An Analysis of Performance Measures in Alberta Health (Government of Alberta)

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Executive Summary

Introduction and Purpose

In the early 1990s, the Government of Alberta undertook two major initiatives that shifted the public service into alignment with the business principles embedded in New Public Management. The first major initiative was legislating a performance-based accountability system in 1993, which was established by the *Government Accountability Act*. The goal of establishing this system was to enhance the effectiveness and focus of programs through openness and accountability. The Act required business plans and performance measures from the government and each ministry. The first ministry business plans were published in 1994 and have been published annually since that date.

The second major initiative was introducing a regionalized health system in 1994. Alberta's regionalized health system and subsequent reforms restructured how health care was delivered in the province. As performance-based accountability systems are expected to change over time in response to new organizational reporting requirements, roles, and responsibilities, Alberta Health's business plans and business plan performance measures were also anticipated to change; these changes have been witnessed since the business plans were first established.

Few studies have been conducted on Alberta Health's business plans or business plan performance measures to determine how the performance-based accountability system has changed. The purpose of this research report is to answer the following main research question: How have Alberta Health's business plan performance measures changed since business planning was introduced in Alberta?

Methodology and Methods

To answer the main research question, the research report analyzed primary and secondary data related to Alberta Health's business plans and business plan performance measures. Specifically, this research report identified, categorized, and analyzed an inventory of all performance measures reported in Alberta Health's business plans since 1994. A literature review determined criteria to assess and explain the changes that have occurred. The criteria were developed into a conceptual framework, and questions were designed to operationalize the criteria for each business plan performance measure.

The literature review determined eleven assessment criteria to assess change. These categories were: outcome alignment; benchmarks; standardization; measure type and selection; audit; targets; results and data presentation; quantity of measures; measure changes; stakeholder input; and data availability and quality. The criteria were operationalized by thirty questions to determine the extent of change over time. Change was understood by "criteria maturity" in business plan performance measures. Criteria maturity reflected the presence, condition, or level of development

of each criterion as observed in the performance measure. The analysis was not intended to provide an overall assessment of the maturity of performance measures in Alberta Health's business plans.

The delimitations of the research were needed to ensure the research report was specific, manageable, attainable, relevant, and time-related. Specifically, two delimitations were defined. The first delimitation was determining the extent of change only through Alberta Health's business plans; other performance-based accountability system documents exist, such as annual reports. An annual report is paired with a business plan each fiscal year, and provides a comprehensive summary on an organization's activities and performance as previously outlined in the business plan. The second delimitation was developing a conceptual framework of criteria to determine change by a non-exhaustive literature review; additional criteria may exist that were not identified by the literature review.

The limitations of the research were important to consider in reference to the research report's findings, analysis, and conclusion. Specifically, three limitations were determined; the first two limitations were the direct result of deliberate delimitation choices. The first limitation was assessing performance measure changes only through Alberta Health's business plans because annual reports and other planning and reporting documents may provide additional understanding of change. . The second limitation was assessing performance measure changes only through what was directly observable in business plans. The third limitation was the inability to determine a direct relationship between criteria maturity, provincial accountability, and provincial health system reform.

Key Findings

The findings suggest that individual business plans changed from first to latest publication (from 1994-97 until 2016-19). The findings demonstrate specific patterns of change and can be summarized by shared patterns of criteria maturity.. Criteria on maturity was classified into three levels: maturity, mixed maturity, and immaturity. Business plan performance measures demonstrated criteria maturity in outcome alignment and targets; mixed criteria maturity in results and data presentation, quantity of measures, and measure changes; and criteria immaturity in benchmarks, standardization, audit, stakeholder input, and data availability and quality.

Four assessment criteria demonstrate notable changes during the 2000s. Notable changes were determined by significant change in trend that was sustained long-term. Notable changes included an improvement in outcome alignment in 2000; an improvement in targets in 2006; an improvement in results and data presentation in 2005; and an improvement in quantity of measures in 2000 and 2011. Other assessment criteria experienced significant change; however, that change was not sustained long-term.

In addition to identifying notable changes, the findings also demonstrated that outcome alignment and targets reached criteria maturity throughout most business plans. Performance measures with criteria immaturity consisted of 50% of all criteria and did not make any notable improvements

since 1994. Findings for four of these criteria may have been influenced by the potential exclusion of information. While there are notable areas of criteria immaturity in Alberta Health's business plan performance measures, the overall criteria maturity has increased since the first business plan in 1994.

Recommendations for Further Research

To build on this research, specific recommendations may generate additional information for awareness and understanding of change in Alberta Health's business plan performance measures. The first recommendation is to compare research findings to a similar assessment of planning and reporting documents within the Government of Alberta; using Alberta Health's annual report would help provide additional information pertaining to same ministry. The second recommendation is to compare research findings to a similar assessment of planning and reporting documents within other Canadian governments; this assessment will benefit by focusing on ministries responsible for the provincial health portfolio. The third recommendation is to assess how a measure's target dates may influence performance information users; for example, some business plan performance measures included targets for preceding years and that influence on performance information users is unknown.

The recommended options will help manage the research report's limitations and are intended to provide a comprehensive understanding of criteria maturity at a reasonable cost. Using this research report's conceptual framework to assess Alberta Health's annual report and other Canadian governments' planning and reporting documents may further research by providing comparable data to this research report's findings and analysis. Internal (i.e. Alberta Health's annual report) and external (i.e. other Canadian government reports) data sources may help determine the degree of internal and external influence on criteria maturity in Alberta Health's business plan performance measures.

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1.0 Introduction

The introduction section provides context to guide the reader of this research report. The section defines the problem, identifies the research report client and objectives, and provides an overview of relevant background needed to better understand the problem. This section also outlines how the research report is organized, including a brief description for each section.

1.1 Defining the Problem

In the early 1990s, the Government of Alberta undertook two major initiatives that shifted the public service into alignment with the business principles embedded in New Public Management. The first major initiative was legislating a performance-based accountability system in 1993. Alberta's accountability system was established by the *Government Accountability Act*. The goal of establishing this system was to enhance the effectiveness and focus of programs through openness and accountability (Alberta Treasury Board and Finance, 1997, p. 330). The Act required business plans and business plan performance measures from the government and each ministry (Government Accountability Act, 2009b). The first ministry business plans were published in 1994 and they have been published annually since. The plans provide a statement of a ministry's "mission [and] core businesses" (Government Accountability Act, 2009a), outline its "responsibilities, goals, [and] strategies" (Alberta Treasury Board and Finance, 1997, p. 330), and provide performance measures and information to demonstrate the ministry's achievements (Alberta Treasury Board and Finance, 1997, p. 330).

The second major initiative was introducing a regionalized health system in 1994. After its introduction, health services were delivered through a regional governance structure called health authorities (Church & Smith, 2008, p. 217) that were intended to "contain costs and improve service integration" (Lomas, Woods, and Veenstra, 1997, p. 371). The restructuring was followed by consecutive reforms to the health system, including the eventual merger of regional health authorities into a single organization called Alberta Health Services in 2008 (Government of Alberta, n.d.b, para. 1).

Alberta's regionalized health system and subsequent reforms are evidence of evolving responsibilities within the province. According to Bradley, the contents of business plans will change as government's responsibilities evolve (2001, p. 36); as such, changes to Alberta Health's business plans and business plan performance measures are anticipated due to health regionalization. In addition, changes are expected as operating knowledge and understanding of Alberta's performance-based accountability system improves over time.

No studies have been conducted on Alberta Health's business plans or business plan performance measures to determine how the performance-based accountability system has changed. This research report will assess how Alberta Health's business plan performance measures have changed since business planning was introduced.

1.2 Research Client

The client for this research report is Dr. Kim Speers, who is an Assistant Teaching Professor in the School of Public Administration, University of Victoria. Her interests include performance measurement and accountability frameworks in the public sector.

1.3 Research Objectives and Questions

The purpose of this research report is to answer this main research question: How have Alberta Health's business plan performance measures changed since business planning was introduced in Alberta?

To develop a further understanding of any changes, the following supplementary questions are explored:

- How has Alberta's accountability system changed since the 1990s?
- How has Alberta's health system changed since the 1990s?
- What is the relationship between Alberta's accountability and health system?

1.4 Background

1.4.1 Brief History of Alberta's Accountability System Since 1990s

A period during the 1990s was called the "performance measurement revolution" by Neely (1999, p. 207) and Yadav and Sagar (2013, p. 948). Between 1994 and 1996 alone, more than 3,600 academic articles on performance measurement were published (Bititci et al., 2012, p. 305). Concurrent to this trend, the Government of Alberta made a commitment to institutionalize a performance-based accountability framework structured around business plans (Speers, 2004, p. 10; Government of Alberta, n.d.a, "Discussion", para. 1; Alberta Treasury Board and Finance, 1997, p. 330). The framework helped shift the public service into alignment with the business principles embedded in New Public Management. The framework was legislated in 1995 when the government passed the *Government Accountability Act* (Speers, 2004, p. 10; Church & Smith, 2008, p. 226) and it is this framework that is currently in force.

In Alberta, a business plan is deemed to be a contract with the public and its stakeholders (Speers, 2004, p. 1). It is a strategic document (Bradley, 2001, p. 29; Philippon & Wasylyshyn, 1996, p. 74) that aligns all levels of a ministry under a shared direction (Bradley, 2001, p. 38). A business plan outlines the ministry's roles and responsibilities, its desired outcomes, and the government's initiatives aimed at achieving these outcomes (Alberta Treasury Board and Finance, 1997, p. 330). The business plan looks forward three years and is approved by special committees and Treasury Board and Finance (Bradley, 2001, p. 34).

Performance measures are a major component of the business plan (Bradley, 2001, p. 29). Previously, measuring performance was a localized practice in the Government of Alberta and results were rarely shared publicly (Speers, 2004, p. 10). Alberta's new approach required business

plans and business plan performance measures from the government and each ministry (Government Accountability Act, 2009b; Church & Smith, 2008, p. 226) and were available to the public. According to Speers and Bradley, under the new *Government Accountability Act*, Alberta became the first province in Canada to adopt a public framework for results-based performance measurement (Speers, 2004, p. 1; Bradley, 2001, p. 33).

Business planning influenced evaluative behaviour in the Government of Alberta. The role of traditional evaluation, which is based on rigorous social policy research methods and often performed by specialists (Bradley 2001, p. 30), decreased when the government introduced business plans (Bradley, 2001, p. 31). Evaluation became known generally as "assessment, review, and research" as more public servants became involved in business planning activities (Bradley, 2001, p. 30). Bradley states that "of all factors affecting the evolution of [general and traditional] evaluation [in Alberta], the introduction of business planning, with is performance measurement component, has had the greatest impact" (Bradley, 2001, p. 34).

The institutionalization of performance measures generated growing pains in the Government of Alberta. Since measurement activities were a localized phenomenon, common measurement practices were not shared and business units, now required to provide measures, had to create measures and gather data "at significant cost" (Bradley, 2001, p. 39). Additionally, the choice and use of measures was influenced by what data existed at the time (Bradley, 2001, p. 34). If organizations wanted measures to demonstrate achievement of key outcomes, they now needed the data to support their case (Bradley, 2001, p. 34). According to Bradley, "the need to gather and use information to assess results and efficiency […] reinforced [a general] evaluative approach to managing government"; the need for performance measures began to restructure government's internal capacities to focus on performance measurement and management (Bradley, 2001, p. 34). Though the new approach was considered "not objective" and lacked "comprehensiveness" and "depth" compared to traditional evaluation (Bradley, 2001, p. 35), it provided "timely information […] at a reasonable cost", which was ideal for the business planning process (Bradley, 2001, p. 37).

The Government of Alberta also consulted with the Canadian research institution CCAF-FCVI Inc. (CCAF) to assess how public performance reports could be improved (CCAf-FCVI Inc., 2008, p. 1). CCAF had previously developed a report in 2002 called *Reporting Principles: Taking Public Performance Reporting to a New Level*, which outlined how Canadian governments could advance their accountability frameworks through performance reports (CCAF-FCVI, Inc., 2002, p. 1). For the consultations in 2008, CCAF conducted workshops and interviews with a range of stakeholders in Alberta, including media, non-government organizations, public service officials, and provincial politicians (CCAF-FCVI Inc., 2008, p. 33). From their discussion, they developed recommendations around themes intended to improve Alberta's accountability framework (CCAF-FCVI Inc., 2008, p. 5).

1.4.2 Brief History of Alberta's Health System Since 1990s

Following national discussions on health reforms in the late 1980s and early 1990s, nine out of ten Canadian provinces introduced health care management at a regional level (Lomas, Woods, and Veenstra, 1997, p. 371-372; Church & Smith, 2008, p. 226). The intent of regional health care management was to "contain costs and improve service integration" (Lomas, Woods, and Veenstra, 1997, p. 371). Once implemented, localized governance structures would manage the delivery of health services within their regions (Church & Smith, 2006, p. 492). The reform was considered the "most sweeping" (Lewis and Kouri, 2004, p. 13) and "most radical" (Lomas, Woods, and Veenstra, 1997, p. 372) since 1971, when medicare became a fully realized program and social policy across Canada (Marchildon, 2014, p. 365; Lewis and Kouri, 2004, p. 13).

Alberta's regional reform occurred in the summer of 1994 (Lomas, Woods, Veenstra, 1997, p. 372), and restructured over 200 local hospital and public health boards into seventeen health authorities (Church and Smith, 2008, p. 217). Among many other responsibilities, the new health authorities were to manage local hospitals and provide services for public health and addiction (Lomas, Woods, and Veenstra, 1997, p. 373). These reforms were announced by the Government of Alberta as part of a "smaller, innovative government", and health authority performance was reported through Alberta's new accountability framework (Treasury Board and Finance, 1997, p. 327).

The new regional system was intended to "reduce internal costs and increase productivity" (Treasury Board and Finance, 1997, p. 329), but it was challenged by the increasing health spending trends and shortage of health providers (Mazankowski, 2001, p. 4). In 2000, the Government of Alberta sought out advice for the "preservation and future enhancements" of the health care system (Mazankowski, 2001, p. 11). The Premier's Advisory Council on Health was established for this purpose and began assessing the health system's sustainability. The Council released its findings in a report, *A Framework for Reform* (Mazankowski, 2001, p. 1) that advised of challenges including poor communication of regional lessons learned, little or no control over resource availability, and political influence on decision-making (Mazankowski, 2001, p. 18). The report also acknowledged the Auditor General of Alberta's concern about the health system's regional "accountability, governance and management", specifically to business planning and performance reporting (Mazankowski, 2001, p. 18). "The challenge", the report advised, "is to find a better framework and better incentives for health authorities to work together, share expertise, share services and save money" (Mazankowski, 2001, p. 23). The Council recommended improvements, including to reduce the number of health authorities to better reflect Alberta's population (Mazankowski, 2001, p. 23).

The Government of Alberta followed through with the Council's recommendation to reduce the number of health authorities. In 2004, Alberta consolidated the seventeen health authorities into nine (Lewis and Kouri, 2004, p. 21); four years later, the nine health authorities were consolidated once more to form one "province-wide, fully integrated health system" (Government of Alberta,

n.d.b, para. 1; Alberta Health Services, n.d, "Our History"). This single health authority was named Alberta Health Services. According to Ron Liepert, the Minister of Health during the 2008 reform, the reason for consolidation was to "reverse the siloed and fragmented approach" to health care delivery, of which health authorities' failure to share knowledge and capacity was a major contributor (Liepert, 2008, para. 3).

In the late 1990s and 2000s, Alberta's extensive restructuring of the health system obscured roles and responsibilities and created confusion with stakeholders (Government of Alberta, 2013, p. 3; Mazankowski, 2001, p. 23). Alberta Health's expertise and policy capacity suffered (Church and Smith, 2006, p. 497), the organization shuffled through eight separate deputy ministers, and "major spending cuts" to budgets influenced service quality (Lomas, 1997, p. 821). An independent agency tasked with monitoring the province's health system, the Health Quality Council of Alberta and operating under legislation of the same name (Health Quality Council of Alberta, n.d., para. 1), recommended that Alberta establish a taskforce to clearly determine governance issues and recommend improvements without additional structural changes (Government of Alberta, 2013, p. 7). The Task Force found the system was chronically unstable (Government of Alberta, 2013, p. 12), had excessive turnover in personnel (Government of Alberta, 2013, p. 11), and the activities of Alberta Health and Alberta Health Services were needlessly overlapped in areas specific to workforce planning, information technology, performance reporting, and monitoring (Government of Alberta, 2013, p. 11). The current expectation of Alberta Health is to provide direction to the health system through policy, legislation, and standard development; and the expectations for Alberta Health Services is to deliver health services through Alberta Health's direction (Alberta Health, n.d.g., "Setting strategic direction").

While fourteen years of structural reforms moved Alberta from a system of seventeen regional health authorities to a single health authority, the health system evolved in other ways too. New legislation was introduced including the *Health Care Protection Act* and *Alberta Health Act*. The *Alberta Health Act* included themes of transparency, accountability, and performance measurement (Minister's Advisory Committee on Health, 2010, p. 6), and recommended a health charter that required "expectations and responsibilities [to be established] within the health system" by Alberta Health (Alberta Health, n.d.b, para. 3). An "aggressive" Health Action Plan was also instituted, which included an outline for quarterly governance and accountability goals (Alberta Health and Wellness, 2008, p. 2). The following table identifies the many activities and events that shaped Alberta's health system since the early 1990s (Table 1).

Table 1
Notable key non-structural changes to Alberta's health system

Type	Key changes
Legislation	*Health Care Protection Act* (2000), *Prevention of Youth Tobacco Use Act* (2003; now *Tobacco Reduction Act*), *Alberta Cancer Prevention Legacy Act* (2006), *Alberta Health Act* (2010, revised 2014)
Plans, strategies, and initiatives	Children and youth initiative (2006), Getting on with Better Health Care (2006), Health Policy Framework (2006), Health Workforce Plan (2007), Tobacco Reduction (2007), Alcohol Strategy (2008), Continuing Care Strategy (2008), Health Action Plan (2008), Pharmaceutical Strategy (2008), Vision 2020 (2008), 5-Year Action Plan (2010), Health Research and Innovation Strategy (2010), Addiction and Mental Health Strategy (2011), Rural Health Care Review (2015)
Reports, symposiums and forums, and decisions	Mazankowski Report (2001), Report on the Health of Albertans (2006), Health Quality Council Report (2008), Minister's Advisory Committee on Health Report (2009), Collaborative Practice and Education Framework for Change (2012), Decision of Supreme Court (Chaoulli v. Quebec) (2005), Unleashing Innovation in Health Systems Symposium (2005), Action on Wellness Forum (2010), Action on Wellness Forum Symposium (2011)

Note. References: Alberta Health, n.d.a; Alberta Health, n.d.b; Alberta Health, n.d.c; Alberta Health, n.d.d; Alberta Health, n.d.e; Alberta Health, n.d.f; Alberta Health and Wellness, 2008, p. 6

1.4.3 How Accountability and Health Systems Relate

While Alberta introduced a performance-based accountability framework with the *Government Accountability Act*, Church and Smith argue that accountability was a natural characteristic of Alberta Health prior to the province-wide system (2008, p. 226). For example, before the Act, Alberta Health formally consulted with stakeholders to clarify the roles and responsibilities of provincial health system stakeholders (Church & Smith, 2008, p. 227). Once business plans and business plan performance measures were institutionalized as part of the new system, the mechanisms provided a structure for Alberta Health to show its existing "accountability relationship" with stakeholders (Church & Smith, 2008, p. 226; Speers, 2004, p. 1).

Some authors suggest that the performance-based accountability system also supported the health system reforms. Alberta's health authorities were responsible for needs assessment, resource allocation, and "ensuring reasonable access to quality services" (Church & Smith, 2006, p. 492-493). By aligning a region's available resources with the needs of its population, it was hoped that the health care system would run more effectively and efficiently than in the past (Lewis & Kouri,

2004, p. 16). Lewis and Kouri argued that providing adequate information through performance measurement and reporting mechanisms can assist in better resource allocation (2004, p. 17-18). Moreover, performance information can highlight areas of concern or need, which supports program improvement or evaluation in determining how a program may influence outcomes (Hatry, 2013, p. 25). Lewis and Kouri also argued that business plans need good performance measures as they are rare tools that "[recognize] performance" and can inform stakeholders on the condition of need, service quality, and health outcomes (2004, p. 29-30). In addition, information provided by performance measures can easily satisfy "interests and pressures" from stakeholders (Lewis & Kouri, 2004, p. 29-30) and, when publicly reported each year, the information can build a relationship with its stakeholders (Speers, 2004, p. 4).

