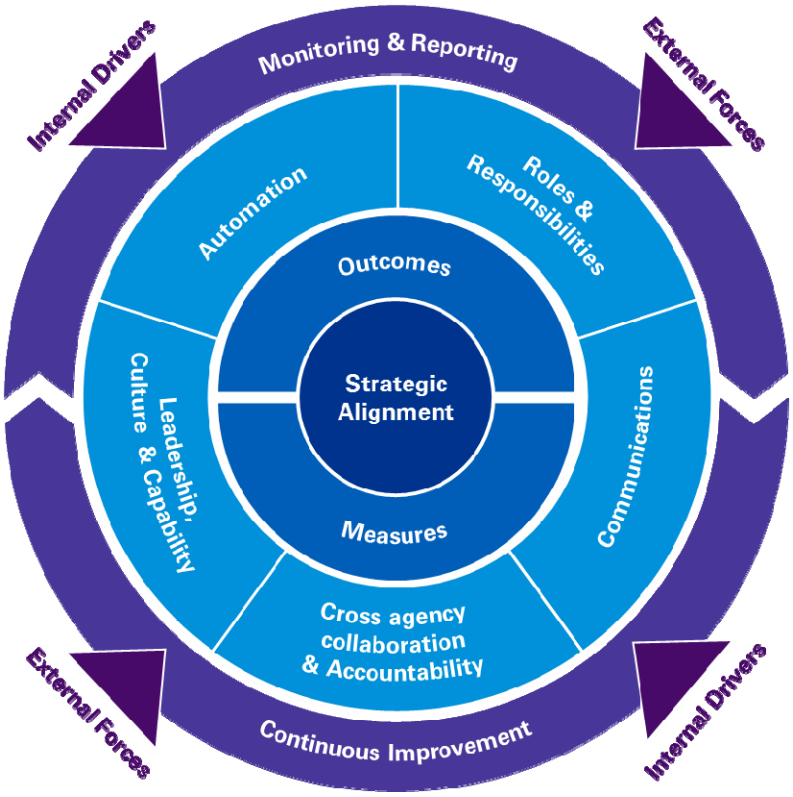
A review has been conducted of the following documents in order to ascertain leading practice features of performance management regimes:

- *Victoria's Performance Management Framework March 2016*
- *New Zealand's Better Public Services Advisory Group Report November 2011*
- *Unites States: A Performance Management Framework for State and Local Government: From Measuring and Reporting to Management and Improving 2010*
- *Better Practice Guide Performance Reviews July 2010*
- *The Scottish Government's Organisational Performance Management in a Government Context: A Literature Review 2008*
- *United Kingdom: Delivering Efficient Public Services through better Performance Management Frameworks 2005*

Extracts from these documents which support the proposed regime are provided in Appendix 2.

Leading Practice Performance Management Regime - The System

Based on the literature review, KPMG's international experience of public sector performance management and knowledge of private sector experience, the following diagram and table are provided as a description of the leading practice features of performance management and their interrelationships to create a complete system.



Component	Overview
Strategic Alignment	The extent to which there is clear line of sight between the Government's agenda and priorities and individuals' objectives cascaded down through the public sector.
Outcomes	Desired short, medium and long term outcomes. Often expressed as targets or goals and a trajectory, to create focus.
Measures	Financial and non-financial measures for the sate-wide outcomes that are cascaded from the entre through agencies and regions.
Roles & Responsibilities	Defined and understood roles and responsibilities for performance and for the performance management regime (system and continuous improvement process).
Communications	Compelling internal and external communications in relation to all elements of performance management.
Cross Agency Collaboration & Accountability	Recognition that objectives often span multiple agency accountabilities and require collaboration.
Leadership, Culture & Capability	Leadership alignment to performance management process and the culture and capability to drive continuous improvement.
Automation	Technology to capture, process and analyse measurement information and reduce manual activities.
Monitoring & Reporting	Accurate, timely and appropriate management of information to rive appropriate action.
Continuous Improvement	Continuous assessment of and action on the gap between current results and desired outcomes and the refinement of the performance mechanism.
External Forces/ Internal Drivers	An acknowledgment of the complexity of the public policy environment and the challenges of creating causal links between inputs and outcomes.

Leading Practice Performance Management Regime – The Continuous Improvement Process

This diagram describes a typical continuous improvement process which drives improved performance within a performance management system.

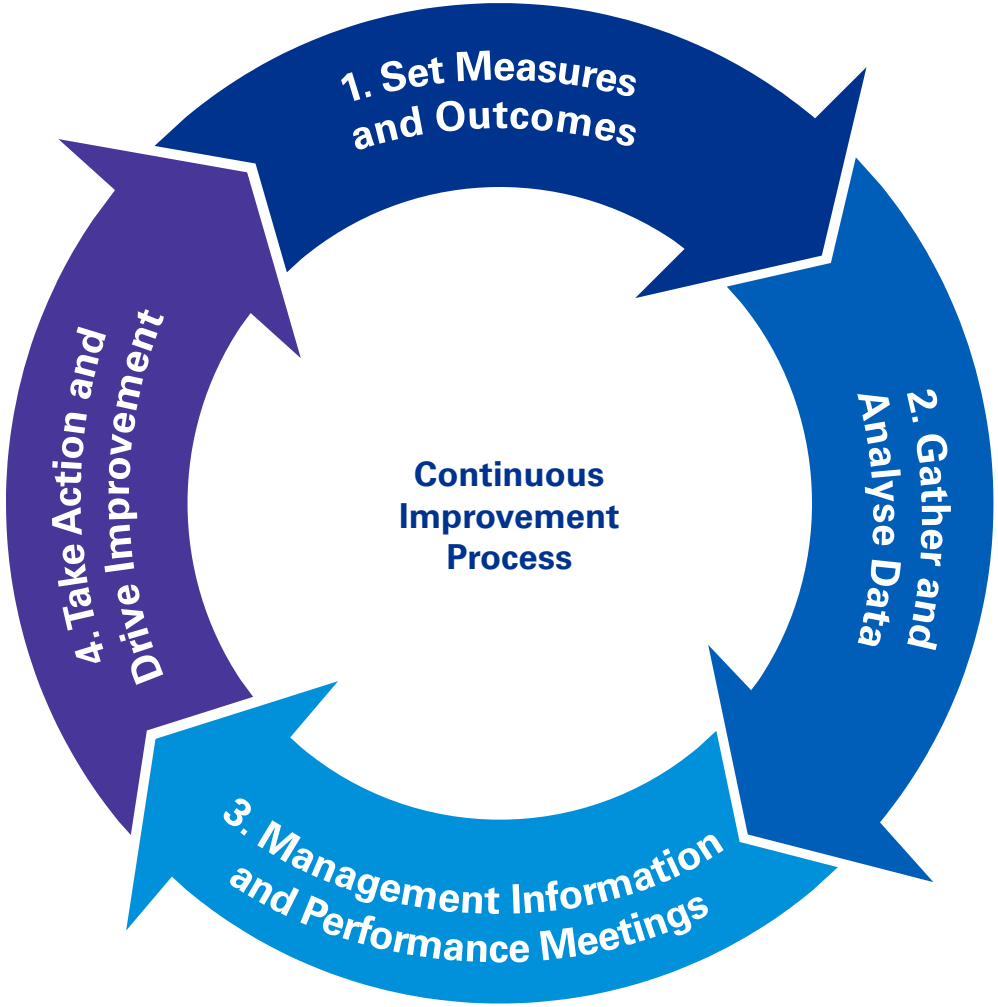
It is largely modelled on the classic PDCA (plan–do–check–act) iterative four-step management method used for the control and continuous improvement of processes, products and services.

The cyclical nature of the underlying process acknowledges that in public sector service delivery, detecting causal relationships between outcomes and inputs can be challenging. This requires that the improvement cycle be maintained while various hypotheses are tested and participants in the effort learn as they go through iterative approaches.

This approach results over time in a better understanding of the causal links within service delivery between inputs and outcomes and the extent to which changes in inputs affect outcomes.

The maintenance of a data-driven evidence-based cycle of improvement drives service innovation and can inform resource allocation, policy decisions and operational processes.

The following pages explain the elements of the process.



Leading Practice Performance Management Regime – The Continuous Improvement Process

1. Set Measures and Outcomes

Considerations:

- The Queensland Government's objectives for the community
- Other strategic State-wide priorities around persistent and challenging issues
- Goals, including targets
- Community concerns
- Election commitments

Results:

- Well designed measures which seek to eliminate potential unintended consequences.
- A trajectory between current performance results and the desired goal
- An understanding of the performance mechanism linking inputs with outcomes
- Agency view of the performance mechanism for each service objective

Interrelation with wider regime:

- Roles and responsibilities agreed for:
  - setting required outcomes and measures agreed with agencies
  - ensuring strategic alignment up, down and across Government
- Clear communication and cascade of outcomes, measures and plans
- Influences budget process, individual performance agreements
- Shapes culture and behaviour - what gets measured gets done

2. Gather and Analyse Data

Considerations:

- Measures
- Data
- The desired trajectory between current performance and the goal

Results:

- Data collection process
- Consistent and quality data to inform the Whole-of-Government dashboard
- An analysis of the gap between current performance results and the trajectory

Interrelation with wider regime:

- Roles and responsibilities for gathering and analysing data agreed and communicated
- Technology to support and enable data gathering and analysis

Leading Practice Performance Management Regime – The Continuous Improvement Process

3. Management Information and Performance Meetings

Considerations:

- Consistent and quality data
- Current view of the performance mechanism
- Analysis of the gap between current performance and the trajectory to the goal
- Performance meeting Terms of Reference (individual agencies, or clusters of agencies where more than one contributes to a priority)

Results:

- Management information
- Improved understanding of the performance mechanism
- Agreed actions for cross-agency collaboration
- Policy, resourcing and operational improvement recommendations

Interrelation with wider regime:

- Ongoing focus on managing performance drives understanding of roles responsibilities
- Communication recommendations for internal and external audiences to explain performance
- Creates performance focused, continuous improvement culture and capability
- Clear performance related roles and responsibilities

4. Take Action and Drive Improvement

Considerations:

- Management information
- Performance meeting actions
- Policy, resourcing and operational improvement recommendations

Results:

- Remedial and proactive action plans
- Themed activities and projects including cross-agency initiatives with clear responsibilities
- Policy, budget and operational improvement proposals

Interrelation with wider regime:

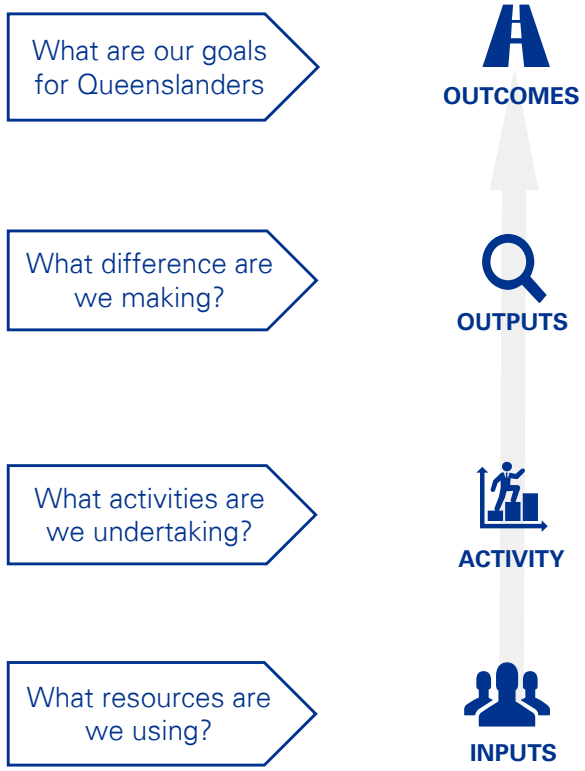
- Clear communication of improvement actions across the system as appropriate (including engagement with external parties and partners)
- Supports a culture of empowerment and continuous improvement

Leading Practice Performance Management Regime – The Performance Mechanism

In order to take action to improve current performance to reach a desired goal in a performance management regime, the causal linkages between inputs and outcomes need to be understood.

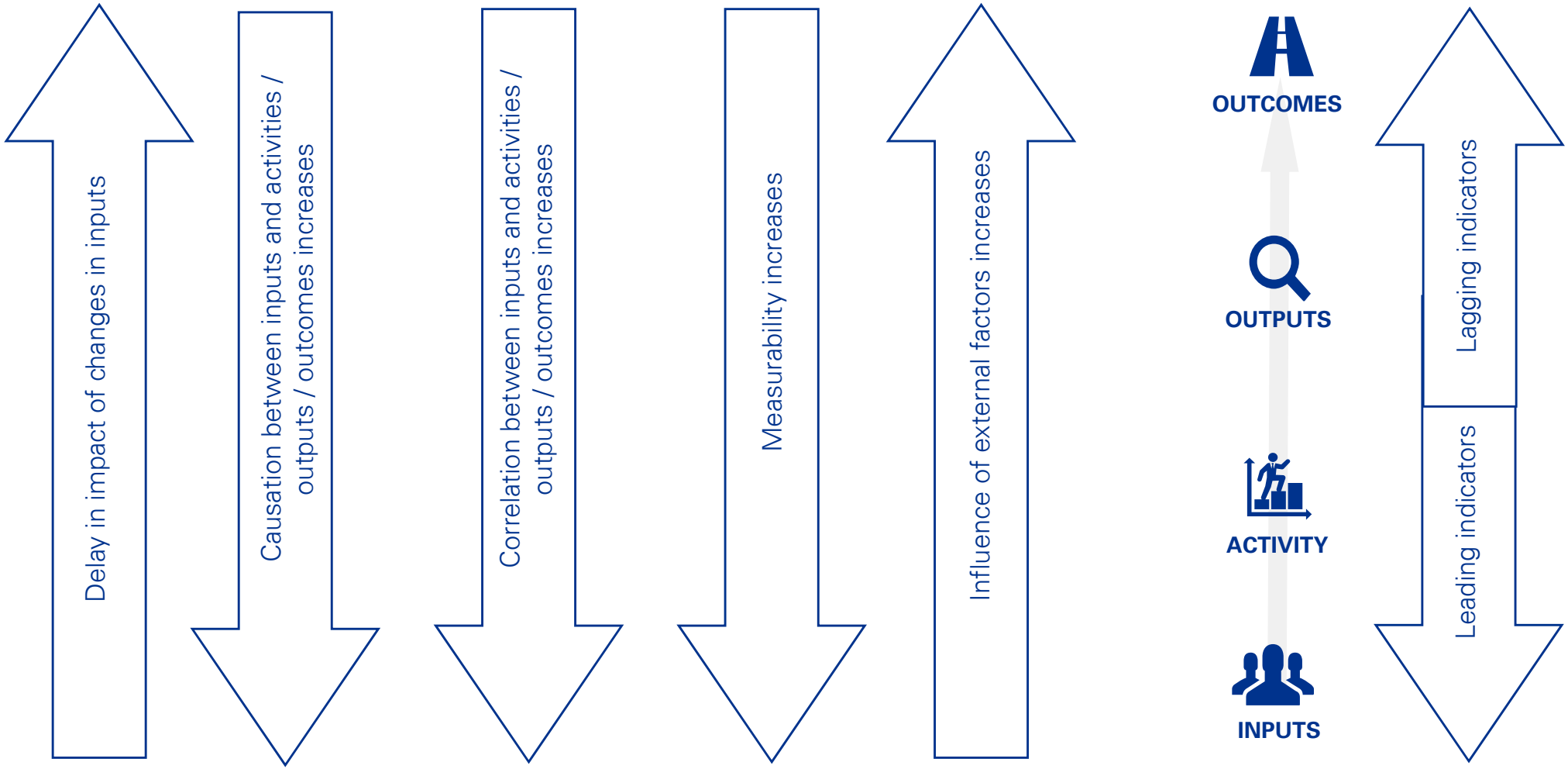
A *performance mechanism* diagram can be a useful way to display current thinking on what these linkages are between inputs, activity, outputs and outcomes. The performance mechanism framework and definitions of each of these terms is shown in this diagram.

Given the complexity of public policy and the large number of external factors beyond Government's control which influence outcomes, a performance mechanism will only ever be an imperfect model. This model can however be improved over time as an evidence base is established for the causal linkages between inputs and outcomes.



Trade Offs Associated With Performance Mechanisms

There are various trade-offs relevant to considering causal links between elements of the performance mechanism, as indicated in this diagram. For example, as inputs are changed, activity levels associated with those changes can be expected to change relatively quickly, compared with impacts to outcomes. As well, inputs and activities tend to be leading indicators, whereas outputs and outcomes tend to be lagging indicators. This concept is expanded in section 3.0 - Identifying Priorities, Goals and Metrics to Drive Accountability.



New Zealand Deep Dive - Example Of The Regime At Work

The following is an extract from the New Zealand Better Public Services website (www.ssc.govt.nz). It demonstrates evidence of the leading practice features of the performance management regime.

IMPROVE THE LIFETIME WELLBEING OF VULNERABLE CHILDREN

What is the target?
Reduce the number of children experiencing physical and sexual abuse by 20 percent by 2021

Why is this important for New Zealand?
Every child and young person has a right to grow up in a safe environment. Safety from physical and sexual abuse sets the foundation for positive future physical and mental development, helps children establish effective relationships with their families, communities and iwi, and breaks the negative cycle of deprivation and disadvantage.

How will we know we are achieving this result?
The target for reducing the number of children and young people experiencing assaults and sexual abuse is ambitious. It will mean reducing the number of children experiencing physical and sexual abuse by 800.
Performance against the target will be measured using the Ministry for Vulnerable Children, Oranga Tamariki data on substantiated physical and sexual abuse.

A CLEARLY ARTICULATED **PRIORITY / OBJECTIVE.**

A TRANSPARENT **GOAL / TARGET** TO CREATE FOCUS.

COMMUNICATING A RATIONALE FOR THE GOVERNMENT'S FOCUS TO HELP **COMMUNICATE** THE PRIORITY.

A SPECIFIC **MEASURE.** THIS IS OFTEN ACCOMPANIED BY A COMPELLING VISUAL GRAPH FEATURING HISOTORICAL DATA AND A CLEAR REFERENCE TO THE TARGET.

A TRANSPARENT EXPLANATION OF THE DATA SOURCE AND HOW THE METRIC IS CALCULATED, **MONITORED** AND **REPORTED.**

New Zealand Deep Dive - Example Of The Regime At Work

In addition to the target measure, the Ministry for Vulnerable Children, Oranga Tamariki will also be tracking two supporting measures:

- the total number of children experiencing abuse of any type, including physical, sexual, emotional abuse and neglect
- the percentage of children who experience a repeat Report of Concern within 12 months.

SUPPORTING **OUTPUT** MEASURES.

What are we doing to achieve this result?

Actions to reduce the number of children experiencing physical and sexual abuse will be at the centre of a major programme of work within the Ministry for Vulnerable Children, Oranga Tamariki.

CLEAR **ACCOUNTABILITY** AND **LEADERSHIP.**

The Ministry for Vulnerable Children, Oranga Tamariki will lead and be ultimately responsible for achieving the target , but will need cooperation and support from Ministries of Health, Education and Social Development, as well as Police and Corrections.

CROSS AGENCY COLLABORATION.

The Ministry for Vulnerable Children, Oranga Tamariki will also require active support and feedback from families, communities and iwi to better design and deliver services and support that work.

There is no single way to address this target. Actions will be taken across a number of areas, with the main focus on:

- reducing sexual violence towards children and young people
- reducing family violence directed at, or in the presence of children and young people
- reducing physical violence towards children and young people
- improving parenting skills
- improving sexuality education and promoting healthy practices
- addressing parental mental health and addiction

AN EXPLANATION OF THE COMMUNITY'S ROLE IN CONTRIBUTING TO THE ACHIEVEMENT OF THE TARGET I.E. IT'S NOT ALL UP TO GOVERNMENT. THIS IS ALSO AN ACKNOWLEDGEMENT OF THE **EXTERNAL FORCES** WHICH APPLY TO AN EFFORT LIKE THIS.

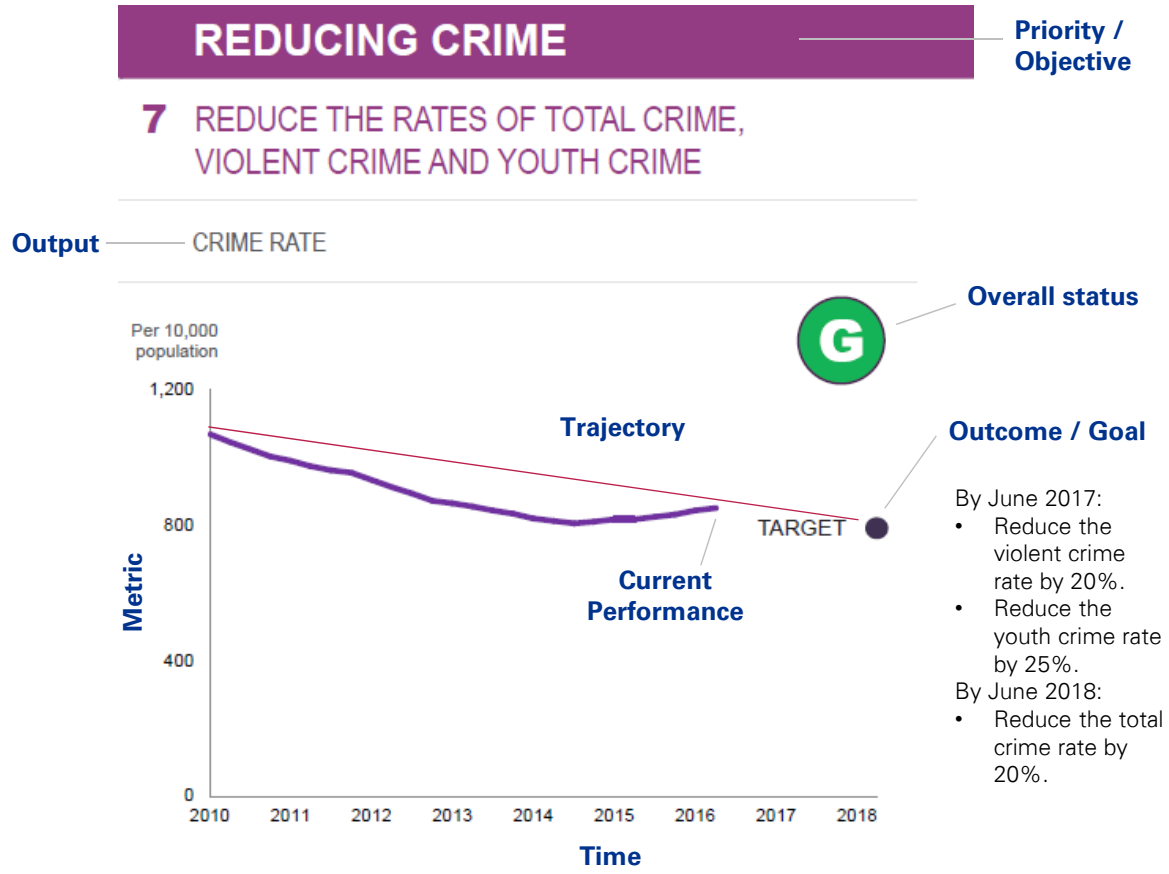
A POLICY AGENDA (OTHER NZ TARGETS HAVE A MUCH MORE DETAILED POLICY PLAN.

New Zealand Deep Dive - Dashboard Elements

This example from the New Zealand Better Public Services dashboard (www.ssc.govt.nz) shows the key elements of the performance management system and their interrelationships.

In this case:

- overall rating is the priority expressed as a high level objective of reducing crime;
- an outcome is stated as a clear goal expressed as a quantitative target reduction by a certain date;
- a particular contributing output is the crime rate (the other in this case is reoffending);
- the measure and metric are clearly defined;
- current performance is shown, along with a trace of the history of performance;
- a trajectory can be defined against which current performance can be measured and the gap identified; and
- reporting is applied as a traffic light summary:
    - Green – on track
    - Yellow – on track, but changes not yet embedded
    - Orange – progress, but issues to resolve
    - Red – urgent attention required



Supporting output measures

This target will be supported by three measures: the rate of reoffending, the rate of family violence and the rate of sexual violence.

Private Sector Case Study

KPMG has recently assessed the performance system of a major oil and gas producer located in Queensland to improve performance across the organisation. The following summary demonstrates that the features of the system developed in this report apply to private sector leading practice as well as public sector practice.

Leading Edge Component	Current State Observations
Strategic Alignment	The overarching vision and 3 year strategy for the organisation has been recently developed in partnership with KPMG. Using this inspiring vision for 2020 the performance objectives and KPI's for the Senior Leadership team were cascaded into the next level of reports.
Outcomes	Short, medium and long-term outcomes have been established across operational teams. For each outcome, clear targets for monthly performance, YTD and the forthcoming year have been outlined. This presents improved clarity for individuals and teams in terms of what is expected from them.
Measures	Detailed end-to-end mapping of a number of key problematic and costly processes identified the need to have the right measures in place to drive the right outcomes in the short, medium and long-term. As a result the original measures in place were revisited and a new suite of KPIs developed. Measures are reported on a monthly basis using RAG traffic light reporting (Red, Amber, Green).
Roles & Responsibilities	Clear accountabilities for teams and senior managers have been developed in the form of documented mandates. These clearly articulate who is responsible for what function and high level task across the organisation. This is particularly important in a complex organisation with a large geographical spread. It serves to add clarity to grey areas that exist between different teams. These are typical areas where accountability is unclear and as a result problems occur.
Communications	Communication is provided in the way of monthly reports and a newly revised performance meeting. This meeting will drive performance by identifying gaps in performance and driving accountability across the end-to-end value chain. The organisation has a cadence or drum beat of meetings to ensure progress towards improved performance is maintained.
Cross Agency Collaboration & Accountability	The end–to-end well drilling process spanned a significant number of teams across the value chain. A newly created forum has been started to promote cross fertilisation of best practice performance ideas. A number of pockets of excellence have been leveraged and applied across each geographical team to realise quick wins based on proven improvement initiatives.
Leadership, Culture & Capability	Senior Leadership has embraced Continuous Improvement (CI) implementation and has instigated an initial performance diagnosis, end-to-end process mapping and alignment of KPIs. Weekly Decision Review Boards are in place and attended by the Senior Leadership team to ensure progress and senior buy-in. A team is in place to manage CI implementation across the organisation.
Automation	Automation exists to capture lead-times throughout the process and track trends across a 12 month window. Automatic traffic light visuals in the form of dashboards present gaps to target and allows the audience to understand the performance landscape quickly. This facilitates effective and efficient decision making.
Monitoring & Reporting	Performance and cost KPIs are reported on a monthly basis and monitored daily. A comprehensive and newly revised reporting pack is circulated to a wide audience. The reporting is focused around delivering the right information to the right people at the right time and in the right format. Meetings are strictly focused on discussing negative variance to plan or target.
Continuous Improvement	The organisation is utilising plan, do, check, act (PDCA) principles in the form of A3 Planning. They are currently utilising benchmark performance information from similar global organisations to leverage best practice and identify gaps in performance.
External Forces / Internal Drivers	The organisation operates in an extremely difficult environment which is unique in it's industry. Elements such as geographical size, commodity prices, exchanges rates and other factors add further layers of complexity.

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2.0 Individual Performance Mechanisms

Performance Mechanisms in each of the Policy Areas Studied

During KPMG's work with available data and the request for further data, it was evident that there is a performance mechanism in place, but there are opportunities to improve and clarify the overall approach as it applies to individual service systems.

KPMG developed possible performance mechanisms in these policy areas – health, education, police and child safety, and these are outlined on the following pages. The term 'performance mechanism' closely aligns to the terms 'program logic' and / or 'service logic', which is commonly used throughout Auditor-General Reports.

These are of course dependent on the Government's actual objectives in these portfolio areas and should be reviewed once outcomes have been agreed.

These examples have been developed by:

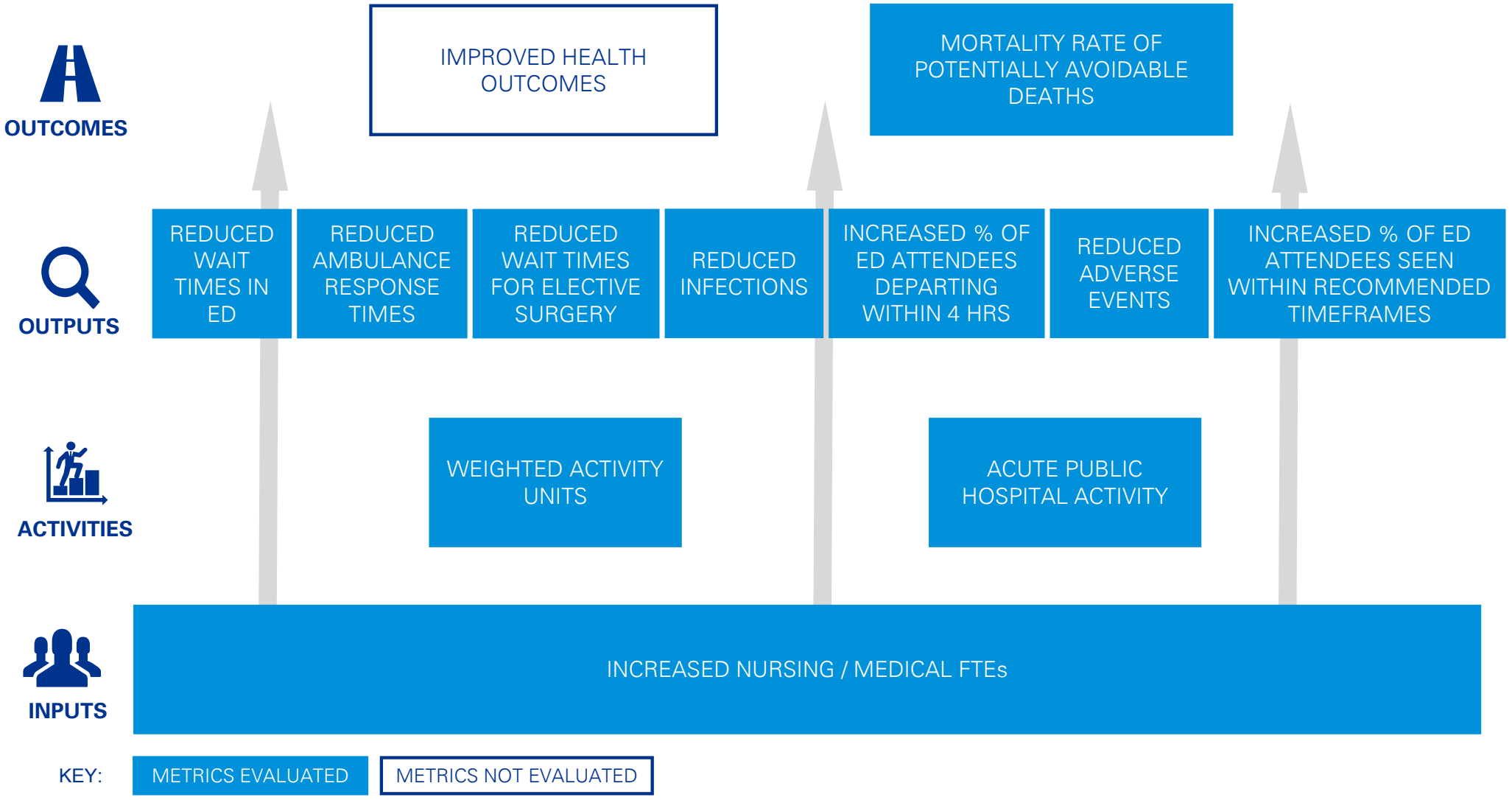
- analysing existing data sets;
- examining the measures in the RoGS; and
- identifying other possible metrics from subject matter experts that could lead to improved outcomes.

The following performance mechanisms represent a hypotheses in each policy area about what the linkages are between inputs, activities, outputs and outcomes. Such a mechanism is an important input into the continuous improvement effort and needs to be considered along with available performance results. As evidence is gathered of the causal links, the mechanism can be updated to inform further cycles of the continuous improvement efforts.

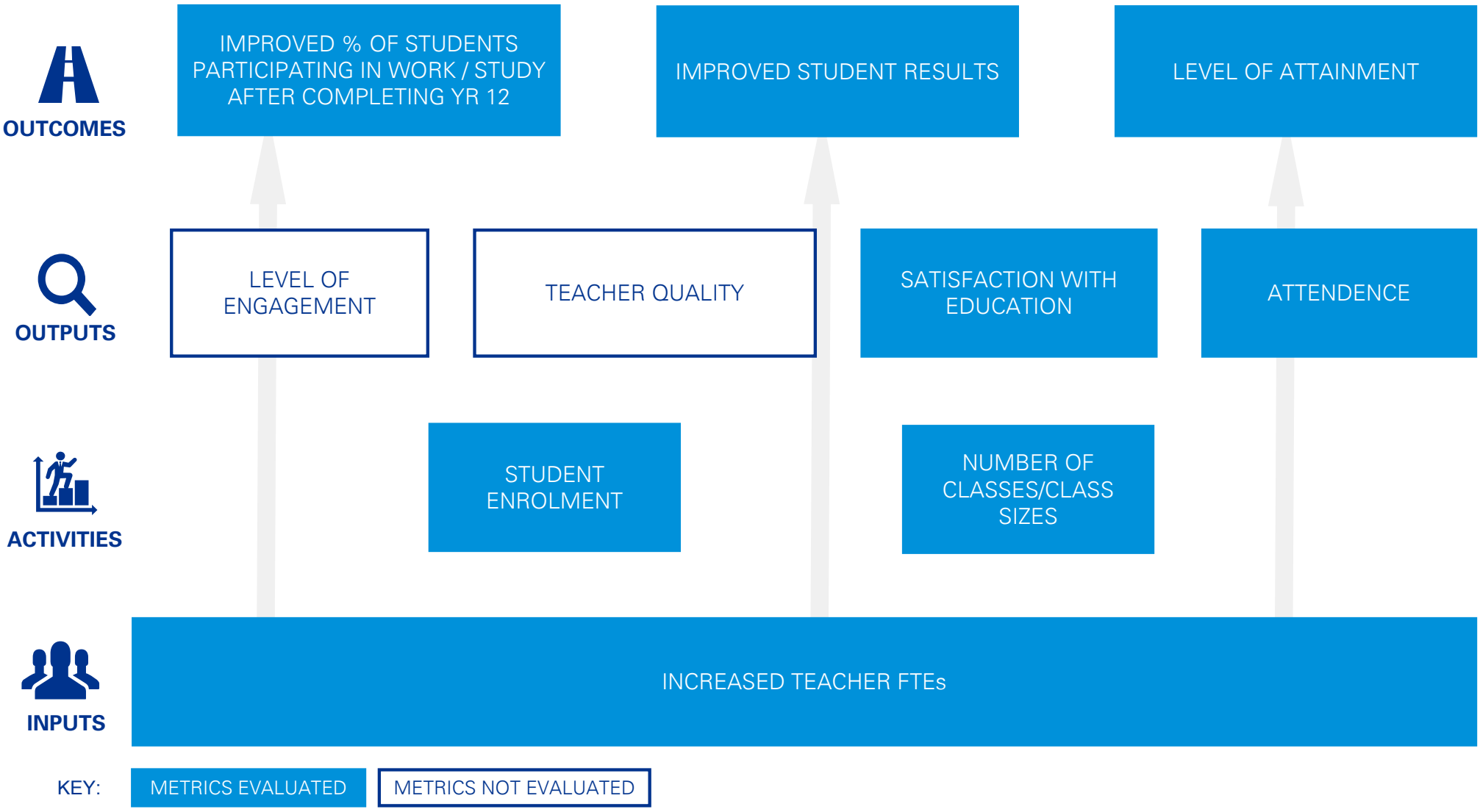
KPMG was able to access some of the data associated with inputs, activities, outputs and outcomes for the policy areas analysed. Where this is the case, it is indicated in blue in the following performance mechanism illustrations.

This list of metrics is not comprehensive, and it is acknowledged departments collect a far braoder range of data which may provide further insight.

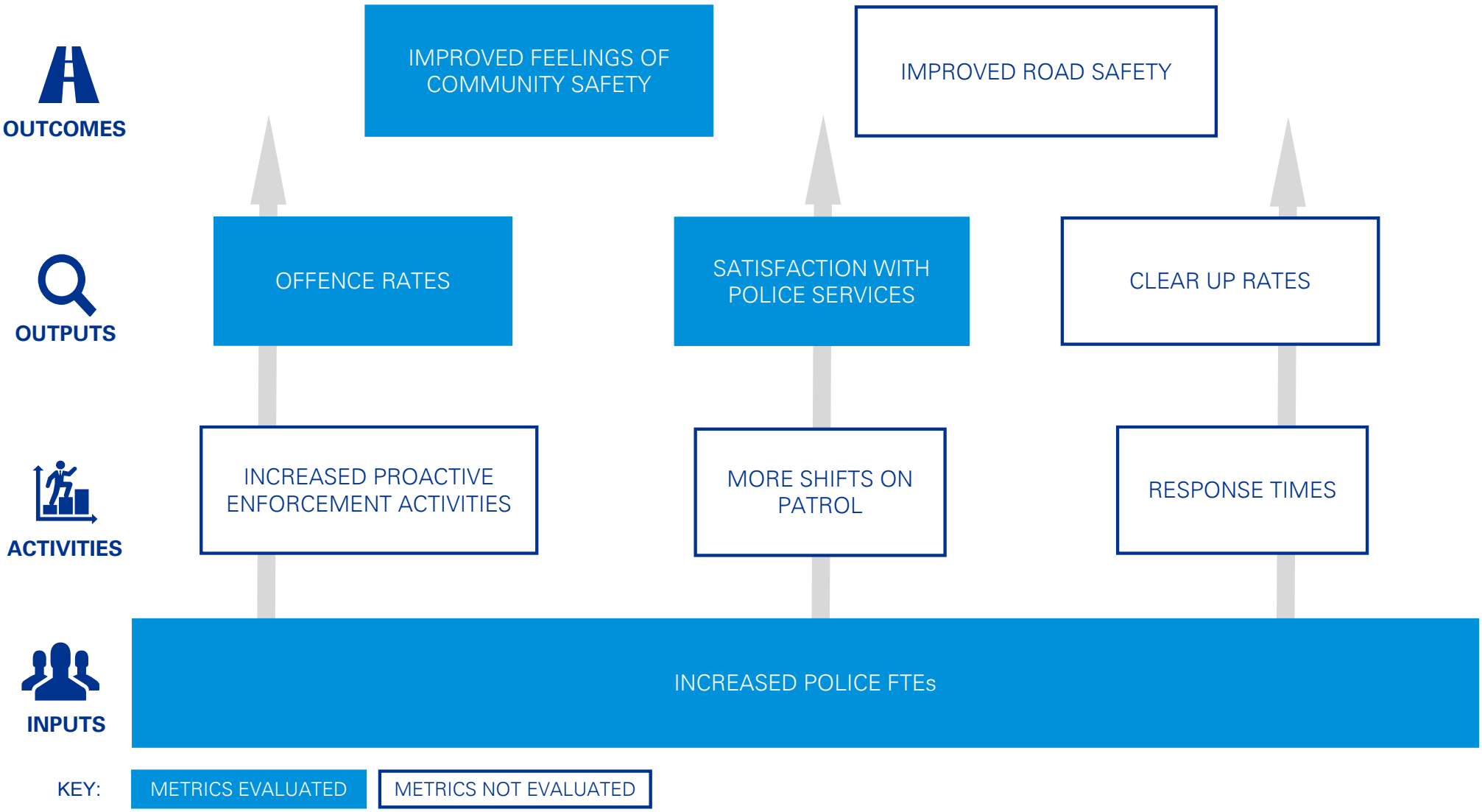
Health Performance Mechanism Example



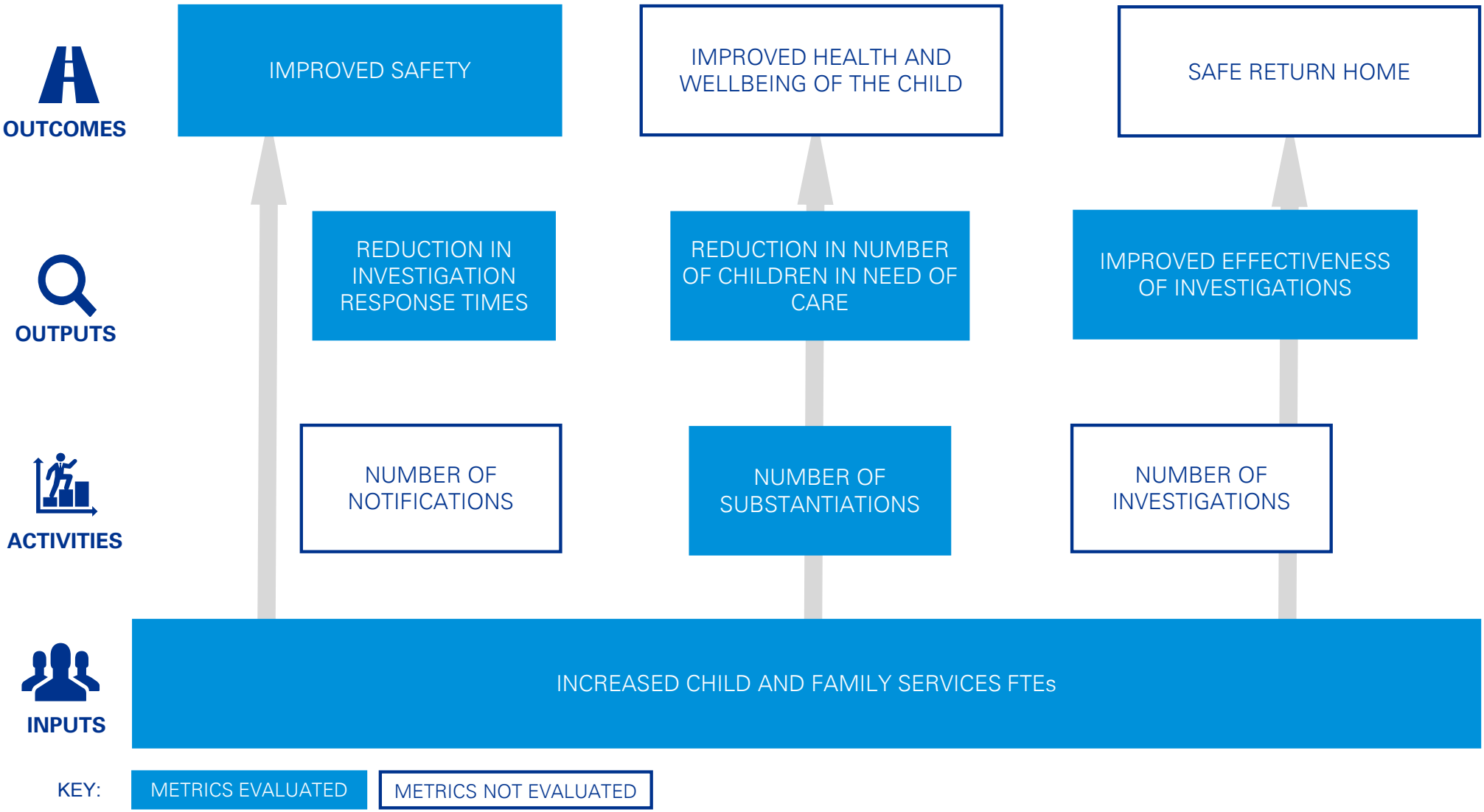
Education Performance Mechanism Example



Police Performance Mechanism Example



Child Safety Performance Mechanism Example



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3.0 Identifying Priorities, Goals and Metrics

Identifying Priorities, Goals and Metrics to Drive Accountability

Set a Clear Agenda and Priorities

A PMF regime should be built around outcomes aligned to a clear Government agenda and an articulation of priorities.

This thinking is evident in the PMFs KPMG has reviewed as part of this engagement. In NSW, for example, the agenda is expressed as "The Premier's 12 Priorities". New Zealand's Better Public Services regime specifies "10 challenging results for the public sector to achieve over the next five years".

In some cases an agenda and priorities are derived from a process of community engagement, or through policy announcements, such as election commitments or ongoing decisions of government. However chosen, in order to resonate with the community and public sector professionals, the priorities should reflect areas of persistent policy challenge and community concern.

Articulating priorities does not mean other areas of Government activity cease, or cease to be tracked and reported upon. Priority setting does not take the place of existing processes, such as publishing SDSs and annual reports.

Setting priorities does however send a clear signal to the public sector and the community about what outcomes Government is seeking to highlight in order to create focus. However, priorities should not be imposed from the centre. Genuine consultation with agencies and Ministers is essential to create buy-in and commitment.

Consideration also needs to be given to where in the performance mechanism each chosen priority will sit. While a focus on outcomes is inherently appealing, correlation with and causation by changes in inputs are more likely to be evident at an activity and output level. There is also likely to be less of a lag between changes in inputs and results at an activity and output level and lengthy lags may influence the ability of Government to focus on a particular priority while maintaining the enthusiasm of agencies. The selection of priorities therefore involves trade-offs which need to be carefully debated, as illustrated in the figure on page 14.

Develop Clear Goals and Measurement Metrics

Priorities are of little consequence in driving improvement across service delivery unless there is also a clear definition of what success looks like and a carefully designed measure by which progress can be assessed.

Goals should be SMART (specific, measurable, ambitious, realistic and time bound). Goals do not necessarily require a target to be set. For example, a goal to continuously reduce crime drives focus and accountability without setting a target, provided that the metrics by which the level of crime is assessed are well articulated and reliable.

However targets can help to create a sense of urgency and inspire action. In particular they allow progress against a trajectory to be constantly monitored which improves accountability and provides evidence of progress in the evidence-based continuous improvement process.

It is critical to ensure priorities, goals and metrics align. The literature on NZ's regime discusses the example of a priority described as "New Zealand Business have a one-stop online shop for all government advice and support". The goal was "business costs from dealing with government will reduce by 25 percent" and the measurement metric was based on perceived effort by business. This created confusion due to the mixed requirements of implementing a solution (the one-stop shop), reducing costs (by 25 percent) and influencing perceptions of "effort".

Given the complexity of creating and aligning priorities, goals, and metrics, it is possible that unintended consequences will emerge. Careful consultation with agencies to tap their considerable service delivery experience mitigates this risk, as does regular audits of the data collection process to ensure the goal is not being gamed. The possibility of unintended consequences should not be used as an excuse not to engage in priority and goal setting given that they can be addressed as they are uncovered.

Identifying Priorities, Goals and Metrics to Drive Accountability

Leading and Lagging Indicators

Metrics can be divided into two categories: leading and lagging.

Lagging metrics measure the results of past actions, such as an increase in funding or a policy change. Leading indicators measure factors which have an impact on outcomes, such as units of a particular activity performed in a period of time.

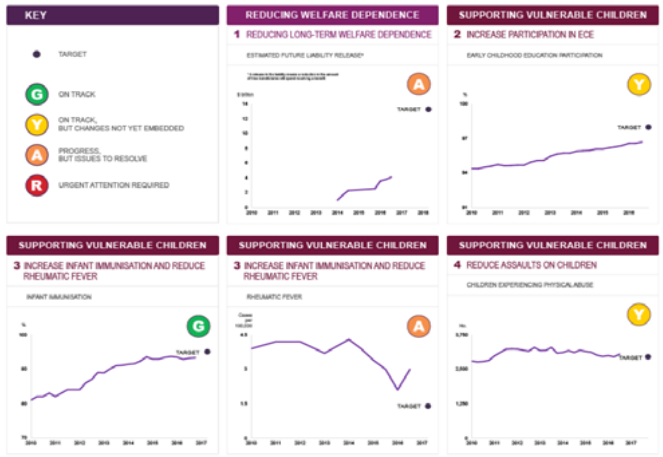
In terms of the construct of the mechanism in each policy area outlined in this report, inputs and activity lend themselves to a leading indicator approach.

Generally, as part of a performance management regime in Government, the role of agencies (or groups of agencies) is to hypothesise the leading indicators at an activity level which correlate with outputs and outcomes. The plan-do-check-act cycle of continuous improvement can then be used to test the hypothesis, adjust the assumptions in the mechanism and refine operational activities over time.

Reporting - Dashboards

Performance dashboards are an important element of reporting. Many of the jurisdictions examined as part of this engagement use a performance dashboard. For example the NZ Better Public Services regime displays ten outcomes, while NSW displays 12 Premier's Priorities and 18 State Priorities.

Ten results within five areas



These dashboards are an important ingredient in driving accountability and providing the critical "check" component of a plan-do-check-act continuous improvement cycle.

Dashboards can operate at various levels of the public sector, with centrally monitored outcomes being cascaded down through agencies. Contributing outputs, activities and inputs (including leading indicators) can be displayed at departmental, functional and operational levels within agencies accountable for delivery.

Dashboards offer a line of sight from state-wide objectives (desirable outcomes) through to frontline service activities and can contribute to evidence-based policy making and resource allocation.

Accountability

A key challenge with any PMF regime is assigning accountability for achieving outputs and outcomes. There are two aspects to this:

1. a vertical consideration of what accountabilities sit at the centre compared to agencies; and
2. a horizontal consideration of how accountability is shared amongst agencies for achieving outcomes which are influenced by the work of many agencies.

In terms of vertical considerations, the centre of Government should have accountability for:

- setting priorities, goals and metrics (following consultation);
- reporting on those priorities;
- monitoring and encouraging the continuous improvement process; and
- holding agency directors-general to account for achieving the goal.

Identifying Priorities, Goals and Metrics to Drive Accountability

Agencies should be accountable for:

- achieving / progress towards the goal;
- providing data to allow reporting; and
- service innovation in order to continuously improve.

In terms of horizontal considerations, a number of agencies contribute to attaining a goal (often described as a "cluster" of agencies). There are a number of options when considering the use of agency clusters, including:

- assign lead agency status for the cluster and hold the lead agency accountable for attaining the goal and hold participating agencies accountable for their active participation in the continuous improvement process; and
- assign collective accountability across the cluster, where contributing agencies are held jointly accountable for attaining goals.

The preceding description is illustrative and high level. Accountability in a performance management regime is a complex issue which warrants detailed consideration.

Whatever accountability mechanism is chosen, writing the goals into individual performance agreements is desirable to create focus and drive results.

Whole-of-Government Involvement

It will be the case that substantial areas of government activity and service delivery will not be involved in the delivery of the Government's identified priorities. This is the nature of priorities – by definition they are not intended to encompass all of Government's service delivery areas.

By explicitly acknowledging that substantial areas of service delivery are not involved in the delivery of the identified priorities, this will avoid a situation where agencies, in order to feel included, seek to create an involvement in the delivery of the priorities where none exists.

Nor should agency personnel believe that their lack of direct involvement in a stated Government priority diminishes their work in any way. The work of service delivery across Government continues, regardless of the expression of priorities.

All existing accountability and reporting mechanisms should continue to apply and the principles underlying the performance management regime can be leveraged by all agencies to improve their individual performance.

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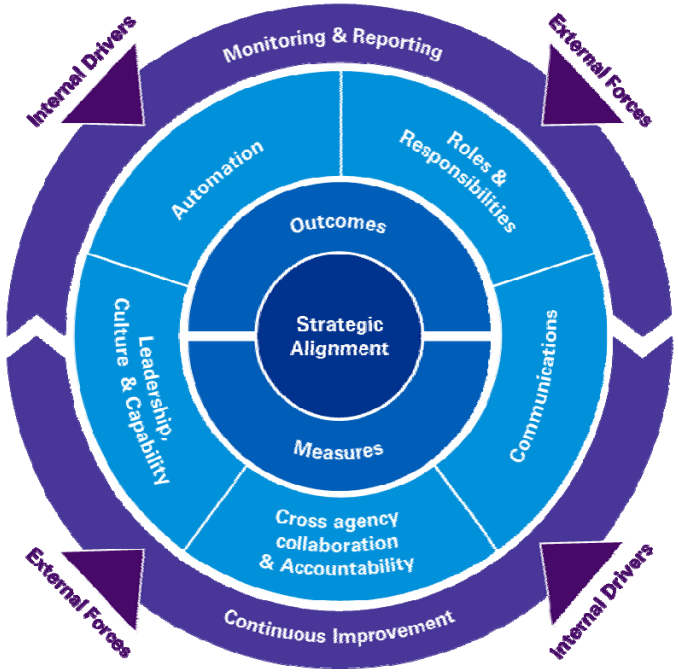
4.0 Queensland Performance Management Regime – Gap Analysis

Queensland Performance Management Regime - Gap Analysis

When comparing the leading practice system, underlying continuous improvement process and critical success features to the Queensland performance management regime, a number of observations can be made. These high-level observations are offered on the following pages as a gap analysis focussed on improvement opportunities, with acknowledgement that no detailed inquiry has been conducted of the Queensland regime's operation in practice.

It is important to note that this high level assessment relates specifically to the implementation and application of the Queensland Government's performance management and reporting regime and not the PMF policy or supporting guidance material. The existing PMF policy and guidance material is a solid basis for performance management and covers the essential elements required by the leading practice regime. However, based on this high-level gap analysis, there are a number of potential opportunities to improve and enhance the implementation of the PMF.

Whilst some internal workshops have been conducted, a more detailed analysis of the gap between leading practice and the operation of the Queensland performance management regime may be warranted prior to any application.



Gap Analysis- Strategic Alignment

Strategic Alignment

The extent to which there is clear line of sight between the Government's agenda and priorities and individuals' objectives cascaded down through the public sector.

Summary of Current State

Government objectives for the community have been articulated and are reported on to some extent from a compliance perspective. However, there is an opportunity to identify what these objectives mean at an activity, output and outcome level and what metrics can be used to measure results. Although they are mentioned in Ministerial Charter Letters, opportunities exist to improve agency or individual objectives, accountability, clarity around priorities, performance management, measurement and improvement.

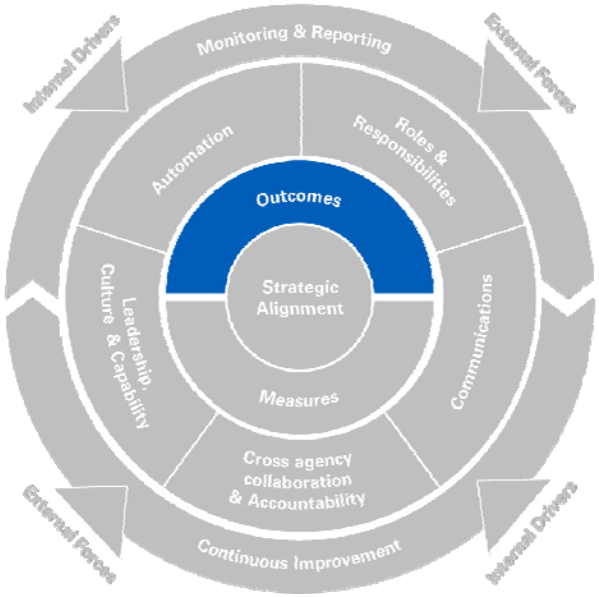
Supporting Narrative

- The *Government's Objectives for the Community* are reflected in relevant reporting documents (SDS, Charter Letters, Strategic Plans, Annual Reports).
- There is compliance through legislative requirements to make mention of the objectives, however there are opportunities to drive greater proactivity and active management of objectives and service innovation.
- The objectives for the community may benefit from review to ensure they remain relevant to the community and to ensure they are clearly articulated and linked to clear actions and outcomes.
- The objectives meet compliance requirements, however they appear to lack the specificity to drive performance and accountability.
- The objectives for the community are not reviewed or monitored regularly. They are only reviewed every election cycle. They may benefit from more regular review.
- There is an opportunity to clarify the relationships between key and flagship initiatives and the government's overall priorities.
- There are various programs, initiatives and statements of objectives, such as the Government's objectives for the community and Advance Queensland, which may create congestion and confusion of the Government's agenda, priorities and focus.
- The objectives for the community would benefit from clearer articulation of definitions, activities and outputs and outcomes. Selecting appropriate targets may be a critical step in this process.
- A clear gap exists as there is no documentation or supporting information that outlines what the Government priority statements mean and what the activity / output / outcome measures or targets are for these objectives.

Gap Analysis - Outcomes

Outcomes

Desired short, medium and long term outcomes. Often expressed as targets or goals and a trajectory, to create focus.



Summary of Current State

The Government's objectives for the community are not expressed in terms of specific goals.

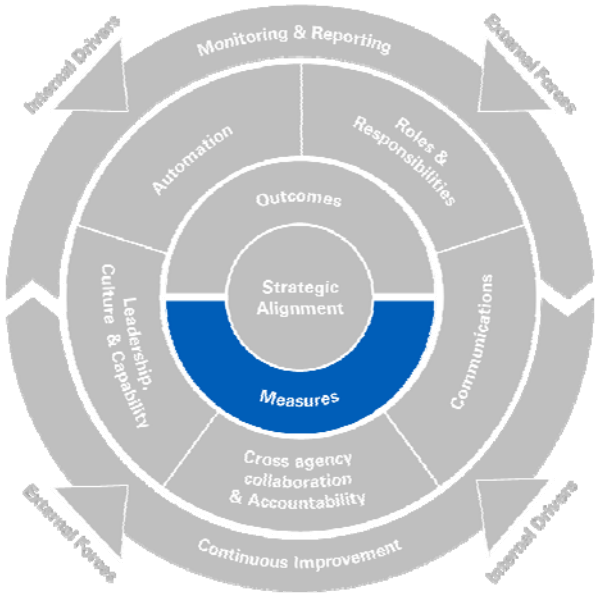
Supporting Narrative

- The Government's objectives for the community are not expressed as targets or goals.
- There is an opportunity and a need to further define the objectives in terms of activities, outputs, outcomes and targets.
- The objectives may benefit from supporting guidance for departments to assist with understanding and alignment of priorities.
- There is some agency focus around the objectives in annual reports, strategic plans and SDSs, however they are not used to drive agency performance or continuous improvement.
- Currently, DPC's focus is on capturing and tracking Government election and Charter letter commitments and cabinet decisions, not on a prioritised suite of Whole-of-Government outcomes.
- The objectives would benefit from centrally-led whole-of-government reporting.

Gap analysis - Measures

Measures

Financial and non-financial measures for the state-wide outcomes that are cascaded from the centre through to agencies and regions.



Summary of Current State

There are no measures associated with the Government's objectives for the community and many are agency driven / determined. There are a large number of measures which may create a lack of focus and no consistent time series data exists.

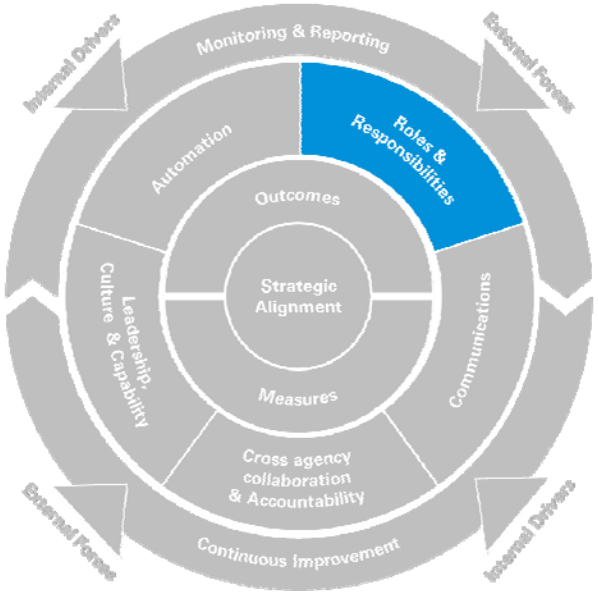
Supporting Narrative

- While agencies are required to prepare data dictionaries for the performance indicators in their strategic plans and for the service standards in the SDS, there is no requirement that reported results are accompanied by these data dictionaries.
- There is limited information about what measures are used to supplement reported results in the SDSs and Strategic Plans.
- Various agency reports have indicators, however there does not appear to be any alignment between outcomes, indicators and measures.
- The QAO Report 18: 2013-14 suggests that there needs to be a Whole-of-Government reporting method that remains separate from the SDS.

Gap Analysis - Roles & Responsibilities

Roles and Responsibilities

Defined and understood roles and responsibilities for performance and for the performance management regime (system and continuous improvement process).



Summary of Current State

Guidance is provided by the PMF policy, but there may be an issue with the way this guidance is applied by agencies. Current guidance may not be sufficiently implemented to reflect a mature process in practice, particularly in the area of governance around cross agency (cluster) outcomes, or roles and responsibilities between the centre of Government and agencies.

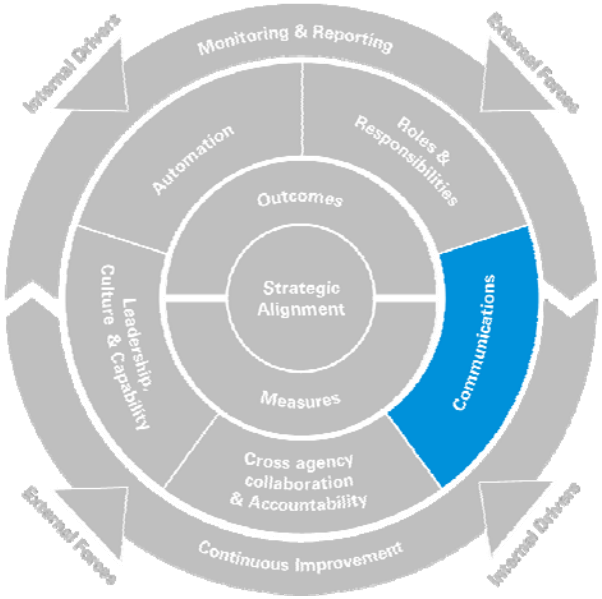
Supporting Narrative

- Roles and responsibilities for the current PMF are stated, but not sufficiently applied in practice, as evidenced by the QAO Report 18: 2013-14.
- There are no clear roles and responsibilities articulated for cross agency outcomes.
- There are no clear roles and responsibilities to define what occurs at the centre of Government as opposed to agencies.
- Given the Premier owns the Government's objectives for the community, DPC should be responsible for reporting agency performance against those objectives.
- Resource and capacity limitations inhibit the gathering of meaningful information.
- Seeking agency cooperation with reporting on performance data appears challenging.
- While Treasury and DPC have clear responsibility for financial and non-financial metrics respectively, DPC does not currently appear to have a role in relation to monitoring and reporting whole-of-Government performance.

Gap Analysis - Communications

Communications

Compelling internal and external communications in relation to all elements of performance management.



Summary of Current State

Much information is communicated through agency annual reports, various financial reports and updates and SDSs. However there is an absence of any public performance dashboard to satisfy the need for compelling external communication, or internal communication to drive adherence to the PMF.

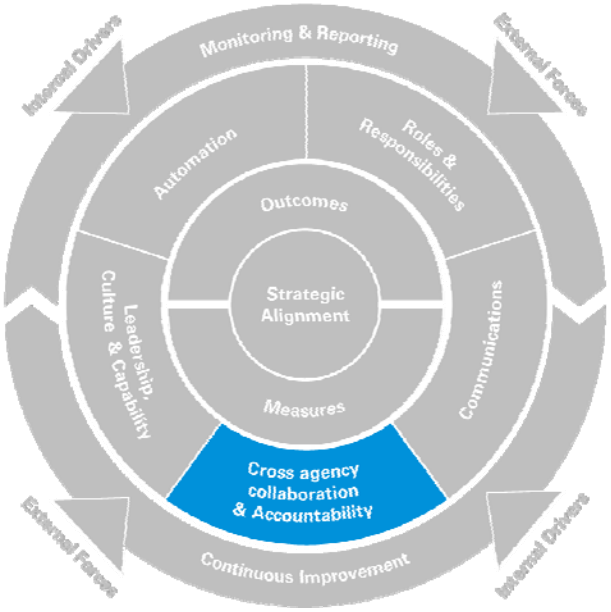
Supporting Narrative

- Much information is available on performance, but it lacks focus and isn't accessible.
- Available information would benefit from review to ensure clarity of information, accessibility and fitness for purpose.
- There is no single dashboard / website that contains Queensland performance information around specific priorities or the Government's objectives for the community.
- The Government's objectives for the community are not consistently referenced in collateral, such as media releases, speeches, etc.

Gap Analysis - Cross Agency Collaboration & Accountability

Cross Agency Collaboration and Accountability

Recognition that objectives often span multiple agency accountabilities and require collaboration.



Summary of Current State

As in all Westminster systems of government, Queensland's Parliamentary accountability regime encourages and (to a degree) requires a silo-driven approach, whereas service delivery and performance management requires more horizontal integration and collaboration. Whilst there have been attempts to drive collaboration at a leadership level, incentives for effective participation may be able to be improved.

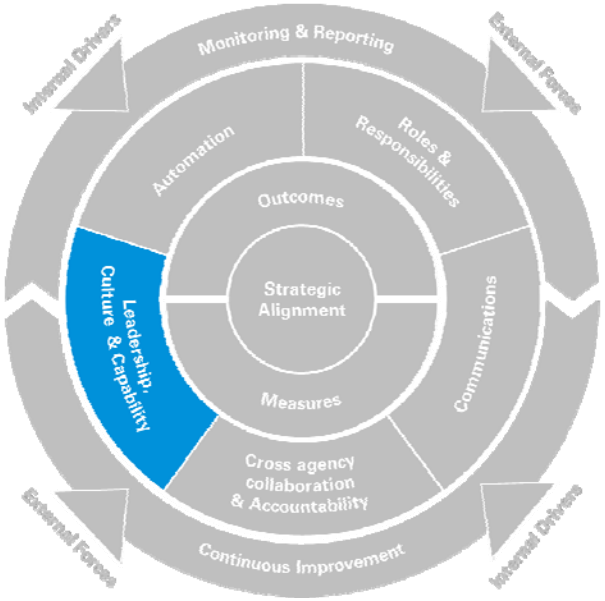
Supporting Narrative

- Agencies are often siloed in their operations and are only accountable for their own service lines.
- There are examples of project specific cross agency collaboration but there is little systemic effort around major shared objectives.
- SDSs are agency driven and don't take account of shared cross agency objectives.
- Specific cross agency objectives, for example, protecting the Great Barrier Reef, or the Government's response to the drug, Ice, do not have shared accountability mechanisms.
- There is no systemic mechanism for shared budget allocations to influence collaboration.
- Very little policies or procedures exist to incentivise collaboration. Some attempts have been made to drive collaboration, for example, at the Leadership Board Level.

Gap Analysis - Leadership, Culture and Capability

Leadership, Culture and Capability

Leadership aligned to performance management process and the culture and capability to drive continuous improvement.



Summary of Current State

Consistent with other jurisdictions, implementation of the PMF in Queensland needs to consider refreshed leadership to ensure effective stewardship of the system, to ensure clarity of focus and purpose and to support the evolution of an outcomes-focussed culture across the sector.

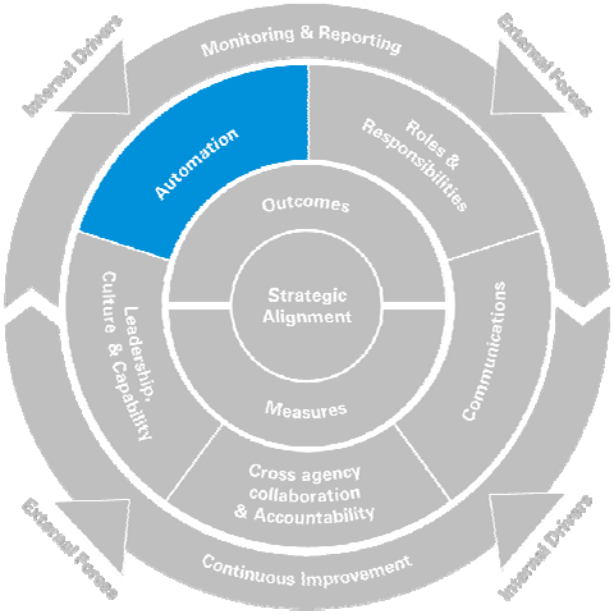
Supporting Narrative

- The 2013 QAO Report asserts that there is a definite gap in leadership around performance management.
- Performance management needs to be cascaded down through agencies to drive culture (from objectives, to Ministerial Charter Letters, to CEO performance agreements, SES performance agreements, business planning and individual performance agreements).
- Ministerial Charter Letters specify that agencies collaborate, however in practice this is most evident in response to a crisis or by a short term taskforce, not for day to day business or performance management or improvement.
- There is an opportunity to link performance management more clearly and more directly to continuous improvement.
- The Public Sector Commission has developed and is applying the Capability Assessment Framework in partnership with Directors General to provide greater insight on the strengths and development areas across the domains of leadership, strategy and delivery within agencies.

Gap Analysis- Automation

Automation

Technology to capture, process and analyse measurement information and reduce manual activities.



Summary of Current State

Fit for purpose information management systems exist for the management and reporting of performance information. Existing automated information and reporting systems are not currently being used to capture, analyse or report on Whole-of-Government priorities.

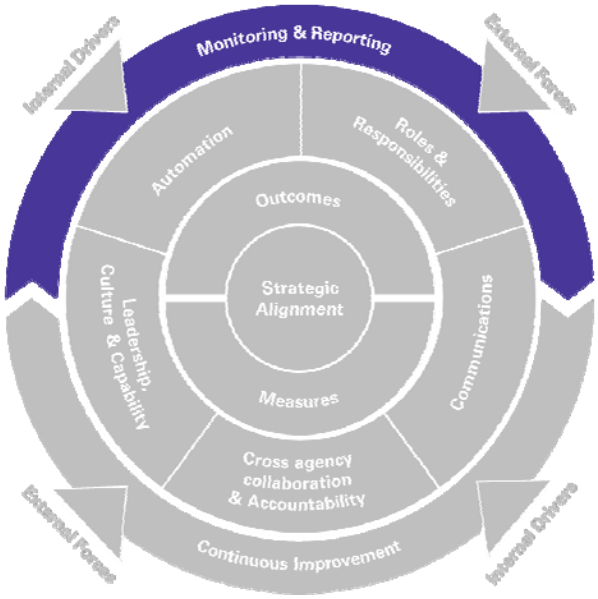
Supporting Narrative

- The Performance Information Management System (PIMS), managed by DPC, has centralised and automated the storage, tracking and reporting of information on the implementation of Government commitments and decisions.
- Agencies use this tool to provide information for automated reporting internally and to DPC.
- The data primarily relates to the implementation of Government commitments and decisions rather than the Government's objectives for the community.
- Data sharing and analysis of information across Government does not occur to the full extent possible.

Gap Analysis- Monitoring and Reporting

Monitoring and Reporting

Accurate, timely and appropriate management of information to drive appropriate action.



Summary of Current State

Agencies report on selected information in annual reports, various financial reports and SDSs to comply with various requirements. However, Whole-of-Government monitoring and public reporting of performance aligned to key Government priorities through a performance dashboard does not occur. There is an opportunity to enhance whole-of-government reporting of performance against key priorities and to create further opportunities for continuous improvement.

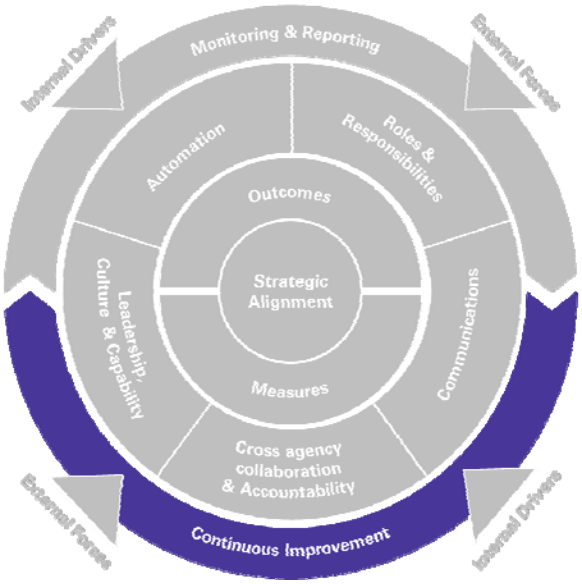
Supporting Narrative

- DPC monitors, tracks and reports on election commitments and cabinet decisions.
- Whole-of-Government performance reporting may be motivated by compliance rather than an opportunity to monitor for the purposes of performance management and continuous improvement.
- While much information is reported in the public arena there is no easy to interpret dashboard to monitor and communicate performance against goals in priority areas.
- DPC does not appear able to readily extract agency data that would allow it to monitor performance in priority areas.
- There are inconsistent uses of formal agreements between agencies to manage performance, reflecting similar accountability challenges facing other jurisdictions.
- Q-TRACK is a proposed approach to enhance public reporting on the Government's performance, focused around a suite of key priorities, outcomes and supporting actions.
- Existing data is being used to monitor progress against objectives as they relate to Government commitments and decisions.
- Q-TRACK has the potential to become a centralised tool for monitoring and public reporting performance results against objectives for Whole-of-Government priorities.

Gap Analysis - Continuous Improvement

Continuous Improvement

Continuous assessment of and action on the gap between current results and desired outcomes and the refinement of the performance mechanism.



Summary of Current State

The PMF policy refers to performance reviews and a consistent effort to improve the performance information of agencies. However, there appears to be little emphasis on a plan-do-check-act continuous improvement process in practice.

Supporting Narrative

- Some mechanisms exist for the improvement of particular aspects of agency service delivery – for example, the Performance Evaluation Guidelines (PEG).
- Central agencies facilitate a formal review process of SDSs on an annual basis.
- Capability blueprints have been completed for four departments. The Capability Blueprint framework includes a number of elements which relate to performance management including 'Evidence based choices', 'Plan, resource and prioritise' and 'Manage performance'.
- There is no mechanism in place to drive systemic performance improvement around the Government's objectives for the community.
- There is an opportunity to improve the linkages between evidence and trajectory.
- No permanent agency clusters exist around Whole-of-Government objectives that are shared across agencies. It appears however that agencies do come together in less permanent task forces and for other collaborative initiatives.
- There are no resources dedicated to proactively manage Whole-of-Government performance or encourage continuous improvement of objectives.
- The Performance Unit (DPC) oversees the implementation and continuous improvement of the PMF policy. However, there is currently limited focus on the oversight, implementation, monitoring and reporting of Government's objectives for the community, Whole-of-Government priorities and outcomes.

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5.0 Recommendations

Recommendations

The following recommendations on enhancing existing performance management systems and processes reflect:

- the lessons learned through undertaking the data analysis on input, activity, output and outcome metrics;
- the literature review; and
- consideration of the leading practice performance management system, continuous improvement process and performance mechanisms developed in this report.

1. Define Priorities

i. Cabinet should establish a DPC-led review of the Queensland Government's objectives for the community with a view to creating a small number of priorities aligned to the Government's agenda and taking into account areas of persistent challenge and community concerns.

ii. This review process should:
- involve consultation with Ministers and agencies to capture expertise and build buy-in and commitment;
- create and consider an initial performance mechanism hypothesis to assist in taking into account trade-offs such as possible causal links and lags between changing inputs and results ; and
- emphasise that the priority-setting approach does not diminish the importance of areas of government activity and service delivery that do not link to the priorities that are determined.

iii. For each priority:
- define goals (including targets and / or continuous improvement benchmarks);
- decide which agencies contribute to each priority (agency clusters);
- consider the desired trajectory;
- define the metrics for measuring results;
- establish a data collection process; and
- consider opportunities to automate the collection and analysis of data.

2. Report Publicly

i. Using the proposed platform of Q-TRACK and DPC's Performance Unit to guide implementation, DPC should establish a public dashboard featuring the priorities, an explanation of the measurement metrics and the goals.

ii. Consideration should be given to using a public dashboard to communicate Government priorities to the public as well as feature other information, such as:

- government policy and initiatives aligned to each priority;
- aspects of the performance mechanism for each priority – i.e. the current hypothesis regarding the linkages between inputs, activities, outputs and outcomes;
- an explanation of trends and external factors considered relevant to achieving the goals; and
- case studies featuring achievements aligned to each priority.

iii. Agency SDSs, website information and annual reports should align to the Government's priorities in the performance management regime and report on other metrics in the performance mechanism for each priority, along with other metrics agencies consider relevant.

iv. A specific quarterly Cabinet agenda item should be established to review results against goals. DPC should be responsible for preparing an updated dashboard of results and agencies should report through their Ministers on policies and initiatives being pursued to close the gap between results and goals, trends, external factors affecting results and case studies of achievement.

v. DPC should develop a communications strategy and plan for communicating the benefits of the performance management framework and progress towards goals within Government and externally.

Recommendations

3. Drive Collaboration and Improvement

i. DPC should lead the process of creating agency clusters around each performance management regime priority, where required (in cases where cross agency collaboration is required) in order to reach a goal within a priority.

ii. In consultation with the agencies involved, DPC should create terms of reference for agency clusters which align to the continuous improvement process and encourage evidence-based decision making.

iii. DPC should monitor and report regularly to the Premier and Cabinet on the effectiveness of agency clusters in pursuing the continuous improvement process and attaining the specified goal.

iv. Cabinet should consider establishing Cabinet sub-committees aligned to agency clusters that drive strategic conversations around performance, continuous improvement and tracking the delivery of cross agency priorities.

4. Create Clear Roles, Accountabilities and Responsibilities

i. Ministerial Charter Letters and CEO performance agreements should be amended to reflect the priorities and goals to achieve strategic alignment.

ii. In consultation with the PSC, CEOs should review their agencies' internal performance management arrangements to cascade accountability throughout agencies.

iii. Collective accountability for achieving goals in priority areas for which agency clusters are established should be assigned to CEOs and agencies across each agency cluster.

iv. In consultation with Ministers and agencies, DPC should seek Cabinet endorsement of a clear statement of roles, accountabilities and responsibilities for various elements of the PMF regime.

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Appendix 1 : Technical Appendix

1.1 Correlation Analysis – Summary

Correlation Analysis

In order to better understand the link between changes in Government inputs and the effectiveness in achieving the desired outcomes, a correlation analysis has been undertaken.

The correlation analysis aims to examine whether there may be a possible connection between certain inputs and outcomes, and to establish the strength of this relationship. The correlation analysis does not determine cause and effect, as it does not consider the effect of other factors which may influence outcomes. However, it can provide insight into the historical relationship of the variables.

A positive correlation between variables indicates as one variable increases, the other also increases, and vice versa. On the other hand, a negative correlation indicates as one variable increases, the other decreases. A positive / negative correlation does not indicate whether the result is good / bad, it only reflects the relationship between the variables given movements over time.

For the purposes of the analysis, the focus has been on the number of Full Time Equivalents (FTEs) employed as the key input, with an interest on improved outcomes for the Police, Education, Health and Child Safety portfolios.

While the correlation analysis does not determine causality between the number of FTEs and particular outcomes, it does identify where fluctuations in FTE numbers tend to coincide with corresponding movements in outcomes.

The data provided does not enable a detailed analysis of where additional FTEs have been allocated within the relevant portfolios, or to which programs they have been allocated. As such, this analysis does not enable a detailed assessment of the effectiveness of FTE growth in individual programs in achieving desired outcomes.

It is also acknowledged that there are numerous other factors beyond simply the number of FTEs that drive outcomes, including the quality of services provided and other factors outside the influence of Government.

However, by understanding the potential correlation between these variables, it establishes a 'first step' towards understanding the relationship between changes in inputs (FTEs in this case) and corresponding movements in outcomes.

To develop a detailed understanding of the performance mechanism and effectiveness of inputs in achieving outcomes, this analysis requires supplementary data, including at a program level, as well as a detailed understanding of the various external forces which drive and influence outcomes.

The majority of data collected was at the Queensland-wide level, however, in some cases – where data was available – some regional level analysis has been undertaken in order to explore the potential links and generate an understanding of potential influencers in a more defined regional setting.

A summary of the results from this analysis are provided in the following pages.

Limitations of the Analysis

- While a correlation analysis may provide an indication of the movements of two variables, it does not provide insights into the 'cause and effect' of the relationship. That is, while variables may be related, the analysis does not identify if one variable influences the other, i.e. correlation does not imply causation
- While movements in performance metrics and the number of FTEs may be correlated, in each circumstance, there will be a number of external factors influencing movements of the variables.
- It should also be noted the outcomes metrics may be influenced by not only external factors, but also the combined effort of other government department programs through integrated service delivery working towards a similar set of objectives. This is likely to be particularly relevant for disadvantaged cohorts which experience a high degree of intervention across a number of Government services.
- The correlation analysis does not attempt to make adjustments to account for potential time lags in any potential link between inputs and outcomes / outputs. For example, increased inputs may take several years to yield improved outcomes. This is particularly relevant for portfolios such as health, child safety and education.
- The FTE data provided does not identify where (or to which programs) the FTEs were allocated within the portfolio. As such, this does not enable a direct comparison with FTEs allocated to specific tasks, and any movements in outcomes within that area.

Correlation Analysis - Assumptions

A number of assumptions have been made to enable a robust and consistent analysis to be undertaken.

FTE Data

Data has been sourced from the Public Service Commission (PSC), which provided unpublished quarterly FTE Minimum Obligatory Human Resource Information (MOHRI) data sets for the financial years 2007-08 to 2015-16. This data was provided at the Special Occupation Group (SOG) level by agency.

The agency data varies from year to year in line with various Machinery of Government changes, however, for key service areas, FTE measures for Teachers, Nurses, Medical and Ambulance – Operational have been reported consistently, enabling an analysis of a complete time series.

For Police FTEs, a minor adjustment was made to ensure consistency across the time periods. From Q1 2013, the police FTEs were split into police FTEs and recruit FTEs. In order to ensure consistency with periods prior to Q1 2013, police and recruit FTEs were aggregated over the period Q1 2013 – Q4 2016.

The PSC advised of potential fluctuations in the quarterly FTE datasets from quarter to quarter, as reporting periods coincide with certain events such as holidays. To account for these fluctuations and provide a more consistent measurement approach in the correlation analysis, an average annual FTE figure has been calculated from quarterly FTE data, to attempt to minimise any impacts from these quarter to quarter fluctuations.

As such, given the quarterly FTE data provided has been averaged over each financial year, the FTE data used in this report may not be consistent with latest FTE data as reported on the PSC website or by departments.

Child Safety FTEs were not reported at the SOG level in the data provided by the PSC. As such, FTE data for the Child and Family Services stream within the Department of Communities, Child Safety and Disabilities Services (DCCSDS) was sourced from annual budget documentation in the form of Service Delivery Statements.

FTE data	Data Source	Data Period
Police	PSC unpublished	2007-08 to 2015-16
Teacher	PSC unpublished	2007-08 to 2015-16
Nursing	PSC unpublished	2007-08 to 2015-16
Medical	PSC unpublished	2007-08 to 2015-16
Child and Family Safety	DCCSDS SDS	2012-13 to 2015-16

Performance Metric Data

Data was sourced primarily from the following sources:

- Departmental Service Delivery Statements and Annual Reports;
- Departmental websites;
- Australian Institute of Health and Welfare;
- Productivity Commission's Report on Government Services; and
- Australian Bureau of Statistics.

See the technical appendix at Appendix 1.1 for data sources used.

The scope of this analysis was focussed on utilising publicly available and published performance data. Departments have not been approached to provide unpublished / additional data for the purposes of the analysis. As such, this analysis may inadvertently omit certain metrics which may be of value, but were not publicly available to enable an analysis.

Metrics determined suitable for exploration have been selected on the basis of guidance from DPC and availability of data. No input has been provided by departmental representatives.

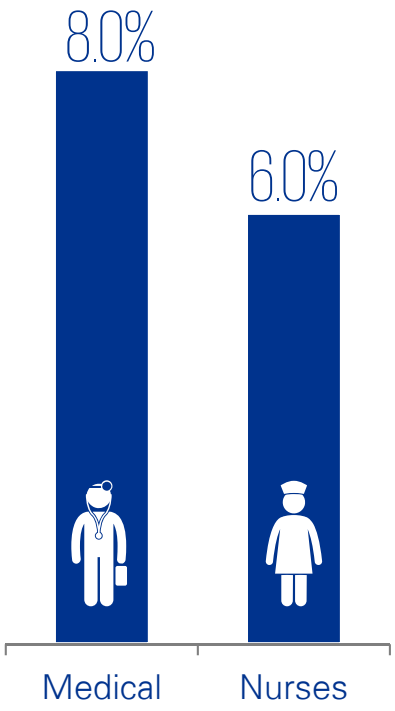
No attempt has been made within the analysis to determine the potential causal links between various influencing factors and outcomes.

Health - Outcomes 2014-15 to 2015-16

Input

FTE GROWTH 2014-15 to 2015-16

*based on average FTEs employed during the year



Activity

Weighted Activity Units

8,531 (3.6%) decrease — ED

71,852 (7.6%) increase — Acute inpatient

Acute Public Hospital Activity

198,485 (6%) increase — Admitted Patient Accrued Patient Days

89,895 (7%) increase — Admitted Patient Episodes of Care

Output/Outcome

Time within which code 1 incidents are attended (QAS):

0.3 minute increase

Elective surgery patients seen within recommended timeframes – Category 1:

No change

ED median wait times:

2 minute reduction

ED attendances departing within 4 hours:

2% increase

ED patients seen within recommended timeframes:

2% increase

Rate of SAB infections in public hospitals (per 10,000 days of patient care):

0.8 reduction

Source: Public Service Commission, Productivity Commission (RoGS), AIHW , QH website and SDS

Correlation Analysis - Health

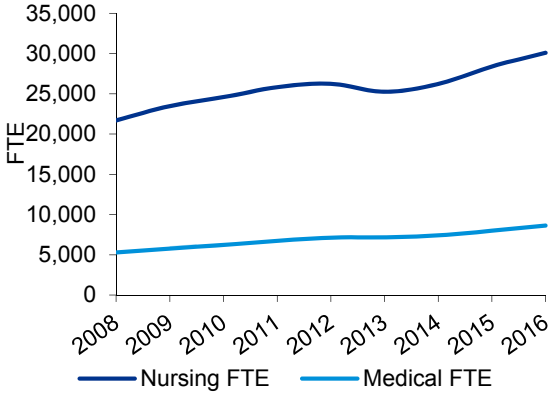
FTEs

Between 2014-15 and 2015-16, the number of medical FTEs grew by 8%, while the number of nursing FTEs grew by 6%. This level of growth is above the annual average growth rate of 6.3% (medical) and 4% (nursing) over the evaluation period 2008-09 to 2015-16.