Challenges exist with performance-based accountability frameworks that apply generally and to health portfolios. Publicly-reported performance measures may build accountability and transparency (Speers, 2004, p. 4), but the information can be inaccurate or incomplete (Lewis & Kouri, 2004, p. 29). In the United States, measurement of health focused on "what was feasible to collect [rather] than what was scientifically sound" (Pronovost, Berenholtz & Goeschel, 2008, p. 146), and there were significant challenges with standards, methodology, and implementation of performance measurement (Wharam & Daniels, 2007, p. 678; Shahian et al., 2013, p. 718). In Canada, the performance measurement process in health care has been an "elusive concept" that has developed (Lewis & Kouri, 2004, p. 23). Based on a report published in 2003 by the Auditor General of British Columbia, the performance agreements of regional health authorities were challenged by issues of design and implementation, where organizational deliverables, commitments, and accountabilities were not communicated in "reasonable, coherent, and measurable" manner (Lewis & Kouri, 2004, p. 23).

The use of information can be as challenging as its production. Users of performance information like public managers can choose to passively interact with the performance measurement process (Radin, 2006), exploit or politicize data (Moynihan, 2008), or manipulate results through gaming (Bevan & Hood, 2006, p. 533). The use of information is behavioural and is influenced by constraints and pressures of the environment, social norms, and individual and management understanding and capacities (Kroll, 2015, p. 202). However, according to Kroll the quality of data and its use are connected: public managers who use information are likely to ensure its quality production, and its quality production generally promotes its use (Kroll, 2015, p. 201).

Overall, Alberta's accountability framework and regionalized health care were evidence of the government's intention to improve through "management and governance structures" (Church and Smith, 2008, p. 217). Both major initiatives shifted the public service into alignment with the business principles embedded in New Public Management. The introduction of performance-based accountability system provided goal statements and measurement practices, and regionalization of the health system deconstructed "traditional structures into quasi-autonomous units"; according to de Araújo, these are major components of New Public Management reform (2001, p. 918).

1.5 Organization of Report

The research report's "Introduction" (Section 1.0) outlines the background content that supports the discussion. This section defines the problem, the research objectives, and relevant history to understand the problem and objectives.

"Literature Review" (Section 2.0) introduces the definition and history of performance measurement. The conceptual framework outlines criteria to assess change in business plan performance measures and questions to operationalize the criteria.

"Methodology and Methods" (Section 3.0) outlines the approach followed by the research report, including how data will be analyzed and the research report limitations and delimitations.

"Findings" (Section 4.0) identifies results and outlines the notable findings of the research report. The section is structured by the criteria outlined in the conceptual framework.

"Discussion and Analysis" (Section 5.0) assesses the findings and draws conclusions in context to the literature review, determining the extent of business plan performance measure criteria maturity and accompanying limitations.

"Options to Consider and Recommendations" (Section 6.0) provides a series of actions to further the awareness and understanding of business plan performance measure criteria maturity within the organization, including the recommended next step.

"Conclusion" (Section 7.0) identifies and discusses the implications of the findings of the research report, including the research limitations and additional questions to direct research in business plan performance measure criteria maturity.

2.0 Literature Review

The literature review section provides an overview of the varied definitions and history of performance measurement. The section also identifies criteria to assess change in performance measurement over time and develops a conceptual framework to guide the research. The literature review was conducted based on methods and keywords outlined in the Methodology and Methods section (3.2) of this research report.

2.1 Definition

The definition of performance measurement is not straightforward. The topic is "often discussed", according to Neely et al., "but rarely defined" (1995, p. 80). Performance measurement is applied to diverse subjects (Neely, 2002, p. 1) and undergoes constant change (Yadav & Sagar, 2013, p. 947), which may lead to what Bourne et al. found as a varied selection of definitions used to understand the practice (2003, p. 2). By finding consensus on a clear definition, Moullin suggests that some barriers inherent to performance measurement can be overcome by managers in the public and private sectors (2007, p. 181).

According to Moullin, the most cited definition for performance measurement is provided by Neely: it is "the process of quantifying the efficiency and effectiveness of past actions" (Moullin, 2007, p. 181). In an article co-authored by Neely, he supplements the core definition of performance measurement by defining performance measures and performance measurement systems (Bourne et al., 2003, p. 2). A performance measure is "a metric used to quantify the efficiency and/or effectiveness of action" and a performance measurement system is "a set of metrics used to quantify both the efficiency and effectiveness of actions" (Bourne et al., 2003, p. 2).

The definitions provided by Neely has critics. For example, Choong suggests that the 'quantification of action', which structures Neely's definition, does not necessarily imply performance (Choong, 2013, p. 110). In another example, Moullin believes Neely's definition is "unlikely to make managers stop and challenge their performance measurement systems and gives little indication as to what they should quantify and why" (Moullin, 2007, p. 181). Moullin offers an alternative definition that performance measurement is "evaluating how well organizations are managed and the value they deliver for customers and other stakeholders (2007, p. 181).

Academic discussion has included the differences between Neely's and Moullin's definitions. Neely's definition focused on 'quantification of action' whereas Moullin suggested 'evaluation of action'. In Moullin's article, he cites an academic as preferring 'quantification' as evaluation referenced "more than measuring" (Moullin, 2007, p. 182); as a rebuttal, Moullin suggested this was the definition's strength (Moullin, 2007, p. 182). In proceeding articles, Pratt and Neely suggested the nuances of Moullin's definition were valid (Moullin, 2007, p. 182). For example, Pratt suggested evaluation implied qualitative and quantitative measures and was therefore more

inclusive (Moullin, 2007, p. 182); and Neely agreed that organization success depends on delivering value to stakeholders (2005, p. 14).

Additional interpretations of performance measurement were identified by Bourne et al.'s literature review and can be used to understand the context of the practice (2003, p. 2). The first interpretation is that measurement should use a multi-dimensional set of performance measures that include financial and non-financial measures, internal and external measures, and measures that "quantify what has been achieved" and ones that "help predict the future" (Bourne et al., 2003, p. 2). The second interpretation is that measurement should reference a framework "against which the efficiency and effectiveness of actions can be judged" (Bourne et al., 2003, p. 2). The third interpretation is that measurement should relate to the planning and control systems of the organization being measured as the entire process of measurement "influences individuals and groups within the organization" (Bourne et al., 2003, p. 2). The fourth and final interpretation provided by Bourne et al. is that measurement should "assess the impact of actions on the stakeholders of the organization [being measured]" (2003, p. 2).

While the literature review conducted for this research was not exhaustive, it did not find a definition with universal consensus and without critique. The brief literature review supports the findings of earlier authors on performance measurement, who state that the subject is diverse and with many definitions. For this research report, the flexibility of accepting diverse definitions will assist in the development of a comprehensive conceptual framework with which to assess Alberta Health's performance measures.

2.2 General History of Performance Measurement

The early history of performance measurement can be associated with pre-industrial organisations. According to Bourne et al., performance measurement can be found in the practice of early accounting systems (2003, p. 4). The Encyclopedia of Global Studies defines accounting systems as "arrays of artifacts and practices organized for generating, circulating, and accumulating numerical records" (Vollmer, 2012, p. 1), and the practice has existed in human civilizations before the Common Era (BCE) (Kee, 1993, p. 187; Badua & Watkins, 2011, p. 76). Accounting systems have 'evolved' from systems "designed to document" to systems "designed to measure changes in economic activity" (Kee, 1993, p. 187). Bourne et al. cites the accounts of a prominent fifteenth century Italian banking family, the Medici, as one example of early accounting practices showing performance measurement fundamentals (2003, p. 4). The Medici accounts demonstrate how pre-industrial organizations can use information (such as external financial transactions like market prices) for decision-making without resorting to advanced techniques like cost accounting (Bourne et al., 2003, p. 4; Johnson, 1981, p. 512).

Bourne et al. and Yadav and Sagar found that performance measurement practice also evolved alongside developing industrial organizations (Bourne et al., 2003, p. 4; Yadav & Sagar, 2013, p. 949). In their literature review, Bourne et al. wrote that a particular type of accounting system,

management accounting, evolved in United States "between the 1850s and 1920s" (2003, p. 4). According to the Encyclopedia of Global Studies, management accounting provides "numbers on operations, products, and individual outputs that are inspected by production managers who, in turn, adapt controls and a reward system, to see the numbers change subsequently" (Vollmer, 2012, p. 4). The reasons provided by Bourne et al. suggest this evolution was caused by industrial organisations such as Du Pont, Seers Roebuck, and General Motors moving from "piece-work to wages; single to multiple operations; individual production plans to vertical integrated businesses and individual businesses to multi-divisional firms" (2003, p. 4). One example of evolution occurred in the early 1920s when Du Pont developed calculations for 'return on investment (ROI)' that subsequently led to financial ratios that "are still extensively used as a diagnostic tool for the measurement of the financial health of an enterprise" (Yadav & Sagar, 2003, p. 950).

While the period between 1850s to 1920s saw performance measurement evolve with management accounting, Bourne et al. suggest development did not significantly continue between 1925 and the 1980s (2003, p. 4). This claim is supported by Neely, who wrote that "the best practices" of today's business management were already practiced at the start of the twentieth century (1999, p. 205). Despite the supposed lack of development during this period, performance measurement did not stop changing completely; Neely cites an argument in H. Thomas Johnson's book *Relevance Regained* (1992) that a shift occurred in performance measure use during the 1950s, where previously performance measures were used as a planning tool they had become popular as a means of control (Neely, 1999, p. 207).

Towards the end of the 1980s, both Bourne et al. and Neely identify increasing criticism towards performance measurement for not appropriately supporting business operations (Bourne et al., 2003, p. 4; Neely, 1999, p. 207). The criticisms include the encouragement of "dysfunctional behavior" and "short-term decision making", "inapplicability to modern manufacturing techniques", and "damage [caused] to businesses [and] economy" (Bourne et al., 2003, p. 4). According to Neely, many of these problems have existed since the start of performance measurement in the twentieth century (1999, p. 206); however, Neely suggested a number of reasons why the problems became a discussion point during the 1980s: these include "the changing nature of work; increasing competition; specific improvement initiatives; national and international awards; changing organisational roles; changing external demands; and the power of information technology" (Neely, 1999, p. 210). Yadav and Sagar also indicate that organisations began to realize performance measurement practices could mislead activities directed towards innovation and continuous improvement within organizations (Yadav & Sagar, 2013, p. 950).

While specific developments in performance measurement helped to mature the practice, such as the Du Pont financial ratio, Yadav and Sagar suggested a number of developments occurred in the late 1980s and 1990s to further change the practice (2013, p. 951). In particular, these developments include business excellence awards; the balanced scorecard; and frameworks for corporate sustainability based on "triple bottom line" (Yadav & Sagar, 2013, p. 951). Business excellence awards, such as Malcolm Baldrige National Quality Award of 1987 and the European

Foundation for Quality Management of 1988, attributed performance excellence to the "contribution to quality and dependability of products" (Yadar & Sagar, 2013, p. 951). The balanced scorecard was introduced by Kaplan and Norton in 1992 and integrated performance information by supplementing financial performance measures with operational and strategic ones (Yadav & Sagar, 2013, p. 951). Finally, a corporate sustainability framework introduced by John Elkington's book *Cannibals with Forks: Triple Bottom Line of 21st Century Business* (1997) suggested a focus on organizational performance to include environmental and social obligations in addition to profits (Yadav & Sagar, 2013, p. 951). These changes were revolutionary to performance measurement, according to Yadav and Sagar, and they "brought drastic changes in the way performance measurement was done" (2013, p. 951).

Overall, Yadav and Sagar's literature review found that the 1990s were a decade identified by a shift from "control" to "management" within performance measurement practice (2013, p. 956). The frameworks developed during this period provided "a process or mechanism [to help] management [...] focus towards achievement of organizational objectives" (Yadav & Sagar, 2013, p. 956). In particular, the frameworks incorporated an "integrated perspective" of measures aligned to strategic organizational objectives (Yadav & Sagar, 2013, p. 956). The same literature review found the conversation continued throughout the 2000s. Specifically, Yadav & Sagar identified a major focus on renewing the balanced scorecard proposed in 1992, with an emphasis on expanding the tool beyond shareholders' financial perspectives to include all stakeholders (Yadav & Sagar, 2013, p. 961); for example, the perspective expanded to include stakeholder satisfaction and stakeholder contribution (Yadav & Sagar, 2013, p. 957). Other developments identified by Yadav & Sagar's literature review include a greater methodological rigor of performance measure design and the application of performance management systems within the service and public sectors (2013, p. 962).

2.3 History of Performance Measurement in Health

The history of performance measurement in health care does not extend as far back as early accounting systems; however, it does have a long history. According to McIntyre et al., a health care performance measurement began as early as 1754 when the Pennsylvania Hospital collected data on patient outcomes (2001, p. 9; Loeb, 2004, p. i6). Other efforts include Florence Nightingale, the founder of modern nursing, who collected "mortality data and infection rates" for English hospitals during the Crimean War in the mid-19th century (Loeb, 2004, p. i6).

While these isolated efforts of health care performance measurement continued, the practice first became "a viable tool for assessing health care quality" in 1910, according to Loeb, when Ernest Codman proposed the "end result hypothesis" (2004, p. i6). Loeb references the proposal as "revolutionary" at the time (2004, p. i6) and was intended to track patients "to determine whether the treatment was effective" (McIntyre et al., 2001, p. 9). Nearly three years later, the system was institutionalized by the American College of Surgeons when it was founded in 1912 (McIntyre et

al., 2001, p. 9). The ideas provided by Codman, Loeb suggested, "still underpin performance measurement activities a full century later" (2004, p. i6).

Avedis Donabedian was another driver of health care performance measurement, and was suggested by Loeb as an important individual to "advance modern thinking" on this topic (2004, p. i6). In 1966, Donabedian proposed a "three-element model" of quality measurement (Loeb, 2004, p. i6), which defined what Berwick et al. call the "organising concepts of structure, process, and outcome" (2016, p. 240). These terms have been simplified to a "health system model of inputs, processes, and outcomes" (Berwick et al., 2016, p. 237). According to Berwick et al., this model provided a methodology for measuring health care (2016, p. 239) and it has "[remained] central to measuring and improving quality" in the field (2016, p. 240).

Donabedian published multiple works in his lifetime, including what Berwick et al. call his "magnum opus" during the 1980s which "synthesized his research and teaching on methods of measurement and analysis" (2016, p. 239). While the works published during Donabedian's career are considered relevant to health care performance measurement today, academics have commented on the general poor quantity and quality of literature during this period. Adair et al. conducted a literature review and found the literature was sparse and unclear, particularly Canadian publications, when compared to recent literature (2006, p. 97). Supplemental to this discussion are Eddy's comments in an article published in 1998, to which he described the systematic measurement of health care as "very much in their methodological adolescence" (1998, p. 8). Eddy suggested that the practice of systematic performance measurement was less than a decade old (1998, p. 8).

While Adair et al. determined the extent of literature was sparse, the authors identified multiple stages that demonstrate the evolution of health care performance measurement (2006, p. 96). The first stage began in the 1980s, and was identified by a desire to measure health care performance for expected benefits of improved care (Adair et al., 2006, p. 96). Adair et al. stated that a "chorus of calls" occurred in the late 1980s for the application of performance measurement within health services (2006, p. 95). In McIntyre et al.'s article, the authors suggested the demand for quality care was the primary diver of the performance measurement practice (2001, p. 8).

The stages following demonstrate a noticeable pattern within the literature. Beginning in the mid-1990s, health care was marked by a "rapid, uncoordinated proliferation of measures and systems" (Adair et al., 2006, p. 96); this is supported by an article authored by the RAND Corporation (RAND) that highlight the growth of performance measure use throughout the 1990s and 2000s (2011, p. xi) and synergizes well with the performance measurement 'revolution' as a general practice identified in the previous section of this literature review. Toward the end of the 1990s, the next transition was "stimulated by practice experiences that revealed the great cost and complexity of system implementation, multiple failures and lack of standardization that impaired comparability"; the literature review identified authors during this time that questioned performance measurement as a workable practice (Adair et al., 2006, p. 96). Following the end of

the 1990s, the third period identified by Adair et al. suggested that authors sought solutions to the challenges they experienced previously (Adair et al., 2006, p. 96).

According to a recent article published in *Canadian Public Administration*, the current state of health care performance reporting is that "numerous countries are releasing regular performance reports with an increased emphasis on outcomes and value for money" (Veillard, Tipper, & Allin, 2015, p. 15). RAND advised similarly, suggesting that performance measurement is "embedded throughout the [United States] health-care system" and cites their "widespread use" in a variety of functions (2011, p. xi). In a recent evaluation by RAND, the organization found four major uses of health care performance measures in the United States (2011, p. 13); these were quality improvement; public reporting; payment; and accreditation, certification, credentialing, and licensure (2011, p. 14). When interviewed by RAND, the sampled organizations advised that performance measures are used in additional functions but were not identified by the document review, including "monitoring the compliance of health plans and evaluating the impact of interventions" (2011, p. 13). In contrast to the United States, according to Veillard et al., these performance reports were deemed to be immature and still developing in Canada (2015, p. 16).

2.4 Criteria to Indicate Change

Business plan performance measures demonstrate how an organization will monitor its performance against intended outcomes, key strategies, and goals (Hass et al., 2005, p. 179). According to Bititci et al., a well-developed performance measure will reflect the "appropriateness of its measurement and management practices in the context of its strategic objectives and in response to environmental change" (Bititci et al., 2015, p. 3065).

Specific criteria can determine change with performance measures in planning and reporting documents (Auditor General of British Columbia, 2008, p. 49; Auditor General of British Columbia, 2011, p. 24). These criteria are: outcome alignment; benchmarks; standardization; measure type and selection; audit; targets; results and data presentation; quantity of measures; measure changes; stakeholder input; and data availability and quality. They are identified from the Auditor General of British Columbia's report *How Are We Doing? The Public Reporting of Performance Measures in British Columbia* (Appendix A: Performance Measure Survey Evaluation Criteria) and CCAF-FCVI Inc.'s report *Reporting Principles: Taking Public Performance Reporting to a New Level* (Appendix 1: A Public Performance Reporting Check-Up).

2.5 Conceptual Framework

This research report assesses Alberta Health's business plan performance measures to determine how they have changed since business planning was introduced in Alberta. The criteria identified within the reports of the Auditor General of British Columbia and CCAF-FCVI Inc. (above) were then supplemented by this research report's literature review to identify how the criteria is exhibited in performance measures, and how each criterion benefits a performance-based accountability system. Where possible, the literature review addressed the criteria through a health

portfolio lens. The conceptual framework below will be applied to each performance measure in Alberta Health's business plans.

Outcome alignment: A measure belonging to a performance-based accountability system should align with outcomes (de Lancer Julnes, 2006, p. 220; Eapen et al., 2015, p. 847; Aron, 2014, p. 472; OECD, 2009, p. 23; Dummer, 2007, p. 36; Pollitt, 2006, p. 36). Alignment responds to the "demands for results-oriented accountability" and is a good management practice (de Lancer Julnes, 2006, p. 220). The performance information is more relatable to the public and external stakeholders (de Lancer Julnes, 2006, p. 222; Pollitt, 2006, p. 36), offers a conversation beyond cost savings (Dummer, 2007, p. 36), and has more value in public policy debate (OECD, 2009, p. 71). A measure's quality can be assessed by its influence on outcomes (OECD, 2009, p. 93) and, within a health setting, a measure's usefulness can be determined by its influence on outcomes that are meaningful to patients (Eapen et al., 2015, p. 853; Aron, 2014, p. 472). According to CCAF-FCVI Inc. and the auditor generals of Alberta and British Columbia, inputs and outputs should be aligned to outcomes in government planning and performance documents (CCAF-FCVI Inc., 2008, p. 2; CCAF-FCVI Inc., 2002, p. 4; Auditor General of British Columbia, 2008, p. 24; Auditor General of Alberta, 1997, p. 2).

Benchmarks: A benchmark measure adds value to performance information (Eapen et al., 2015, p. 850; OECD, 2009, p. 19; Walter et al., 2004, p. 2468; Auluck, 2002, p. 109; Sensoy, 2009, p. 25; Baker, 2009, p. 82). Benchmarks are the basis of performance evaluation (Sensoy, 2009, p. 25) and improvement (Baker, 2009, p. 82). A benchmark allows an organization's results to be compared with another organization (Baker, 2009, p. 85) and helps demonstrate "reasonableness of performance expectations" (CCAF-FCVI Inc., 2002, p. 5). Benchmarks help an organization become more self-aware and provides useful information for strategic planning (Auluck, 2002, p. 109; Baker, 2009, p. 85). They facilitate a learning and performance culture (Auluck, 2002, p. 109; Baker, 2009, p. 85; OECD, 2009 p. 39) by providing rigorous information for discussion and debate (OECD, 2009, p. 19; Auluck, 2002, p. 109) based on content analysis (Baker, 2009, p. 88) and better practices (OECD, 2009, p. 36). Within a health setting, benchmarking is used to compare and model service providers to those that perform best (Walter et al., 2004, p. 2468).