FTEs have grown each year over this period, with the exception of 2012-13, where nursing FTEs fell by 3.8% on the prior year.

While acknowledging the Queensland Government's Fiscal Principle 6 – that overall growth in public service FTE employees, on average over the forward estimates, does not exceed population growth – it is clear that demand for front line health services has been growing at a rate significantly above that of population growth in recent years.

Nursing and Medical, FTEs - Queensland 2008-2016



	Nursing	Medical
2008-09	8.2%	9.2%
2009-10	4.7%	8.1%
2010-11	5.0%	7.7%
2011-12	1.6%	6.1%
2012-13	-3.8%	0.5%
2013-14	3.9%	3.3%
2014-15	8.2%	7.9%
2015-16	6.0%	8.0%

Source: Public Service Commission

Activity

Between 2013-14 and 2015-16 growth in acute public hospital activity has significantly outstripped population growth, with the number of admitted patient accrued days growing by an average annual rate of 6.6%, and the number of admitted patient episodes of care growing by an average annual rate of 9.1%. This is compared to the average annual population growth rate over the same period of 1.3%.

This is supported by growth in weighted activity units for acute inpatients. A weighted activity unit (WAU) is a measure of health service activity, weighted for its clinical complexity. Between 2012-13 and 2015-16, average annual growth of 6.5% has been experienced in acute inpatient WAUs, again, significantly in excess of population growth.

The average annual growth rate for emergency department WAUs has grown by an average annual rate of 6.2% between 2012-13 and 2015-16, however, with a fall of 3.6% between 2014-15 and 2015-16.

Performance

While it is clear that frontline health service activity has been growing at a rate in excess of population growth, the FTE data provided is not disaggregated to a level that enables an analysis of whether the additional medical or nursing FTEs were allocated to high demand areas, or the effectiveness of these additional FTEs at a program level.

In addition, it is acknowledged there are a number of external factors that influence health outcomes that are beyond the control of government, including lifestyle/behavioural factors, socio-economic status, genetic and environmental factors. Likewise, it is acknowledged that improved health outcomes may take several years from initial intervention to be realised.

Correlation Analysis - Health

However, this does not preclude the need for government to track outcomes and drive continual improvement of services that contribute to these outcomes.

Despite significant growth in activity/demand in recent years, many publicly available performance metrics have not deteriorated.

The ability to sustain and improve on various levels of service and contribute to the overall objectives of improving health outcomes is to some degree influenced by the level of inputs allocated to providing this service. For the purposes of this analysis, the focus is on the number of frontline health FTEs. However, it is also acknowledged that FTEs are only one input contributing to the delivery of public health services, and does not necessarily capture improvements in the quality of care or efficiency in delivery.

As evidenced in the following summary analysis, while not an indicator of causality, improvements in some indicators are closely correlated with the number of frontline FTEs involved in service provision. However, perhaps reflecting the degree of external influences on the health sector, many metrics do not provide statistically significant evidence of correlation with FTE movements.

Mortality rate of potentially avoidable deaths

Over the period 2007-08 to 2014-15, available data suggests there is a statistically significant correlation with the number of frontline FTEs (medical and nursing). Data indicates FTE growth over the period has coincided with a reduction in mortality rate. Over the evaluation period, the mortality rate of potentially avoidable deaths fell at an average annual rate of 2.2% (a rise of 4.1% was realised in 2014-15).

However, given the significant number of other external influences impacting on mortality rate, and the inability for FTE numbers to capture the quality of services provided, it would appear unreasonable to allocate responsibility for this result to FTE increases alone. Although the data indicates a correlation, as with all metrics analysed, this does not indicate causation.

Median wait time for treatment in emergency departments (ED)

Over the evaluation period 2011-12 to 2015-16, the data indicates there is a statistically significant negative relationship with the number of medical FTEs, indicating growth in medical FTEs has coincided with a decrease in the median wait time.

The data does not indicate a statistically significant relationship with nursing FTEs. However, this result is largely due to fluctuations in the nursing FTE data in 2013, which breaks the continuity of the time series and impacts on the linear nature of the assessment methodology.

Over the evaluation period, nursing FTEs grew at an average annual rate of 4%, while the median wait time fell at an average annual rate of 6%, with a 2 minute reduction in 2015-16.

ED wait time is likely to be influenced heavily by the level of demand for ED services. As such, campaigns aimed at changing behaviour and reducing unnecessary ED visitation can reduce pressure on ED services, such as Queensland Health's *Keeping Emergency for emergencies* campaign, which was first run in December 2014 and is currently continuing.

Percentage of ED attendances who depart within 4 hours

Over the evaluation period 2011-12 to 2015-16, the data indicates there is a positive relationship with the number of medical FTEs, indicating growth in medical FTEs has coincided with an increase in the percentage of ED attendances who depart within 4 hours.

The data does not indicate a statistically significant relationship with nursing FTEs. This result is largely due to fluctuations in the nursing FTE data in 2013, which breaks the continuity of the time series and impacts on the linear nature of the assessment methodology.

However over the evaluation period, nursing FTEs grew at an average annual rate of 4%, while the percentage of ED attendances that departed within 4 hours increased from 63% to 79%, with a 2% improvement between 2014-15 and 2015-16.

Correlation Analysis - Health

Percentage of ED patients seen within recommended timeframes

Over the evaluation period, the data does not provide evidence of a statistically significant correlation with FTE growth, indicating movements in the percentage of ED patients seen within recommended timeframes have not coincided with movements in FTEs.

Over the period, the percentage of ED patients seen within recommended timeframes improved from 64% to 72%, with a 2% improvement in 2015-16.

Although an increasing share of patients were seen within recommended timeframes and this grew largely in line with FTE growth, the above result indicates other drivers also influence the result. These could include process efficiency factors as well as demand/supply factors (including unnecessary ED visitations).

Percentage of elective surgery patients seen within clinically recommended timeframes – Category 1

Over the evaluation period 2011-12 to 2015-16, the available data suggests there is a statistically significant positive correlation with the number of frontline medical and nursing FTEs. This indicates growth in FTEs has coincided with an increase in the percentage of elective surgery patients seen within recommended timeframes. Over the evaluation period, the percentage of category 1 elective surgery patients treated within recommended timeframes improved from 88% to 98%, with no movement in 2015-16 on the prior year.

Separations with an adverse event, public hospitals

Over the evaluation period 2010-11 to 2014-15, the data shows there is a statistically significant positive correlation with number of medical FTEs, indicating growth in medical FTEs has coincided with an increase in the number of separations with an adverse event.

The data does not indicate a statistically significant relationship with nursing FTEs. This result is largely due to fluctuations in the nursing FTE data in 2013, which breaks the continuity of the time series and impacts on the linear nature of the assessment methodology.

Over the evaluation period, the rate of separations with an adverse event grew from 5.7 to 6.4 events per 100 separations, with no movement in 2015-16 on the prior year.

This measure is an indicator of quality and safety (see PC, RoGS), and measures adverse events that occurred during hospitalisation.

As noted, FTEs are only one input contributing to the delivery of public health services, and does not necessarily capture the quality of care or efficiency in delivery. As such, given the significant number of other drivers influencing this result, it is not considered reasonable to map this outcome to FTE numbers without consideration of other drivers.

Correlation Analysis - Health

Cases of Staphylococcus aureus bacteraemia (SAB) in public hospitals

Over the period 2010-11 to 2015-16, available data suggests there is a statistically significant correlation with the number of frontline FTEs. Data indicates FTE growth over the period has coincided with a reduction in the rate of SAB cases (per 10,000 days of patient care). Over the evaluation period, the rate of SAB cases fell at an average annual rate of 10.5% (a fall of 10.4% was realised in 2014-15).

Rather than being influenced by additional FTEs, this is more likely to be a result of an increased focus on hygiene and education campaigns around the importance of ensuring certain standards and protocols are followed to minimise infections.

As noted, FTEs are only one input contributing to the delivery of public health services, and does not necessarily capture improvements in the quality of care or efficiency in delivery. As such, given the significant number of other drivers influencing this result, it is not considered reasonable to map this outcome to FTE numbers without consideration of other drivers.

Queensland's rate of infection has been consistently below the nationally agreed benchmark of no more than 2.0 SAB cases per 10,000 days of patient care for acute care public hospitals, with the rate for 2015-16 sitting at 0.69 SAB cases per 10,000 days of patient care.

Time within which code 1 incidents are attended – 50th percentile – Queensland Ambulance Service

Over the period 2010-11 to 2015-16, available data suggests ambulance FTE growth has coincided with an increase in the time within with code 1 incidents are responded to (50th percentile).

There are a range of other factors that will have influenced response times, beyond availability of ambulance FTEs, including the impacts of traffic congestion, weather conditions, allocation of assets (i.e., actual ambulances) and the place/proximity of incident to dispatch centres.

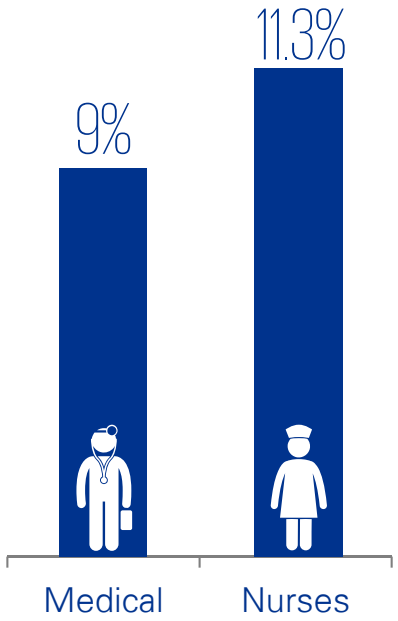
It should be noted that over the evaluation period, the response time only increased from 8.2 minutes to 8.6 minutes (i.e., 24 seconds). The scale of the average annual movements in attendance times is less than 1% over the 6 year evaluation period, which is far less than population growth over the period.

Health - Gold Coast HHS - Outcomes 2014-15 to 2015-16

Input

FTE GROWTH 2014-15 to 2015-16

*based on average FTEs employed during the year



Activity

Weighted Activity Units

628 increase — ED

13,545 increase — Acute inpatient

Output/Outcome

Elective surgery patients seen within recommended timeframes – Category 1:

1% increase

ED median wait times:

2 minute reduction

ED attendances departing within 4 hours:

4% increase

ED patients seen within recommended timeframes:

1% increase

Rate of SAB infections in public hospitals (per 10,000 days of patient care):

0.6 reduction

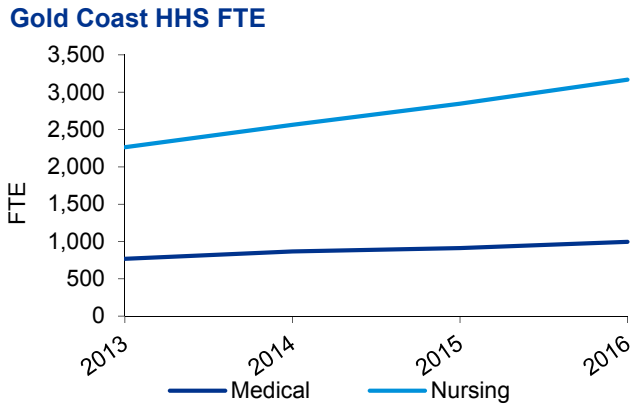
Source: Public Service Commission, QH website and SDS

Correlation Analysis - Health - Gold Coast HHS

FTEs

Between 2014-15 and 2015-16, the number of medical FTEs grew by 9%, while the number of nursing FTEs grew by 11.3%.

This level of growth is above the annual average growth rate of 9.1% for medical, and on par with the 11.9% for nursing over the evaluation period 2012-13 to 2015-16.



	Nursing growth	Medical growth
2013-14	13.3%	13.0%
2014-15	11.1%	5.2%
2015-16	11.3%	9.0%

Source: Public Service Commission

Activity

Between 2014- 15 and 2015-16 growth in acute public hospital activity has grown significantly faster than population growth, with growth in weighted activity units for acute inpatients of 14%, compared to population growth in the Gold Coast LGA of 2.2% over the period.

A weighted activity unit (WAU) is a measure of health service activity, weighted for its clinical complexity.

Between 2012-13 and 2015-16, average annual growth of 14.4% has been experienced in acute inpatient WAUs, again, significantly in excess of population growth of 1.9% for the Gold Coast LGA over the period.

The average annual growth rate for emergency department WAUs has grown by an average annual rate of 14.4% between 2012-13 and 2015-16, with growth of 2.8% between 2014-15 and 2015-16.

Performance

While it is clear that frontline health service activity has been growing at a rate in excess of population growth, the FTE data provided is not disaggregated to a level that enables an analysis of whether the additional medical or nursing FTEs were allocated to high demand areas, or the effectiveness of these additional FTEs at a program level.

In addition, it is acknowledged there are a number of external factors that influence health outcomes that are beyond the control of government, including lifestyle/behavioural factors, socio-economic status, genetic and environmental factors. Likewise, it is acknowledged that improved health outcomes may take several years from initial intervention to be realised.

Correlation Analysis - Health - Gold Coast HHS

However, this does not preclude the need for government to track outcomes and drive continual improvement of services that contribute to these outcomes.

Despite significant growth in activity/demand in recent years, many publicly available performance metrics have not deteriorated.

The ability to sustain and improve on various levels of service and contribute to the overall objectives of improving health outcomes is to some degree influenced by the level of inputs allocated to providing this service. For the purposes of this analysis, the focus is on the number of frontline health FTEs. However, it is also acknowledged that FTEs are only one input contributing to the delivery of public health services, and does not necessarily capture improvements in the quality of care or efficiency in delivery.

As evidenced in the following summary analysis, while not an indicator of causality, improvements in some indicators are closely correlated with the number of frontline FTEs involved in service provision. However, perhaps reflecting the degree of external influences on the health sector, many metrics do not provide statistically significant evidence of correlation with FTE movements.

Percentage of ED attendances who depart within 4 hours

Over the period 2012-13 to 2015-16, available data suggests there is a statistically significant correlation with the number of frontline FTEs. Data indicates FTE growth over the period has coincided with an increase in the percentage of ED attendees departing within 4 hours.

Over the evaluation period, the percentage of ED attendees that depart within 4 hours has increased by 12%, with a 4% increase between 2014-15 and 2015-16.

Percentage of ED patients seen within recommended timeframes – All categories

Over the evaluation period 2012-13 to 2015-16, the data does not provide evidence of a statistically significant correlation with FTE growth. Indicating movements in FTEs have not directly coincided with movements in the number of ED patients seen within recommended timeframes.

Over the period, the percentage of ED patients seen within recommended timeframes fell from 57% to 50%, with a 1% improvement in 2015-16.

Percentage of elective surgery patients seen within clinically recommended timeframes – Category 1

Over the evaluation period 2012-13 to 2015-16, the data suggests there is a statistically significant relationship with the number of nursing FTEs, indicating growth in nursing FTEs has coincided with and increase in the percentage of elective surgery patients seen within recommended timeframes.

The data does not indicate a statistically significant relationship with medical FTEs. This result is largely due to the short time series of data available and fluctuations in the growth rates of medical FTEs, which breaks the continuity of the time series and impacts on the linear nature of the assessment methodology.

Over the period, the percentage of category 1 elective surgery patients treated within recommended timeframes improved from 91% to 100%, with a 1% improvement in 2015-16 on the prior year.

Correlation Analysis - Health - Gold Coast HHS

Cases of Staphylococcus aureus bacteraemia (SAB) in public hospitals

Over the evaluation period 2012-13 to 2015-16, available data suggests there is no evidence of a statistically significant correlation with the number of frontline FTEs. Indicating movements in FTEs have not directly coincided with movements in the rate of SAB cases.

Over the period, the rate of SAB cases fell from 0.5 cases per 10,000 days of patient care to 0 (a fall of 0.6 was realised in 2015-16).

As noted, FTEs are only one input contributing to the delivery of public health services, and does not necessarily capture improvements in the quality of care or efficiency in delivery. As such, given the significant number of other drivers influencing this result, it is not considered reasonable to map this outcome to FTE numbers without consideration of other drivers.

Median wait time for treatment in ED

Over the evaluation period 2012-13 to 2015-16, available data suggests there is no evidence of a statistically significant correlation with the number of frontline FTEs. Indicating movements in FTEs have not directly coincided with movements in the rate median wait time.

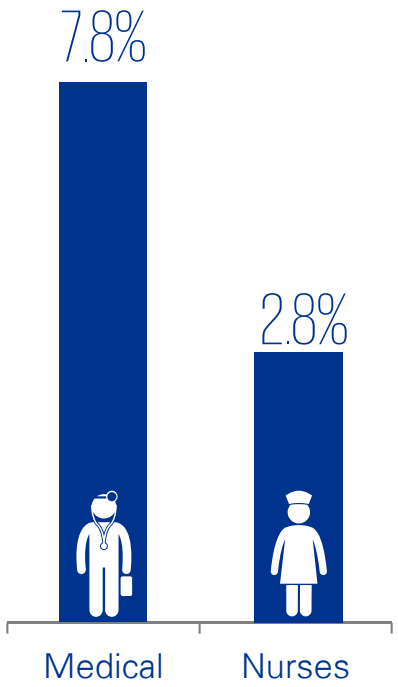
Over the period, the median wait time rose by 3 minutes. In 2015-16, it fell by 2 minutes on the previous year.

Health - Townsville HHS - Outcomes 2014-15 to 2015-16

Input

FTE GROWTH 2014-15 to 2015-16

*based on average FTEs employed during the year



Activity

Weighted Activity Units

1,077	2,198
decrease	decrease
ED	Acute inpatient

Output/Outcome

Elective surgery patients seen within recommended timeframes – Category 1:

1% decrease

ED median wait times:

4 minute reduction

ED attendances departing within 4 hours:

8% increase

ED patients seen within recommended timeframes – All categories:

5% increase

Rate of SAB infections in public hospitals (per 10,000 days of patient care):

0.8 increase

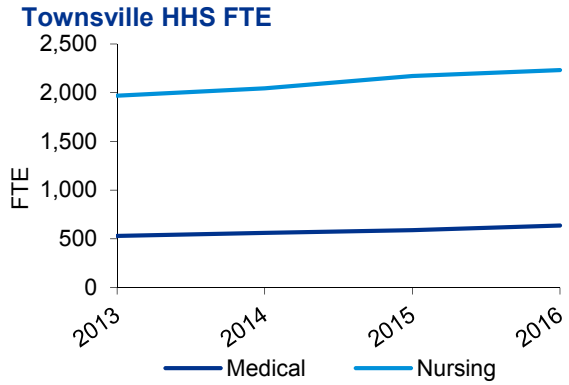
Source: Public Service Commission, QH website and SDS

Correlation Analysis - Health - Townsville HHS

FTEs

Between 2014-15 and 2015-16, the number of medical FTEs grew by 7.8%, while the number of nursing FTEs grew by 2.8%.

This level of growth is above the annual average growth rate of 6.3% for medical FTEs, and slightly below the 4.2% for nursing FTEs over the evaluation period 2012-13 to 2015-16.



	Nursing growth	Medical growth
2013-14	3.8%	6.0%
2014-15	6.2%	5.1%
2015-16	2.8%	7.8%

Source: Public Service Commission

Activity

Between 2012-13 and 2015-16 growth in acute public hospital activity has grown above that of population growth, with average annual growth in weighted activity units for acute inpatients of 4.0%, compared to population growth in the Townsville LGA of 1.2% over the period.

A weighted activity unit (WAU) is a measure of health service activity, weighted for its clinical complexity.

The average annual growth rate for emergency department WAUs has grown by an average annual rate of 3.6% between 2012-13 and 2015-16.

In 2015-16, acute inpatient WAUs fell by 3%, while ED WAUs fell by 7.4%.

Performance

While it is clear that frontline health service activity has been growing at a rate in excess of population growth, the FTE data provided is not disaggregated to a level that enables an analysis of whether the additional medical or nursing FTEs were allocated to high demand areas, or the effectiveness of these additional FTEs at a program level.

In addition, it is acknowledged there are a number of external factors that influence health outcomes that are beyond the control of government, including lifestyle/behavioural factors, socio-economic status, genetic and environmental factors. Likewise, it is acknowledged that improved health outcomes may take several years from initial intervention to be realised.

Correlation Analysis - Health - Townsville HHS

However, this does not preclude the need for government to track outcomes and drive continual improvement of services that contribute to these outcomes.

Despite significant growth in activity/demand in recent years, many publicly available performance metrics have not deteriorated.

The ability to sustain and improve on various levels of service and contribute to the overall objectives of improving health outcomes is to some degree influenced by the level of inputs allocated to providing this service. For the purposes of this analysis, the focus is on the number of frontline health FTEs. However, it is also acknowledged that FTEs are only one input contributing to the delivery of public health services, and does not necessarily capture improvements in the quality of care or efficiency in delivery.

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Percentage of ED attendances who depart within 4 hours

Over the evaluation period 2012-13 to 2015-16, the data suggests there is a statistically significant relationship with the number of medical and nursing FTEs, indicating growth in medical and nursing FTEs has coincided with an increase in the percentage of ED attendees who depart within 4 hours.

Over the evaluation period, the percentage of ED attendees that depart within 4 hours has increased by 18%, with an 8% increase between 2014-15 and 2015-16.

Percentage of ED patients seen within recommended timeframes – All categories

Over the evaluation period 2012-13 to 2015-16, the data does not provide evidence of a statistically significant correlation with FTE growth. Indicating movements in FTEs have not directly coincided with movements in the percentage of ED patients seen within recommended timeframes.

Over the period, the percentage of ED patients seen within recommended timeframes increased from 70% to 83%, with a 5% improvement in 2015-16.

Percentage of elective surgery patients seen within clinically recommended timeframes – Category 1

Over the evaluation period 2012-13 to 2015-16, the data does not provide evidence of a statistically significant correlation with FTE growth. Indicating movements in FTEs have not directly coincided with movements in the percentage of elective surgery patients seen within recommended timeframes.

Over the period, the percentage of category 1 elective surgery patients treated within recommended timeframes improved from 93% to 99%, with a 1% reduction in 2015-16 on the prior year.

Correlation Analysis - Health - Townsville HHS

Cases of Staphylococcus aureus bacteraemia (SAB) in public hospitals

Over the evaluation period 2012-13 to 2015-16, available data suggests there is no evidence of a statistically significant correlation with the number of frontline FTEs. Indicating movements in FTEs have not directly coincided with movements in the rate of SAB cases.

Over the period, the rate of SAB cases rose from 1.5 cases per 10,000 days of patient care to 1.8 (a rise of 0.8 was realised in 2015-16).

As noted, FTEs are only one input contributing to the delivery of public health services, and does not necessarily capture improvements in the quality of care or efficiency in delivery. As such, given the significant number of other drivers influencing this result, it is not considered reasonable to map this outcome to FTE numbers without consideration of other drivers.

Median wait time for treatment in ED

Over the evaluation period 2012-13 to 2015-16, the data suggests there is a statistically significant relationship with the number of nursing and medical FTEs, indicating growth in nursing and medical FTEs has coincided with a reduction in median wait times.

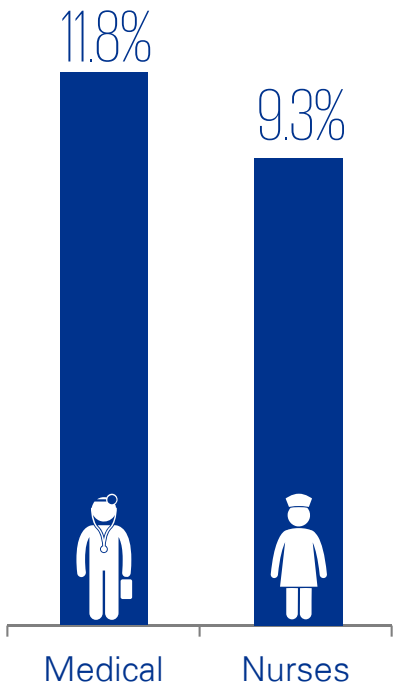
Over the period, the median wait time fell by 8 minutes. In 2015-16, it fell by 4 minutes on the previous year.

Health - Cairns HHS - Outcomes 2014-15 to 2015-16

Input

FTE GROWTH 2014-15 to 2015-16

*based on average FTEs employed during the year



Activity

Weighted Activity Units

70 increase — ED

7,864 increase — Acute inpatient

Output/Outcome

Elective surgery patients seen within recommended timeframes – Category 1:

6% decrease

ED median wait times:

5 minute reduction

ED attendances departing within 4 hours:

12% increase

ED patients seen within recommended timeframes – All categories:

12% increase

Rate of SAB infections in public hospitals (per 10,000 days of patient care):

0.3 decrease

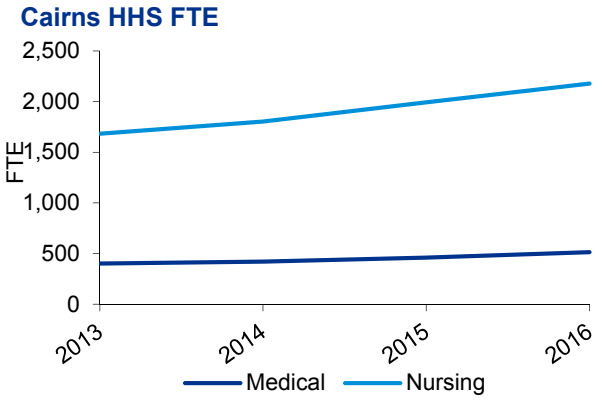
Source: Public Service Commission, QH website and SDS

Correlation Analysis - Health - Cairns HHS

FTEs

Between 2014-15 and 2015-16, the number of medical FTEs grew by 11.8%, while the number of nursing FTEs grew by 9.3%.

This level of growth is above the annual average growth rate of 8.5% for medical FTEs, and on par with the 9% for nursing FTEs over the evaluation period 2012-13 to 2015-16.



	Nursing growth	Medical growth
2013-14	7.2%	4.6%
2014-15	10.5%	9.2%
2015-16	9.3%	11.8%

Source: Public Service Commission

Activity

Between 2014- 15 and 2015-16 growth in acute public hospital activity has grown significantly faster than population growth, with growth in weighted activity units for acute inpatients of 13.7%, compared to population growth in the Cairns LGA of 1% over the period.

A weighted activity unit (WAU) is a measure of health service activity, weighted for its clinical complexity.

Between 2012-13 and 2015-16, average annual growth of 5.8% has been experienced in acute inpatient WAUs, again, significantly in excess of population growth of 1.1% for the Cairns LGA over the period.

The average annual growth rate for emergency department WAUs has grown by an average annual rate of 5.9% between 2012-13 and 2015-16, with growth of 0.4% between 2014-15 and 2015-16.

Performance

While it is clear that frontline health service activity has been growing at a rate in excess of population growth, the FTE data provided is not disaggregated to a level that enables an analysis of whether the additional medical or nursing FTEs were allocated to high demand areas, or the effectiveness of these additional FTEs at a program level.

In addition, it is acknowledged there are a number of external factors that influence health outcomes that are beyond the control of government, including lifestyle/behavioural factors, socio-economic status, genetic and environmental factors. Likewise, it is acknowledged that improved health outcomes may take several years from initial intervention to be realised.

Correlation Analysis - Health - Cairns HHS

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Percentage of ED attendances who depart within 4 hours

Over the evaluation period 2012-13 to 2015-16, the data does not provide evidence of a statistically significant correlation with FTE growth. Indicating movements in FTEs have not directly coincided with movements in the percentage of ED attendances who depart within 4 hours.

Over the evaluation period, the percentage of ED attendees that depart within 4 hours has increased by 14%, with a 12% increase between 2014-15 and 2015-16.

Percentage of ED patients seen within recommended timeframes – All categories

Over the evaluation period 2012-13 to 2015-16, the data does not provide evidence of a statistically significant correlation with FTE growth. Indicating movements in FTEs have not directly coincided with movements in the percentage of ED patients seen within recommended timeframes.

Over the period, the percentage of ED patients seen within recommended timeframes fell from 80% to 79%, with a 12% improvement in 2015-16 on the prior year.

Percentage of elective surgery patients seen within clinically recommended timeframes – Category 1

Over the evaluation period 2012-13 to 2015-16, the data does not provide evidence of a statistically significant correlation with FTE growth. Indicating movements in FTEs have not directly coincided with movements in the percentage of elective surgery patients seen within clinically recommended timeframes.

Over the period, the percentage of category 1 elective surgery patients treated within recommended timeframes improved from 88% to 93%, with a 6% reduction in 2015-16 on the prior year.

Correlation Analysis - Health - Cairns HHS

Cases of Staphylococcus aureus bacteraemia (SAB) in public hospitals

Over the evaluation period 2012-13 to 2015-16, available data suggests there is no evidence of a statistically significant correlation with the number of frontline FTEs. Indicating movements in FTEs have not directly coincided with movements in the rate of SAB cases.

Over the period, the rate of SAB cases fell from 0.9 cases per 10,000 days of patient care to 0.3 (a fall of 0.3 was realised in 2015-16).

As noted, FTEs are only one input contributing to the delivery of public health services, and does not necessarily capture improvements in the quality of care or efficiency in delivery. As such, given the significant number of other drivers influencing this result, it is not considered reasonable to map this outcome to FTE numbers without consideration of other drivers.

Median wait time for treatment in ED

Over the evaluation period 2012-13 to 2015-16, available data suggests there is no evidence of a statistically significant correlation with the number of frontline FTEs. Indicating movements in FTEs have not directly coincided with movements in the median wait time for treatment in the ED.

Over the period, the median wait time rose by 2 minutes. In 2015-16, it fell by 5 minutes on the previous year.

Education - Outcomes 2014-15 to 2015-16

Input

FTE GROWTH 2014-15 to 2015-16

*based on average FTEs employed during the year

Output/Outcome

Proportion of students receiving an OP 1-15 or IBD

0.2% increase

Proportion of Year 12 students completing SAT, QCE, IBD or VET qualification

1.4% increase

Proportion of students participating in the workforce, studying or training, 6 months after completing year 12

0.1% increase

Attendance rates

0.1% increase

Output/Outcome

Students above national minimum standards

Year 3	Increase	1.8%
	Increase	2.0%
	Decrease	0.2%
Year 5	Increase	2.7%
	Increase	3.7%
	Increase	4.3%
Year 7	Increase	2.1%
	Decrease	1.6%
	Increase	1.6%
Year 9	Increase	2.2%
	Decrease	1.7%
	Increase	2.1%

Reading Writing Numeracy

Source: Public Service Commission, DET website and SDS

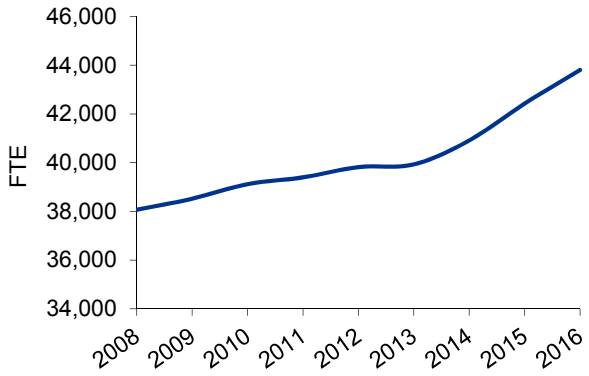
Correlation Analysis - Education

FTEs

Between 2014-15 and 2015-16, the number of teacher FTEs grew by 3.3%. This level of growth is above the annual average growth rate of 1.8% over the evaluation period 2008-09 to 2015-16.

FTEs have grown each year over this period, with the lowest rate of growth of 0.3% in 2012-13.

Teacher FTEs - Queensland 2008-2016



	Teacher FTE growth
2008-09	1.2%
2009-10	1.6%
2010-11	0.7%
2011-12	1.1%
2012-13	0.3%
2013-14	2.5%
2014-15	3.7%
2015-16	3.3%

Source: Public Service Commission

Demand

Between 2012-13 and 2015-16, the number of public school enrolments grew at the average annual rate of 1.6%, slightly above the average annual rate of population growth of 1.36% over the period.

The number of student enrolments is not only a measure of demand for public school services (i.e. teaching), but is also a measure of the level of activity required to be undertaken by the public school system.

Viewed in conjunction with the number of public school enrolments, it appears as though the additional teacher FTEs has not had a significant impact on reducing the average class size across all cohorts for Queensland public schools. However, the average class size has remained steady over the period, potentially indicating FTE increases may be targeted at maintaining current/past class sizes based on demand.

It should be noted this data is only provided at the Queensland level. Greater impacts on class sizes may be observed with more disaggregated FTE data that identified where additional FTEs were allocated.

Performance

It is acknowledged there are a number of external factors that influence educational outcomes that are beyond the control of Government and teachers, including socio-demographic status, geographical location and family background. Likewise, in many cases, improved educational outcomes are likely to be influenced to a greater degree by the quality of teachers, rather than purely additional FTEs. It is also acknowledged that improved educational outcomes may take several years from initial intervention to be realised.

However, this does not preclude the need for government to track outcomes and drive continual improvement of services that contribute to these outcomes.

As evidenced on the following pages, while not an indicator of causality, improvements in some indicators are closely correlated with the number of frontline FTEs involved in service provision.

Correlation Analysis - Education

Year 3 test – proportion of students above the national minimum standards

Over the evaluation period, 2008-09 to 2015-16, the data indicates there is a statistically significant correlation with growth in the number of teacher FTEs and improvements in year 3 results for writing and numeracy, indicating movements in teacher FTEs have coincided with corresponding movements in these areas.

Over the period, the proportion of students above the national minimum standards improved for reading (7.1%), writing (5%) and numeracy (4.1%). Between 2014-15 and 2015-16, the results improved for reading (1.8%) and writing (2%), but fell for numeracy (2%).

Year 5 test – proportion of students above the national minimum standards

Over the evaluation period, 2008-09 to 2015-16, the data indicates there is a statistically significant correlation with growth in the number of teacher FTEs and improvements year 5 results for reading and numeracy, indicating movements in teacher FTEs have coincided with corresponding movements in these areas.

Over the period, the proportion of students above the national minimum standards improved for reading (10.5%), writing (0.4%) and numeracy (6.7%). Between 2014-15 and 2015-16, the results improved for reading (2.7%), writing (3.7%) and numeracy (4.3%).

Year 7 test – proportion of students above the national minimum standards

Over the evaluation period, 2008-09 to 2015-16, the data indicates there is a statistically significant correlation with growth in the number of teacher FTEs and improvements in year 7 results for reading. It also indicates a correlation suggesting as FTEs grow, year 7 results in a decline in writing results. This indicates movements in teacher FTEs have coincided with corresponding movements in these areas.

Over the period, the proportion of students above the national minimum standards improved for reading (2.9%) and numeracy (1%), but fell for writing (5.9%). Between 2014-15 and 2015-16, the results improved for reading (2.1%) and numeracy (1%) but fell for writing (1.6%).

Year 9 test – proportion of students above the national minimum standards

Over the evaluation period, 2008-09 to 2015-16, the data indicates a correlation suggesting as FTEs grow, year 9 results in a decline in writing results. This indicates movements in teacher FTEs have coincided with corresponding movements in these areas.

Over the period, the proportion of students above the national minimum standards improved for reading (0.7%) and numeracy (5.1%), but fell for writing (11.1%). Between 2014-15 and 2015-16, the results improved for reading (2.2%) and numeracy (1.7%), but fell for writing (1.7%).

Overall, FTEs are not the sole factor influencing these results, and does not capture teaching quality. As such, these outcomes need to be considered in conjunction with other potential driving factors.

While improvements have been made across reading and numeracy state wide, the prevalence of a correlation between increasing teacher FTEs and a decline in writing results for years 7 and 9, albeit counterintuitive, it is an indication that additional FTEs – on its own – are unlikely to drive improved outcomes in writing. It potentially indicates that current approaches targeting improved writing outcomes may not be achieving the desired impacts.

However, the level of detail in the FTE data provided does not enable an in depth analysis of this result, given it is unclear how much of the additional FTE growth (or time spent teaching) has been allocated to writing skills.

Correlation Analysis - Education

Proportion of students who received an OP1-15 or International Baccalaureate Diploma (IBD)

Over the period 2008-09 to 2015-16, available data suggests there is a statistically significant correlation with the number of teacher FTEs. Data indicates FTE growth over the period has coincided with an increase in the proportion of students receiving an OP1-15 or IBD. Over the evaluation period, the proportion improved by 10%, with a 0.2% improvement in 2015-16.

Proportion of students who, 6 months after completing year 12, are participating in education, training or employment

Over the period 2008-09 to 2015-16, available data suggests there is a statistically significant correlation with the number of teacher FTEs. Data indicates FTE growth over the period has coincided with an decrease in the proportion of students participating in education, training or employment, 6 months after completing year 12.

Over the evaluation period, this proportion has declined by 7.4%. However, teacher FTEs are unlikely to be a sole driver of this result, which is to some degree likely to be a reflection of the broader economic conditions since the onset of the Global Financial Crisis, and availability of employment opportunities for school leavers, as evidenced by the prolonged high levels of youth unemployment across Queensland.

Proportion of parents satisfied with their child's school

Over the period 2009-10 to 2015-16 the data indicates there is no significant correlation between the number of FTEs and parent satisfaction. Over the period, parent satisfaction improved by 11.3%, with an increase of 0.2% between 2014-15 and 2015-16.

This result indicates the number of teachers is unlikely to be the sole driver of parents' satisfaction with their child's school. This is more likely to be more closely tied to parents' individual interactions with the school and the quality of the teachers.

Proportion of year 12 students who are completing or have completed SAT or awarded a QCE, IBD or VET qualifications

Over the evaluation period 2008-09 to 2015-16, the data indicates there is a correlation, with growing teacher FTEs coinciding with growth in the proportion of students completing one of the above qualifications. Over the evaluation period, this proportion increased by 8.4%, with a 1.4% increase between 2014-15 and 2015-16.

This result indicates a growing share of students are leaving school with some form of qualification. However, the degree to which additional FTEs is driving this result is unclear.

Attendance rates

The data over the period 2012-13 to 2015-16 indicates there is a correlation with attendance rates at public schools and the number of FTEs, with attendance rates increasing in line with additional FTEs.

However, over the evaluation period, the increase in participation rate was only 0.7% with a 0.1% increase between 2014-15 and 2015-16.

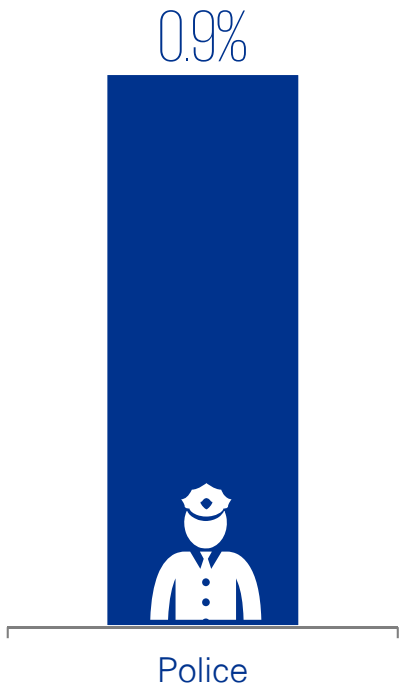
While an increasing student participation rate is a measure of improved student engagement with education, it appears difficult to allocate responsibility for this result to increased teacher numbers.

Police - Outcomes 2014-15 to 2015-16

Input

FTE GROWTH 2014-15 to 2015-16

*based on average FTEs employed during the year



Output/Outcome

Offences (per 100,000 persons)

Drink Driving	17.9% increase
Against the person	9.4% increase
Assaults	11.2% increase
Public nuisance	5% decrease
Police proceedings – Non-Court action	2.4% increase

Output/Outcome

Offences (per 100,000 persons)

Drug	8.3% increase
Breach of domestic violence protection order	35.7% increase
Other Offences	11.5% increase
Police proceedings – Court action	5.7% increase

Source: Public Service Commission, QPS website and SDS

Correlation Analysis - Police

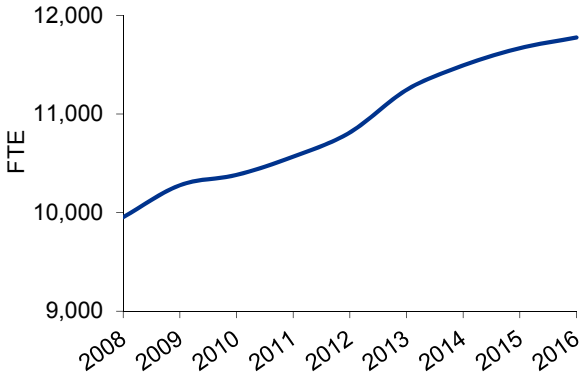
FTEs

Between 2014-15 and 2015-16, the number of police FTEs grew by 0.9%. This level of growth is below the annual average growth rate of 2.2% over the evaluation period 2008-09 to 2015-16.

FTEs have grown each year over this period, with the largest year-on-year growth rate of 4% occurring between 2011-12 and 2012-13.

The FTE data provided does not identify where the police service FTEs were allocated. As such, this does not enable a direct comparison with FTEs allocated to specific tasks, and any movements in outcomes in that area.

Police FTEs – Queensland 2008-2016



	Police FTE Growth
2008-09	3.3%
2009-10	1.0%
2010-11	1.8%
2011-12	2.3%
2012-13	4.0%
2013-14	2.2%
2014-15	1.5%
2015-16	0.9%

Source: Public Service Commission

Performance

It is acknowledged there are a number of external factors that can influence policing outcomes that are beyond the control of Government and police. It is also noted that overall outcomes are influenced by the combined actions of other Government department programs through integrated service delivery working toward a similar set of objectives.

For example, crime rates may also be influenced by programs run by the justice sector aimed at reducing recidivism, or the health sector through various mental health programs.

However, this does not preclude the need for government to track outcomes and drive continual improvement of services that contribute to these outcomes.

Interpretation of policing metrics can be difficult. While some metrics may show the rate of crime growing in some circumstances, this may not necessarily indicate a greater degree of crime is occurring, but may reflect that a greater level of enforcement is occurring and capturing a greater share of previously uncaptured criminal activity. Similarly, shifting public perceptions and culture around certain activities may lead to additional reporting of previously unreported criminal activity, for example Domestic Violence.

Policing activity can be broken down into proactive and reactive police activity. Proactive policing are activities that are generally detected by police, whereas reactive policing is typically responding to reports of criminal activity.

In addition, a recent report by the Queensland Audit Office recently highlighted concerns around the quality of data regarding reporting of offences. As identified by the QAO:

"For criminal justice data to be useful, it must be reliable; otherwise it can lead to incorrect perceptions and decisions. For example, a combination of under-reporting crime rates and inflating clearance rates can have a significant effect on how the community perceives crime and the effectiveness of police." (QAO, Report 14: 2016-17, p1)

As such, care should be taken when interpreting movements in these metrics, however, it remains the best publicly available information source upon which to guide policy and tailor departmental programs and activities.

As evidenced on the following pages, while not an indicator of causality, improvements in some indicators are closely correlated with the number of frontline FTEs involved in service provision.

Correlation Analysis - Police

Drink Driving offences (per 100,000 persons)

Over the evaluation period 2007-08 to 2015-16, data indicates there is a strong correlation with the number of police FTEs, suggesting growth in police numbers has coincided with a fall in the number of drink driving offences. Over the period, the rate of drink driving fell at an average annual rate of 2.1%, with a rise of 17.9% between 2014-15 and 2015-16.

Some potential external factors influencing movements in the drink driving offence rates includes various socio-economic factors, deterrent activity, impact of advertising campaigns and changing social views and norms around drink driving.

The rise in drink driving offences in 2016 could potentially be due to increased enforcement activity or better targeting of high-offence areas. However, this would need to be validated by supplementary activity data on the number of random breath tests undertaken (for which data was not publicly accessible).

Offences against the person (per 100,000 persons)

Over the evaluation period 2007-08 to 2015-16 data indicates there is a strong correlation with the number of police FTEs, suggesting growth in police numbers has coincided with a fall in the number offences against the person. Over the period, the rate of offences against the person fell at an average annual rate of 1.8%, with a 9.4% increase between 2014-15 and 2015-16.

Offences against the person are also more likely to be reported to the police (i.e. a measure of reactive policing activity), rather than detected by police. However, it would be reasonable to expect that the presence of police FTEs may act as a deterrent to these offences in certain circumstances, e.g. night club districts.

Assaults (per 100,000 persons)

Over the evaluation period 2007-08 to 2015-16, data indicates there is a strong correlation with the number of police FTEs, suggesting growth in police numbers has coincided with a fall in the number of assaults. Over the period, the rate of assaults fell at an average annual rate of 1.2%, with a rise of 11.2% between 2014-15 and 2015-16.

The number of assaults makes up a significant share of offences against the person.

Public nuisance offences (per 100,000 persons)

Over the evaluation period 2007-08 to 2015-16, data indicates there is a correlation with the number of police FTEs, suggesting growth in police numbers has coincided with a fall in the number of public nuisance offences. Over the period, the rate of public nuisance offences fell at an average annual rate of 1.2%, with a fall of 5% between 2014-15 and 2015-16.

The Queensland Police Service considers the rate of public nuisance offences as a proactive policing metric.

Other offences (per 100,000 persons)

Over the evaluation period 2007-08 to 2015-16, data indicates there is a correlation with the number of police FTEs, suggesting growth in police numbers has coincided with a rise in the number of other offences. Over the period, the rate of other offences grew at an average annual rate of 4.8%, with a rise of 11.5% between 2014-15 and 2015-16.

The Queensland Police Service (QPS), in its Annual Statistical Review, identified the number of other offences reported as an indicator of proactive policing activity, as these are offences that are generally detected by police. This potentially indicates a greater degree of proactive policing activity is occurring.

Correlation Analysis - Police

Drug offences (per 100,000 persons)

Over the evaluation period 2007-08 to 2015-16, data indicates there is a correlation with the number of police FTEs, suggesting growth in police numbers has coincided with a rise in the number of drug offences. Over the period, the rate of drug offences grew at an average annual rate of 5.7%, with a rise of 8.3% between 2014-15 and 2015-16.

The drug offence rate is considered by the QPS as a measure of proactive policing activity, as such, the result indicates the relationship between the growth in the number of police FTEs and the growth in drug offences is to some degree an indicator of increased enforcement activity.

There has been a clear focus on targeting organised crime by the Queensland Police Service (QPS), with Taskforce Maxima – which targets organised crime and drugs – becoming a permanent fixture of the QPS as the Organised Crime Gangs Group in May 2017.

Breach of domestic violence (DV) protection order (per 100,000 persons)

Over the evaluation period 2007-08 to 2015-16, data indicates there is a correlation with the number of police FTEs, suggesting growth in police numbers has coincided with a rise in the number of DV protection orders breached. Over the period, the rate of DV breach offences grew at an average annual rate of 13.7%, with a rise of 35.7% between 2014-15 and 2015-16.

While correlated, it is difficult to see how these variables could be causal, given the direction of the relationship and given offences are most often perpetrated in the home or amongst family members (see *Not Now, Not Ever*).

It is acknowledged by the Queensland Government that many incidences of domestic violence go unreported, given the private nature of the offences. As such, it is unclear whether the rise in DV offences in recent years are a result of the increasing prevalence of DV related assaults, or to some degree reflect a cultural change where victims may feel more comfortable reporting DV offences, given the support available to them.

Satisfaction with police services

The data available for the evaluation period 2009-10 to 2014-15 does not indicate any evidence of correlation with the number of police FTEs.

The above result indicates that the number of FTEs is unlikely to be a primary influencing factor around the public's perception of satisfaction of police services. This may be driven more by an individuals' interactions with police, the quality of service provided and general demeanour of officers.

Feelings of safety at home alone during the night

Data available for the evaluation period 2008-09 to 2014-15 indicates there is a correlation with the number of police FTEs, suggesting growth in police numbers has coincided with an increase in the percentage of the community that feel safe at home alone during the night. Over the period, the percentage of Queenslander's feeling safe increased by 5%.

Police proceedings – Court and Non-court action

Over the period 2008-09 to 2015-16, data indicates a correlation between the number of police FTEs, suggesting as police FTEs grow, the number of court and non-court actions also grow. Over the period the number of court action grew at an average annual rate of 3%, with non-court actions growing at 8%. Between 2014-15 and 2015-16, the number of court actions grew by 5.7% and non-court actions grew by 2.4%.

This result is not unexpected given the growth in offences identified above. However, the significant increase in the number of court action proceedings is a measure of increasing costs to the sector, and growing demand for court services, and associated police resources. On the other hand, an increasing number of non-court actions indicates steps are being taken where appropriate to divert offenders away from court action and focus on other programs or measures.

Police - Outcomes 2014-15 to 2015-16 - Police District

Gold Coast

Input

FTE GROWTH 2014-15 to 2015-16

*based on average FTEs employed during the year

Police

2.6% decline

Output/Outcome

2.1% decrease

Other Offences

49.7% increase

Breach of Domestic Violence Protection Order

Townsville

Input

FTE GROWTH 2014-15 to 2015-16

*based on average FTEs employed during the year

Police

0.3% decline

Output/Outcome

11.5% increase

Other Offences

75.2% increase

Breach of Domestic Violence Protection Order

Source: Public Service Commission, QPS website and SDS

Correlation Analysis - Police - District

Gold Coast District – Police FTE

The unpublished FTE data provided by the PSC was presented by Special Occupation Group, by Local Government Area (LGA).

The Queensland Police dataset sourced from the QPS website provided offence rates at the police district level.

In the following analysis, the reported offence rates for the Gold Coast police district have been used. With offence rates averaged over the course of each financial year to enable consistency of analysis with FTE data.

While the Gold Coast police district does not directly align with the Gold Coast LGA in a geographic sense, it provides a reasonable proxy for comparison.

However, it should be noted that given the close proximity of the Logan and South Brisbane Districts, the number of police FTEs recorded in the Gold Coast LGA may not accurately reflect the number of police FTEs operating in the district, as police may operate across districts where required. This assumption would need to be confirmed with the QPS.

Townsville District – Police FTE

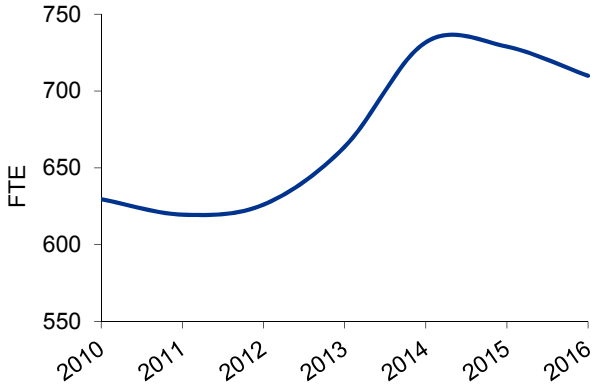
The unpublished FTE data provided by the PSC was presented by Special Occupation Group, by Local Government Area (LGA).

The Queensland Police dataset sourced from the QPS website provided offence rates at the police district level.

In the following analysis, the reported offence rates for the Townsville police district have been used, with offence rates averaged over the course of each financial year to enable consistency of analysis with FTE data.

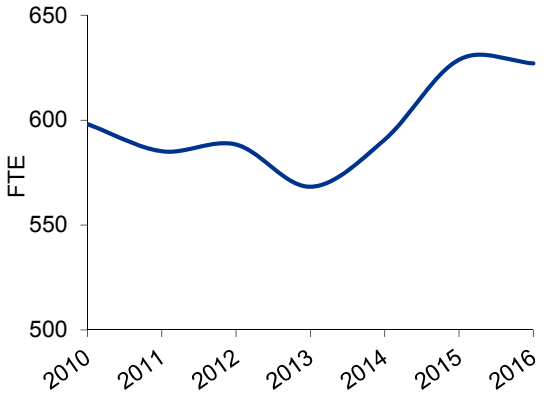
In order to map the Townsville police district with FTE data at the LGA level, the number of police FTEs for the Burdekin Shire Council, Charters Towers Regional Council, Flinders Shire Council, Palm Island Aboriginal Shire Council, Richmond Shire Council and Townsville City Council, have been aggregated. This provides a reasonably close approximation of the geographical area covered by the Townsville police district. However, it should be noted that there is potential for police FTEs to operate across districts where required. This assumption would need to be confirmed with the QPS.

Gold Coast Police FTE



	Gold Coast Police FTE Growth
2010-11	-1.60%
2011-12	1.05%
2012-13	6.01%
2013-14	10.26%
2014-15	-0.39%
2015-16	-2.60%

Townsville Police FTE



	Townsville Police FTE Growth
2010-11	-2.16%
2011-12	0.55%
2012-13	-3.42%
2013-14	3.96%
2014-15	6.45%
2015-16	-0.28%

Source: Public Service Commission

Correlation Analysis - Police - District

Gold Coast District

Other offences (per 100,000 persons)

Over the evaluation period 2009-10 to 2015-16, data indicates there is a correlation with the number of police FTEs, suggesting growth in police numbers on the Gold Coast has coincided with a rise in the number of other offences (and vice versa). Over the period, the rate of other offences grew at an average annual rate of 3.2%, with a fall of 2.1% between 2014-15 and 2015-16.

The QPS, in its Annual Statistical Review, identified the number of other offences reported as an indicator of proactive policing activity, as these are offences that are generally detected by police.

Breach of domestic violence (DV) protection order (per 100,000 persons)

Over the evaluation period 2009-10 to 2015-16, data indicates there is no evidence of a correlation with the number of police FTEs on the Gold Coast. Over the period, the rate of DV breaches offences grew at an average annual rate of 16.8%, with a rise of 49.7% between 2014-15 and 2015-16.

This result indicates the number of police FTEs is unlikely to have a significant influence of the rate of DV protection orders breached. This is not unexpected, as the offence is most often perpetrated in the home or amongst family members (see *Not Now, Not Ever*).

It is acknowledged by the Queensland Government that many incidences of domestic violence go unreported, given the private nature of the offences. As such, it is unclear whether the rise in DV offences in recent years are a result of the increasing prevalence of DV related assaults, or to some degree reflect a cultural change where victims may feel more comfortable reporting DV offences.

Townsville District

Other offences (per 100,000 persons)

Over the evaluation period 2009-10 to 2015-16, data indicates there is a correlation with the number of police FTEs, suggesting growth in police numbers in the Townsville District has coincided with a rise in the number of other offences. Over the period, the rate of other offences grew at an average annual rate of 3.3%, with an increase of 11.5% between 2014-15 and 2015-16.

The QPS, in its Annual Statistical Review, identified the number of other offences reported as an indicator of proactive policing activity, as these are offences that are generally detected by police.

Breach of domestic violence (DV) protection order (per 100,000 persons)

Over the evaluation period 2009-10 to 2015-16, data indicates there is a correlation with the number of police FTEs, suggesting growth in police numbers has coincided with a rise in the number of DV protection orders breached in the Townsville District. Over the period, the rate of DV breaches offences grew at an average annual rate of 17.5%, with a rise of 72.5% between 2014-15 and 2015-16.

While correlated, it is difficult to see how variations in these variables could be causal, given the direction of the relationship and that offences are most often perpetrated in the home or amongst family members (see *Not Now, Not Ever*).

It is acknowledged by the Queensland Government that many incidences of domestic violence go unreported, given the private nature of the offences. As such, it is unclear whether the rise in DV offences in recent years are a result of the increasing prevalence of DV related assaults, or to some degree reflects a cultural change where victims may feel more comfortable reporting DV offences, given the support available to them.

Child Safety - Outcomes 2014-15 to 2015-16

Input

FTE GROWTH 2014-15 to 2015-16

*based on average FTEs employed during the year

Activity

Number of intake reports: 7.7% reduction

Output/Outcome

	< 7 days	< 28 days
Percentage of investigations commenced within:	0.9% reduction	5% reduction
Children in out-of-home care:	2.6% increase	
Children in need of protection:	4.4% reduction	
Percentage of investigations completed within 28 days:	5% reduction	

Correlation Analysis - Child Safety

FTEs

Between 2014-15 and 2015-16, the number of child and family services FTEs grew by 0.6%. This level of growth is below the annual average growth rate of 3.3% over the evaluation period 2012-13 to 2015-16.

FTEs have grown each year over this period, with the largest year-on-year growth rate of 5.8% occurring between 2013-14 and 2014-15.

The FTE data provided does not identify where within the portfolio FTEs were allocated. As such, this does not enable a direct comparison with FTEs allocated to specific tasks, and any movements in outcomes in that area.

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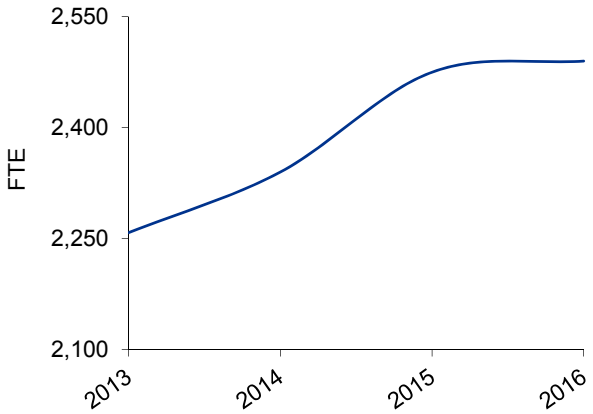
Child and Family Services



	Child and Family Services FTE Growth
2013-14	3.6%
2014-15	5.8%
2015-16	0.6%

Source: DCCSDS SDS

Performance

As with the police performance metrics, interpretation of the child safety metrics can be difficult. For example, while it may be preferable to reduce the number of children in out-of-home care, on an individual basis, placing children in out-of-home care may in fact be a desired outcome where the individual circumstances dictate better outcomes are likely to be realised for the child by being placed in out-of-home care. However, if there is an overall increasing number of children in out-of home care, it could indicate programs and measures are not delivering desired results.

It is acknowledged there are a number of external factors that can influence child safety outcomes that are beyond the control of Government. It is also noted that overall outcomes are influenced by the combined actions of other government department programs through integrated service delivery working toward a similar set of objectives.

However, this does not preclude the need for Government to track outcomes and drive continual improvement of services that contribute to these outcomes.

As evidenced on the following pages, while not an indicator of causality, improvements in some indicators are closely correlated with the number of frontline FTEs involved in service provision.

Correlation Analysis - Child Safety

Child Intake Reports

Over the evaluation period 2012-13 to 2015-16, data indicates there is a strong correlation with the number of child and family services FTEs, suggesting growth in FTE numbers has coincided with a fall in the number of child intake reports. Over the period, the number of intake reports fell at the average annual rate of 8.2%, with a fall of 7.7% between 2014-15 and 2015-16.

The intake phase is the initial decision making phase, where the department is notified of harm or risk of harm to a child.

While this is an improvement in that there has been a reduction in the number of notified incidences of harm or risk of harm to a child, it is unclear to what degree this result is driven by the willingness of the community to report such concerns or whether there has been a sustained reduction in the number of incidences of harm.

This may be a measure of the level of activity undertaken by the department, however, the number of child intake reports does not necessarily take into account the complexity associated with each individual case.

Children in out-of-home care

Over the evaluation period 2012-13 to 2015-16, the data indicates there is a strong correlation with the number of child and family services FTEs, suggesting growth in FTE numbers has coincided with an increase in the number of children in out-of-home care. Over the period, the number of children in out of home care grew at an average annual rate of 2.1%.

It would appear unreasonable to assume growth in FTEs would contribute to growth in the number of children in out-of-home care, unless the increase in FTEs has resulted in improved investigation quality which has resulted in an increased number of recommendations. However, this would be difficult to determine and no publicly available data was available to support this.

Proportion of children in out-of-home care subject of a child protection substantiation and the person believed responsible was living in the household providing out-of-home care

Data over the period 2012-13 to 2015-16 indicates no evidence of correlation with the number of FTEs.

This metric is a measure of safety of children in out-of-home care, as such a falling proportion of children subject to a substantiation where the person responsible lived in the household providing out-of-home care is desirable.

Over the evaluation period, this proportion fell by 1.2% (from 2.7% to 1.5%).

Proportion of children who were the subject of a decision not to substantiate during the year and who were also the subject of a subsequent substantiation within 3 and/or 12 months

Data over the period 2012-13 to 2014-15 indicates no evidence of correlation with the number of FTEs.

This is a measure of improved safety, with a falling rate of substantiations a desirable outcome. However, results for this indicator can be influenced by the finalisation of investigations, factors beyond the control of child protection services or changes in circumstances after the initial decision not to substantiate was made.

Over the period, the proportion of substantiations 3 months after the initial decision not to substantiate fell by 0.1%, with the rate at 12 months falling by 1%.

Correlation Analysis - Child Safety

Children subject to substantiation and in need of protection

Over the evaluation period 2012-13 to 2015-16, data indicates there is a strong correlation with the number of child and family services FTEs, suggesting growth in FTE numbers has coincided with a fall in the number of children in need of protection. Over the period, the number of children requiring protection fell at the average annual rate of 6.5%, with a fall of 4.4% between 2014-15 and 2015-16.

Response time to commence investigation

Data for the period 2012-13 to 2015-16 indicates there is no evidence of correlation with the number of FTEs. Over the evaluation period, the percentage of investigations responded to within 7 days fell by 11%, while the percentage of investigations responded to within 28 days fell by 5%.

In 2015-16, the percentage of investigations responded to within 7 days fell by 0.8% on the prior year, while it fell by 5% for investigations commenced within 28 days.

As identified in the Productivity Commission's RoGS, Queensland practice is that an investigation is not considered commenced until the child is sighted or, in the case of an unborn child, the pregnant woman is interviewed. Prior to sighting the child (or interviewing the pregnant woman) child safety officers begin actively working on the case through reviewing the child protection history of the child and family and determining who will be involved in the investigation process. This may include making contact with other agencies such as police, schools and hospitals.

Discussions with departmental representatives would likely provide some insight into this result, however, it is possible that recent reforms associated with implementation of the Carmody Inquiry recommendations may have increased workload complexities that have contributed to increased response times.

Response time to complete investigation (within 28 days)

Over the evaluation period 2012-13 to 2015-16 data indicates there is no evidence of correlation with the number of FTEs. Over the period, the proportion of investigations completed within 28 days fell by 11%, with a 5% fall in 2015-16.

While this indicates the effectiveness of conducting investigations in a timely manner, it does not necessarily take into account the degree of complexity of individual investigations.

Discussions with departmental representatives would likely provide some insight into this result, however, it is possible that recent reforms associated with implementation of the Carmody Inquiry recommendations may have increased workload complexities that have contributed to increased response times.

Correlation Analysis - Key Learnings

Throughout the course of the data collection and analysis process a number of key learnings have been identified:

- A factor potentially complicating the ability to derive meaning from correlations of single departments FTE movements with outcomes is that several departments may be working together towards similar outcomes through various programs that, collaboratively, contribute towards achieving outcomes.
- The initial focus of this analysis was to track the movements of inputs with outputs, using publicly available data sources on outcomes for the four service areas specified. However, as a list of potential metrics was being collated, it became clear that many of the measures considered outcomes, were better suited to that of outputs.
- While the focus of the data collection process was on publicly available data sources, there may be an issue with central agency real-time access to key departmental performance metrics, without individual requests for data. There may be valid reasons behind this – e.g. privacy concerns. However to the extent that data is not readily available to central agencies, any cultural barriers to data access need to be overcome to drive improvements in public service delivery, with a focus on continuous improvement. From the brief exercise of data analysis KPMG conducted, the extent of any such issue could not be clearly determined. However, ensuring central agencies and departments have a clear understanding of the strategic alignment with a common set of government objectives will focus service delivery.
- There appears to be limited continuity amongst service outcome measures reported within departmental Service Delivery Statements. There are a number of key metrics that are reported consistently, however, as measures are discontinued and new measures incorporated, the consistent reporting of these measures is compromised.
- Throughout the course of the analysis, it became apparent that the degree of influence of external factors becomes greater at the outcomes level, as opposed to a program activity or output level. As such, in order to track the effectiveness of inputs in achieving/contributing towards desired outcomes, a greater focus should be on understanding the mechanisms through which additional inputs influence progress against desired outcomes.
- One way to achieve this would be to improve the collection and analysis of robust data sources, through embedding program evaluation in the decision making process, with a focus on continual improvement. This could include a renewed focus on program evaluation by departments, by building program evaluation into the program budget and establishing an evaluation methodology early in the program design phase to ensure robust results. The Queensland Government's Program Evaluation Guidelines provide a good starting point for departments undertaking evaluations.
- This does not negate the need to track progress against high level outcomes, indeed, these high level outcomes will drive and inform program development and service delivery, which are tailored to achieving these objectives.

KPMG

Appendix 1 : Technical Appendix
1.2 Correlation Analysis – Detailed Results

Correlation Analysis

Correlation Coefficient

In order to determine any potential correlation in the direction of movements between inputs and measured outputs, a correlation analysis was conducted to identify the strength of any potential relationship.

As part of this analysis, the degree to which the two variables are related was measured by estimating a correlation coefficient (r), where values fall between -1 and 1. A value of r = -1 indicates a perfect negative correlation between the two variables (that is, one falls while the other rises), while a value of r = 1 indicates a perfect positive correlation (both variables move in the same direction).

It is important to note that the correlation coefficient only measures the strength of the *linear* relationship between two variables, as nonlinear relationships cannot be estimated using this technique. As such, while the two variables may not exhibit a linear relationship, a nonlinear relationship may exist.

For the purposes of this analysis, the following rules of thumb are used in determining the strength of the linear relationship:

Value of correlation coefficient (r)	Strength of relationship
-1 to -0.8	Strong negative
-0.8 to -0.5	Moderate negative
-0.2 to -0.5	Weak negative
-0.2 to 0.2	No/very weak correlation
0.2 to 0.5	Weak positive
0.5 to 0.8	Moderate positive
0.8 to 1	Strong positive

While a correlation analysis may provide an indication of the movements of two variables, it does not provide insights into the 'cause and effect' of the relationship. That is, while variables may be related, the analysis does not identify if one variable influences the other, i.e. correlation does not imply causation.

Level of significance

Once the correlation coefficient is estimated, determining the strength of the relationship, the level of confidence in the result needs to be determined, and whether the result is statistically significant, or simply due to random movements in the data.

In order to do this, a hypothesis test is conducted, where the null hypothesis is that there is no linear relationship between the variables (H_0: $\rho=0$), and the alternative hypothesis is that a linear relationship exists (H_1: $\rho<0$ or $\rho>0$ depending on whether a positive or negative correlation is being tested).

The probability value (p-value) is then calculated, which represents the strength of the evidence against the null hypothesis (no correlation). This p-value is assessed against three designated significance levels, 10%, 5% and 1% to determine whether there is sufficient evidence to confirm there is a statistically significant relationship between the variables. Where the p-value is less than the chosen confidence level, we can conclude there is statistically significant evidence of correlation between the variables.

A smaller p-value indicates stronger evidence of a relationship between the variables.

For example, where a test is conducted for a positive correlation between variables (i.e. H_1: $\rho>0$), and a p-value of 0.09 is observed, the null hypothesis can be rejected (no correlation) and it can be concluded that there is statistically significant evidence of a positive correlation at a 10% confidence level (given $p < 0.10$), but not at the 5% or 1% level. However, a p-value of 0.04 would provide a stronger level of evidence (at the 5% confidence level).

Assumptions

A number of assumptions have been made to enable a robust and consistent analysis to be undertaken:

FTE Data

Data has been sourced from the Public Service Commission (PSC), which provided unpublished quarterly FTE MOHRI data sets for the financial years 2007-08 to 2015-16. This data was provided at the Special Occupation Group (SOG) level by agency.

The agency data varies from year to year in line with various Machinery of Government changes, however, for key service areas, FTE measures for Teachers, Nurses, Medical and Ambulance – Operational have been reported consistently, enabling an analysis of a complete time series.

For Police FTEs, a minor adjustment was made to ensure consistency across the time periods. From Q1 2013, the police FTEs were split into police FTEs and recruit FTEs. In order to ensure consistency with periods prior to Q1 2013, police and recruit FTEs were aggregated over the period Q1 2013 – Q4 2016.

Child Safety FTEs were not reported at the SOG level in the data provided by the PSC. As such, FTE data for the Child and Family Services stream within the Department of Communities, Child Safety and Disabilities Services (DCCSDS) was sourced from annual budget documentation in the form of Service Delivery Statements.

FTE data	Data Source	Data Period
Police	PSC unpublished	2007-08 to 2015-16
Teacher	PSC unpublished	2007-08 to 2015-16
Nursing	PSC unpublished	2007-08 to 2015-16
Medical	PSC unpublished	2007-08 to 2015-16
Child and Family Safety	DCCSDS SDS	2012-13 to 2015-16

Outcome metric data

Data was sourced primarily from the following sources:

- Departmental Service Delivery Statements and Annual Reports;
- Departmental websites;
- Australian Institute of Health and Welfare;
- Productivity Commission's Report on Government Services; and
- Australian Bureau of Statistics.

The scope of this analysis was focussed on utilising publicly available and published performance data. Departments have not been approached to provide unpublished/additional data for the purposes of the analysis. As such, this analysis may inadvertently omit certain metrics which may be of value, but were not publicly available to enable an analysis.

Metrics determined suitable for exploration have been selected on the basis of guidance from DPC and availability of data. No input has been provided by departmental representatives.

Attempts have not been made within the analysis to determine the potential causal links between various influencing factors and outcomes.

Health

Data selection

FTE data

The Full-Time Equivalent (FTE) employee data has been sourced directly from unpublished MOHRI datasets provided by the Public Service Commission (PSC).

The data provided by the PSC separated the FTE data into several sub-categories, including nursing, medical, managerial/clerical and professional, amongst others. While acknowledging the important role played by supporting employees in enabling efficient frontline service delivery, for the purposes of this exercise, our focus was on frontline nursing, medical and ambulance operational FTE numbers, and the potential correlations between particular outcomes measures.

The PSC advised of potential fluctuations in the quarterly FTE datasets from quarter to quarter, as reporting periods coincide with certain events such as holidays. To account for these fluctuations and provide a more consistent measurement approach in the correlation analysis, an average annual FTE figure has been calculated from quarterly FTE data, to attempt to minimise any impacts from these quarter to quarter fluctuations.

As such, given the quarterly FTE data provided has been averaged over each financial year, the FTE data used in this report may not be consistent with latest FTE data as reported on the PSC website or by departments.

Averaged data is presented as the average FTEs employed across that financial year. For example, 2016 FTE data reflects the average FTEs employed in each quarter for the 2015-16 financial year.

Performance data

Datasets used in the following analysis have been sourced from publicly available performance data published on the Queensland Health website, annual budget reporting (Service Delivery Statements) and the Productivity Commission's annual Report on Government Services.

The following metrics were assessed against the number of nursing and medical FTEs for potential correlation between variables:

- Mortality rates of potentially avoidable deaths, under 75 years (per 100,000 persons);
- Median wait time for treatment in emergency departments (minutes);
- Percentage of emergency department attendances who depart within 4 hours of their arrival (%);
- Percentage of emergency department patients seen within recommended timeframes - All categories (%);
- Weighted Activity Units (Acute and Emergency Department);
- Cases of SAB infection (per 10,000 days of patient care);
- Acute public hospital activity - Admitted patient accrued patient days;
- Acute public hospital activity - Admitted patient episodes of care;
- Separation with an adverse event, public hospitals;
- Percentage of elective surgery patients treated within clinically recommended timeframes - Category 1 (%); and
- (Queensland Ambulance Service) Time within which code 1 incidents are attended (minutes).

Unless otherwise specified, all data presented within the analysis is for Queensland wide outcomes.

Health

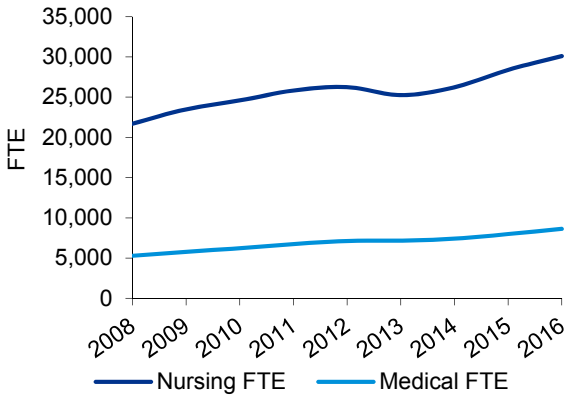
Limitations of analysis

- While movements in these performance metrics, and the number of teacher FTEs may be correlated, in each circumstance, there will be a number of external factors influencing movements of the variables. For example, in many circumstances the quality of the teaching is likely to have a greater influence on improved educational outcomes than simply additional FTEs.
- This analysis is also limited by the degree to which the outcomes metrics are influenced by not only external factors, but also the combined effort of other government department programs through integrated service delivery, working towards a similar set of objectives. This is likely to be particularly relevant for disadvantaged cohorts which experience a high degree of intervention across a number of services.
- The correlation analysis does not attempt to make adjustments to account for potential time lags in any potential link between inputs and outcomes/outputs. For example, increased inputs may take several years to yield improved outcomes. This is particularly relevant for health, child safety and education outcomes.
- The FTE data provided does not identify where (or to which programs) the FTEs were allocated within the health portfolio. As such, this does not enable a direct comparison with FTEs allocated to specific tasks, and any movements in outcomes within that area.

Historical Health FTE movements

Over the analysis period, 2008-2016, growth in the number of nursing and medical FTEs has grown consistently, with average annual growth rates of 4.2% and 6.3% respectively.

Nursing and Medical, FTEs - Queensland 2008-2016



	Nursing	Medical
2008-09	8.2%	9.2%
2009-10	4.7%	8.1%
2010-11	5.0%	7.7%
2011-12	1.6%	6.1%
2012-13	-3.8%	0.5%
2013-14	3.9%	3.3%
2014-15	8.2%	7.9%
2015-16	6.0%	8.0%

Source: Public Service Commission

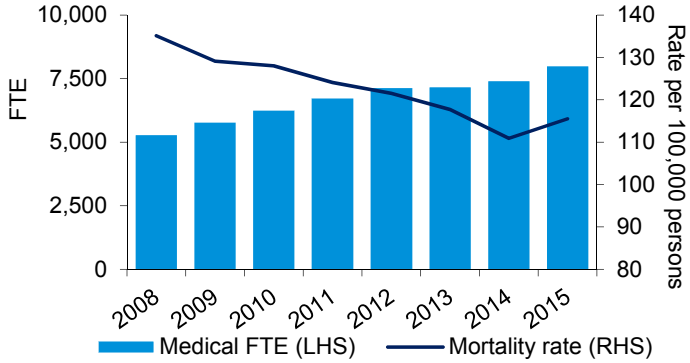
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Health - Summary of correlation results

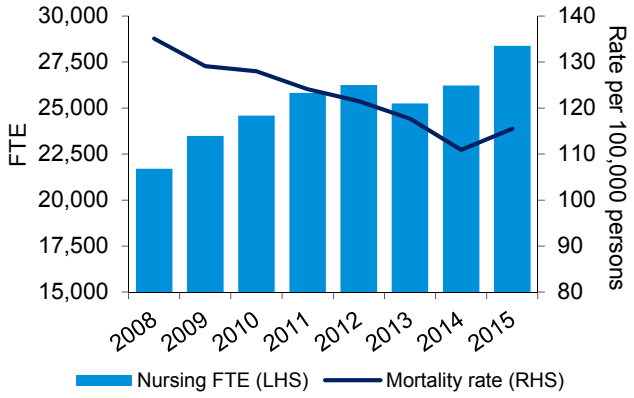
Metric – Health	Correlation	Data Source	Data Period
Mortality rates of potentially avoidable deaths, under 75 years	Strong negative (Medical) Strong negative (Nursing)	Productivity Commission - RoGS	2007-08 to 2015-16
Median wait time for treatment in emergency departments	Moderate negative (Medical) No sufficient evidence of correlation (Nursing)	Queensland Health - SDS	2010-11 to 2015-16
Percentage of emergency department attendances who depart within 4 hours of their arrival	Strong positive (Medical) No sufficient evidence of correlation	Queensland Health - SDS	2011-12 to 2015-16
Percentage of emergency department patients seen within recommended timeframes - All categories	No sufficient evidence of correlation	Queensland Health - SDS	2010-11 - 2015-16
Percentage of elective surgery patients treated within clinically recommended timeframes - Category 1	Strong positive (Medical) Strong positive (Nursing)	Queensland Health - SDS	2011-12 to 2015-16
Cases of SAB infection (per 10,000 days of patient care)	Strong negative (Medical) Strong negative (Nursing)	AIHW	2010-11 to 2015-16
Weighted Activity Units - Acute Inpatient	Strong negative (Medical) Strong negative (Nursing)	Queensland Health - SDS	2011-12 to 2015-16
Weighted Activity Units -ED	No evidence of correlation	Queensland Health - SDS	2011-12 to 2015-16
Acute public hospital activity - Admitted patient accrued patient days	Strong positive (Medical) Strong positive (Nursing)	Queensland Health website	2007-08 to 2015-16
Acute public hospital activity - Admitted patient episodes of care	Strong positive (Medical) Strong positive (Nursing)	Queensland Health website	2007-08 to 2015-16
Separation with an adverse event, public hospitals	Strong positive (Medical) No evidence of correlation (Nursing)	Productivity Commission - RoGS	2010-11 to 2015-16
(Ambulance) Time within which code 1 incidents are attended - 50th percentile	Strong positive	Queensland Ambulance Service website	2010-11 to 2015-16
(Ambulance) Time within which code 1 incidents are attended - 90th percentile	No sufficient evidence of correlation	Queensland Ambulance Service website	2010-11 to 2015-16

Health - Correlation Analysis

Mortality rates of potentially avoidable deaths, under 75 years



Mortality rates of potentially avoidable deaths, under 75 years – Nursing FTEs



Source: Public Service Commission and Productivity Commission (RoGS, 2017)

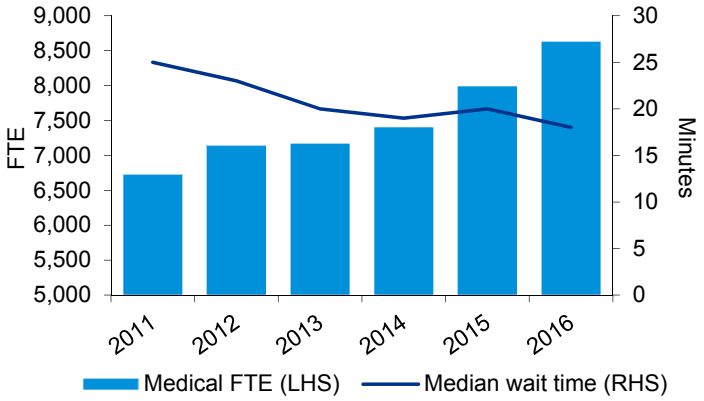
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Mortality rates of potentially avoidable deaths, under 75 years

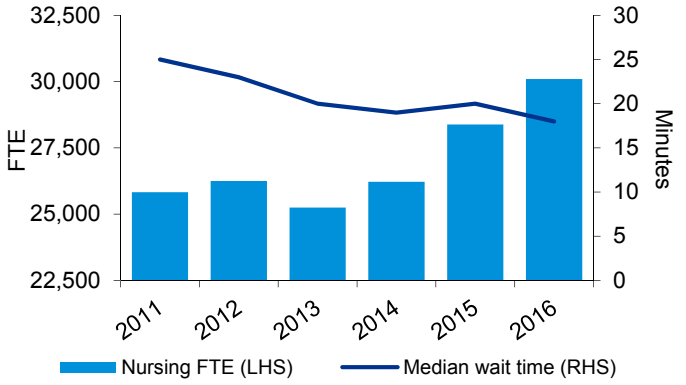
- Data indicates there is a negative correlation over the evaluation period (2008-2015) between the mortality rate of potentially avoidable deaths and the number of medical FTEs, with a correlation of r = -0.93
- This result is statistically significant at the 1% level, with a p-value of 0.0008.
- There is also a strong negative correlation with the number of nursing FTEs, with a correlation of r = -0.83, which is statistically significant at the 1% level, with a p-value of 0.001.
- Over the evaluation period, the mortality rate of potentially avoidable deaths fell at an average annual rate of 2.2%.
- Some external drivers of health outcomes include individual behavioural and lifestyle factors, socio-economic status, bio-medical and genetic factors and environmental conditions.
- However, given the significant number of other external influences impacting on mortality rate, and the inability for FTE numbers to capture the quality of services provided, it would appear unreasonable to allocate responsibility for this result to FTE increases alone. Although the data indicates a correlation, as with all metrics analysed, this does not indicate causation.

Health - Correlation Analysis

Median wait time for treatment in emergency departments - Medical



Median wait time for treatment in emergency departments - Nursing



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

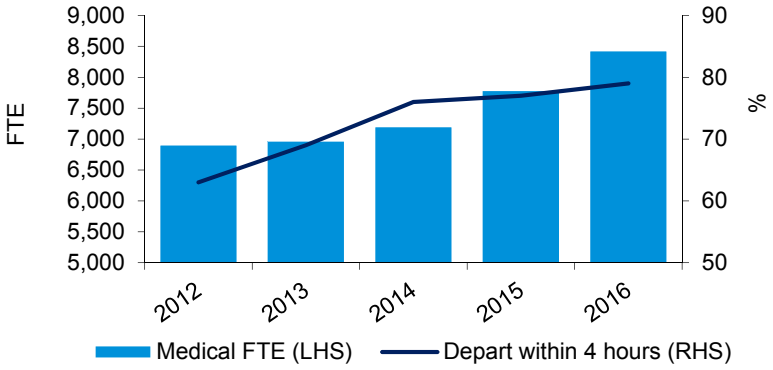
Source: Public Service Commission and Queensland Health

Median wait time for treatment in emergency departments

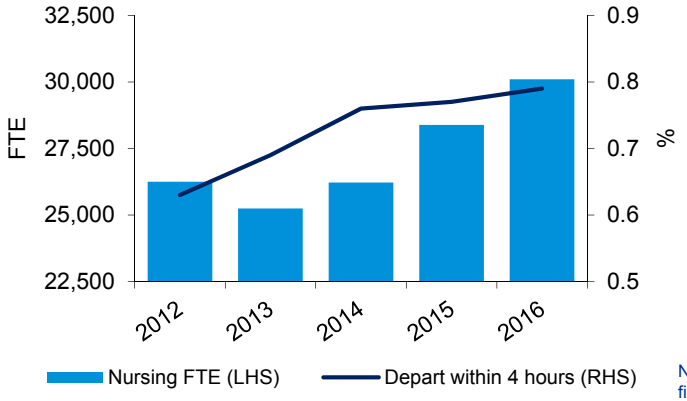
- The data indicates there is a negative correlation with the number of medical FTEs and the median wait time for treatment in emergency departments, with a correlation coefficient r = -0.79 and a p-value of 0.0610, (significant at the 10% level)
- However, it does not provide evidence of a statistically significant correlation between the number nurses, with r = -0.56 for and a p-value 0.45, indicating there is no sufficient evidence to support any correlation. This result is largely due to fluctuations in the nursing FTE data in 2013, which breaks the continuity of the time series and impacts on the linear nature of the assessment methodology.
- Over the evaluation period, the median wait time fell at an average annual rate of 6%.
- ED wait time is likely to be influenced heavily by the level of demand for ED services. As such, campaigns aimed at changing behaviour and reducing unnecessary ED visitation can reduce pressure on ED services, such as Queensland Health's *Keeping Emergency for emergencies* campaign, which was first run in December 2014 and is currently continuing.

Health - Correlation Analysis

Percentage of emergency department attendances who depart within 4 hours of their arrival - Medical



Percentage of emergency department attendances who depart within 4 hours of their arrival - Nursing



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

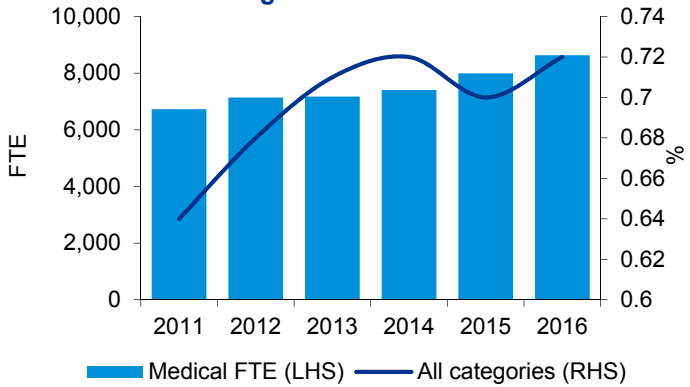
Source: Public Service Commission and Queensland Health

Percentage of emergency department attendances who depart within 4 hours of their arrival

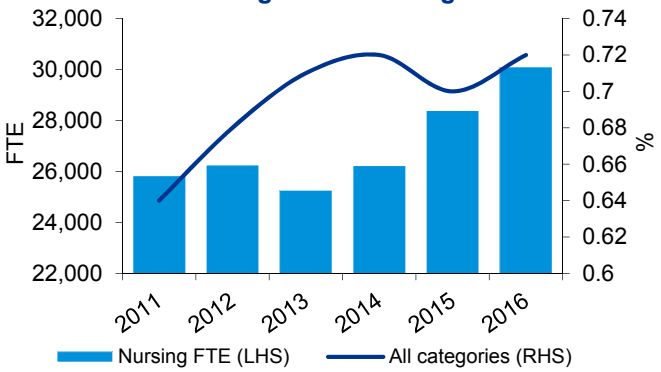
- The data indicates there is a positive relationship with the number of medical FTEs and the percentage of emergency department attendances who depart within 4 hours of their arrival, with a correlation of r = 0.80 and a p-value of 0.0975.
- For nurses, there is no evidence of correlation, with r = 0.69 and a p-value of 0.1888 indicating there is no sufficient evidence to support any correlation. This result is largely due to fluctuations in the nursing FTE data in 2013, which breaks the continuity of the time series and impacts on the linear nature of the assessment methodology.
- Over the evaluation period, the percentage of emergency department attendees who departed within 4 hours grew at an average annual rate of 6%.
- While acknowledging the intent behind implementing the 4 hour target, anecdotal evidence suggests such targets can provide adverse incentives for hospitals to progress patients with less complicated requirements first, at the expense of time spent in ED for relatively more 'time-intensive' patients, in order to improve reporting outcomes against this metric.