Standardization: Measures that share standard technical features add value to performance information (Eapen et al., 2015, p. 850; Walter et al., 2004, p. 2470; OECD, 2009, p. 97; Dummer, 2007, p. 34; Rich, 2006, p. 8; Baker, 2009, p. 88). A benchmark measure relies on standardization (OECD, 2009, p. 18). Standardization supports a measure's credibility (OECD, 2009, p. 97). Within a health setting, standardized measures facilitate public reporting and quality recognition (Eapen et al., 2015, p. 850; Rich, 2006, p. 8), and also allow users to more easily extract information (Walter et al., 2004, p. 2470). Individual measures that share standardized technical features year-over-year help identify incremental improvements (Aron, 2014, p. 6) and performance over time (CCAF-FCVI Inc., 2002, p. 47).

Measure type and selection: A selection of measures of different types helps generate a holistic understanding of organizational performance (de Lancer Julnes, 2006, p. 211; OECD, 2009, p. 43; Dummer, 2007, p. 37; Amirkhanyan, 2011, p. 304; Rich, 2006, p. 4). Measurement should include inputs, processes, outputs, and outcomes (OECD, 2009, p. 43; Dummer, 2006, p. 37). Each measure type highlights a different aspect of performance (Dummer, 2006, p. 37), and selecting a range of measures that supply quantitative, qualitative, perceptual, or objective data can enhance the picture of performance (Amirkhanyan, 2011, p. 308). The measurement selection can also determine the extent of performance quality and potential impact elsewhere in an organization (Amirkhanyan, 2011, p. 308). In particular, output measures are important as they inform analysis on economy, efficiency, productivity, and effectiveness (OECD, 2009, p. 17). In health care, the amount of measures can be unmanageable for a planning and performance document, and bundling measures into one result can help increase understandability (Fibuch & Ahmed, 2013, p. 39). Including efficiency measures in planning and performance reports is also recommended by the Auditor General of British Columbia, as it is found lacking in these documents (Auditor General of British Columbia, 2008, p. 45).

Audit: An audit is a process employed by an independent entity to collect, evaluate, and communicate evidence objectively, and it can be applied to different functions within an organization (Brooks, 2011, p. 39). An audit's usefulness depends on the situation to which it is applied (OECD, 2009, p. 31; Rahmawati, 2015, p. 13). Audits provide reasonable assurance as to the consistency and quality of data (Eapen et al., 2015, p. 848; Hysong et al., 2012, p. 1; Le Grand Rogers et al., 2015, p. 1505; Brooks, 2011, p. 39); formalize and enhance accountability (Shore, 2008, p. 280; Owczarzak et al., 2015, p. 2; Brooks, 2011, p. 40); demonstrate stewardship (Brooks, 2011, p. 42); reduce risk of information use by decision-makers (Brooks, 2011, p. 42); assess relevance (Nudurupati et al., 2011, p. 282); and can improve overall performance (Hysong et al., 2012, p. 1; Le Grand Rogers et al., 2015, p. 1505). An audit that is successfully passed can positively influence reputation, public trust, and public confidence (Brooks, 2011, p. 40; CCAF-FCVI Inc., 2002, p. 49). The Auditor General of Alberta advises that "all published performance information should be audited" (Auditor General of Alberta, 1997, "Overview"). In a review of government performance documents in Alberta, the CCAF-FCVI Inc. found that stakeholders would be more confident if the documents had "independent review and input" (CCAF-FCVI Inc., 2008, p. 10).

Targets: The underlying logic of measures includes forming targets (Pollitt, 2013b, p. 347; Lohman, Fortuin & Wouters, 2004, p. 284; Braz, Scavarda & Martins, 2011, p. 752) and they have become a fixed component of public policy, public service, and strategic performance management (OECD, 2009, p. 64; Auluck, 2002, p. 109; de Lancer Julnes, 2006, p. 222; Speckbacher & Wentges, 2012, p. 35; Folan & Browne, 2005, p. 669). Targets help to focus policy thinking (OECD, 2009, p. 70); generate information for decision-makers (Hansen, 2010, p. 37; Ukko, Tenhunen & Rantanen, 2007, p. 46); communicate expectations and direction (Hansen, 2010, p. 21; Lau & Sholihin, 2005, p. 398; Lohman, Fortuin & Wouters, 2004, p. 269; OECD, 2009, p. 49);

encourage individual and organizational improvement (OECD, 2009, p. 70; Pollitt, 2013b, p. 352; van Veen Dirks, 2010, p. 145; Lau & Sholihin, 2005, p. 398; Wouters, 2009, p. 66); and can be used to manage consequences of externalities (Hansen, 2010, p. 24). In health care, targets are highly influential and improve facility performance (Aron, 2014, p. 472; Hysong et al., 2012, p. 5). The auditor generals of Alberta and British Columbia consider targets as an important part of accountability that should be included in planning and performance reports (Auditor General of Alberta, 1997, "Overview"; Auditor General of British Columbia, 2008, p. 43).

Results and data presentation: The presentation of data and information is a fundamental part of performance-based accountability and management (OECD, 2009, p. 114; de Lancer Julnes, 2006, p. 220; Amirkhanyan, 2011, p. 305; Pollitt, 2013b, p. 348) and in particular planning and performance documents (Dummer, 2007, p. 38). Data underlies performance measures (Divosrski & Scheirer, 2000, p. 83), is used to document and support decision-making (Divosrski & Scheirer, 2000, p. 85), and its use can be influenced by its presentation (Cardinaels & van Veen-Dirks, 2010, p. 566; van der Heijden, 2013, p. 31). Uptake of large data sets can be increased by using performance markers (Cardinaels & van Veen-Dirks, 2010, p. 566) and organizing data by categories (Cardinaels & van Veen-Dirks, 2010, p. 569). The perception of performance data is also influenced by anchoring (fixing a result to a target) and the use of graphical summaries over text (van der Heijden, 2013, p. 23). In health care, reporting raw data without processing is controversial (Rich, 2006, p. 5). For planning and reporting documents in Alberta, five years of data was recommended (CCAF-FCVI Inc., 2008, p. 9). Comparing actual results against planned results is also useful information for decision-makers to "determine if their goals are being achieved" (Alberta Auditor General, 1997, p. 5).

Quantity of measures: The quantity of measures enhances a performance-based accountability system's usefulness (Aron, 2014, p. 472; Walter et al., 2004, p. 2470; Amirkhanyan, 2011, p. 304; Fibuch & Ahmed, 2013, p. 38; Deshpande, Green & Schellhase, 2015, p. 289). Additional performance information increases accountability (see Measure type and selection) (Amirkhanyan, 2011, p. 326); however, resource constraints limit information quality when it is produced in high quantities (Amirkhanyan, 2011, p. 304). A balanced number of measures will maintain both information quality and comprehensiveness (Walter et al., 2004, p. 2470; Amirkhanyan, 2011, p. 304; Desphande, Green & Schellhase, 2015, p. 289) while mitigating complications common to over-reporting, which include obscuring an organization's intent and strategy (Desphande, Green & Schellhase, 2015, p. 289; Fibuch & Ahmed, 2013, p. 38). The Auditor General of British Columbia and CCAF-FCVI Inc. advise similarly, recommending government agencies to "focus on the critical few" measures (Auditor General of British Columbia, 2008, p. 53; CCAF-FCVI Inc., 2002, p. 4) or risk blurring the intent of an organization (Auditor General of British Columbia, 2008, p. 54).

Measure changes: A measure's design or specification can change over time (OECD, 2009, p. 12; Bratzler, 2013, p. 428; Rich, 2006, p. 5; Fogg, 2010, p. 24; Wouters & Wilderom, 2008, p. 509; Johnston & Pongatichat, 2008, p. 945). Technical definitions supporting measures can evolve

within an industry (OECD, 2009, p. 12), and a measure's design can include decisions on methodology (Pollitt, 2013b, p. 358) that can be later interpreted by users as inadequate (OECD, 2009, p. 12). In health care, some performance programs will phase measures through expert panels, pilots, and into wider distribution where additional scrutiny will determine issues in design (Bratzler, 2013, p. 428; Fogg, 2010, p. 24). New scientific knowledge (Bratzler, 2013, p. 428) and additional risk adjustment can also influence measure design (Rich, 2006, p. 5). Some organizations approach measurement design through experimentation where employees design, try, and revise measures until they were reliable, valid, and understandable (Wouters & Wilderom, 2008, p. 508). Revising measures is a continuous process (Wouters & Sportel, 2005, p. 1077) and organizations should continuously review measures to determine if revision is appropriate (Wouters & Sportel, 2005, p. 1065). In reviewing a sample of annual reports released by government agencies, the Auditor General of British Columbia determined that around three-quarters provided measures that were consistent over time, which was important to ensure the organization and a "consistent vision" and allowed stakeholders to evaluate long-term performance (Auditor General of British Columbia, 2008, p. 54-55). The research institute CCAF-FVCI Inc. advises any changes to measures should be documented to heighten credibility of the measures (2008, p. 2) and should advise "when, why and how performance measures have changed from year-to-year" (2008, p. 9).

Stakeholder input: Collaborative input into a measure's design should be considered for its benefits (Deshpande, Green & Schellhase, 2015, p. 295; Wouters & Wilderom, 2008, p. 509; Wouters & Sportel, 2005, p. 1079; Aron, 2014, p. 8; Dummer, 2007, p. 38; Amirkhanyan, 2011, p. 309; Bratzler, 2013, p. 428; Pollitt, 2006, p. 32; Heck et al., 2011, p. 896). Stakeholders can hold different values and inferences that provide alternative perspectives to performance measurement (Aron, 2014, p. 4; Heck et al., 2011, p. 896). The benefits of collaboration include increased understanding and validation of the measurement process and specific measures (Amirkhanyan, 2011, p. 309; Amirkhanyan, 2009, p. 546; Desphande, Green & Schellhase, 2015, p., 295; Wouters & Wilderom, 2008, p. 509; Pollitt, 2006, p. 32); reduced impact of measurement activity impact on entities (Wouters & Wilderom, 2008, p. 509); increased perceived credibility (Amirkhanyan, 2011, p. 309); improved usefulness (Amirkhanyan, 2011, p. 309; Heck et al., 2011, p. 896); and other benefits associated with collaboration (Amirkhanyan, 2009, p. 547). Entities providing input can include those under measurement such as employees, managers, or contractors (Wouters & Wilderom, 2008, p. 509; Wouters & Sportel, 2005, p. 1079; Amirkhanyan, 2011, p. 309); stakeholders in outcomes such as patients, families, providers, and payers (Desphande, Green, & Schellhase, 2015, p. 295); and experts such as researchers (Wouters & Sportel, 2005, p. 1077; Aron, 2014, p. 4; Dummer, 2007, p. 38; Bratzler, 2013, p. 428). In health care, performance measure programs rely on a robust process of stakeholder input (Rich, 2006, p. 6). For public reporting in Alberta, a study found that those who used performance measures felt disengaged, including the process of setting targets for the organizations (CCAF-FCVI Inc., 2008, p. 4). Additionally, stakeholder input is a useful form of measuring achievement of outcomes (Auditor General of British Columbia, 2008, p. 51). However, when researching credibility of performance

reports in Alberta, the Canadian research institute CCAF-FCVI Inc. found that stakeholders mistrusted surveys if they were not performed by an independent party (2008, p. 10).

Data availability and quality: The availability and quality of data can limit and influence a performance measure's usefulness (Aron, 2014, p. 5; Eapen et al., 2015 p. 848; OECD, 2009, p. 7; Divorski & Scheirer, 2001, p. 85; Watts, Shankaranarayanan & Even, 2009, p. 202). Poor data quality is an extensive and longstanding problem in many organizations (Divorski & Scheirer, 2001, p. 84), is an organizational and technical issue (Divorski & Scheirer, 2001, p. 93), and can be caused by intentional or unintentional manipulation such as inflation and data aggregation (OECD, 2009, p. 27). Data quality can be managed by conventional data management techniques (Shankaranarayanan & Cai, 2005, p. 303); design or technical improvements (OECD, 2009, p. 28; Divorski & Scheirer, 2001, p. 88); internal control systems and external audit systems (OECD, 2009, p. 29; Divorski & Scheirer, 2001, p. 89); stakeholder input (Divorski & Scheirer, 2001, p. 88); established data quality standards and systematic databases (OECD, 2009, p. 30; Rich, 2006, p. 8); use of external data sources (OECD, 2009, p. 31), homogenized data sources (Rich, 2006, p. 5), and multiple data sources for comparisons (Divorski & Scheirer, 2001, p. 88-89); risk adjustment (Rich, 2006, p. 5); and replacing data with new sources or measurement methodologies based on feedback (Divorski & Scheirer, 2001, p. 90). The awareness and perception of data quality can be influenced by reporting data limitations and their implications (Divorski & Scheirer, 2001, p. 89; Watts, Shankaranarayanan & Even, 2009, p. 202); data quality controls (Divorski & Scheirer, 2001, p. 92); details of data source (Divorski & Scheirer, 2001, p. 92); and activities undertaken to improve data quality (Divorski & Scheirer, 2001, p. 92). The threshold to determine data quality is dependent on the data purpose and may require professional judgement to determine whether data is useful (Divorski & Scheirer, 2001, p. 85; Watts, Shankaranarayanan & Even, 2009, p. 210; Shankaranarayanan & Cai, 2005, p. 316) and what processes should be performed to manage quality (Divorski & Scheirer, 2001, p. 86). Professional judgement should be inclusive of stakeholders, management, and technical advice (Divorski & Scheirer, 2001, p. 86).

2.3.3 Operationalization of Criteria

The criteria above are operationalized by thirty questions to determine the extent of change over time. Change will be understood by "criteria maturity" in business plan performance measures. Criteria maturity is considered the presence, condition, or level of development of each criterion as observed in the performance measure. The research report is not intended to provide an overall assessment of the maturity of performance measures in Alberta Health's business plans. See Table 2 (below) for these question. The methods to determine answers for these questions follow specific parameters outlined in Appendix A.

Table 2
Questions to operationalize criteria

Criteria	Questions to operationalize
Outcome alignment	1.1 Is measure associated with an outcome?
Benchmarks	2.1 Is measure identified as a benchmark?
Standardization	3.1 Is measure identified as standardized?
Measure type and selection	4.1 What is measure's type? 4.2 What is measure's data type?
Audit	5.1 Is measure identified as audited? 5.2 Is business plan identified as audited (or) does business plan include an audit statement? 5.3 If an audit is identified for a measure or business plan, are the results provided?
Targets	6.1 Is measure associated with targets? 6.2 For each measure, how many targets are provided? 6.3 For each measure, how distant is the target in years (from document publication date)?
Results and data presentation	7.1 For each measure, are actual results provided? 7.2 For each measure, how many years of actual results are provided? 7.3 For each measure, is a graphical presentation provided?
Quantity of measures	8.1 In business plan, how many measures are provided? 8.2 For each outcome category (if exist), how many measures are provided?
Measure changes	9.1 For each measure, was it reported in the previous business plan? 9.2 Is measure identified as changed from previous? 9.3 For each changed measure, are changes summarized? 9.4 For each measure, what is its status in each business plan and longevity?
Stakeholder input	10.1 Is measure identified as inclusive of stakeholder input? 10.2 Is business plan identified as inclusive of stakeholder input regarding measure development?
Data availability and quality	11.1 Is measure source identified? 11.2 Is measure source internal or external? 11.3 Is measure source a survey?

11.4 For each measure or business plan, are control systems identified?
11.5 Are audit systems identified?
11.6 For each business plan and measure, is stakeholder input identified?
11.7 If results are provided, are data limitations identified?
11.8 For each business plan and measure, are data availability or quality improvement activities reported? (i.e. is a statement provided?)

3.0 Methodology and Methods

The methodology and methods section outlines the approach followed by this research report. The section also identifies how data will be analyzed and includes a discussion on the limitations and delimitations that influence the interpretation of the research report's findings.

3.1 Methodology

The main research question is: How have Alberta Health's business plan performance measures changed since business planning was introduced in Alberta? To answer the main research question, the research report analyzed primary and secondary data related to Alberta Health's business plans and business plan performance measures. Specifically, this research report identified, categorized, and analyzed an inventory of all performance measures reported in Alberta Health's business plans since 1994.

A literature review was conducted to understand the history of Alberta's accountability and health systems since early 1990s; identify the relationship between these two systems; and determine criteria to indicate and help explain the changes that have taken place.

3.2 Methods

A document review was conducted to inventory all performance measures used in Alberta Health's business plans. The business plans are public domain and were accessed via website (e.g. Alberta Treasury Board and Finance and Alberta Health). The data derived from the inventory was coded and stored in Microsoft Excel as a database.

A literature review was conducted to support the research report's analyses. Literature was accessed via website (e.g. University of Victoria online library and Google) using a combination of the keywords listed in the table below (Table 3). Reference lists and in-text citations were also used to identify additional sources.

Table 3
Keywords used to identify sources for the literature review

Accountability
Annual report
Business plan
CCAF measures
Criteria
Definition of performance measurement
Health performance measurement
History of performance measurement
Performance measure
Performance measurement
Performance measurement system

A literature review determined criteria to indicate and explain the changes that have occurred. The criteria were developed into a conceptual framework. A conceptual framework guides the research by defining the research concepts and variables and the "presumed relationships" connecting them (Maxwell, 2005, p. 39). Based on the conceptual framework, questions were designed to operationalize the criteria for each business plan performance measure. The questions were coded and applied to the performance measures and the resulting data stored in Microsoft Excel. After application, the data results were manipulated in Microsoft Excel for data analysis.

3.3 Data Analysis

A thematic analysis was conducted with a post-positivist approach to answer the main research question and was applied following the basic grounded theory suggested by Guest et al. (2012, p. 12). Thematic analysis requires interpretation to identify and describe the "implicit and explicit ideas within the data" (Guest, MacQueen, & Namey, 2012, p. 10) and guides the criteria defined in the conceptual framework to ensure greater reliability of analysis. General issues with thematic analysis include the number of persons involved in the analysis and the length or complexity of each data point (Guest et al., 2012, p. 11).

The analysis was applied by the researcher in the following way. The researcher identified and categorized criteria to develop the conceptual framework based on two expert sources, which was then supported by a literature review of academic research. The expert sources are the BC Auditor General and the Canadian research institution CCAF-FCVI Inc. The criteria were operationalized by questions intended to identify whether their presence was in the Albert Health business plan documents; these questions were developed from ones provided by the two expert sources above. No additional criteria were discovered through the data analysis; however, one additional question was added to "Measure changes" criterion to assist in the identification of measure longevity.

In keeping with a post-positivist approach, the analysis process used criteria from the conceptual framework to identify the "structure within the data" and for increased objectivity (Guest et al., 2012, p. 15). The identified structure within Alberta Health's business plans and business plan performance measures were then assessed to identify possible themes and to compare and contrast these themes.

3.4 Research Limitations and Delimitations

Delimitations are needed to ensure the research report is specific, manageable, attainable, relevant, and time-related. Specifically, two delimitations are defined. The first delimitation is determining the extent of change only through Alberta Health's business plans; other performance-based accountability system documents exist, such as annual reports. An annual report is paired with a business plan each fiscal year, and provides a comprehensive summary on an organization's

activities and performance as previously outlined in the business plan. The second delimitation is developing a conceptual framework of criteria to determine change by a non-exhaustive literature review; additional criteria may exist that are not identified by the literature review.

The limitations of the research are important to consider in reference to the research report's findings, analysis, and conclusion. Specifically, three limitations are determined; the first two limitations are the direct result of deliberate delimitation choices. The first limitation is assessing performance measure changes through Alberta Health's business plans; annual reports and other planning and reporting documents may provide additional understanding of change. The second limitation is the potential exclusion of information in business plans; change is assessed only through what is directly observable. The third limitation is the inability to determine a direct relationship between criteria maturity, provincial accountability, and provincial health system reform.

4.0 Findings

The literature review determined eleven assessment criteria to assess the primary research question: How have Alberta Health's business plan performance measures changed since business planning was introduced in Alberta? These criteria were: outcome alignment; benchmarks; standardization; measure type and selection; audit; targets; results and data presentation; quantity of measures; measure changes; stakeholder input; and data availability and quality. These criteria were operationalized by thirty questions developed by the researcher. The section below explains the general and notable findings of each criterion. Data tables and graphs are used to depict these findings and are provided in Appendix C. With respect to the use of business plans as the sole data source, it is important to note that it may be more challenging to produce findings and analysis on some criteria given that the intent of business planning may not support certain functions of performance information. In addition, stakeholders are considered any users of the performance information provided in business plans; they may include non-technical users, such as the general public; government users employing information in situations such as budget discussions; or health experts.

4.1 Outcome Alignment

The question to assess outcome alignment was "Is measure associated with an outcome?" (yes or no). Multiple measures can be associated with one outcome; for example, in Alberta Health's 2010-13 business plan, the outcome "Health workforce utilization and efficiency" is supported by three measures: (1) "Access to primary care providers (% of Albertans reporting they have a family doctor)"; (2) "Access to primary care through Primary Care Networks (% of Albertans enrolled in a Primary Care Network)"; and (3) "Physicians linked to Primary Care Networks (% of family physicians linked to Primary Care Networks)" (p. 158).

All business plans aligned performance measures with outcomes. Outcome alignment was determined by measure association to an explicit organizational goal (e.g. "Outcome Two: The well-being of Albertans is supported though population health initiatives") or to health categories and relevance descriptions (e.g. access and quality of health system). Only four business plans inexplicitly associated measures with outcomes (1996-99 to 1999-02). For example, in Alberta Health's 1997-00 business plan, "Albertan's ratings of access to health services" measure was aligned to "Health Access – Are Services Available When People Need Them?" (p. 11); health access was not an explicit goal of the ministry during this period, but is relevant to the stated ministry goal of ensuring delivery of quality health services (p. 9).

Beginning in 2000, business plans categorized content (e.g. measures and strategies) by ministry goals/outcomes; this style of categorization continued to current date with minor aesthetic changes. For example, in Alberta Health's 2001-04 business plan, "Ratings of ease of access to health services" measure was aligned under "Goal 1: To sustain and improve the delivery of accessible, effective, quality health services to Albertans who need them" and appeared on the same page with goal and strategy descriptions (p. 7).

4.2 Benchmarks

The question to assess benchmarks was "Is measure identified as a benchmark?" (yes or no).

No performance measure was explicitly identified as a benchmark measure. Based on a keyword search for "benchmark", three business plans are important to mention as exceptions. The first was Alberta Health's 1997-99 business plan, which included seven measures that were described as future benchmarks (p. 11-14); these measures were coded as "no" as they were undeveloped and therefore describe intent and not actuality of measure design.

The other exceptions were Alberta Health's 2008-11 and 2009-12 business plans, where two measures were described as including provincial/territorial targets as benchmarks (2008, p. 9; 2008, p. 11; 2009, p. 11); these measures were coded as "no" as they identified target benchmarks and not measure benchmarks. Targets can be compared, but measure methodology must allow for benchmarking (i.e. standardized over time or organization) for meaningful comparisons. In addition, some measures were not identified by a keyword search for "benchmark" but included a statement of national standards or national targets. These measures were identified by footnotes in Alberta Health business plans from 2001-04 to 2007-10 (excluding 2004-07). For example, in Alberta Health's 2002-05 business plan, "Childhood immunization coverage rates" measure included the footnote indicating the provided target was the "national target for immunization coverage" (p. 7). While the intent of these measures may be for benchmark purposes, they were coded "no" for the same reasons as target benchmarks above.

4.3 Standardization

The question to assess standardization was "Is measure identified as standardized?" (yes or no).

No performance measure was explicitly identified as standardized. Based on a keyword search for "standard", four business plans are notable exceptions. The first exception was 1999-02 business plan, which included one measure that stated previous data was unavailable as the measure had a new standard (p. 16); this measure was coded as "no" as it does not indicate a standard methodology with previous measures. The next exceptions were 2006-09 and 2007-10 business plans, which each included one measure that described targets as established with national standards (2006, p. 10; 2007, p. 8); these measures were coded as "no" as measure methodology could not be determined. The final exception was 2010-13 business plan, which included one measure that described the measure as undergoing standardization (p. 11); this measure was coded as "no" as it was undeveloped. Despite coding choice by researcher, these four exceptions are less than 1% of total measures and do not have a significant influence on findings.

In addition, business plans included measures described as "age/sex standardized". For example, in Alberta Health's 1994-97 business plan, "Age and sex standardized mortality rates by major causes of death" measure is explicitly identified as such (p. 17). Age/sex standardization (or age/sex adjustment) is a statistical technique used to improve data comparison between age groups.

These measures were coded as "no" as age/sex standardization does not indicate a standard methodology over time or organizations.

4.4 Measure Type and Selection

The two questions to assess measure type and selection were (1) "What is measure's type?" (input, output, or outcome) and (2) "What is measure's data type?" (qualitative or quantitative).

Over all business plans, the measure type proportions were: 7% input, 65% output, 28% outcome, and 1% undeterminable (respectively: 31, 302, 131, and 4 measures). Forty-three percent of business plans (10) did not use inputs; when used, they averaged 9% of all measures per business plan. The pattern of input use and non-use are alternating periods lasting for four to six years. Outcomes were used in all business plans and their largest proportion of measures per business plan were during periods of input non-use. Per business plan, outcomes were consistently greater in quantity than inputs, but never greater than outputs (with one exception in 1994). Outputs were consistently used in business plans and only dropped below 54% once. The period of greatest parity for all measure types was from 2004 to 2008, when outputs were at a minimum and inputs and outcomes were at maximums. (See Figure C1 in Appendix C.)

Over all business plans, measure data type proportions were: 71% quantitative, 26% qualitative, and 3% undeterminable (respectively: 332, 120, and 16 measures). Neither quantitative nor qualitative measures went through periods when they were not used in business plans. The greatest period of parity was from 2000 to 2004, when quantitative measures were at a minimum and qualitative measures at a maximum. Quantitative measures reached a minimum in 1996 at 29% and highest in 2007 at 90%, though this was not a steady increase over time. Qualitative measures reached a minimum in 1995 and 2007 at 10% and highest in 1996 at 71%; like quantitative, there was no steady increase or decrease over time. (See Figure C2 in Appendix C.)

4.5 Audit

The three questions to assess audit were (1) "Is measure identified as audited?" (yes or no), (2) "Is business plan identified as audited (or) does business plan include an audit statement?" (yes or no), and (3) "If an audit is identified for a measure or business plan, are the results provided?" (yes or no).

No business plan nor business plan performance measure was explicitly identified as audited. In addition, no business plan nor business plan performance measure provided a summary of audit results. One exception is important to identify: the majority of business plans (21 of 23) provide an accountability statement from the then-incumbent minister of Alberta Health, and fifteen of those accountability statements reference the *Government Accountability Act* and government accounting principles. For example, in Alberta Health's 2000-03 business plan, the accountability statement references the Act and relevant policies and is signed by Halvar C. Jonson, the responsible minister at business plan publication (p. 1).

4.6 Targets

The three questions to assess targets were (1) "Is measure associated with a target?" (yes or no), (2) "For each measure, how many targets are provided?", and (3) "For each measure, how distant is the target in years (from document publication date)?". Every measure can have multiple targets; for example, in Alberta Health's 2010-13 business plan, the measure "Access to primary care providers (% of Albertans reporting they have a family doctor)" has three targets: (1) 83% for 2010-11; (2) 84% for 2011-12; and (3) 85% for 2012-13 (p. 158).

Over all business plans, the ratio of measures associated and not associated with a target was 78% to 22% (363 to 105). The lowest percentage of measures associated with targets was 14% and 12% in 1994 and 1995. The highest percentage was 100% association from 2000 to 2013 (14 of 16 total business plans with 100% association). Since 2013, 19 of 40 measures (48%) have not been associated with targets.

The number of targets provided for individual measures were: 22% (105 measures) with 0 targets; 37% (175) with 1 target; 2% (10) with 2 targets; 37% (171) with 3 targets; and 1% (6) with 4 targets. From 1994 to 1995, 87% of measures (68 of 78) had 0 targets. From 1996 to 2005, 85% of measures (165 of 193) had 1 target. From 2006 to 2016, 87% of measures (171 of 196) had 3 targets.

Data was varied for the distance (in years) from the business plan publication date to nearest target, and provided no consistent trend until 2006. Twenty-two percent of measures (105) did not have a target year and 4% of measures (21) were under development or did not include a year. Five measures included targets prior to business plan publication (one to three years prior). For example, in Alberta Health's 2005-08 business plan, "5-year cancer survival rate" measure target is set for the date range beginning in 2002 (p. 13). The remaining measures included targets at current year (51% or 238 measures) or more in the future (21% or 99 measures). Starting in 2006, the majority of targets distances were at current year (100% from 2006 to 2013). (See Figure C3, C4, and C5 in Appendix C.)

4.7 Results and Data Presentation

The three questions to assess results and data presentation were (1) "For each measure, are actual results provided?" (yes or no), (2) "For each measure, how many years of actual results are provided?", and (3) "For each measure, is a graphical presentation provided?" (yes or no).

Over all business plans, the ratio of measures with actual results and no actual results was 65% to 35% (306 to 162). Beginning in 2003, the majority of measures included actual results, and in 2005 all measures included a minimum of one actual result. Prior to 2003, 66% of business plans (6 of 9) did not provide a majority of measures with actual results.

The number of years of actual results follows a similar pattern to the above findings on actual results. Beginning in 2003, 91% of measures (242 of 266) provided one year of actual results. Prior to 2003, 22% of measures (45 of 202) provided one year or more of actual results.

No performance measure provided a graphical presentation of its results and data. (See Figure C6 and C7 in Appendix C.)

4.8 Quantity of Measures

The two questions to assess quantity of measures were (1) "In business plan, how many measures are provided?" and (2) "For each outcome category (if exist), how many measures are provided?". Outcome categories are a unique organizational goal/outcome to which a measure or group of measures relate.

Over all business plans, the total amount of measures is 468. This includes all input, output, and outcome measures, which totaled 31, 302, and 131 measures for each, respectively; four measures were undeterminable. The first three years of business plans had the first and second most number of measures (36 and 42 total) and the fewest number (7) compared to all other years. The average over all years is 20 measures per business plan. Excluding the first three years, the number of measures went through two consecutive high (average 25 each) and low periods (average 14 and 12 respectively), the most recent period lasting for six years.

One-hundred percent of business plans had at least three outcome categories to which measures aligned. The average for all business plans was 4.6 categories per business plan, and no more than seven categories were used in a single business plan. Since 1994, the average number of measures per outcome category has trended downwards. The first three years of business plans had the first and second highest average measures per category (9 and 10.5) and the lowest (1.4) compared to all other years. Beginning with the 2000, the average measures per category remained relatively stable, reaching a maximum and minimum average of 4.8 and 2.6. (See Figure C8 and C9 in Appendix C.)

4.9 Measure Changes

The three questions to assess measure changes were (1) "For each measure, was it reported in the previous business plan?" (yes or no), (2) "Is measure identified as changed from previous?" (yes or no), (3) "For each changed measure, are changes summarized?" (yes or no); and (4) "For each measure, what is its status in each business plan and longevity?" (new, consecutive, re-use, eliminated).

Sixty-three percent of measures (296) were used in consecutive business plans, 29% (136) were not, and 8% (36) had no previous business plan (i.e. they were used in the first business plan in 1994). The highest proportion of consecutive use occurred in three two-year periods, beginning in 2002, 2006, and 2011 (96%, 98%, and 100% average for each period); however, each of these periods was proceeded by lows ranging from 43% to 56%.

Over all business plans, only 4 measures (1%) explicitly identified a methodology change from a previous version. These changes occurred in three business plans (2007-10, 2015-18, and 2016-19) and did not include a summary list of changes. For example, in Alberta Health's 2016-19 business plan, "Ambulatory care sensitive conditions" measure included the footnote "Canadian Institute for Health Information (CIHI) has revised the methodology used to age-standardize population-based indicators [and] results calculated with this updated methodology are not comparable with previously reported rates" (p. 4). (See Figure C10 through C15 in Appendix C.)

While the total number of measures used in all business plans was 468, the number of distinct measures was 136 measures. New distinct measures were introduced more often during the early periods of business planning, averaging 9.5 measures per business plan from 1994 to 2005; from 2006 to 2016, an average of 2 new measures were added per business plan. (If excluding the first business plan, which introduced all measures for the first time, the average from 1994 to 2005 was 7.4 measures.) Measures were also permanently eliminated from the business plan more often during the first period of business planning, averaging 6.4 eliminated measures per business plan from 1994 to 2005; from 2006 to 2016, an average of 3.8 measures were eliminated per business plan. Consecutive use of measures demonstrates an opposite pattern but with less variation, as measures were used consecutively less frequently during 1994 to 2005 (11 measure average) than 2006 to 2016 (13.6 measure average). Measure re-use is stable through both periods as previously-retired measures were reintroduced during 1994 to 2005 and 2006 to 2016 at an average rate of 1.25 measures and 1.5 measures per business plan, respectively.

For measure longevity, the average distinct measure was included in 3 (3.3) business plans, regardless of consecutive use; ignoring measures that were used one time only, the average distinct measure was included in 4 (4.8) business plans. A significant portion of measures were used once (40% or 54 measures), whereas 19% (26 measures) were used twice; 13% (17 measures) were used three times; 10% (13 measures) were used four times, and 19% (26 measures) were used five times or more. Nine measures were used for a period of ten years or more; however, only one of these measures was still active in the most recent business plan (2016-2019). This was the "Influenza flu vaccine" measure, which began use in Albert Health's 2003-2006 business plan. (See Figure D1 and Table D1 in Appendix D.)

4.10 Stakeholder Input

The two questions to assess stakeholder input were (1) "Is measure identified as inclusive of stakeholder input?" (yes or no) and (2) "Is business plan identified as inclusive of stakeholder input in a way that supports measure development?" (yes or no).

No business plan broadly identified stakeholder input in a manner that supports measure development; however, five measures (1%) were identified as including stakeholder input in three business plans (1994-97, 1995-98, and 1997-00). For example, in Alberta Health's 1997-00 business plan, "Waiting time for cardiac surgery" measure includes the description "The targets

are based on recommended practice and will be refined in consultation with physicians and health professionals involved in cardiac programs" (p. 11).

4.11 Data Availability and Quality

The eight questions to assess data availability and quality were:

(1) Is measure source identified? (yes or no)
(2) Is measure source internal or external? (internal or external)
(3) Is measure source a survey? (yes or no)
(4) For each measure or business plan, are control systems identified? (yes or no)
(5) Are audit systems identified? (yes or no)
(6) For each business plan and measure, is stakeholder input identified? (yes or no)
(7) If results are provided, are data limitations identified? (yes or no)
(8) For each business plan and measure, are data availability or quality improvement activities reported? (i.e. is a statement provided?) (yes or no)

Over all business plans, 36% of measures (167) identified its data source. Generally, business plans either listed or did not list a source for performance measures; 16 business plans were either/or (i.e. 100%-0%) and the remaining business plans proportional parity ranged from 4/96% to 21/79%. Since 2004-07, 77% of measures (196) did not identify a source and business plans from 2013-14 to current date do not provide a source for any measures.

Of those measures that identified source, 77% were internal (129), 17% were external (28), and 6% were undeterminable (10). Internal sources were used exclusively from 1997 to 2003, with one exception in 1999 when no sources were provided. External sources were only identified in four business plans and were accompanied by measures with internal sources or measures without a source. For example, in Alberta Health's 2007-10 business plan, "Exercise: Percentage of Albertans age 12 and over who eat at least 5 servings of fruit or vegetables each day" measure includes a footnote indicating its external source as Statistics Canada Canadian Community Health Survey (p. 6).

Surveys were used for 8% of measures (37) through all business plans. Thirteen business plans (56%) did not include a survey measure, twelve of which were in a fifteen-year period from 2000 to 2014. In the most recent two years, one survey measure was provided for each business plan (7% and 6% of measures in each business plan). For example, in Alberta Health's 2016-19 business plan, "Albertans rating of the quality of health care services received" measure indicates it is a biennial survey (p. 7).

No performance measure nor business plan identified a control system or audit system.

No stakeholder input was identified relating to use or determination of data.

Data limitations were identified in 2% of measures (9). Prior to 2005, no business plan identified data limitations; since 2005, six of twelve business plans (50%) identified at least one measure with data limitations. For example, in Alberta Health's 2016-19 business plan, "Influenza immunization" measure included a footnote indicating the measure population is at-risk populations (i.e. seniors, children, and long-term care facility residents) (p. 7) and does not apply broadly to the general public.

Data availability and quality improvement activities were reported in 4% of performance measures (20) and 35% of business plans (8). Prior to 2004, 6 of 10 business plans identified at least one measure. For example, in Alberta Health's 1999-02 business plan, "Length of stay in emergency after hospital admission" measure included a description that information for current performance is currently under development (p. 14). Since 2004, no measures were identified as undergoing improvement activities. Eight business plans provided general statements on data availability or quality improvement activities; from 1994 to 1997 and from 2005 to 2009 (with one exception in 2007). For example, in Alberta Health's 2005-08 business plan, two measures are separately indicated as under development and not included within the main tables providing measure actual results and targets (p. 10-11). (See Figure C16 through C20 in Appendix C.)

4.12 Summary

The findings can be summarized by categorizing the data by shared patterns. These categories are: criteria coded "yes" (90-100%); criteria coded "no" (90-100%); and criteria coded with mixed results. (See Table 4 below.) Outcome alignment was the only criteria consistently coded as "yes". All other criteria and their operationalization questions were generally distributed evenly (13:15) between consistent "no" coding and mixed coding.

Four criteria and their operationalization questions demonstrate notable changes during the early to mid-2000s. Notable changes were determined by significant change in trend that was sustained long-term. Other criteria experienced significant change during this period, but continued to fluctuate in proceeding years. The criteria and their notable periods of change are:

- Targets: (6.1) in 2000, (6.2) in 2006, and (6.3) in 2005/2006
- Results and data presentation: (7.1) in 2003 and (7.2) in 2003
- Quantity of measures: (8.2) in 2000
- Data availability and quality: (11.1) in 1999, (11.2) in 2004, and (11.7) in 2003

Table 4

Assessment criteria by shared data patterns

"Yes": 90 to 100%	"No": 90 to 100%	Mixed
Outcome alignment (1.1)	Benchmarks (2.1) Standardization (3.1) Audit (5.1, 5.2, 5.3) Results and data presentation (7.3) Measure changes (9.2) Stakeholder input (10.1, 10.2) Data availability and quality (11.3, 11.4, 11.5, 11.6)	Measure type and selection (4.1, 4.2) Targets (6.1, 6.2, 6.3) Results and data presentation (7.1, 7.2) Quantity of measures (8.1, 8.2) Measure changes (9.1, 9.3) Data availability and quality (11.1, 11.2, 11.7, 11.8)

5.0 Discussion and Analysis

The findings provide context for the discussion and analysis of the primary research question: How have Alberta Health's business plan performance measures changed since business planning was introduced in Alberta? The findings suggest that individual business plans changed from first to latest publication (from 1994-97 until 2016-19). Change was understood by "criteria maturity" in business plan performance measures. Criteria maturity was considered the presence, condition, or level of development of each criterion as observed in the performance measure. The findings demonstrate specific patterns of change, and provided below is the discussion and analysis of the eleven criteria outlined by the conceptual framework. With respect to the use of business plans as the sole data source, it is important to note that it may be more challenging to produce findings and analysis on some criteria given that the intent of business planning may not support certain functions of performance information. In addition, stakeholders are considered any users of the performance information provided in business plans; they may include non-technical users, such as the general public; government users employing information in situations such as budget discussions; or health experts.

5.1 Outcome Alignment

For business plan performance measures to demonstrate criteria maturity, a measure is expected to align with an outcome that is relevant to the organization. Outcomes are more relevant when they link closely to the vision and mission of the organization. The literature review found that outcome alignment is a good management practice and important for a performance-based accountability system.

All of Alberta Health's business plans aligned performance measures with outcomes, but three periods of business plans were markedly different in presenting outcome alignment. These periods were from 1994-1995, 1996-1999, and 2000 to current. The first period aligned measures to organizational outcomes, and listed them within a measure section of the business plan. The second period aligned measures to measure themes instead of organizational outcomes, but continued listing them within a measure section. The third period reverted to align measures to organizational outcomes, and began listing them alongside objectives and strategies within separate organizational outcome sections. See Table X below for an example of each period.

Table 5
Examples of outcome alignment within three different periods

Period 1: 1994 to 1995
Document: 1994-97 business plan (p. 15)
Outcome: Provide a continuum of affordable, accessible and appropriate high quality health services in appropriate settings and locales that ensure a client-oriented focus
Measure theme: N/A
Measure: Acute care beds per 1000 population

Period 2: 1996 to 1999
Document: 1997-99 business plan (p. 241)
Outcome: N/A
Measure theme: Health Access
Measure: Albertans' ratings of access to health services

The theme of "Health Access" is not an outcome statement; however, the theme relates to the outcome listed in a previous table of the document, which states the goal: "Health services are accessible, appropriate, and well managed to achieve the best value" (p. 240).