Health - Correlation Analysis

Percentage of emergency department patients seen within recommended timeframes - All categories - Medical



Percentage of emergency department patients seen within recommended timeframes - All categories - Nursing



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

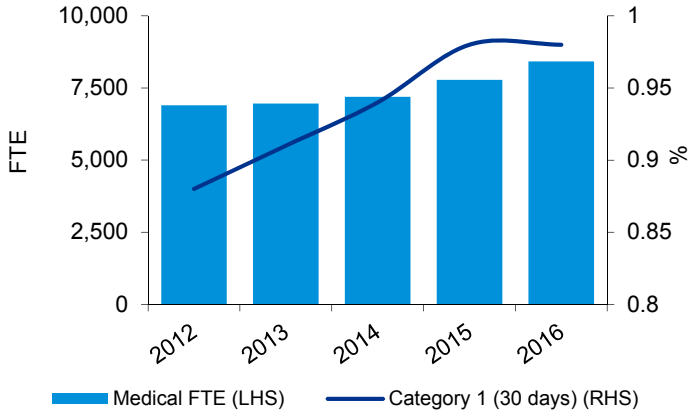
Source: Public Service Commission and Queensland Health

Percentage of emergency department patients seen within recommended timeframes - All categories

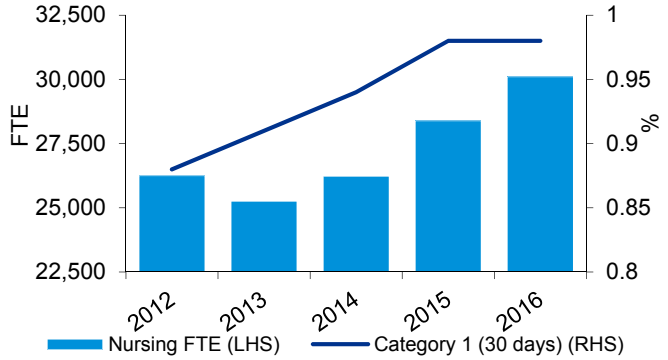
- The data indicates there is no statistically significant relationship between the number of medical FTEs and an improvement in the percentage of emergency department patients seen within recommended timeframes – All categories.
- The correlation of r = 0.67 is not statistically significant with a p-value of 0.1418.
- This result is similar for the relationship with the number of nursing FTEs, with r = 0.24 and a p-value of 0.65.
- As such, there is not sufficient evidence to determine that correlation exists between the variables.
- It should be noted that the percentage of Category 1 patients seen within recommended timeframes (2 minutes) has been consistently between 98-100% over the evaluation period.
- Over the evaluation period, the percentage of ED patients seen within recommended timeframes grew at an average annual rate of 2.4%.
- Although an increasing share of patients were seen within recommended timeframes grew largely in line with FTE growth, the above result indicates other drivers also influence the result. These could include process efficiency factors as well as demand/supply factors (including unnecessary ED visitations).

Health - Correlation Analysis

Percentage of elective surgery patients treated within clinically recommended timeframes - Category 1 - Medical



Percentage of elective surgery patients treated within clinically recommended timeframes - Category 1 - Nursing



Source: Public Service Commission and Queensland Health

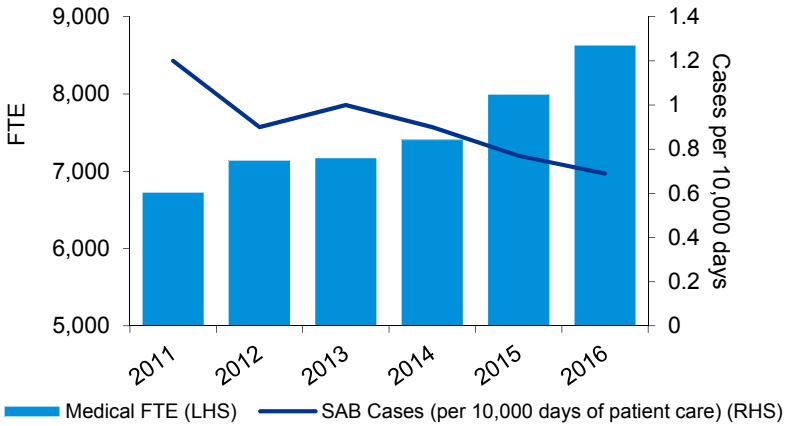
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Percentage of elective surgery patients treated within clinically recommended timeframes - Category 1

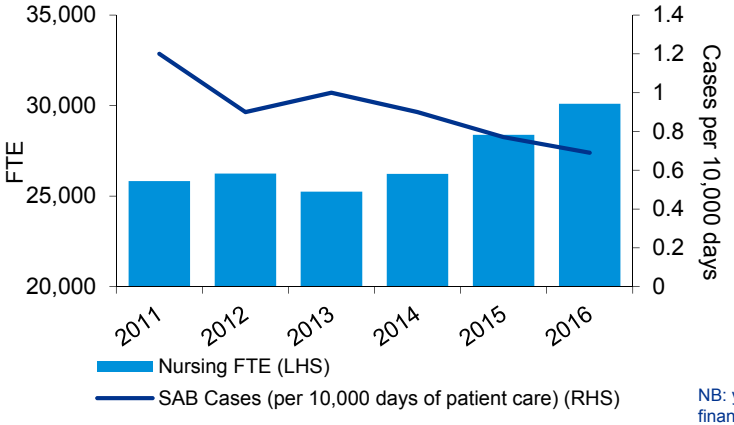
- The data indicates there is a statistically significant relationship between the number of medical FTEs and an improvement in the percentage of category 1 elective surgery patients treated within clinically recommended timeframes.
- The correlation of r = 0.88 is statistically significant with a p-value of 0.0467.
- There is a positive correlation with the number of nursing FTEs, with r = 0.81 and a p-value of 0.096, suggesting a positive correlation at the 10% level.
- Over the evaluation period, the percentage of elective surgery patients treated within clinically recommended timeframes grew at an average annual rate of 2.7%.

Health - Correlation Analysis

SAB Cases per 10,000 days of patient care - Medical



SAB Cases per 10,000 days of patient care - Nursing



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

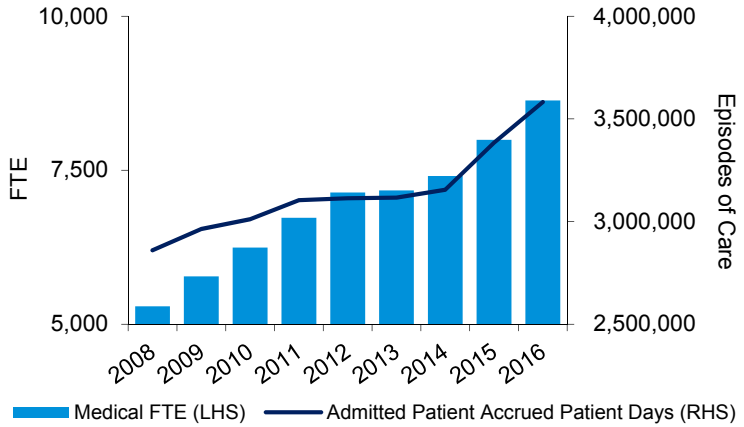
Source: Public Service Commission and Queensland Health (website)

Cases of Staphylococcus aureus bacteraemia (SAB) in public hospitals

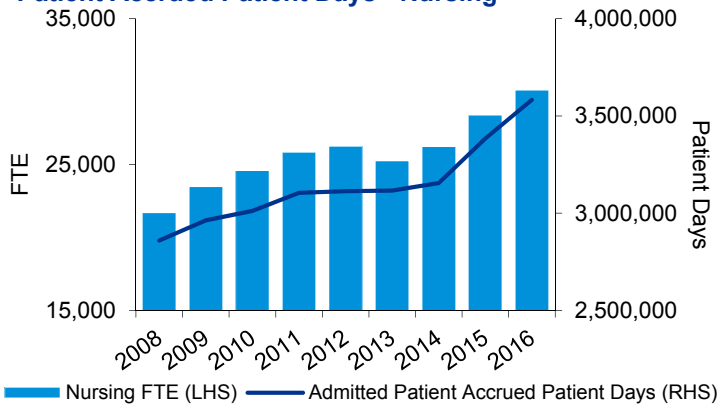
- Data indicates there is a negative correlation between the number of cases of SAB in public hospitals and the number of medical FTEs, with correlation coefficient of r = -0.92.
- This result is statistically significant at the 1% level with a p-value of 0.009.
- The correlation is a strong negative for nursing FTEs, with a correlation coefficient r = -0.82, which is statistically significant at the 5% level with a p-value of 0.046.
- The number of SAB cases per 10,000 days of patient care fell by an average annual rate of 10.5% between 2011 and 2016.
- While the data indicates a relationship exists between the growth in FTE numbers and a reduction in the number of cases of SAB per 10,000 days of patient care, it would appear difficult to suggest growth in FTE number is likely to lead to reduced hospital infections.
- This is more likely to be a result of a increased focus on hygiene and education campaigns around the importance of ensuring certain standards and protocols are followed to minimise infections.
- As such, consideration needs to be given to other drivers influencing this result.
- However, a decline in the number of SAB cases is an indicator of quality and improved safety (see PC, RoGS). Queensland's rate of infection has been consistently below the nationally agreed benchmark of no more than 2.0 SAB cases per 10,000 days of patient care for acute care public hospitals, with the rate for 2015-16 sitting at 0.69 SAB cases per 10,000 days of patient care.

Health - Correlation Analysis

Acute Public Hospital Activity - Admitted Patient Accrued Patient Days - Medical



Acute Public Hospital Activity - Admitted Patient Accrued Patient Days - Nursing



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

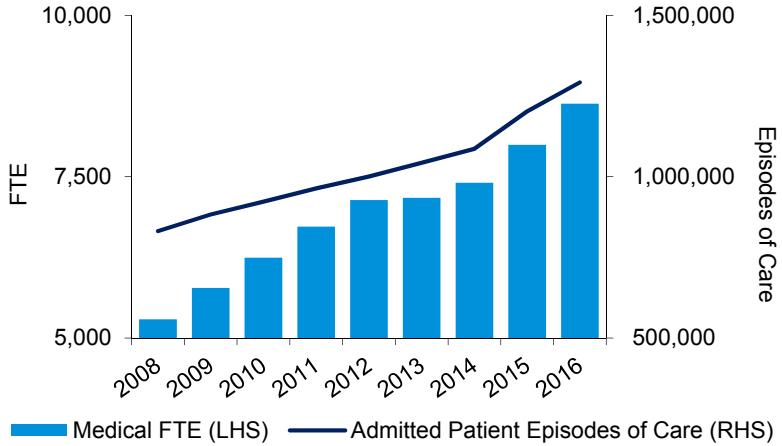
Source: Public Service Commission and Queensland Health (website)

Acute Public Hospital Activity – Admitted Patient Accrued Patient Days

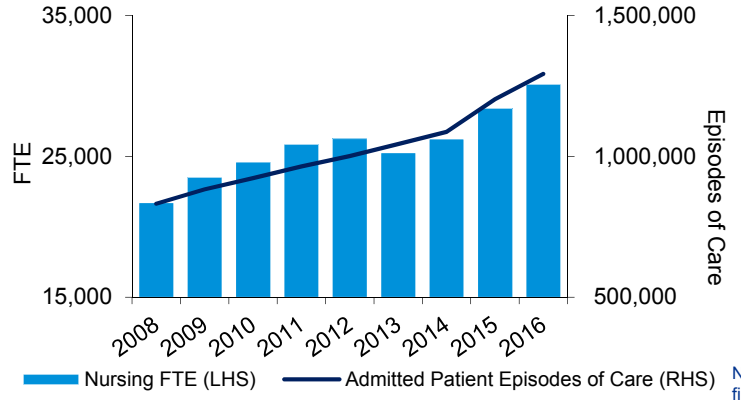
- Data indicates there is a strong positive correlation between the number of medical FTEs and the level of acute public hospital activity, measured by the admitted patient accrued patient days, with a correlation coefficient of r = 0.96.
- This result is statistically significant at the 1% level with a p-value of 0.00005.
- This result is similar for nursing FTEs, with a correlation coefficient of r = 0.98, which is statistically significant at the 1% level.
- While the level of activity is a measure of demand for certain services, and would be reasonable to expect a strong correlation between demand for services and the number of FTEs required to perform services, this metric also indicates the level of activity conducted by these FTEs.
- Over the evaluation period, 2008-2016, the number of admitted patient accrued patient days has grown at the average annual rate of 2.9%, exceeding the annual average rate of population growth over the period of 1.7%.
- Interestingly, between 2014 and 2016, the number of admitted patient accrued days has grown at an average annual rate of 6.6%, again, far in excess of population growth of 1.3% over the period.
- It should be noted that the FTE data provided does not identify where within the health system the additional nurses or medical FTEs were allocated, so it is unclear whether the additional FTEs were allocated to this service area to coincide with activity levels.

Health - Correlation Analysis

Acute Public Hospital Activity - Admitted Patient Episodes of Care - Medical



Acute Public Hospital Activity - Admitted Patient Episodes of Care - Nursing



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

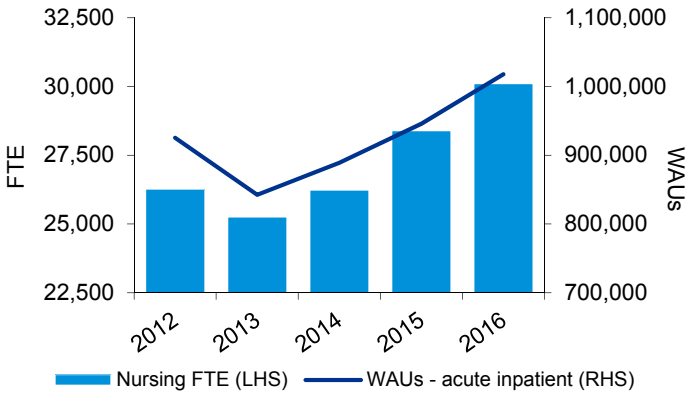
Source: Public Service Commission and Queensland Health Website

Acute Public Hospital Activity – Admitted Patient Episodes of Care

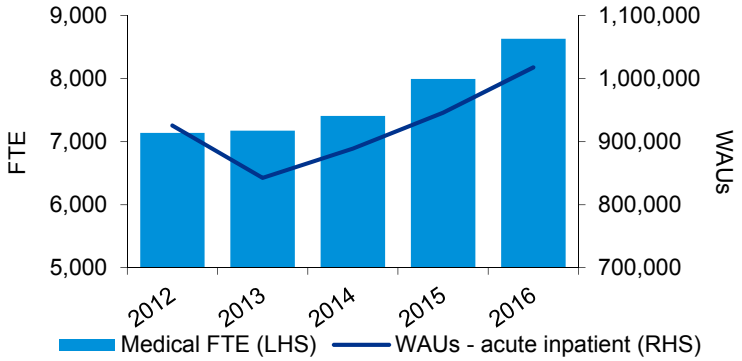
- Data indicates there is a strong positive correlation between the number of medical FTEs and the level of acute public hospital activity, measured by the admitted patient episodes of care, with a correlation coefficient of r = 0.97.
- This result is statistically significant at the 1% level with a p-value of 0.00004.
- This result is similar for nursing FTEs, with a correlation coefficient of r = 0.96, which is statistically significant at the 1% level.
- While the level of activity is a measure of demand for certain services, and would be reasonable to expect a strong correlation between demand for services and the number of FTEs required to perform services, this metric also indicates the level of activity conducted by these FTEs.
- Over the evaluation period, 2008-2016, the number of admitted patient episodes of care has grown at the average annual rate of 5.7%, exceeding the annual average rate of population growth over the period of 1.7%.
- Between 2014 and 2016, the number of admitted patient episodes of care has grown at an average annual rate of 9.1%, again, far in excess of population growth of 1.3% over the period.
- It should be noted that the FTE data provided does not identify where within the health system the additional nurses or medical FTEs were allocated, so it is unclear whether the additional FTEs were allocated to this service area to coincide with activity levels.

Health - Correlation Analysis

Weighted Activity Units - Acute Inpatient - Nursing



Weighted Activity Units - Acute Inpatient - Medical



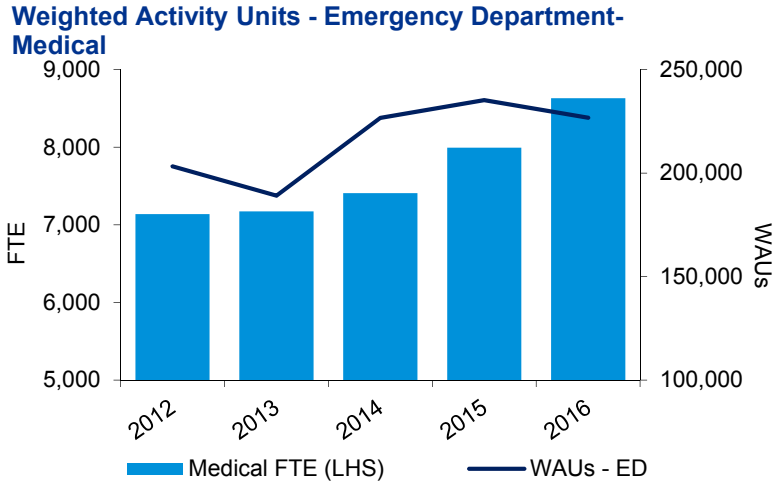
Source: Public Service Commission and Queensland Health (SDS)

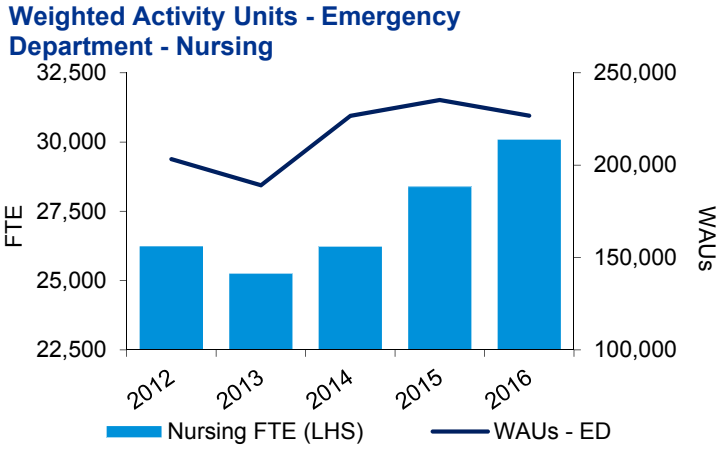
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Weighted Activity Units – Acute Inpatient

- Data indicates there is a strong positive correlation between the number of medical FTEs and the total weighted activity units (WAU) for acute inpatients, with a correlation coefficient of r = 0.87.
- This result is statistically significant at the 10% level with a p-value of 0.0521.
- This result is similar for nursing FTEs, with a correlation coefficient of r = 0.96, which is statistically significant at the 5% level with a p-value of 0.013.
- A weighted activity unit is a measure of health service activity by weighting it for its clinical complexity. The average hospital service is worth one WAU, with the most intensive and expensive activities worth multiple WAUs.
- Over the evaluation period, 2012-2016, the number of WAUs for acute inpatients grew at the annual average rate of 2.4%, compared to an average annual growth rate of 2.2% for medical FTEs over the period and 3.5% for nursing FTEs over the period.
- Between 2013 and 2016, average annual growth of 6.5% has been experienced in WAUs for acute inpatients. Over this period medical FTEs grew at the average annual rate of 5% while nursing FTEs grew at the average annual rate of 6%.
- Over the evaluation period, the level of activity as measured by WAUs for acute inpatients has exceeded the annual average rate of population growth of 1.5% (2012-16).
- It should be noted that the FTE data provided does not identify where within the health system the additional nurses or medical were allocated, so it is unclear whether the additional FTEs were allocated to this service area to coincide with activity levels.

Health - Correlation Analysis





Source: Public Service Commission and Queensland Health (SDS)

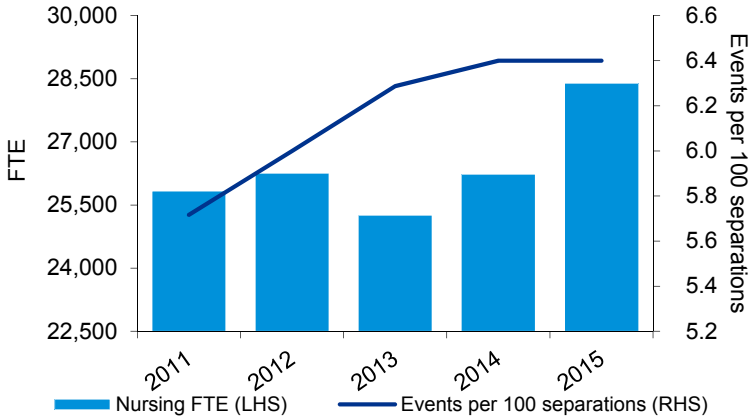
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Weighted Activity Units – Emergency Department

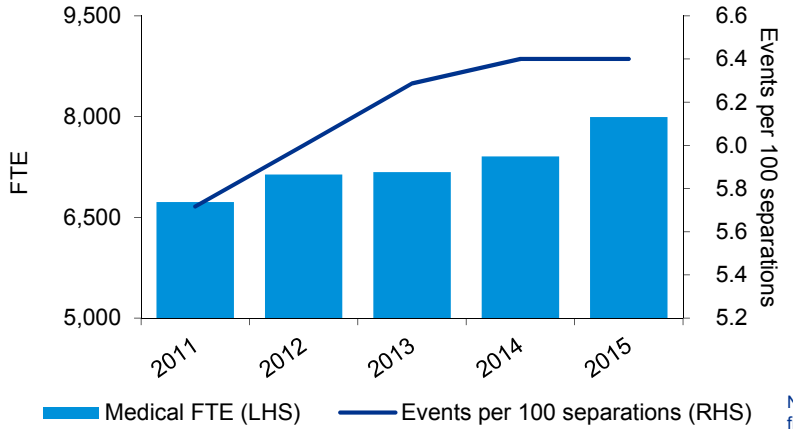
- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and the total weighted activity units (WAU) for the emergency department, with a correlation coefficient of r = 0.68 and a p-value of 0.1979.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = 0.71, and a p-value of 0.176.
- A weighted activity unit is a measure of health service activity by weighting it for its clinical complexity. The average hospital service is worth one WAU, with the most intensive and expensive activities worth multiple WAUs.
- It should be noted that the FTE data provided does not identify where within the health system the additional nurses or medical were allocated, so it is unclear whether the additional FTEs were allocated to this service area to coincide with activity levels.

Health - Correlation Analysis

Separations with an adverse event, public hospitals - Nursing



Separations with an adverse event, public hospitals - Medical



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

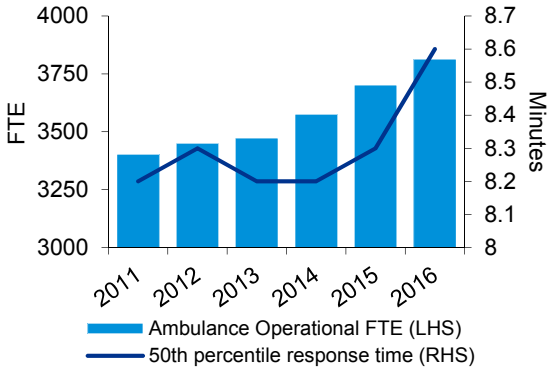
Source: Public Service Commission and Productivity Commission (RoGS)

Separations with an adverse event – Public Hospitals

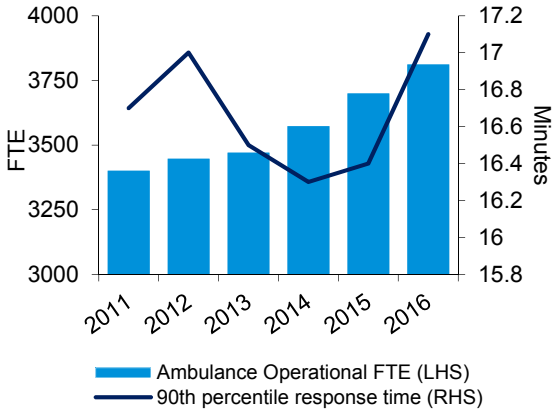
- Data indicates there is a positive correlation with the number of medical FTEs, with a correlation coefficient of r = 0.83 and a p-value of 0.0847, indicating the result is significant at the 10% level.
- However, there is no evidence of a statistically significant correlation with nursing FTEs, with r = 0.40, and a p-value of 0.504.
- This measure is an indicator of quality and safety (see PC, RoGS), and measures adverse events that occurred during hospitalisation.
- As noted, FTEs are only one input contributing to the delivery of public health services, and does not necessarily capture the quality of care or efficiency in delivery. As such, given the significant number of other drivers influencing this result, it is not considered reasonable to map this outcome to FTE numbers without consideration of other drivers.

Health - Correlation Analysis - Queensland Ambulance Service

Time within which code 1 incidents are attended – 50th percentile



Time within which code 1 incidents are attended – 90th percentile



Source: Public Service Commission and Queensland Health

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Ambulance Operational FTE

- Over the analysis period, 2008-2016, growth in the number of ambulance operational FTEs has grown at an average annual growth rates of 3.2%

	Ambulance Operational FTE growth
2012	1.4%
2013	0.7%
2014	3.0%
2015	3.5%
2016	3.0%

Time within which code 1 incidents are attended

- Available data over the period 2011-2016 indicates there is a statistically significant positive correlation between the number of operational ambulance FTEs and the time within which code 1 incidents are attended (50th percentile).
- The data indicates a positive correlation of r = 0.8, significant at the 10% level, with a p-value of 0.058.
- This result does not conform with a priori expectations that times would decline as FTEs increase.
- However, the scale of the average annual movements in attendance times is less than 1% over the 6 year evaluation period – between 8.2 minutes and 8.6 minutes (i.e. within 24 seconds) – indicates the metric is relatively stable over time.
- The data fails to determine any statistically significant correlation between the number of ambulance FTEs and the 90th percentile response time, with r = 0.14 and a p-value of 0.78.
- External factors likely to influence response times include the impacts of traffic congestion, weather conditions and place/proximity of incident to dispatch centre.

Health - Correlation Analysis - Townsville HHS

HHS FTE data

The Full-Time Equivalent (FTE) employee data by Hospital and Health Service (HHS) has been sourced directly from unpublished MOHRI datasets provided by the Public Service Commission (PSC).

The data provided by the PSC separated the FTE data into several sub-categories, including nursing, medical, managerial/clerical and professional, amongst others. For the purposes of this exercise, the focus was on frontline nursing and medical FTE numbers, and the potential correlations between particular outcomes measures.

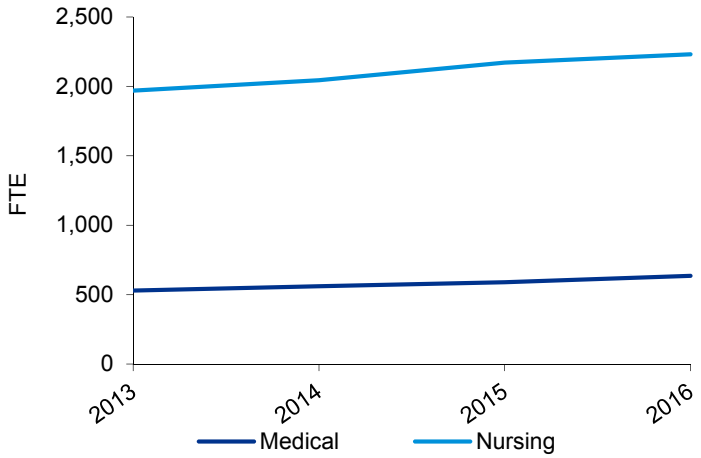
As with the Queensland-wide data. the quarterly FTE data provided has been averaged over each financial year. As, such, the FTE data used in this report may not be consistent with latest FTE data as reported on the PSC website or by departments.

Averaged data is presented as the average FTEs employed across that financial year. For example, 2016 FTE data reflects the average FTEs employed in each quarter for the 2015-16 financial year.

Historical Health FTE movements

Over the analysis period, 2013-2016, growth in the number of nursing and medical FTEs has grown consistently, with average annual growth rates of 4.2% and 6.3% respectively.

Townsville HHS FTE



	Nursing growth	Medical growth
2013-14	3.8%	6.0%
2014-15	6.2%	5.1%
2015-16	2.8%	7.8%

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

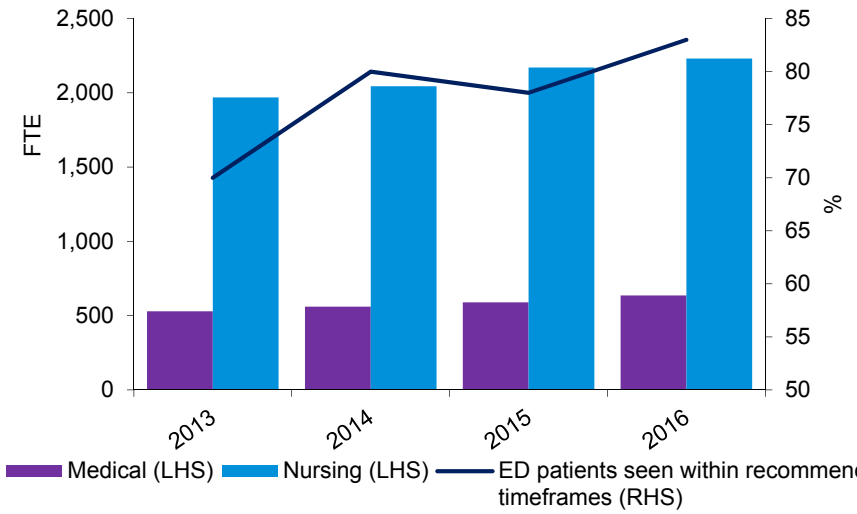
Source: Public Service Commission

Health - Correlation Analysis - Townsville HHS

Percentage of ED patients seen within recommended timeframes – All Categories

- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and the percentage of ED patients seen within recommended timeframes, with a correlation coefficient of r = 0.84 and a p-value of 0.1450.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = 0.81, and a p-value of 0.1947.
- Over the period, the percentage of ED patients seen within recommended timeframes increased from 70% to 83%, with a 5% improvement in 2015-16.

Townsville HHS - Percentage of ED patients seen within recommended timeframes - All Categories



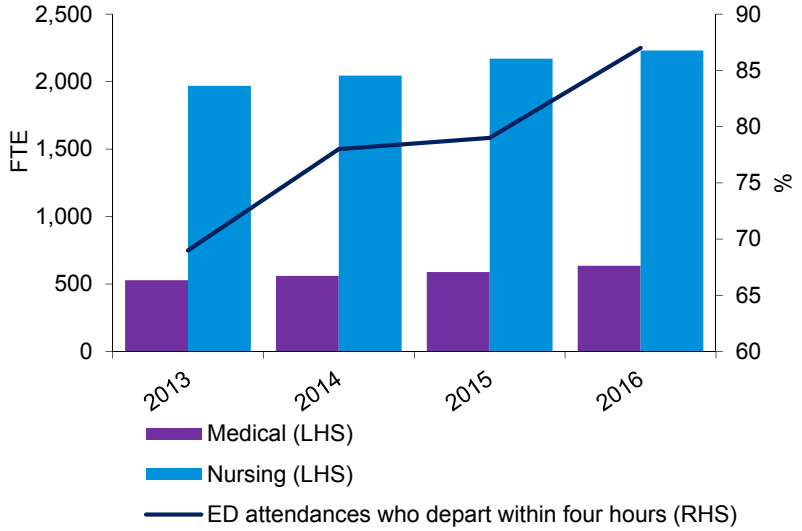
Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Percentage of ED attendances who depart within 4 hours

- Data indicates there is a positive correlation between the number of nursing FTEs and percentage of ED attendees who depart within 4 hours, with a correlation coefficient of r = 0.92.
- This result is statistically significant at the 10% level with a p-value of 0.0763.
- There is a similar result for medical FTEs, with a positive correlation of r = 0.97 and a p-value of 0.0303
- Over the evaluation period, the percentage of ED attendees that depart within 4 hours has increased by 18%, with an 8% increase between 2014-15 and 2015-16.

Townsville HHS - Percentage of ED patients who depart within 4 hours



Source: Public Service Commission and Queensland Health (SDS)

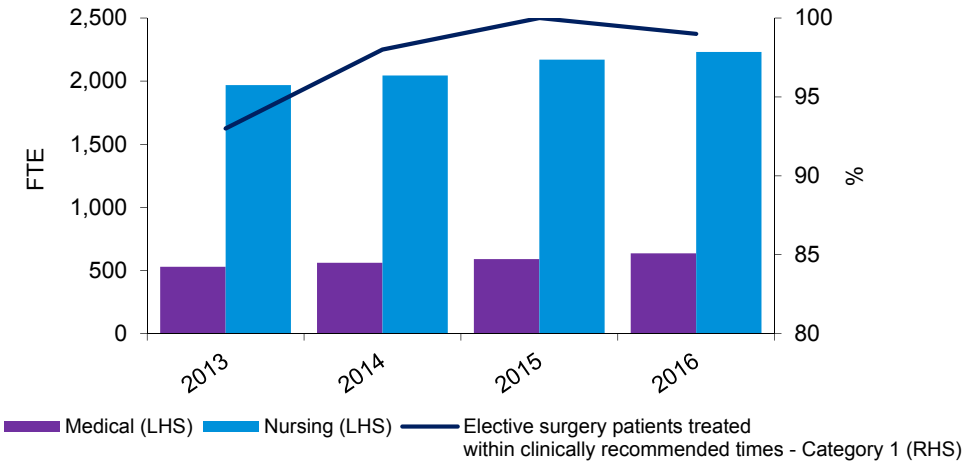
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Health - Correlation Analysis - Townsville HHS

Percentage of elective surgery patients seen within clinically recommended timeframes – Category 1

- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and the percentage of elective surgery patients seen within clinically recommended timeframes, with a correlation coefficient of r = 0.77 and a p-value of 0.2264.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = 0.84, and a p-value of 0.1560.
- Over the period, the percentage of category 1 elective surgery patients treated within recommended timeframes improved from 93% to 99%, with a 1% reduction in 2015-16 on the prior year.

Townsville HHS - Percentage of elective surgery patients treated within clinically recommended times - Category 1



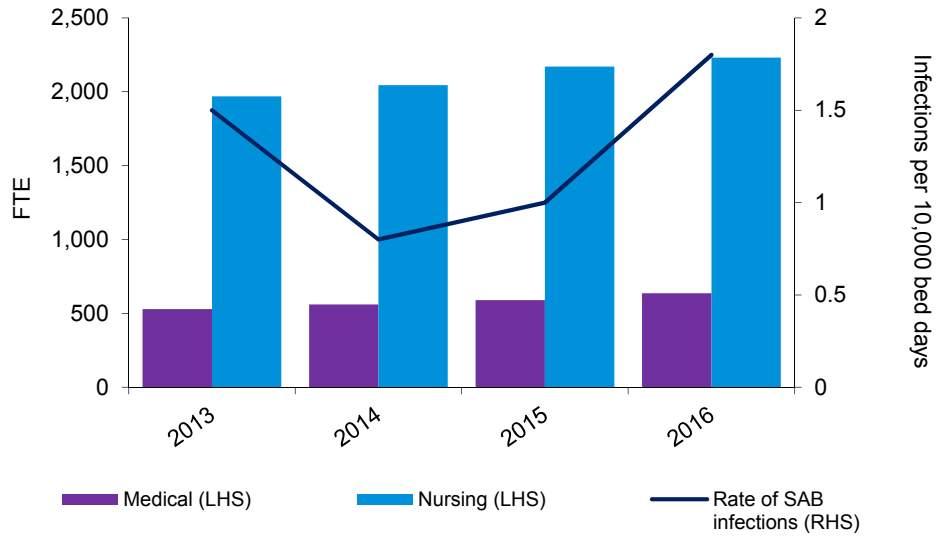
Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Cases of Staphylococcus aureus bacteraemia (SAB) in public hospitals

- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and the rate of SAB cases, with a correlation coefficient of r = 0.39 and a p-value of 0.6080.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = 0.28, and a p-value of 0.7168.
- Over the period, the rate of SAB cases rose from 1.5 cases per 10,000 days of patient care to 1.8 (a rise of 0.8 was realised in 2015-16).

Townsville HHS - SAB cases per 10,000 days of patient care



Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Health - Correlation Analysis - Townsville HHS

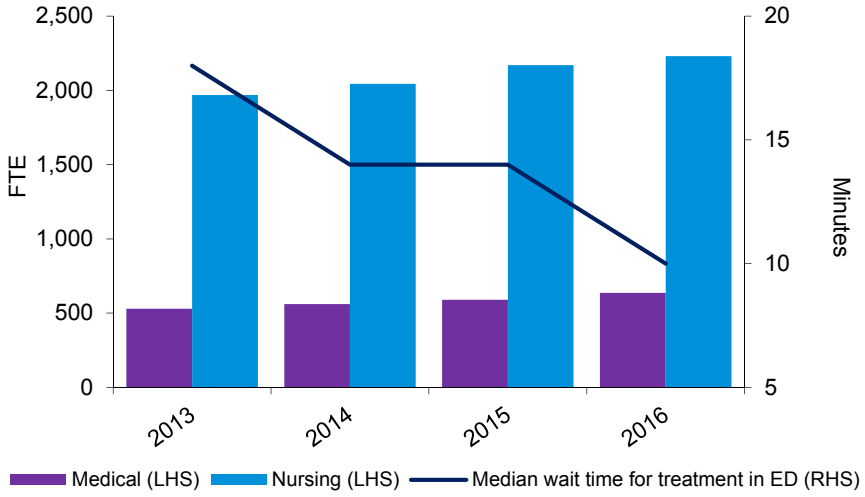
Median wait time for treatment in ED

- Data indicates there is a negative correlation between the number of nursing FTEs and the median wait time for treatment, with a correlation coefficient of r = -0.90.
- This result is statistically significant at the 10% level with a p-value of 0.09973.
- There is a similar result for medical FTEs, with a negative correlation of r = -0.96 and a p-value of 0.0389 (5% level).
- Over the period, the median wait time fell by 8 minutes. In 2015-16, it fell by 4 minutes on the previous year.

Weighted Activity Units – Acute inpatient

- Data indicates there is a positive correlation between the number of nursing FTEs and the acute inpatient WAUs, with a correlation coefficient of r = 0.91.
- This result is statistically significant at the 10% level with a p-value of 0.0868.
- There is no evidence of a statistically significant correlation with the number of medical FTEs, with a correlation coefficient of 0.80 and a p-value of 0.2003.
- The average annual growth in weighted activity units for acute inpatients of 4.0% over the period.

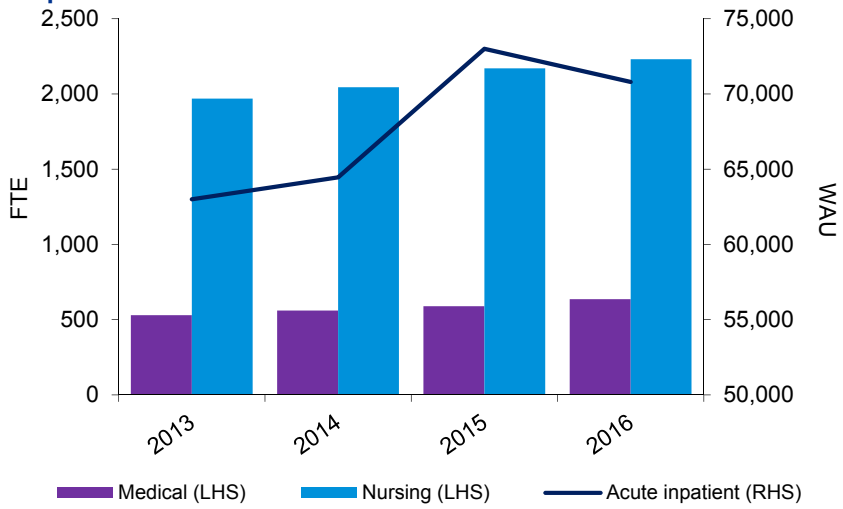
Townsville HHS - Median wait time for treatment in ED



Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Townsville HHS - Weighted Activity Units - Acute Inpatient



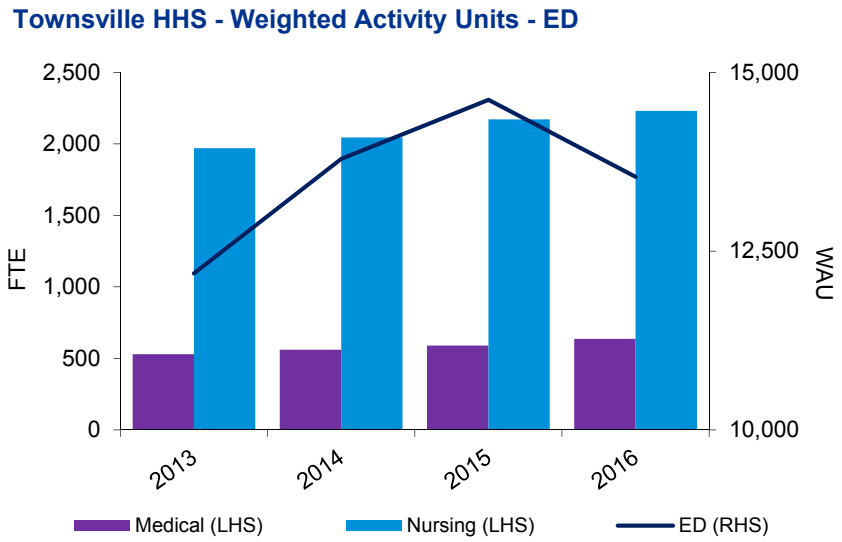
Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Health - Correlation Analysis - Townsville HHS

Weighted Activity Units – ED

- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and ED WAUs, with a correlation coefficient of r = 0.54 and a p-value of 0.458.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = 0.67, and a p-value of 0.334.
- The average annual growth rate for emergency department WAUs has grown by an average annual rate of 3.6% between 2012-13 and 2015-16.



Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Health - Correlation Analysis - Cairns HHS

HHS FTE data

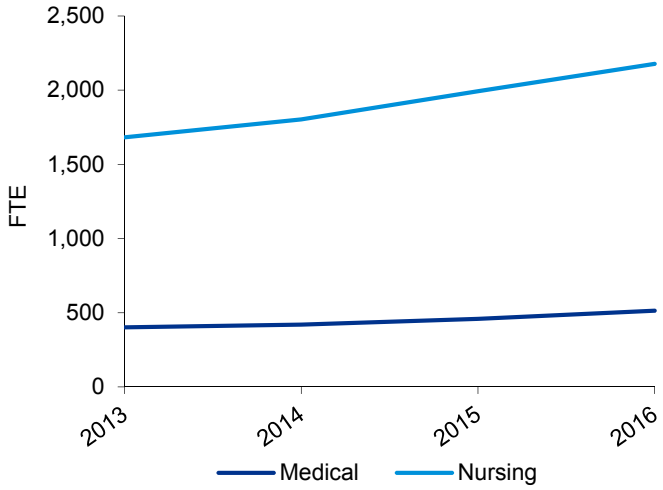
The Full-Time Equivalent (FTE) employee data by Hospital and Health Service (HHS) has been sourced directly from unpublished MOHRI datasets provided by the Public Service Commission (PSC).

The data provided by the PSC separated the FTE data into several sub-categories, including nursing, medical, managerial/clerical and professional, amongst others. For the purposes of this exercise, the focus was on frontline nursing and medical FTE numbers, and the potential correlations between particular outcomes measures.

As with the Queensland-wide data. the quarterly FTE data provided has been averaged over each financial year. As, such, the FTE data used in this report may not be consistent with latest FTE data as reported on the PSC website or by departments.

Averaged data is presented as the average FTEs employed across that financial year. For example, 2016 FTE data reflects the average FTEs employed in each quarter for the 2015-16 financial year.

Cairns HHS FTE



Historical Health FTE movements

Over the analysis period, 2013-2016, growth in the number of nursing and medical FTEs has grown consistently, with average annual growth rates of 9% and 8.5% respectively.

	Nursing growth	Medical growth
2013-14	7.2%	4.6%
2014-15	10.5%	9.2%
2015-16	9.3%	11.8%

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

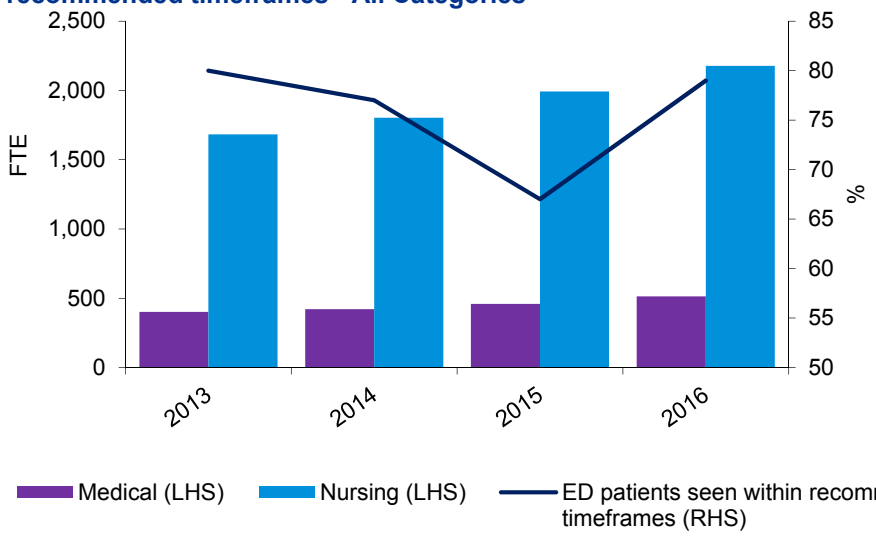
Source: Public Service Commission

Health - Correlation Analysis - Cairns HHS

Percentage of ED patients seen within recommended timeframes – All Categories

- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and the percentage of ED patients seen within recommended timeframes, with a correlation coefficient of r = -0.13 and a p-value of 0.8689.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = -0.25, and a p-value of 0.7534.
- Over the period, the percentage of ED patients seen within recommended timeframes fell from 80% to 79%, with a 12% improvement in 2015-16 on the prior year.

Cairns HHS - Percentage of ED patients seen within recommended timeframes - All Categories



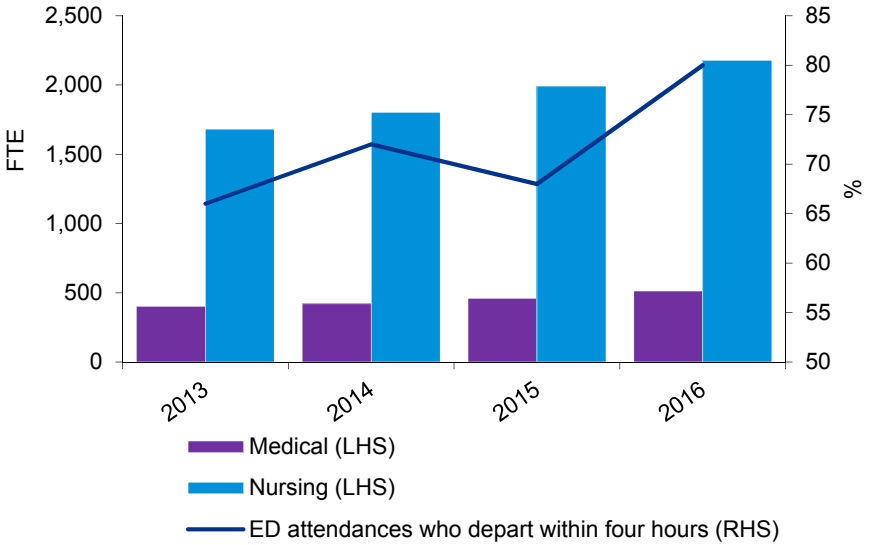
Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Percentage of ED attendances who depart within 4 hours

- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and the percentage of ED patients who depart within 4 hours, with a correlation coefficient of r = 0.82 and a p-value of 0.1732.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = 0.79, and a p-value of 0.2114.
- Over the evaluation period, the percentage of ED attendees that depart within 4 hours has increased by 14%, with a 12% increase between 2014-15 and 2015-16.

Cairns HHS - Percentage of ED patients who depart within 4 hours



Source: Public Service Commission and Queensland Health (SDS)

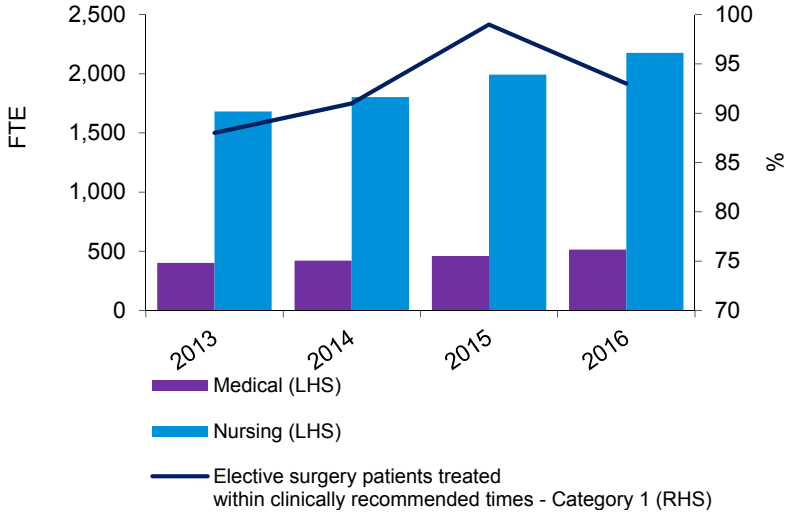
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Health - Correlation Analysis - Cairns HHS

Percentage of elective surgery patients seen within clinically recommended timeframes – Category 1

- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and the percentage of elective surgery patients seen within clinically recommended timeframes, with a correlation coefficient of r = 0.51 and a p-value of 0.4855.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = 0.61, and a p-value of 0.3876.
- Over the period, the percentage of category 1 elective surgery patients treated within recommended timeframes improved from 88% to 93%, with a 6% reduction in 2015-16 on the prior year.

Cairns HHS - Percentage of elective surgery patients treated within clinically recommended times - Category 1



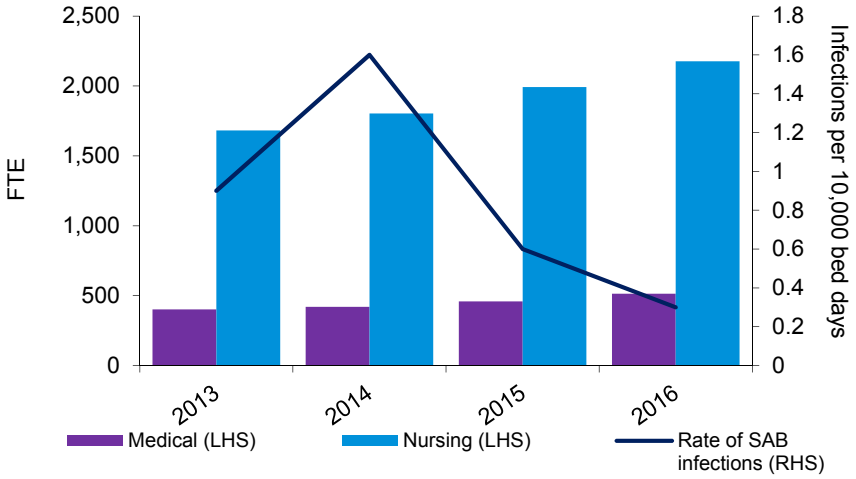
Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Cases of Staphylococcus aureus bacteraemia (SAB) in public hospitals

- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and the rate of SAB cases, with a correlation coefficient of r = -0.75 and a p-value of 0.2502.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = -0.71, and a p-value of 0.2858
- Over the period, the rate of SAB cases fell from 0.9 cases per 10,000 days of patient care to 0.3 (a fall of 0.3 was realised in 2015-16).

Cairns HHS - SAB cases per 10,000 days of patient care



Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Health - Correlation Analysis - Cairns HHS

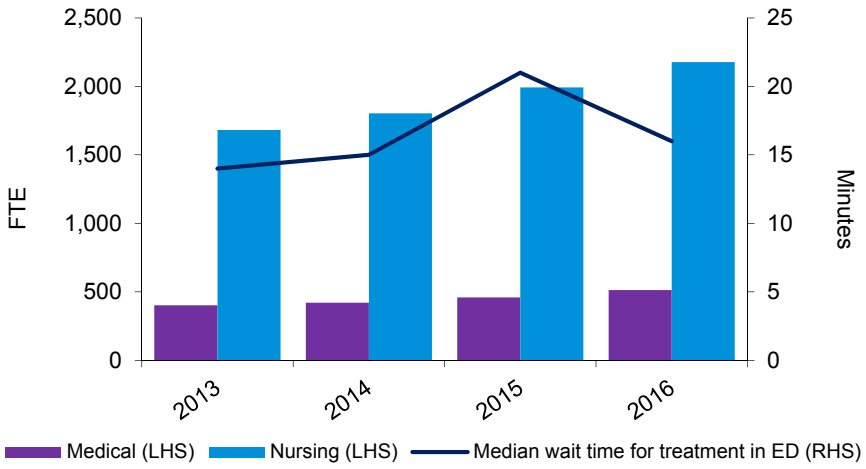
Median wait time for treatment in ED

- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and the median wait time for treatment in the ED, with a correlation coefficient of r = 0.38 and a p-value of 0.6211.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = 0.48, and a p-value of 0.5217.
- Over the period, the median wait time rose by 2 minutes. In 2015-16, it fell by 5 minutes on the previous year.

Weighted Activity Units – Acute inpatient

- Data indicates there is a positive correlation between the number of nursing FTEs and the acute inpatient WAUs, with a correlation coefficient of r = 0.91.
- This result is statistically significant at the 10% level with a p-value of 0.09.
- The result is similar for medical FTEs, with r = 0.96 and a p-value of 0.0445 (significant at the 5% level).
- Over the period, average annual growth of 5.8% has been experienced in acute inpatient WAUs.

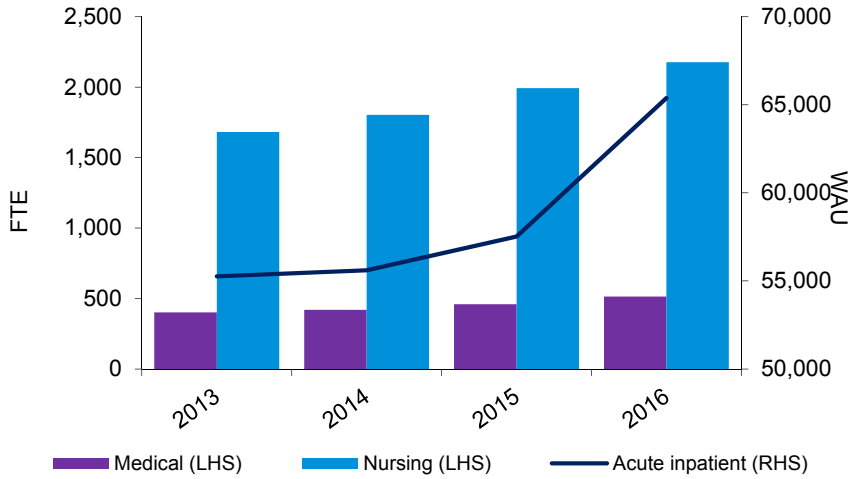
Cairns HHS - Median wait time for treatment in ED



Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Cairns HHS - Weighted Activity Units - Acute Inpatient



Source: Public Service Commission and Queensland Health (SDS)

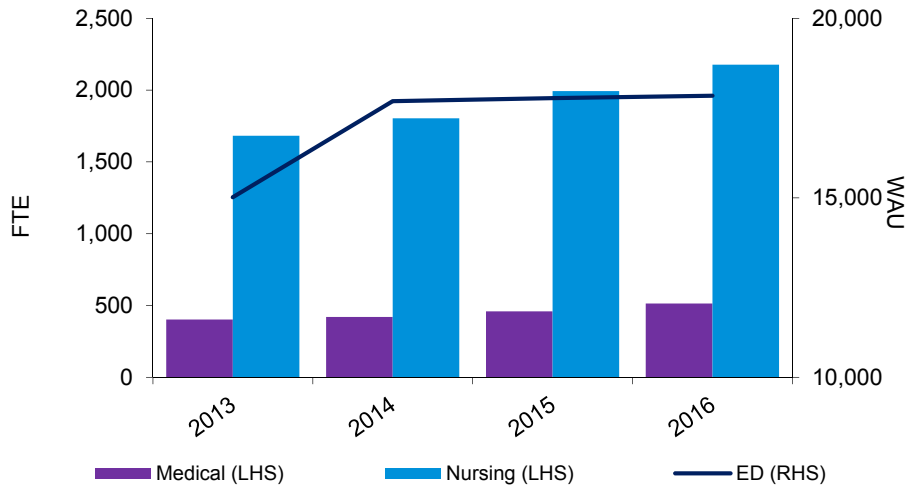
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Health - Correlation Analysis - Cairns HHS

Weighted Activity Units – ED

- Data indicates there is no evidence of a statistically significant relationship between the number medical FTEs and ED WAUs, with a correlation coefficient of r = 0.67 and a p-value of 0.3326.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = 0.74, and a p-value of 0.2579.
- The average annual growth rate for emergency department WAUs has grown by an average annual rate of 5.9% between 2012-13 and 2015-16, with growth of 0.4% between 2014-15 and 2015-16.

Cairns HHS - Weighted Activity Units - ED



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and Queensland Health (SDS)

Health - Correlation Analysis - Gold Coast HHS

HHS FTE data

The Full-Time Equivalent (FTE) employee data by Hospital and Health Service (HHS) has been sourced directly from unpublished MOHRI datasets provided by the Public Service Commission (PSC).

The data provided by the PSC separated the FTE data into several sub-categories, including nursing, medical, managerial/clerical and professional, amongst others. For the purposes of this exercise, the focus was on frontline nursing and medical FTE numbers, and the potential correlations between particular outcomes measures.

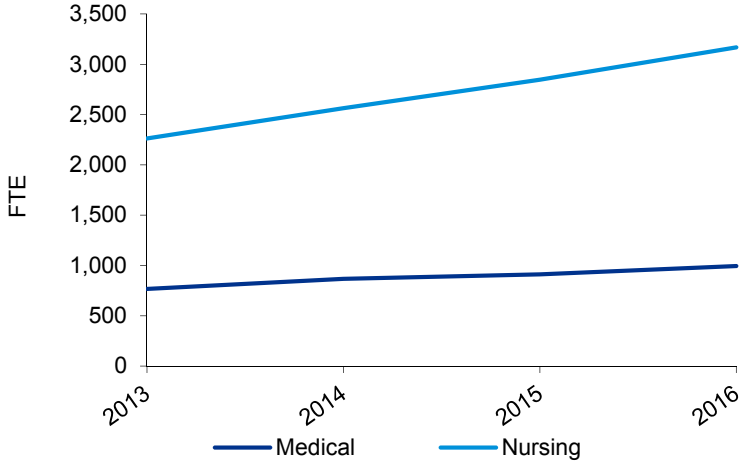
As with the Queensland-wide data. the quarterly FTE data provided has been averaged over each financial year. As, such, the FTE data used in this report may not be consistent with latest FTE data as reported on the PSC website or by departments.

Averaged data is presented as the average FTEs employed across that financial year. For example, 2016 FTE data reflects the average FTEs employed in each quarter for the 2015-16 financial year.

Historical Health FTE movements

Over the analysis period, 2013-2016, growth in the number of nursing and medical FTEs has grown consistently, with average annual growth rates of 11.9% and 9.1% respectively.

Gold Coast HHS FTE



	Nursing growth	Medical growth
2013-14	13.3%	13.0%
2014-15	11.1%	5.2%
2015-16	11.3%	9.0%

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission

Health - Correlation Analysis - Gold Coast HHS

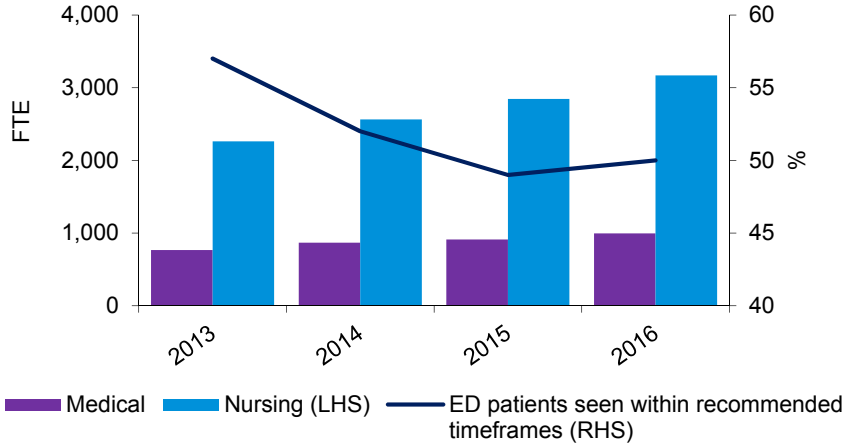
Percentage of ED patients seen within recommended timeframes – All Categories

- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and the percentage of ED patients seen within recommended timeframes, with a correlation coefficient of r = -0.88 and a p-value of 0.1203.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = -0.86, and a p-value of 0.1387.
- Over the period, the percentage of ED patients seen within recommended timeframes fell from 57% to 50%, with a 1% improvement in 2015-16.

Percentage of ED attendances who depart within 4 hours

- Data indicates there is a positive correlation between the number of medical FTEs and percentage of ED attendees who depart within 4 hours, with a correlation coefficient of r = 0.99.
- This result is statistically significant at the 1% level with a p-value of 0.0024.
- This result is similar for nursing FTEs, with r = 0.98, and a p-value of 0.0180.
- Over the evaluation period, the percentage of ED attendees that depart within 4 hours has increased by 12%, with a 4% increase between 2014-15 and 2015-16.

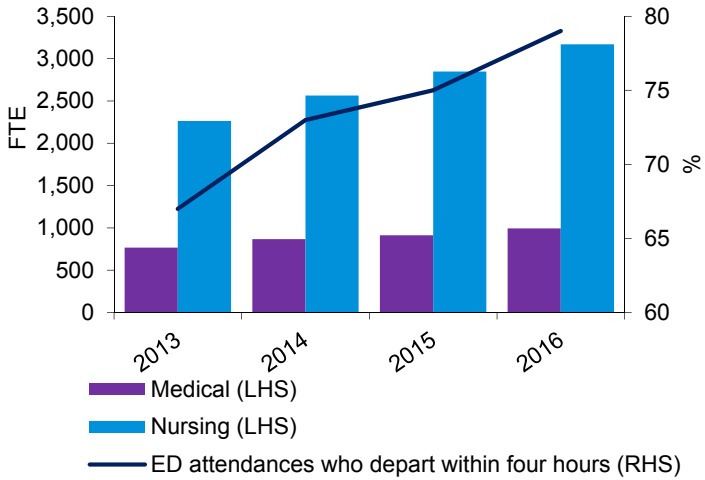
Gold Coast HHS - Percentage of ED patients seen within recommended timeframes - All Categories



Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Gold Coast HHS - Percentage of ED patients who depart within 4 hours



Source: Public Service Commission and Queensland Health (SDS)

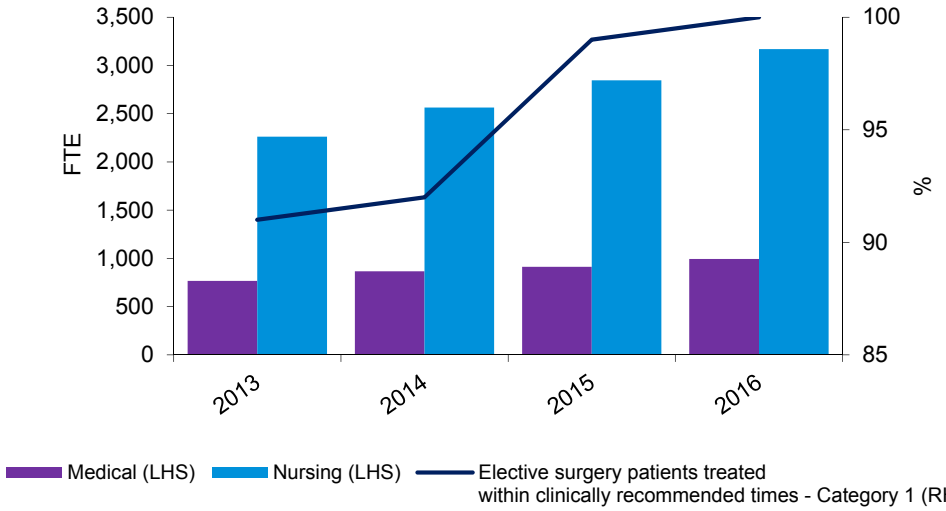
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Health - Correlation Analysis - Gold Coast HHS

Percentage of elective surgery patients seen within clinically recommended timeframes – Category 1

- Data indicates there is a positive correlation between the number of nursing FTEs and percentage of elective surgery patients seen within clinically recommended timeframes, with a correlation coefficient of r = 0.93.
- This result is statistically significant at the 10% level with a p-value of 0.0635.
- There is no evidence of a statistically significant correlation with the number of medical FTEs, with a correlation coefficient of 0.89 and a p-value of 0.1071.
- Over the period, the percentage of category 1 elective surgery patients treated within recommended timeframes improved from 91% to 100%, with a 1% improvement in 2015-16 on the prior year.

Gold Coast HHS - Percentage of elective surgery patients treated within clinically recommended times - Category 1



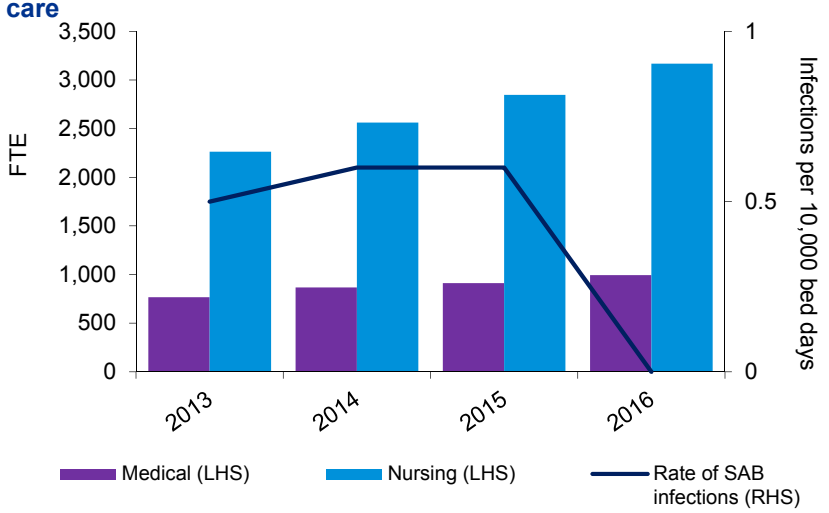
Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Cases of Staphylococcus aureus bacteraemia (SAB) in public hospitals

- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and the rate of SAB cases, with a correlation coefficient of r = -0.65 and a p-value of 0.3418.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = -0.70, and a p-value of 0.3106.
- Over the period, the rate of SAB cases fell from 0.5 cases per 10,000 days of patient care to 0 (a fall of 0.6 was realised in 2015-16).

Gold Coast HHS - SAB cases per 10,000 days of patient care



Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Health - Correlation Analysis - Gold Coast HHS

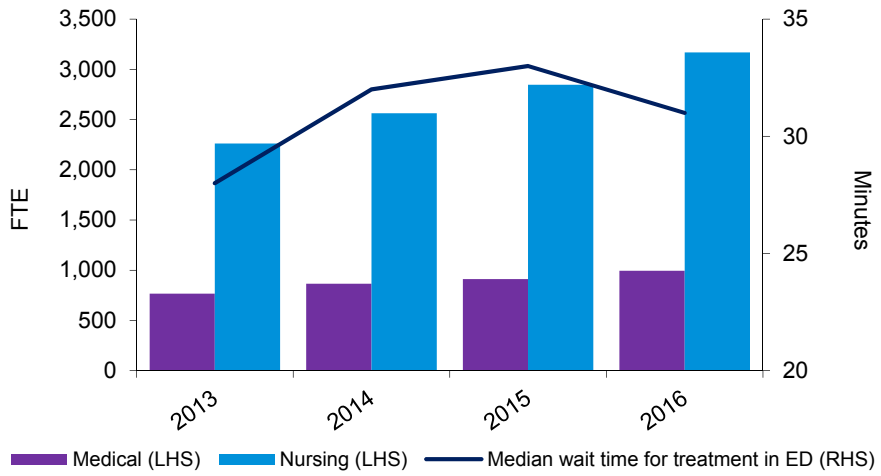
Median wait time for treatment in ED

- Data indicates there is no evidence of a statistically significant relationship between the number of medical FTEs and the median wait time for treatment in the ED, with a correlation coefficient of r = 0.64 and a p-value of 0.3648.
- This result is similar for nursing FTEs, with no evidence of a statistically significant correlation, with r = 0.58, and a p-value of 0.4152.
- Over the period, the median wait time rose by 3 minutes. In 2015-16, it fell by 2 minutes on the previous year.

Weighted Activity Units – Acute inpatient

- Data indicates there is a positive correlation between the number of nursing FTEs and the acute inpatient WAUs, with a correlation coefficient of r = 0.99.
- This result is statistically significant at the 1% level with a p-value of 0.0006.
- This result is consistent with that for medical FTEs, with a positive correlation coefficient of r = 0.99, significant at the 5% level with a p-value of 0.0125.
- Over the period, average annual growth of 14.4% has been experienced in acute inpatient WAUs

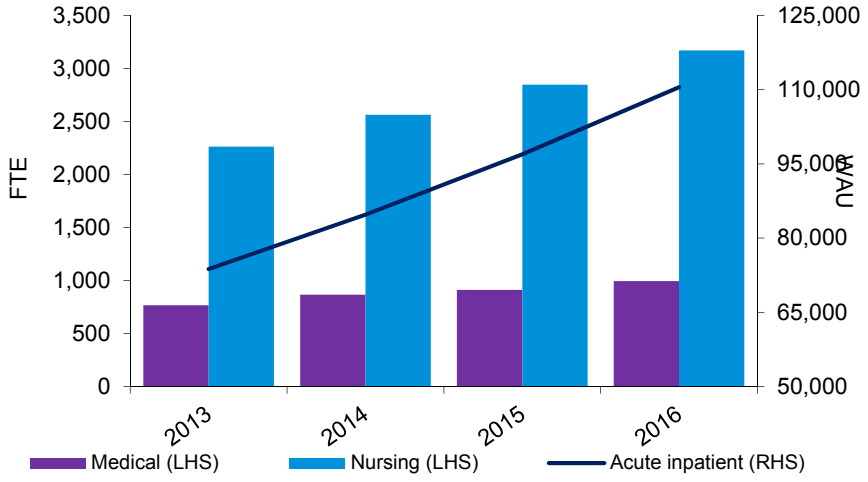
Gold Coast HHS - Median wait time for treatment in ED



Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Gold Coast HHS - Weighted Activity Units - Acute Inpatient



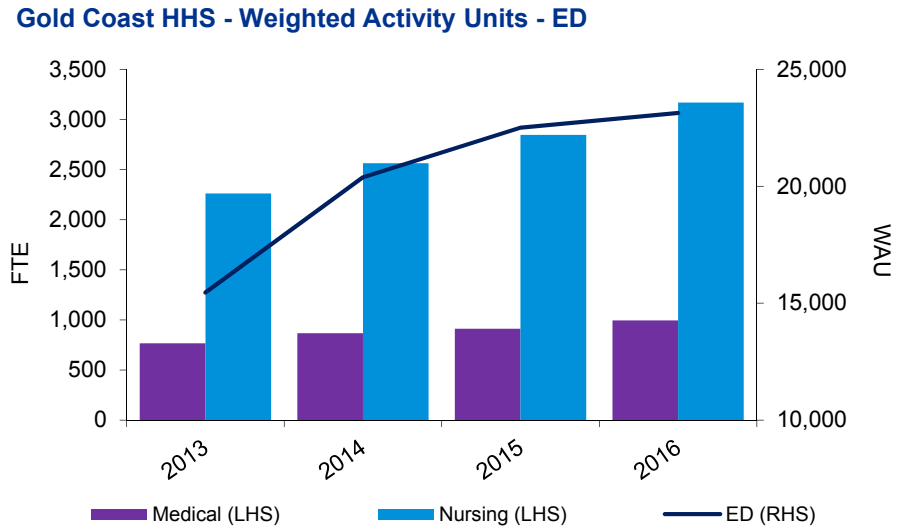
Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Health - Correlation Analysis - Gold Coast HHS

Weighted Activity Units – ED

- Data indicates there is a positive correlation between the number of nursing FTEs and ED WAUs, with a correlation coefficient of r = 0.93, significant at the 10% level with a p-value of 0.0721.
- There is a statistically significant correlation with the number of medical FTEs, with a correlation coefficient of r = 0.95 and a p-value of 0.0504.
- The average annual growth rate for emergency department WAUs has grown by an average annual rate of 14.4% between 2012-13 and 2015-16, with growth of 2.8% between 2014-15 and 2015-16.



Source: Public Service Commission and Queensland Health (SDS)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Education

Data selection

FTE data

The Full-Time Equivalent (FTE) employee data has been sourced directly from unpublished MOHRI datasets provided by the Public Service Commission (PSC).

The data provided by the PSC separated the FTE data into Teacher FTEs and other employees of the Department of Education and Training, such as public servants, cleaners and grounds-people. While acknowledging the important role non-teacher employees play in supporting and enabling efficient frontline service delivery, for the purposes of this exercise, our focus was on frontline teacher FTE numbers, and the potential correlations with particular outcomes measures.

The PSC advised of potential fluctuations in the quarterly FTE datasets from quarter to quarter, as reporting periods coincide with certain events such as holidays. To account for these fluctuations and provide a more consistent measurement approach in the correlation analysis, an average annual FTE figure has been calculated from quarterly FTE data, to attempt to minimise any impacts from these quarter to quarter fluctuations.

As such, given the quarterly FTE data provided has been averaged over each financial year, the FTE data used in this report may not be consistent with latest FTE data as reported on the PSC website or by departments.

Averaged data is presented as the average FTEs employed across that financial year. For example, 2016 FTE data reflects the average FTEs employed in each quarter for the 2015-16 financial year.

Performance data

Datasets used in the following analysis have been sourced from publicly available performance data published on the Department of Education and Training website, annual budgeting reporting (Service Delivery Statements) and the Productivity Commission's annual Report on Government Services.

The following metrics were assessed against the number of teacher FTEs for potential correlation between variables:

- Proportion of students above the national minimum standards - Years 3, 5, 7 and 9 (%);
- Proportion of students who received an OP 1-15 or IBD (%);
- Proportion of students who, six months after completing Year 12, are participating in education, training or employment (%);
- Proportion of parents satisfied with their child's school (%);
- Proportion of Year 12 students who are completing or have completed a school-based apprenticeship or traineeship (SAT) or were awarded one or more of: Queensland Certificate of Education (QCE), International Baccalaureate Diploma (IBD), or Vocational Education and Training (VET) qualification (%);
- Public School Enrolments;
- Class Sizes; and
- Attendance Rates.

Unless otherwise specified, all data presented within the analysis is for Queensland wide outcomes.

Education - FTEs

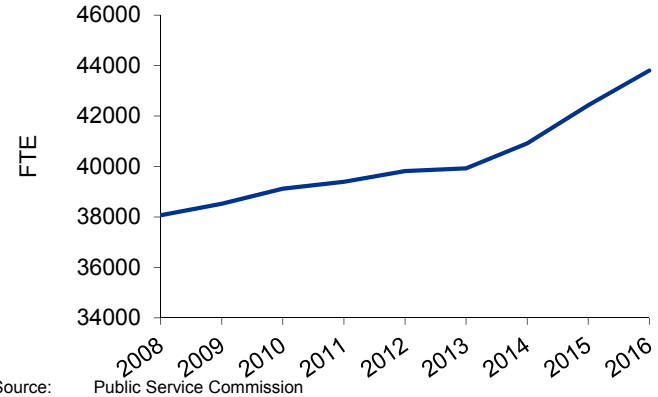
Limitations of analysis

- While movements in these performance metrics, and the number of teacher FTEs may be correlated, in each circumstance, there will be a number of external factors influencing movements of the variables. For example, in many circumstances the quality of the teaching is likely to have a greater influence on improved educational outcomes than simply additional FTEs.
- This analysis is also limited by the degree to which the outcomes metrics are influenced by not only external factors, but also the combined effort of other government department programs through integrated service delivery, working towards a similar set of objectives. This is likely to be particularly relevant for disadvantaged cohorts which experience a high degree of intervention across a number of services.
- The correlation analysis does not attempt to make adjustments to account for potential time lags in any potential link between inputs and outcomes/outputs. For example, increased inputs may take several years to yield improved outcomes. This is particularly relevant for health, child safety and education outcomes.
- The FTE data provided does not identify where (or to which programs) the FTEs were allocated within the education portfolio. As such, this does not enable a direct comparison with FTEs allocated to specific tasks, and any movements in outcomes within that area.

Historical Teacher FTE movements

Over the analysis period, 2008-2016, growth in the number of teacher FTEs has grown each year, at an average annual growth rate of 1.8%.

Teacher FTEs - Queensland 2008-2016



Source: Public Service Commission

	Teacher FTE growth
2009	1.2%
2010	1.6%
2011	0.7%
2012	1.1%
2013	0.3%
2014	2.5%
2015	3.7%
2016	3.3%

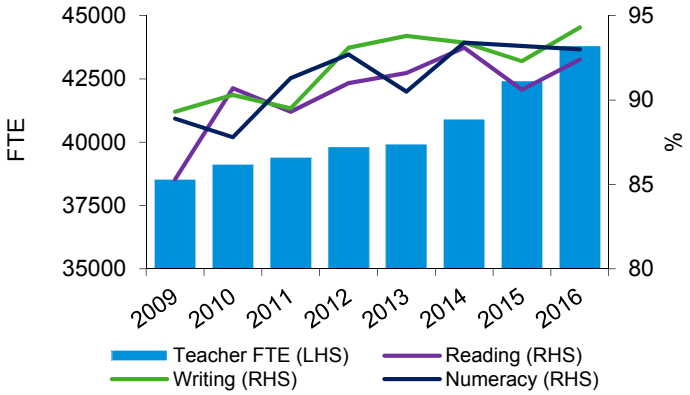
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Education - Summary of correlation results

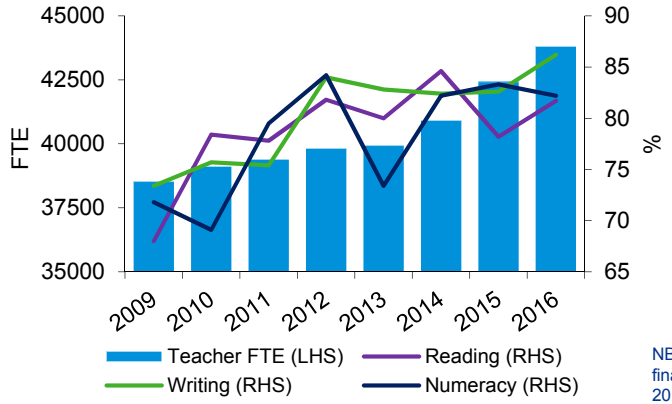
Metric – Education	Correlation	Data Source	Data Period
Year 3 test - proportion of students above the national minimum standards:		Department of Education and Training (DET) SDS	2008-09 to 2015-16
Writing	Moderate positive		
Reading	No sufficient evidence of correlation		
Numeracy	Moderate positive		
Year 5 test - proportion of students above the national minimum standards:		DET SDS	2008-09 to 2015-16
Writing	No sufficient evidence of correlation		
Reading	Moderate positive		
Numeracy	Moderate positive		
Year 7 test - proportion of students above the national minimum standards:		DET SDS	2008-09 to 2015-16
Writing	Strong negative		
Reading	Moderate positive		
Numeracy	No sufficient evidence of correlation		
Year 9 test - proportion of students above the national minimum standards:		DET SDS	2008-09 to 2015-16
Writing	Moderate negative		
Reading	No sufficient evidence of correlation		
Numeracy	No sufficient evidence of correlation		
Proportion of students who received an OP 1-15	Strong positive	DET SDS	2008-09 to 2015-16
Proportion of students who, six months after completing Year 12, are participating in education, training or employment	Strong negative	DET SDS	2008-09 to 2015-16
Proportion of parents satisfied with their child's school	No sufficient evidence of correlation	DET SDS	2009-10 to 2015-16
Proportion of Year 12 students who are completing or have completed a SAT or awarded a QCE, IBD or VET qualification	Strong positive	DET SDS	2008-09 to 2015-16
Public school enrolments	Strong positive	DET website	2012-13 to 2015-16
Class sizes	Strong positive (Prep-Yr10)	DET website	2011-12 to 2015-16
Attendance rates	Strong positive	DET website	2012-13 to 2015-16

Education - Correlation Analysis

Year 3 test - Proportion of students above the national minimum standards



Year 3 test - Proportion of students above the national minimum standards - Indigenous Students



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and Department of Education and Training

Year 3 test - Proportion of students above the national minimum standards

Reading

- Data indicates there is no statistically significant correlation between the number of teacher FTEs and the proportion of year 3 students above the national average for reading. With a correlation of r = 0.59 and a p-value of 0.121, indicating there is no sufficient evidence of correlation between the two variables.
- This result is consistent with that for indigenous students.

Writing

- The data for the evaluation period indicates there is a moderate positive correlation with the number of teacher FTEs and the proportion of year 3 students above the national average for writing. With a correlation of r=0.69 and a p-value of 0.058, the result is significant at the 10% level.
- For indigenous students, the correlation is strong, with r = 0.78 and a p-value of 0.024, indicating the result is statistically significant at the 5% level.

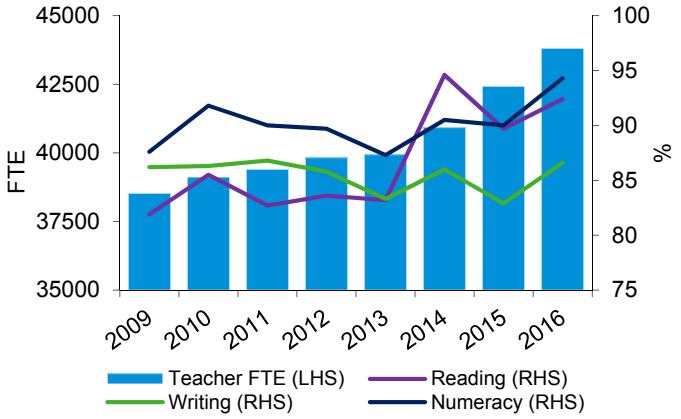
Numeracy

- The data for the evaluation period indicates there is a moderate positive correlation with the number of teacher FTEs and the proportion of year 3 students above the national average for numeracy. With a correlation of r=0.72 and a p-value of 0.044, the result is significant at the 5% level.
- For indigenous students, the correlation is moderate, with r = 0.64 and a p-value of 0.09, indicating the result is statistically significant at the 10% level.

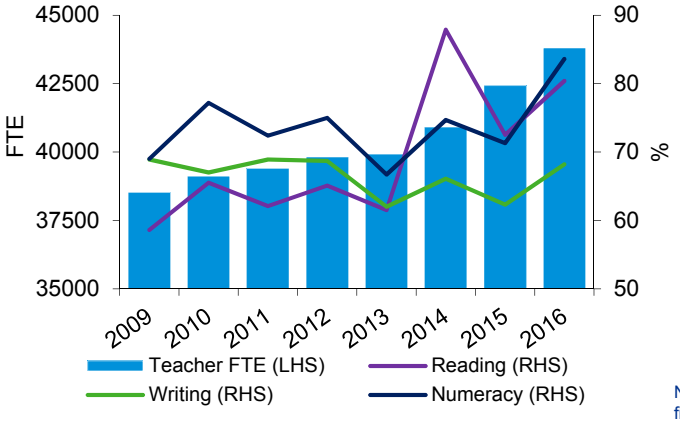
Year 3	Correlation	P-value
Reading	0.59	0.121
Writing	0.69	0.058
Numeracy	0.72	0.044
Indigenous students:		
Reading	0.50	0.206
Writing	0.78	0.024
Numeracy	0.64	0.090

Education - Correlation Analysis

Year 5 test - Proportion of students above the national minimum standards



Year 5 test - Proportion of students above the national minimum standards - Indigenous Students



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and Department of Education and Training

Year 5 test - Proportion of students above the national minimum standards

Reading

- The data for the evaluation period indicates there is a moderate positive correlation with the number of teacher FTEs and the proportion of year 5 students above the national average for reading. With a correlation of r=0.78 and a p-value of 0.024, the result is significant at the 5% level.
- For indigenous students, the correlation is also moderate, with r = 0.71 and a p-value of 0.047, indicating the result is statistically significant at the 5% level.