Period 3: 2000 to current
Document: 2000-03 business plan (p. 142)
Outcome: To sustain and improve the delivery of accessible, effective, quality health services to Albertans who need them
Measure theme: N/A
Measure: Ratings of ease of access to health services

Note: Some business plans refer to 'outcomes' as 'goals'. These terms are used interchangeably. Appendix E provides a list of common terms and definitions used.

The shift from first to second period obfuscated the connection between measure and organizational goal by introducing measure themes in lieu of explicit outcomes. The shift from second to third period clarified the connection by reintroducing alignment to organizational goals; it further clarified alignment by introducing organizational goal sections. Overall, the third period structure provided more content related to organizational goals, including objectives and strategies intended to influence measure results. This structure suggests a higher degree of relatability and increased understanding for public and external stakeholders, which is a key characteristic of criteria maturity as identified by the literature review.

Summary: The findings suggest criteria maturity, which decreased in 1996 before making a notable improvement in 2000 that has remained consistent to current date.

5.2 Benchmarks

For business plan performance measures to demonstrate criteria maturity, a measure is expected to be used as a benchmark for comparison purposes. A benchmark measure is a measure that uses standardized technical features to compare data over time or between organizations. The literature review found that benchmarks are the basis of performance evaluation and improvement.

None of Alberta Health's business plans identified performance measures as benchmarks, but some notable exceptions highlight the possibility that a form of exception reporting may be used for benchmarks. (Exception reporting is the identification of an abnormal event that requires attention.) Undeveloped measures were identified as benchmarks in the 1997-99 business plan, but they were not identified as benchmarks once developed and listed in subsequent business plans.

Benchmarking was also hinted at in measures identified as using or sharing targets with other jurisdictions.

With limited and variable information from business plans, it was not possible to determine the extent of benchmarking. Benchmark measures are expected to provide rigorous information for discussion and debate when comparing results with another organization or demonstrating reasonableness of performance expectations. As business plan users do not have assurance of measure relatability, the benefits of benchmarking are limited or removed when a measure is not identified as benchmark appropriate; however, internal stakeholders may have greater awareness of measure relatability and therefore utilize benchmark capabilities.

Summary: The findings suggest criteria immaturity, particularly in benefits to stakeholders external to the ministry.

5.3 Standardization

For business plan performance measures to demonstrate criteria maturity, a measure is expected to be standardized for comparison purposes. Standardization is a measure that uses the same technical features as a measure previously reported or used by other organizations; a standardized measure is required for benchmarking purposes. The literature review found that standardization adds value to performance information.

Similar to benchmark criteria, none of Alberta Health's business plans identified performance measures as standardized, but some notable exceptions highlight the possibility that a form of exception reporting may be used for standardization. Measures were identified as adopting new standards or establishing targets with national standards, but they were not identified as standardized once developed and listed in subsequent business plans.

With limited and variable information from business plans, it was not possible to determine the extent of standardization. Standardized measures allow users to extract information, determine credibility, and are required for benchmarking. As business plan users do not have assurance of measure consistency, the benefits of standardization are limited or removed when a measure is not identified as such; however, internal stakeholders may have greater awareness of measure consistency and therefore utilize standardization capabilities. In addition, it is reasonable to assume that current and previous actual result data can be compared if they are isolated to a performance measure and business plan.

Summary: The findings suggest criteria immaturity, particularly in benefits to stakeholders external to the ministry.

5.4 Measure Type and Selection

For business plan performance measures to demonstrate criteria maturity, the selection of measures is expected to be mixed to provide an overview of the organization. The appropriate balance of

measures is difficult to determine; however, a selection is expected to include a minimum of one of each data type and measure type. The literature review found that measure type and selection helps generate a holistic understanding of organizational performance.

Alberta Health's business plans experienced variable selection patterns of data types and measure types. Each measure type highlights a different aspect of organizational performance. The majority measure type throughout the business plans was outputs, which are important to informing analysis on economy, efficiency, productivity, and effectiveness. Outcomes were included in all business plans, to a lesser proportion than outputs, consistently contributing some understanding of organizational influence on stakeholders. Input measures were not used in a high proportion of business plans, failing to provide as consistently comprehensive picture of organizational performance. For data type, selecting a range of measures that supply quantitative, qualitative, perceptual, or objective data can also enhance the picture of performance; in this case, qualitative and quantitative measures were always used in business plans.

Neither measure type nor data type trends shared their highs and lows of criteria maturity. Data type reached greatest parity from 2000-2004, which was when measure type reached the first of two lowest parities. The wave-like variation in data type and measure type parity levels could suggest organizational adaptability or inconsistency.

Summary: The findings suggest a mixed criteria maturity, where data type improved in recent years.

5.5 Audit

For business plan performance measures to demonstrate criteria maturity, a measure is expected to be assessed by an independent third-party. Ideally, all measures are audited; however, the intensive resource requirements of audits are prohibitive in high quantities. The literature review found that audits provide reasonable assurance as to the consistency and quality of data; formalize and enhance accountability; demonstrate stewardship; reduce risk of information use by decision-makers; assess relevance; and can improve overall performance.

None of Alberta Health's performance measures nor business plans identified audits, but accountability statements were provided and are a notable-but-incomplete alternative to audit statements. An accountability statement frames the beginning of business plans, referencing guiding documents that provide expectations and standards in the development of accountability documents. While not a systematic evaluation of performance information, the statements are provided on behalf of the Alberta Health minister which provide an amount of accountability and stewardship. However, the minister cannot provide an independent assessment, which is a primary benefit of audits and found by the literature review to provide stakeholders more confidence in the performance information.

Summary: The findings suggest criteria immaturity, with a notable-but-incomplete alternative in all business plans.

5.6 Targets

For business plan performance measures to demonstrate criteria maturity, a measure is expected to have targets. The appropriate number of targets is difficult to determine; however, a measure is expected to include a minimum of one target. The literature review found that targets are an underlying logic of measures for many reasons, including support of policy thinking; information for decision-makers; communication of expectations and direction; and encouraging individual and organizational improvement.

All of Alberta Health's business plans provide targets for at least a portion of measures. Prior to 1996, the two business plans did not include sections for target data and only mentioned targets in comments for 12 to 14% of measures. Starting in 1996, business plans provided targets with the majority of measures (100% from 2000-2013) and included sections specifically for target data. The number of provided targets for each measure and the distance in target year to business plan publication date also demonstrates improved maturity over time by providing more target data for stakeholders to use and a more comprehensive vision of expectations and direction.

Summary: The findings suggest criteria maturity, which made notable improvements in 2006.

5.7 Results and Data Presentation

For business plan performance measures to demonstrate criteria maturity, a measure is expected to have actual results or data. The appropriate number of actual results is difficult to determine; however, a measure is expected to include a minimum of one actual result. The literature review found that results and data presentation is a fundamental part of performance-based accountability and management.

The findings demonstrate that business plans experienced two distinct periods in presenting results and data, with the shift beginning in 2003 and finalizing in 2005. The number of years of actual results demonstrates the same. Presenting results and data supports decision-making and can influence user uptake by how it is presented. However, no graphical presentation of a measure's results and data were provided, which does not support an easier use of results and data.

Summary: The findings suggest a mixed criteria maturity, which improved to criteria maturity in 2005.

5.8 Quantity of Measures

For business plan performance measures to demonstrate criteria maturity, a measure is expected to have a balanced number of measures. The appropriate number of measures is difficult to determine; however, "a critical few" number of measures is recommended by the literature review.

The literature review found that quantity of measures enhances a performance-based accountability system's usefulness. Additional performance information increases accountability and a balanced number will maintain information quality and comprehensiveness, when factoring in resource constraints and potential to obscure organization intent and strategy.

The findings demonstrate that business plans provide an average 20 measures per business plan, fluctuating significantly in the first three years and experiencing two high and low periods; the longest period of stability began in 2011 until current. Prior to this period, the fluctuation does not support a clear organizational intent or strategy or a focus on "a critical few" set of measures. Fluctuations occurred with the number of outcome categories, particularly from 2004 to 2010, which does not support a clear organizational intent or strategy. The average number of measures per category decreased and remained relatively consistent starting in 2000, supporting the importance of a "critical few" measures highlighted by the literature review.

Summary: The findings suggest a mixed criteria maturity, with notable stability improvements in 2000 for average number of measures per category and 2011 for measure quantity.

5.9 Measure Changes

For business plan performance measures to demonstrate criteria maturity, a measure is expected to change over time, particularly new or recently developed measures. Changes to measures are expected to be identified and summarized. The literature review found that measure revisions over time is a natural process but measures should also remain stable to develop a consistent vision and evaluate long-term performance.

From 1994-2005 and 2006-2016, the findings demonstrate that business plans reduced both the number of distinct measures introduced into and permanently eliminated from business plans, indicating a growing stability over time. Continued use of measures in consecutive business plans was identified as more frequent during the second half as well; when consecutive use is compared to the total quantity of measures in each business plan, the first and second periods average 55% and 75% consecutive use, respectively. While these trends support a basic framework to evaluate organizational performance over time and therefore demonstrate criteria maturity, 71% of measures were used three times or less over all business plans, which demonstrates that a high percentage of organizational performance information was not provided for a reasonable period of time to support evaluation.

Identification of methodological changes indicates that changes did not occur or were not identified as changed, and neither scenario supports the findings of the literature review that changes are natural and should be documented. In addition, the few identified changes were not summarized and therefore did not advise business plan users on when, why, and how the measure changed.

The findings on performance measure longevity in business plans demonstrate that a high number of performance measures were used once through all business plans, and a significantly lower number were used with frequently. With over twenty-three years of business plans, only nine distinct measures (5.8%) were used in ten or more business plans. The lower number of longer-term performance measures does not support the benefits of longevity, and therefore demonstrate a reduced capacity to develop a consistent vision and evaluate long-term performance.

Summary: The findings suggest a mixed criteria maturity, with criteria maturity in context to natural measure evolution and stability, criteria immaturity in context to change identification, and criteria immaturity in context to longevity.

5.10 Stakeholder Input

For business plan performance measures to demonstrate criteria maturity, a measure is expected to include stakeholder input in its selection and design. While identifying stakeholder input is not expected for each measure, business plans can identify that stakeholder input was used. The literature review found collaborative input into a measures' design has benefits, including providing alternative perspectives, increased understanding and validation of process and selection, and increased perceived credibility.

The findings demonstrate that no business plan identified stakeholder input in a manner that supports measure development, and five measures included stakeholder input. Similar to benchmarks and standardization, the criterion is possibly influenced by a form of exception reporting. With limited and variable information from business plans, it was not possible to determine the extent of stakeholder input. Stakeholder input is expected to improve a measure's design and selection; while input may be collected and used to influence measures, the perceived credibility is limited or removed when a measure is not identified as including stakeholder input.

Summary: The findings suggest criteria immaturity, particularly in benefits to stakeholders external to the ministry.

5.11 Data Availability and Quality

For business plan performance measures to demonstrate criteria maturity, a measure is expected to identify its source, control or audit systems, stakeholder input, data limitations, and any activities intended to improve data availability or quality. Not all business plans or measures will have improvement activities and therefore are not expected in significant quantities; however, the other factors are expected to be identified. The literature review found that the availability and quality of data can limit and influence a measure's usefulness.

The findings lack of identified control and audit systems, stakeholder input, data limitations, and data availability and quality improvement activities negatively influences data quality and the confidence, perception and assurance that stakeholders have in data quality. Similar to benchmarks, standardization, and stakeholder input, the criterion is possibly influenced by a form

of exception reporting. With limited and variable information from business plans, it was not possible to determine the extent of these identification issues. Data availability and quality may improve without identification; however, the perceived benefits are limited or removed when the criterion is not identified.

Summary: The findings suggest criteria immaturity, with minimal improvements beginning in 2004.

5.12 Summary

The findings can be summarized by shared patterns of criteria maturity. These categories were: criteria maturity; mixed criteria maturity; and criteria immaturity. Business plan performance measures demonstrated criteria maturity in outcome alignment and targets; mixed criteria maturity in results and data presentation, quantity of measures, and measure changes; and criteria immaturity in benchmarks, standardization, audit, stakeholder input, and data availability and quality. (See Table 5 below.)

Table 6
Assessment criteria by shared criteria maturity patterns

Criteria maturity	Mixed criteria maturity	Criteria immaturity
Outcome alignment	Results and data presentation	Benchmarks
Targets	Quantity of measures	Standardization
	Measure changes	Audit
	Measure type and selection	Stakeholder input
		Data availability and quality

Four criteria demonstrated notable changes during the 2000s. Notable changes were determined by significant change in trend that was sustained long-term. Other criteria experienced significant change during this period, but continued to fluctuate in proceeding years. The criteria and their notable periods of change were:

- Outcome alignment: 2000 (improved)
- Targets: 2006 (improved)
- Results and data presentation: 2005 (improved)
- Quantity of measures: 2000 (improved), 2011 (improved)

In addition to demonstrating notable changes, the findings also demonstrated that two criteria (outcome alignment and targets) demonstrated criteria maturity throughout most business plans. Performance measures with criteria immaturity consisted of 50% of all criteria and did not make any notable improvements since 1994. Four of these criteria were cautioned as influenced by the potential exclusion of information. While there are notable areas of criteria immaturity in Alberta Health's business plan performance measures, the overall criteria maturity has increased since the first business plan in 1994.

6.0 Recommendations for Further Research

This section provides recommendations for further research to the client. The client is Kimberly Speers, Assistant Teaching Professor at the University of Victoria. The recommendations are intended to generate additional information for awareness and understanding of performance measure criteria maturity in Alberta Health. Alberta Health is not a client and this section is not intended to provide explicit actions to improve future business plan performance measures.

6.1 Recommendations to Consider

6.1.1 Cross-reference Government of Alberta Planning and Reporting Documents

The business plan is one document used to report on ministry planning and performance information, and is complemented by the annual report. The annual report would partly address the limitations suggested by the findings and analysis. The same assessment used on the business plan can be applied to the annual report to generate a more comprehensive picture. For example, the annual report may comment on measure audits or use measures as benchmarks to compare results to other jurisdictions.

Alberta Health is also one of many ministries within the Government of Alberta. The findings of this report may be triangulated with other ministry business plans and annual reports to determine whether the criteria maturity gaps were widely endemic to the provincial government, to select ministries, or to Alberta Health.

6.1.2 Assess Planning and Reporting Reports of Other Canadian Governments

Other jurisdictions require governments to report on planning and performance information. The principles that guide the development of these documents are internal to their governments, and therefore the criteria maturity of their measures may have evolved differently. Using the same conceptual framework and operationalization questions, conducting the same assessment on a sampling of provincial ministries would provide data to compare against the findings on Alberta Health's business plans.

6.1.3 Assess influence of target distance on behaviour

Performance measure targets varied by the number of years distant or offset from publication date of business plan. Targets are intended to encourage individual and organizational improvement. The research did not identify how targets provided for previous, current, or future years may influence the behaviour of organizations and stakeholders differently. Conducting a literature review to determine the extent of influence would provide a clearer understanding of the criteria maturity of performance measures.

6.2 RECOMMENDATIONS

The following recommendations are based on the considerations above. These recommendations are intended to provide a comprehensive understanding of performance measure criteria maturity within reasonable cost:

- Alberta Health's annual report should be assessed by the same conceptual framework used to assess the business plan; assessing the annual report will provide a clearer understanding of performance measure criteria maturity as it relates to a single organization's complete planning and reporting cycle.
- A sample of ministries from other provincial governments should be assessed by the same conceptual framework. To ensure comparability, the selected ministries should be responsible for the provincial health portfolio and be assessed by the same conceptual framework and operationalization questions to enhance relatability.
- A literature review should be conducted to review the influence of performance measure targets on organizations and stakeholders. In particular, the literature review should include an assessment on the influence of target distance (in years to publication date of planning and performance reports) to organization and stakeholder behaviour.

7.0 Conclusion

The findings demonstrate how Alberta Health's business plan performance measures changed since business planning was introduced in Alberta. Change was understood by "criteria maturity" in business plan performance measures. Criteria maturity was considered the presence, condition, or level of development of each criterion as observed in the performance measure. Since the first business plan in 1994, the criteria maturity of performance measures has increased overall. While the criteria maturity of some remained stable, other criteria like outcome alignment and targets made notable improvements and no criteria were notably less improved over time. In particular, the pattern of criteria maturity growth progresses during a peak time in the early 2000s when Alberta's accountability and health systems were undergoing change.

When the Government of Alberta committed to an institutionalized accountability framework and a public performance measure framework, the level of performance measure criteria maturity was low. Low criteria maturity is understandable within the context that report requirements were new and supporting activities were undeveloped. As noted in the literature review, by 2001 there was a noticeable shift in government direction and resources to support performance measurement activities, and the shift raised the profile of measurement from a localized to organizational level.

While early health system reforms do not explicitly suggest performance measure criteria maturity, they were the product of a government intended to improve through management and governance structures. The resulting reforms led to the Mazankowski Report (2001) and the Health Quality Council Report (2008) that similarly advised of concerns of business planning and performance reporting issues. During the same period, a third-party report was published by CCAF-FCVI Inc. advising Canadian governments on advancing accountability frameworks; the Government of Alberta eventually consulted with this research institute on improving their business plans and annual reports. These years track with Alberta's continued improvements in performance measure criteria maturity throughout the 2000s.

The limitations of the research are important to consider in reference to the research report's findings, analysis, and conclusion. First, document scope is a limitation that influences the assessment of performance measure criteria maturity. The business plan is complemented by an annual report, and assessing annual reports may provide additional information on performance measure criteria maturity. Second, disclosure or asymmetry of information is a limitation that influences the assessment of performance measure criteria maturity. The limitation is difficult to manage without additional data sources. Third, determining a causation-or-correlation relationship between performance measure criteria maturity and provincial accountability and health system changes is a limitation.

The recommended options will help manage these research limitations. Annual reports may provide additional information on performance measure criteria maturity to further develop understanding of performance measure criteria maturity. The additional findings can provide a

helpful comparative with other jurisdictions to highlight the extent of internal versus external influence on performance measure criteria maturity.

Determining performance measure criteria maturity helps focus future research and improvement activities on areas and potential actions. While the current findings and analysis are suggestive, they are also limited. The implications of completing the recommended option is a more comprehensive understanding of performance measure criteria maturity in Alberta Health and potential change causations over time. In time, a greater understanding of performance measure criteria maturity will hopefully increase the usefulness of business plan performance information.

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Appendix A: Questions to Operationalize Criteria

The content below lists the questions used to operationalize the performance measure criteria outlined by the conceptual framework. Each question includes specific methods used by the researcher to determine and code data.

Outcome alignment

Question: (1.1) Is measure associated with an outcome?
Answer: Yes/no (y/n)
Method:

- Document review of measure section.
- Identified by either (1) explicit category alignment, (2) non-explicit alignment through health topic categories (e.g. access), or (3) non-explicit alignment through description of measure (i.e. relevance).

Benchmarks

Question: (2.1) Is measure identified as a benchmark?
Answer: Yes/no (y/n)
Method:

- Document keyword search for "benchmark" and "comparison".
- Document review of measure section.
- Identified by explicit statement of "benchmark" and "comparison", in addition to actual data for benchmark comparisons.

Standardization

Question: (3.1) Is measure identified as standardized?
Answer: Yes/no (y/n)
Method:

- Document keyword search for "standard".
- Document review of measure section.
- Identified by explicit statement of "standard".

Measure type and selection

Question: (4.1) What is measure's type?
Answer: Input/output/outcome/undeterminable (i/o/g/u)
Method:

- Document review of measure section.
- Identified by association to questions (OECD, 2009, p. 16):
  - Input (i) - What goes into the system? Which resources are used?
  - Output (o) - Which products and services are delivered? What is the quality of these products and services?
  - Outcome (g) - What are the direct consequences of the output? What are the outcomes achieved that are significantly attributable to the output?

Question: (4.2) What is measure's data type?

Answer: Quantitative/qualitative/undeterminable (n/l/u)
Method:

- Document review of measure section.
- Identified by datum point; if a word or phrase, then (l) qualitative; if a number, then (n) quantitative.

Audit

Question: (5.1) Is measure identified as audited?
Answer: Yes/no (y/n)
Method:

- Document keyword search for "audit", "review", and "assess".
- Document review of measure section.
- Identified by explicit reference to an objective assessment (e.g. audit) of data for each performance measure. (*Note: general statements in business plans are not considered associations; these are subject to question 5.2.*)

Question: (5.2) Is business plan identified as audited (or) does business plan include an audit statement?
Answer: Yes/no (y/n)
Method:

- Document keyword search for "audit" and "accountability".
- Identified by explicit reference to an objective assessment (e.g. audit) of data in business plan. (*Note: either/or is enough to code data as yes/no.*)

Question: (5.3) If an audit is identified for a measure or business plan, are the results provided?
Answer: Yes/no (y/n)
Method:

- Document keyword search for "audit" and "accountability"
- Identified by explicit inclusion of results from an objective assessment (e.g. audit) of data in business plan.

Targets

Question: (6.1) Is measure associated with targets?
Answer: Yes/no (y/n)
Method:

- Document review of measure section.
- Identified by explicit association with a minimum of one target (per variable). If multivariable, each must include a target to be coded as "y".

Question: (6.2) For each measure, how many targets are provided?
Answer: # of targets
Method:

- Document review of measure section.

- Identified by counting number of targets explicitly associated with a unique target year. Multivariable measures with different target counts are averaged (e.g. measure has two variables, a and b: (a) has 1 target year and (b) has 2 target years is coded as average of 1+2, or 1.5).

Question: (6.3) For each measure, how distant is the target in years (from document publication date)?
Answer: # years
Method:

- Document review of measure section.
- Identified by determining year of the most recent target (if stated in fiscal, starting year used) minus year of business plan publication (starting year used). If multiple targets are provided for one measure, closest target to publication date is used. If target is not associated with a year, data is coded as 'n'. If target states "under development", coded as 'n'. If target indication/data is not provided for a year, coded as 'n'. If no target is provided, data is coded as 'i'. Table column headings are used as secondary data source if no direct year is provided.
- Example: 1996-1999 business plan with 1997-1998 target is calculated as: 1997-1996 = 1 year.

Results and data presentation

Question: (7.1) For each measure, are actual results provided?
Answer: Yes/no (y/n)
Method:

- Document review of measure section.
- Identified by explicit association with a minimum of one actual result (per variable); under development coded as 'n'. If multivariable, must include one actual result to be coded as "y".

Question: (7.2) For each measure, how many years of actual results are provided?
Answer: # years
Method:

- Document review of measure section.
- Identified by count of actual results explicitly associated with a unique actual result year; data must be provided (e.g. cannot be "under development", unless it is a multivariable measure and at least one variable provides data). Multivariable measures with different actual result counts are averaged (e.g. measure has two variables, a and b: (a) has 1 actual result year and (b) has 2 actual result year is coded as average of 1+2, or 1.5).

Question: (7.3) For each measure, is a graphical presentation provided?
Answer: Yes/no (y/n)
Method:

- Document review of measure section.

- Identified by explicit graphical presentation of actual results data for each measure (does not include tables used to structure measure name and data).

Quantity of measures

Question: (8.1) In business plan, how many measures are provided? #
Answer: #
Method:

- Document review of measure section.
- Identified by explicit identification of unique measures (including indicators) that are developed or under development, regardless of target data or actual results data. Multivariable measures are counted as one (e.g. they all are associated under one measure heading)

Question: (8.2) For each outcome category (if exist), how many measures are provided?
Answer: Average # per category
Method:

- Document review of measure section.
- Identified by count of each measure under a unique category (following categorization rules of 1.1). Each measure is identified by a letter (alphabetical order) that represents a unique category. Letters to be counted afterwards and averaged for each business plan. Indicators considered their own category.

Measure changes

Question: (9.1) For each measure, was it reported in the previous business plan?
Answer: Yes/no/no previous business plan (y/n/u)
Method:

- Document review of measure section.
- Identified by explicit association to a performance measure reported in the business plan immediately prior to current business plan. If a reasonable association exists (e.g. measures are similar in name and description), the measure is coded 'y' if they share the same actual result or target data; if they do not share the same actual results or target data, the measure is coded 'n'; if there was no previous business plan, coded 'u'.
- As name and descriptions can significantly change for what may be the same measure, reasonable association is determined by a keyword search in previous business plan of the current measure's name. For example, "Comparison of quarterly results with budget" was searched by "comparison", "quarterly", and "budget".
- Changes cannot be known; similarity of measure is determined by keyword topic. For example, "Physician visits per 100 residents" (1995) v. "Physician visits per capita" (1994) are considered same and coded 'y'.

Question: (9.2) Is measure identified as changed from previous?
Answer: Yes/no (y/n)
Method:

- Document keyword search for "change", "changed", "modify", and "modified"
- Document review of measure section.

- Identified by explicit reference to a measure change or modification from previous business plans.

Question: (9.3) For each changed measure, are changes summarized?
Answer: Yes/no (y/n)
Method:

- Document keyword search for "change", "changed", "modify", and "modified"
- Document review of measure section.
- Identified by explicit inclusion of a measure's summary of changes from previous business plans. If no statement beyond "measure changed" is provided (e.g. survey design change), it is not considered a summary.

Question: (9.4) For each measure, what is its status in each business plan and longevity?
Answer: New, consecutive use, re-use, eliminated
Method:

- Document review of measure section.
- Status identified by first-time use of distinct measure (new); previous use of distinct measure in preceding business plan (consecutive use); previous use of distinct measure in any previous business plan (re-use); and exclusion of distinct measure from any proceeding business plan (elimination).
- Longevity identified by length of consecutive use of distinct measure in business plans.

Stakeholder input

Question: (10.1) Is measure identified as inclusive of stakeholder input?
Answer: Yes/no (y/n)
Method:

- Document keyword search for "stakeholder input", "stakeholder", "input", "consult", "consultation", "collaborate", and "collaboration"
- Document review of measure section.
- Identified by explicit reference to use of stakeholder input in the design of a measure or targets.

Question: (10.2) Is business plan identified as inclusive of stakeholder input regarding measure development?
Answer: Yes/no (y/n)
Method:

- Document keyword search for "stakeholder input", "stakeholder", "input", "consult", "consultation", "collaborate", and "collaboration".
- Identified by explicit reference to use of stakeholder input in development of current business plan regarding measure development.

Data availability and quality

Question: (11.1) Is measure source identified?
Answer: Yes/no (y/n)
Method:

- Document keyword search for “source”, “data”, “statistical information”, “statistical”, and “information”
- Document review of measure section.
- Identified by explicit statement of data source for a measure or set of measures.

Question: (11.2) Is measure source internal or external?
Answer: Internal/external/unidentified (i/e/u/n)
Method:

- Document keyword search for “source”.
- Document review of measure section.
- Identified by explicit association of data source. If data is collected by Alberta Health or Government of Alberta, data coded as ‘i’; if data is not collected by Alberta Health or Government of Alberta, data coded as ‘e’; if the type of data source cannot be determined within the business plan, data coded as ‘u’; if no data source is provided, data is coded as ‘n’.

Question: (11.3) Is measure source a survey?
Answer: Yes/no (y/n)
Method:

- Document keyword search for “survey”.
- Document review of measure section.
- Identified by explicit reference to data collection as a survey. If measure name and description references survey, data is coded as ‘y’. If measure name and description references another type of source, if no data source is provided, or if data source is undetermined, data is coded as ‘n’.

Question: (11.4) For each measure or business plan, are control systems* identified?
Answer: Yes/no (y/n)
Method:

- Document keyword search for “control system”, “control”, “system”, “methodology”, “process”
- Document review of measure section.
- Identified by explicit reference to a set of processes to control and review a measure’s methodology.

**Note. A control system is a set of implemented processes to control and review measures to ensure the results are reliable, understandable, comparable, accurate, and complete. The system controls and reviews each step of a measure’s methodology to ensure data and information integrity, etc. For example, data entry can be controlled by an external reviewer to confirm data completeness or identify issues.*

Question: (11.5) Are audit systems identified?
Answer: Yes/no (y/n)
Method:

- Document keyword search for “audit system”, “audit”, “system”, “review system”, “review”, “assessment system”, “assessment”

- Document review of measure section.
- Identified by explicit reference to a system to review measure design, results, or targets

Question: (11.6) For each business plan and measure, is stakeholder input identified?
Answer: Yes/no (y/n)
Method:

- Document keyword search for "stakeholder input", "stakeholder", "input", "consult", "consultation", "collaborate", and "collaboration"
- Document review of measure section.
- Identified by explicit reference to use of stakeholder input in use or determination of data source.

Question: (11.7) If results are provided, are data limitations identified?
Answer: Yes/no/no results provided (y/n/u)
Method:

- Document keyword search for "limitation", "methodology", "assumption", "interpret"
- Document review of measure section.
- Identified by explicit reference to current limitations in the data that may influence interpretation of results. Some possible limitations may be intentional design decisions and are therefore coded 'n' unless it is reasonably assumed as an unintentional data limitation. Does not include a statement of target or trend.

Question: (11.8) For each business plan and measure, are data availability/quality improvement activities reported (i.e. is a statement provided)?
Answer: Yes/no (y/n)
Method:

- Document keyword search for "data improvement", "data", and "improvement", "information", "quality", "availability", "collect", "develop"
- Document review of measure section.
- Identified by explicit reference to general activities to make available or improve the quality of data for measures in the business plan.

Appendix B: Summary of Alberta Health's Business Plan Performance Measures

The content below provides a summary of performance measures used in Alberta Health's business plan. The summaries are intended to provide an understanding of measure changes since Alberta's performance-based accountability system was institutionalized in 1993. The count of measures used may not always equal the count of (a) measures related to the previous business plan and (b) introduced measures; the reason is due to the technical nature of counting measures that are combined or split over time.

1993

With the establishment of the *Government Accountability Act* in 1993, the first ministry business plan began development and was published for the fiscal years of 1994-1997.

1994-1997 Business Plan

- 1st business plan for Alberta Health.
- Introduced 36 measures.
- 10 measures will not be used again.

1995-1998 Business Plan

- 2nd business plan.
- 42 measures used.
- 20 measures related to the previous business plan.
- Introduced 21 measures.
- 29 measures will not be used again.

1996-1999 Business Plan

- 3rd business plan.
- 7 measures used.
- 5 measures related to previous business plans.
- Introduced 2 measures.
- 1 measure will not be used again.

1997-2000 Business Plan

- 4th business plan.
- 21 measures used.
- 9 measures related to previous business plans.
- Introduced 12 measures.
- 2 measures will not be used again.

1998-2001 Business Plan

- 5th business plan.

- 24 measures used.
- 16 measures related to previous business plans.
- Introduced 7 measures.
- 1 measure will not be used again.

1999-2002 Business Plan

- 6th business plan.
- 31 measures used.
- 24 measures related to previous business plans.
- Introduced 5 measures.
- 16 measures will not be used again.

2000-2003 Business Plan

- 7th business plan.
- 13 measures used.
- 7 measures related to previous business plans.
- Introduced 6 measures.
- 5 measures will not be used again.

2001-2004 Business Plan

- 8th business plan.
- 14 measures used.
- 9 measures related to previous business plans.
- Introduced 5 measures.
- All measures will be used again.

2002-2005 Business Plan

- 9th business plan.
- 14 measures used.
- 14 measures related to previous business plans.
- Introduced no new measures.
- All measures will be used again.

2003-2006 Business Plan

- 10th business plan.
- 14 measures used.
- 13 measures related to previous business plans.
- Introduced 1 measure.
- 2 measures will not be used again.

2004-2007 Business Plan

- 11th business plan.
- 28 measures used.
- 15 measures related to previous business plans.
- Introduced 12 measures.
- 11 measures will not be used again.

2005-2008 Business Plan

- 12th business plan.
- 28 measures used.
- 16 measures related to previous business plans.
- Introduced 12 measures.
- All measures will be used again.

2006-2009 Business Plan

- 13th business plan.
- 28 measures used.
- 28 measures related to previous business plans.
- Introduced no new measures.
- All measures will be used again.

2007-2010 Business Plan

- 14th business plan.
- 29 measures used.
- 28 measures related to previous business plans.
- Introduced 1 measure.
- 13 measures will not be used again.

2008-2011 Business Plan

- 15th business plan.
- 21 measures used.
- 14 measures related to previous business plans.
- Introduced 7 measures.
- 11 measures will not be used again.

2009-2012 Business Plan

- 16th business plan.
- 18 measures used.
- 12 measures related to previous business plans.
- Introduced 6 measures.
- 2 measures will not be used again.

2010-2013 Business Plan

- 17th business plan.
- 26 measures used.
- 18 measures related to previous business plans.
- Introduced 4 measures.
- 10 measures will not be used again.

2011-2014 Business Plan

- 18th business plan.
- 13 measures used.
- 11 measures related to previous business plans.
- Introduced no new measures.
- All measures will be used again.

2012-2015 Business Plan

- 19th business plan.
- 12 measures used.
- 10 measures related to previous business plans.
- Introduced no new measures.
- 5 measures will not be used again.

2013-2016 Business Plan

- 20th business plan.
- 9 measures used.
- 7 measures related to previous business plans.
- Introduced 2 measures.
- 1 measure will not be used again.

2014-2017 Business Plan

- 21st business plan.
- 10 measures used.
- 10 measures related to previous business plans.
- Introduced no new measures.
- 1 measure will not be used again.

2015-2018 Business Plan

- 22nd business plan.
- 14 measures used.
- 14 measures related to previous business plans.
- Introduced no new measures.
- All measures will be used again.

2016-2019 Business Plan

- 23rd business plan and current business plan (to-date).
- 16 measures used.
- 16 measures related to previous business plans.
- Introduced no new measures.

Appendix C: Data Results for All Business Plans (Overall)

Outcome alignment

Table C1
Data for question: "Is measure associated with an outcome?"

Response	Number of	Percent of total
yes	468	100%
no	0	0%
(total)	468	100%

Benchmarks

Table C2
Data for question: "Is measure identified as a benchmark?"

Response	Number of	Percent of total
yes	0	0%
no	468	100%
(total)	468	100%

Standardization

Table C3
Data for question: "Is measure identified as standardized?"

Response	Number of	Percent of total
yes	0	0%
no	468	100%
(total)	468	100%

Measure type and selection

Table C4
Data for question: "What is measure's type?"

Response	Number of	Percent of total
input	31	7%
output	302	65%
outcome	131	28%
undetermined	4	1%
(total)	468	100%

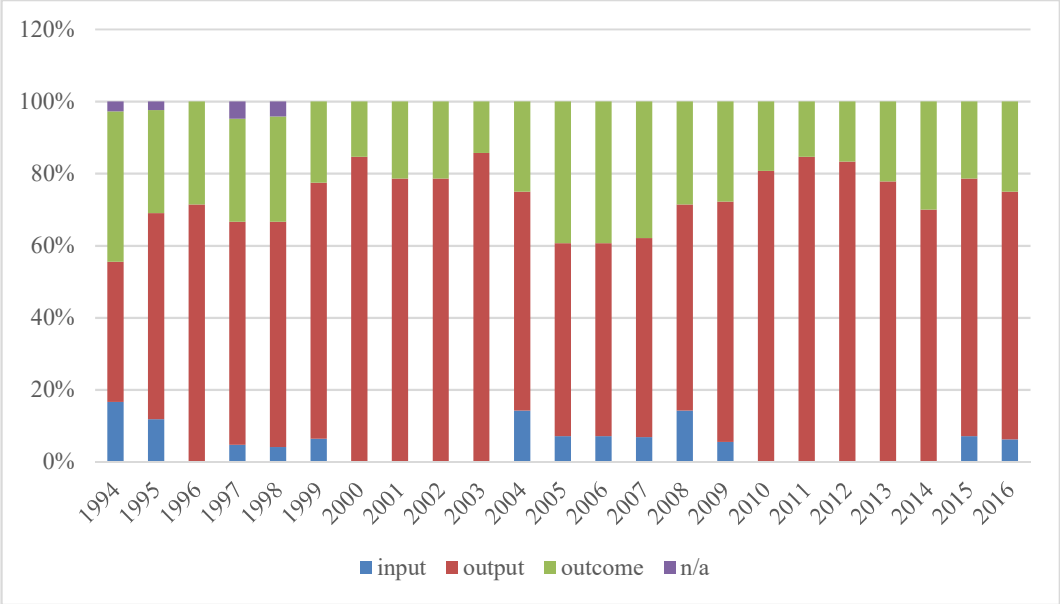

Figure C1
Measure type (as percentage of total) per business plan

Table C5
Data for question: "What is measure's data type?"

Response	Number of	Percent of total
quantitative	332	71%
qualitative	120	26%
undetermined	16	3%
(total)	468	100%

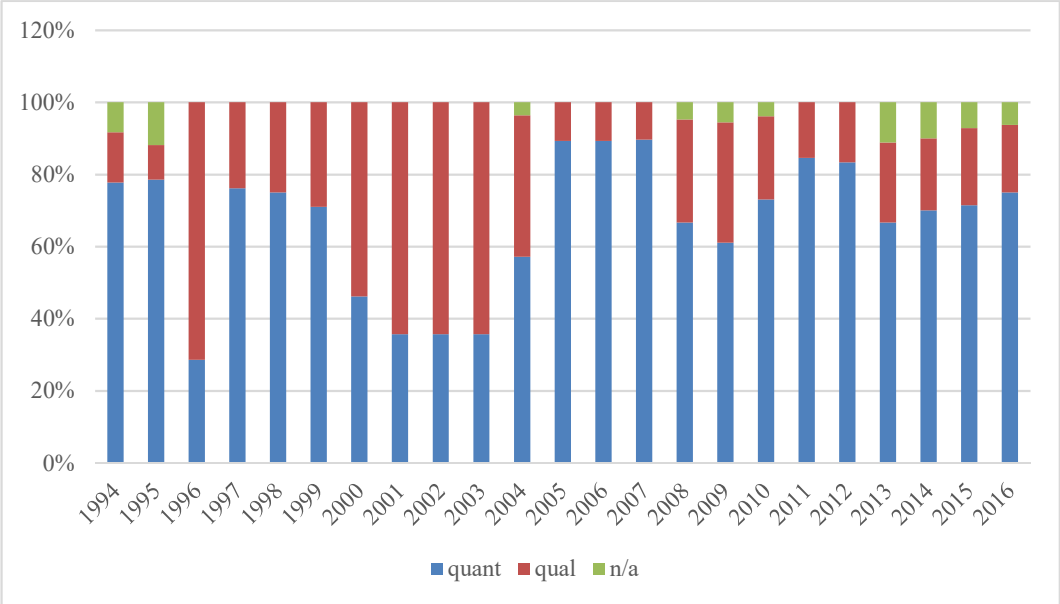

Figure C2
Measure data type (as percentage of total) per business plan

Audit

Table C6
Data for question: "Is measure identified as audited?"

Response	Number of	Percent of total
yes	0	0%
no	468	100%
(total)	468	100%

Table C7
Data for question: "Is business plan identified as audited (or) does business plan include an audit statement?"

Response	Number of	Percent of total
yes	0	0%
no	23	100%
(total)	23	100%

Table C8
Data for question: "If an audit is identified for a measure or business plan, are the results provided?"

Response	Number of	Percent of total
Performance measures		
yes	0	0%
no	468	100%
(total)	468	100%
Business plans		
yes	0	0%
no	23	100%
(total)	23	100%

Targets

Table C9
Data for question: "Is measure associated with targets?"

Response	Number of	Percent of total
yes	363	78%
no	105	22%
(total)	468	100%

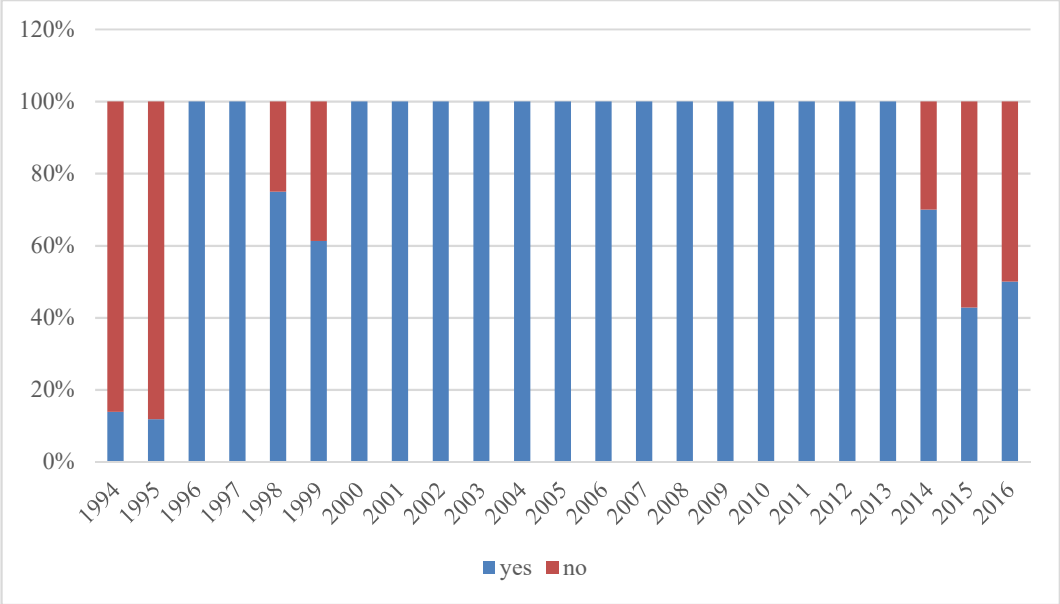

Figure C3
Measures associated with targets (as percentage of total) per business plan

Table C10
Data for question: "For each measure, how many targets are provided?"