Writing

- Data indicates there is no statistically significant correlation between the number of teacher FTEs and the proportion of year 5 students above the national average for reading. With a correlation of r = -0.21 and a p-value of 0.614, the results indicate there is no sufficient evidence of correlation between the two variables.
- This result is consistent with that for indigenous students.

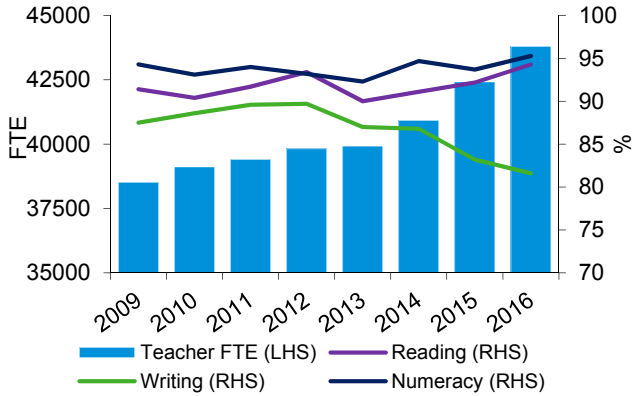
Numeracy

- The data for the evaluation period indicates there is a moderate positive correlation with the number of teacher FTEs and the proportion of year 5 students above the national average for numeracy. With a correlation of r=0.66 and a p-value of 0.077, the result is significant at the 10% level.
- This result is not replicated for indigenous students, with no statistically significant relationship between the variables.

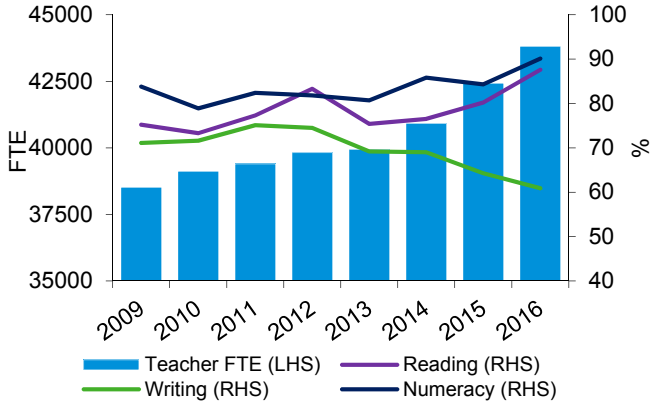
Year 5	Correlation	P-value
Reading	0.78	0.024
Writing	-0.21	0.614
Numeracy	0.66	0.077
Indigenous students:		
Reading	0.71	0.047
Writing	-0.27	0.523
Numeracy	0.57	0.140

Education - Correlation Analysis

Year 7 test - Proportion of students above the national minimum standards



Year 7 test - Proportion of students above the national minimum standards - Indigenous Students



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and Department of Education and Training

Year 7 test - Proportion of students above the national minimum standards

Reading

- Data indicates there is a moderate positive correlation between the number of teacher FTEs and the proportion of year 7 students above the national average for reading. With a correlation of r = 0.63 and a p-value of 0.095, there is correlation between the two variables at the 10% level of significance.
- The relationship appears stronger over the evaluation period for indigenous students, with r = 0.76, which is significant at the 5% level.

Writing

- The data for the evaluation period indicates there is a strong negative correlation with the number of teacher FTEs and the proportion of year 7 students above the national average for writing. With a correlation of r = -0.9 and a p-value of 0.002, the result is significant at the 1% level.
- This result is replicated for indigenous students.

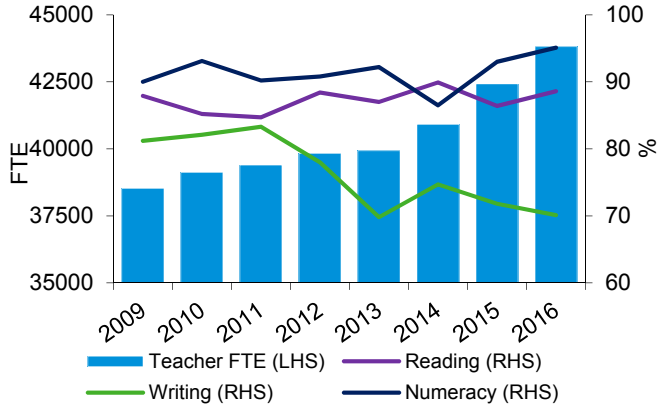
Numeracy

- The data for the evaluation period indicates there is no statistically significant relationship between the number of teacher FTEs and the proportion of year 7 students above the national average for numeracy. With a correlation of r=0.51 and a p-value of 0.197, the results indicate there is no sufficient evidence of correlation.
- For indigenous students, there is a statistically significant correlation, with r = 0.79 and a p-value of 0.02, indicating the result is statistically significant at the 5% level.

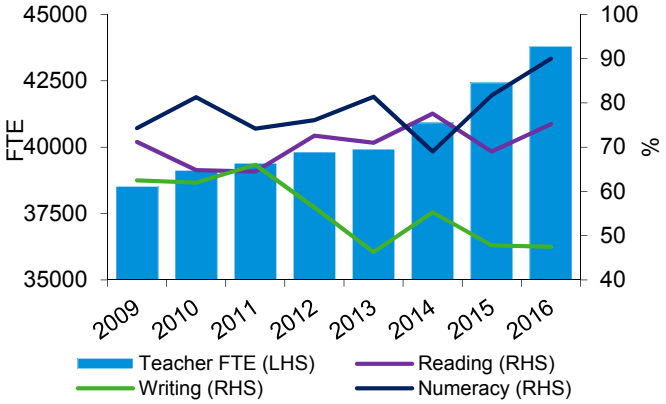
Year 7	Correlation	P-value
Reading	0.63	0.095
Writing	-0.90	0.002
Numeracy	0.51	0.197
Indigenous students:		
Reading	0.76	0.028
Writing	-0.89	0.003
Numeracy	0.79	0.020

Education - Correlation Analysis

Year 9 test - Proportion of students above the national minimum standards



Year 9 test - Proportion of students above the national minimum standards - Indigenous Students



Source: Public Service Commission and Department of Education and Training

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Year 9 test - Proportion of students above the national minimum standards

Reading

- Data indicates there is no statistically significant correlation between the number of teacher FTEs and the proportion of year 9 students above the national average for reading. With a correlation of r = 0.34 and a p-value of 0.407, there is no sufficient evidence of correlation.
- This result is replicated for indigenous students.

Writing

- The data for the evaluation period indicates there is a moderate negative correlation with the number of teacher FTEs and the proportion of year 9 students above the national average for writing. With a correlation of r = -0.76 and a p-value of 0.029, the result is significant at the 5% level.
- This result is replicated for indigenous students.

Numeracy

- The data for the evaluation period indicates there is no statistically significant relationship between the number of teacher FTEs and the proportion of year 9 students above the national average for numeracy. With a correlation of r=0.46 and a p-value of 0.255, this indicates there is no sufficient evidence of correlation.
- This result is replicated for indigenous students.

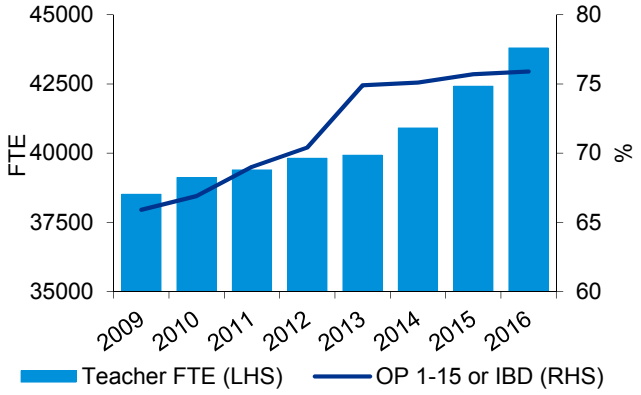
Year 9	Correlation	P-value
Reading	0.34	0.407
Writing	-0.76	0.029
Numeracy	0.46	0.255
Indigenous students:		
Reading	0.47	0.244
Writing	-0.74	0.037
Numeracy	0.61	0.109

Education - Correlation Analysis

Proportion of students who received an OP 1-15 or IBD

- The data indicates a strong positive relationship with the number of teacher FTEs and the number of students receiving OP 1-15 or International Baccalaureate Diploma, with a correlation of 0.82.
- This result is statistically significant at the 5% level with a p-value of 0.012.
- Over the evaluation period, the proportion of students receiving an OP1-15 or an IBD grew at the average annual rate of 2%.
- Some external drivers influencing students' educational performance include socio-demographic status, geographical location, family background, ethnicity and the type of school attended (see Considine, G. and Zappala, G, 2002, *Factors influencing the educational performance of students from disadvantaged backgrounds*, University of New South Wales, Sydney).

Proportion of eligible students who recieved an OP1-15 or an International Baccalaureate Diploma



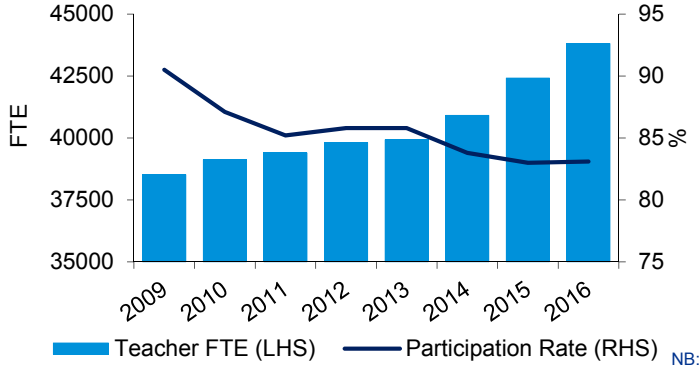
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and Department of Education and Training

Proportion of students who, six months after completing Year 12, are participating in education, training or employment

- Data indicates a strong negative correlation between the number of teachers and the proportion of students participating in education, training and employment shortly after completing year 12, with a correlation of -0.82.
- This result is statistically significant at the 5% level, with a p-value of 0.012.
- Over the evaluation period, the proportion of students participating in education, training or employment fell at the average annual rate of 1.2%.
- The decline in the participation rate since 2009 is likely to be influenced by the external economic conditions, and the availability of employment opportunities for school leavers.

Proportion of students who, six months after completing Year 12, are participating in education, training or employment



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and Department of Education and Training

Education - Correlation Analysis

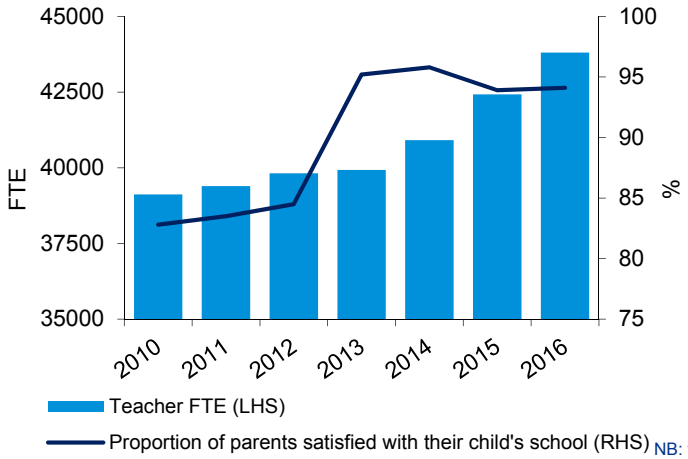
Proportion of parents satisfied with their child's school

- The data indicates there is no evidence of a statistically significant correlation between the proportion of parents satisfied with their child's school and the number of teacher FTEs. With a correlation coefficient of r = 0.66 and a p-value of 0.107
- Over the evaluation period, the proportion of parents satisfied with their child's school grew at the average annual rate of 2.2%.
- This result indicates the number of teachers is unlikely to be the sole driver of parents' satisfaction with their child's school. This is likely to be more closely tied to parents' individual interactions with the school and the quality of the teachers.

Proportion of Year 12 students who are completing or have completed a school-based apprenticeship or traineeship (SAT) or were awarded one or more of: Queensland Certificate of Education (QCE), International Baccalaureate Diploma (IBD), or Vocational Education and Training (VET) qualification

- Data indicates a strong positive correlation of r = 0.91.
- This result is statistically significant at the 1% level, with a p-value of 0.002.
- Over the evaluation period, the proportion of year 12 students who are or have completed a SAT or awarded a QCE, IBD or VET qualification grew at the average annual rate of 1.3%.

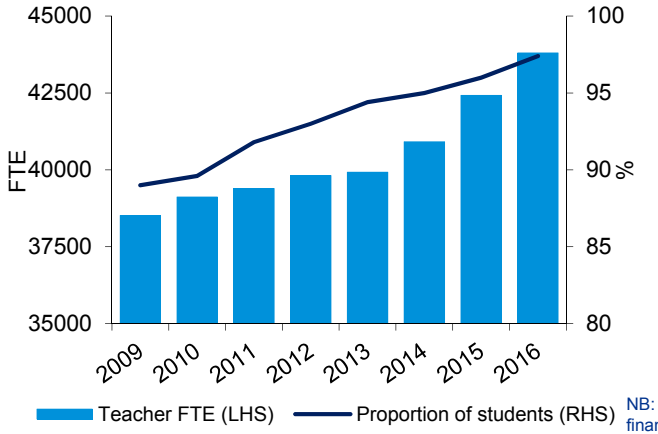
Proportion of parents satisfied with their child's school



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and Department of Education and Training

Proportion of Year 12 students who are completing or have completed a SAT or awarded a QCE, IBD or VET qualification



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

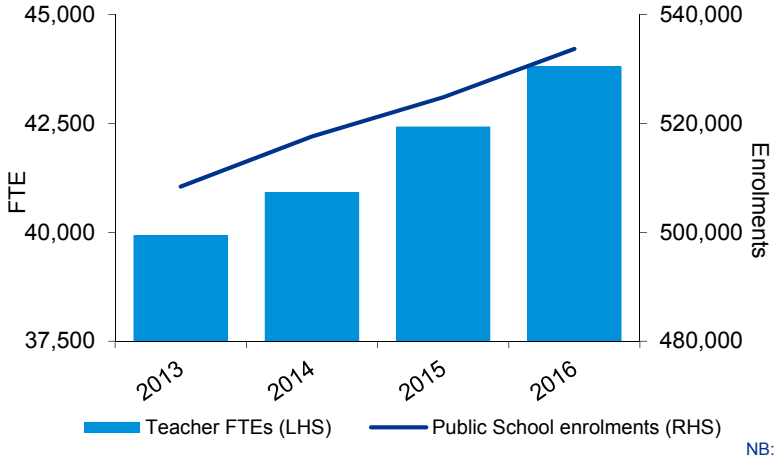
Source: Public Service Commission and Department of Education and Training

Education - Correlation Analysis

Public School Enrolments

- The data indicates there is a strong positive relationship between the number of teacher FTEs and the number of public school enrolments, with a correlation coefficient of r = 0.99.
- This result is statistically significant at the 1% level with a p-value of 0.007.
- Over the evaluation period, 2013-16, the number of public school enrolments grew at the average annual rate of 1.6%. This was slightly above the average annual rate of population growth over the period of 1.36%.
- This metric is not only a measure of demand for public school services (i.e. teaching), but is also a measure of the level of activity required to be undertaken by the public school system.

Public School Enrolments



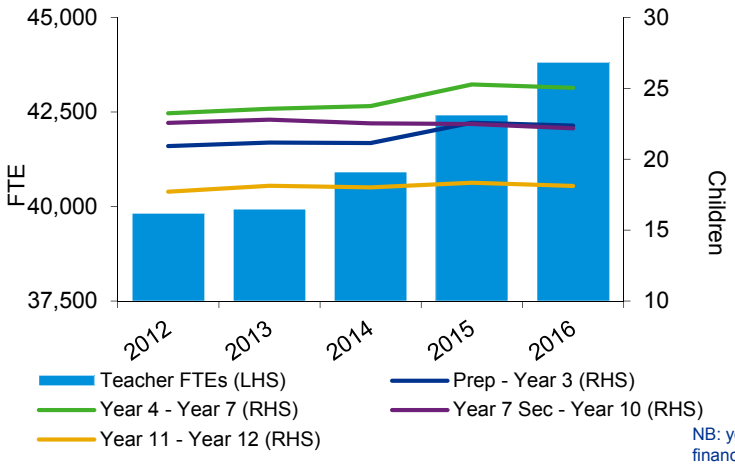
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and Department of Education and Training

Average Class Sizes

- Viewed in conjunction with the number of public school enrolments, it appears as though the additional teacher FTEs has not had a significant impact on reducing the average class size across all cohorts for Queensland public schools. However, the average class size has remained steady over the period, potentially indicating FTE increases may be targeted at maintaining current/past class sizes based on demand.
- However, this data is only at the Queensland level, greater impacts on class sizes may be observed with more disaggregated FTE data that identified where additional FTEs were allocated.
- Strong positive correlations were observed for the Prep-Year 3, Year 4-Year 7 and Year 8-Year 10 cohorts, all statistically significant at the 5% level. There was no evidence of correlation for the Year 11-Year 12 cohort.

Average Class Sizes



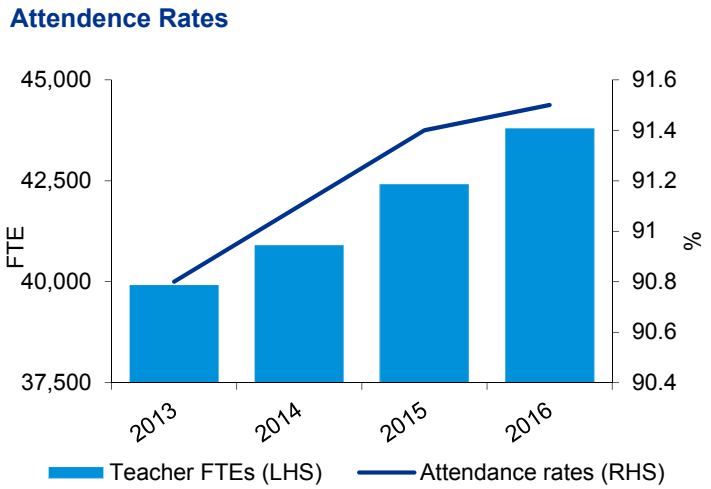
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and Department of Education and Training

Education - Correlation Analysis

Attendance Rates

- The data indicates there is a strong positive relationship between the number of teacher FTEs and the attendance rates at public schools, with a correlation coefficient of r = 0.97.
- This result is statistically significant at the 5% level with a p-value of 0.032.
- Over the evaluation period, 2013-16, the attendance rate grew from 90.8% to 91.5%, potentially reflecting a greater degree of student engagement.



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and Department of Education and Training

Queensland Police

Data selection

FTE data

The Full-Time Equivalent (FTE) employee data has been sourced directly from unpublished MOHRI datasets provided by the Public Service Commission (PSC).

The data provided by the PSC separated the FTE data into Police and Non-Police FTEs. While acknowledging the important role non-police employees play in supporting and enabling efficient frontline service delivery, for the purposes of this exercise, the focus was on frontline police FTE numbers, and the potential correlations between particular outcomes measures.

The PSC advised of potential fluctuations in the quarterly FTE datasets from quarter to quarter, as reporting periods coincide with certain events such as holidays. To account for these fluctuations and provide a more consistent measurement approach in the correlation analysis, an average annual FTE figure has been calculated from quarterly FTE data, to attempt to minimise any impacts from these quarter to quarter fluctuations.

As such, given the quarterly FTE data provided has been averaged over each financial year, the FTE data used in this report may not directly align with latest FTE data as reported on the PSC website or by departments.

Averaged data is presented as the average FTEs employed across that financial year. For example, 2016 FTE data reflects the average FTEs employed in each quarter for the 2015-16 financial year.

Performance data

Datasets used in the following analysis have been sourced from publicly available performance data published on the QPS website, annual budget reporting (Service Delivery Statements), the Australian Bureau of Statistics and the Productivity Commission's annual Report on Government Services, which collects data from a number of published and unpublished sources.

The following variables were assessed against the number of police FTEs for potential correlation:

- Drink driving (offences per 100,000 persons);
- Offences against the person (offences per 100,000 persons);
- Homicide (Murder) (offences per 100,000 persons);
- Drug offence rates (offences per 100,000 persons);
- Assault (offences per 100,000 persons);
- Public nuisance (offences per 100,000 persons);
- General satisfaction with services provided by police (%);
- Feelings of safety at home alone during the night (%);
- Other offences (per 100,000 persons);
- Breach of Domestic Violence Protection Order (offences per 100,000 persons); and
- Police Proceedings - Court Actions and Non-Court Actions.

Unless otherwise specified, all data presented within the analysis is for Queensland wide outcomes.

Queensland Police - FTEs

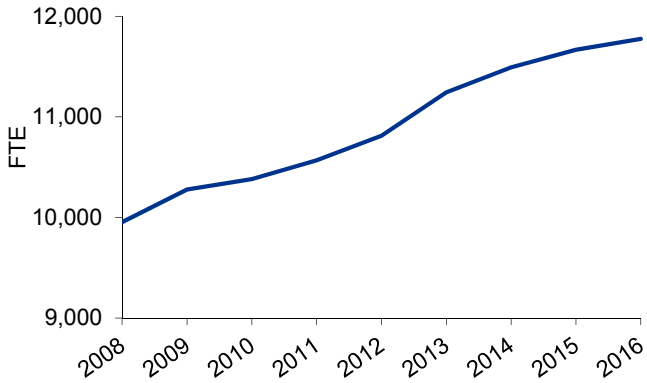
Limitations of analysis

- Where datasets are reported on a monthly or quarterly basis, an annual average has been taken to minimise fluctuations in the data series, and ensure consistency with the presentation of FTE data and other performance data reported on an annual basis.
- While movements in performance metrics and the number of police FTEs may be correlated, in each circumstance, there will be a number of external factors influencing movements of the variables.
- It should also be noted the outcomes metrics may be influenced by not only external factors, but also the combined effort of other government department programs through integrated service delivery, working towards a similar set of objectives. This is likely to be particularly relevant for disadvantaged cohorts which experience a high degree of intervention across a number of government services.
- The correlation analysis does not attempt to make adjustments to account for potential time lags in any potential link between inputs and outcomes/outputs. For example, increased inputs may take several years to yield improved outcomes. This is particularly relevant for health, child safety and education outcomes.
- The FTE data provided does not identify where (or to which programs) the FTEs were allocated within the QPS portfolio. As such, this does not enable a direct comparison with FTEs allocated to specific tasks, and any movements in outcomes within that area.

Historical Police FTE movements

- Over the analysis period, 2008-2016, growth in the number of police FTEs has grown consistently, at an average annual growth rate of 2.12%.
- The strongest year-on-year period of growth was between 2011-12 and 2012-13, with a 4% increase in police FTEs.

Police FTEs – Queensland 2008-2016



Source: Public Service Commission

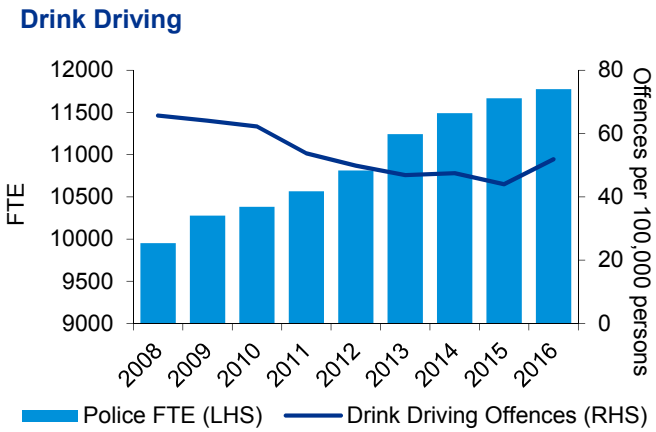
	Police FTE growth
2009	3.3%
2010	1.0%
2011	1.8%
2012	2.3%
2013	4.0%
2014	2.2%
2015	1.5%
2016	0.9%

NB: years are presented in financial years, i.e. 2016 = 2015-16 FY

Queensland Police - Summary of results - Queensland

Metric – Police	Correlation	Data Source	Data Period
Drink driving (offences per 100,000 persons)	Strong negative	QPS website	2007-08 - 2015-16
Offences against the person (offences per 100,000 persons	Strong negative	QPS website	2007-08 - 2015-16
Homicide (Murder) (offences per 100,000 persons)	Moderate negative	QPS website	2007-08 - 2015-16
Drug offence rates (offences per 100,000 persons)	Strong positive	QPS website	2007-08 - 2015-16
Assault (offences per 100,000 persons)	Strong negative	QPS website	2007-08 - 2015-16
Public nuisance (offences per 100,000 persons)	Moderate negative	QPS website	2007-08 - 2015-16
General satisfaction with services provided by police (%)	No sufficient evidence of correlation	Productivity Commission - RoGS	2009-10 - 2014-15
Feelings of safety at home alone during the night (%)	Moderate positive	Productivity Commission - RoGS	2008-09 to 2014-15
Other offences (rate per 100,000 persons)	Stong positive	QPS website	2009-10 to 2015-16
Breach of Domestic Violence Protection Order (per 100,000 persons)	Strong positive	QPS website	2009-10 to 2015-16
Police proceedings - Court Action	Moderate positive	Australian Bureau of Statistics	2008-09 to 2015-16
Police proceedings - Non-Court Action	Strong positive	Australian Bureau of Statistics	2008-09 to 2015-16

Queensland Police - Correlation Analysis



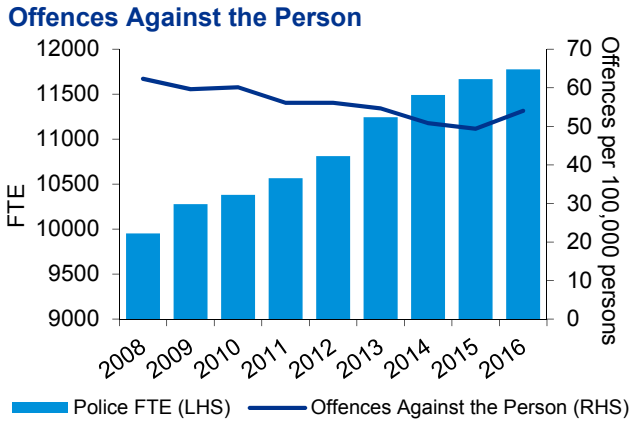
Drink Driving

- Data indicates there is a strong negative correlation over the analysis period 2008-2016, with a correlation coefficient of r = -0.86.
- This result is statistically significant at the 1% level, with a p-value of 0.002
- Over the evaluation period, the drink driving offence rate fell at an average annual rate of 2.9%, while the number of police FTEs grew at an average annual rate of 2.1%.
- This data suggests police FTE growth is closely related to a decline in the number of drink driving offences.
- Some potential external factors influencing movements in the drink driving offence rates includes various socio-economic factors, deterrent activity, impact of advertising campaigns and changing social views and norms around drink driving.
- The rise in drink driving offences in 2016 could potentially be due to increased enforcement activity or better targeting of high-offence areas. However, this would need to be validated by supplementary activity data on the number of random-breath tests undertaken (for which data was not publicly accessible).

Source: Public Service Commission and Queensland Police Service

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Queensland Police - Correlation Analysis



Offences against the person

- Data indicates there is a strong negative correlation, with the correlation coefficient of r = -0.92.
- This result is statistically significant at the 1% level with a p-value of 0.0005.
- Over the evaluation period, the rate of offences against the person fell at an average annual rate of 1.8%, while the number of police FTEs grew at an average annual rate of 2.1%.
- The data suggests growth in FTE growth is closely related to the declining trend in offences against the person.
- Some potential external factors influencing movements in offence rates includes an individuals' socio-demographic status, employment status, broader economic conditions and/or alcohol/drug abuse among others.
- The level of pro-active policing activity also acts as a deterrent of crime, however, the effectiveness of this activity is difficult to capture. It is also difficult to determine whether the slight increase in offences in 2016 is a result of additional enforcement activity, or is driven by external factors listed above.
- Offences against the person are also more likely to be reported to the police, rather than detected by police.

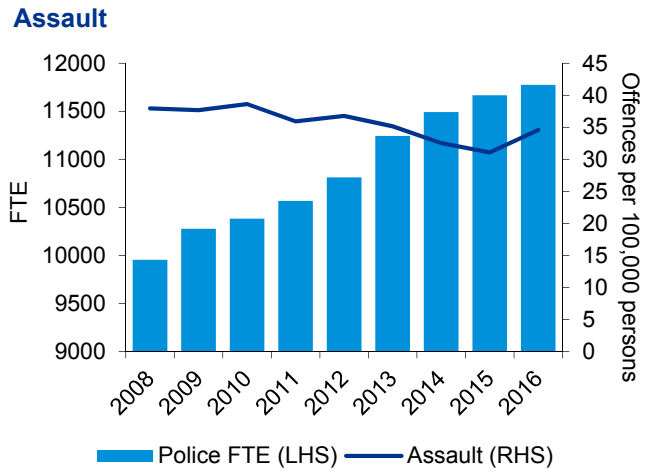
Source: Public Service Commission and Queensland Police Service

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Queensland Police - Correlation Analysis

Assault

- Data indicates there is a strong negative correlation with police FTE numbers.
- Over the analysis period 2008-2016, there was a correlation of r = -0.87.
- This result is statistically significant at the 1% level, with a p-value of 0.0025
- Over the evaluation period, the rate of assault offences fell at an average annual rate of 1.2%, while the number of police FTEs grew at an average annual rate of 2.1%.
- Some potential external factors influencing movements in offence rates includes an individuals' socio-demographic status, employment status, broader economic conditions and/or alcohol/drug abuse among others.
- The level of pro-active policing activity also acts as a deterrent of crime, however, the effectiveness of this activity is difficult to capture. It is also difficult to determine whether the slight increase in offences in 2016 is a result of additional enforcement activity, or is driven by external factors listed above.

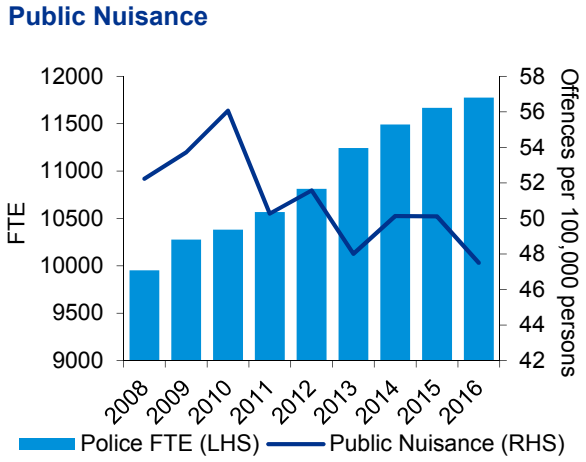


NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and Queensland Police Service

Public Nuisance

- Data indicates there is a moderate negative correlation with the rate of public nuisance offences, over the analysis period 2008-2016, with a correlation of -0.74.
- This result is statistically significant at the 5% level, with a p-value of 0.022.
- Over the evaluation period, the rate public nuisance offences fell at an average annual rate of 1.2%, while the number of police FTEs grew at an average annual rate of 2.1%.
- The data suggests over the evaluation period, FTE growth tracked closely with a decline in public nuisance offences.
- Some potential external factors influencing movements in offence rates includes an individuals' socio-demographic status, employment status, broader economic conditions and/or alcohol/drug abuse among others.
- The Queensland Police Service considers public nuisance offences a measure of proactive policing activity.



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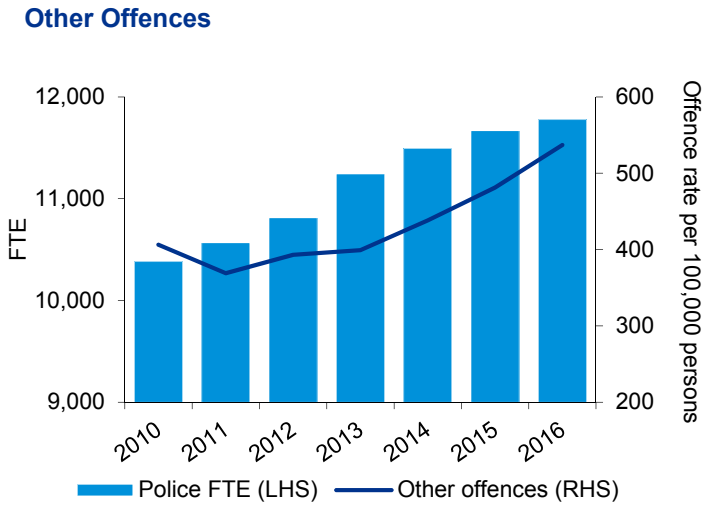
Source: Public Service Commission and Queensland Police Service

Queensland Police - Correlation Analysis



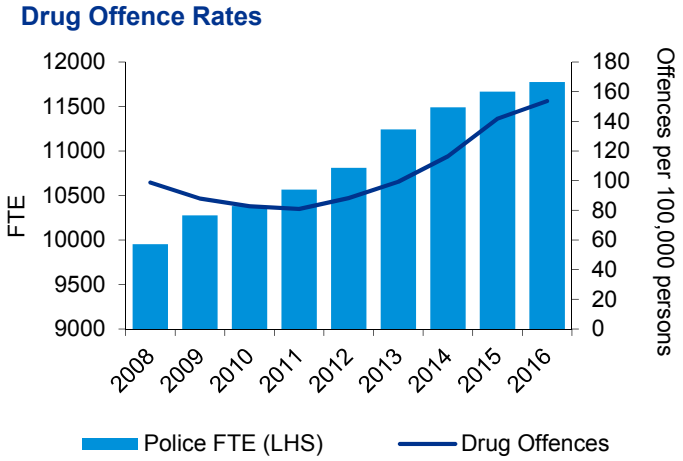
Other Offences – Proactive Policing

- Data indicates there is a strong positive relationship with the number of police FTEs and the number of other offences reported with a correlation coefficient of r = 0.82.
- This result is statistically significant at the 5% level, with a p-value of 0.023.
- The Queensland Police Service, in its Annual Statistical Review, identify the number of other offences reported as an indicator of proactive policing activity, as these are offences that are generally detected by police.
- Over the evaluation period, 2010-2016, the number of other offences reported grew at an annual average rate of 4.8%.
- This indicates there is as statistically significant positive relationship with the number of police FTEs and the amount of proactive police activity undertaken across Queensland.

Source: Public Service Commission and Queensland Police Service (website)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Queensland Police - Correlation Analysis



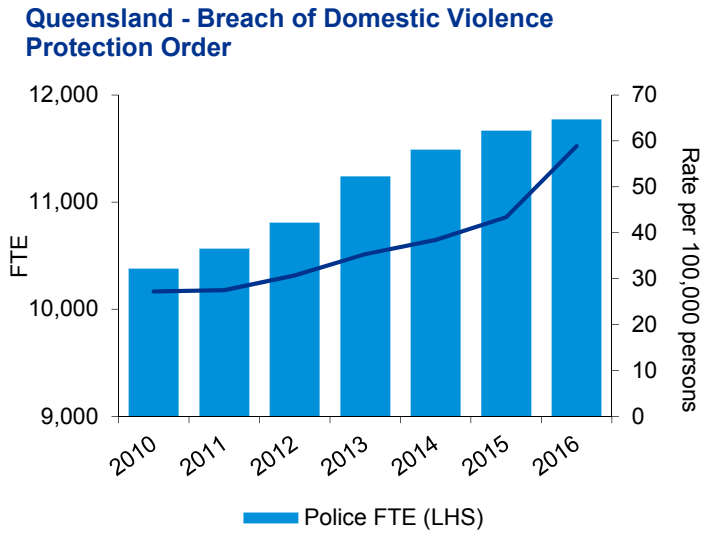
Drug Offences

- Data indicates there is a strong positive correlation with the rate of drug offences, over the analysis period 2008-2016, with a correlation of 0.81.
- This result is statistically significant at the 1% level, with a p-value of 0.008.
- Over the evaluation period, the rate of drug offences grew at an average annual rate of 5.7%, while the number of police FTEs grew at an average annual rate of 2.1%.
- The data suggests that over the evaluation period. growth in FTE growth is closely related to the growth in drug offences.
- The drug offence rate is considered by the Queensland Police Service as a measure of proactive policing activity, as such, the result indicates the relationship between the growth in the number of police FTEs and the growth in drug offences is to some degree an indicator of increased enforcement activity.
- There has been a clear focus on targeting organised crime by the Queensland Police Service (QPS), with Taskforce Maxima – which targets organised crime and drugs – becoming a permanent fixture of the QPS as the Organised Crime Gangs Group in May 2017.

Source: Public Service Commission and Queensland Police Service

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Queensland Police - Correlation Analysis



Breach of Domestic Violence Protection Order

- Data indicates there is a strong positive correlation between the number of police FTEs and the rate of breaches of domestic violence protection orders with a correlation coefficient of r = 0.88.
- This result is statistically significant at the 1% level with a p-value of 0.009.
- Over the evaluation period, 2010-2016, the rate of domestic violence protection orders breached grew at an annual average rate of 13.7%.
- This result indicates the number of police FTEs positively correlated with the rate of DV protection orders breached. While correlated, it is difficult to see how variations in these variables could be causal, given the direction of the relationship and given offences are most often perpetrated in the home or amongst family members (see *Not Now, Not Ever*).
- It is acknowledged by the Queensland Government that many incidences of domestic violence go unreported, given the private nature of the offences. As such, it is unclear whether the rise in DV offences in recent years are a result of the increasing prevalence of DV related assaults, or to some degree reflect a culture change where victims may feel more comfortable reporting DV offences.

Source: Public Service Commission and Queensland Police Service (website)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Queensland Police - Correlation Analysis

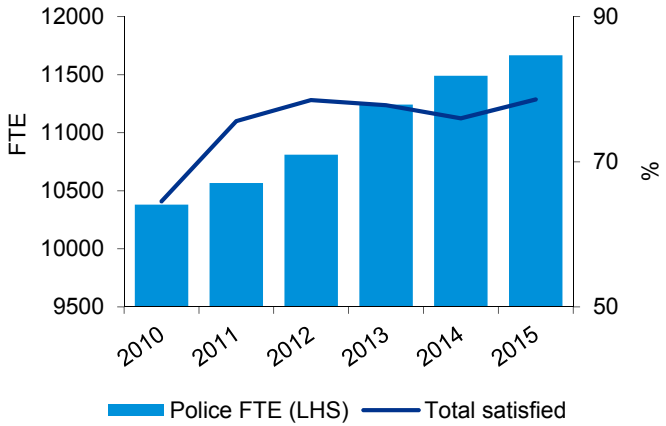
Satisfaction with police services

- There is no sufficient evidence to support evidence that correlation exists between the two variables.
- The initial result of a moderate positive correlation of 0.65 is not statistically significant, with a p-value of 0.15.
- Over the evaluation period, the level of satisfaction with services provided by police grew at an average annual rate of 4%, while the number of police FTEs grew at an average annual rate of 2.1%.
- The above result indicates that the number of FTEs is unlikely to be a primary influencing factor around the public's perception around satisfaction of services provided by police. This may be driven more by an individuals' interactions with police, the quality of service provided and general demeanour of officers.

Feelings of safety home alone at night

- Data indicates a moderate positive correlation with the number of police FTE's and Queenslander's feelings of safety at home alone during the night, with a positive correlation of 0.71.
- This result is statistically significant at the 10% level, with a p-value of 0.0692.
- Over the evaluation period, the level of safety felt by Queenslanders at home alone during the night grew at an average annual rate of 0.9%, while the number of police FTEs grew at an average annual rate of 2.1%.
- Other external factors influencing feelings of safety include an individuals' age, gender, socio-economic status and ethnicity, as well as the influence of media and various neighbourhood factors (see Shepherdson. P, 2014, *Perceptions of safety & fear of crime report,* Auburn City Council).

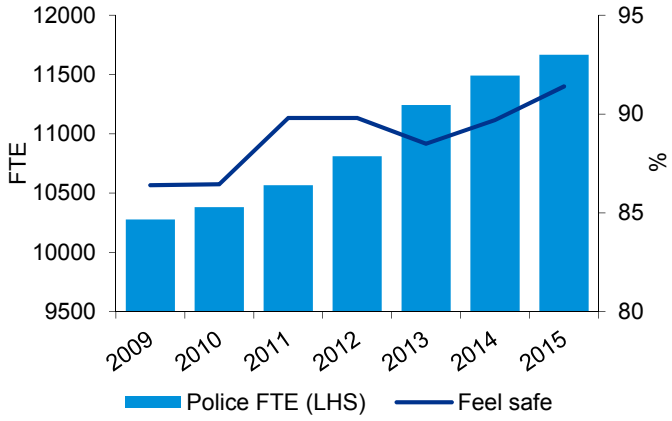
General satisfaction with services provided by the police



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Productivity Commission (RoGS, 2017) and Public Service Commission

Feelings of safety at home alone during the night



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Productivity Commission (RoGS, 2017) and Public Service Commission

Queensland Police - Correlation Analysis

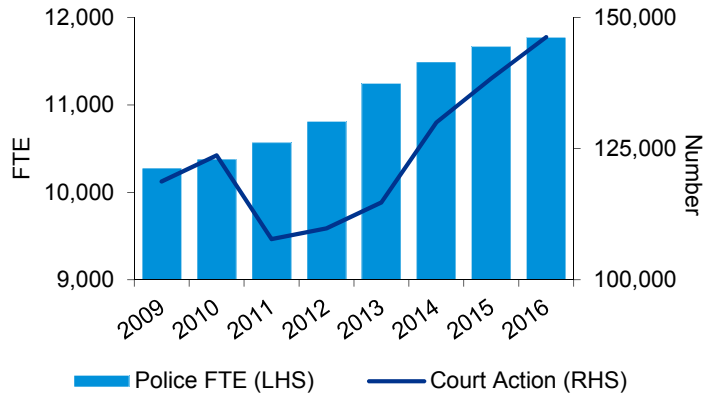
Police Proceedings – Court actions

- Data indicates there is a moderate positive correlation between the number of police FTEs number of court action police proceedings with a correlation coefficient of r = 0.72.
- This result is statistically significant at the 5% level with a p-value of 0.04.
- Over the evaluation period, 2009-2016, the number of court action police proceedings grew at an annual average rate of 3%. Between 2011 and 2016 this growth rate was 6.3% per annum.
- Between 2015 and 2016, the number of court proceedings grew by 5.7%.

Police Proceedings – Non-Court action

- Data indicates there is a strong positive correlation between the number of police FTEs number of non-court action police proceedings with a correlation coefficient of r = 0.90.
- This result is statistically significant at the 1% level with a p-value of 0.002.
- Over the evaluation period, 2009-2016, the number of non-court action police proceedings grew at an annual average rate of 8%.
- Between 2015 and 2016, the number of non-court proceedings grew by 2.4%.