Response	Number of	Percent of total
0	105	22%
1	175	37%
2	10	2%
3	171	37%
4	6	1%
(total)	467	100%

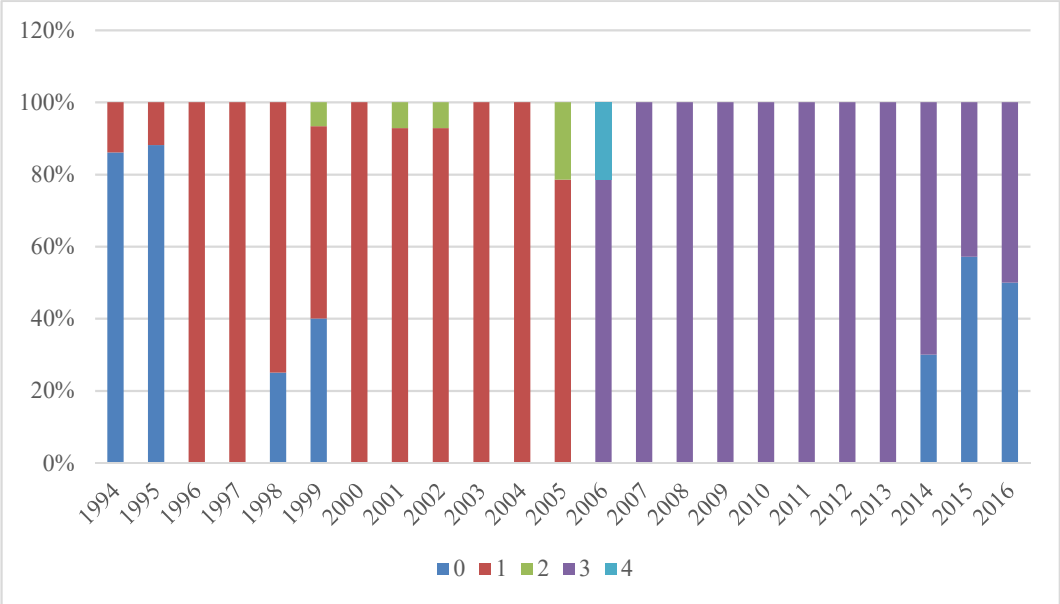

Figure C4
Number of targets per measure (as percentage of total) per business plan

Table C11
Data for question: "For each measure, how distant is the target in years (from document publication date)?"

Response	Number of	Percent of total
i (no target)	105	22%
n (no year)	21	4%
-3	1	0%
-2	2	0%
-1	2	0%
0	238	51%
1	62	13%
2	26	6%
3	10	2%
4	0	0%
5	1	0%
(total)	468	100%

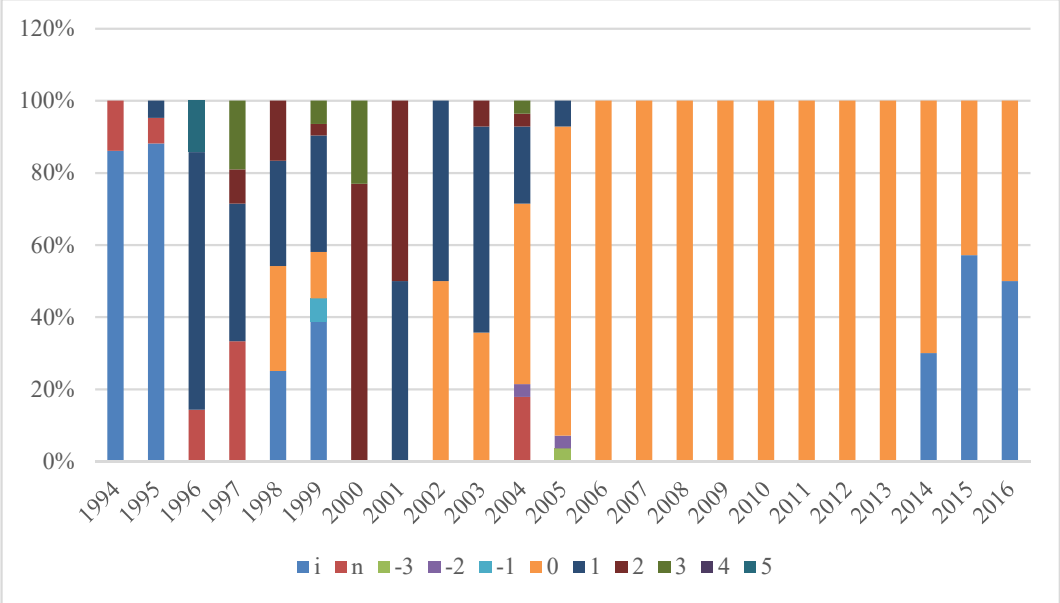

Figure C5
Target year distance per measure (as percentage of total) per business plan

Results and data presentation

Table C12
Data for question: "For each measure, are actual results provided?"

Response	Number of	Percent of total
yes	306	65%
no	162	35%
(total)	468	100%

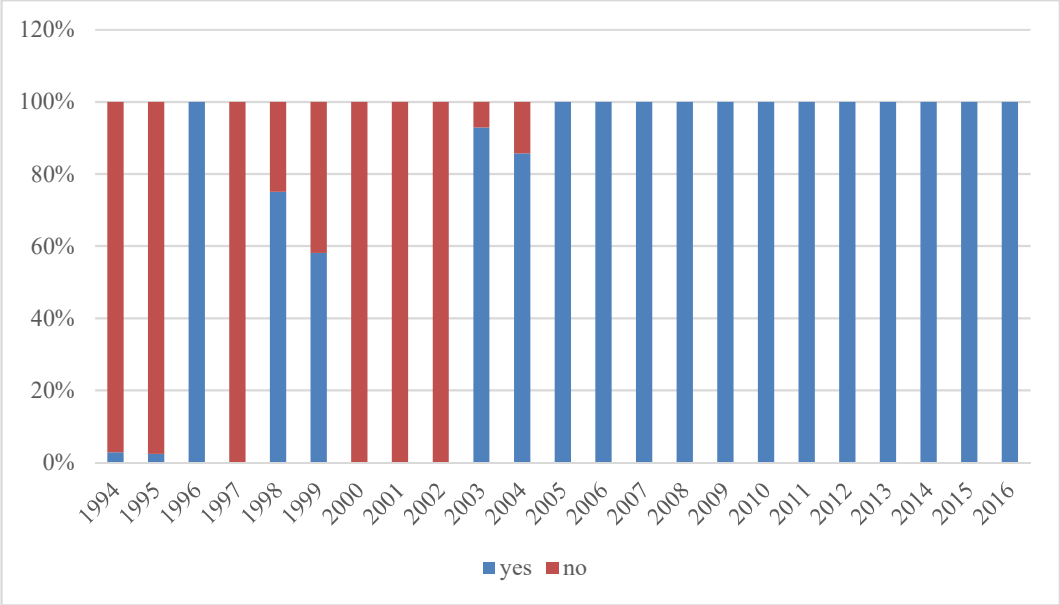

Figure C6
Measures associated with actual results (as percentage of total) per business plan

Table C13
Data for question: "For each measure, how many years of actual results are provided?"

Response	Number of	Percent of total
0	162	35%
1	270	58%
2	16	3%
3	1	0%
4	17	4%
5	2	0%
(total)	468	100%

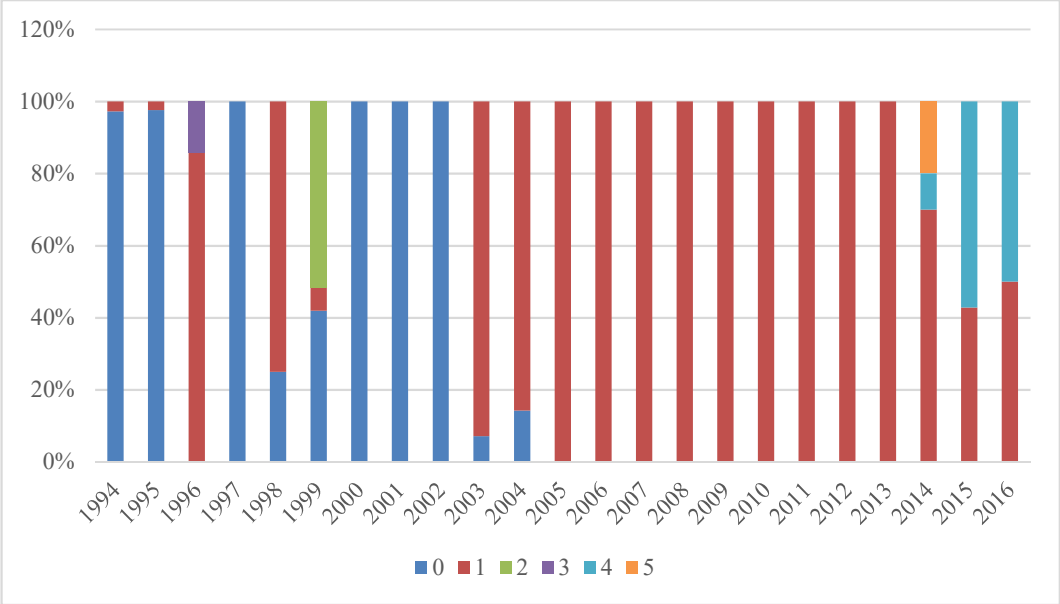

Figure C7
Number of actual results per measure (as percentage of total) per business plan

Table C14
Data for question: "For each measure, is a graphical presentation provided?"

Response	Number of	Percent of total
yes	0	0%
no	468	100%
(total)	468	100%

Quantity of measures

Table C15
Data for question: "In business plan, how many measures are provided?"

Number of measures	468

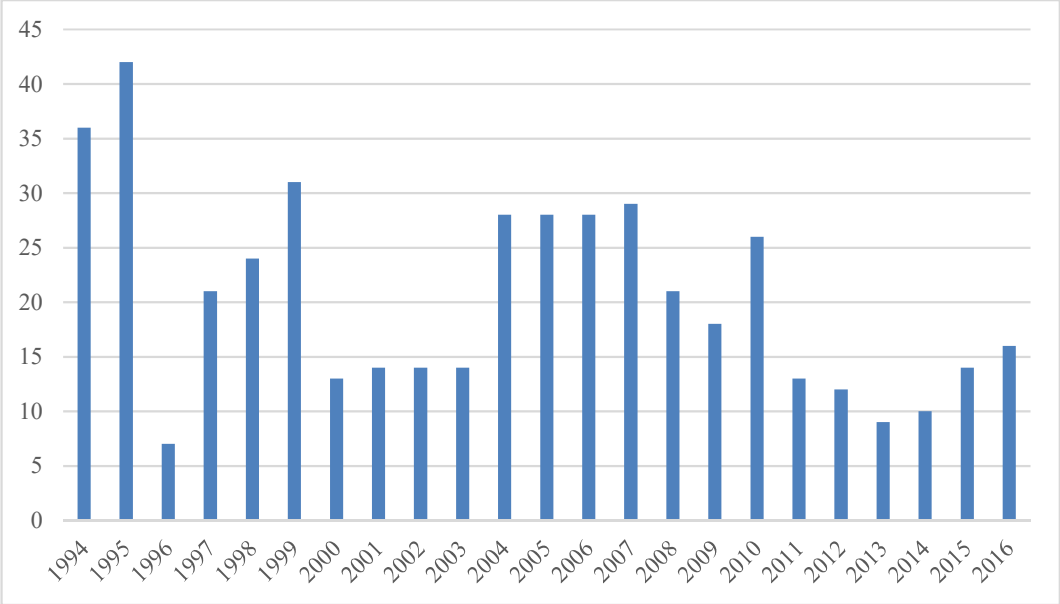

Figure C8
Number of measures per business plan

Table C16
Data for question: "For each outcome category (if exist), how many measures are provided (average)?"

Business plan	Average measures per category
1994	9.0
1995	10.5
1996	1.4
1997	7.0
1998	6.0
1999	7.8
2000	3.3
2001	3.5
2002	3.5
2003	3.5
2004	4.7
2005	4.7
2006	4.7
2007	4.8
2008	3.5
2009	2.6
2010	3.7
2011	3.3
2012	3.0
2013	3.0
2014	3.3

2015	3.5
2016	4.0

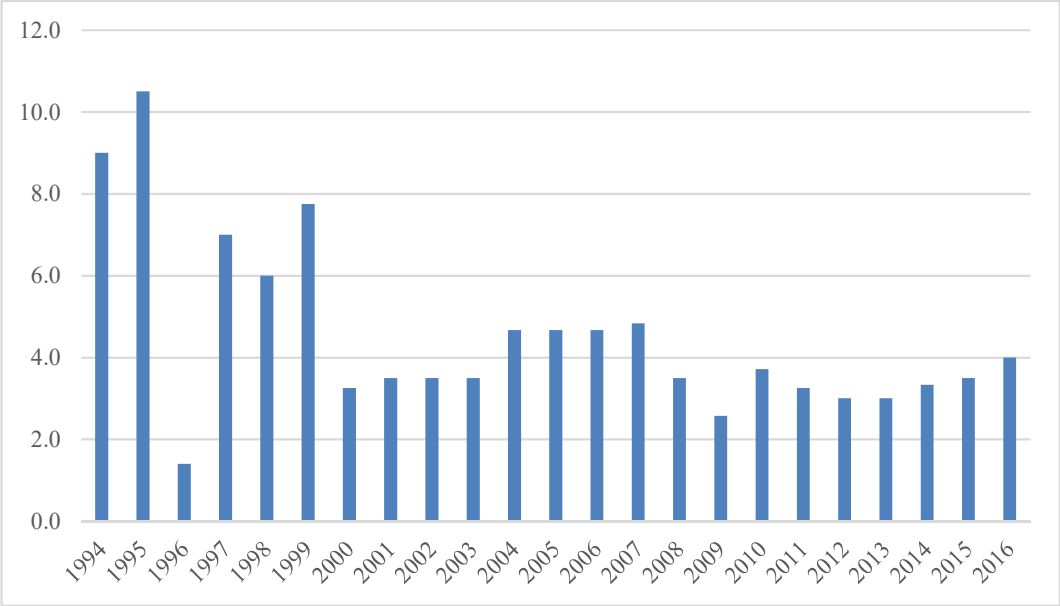

Figure C9
Average number of measures (per outcome category) per business plan

Measure changes

Table C17
Data for question: "For each measure, was it reported in the previous business plan?"

Response	Number of	Percent of total
yes	296	63%
no	136	29%
no previous business plan	36	8%
(total)	468	100%

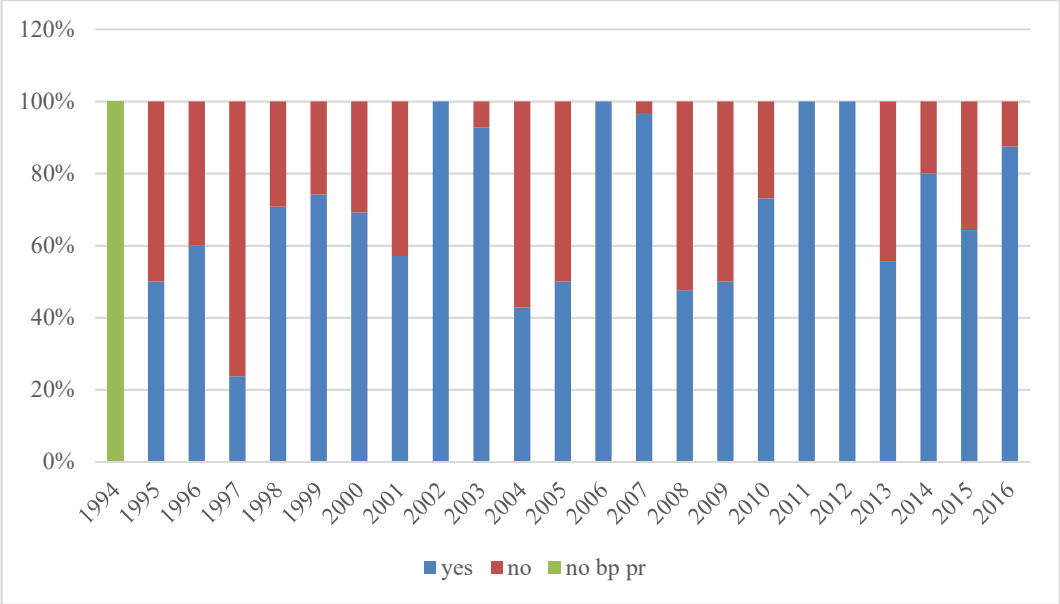

Figure C10
Measures reported in previous business plan (as percentage of total) per business plan

Table C18
Data for question: "Is measure identified as changed from previous?"

Response	Number of	Percent of total
yes	4	1%
no	464	99%
(total)	468	100%

Table C19
Data for question: "For each changed measure, are changes summarized?"

Response	Number of	Percent of total
yes	4	1%
no	0	0%
not identified	464	99%
(total)	468	100%

Table C20
Data for question: "For each measure, what is its status in each business plan?"

	Number of			
Business plan	New	Consecutive use	Re-use	Elimination
1994	33	0	0	0
1995	21	20	0	10
1996	2	5	0	29
1997	10	4	5	1

1998	7	16	0	2
1999	5	22	2	1
2000	6	7	0	16
2001	5	7	2	5
2002	0	14	0	0
2003	1	13	0	0
2004	12	10	4	2
2005	12	14	2	11
2006	0	28	0	0
2007	1	28	0	0
2008	7	10	4	12
2009	6	10	2	11
2010	4	16	2	2
2011	0	11	0	10
2012	0	10	0	0
2013	2	5	2	5
2014	0	8	2	1
2015	2	9	3	1
2016	0	15	2	0

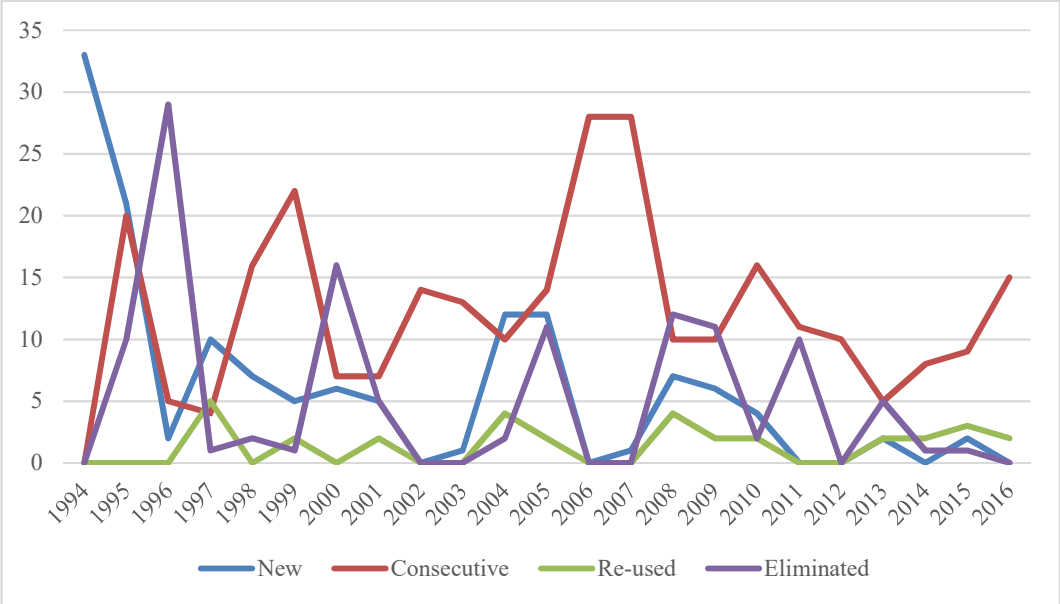

Figure C11

Number of measures identified as new, consecutively used, re-used, or eliminated per business plan