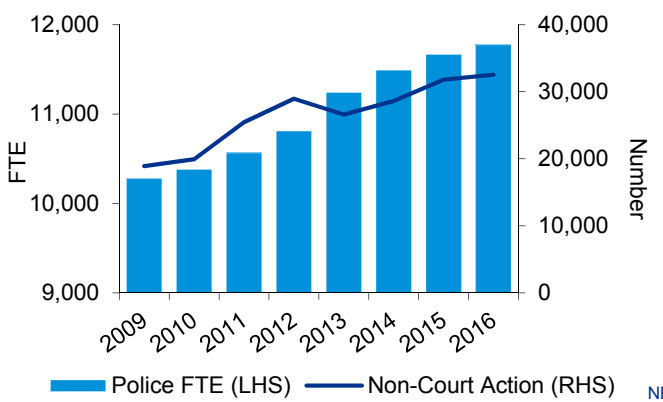
Police Proceedings - Court Action



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and ABS 4519.0

Police Proceedings - Non-Court Action



NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and ABS 4519.0

Queensland Police - Gold Coast District

Gold Coast FTE data

The unpublished FTE data provided by the PSC was presented by Special Occupation Group, by Local Government Area (LGA).

The Queensland Police dataset sourced from the QPS website provided offence rates at the police district level.

In the following analysis, the reported offence rates for the Gold Coast police district have been used. With offence rates averaged over the course of each financial year to enable consistency of analysis with FTE data.

While the Gold Coast police district does not directly align with the Gold Coast LGA in a geographic sense, it provides a reasonable proxy for comparison.

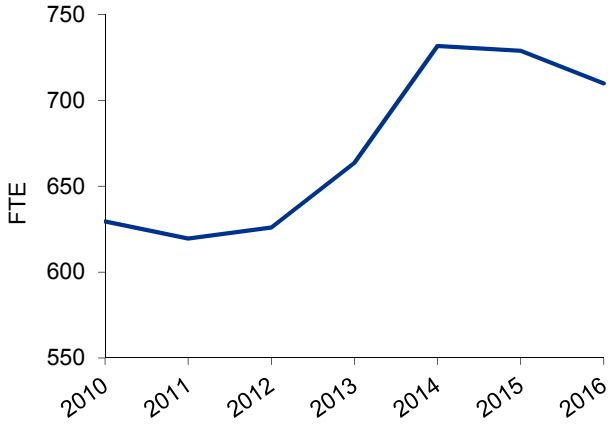
However, it should be noted that given the close proximity of the Logan and South Brisbane Districts, the number of police FTEs recorded in the Gold Coast LGA may not accurately reflect the number of police FTEs operating in the district, as police may operate across districts where required. This assumption would need to be confirmed with the QPS.

Given the quarterly FTE data provided has been averaged over each financial year, the FTE data used in this report may not be consistent with latest FTE data as reported on the PSC website or by departments.

Historical Police FTE movements

- Over the analysis period, 2011-2016, growth in the number of police FTEs in the Gold Coast LGA grew at an average annual growth rate of 2%.
- The strongest year-on-year period of growth was between 2012-13 and 2013-14, with a 10.3% increase in the police FTEs on the Gold Coast.
- Between 2014-15 and 2015-16, the of FTEs employed within the Gold Coast LGA fell by 2.6%.

Gold Coast Police FTE

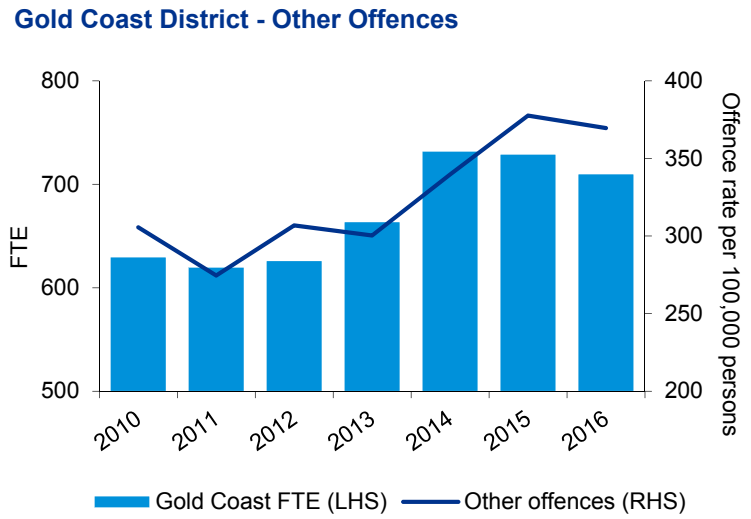


Source: Public Service Commission

	Gold Coast Police FTE growth
2011	-1.60%
2012	1.05%
2013	6.01%
2014	10.26%
2015	-0.39%
2016	-2.60%

NB: years are presented in financial years, i.e. 2016 = 2015-16 FY

Queensland Police - Correlation Analysis - Gold Coast District



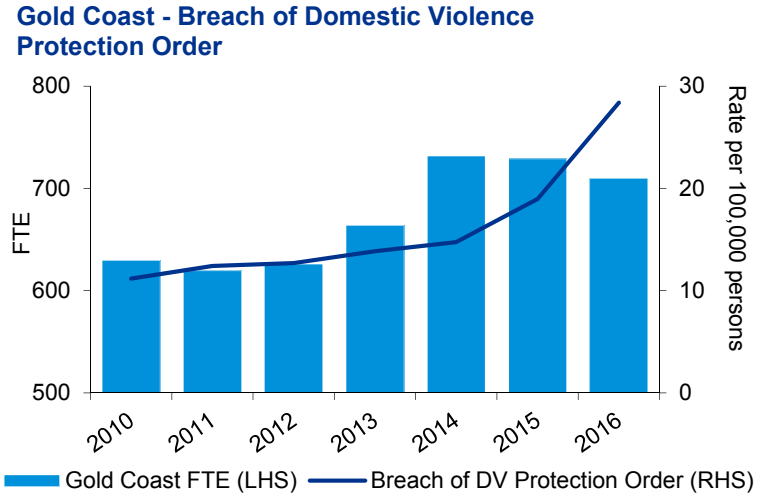
Other Offences – Gold Coast District – Proactive Policing

- NOTE: Offence data reported is for the Gold Coast Police District, while FTE data is reported for the Gold Coast City Council Local Government Area (LGA). Although the LGA data may not align perfectly with the police district geography, it aligns reasonably well with the geographic area covered.
- Data indicates there is a strong positive relationship with the number of police FTEs in the Gold Coast LGA and the number of other offences in the Gold Coast District with a correlation coefficient of r = 0.86.
- This result is statistically significant at the 1% level, with a p-value of 0.0097.
- Over the evaluation period, 2010-2016, the number of other offences reported grew at an annual average rate of 3.2%.
- This indicates there is as statistically significant positive relationship with the number of police FTEs and the amount of proactive police activity undertaken at the Gold Coast.

Source: Public Service Commission and Queensland Police Service (website)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Queensland Police - Correlation Analysis - Gold Coast District



Breach of Domestic Violence Protection Order – Gold Coast District

- NOTE: Offence data reported is for the Gold Coast Police District, while FTE data is reported for the Gold Coast City Council Local Government Area (LGA). Although the LGA data may not align perfectly with the police district geography, it aligns reasonably well with the geographic area covered.
- Data indicates there is no statistically significant correlation between the number of police FTEs in the Gold Coast LGA and the rate of breaches of domestic violence protection orders in the Gold Coast police district with a correlation coefficient of r = 0.63 and a p-value of 0.13. .
- Over the evaluation period, 2010-2016, the rate of domestic violence protection orders breached grew at an annual average rate of 16.8%.
- This result indicates the number of police FTEs is unlikely to have a significant influence of the rate of DV protection orders breached. This is not unexpected, as the offence is most often perpetrated in the home or amongst family members (see *Not Now, Not Ever*).
- It is acknowledged by the Queensland Government that many incidences of domestic violence go unreported, given the private nature of the offences. As such, it is unclear whether the rise in DV offences in recent years are a result of the increasing prevalence of DV related assaults, or to some degree reflect a culture change where victims may feel more comfortable reporting DV offences.

Source: Public Service Commission and Queensland Police Service (website)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Queensland Police - Townsville District

Townsville FTE data

The unpublished FTE data provided by the PSC was presented by Special Occupation Group, by Local Government Area (LGA).

The Queensland Police dataset sourced from the QPS website provided offence rates at the police district level.

In the following analysis, the reported offence rates for the Townsville police district have been used. With offence rates averaged over the course of each financial year to enable consistency of analysis with FTE data.

In order to map the Townsville police district with FTE data at the LGA level, the number of police FTEs for the Burdekin Shire Council, Charters Towers Regional Council, Flinders Shire Council, Palm Island Aboriginal Shire Council, Richmond Shire Council and Townsville City Council have been aggregated. This provides a reasonably close approximation of the geographical area covered by the Townsville police district.

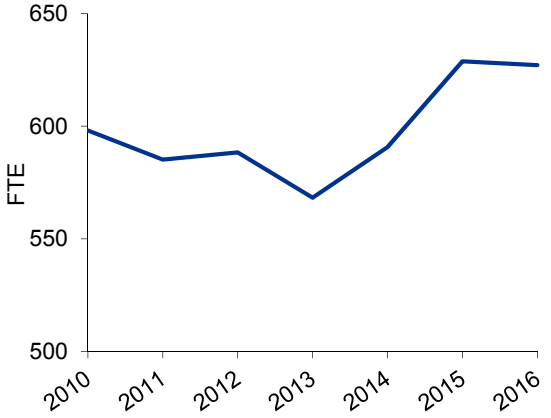
However, it should be noted that there is for police FTEs to operate across districts where required. This assumption would need to be confirmed with the QPS.

Given the quarterly FTE data provided has been averaged over each financial year, the FTE data used in this report may not be consistent with latest FTE data as reported on the PSC website or by departments.

Historical Police FTE movements

- Over the analysis period, 2011-2016, growth in the number of police FTEs in the aggregated Townsville LGA region grew at an average annual growth rate of 2.1%.
- The strongest year-on-year period of growth was between 2013-14 and 2014-15, with a 6.45% increase in the police FTEs.
- Between 2014-15 and 2015-16, the of FTEs employed within the aggregated Townsville LGA region fell by 0.3%.

Townsville Police FTE

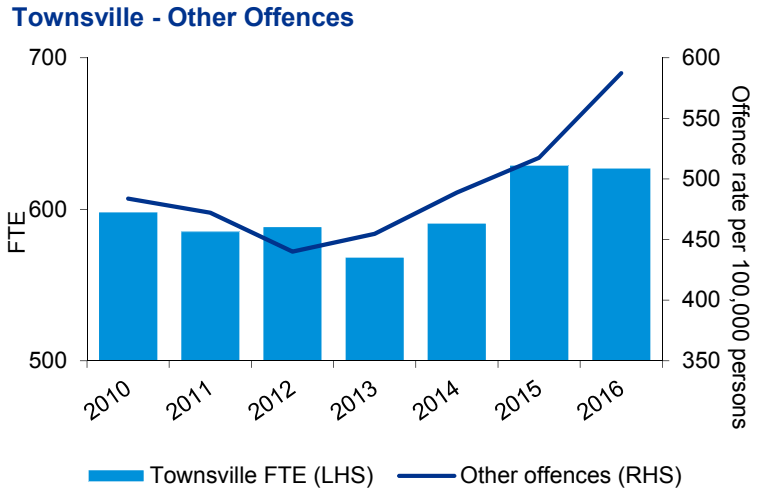


Source: Public Service Commission

	Townsville Police FTE growth
2011	-2.16%
2012	0.55%
2013	-3.42%
2014	3.96%
2015	6.45%
2016	-0.28%

NB: years are presented in financial years, i.e. 2016 = 2015-16 FY

Queensland Police - Correlation Analysis - Townsville District



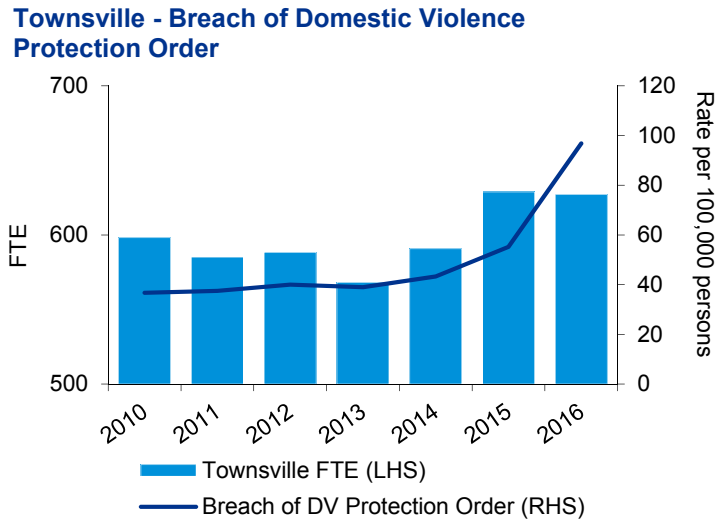
Other Offences – Townsville District – Proactive Policing

- NOTE: Offence data reported is for the Townsville Police District, while FTE data was provided at the Local Government Area (LGA) level. As such, in order to align FTEs by LGA with the Townsville Police District, the number of police FTEs for the Burdekin Shire Council, Charters Towers Regional Council, Flinders Shire Council, Palm Island Aboriginal Shire Council, Richmond Shire Council and Townsville City Council have been aggregated.
- Although the aggregated LGA data may not align perfectly with the police district geography, it aligns reasonably well with the geographic area covered.
- Data indicates there is a strong positive relationship with the number of police FTEs in the aggregated Townsville LGA area (identified above) and the number of other offences in the Townsville District with a correlation coefficient of r = 0.83.
- This result is statistically significant at the 5% level, with a p-value of 0.020.
- Over the evaluation period, 2010-2016, the number of other offences reported grew at an annual average rate of 3.3%.
- This indicates there is as statistically significant positive relationship with the number of police FTEs and the amount of proactive police activity undertaken in the Townsville police district.

Source: Public Service Commission and Queensland Police Service (website)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Queensland Police - Correlation Analysis - Townsville District



Breach of Domestic Violence Protection Order – Townsville District

- NOTE: Offence data reported is for the Townsville Police District, while FTE data was provided at the Local Government Area (LGA) level. As such, in order to align FTEs by LGA with the Townsville Police District, the number of police FTEs for the Burdekin Shire Council, Charters Towers Regional Council, Flinders Shire Council, Palm Island Aboriginal Shire Council, Richmond Shire Council and Townsville City Council have been aggregated.
- Although the aggregated LGA data may not align perfectly with the police district geography, it aligns reasonably well with the geographic area covered.
- Data indicates there is a moderate positive correlation between the number of police FTEs in the aggregated Townsville area (specified above) and the rate of breaches of domestic violence protection orders in the Townsville police district with a correlation coefficient of r = 0.74.
- This result is statistically significant at the 10% level with a p-value of 0.056.
- Over the evaluation period, 2010-2016, the rate of domestic violence protection orders breached grew at an annual average rate of 17.5%.
- This result indicates the number of police FTEs positively correlated with the rate of DV protection orders breached. While correlated, it is difficult to see how variations in these variables could be causal, given the direction of the relationship and given offences are most often perpetrated in the home or amongst family members (see *Not Now, Not Ever*).
- It is acknowledged by the Queensland Government that many incidences of domestic violence go unreported, given the private nature of the offences. As such, it is unclear whether the rise in DV offences in recent years are a result of the increasing prevalence of DV related assaults, or to some degree reflect a culture change where victims may feel more comfortable reporting DV offences.

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Source: Public Service Commission and Queensland Police Service (website)

Child Safety

Data selection

FTE data

The Full-Time Equivalent (FTE) employee data has been sourced directly from prior years' Service Delivery Statements (SDSs) for the Department of Communities, Child Safety and Disabilities Services (DCCSDS). The SDSs provided data for the number of FTEs in the Child and Family Services stream for the financial years 2012-13 to 2015-16.

FTE data for this service stream was not available prior to this via PSC reporting or SDSs.

Performance data

Datasets used in the following analysis have been sourced from publicly available performance data published on the DCCSDS website, annual budget reporting (Service Delivery Statements) and the Productivity Commission's annual Report on Government Services.

The following metrics were assessed against the number of child and family services FTEs for potential correlation between variables:

- Children in out of home care;
- Children in out-of-home care subject of a child protection substantiation and the person believed responsible was living in the household providing out-of-home care;
- Response time to commence investigation;
- Response time to complete investigation;
- Children who were the subject of a decision not to substantiate during the year and who were also the subject of a subsequent substantiation within 3 and/or 12 months;
- Child Intake Reports; and
- Children in need of protection

Unless otherwise specified, all data presented within the analysis is for Queensland wide outcomes.

Child Safety - FTEs

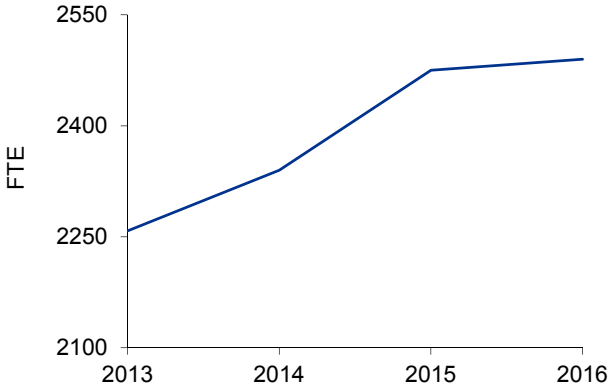
Limitations of analysis

- While movements in these performance metrics, and the number of FTEs may be correlated, in each circumstance, there will be a number of external factors influencing movements of the variables.
- This analysis is also limited by the degree to which the outcomes metrics are influenced by not only external factors, but also the combined effort of other government department programs through integrated service delivery, working towards a similar set of objectives. This is likely to be particularly relevant for disadvantaged cohorts which experience a high degree of intervention across a number of services.
- The correlation analysis does not attempt to make adjustments to account for potential time lags in any potential link between inputs and outcomes/outputs. For example, increased inputs may take several years to yield improved outcomes. This is particularly relevant for health, child safety and education outcomes.
- The FTE data provided does not identify where (or to which programs) the FTEs were allocated within the portfolio. As such, this does not enable a direct comparison with FTEs allocated to specific tasks, and any movements in outcomes within that area.

Historical Child Safety FTE movements

Over the analysis period, 2013-2016, growth in the number of child and family services FTEs has grown each year, at average annual growth rate of 3.3%.

Child and Family Services



	Child and Family Services FTE Growth
2014	3.6%
2015	5.8%
2016	0.6%

Source: DCCSDS, Service Delivery Statements

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Child Safety - Summary of correlation results

Metric – Child Safety	Correlation	Data Source	Data Period
Children in out of home care	Strong positive	Productivity Commission - RoGS	2012-13 to 2015-16
Children in out-of-home care subject of a child protection substantiation and the person believed responsible was living in the household providing out-of-home care	No sufficient evidence of correlation	Productivity Commission - RoGS	2012-13 to 2015-16
Response time to commence investigation	No sufficient evidence of correlation	Productivity Commission - RoGS	2012-13 to 2015-16
Response time to complete investigation	No sufficient evidence of correlation	Productivity Commission - RoGS	2012-13 to 2015-16
Children who were the subject of a decision not to substantiate during the year and who were also the subject of a subsequent substantiation within 3 and/or 12 months	No sufficient evidence of correlation	Productivity Commission - RoGS	2012-13 to 2014-15
Number of Child Intake Reports	Strong negative	DCCSDS website	2012-13 to 2015-16
Children in need of protection	Strong negative	DCCSDS website	2012-13 to 2015-16

Child Safety - Correlation Analysis

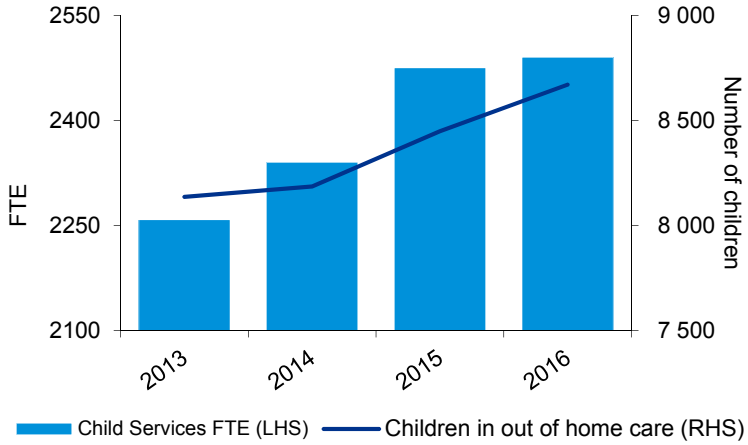
Children in out of home care

- Data indicates a strong positive correlation between the number of children in out of home care and number of FTEs, with a correlation of r = 0.93.
- This result is statistically significant at the 10% level, with a p-value of 0.072.
- Over the evaluation period, the number of children in out of home care grew at the average annual rate of 2.1%.
- External drivers of children requiring out of home care includes socio-demographic status, ethnicity, alcohol/drug abuse, parents with mental health problems and more broadly, disadvantaged groups face greater risk factors for abuse and neglect.

Children in out-of-home care subject of a child protection substantiation and the person believed responsible was living in the household providing out-of-home care

- The data indicates there is no statistically significant relationship between the number of child services FTEs and the percentage of children in out-of-home care care that were subject to a child protection substantiation where the person believed responsible was living in the household providing out-of-home care.
- The correlation coefficient of r = -0.8 was not statistically significant with a p-value of 0.202.
- The rate fell by an average annual rate of 17.6% between 2013 and 2016, with a significant fall occurring in 2014, before remaining stable.

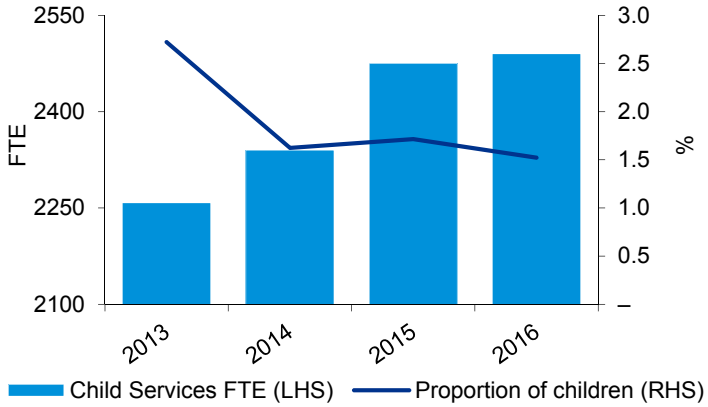
Children in out of home care



Source: Public Service Commission and Productivity Commission (RoGS, 2017)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Proportion of children in out-of-home care that are the subject of a substatiation, and the person responsible lived in the household providing out-of-home care



Source: Public Service Commission and Productivity Commission (RoGS, 2017)

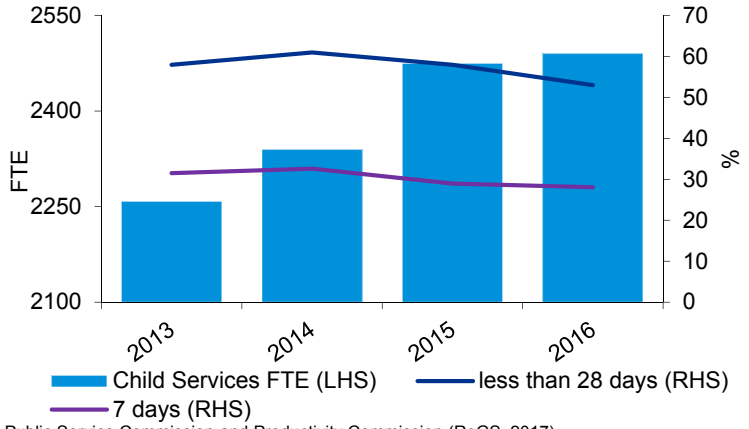
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Child Safety - Correlation Analysis

Response time to commence investigation

- Data indicates no evidence to suggest that the number of FTEs has resulted in an improvement in response time to commence investigations.
- For investigations responded to in less than 7 days, the correlation coefficient of r = -0.86 is not statistically significant, with a p-value of 0.137.
- For investigations responded to in less than 28 days, the correlation coefficient of r = -0.56 is not statistically significant, with a p-value of 0.414.
- Over the evaluation period, the percent of investigations responded to within 7 days declined by and average annual rate of 3.8%, with a rate of 3% for investigations commenced under 28 days.
- Discussions with departmental representatives would likely provide some insight into this result, however, it is possible that recent reforms associated with implementation of the Carmody Inquiry recommendations may have increased workload complexities that have contributed to increased response times.

Percent of investigations responded to within a timeframe



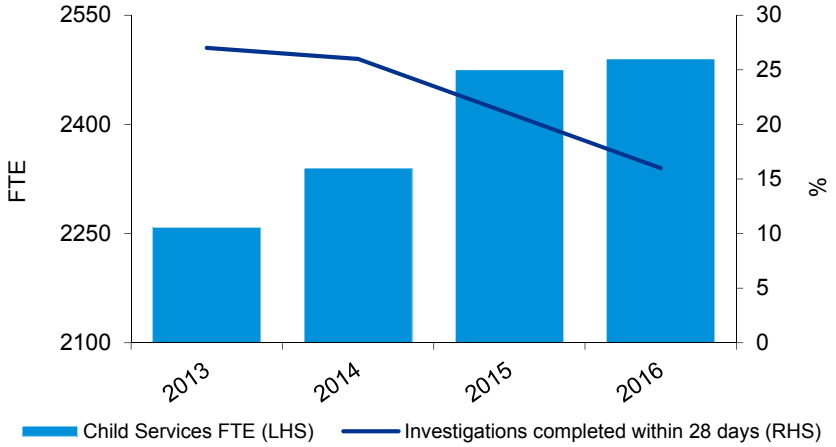
Source: Public Service Commission and Productivity Commission (RoGS, 2017)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Response time to complete investigation

- Data indicates there is no statistically significant relationship between the number of FTEs and the proportion of investigations completed within 28 days.
- The correlation coefficient of r = -0.9 is not statistically significant, with a p-value of 0.102.
- Over the evaluation period the proportion of investigations completed within 28 days fell at an average annual rate of 16%.
- Discussions with departmental representatives would likely provide some insight into this result, however, it is possible that recent reforms associated with implementation of the Carmody Inquiry recommendations may have increased workload complexities that have contributed to increased response times.

Proportion of investigations completed within 28 days or less



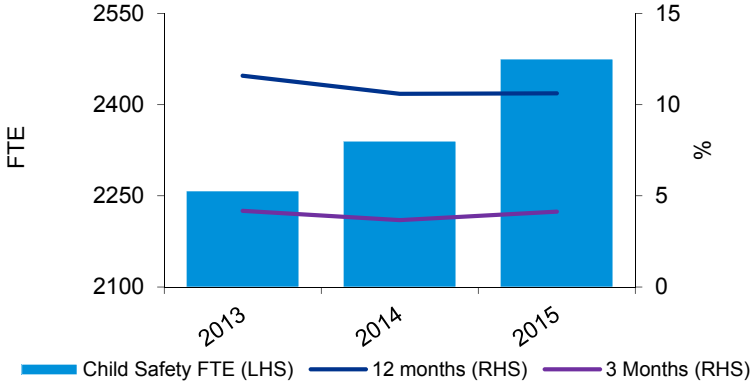
NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Child Safety - Correlation Analysis

Children who were the subject of a decision not to substantiate during the year and who were also the subject of a subsequent substantiation within 3 and/or 12 months

- Data indicates no evidence to suggest that there is a relationship between the number of FTEs and an improvement in the number of children who were subject to a decision not to substantiate, but were the subject of a substantiated investigation 3 or 12 months later.
- The correlation coefficient of r = -0.06 is not statistically significant with a p-value of 0.96.
- The limited time series of FTE data available makes it difficult to observe any trends/correlation between variables.
- Results for this indicator can be influenced by the finalisation of investigations, factors beyond the control of child protection services or changes in circumstances after the initial decision not to substantiate was made.

Children who were the subject of a decision not to substantiate during the year and who were also the subject of a subsequent substantiation within 3 and/or 12 months



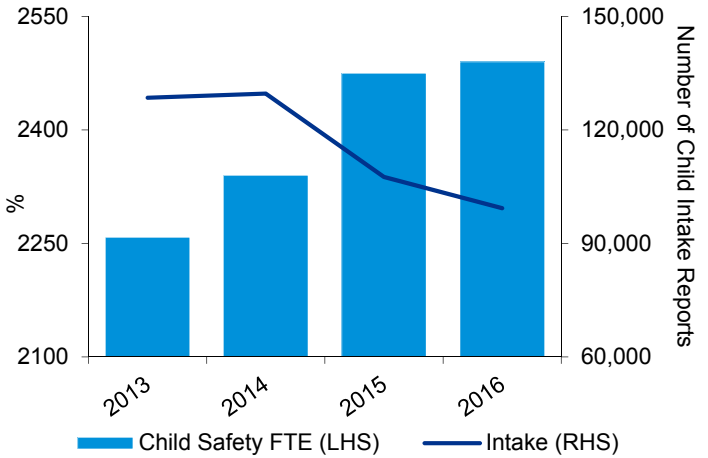
Source: Public Service Commission and Productivity Commission (RoGS, 2017)

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Number of Child Intake Reports

- The data indicates there is a strong negative correlation between the number of child safety FTEs and the number of intake reports, with a correlation coefficient of r = -0.93.
- This result is statistically significant at the 10% level, with a p-value of 0.069.
- The number of intake reports fell at an average annual rate of 8.2% between 2013 and 2016.
- The intake phase is the initial decision making phase, where the department is notified of harm or risk of harm to a child. As such, the number of reports is likely influenced to some degree by the willingness of the community to report such concerns.

Child Intake Reports



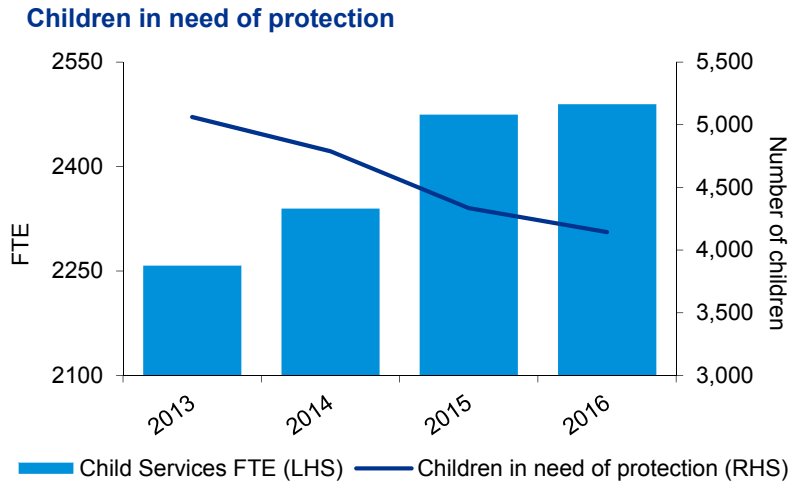
Source: Public Service Commission and DCCSDS

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

Child Safety - Correlation Analysis

Children subject to substantiation and are in need of protection

- Data indicates a strong negative correlation between the number of child safety FTEs and the number of children in need of protection, with a correlation coefficient of r = -0.99.
- This result is statistically significant at the 1% level, with a p-value of 0.009.
- Between 2013 and 2016, the number of children in need of protection fell by an average annual rate of 6.5%.



Source: Public Service Commission and DCCSDS

NB: years refer to financial years, i.e. 2016 = 2015-16 FY

KPMG

Appendix 2 : Evidence to support the Leading Practice System

Evidence to support the Leading Practice System

The following references in the reviewed documents support each leading practice feature.

Strategic Alignment

"Assure that policies, strategies and services are in alignment." (United States, 2010)

"Public sector organisations often describe performance management in terms of a 'golden thread' linking individual responsibilities to actions and performance indicators." (United Kingdom, 2005)

"Goals, programs, activities and resources are aligned with priorities and desired results." (United States, 2010)

"By integrating planning, budgeting, forecasting and reporting, and other processes into a continuous loop, world class performance management can help executives to align the operational response to strategic intent." (United Kingdom, 2005)

"There is a need for employees to understand strategic objectives." (United Kingdom, 2005)

"Managers recognize the importance of being able to monitor performance, not only at organization or department levels, but also down to team and individual levels" (United Kingdom, 2005)

"Establishing departmental objectives and strategies during planning helps the department focus on achievable goals and reach the best possible results from the resources available." (Victorian Government, 2016)

Outcomes

"The process of attempting to translate outcomes into process and output targets can be of value in itself as it can lead to a better understanding on the part of organisational members of the fundamental purposes of their roles and the ultimate consequences of their performance." (Scotland, 2008)

"Identify and implement programs and services that will meet needs." (United States, 2010)

"The first significant change proposed in this report is to reconfigure the system much more directly around those results or outcomes that matter most to New Zealanders – something that the state services have struggled to deliver collectively over the years." (New Zealand, 2011)

"Translate aspirations into long and short-term objectives, output and outcome performance indicators and targets against which performance and progress can be measured." (Scotland, 2008)

"Performance indicators in contemporary organisational performance management should incorporate performance outcomes." (Scotland, 2008)

"There are consistent features in all contemporary performance management systems including the emphasis on outcomes and the central role for strategic planning performance indicators and the use of 'easy to understand' concurrent and post control tools and techniques." (Scotland, 2008)

"This report suggests the first step in lifting the game on results is for Ministers to agree to a small number of critical, measureable results (no more than 10 to 12 across government, arguably less) reflecting the Government's top priorities. The Advisory Group considers that the list of priority results needs to be short enough to guide resourcing trade-offs and specific enough that the impacts of government action can be tracked." (United Kingdom 2005)

Evidence to support the Leading Practice System

Measures

"Measurement information must add value to the discussion. Measurement definitions must be transparent so data collectors, managers and policy makers are clear on the data's meaning and are able to use the information appropriately." (United States, 2010)

"It is impossible to overstate the importance of measurement in operations of government. It would be impossible to fulfil the promise of performance management for improving results without the existence of measures needed for internal use." (United States, 2010)

"Measures can inform decision makers on a wide variety of topics, including quantity, efficiency, quality, effectiveness and impact." (United States, 2010)

"Information, measures, goals, priorities and activities are relevant to the priorities and well-being of the government and the community." (United States, 2010)

"Well articulated and measurable objectives provide a basis for setting annual targets and for assessing the extent to which the organisation is meetings its goals." (United States, 2010)

"When developing measures, it is best to keep things simple, however it is important to collect the right measures." (United States, 2010)

"Measures must be relevant to specific processes, programs, or policies; collected with sufficient frequency to enable the government to monitor and make adjustments; and easy to access, not only for managers but for all employees involved in a particular process or program." (United States, 2010)

"Output performance measures help assess organisational performance in the delivery of outputs." (Victorian Government, 2016)

"Performance management requires measuring and monitoring actual results or performance achieved against plans." (Victorian Government, 2016)

Roles and responsibilities

"Leaders must instill a sense of urgency about improving performance in their governments, build performance based organisational cultures and management structures, continuously communicate the necessity of listening to the public and provide resources to assure that a performance based culture and related practices are initiated and sustained." (United States, 2010)

"The need to engage all public employees, not just top officials and managers, in finding ways to better serve the public in an era of complexity and rapid changes in the environment." (United States, 2010)

The Victorian Government has a clear set of roles and responsibilities for departments, Ministers and the Parliament. (Victorian Government, 2016)

Ownership must permeate the organisation's structure and cascade through organisational levels which each level and each individual having responsibility for specific objectives and targets, which, if realised, contribute to the attainment of key performance indicators and outcomes which the organisation is charged with achieving. (Scotland, 2008)

"Managing for results by establishing clear responsibilities for departments to better define the expected outcomes and actual performance of new and existing program." (Scotland, 2008)

Evidence to support the Leading Practice System

Communication

"Clarifying and communicating key purposes and establishing specific objectives at the beginning will help to determine process design and enlist support." (United States, 2010)

"Communication is a critical component of any change effort. Setting up a multifaceted communication effort will help all parties gain understanding and build and maintain support." (United States, 2010)

"Effective communication requires that the target audience has access to and understand the message or information contained in the data which requires more than distributing reports." (United States, 2010)

"To be effective at communicating performance information, governments must understand the diverse audiences the information will serve. Regardless of the level of detail, governments should provide audience-specific information." (United States, 2010)

"Internal communication is particularly important in public service organisations within a strong ethos, and dependence on professional standards. The importance of political and public scrutiny and external communication is equally important." (United Kingdom, 2005)

"A common approach to performance management involves defining and communicating a future state of affairs that the organisation will attempt to achieve. This serves as the rationale for objectives and targets which stretch organisational capability." (Scotland, 2008)

Cross agency collaboration and accountability

"Alignment must be both vertical (from the top to the bottom of the organisation's structure and also from organisation-wide to individual goals) and horizontal (across organisational units and, optimally, across governments serving the same population). A lack of alignment creates two significant impediments to success: 1 – the organisation will act like multiple organisations rather than a single one, potentially compromising efficiency and effectiveness; and 2) components of the organisation will compete for resources rather than developing ways to cooperate." (United States, 2010)

"Accountability obligations include; answering – providing an explanation or justification – for the execution of that authority and / or fulfilment of that responsibility; reporting on the results of that execution and/or fulfilment; and assuming responsibility for those results." (United States, 2010)

"Integration is most important so all systems can work together." (United Kingdom, 2005)

"Running individual agencies well is important, but should not get in the way of progress on the complex, long term social and economic issues. The New Zealand public management model is founded on clear accountability: agencies have been structured to have clear and non-conflicting objectives." (New Zealand, 2011)

"Having many agencies and a culture of high levels of consensus-seeking consultation between agencies slows progress down." (New Zealand, 2011)

"Acceptance by management and organisational members of their collective and individual accountability for performance attained is essential. Accountability for delivering against individual short and long-term targets , once clearly defined, allows for the operation of systematic and comprehensive performance monitoring, review and evaluation." (Scotland, 2008)

"The root cause of some persistent problems stem from outmoded management frameworks or fragmented approaches that require more strategic, systemic, and integrated solutions that can be adequately provided by individual or interagency planning efforts." (Scotland, 2008)

Evidence to support the Leading Practice System

Leadership, culture and capability

"Practitioners of performance management have learned that achieving better results through the principles and practices of performance management requires a sound technical approach, strong leadership, ever improving expertise, and a culture that constantly reinforces a focus on results." (United States, 2010)

"The organisation needs the capacity to analyse data, not just collect and report it, so that data can be interpreted and useful information provided to management, policymakers and the public." (United States, 2010)

"Build organisational capacity through training, hiring or developing in house technical and other expertise." (United States, 2010)

"Performance management initiatives cannot achieve optimum success without energetic and sustained support from an organisation's top mangers. Leaders need to articulate a vision for performance management that tells stakeholders how they will benefit and encourage involvement." (United States, 2010)

"Excellent implementation of performance management is founded on strong frameworks, centrally driven, with leadership from the top." (United Kingdom, 2005)

For leaders to exercise effective horizontal leadership, the Advisory Group considers that decision-rights will have to be rebalanced to provide a clear mandate for leading across agency boundaries." (United Kingdom, 2005)

"State services need to be built on a culture where opportunities are consistently sought out. Finding better ways to deliver value and better quality services needs to be front and centre for all state employees – leaders, managers and staff." (New Zealand, 2011)

"The single most critical driver of successful change is leadership." (New Zealand, 2011)

"In the future, chief executives will increasingly have to work across government, as well as leading their own agencies. They will face pressure to lead transformational business processes within the tight fiscal environment. (New Zealand, 2011)

"Leaders and leadership behaviour do not exist in a vacuum – but are shaped by the culture and features of the overall system in which they work." (New Zealand, 2011)

"Strengthen and extend the use of functional leadership roles to drive best practice, set common standards, collect data, influence or control budgets and identify opportunities to increase value." (New Zealand, 2011)

"It requires a participative 'bottom-up' approach where the system develops from within the organisation but is supported from the top and organisational members feel a sense of ownership of performance measures." (Scotland, 2008)

Automation

"World class performance management reduces the time, effort and errors associated with traditional spreadsheet-based budgeting by providing online collection of data, a single database to ensure only one version of the figures, and automated calculations." (United Kingdom, 2005)

"Evidence suggests that citizens like online services, which are cheaper, but like access to other channels as well. However, even a 5% reduction in the cost of a single service could save an estimated $40 million a year. It is also to be expected that, over the next 10 years, there will continue to be a major shift to electronic service provision, in place of the more traditional channels." (New Zealand, 2011)

Evidence to support the Leading Practice System

Monitoring and reporting

"Although measurement is a critical component of performance management, measuring and reporting alone have rarely led to organisational learning and improved outcomes." (United States, 2010)

"Just as monitoring and adjusting are part of the performance management cycle, the performance management initiative itself must be continually monitored and changes must be made to assure that it has become ingrained in the organisation and benefits are being achieved." (United States, 2010)

World class performance management tools provide strong analytical tools such as trend analysis, sorting and charting to transform data into insight." (United Kingdom, 2005)

"Performance monitoring should identify performance trends, gaps and risks and enable the implementation of mitigation strategies and corrective actions". (Victorian Government, 2016)

The Victorian Government monitors and reports on its performance in a variety of ways to ensure the expenditure of public funds is efficient, effective and is deriving value for money outcomes. The requirements focus on performance reporting to parties external to the department for accountability and monitoring purposes. (Victorian Government, 2016)

"There is clear evidence that having clarity of purpose and the means to monitor progress towards goal attainment does promote a performance culture in organisations which achieves enhanced organisational performance levels." (Scotland, 2008)

"Organisational performance management in a government context concerns monitoring the success of public policy, programs or projects in achieving their objectives and in securing the expected benefits." (Scotland, 2008)

"Reporting for results by improving the quality of departmental and government wide reporting to Parliament." (Scotland, 2008)

Continuous Improvement

"Government must move beyond measuring and reporting measures to managing performance towards improved results." (United States, 2010)

"Apply information to continuously improve results and become more efficient." (United States, 2010)

"World class performance management shares information throughout the organisation to provide ongoing feedback and promote collaborative decision making." (United Kingdom, 2005)

"In the view of the Advisory Group, sharply improved state sector performance will require a culture that supports and actively encourages innovation and continuous improvement. Innovating involves continuously re-designing services and processes to create something different and better. The views of customers and clients, managers and staff, and relevant external parties, can all contribute to this goal, and should be drawn on. An innovation culture also requires some tolerance of failure and a focus on learning from that failure." (New Zealand, 2011)

"Evidence from performance measurement enables government and management to focus on improving the results and impact by supporting decision-making and managing risk." (Victorian Government, 2016)

"Organisational performance management also requires tools and techniques of post-control to allow the organisation to review, evaluate and report on performance attained and to reflect on what worked and what didn't work in an effort to learn and to continuously improve." (Scotland, 2008)

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