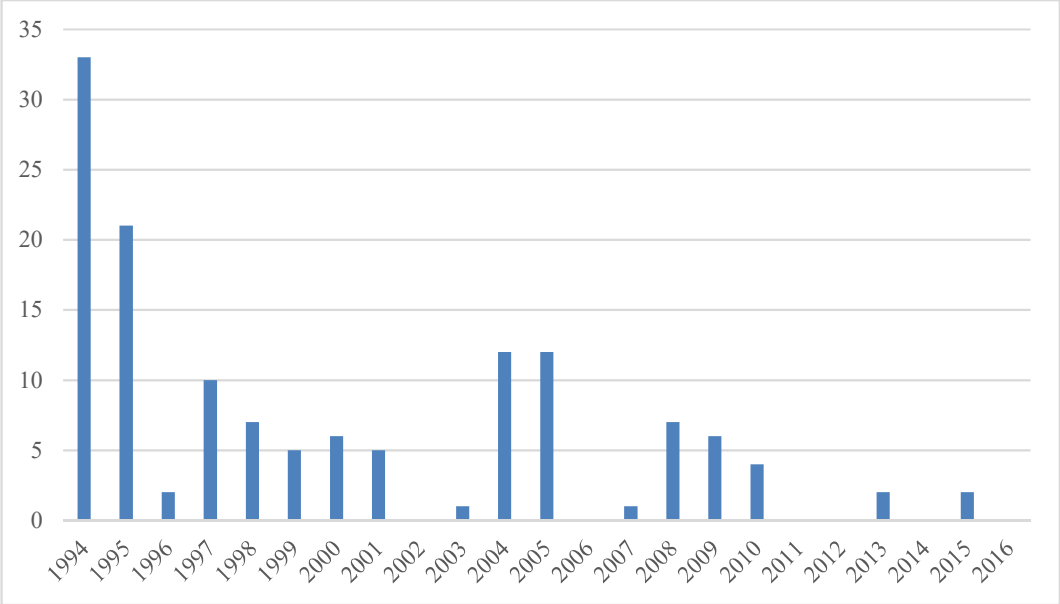

Figure C12

Number of measures identified as new per business plan

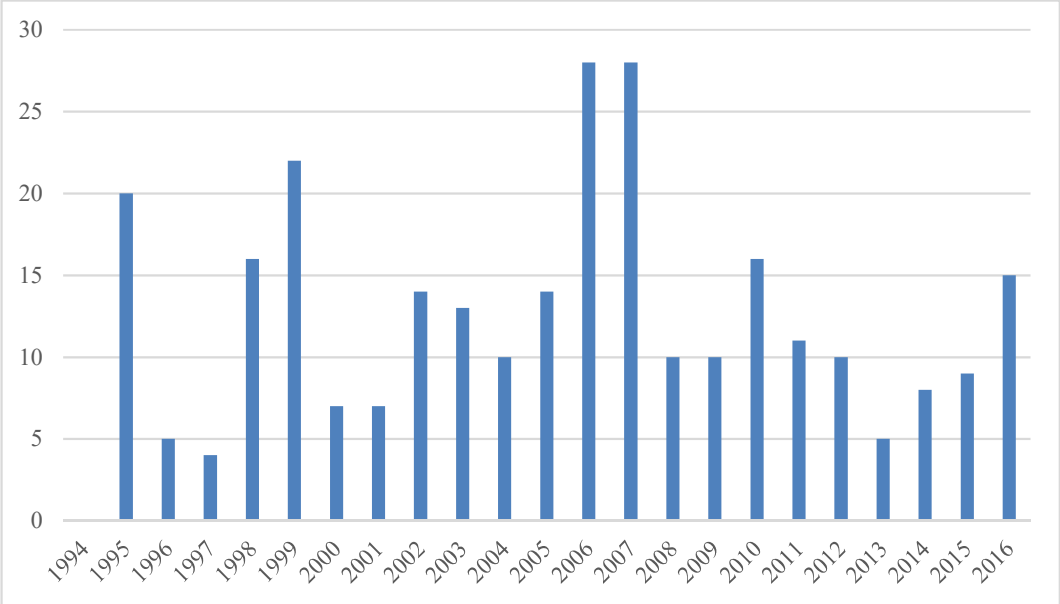

Figure C13

Number of measures identified as consecutively used per business plan

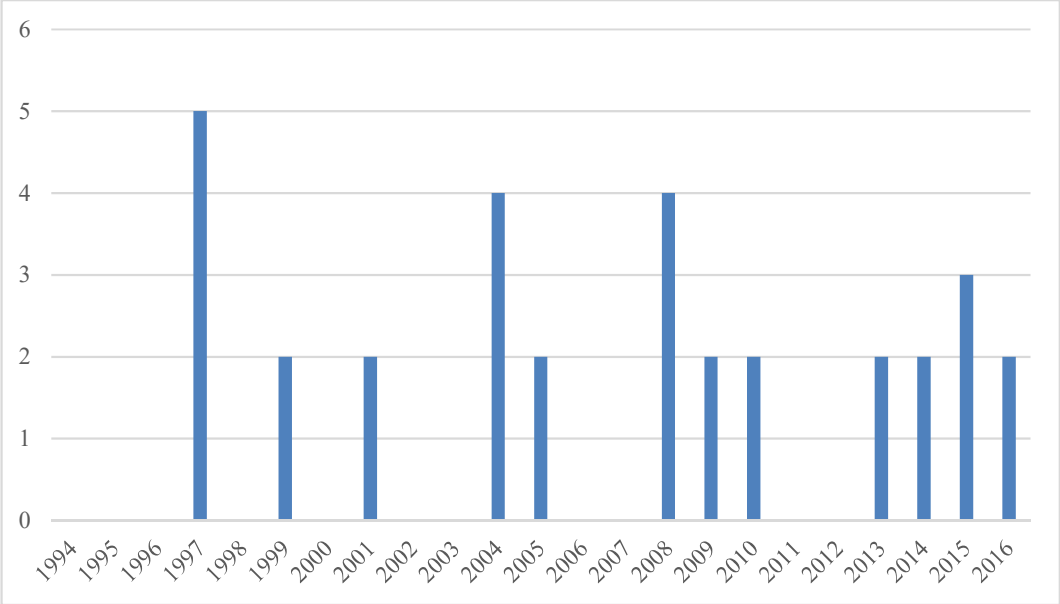

Figure C14
Number of measures identified as re-used per business plan

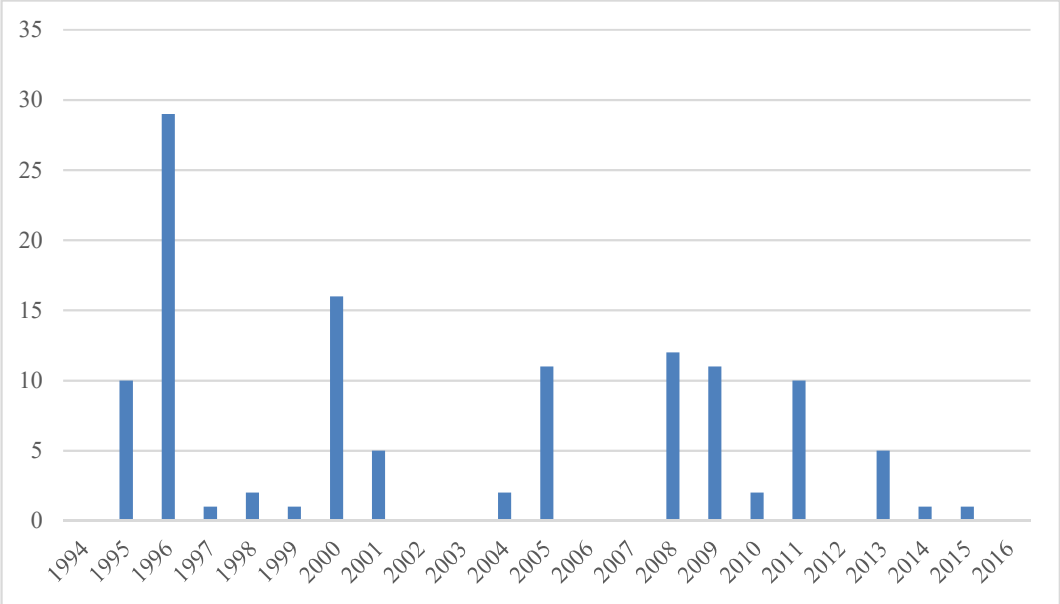

Figure C15
Number of measures identified as eliminated per business plan

Stakeholder input

Table C21
Data for question: "Is measure identified as inclusive of stakeholder input?"

Response	Number of	Percent of total
yes	5	1%
no	463	99%
(total)	468	100%

Table C22
Data for question: "Is business plan identified as inclusive of stakeholder input regarding measure development?"

Response	Number of	Percent of total
yes	0	0%
no	23	100%
(total)	23	100%

Data availability and quality

Table C23
Data for question: "Is measure source identified?"

Response	Number of	Percent of total
yes	167	36%
no	299	64%
(total)	466	100%

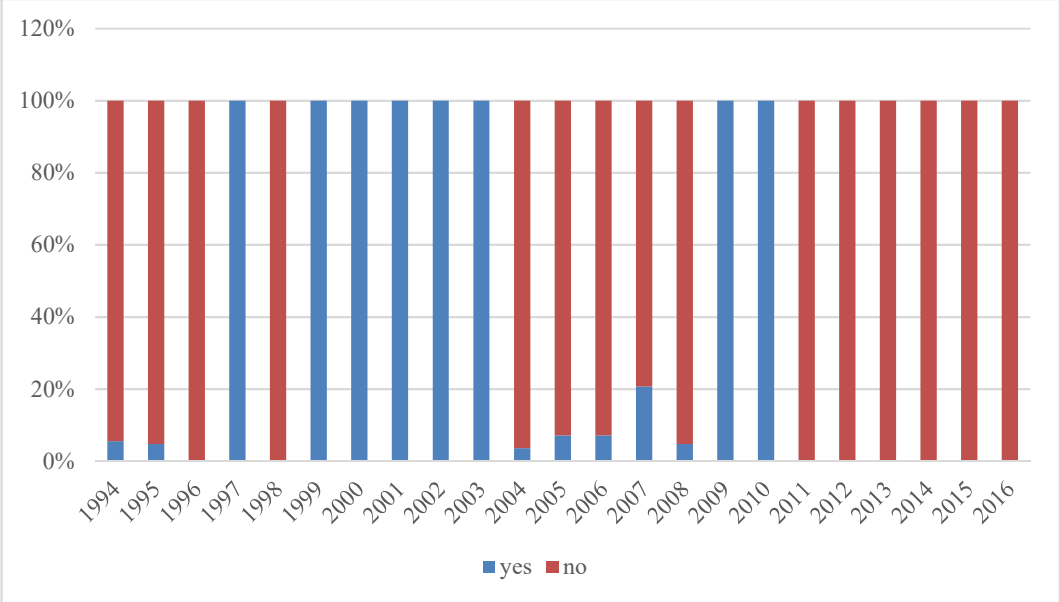

Figure C16

Measure associated with a data source (as percentage of total) per business plan

Table C24
Data for question: "Is measure source internal or external?"

Response	Number of	Percent of total
internal	129	28%
external	28	6%
undetermined	10	2%
no data	299	64%
(total)	466	100%

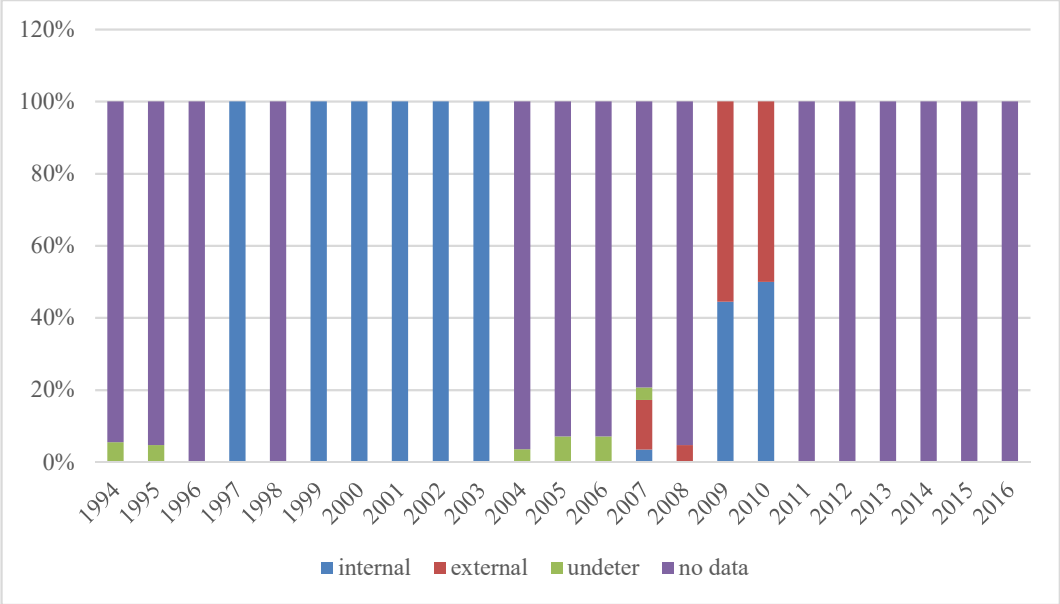

Figure C17
Measure data source type (as percentage of total) per business plan

Table C25
Data for question: "Is measure source a survey?"

Response	Number of	Percent of total
yes	37	8%
no	429	92%
not identified	0	0%
(total)	466	100%

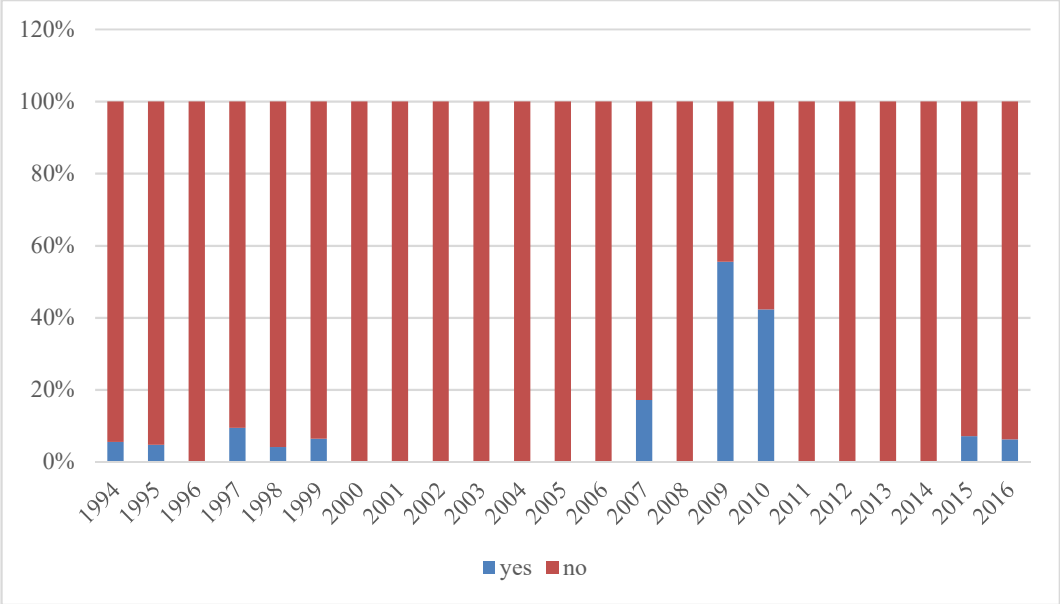

Figure C18

Measure data source associated with a survey (as percentage of total) per business plan

Table C26

Data for question: "For each measure or business plan, are control systems identified?"

Response	Number of	Percent of total
yes	0	0%
no	489	100%
(total)	489	100%

Table C27

Data for question: "Are audit systems identified?"

Response	Number of	Percent of total
Performance measures		
yes	0	0%
no	468	100%
	468	100%
Business plans		
yes	0	0%
no	23	100%
(total)	23	100%

Table C28

Data for question: "For each business plan and measure, is stakeholder input identified?"

Response	Number of	Percent of total
Performance measures		
yes	0	0%
no	468	100%
(total)	468	100%
Business plans		
yes	0	0%
no	23	100%
(total)	23	100%

Table C29

Data for question: "If results are provided, are data limitations identified?"

Response	Number of	Percent of total
yes	9	2%
no	297	63%
no results	162	35%
(total)	468	100%

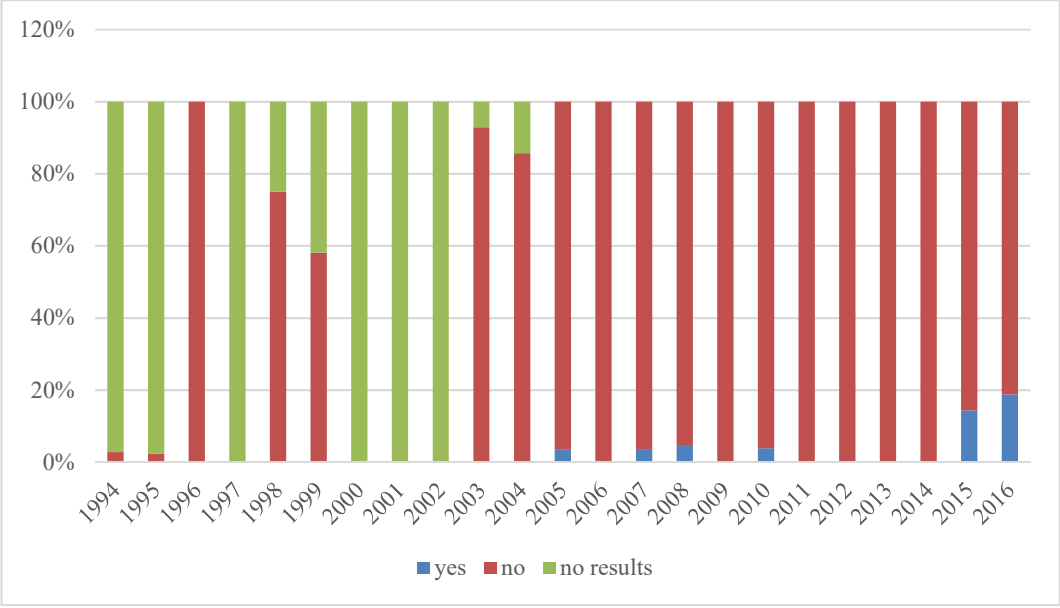

Figure C19

Identification of data limitations (as percentage of total) per business plan

Table C30

Data for question: "For each business plan and measure, are data availability or quality improvement activities reported? (i.e. is a statement provided?)"

Response	Number of	Percent of total
Performance measures		
yes	20	4%
no	448	96%
(total)	468	100%
Business plans		
yes	8	35%
no	15	65%
(total)	23	100%

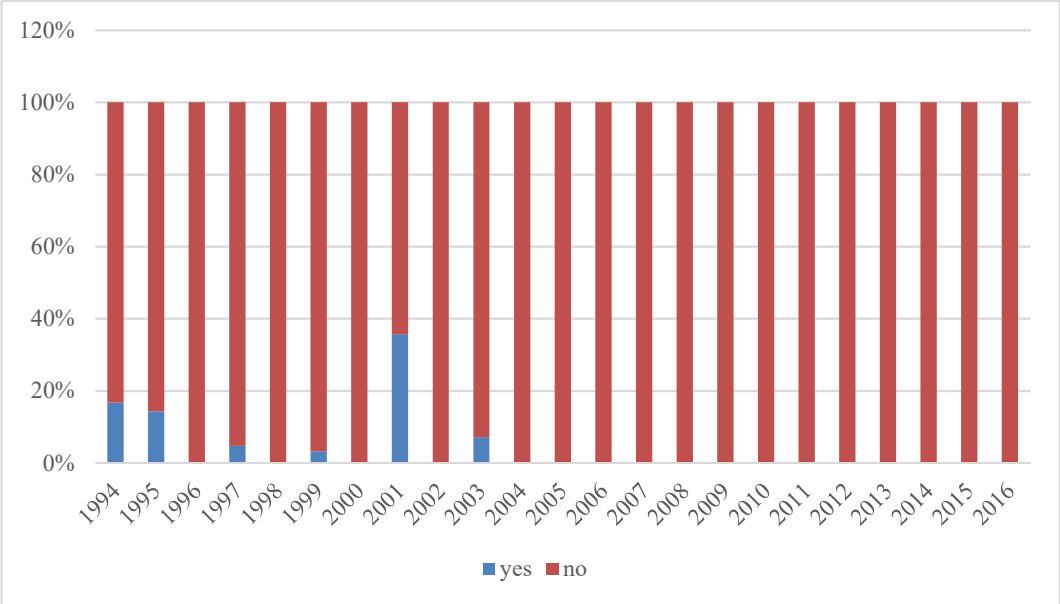

Figure C20

Identification of data availability or quality improvement activities (as percentage of total) per business plan

Appendix D: Longevity of Alberta Health's Business Plan Performance Measures

The content below provides a summary of performance measure use in Alberta Health's business plan. The summaries are intended to provide an understanding of longevity since business plans were published in 1994. Use of individual performance measures may be interrupted by periods of non-use; interruptions are not factored in the data below. (See Figure D1 and Table D1 below.)

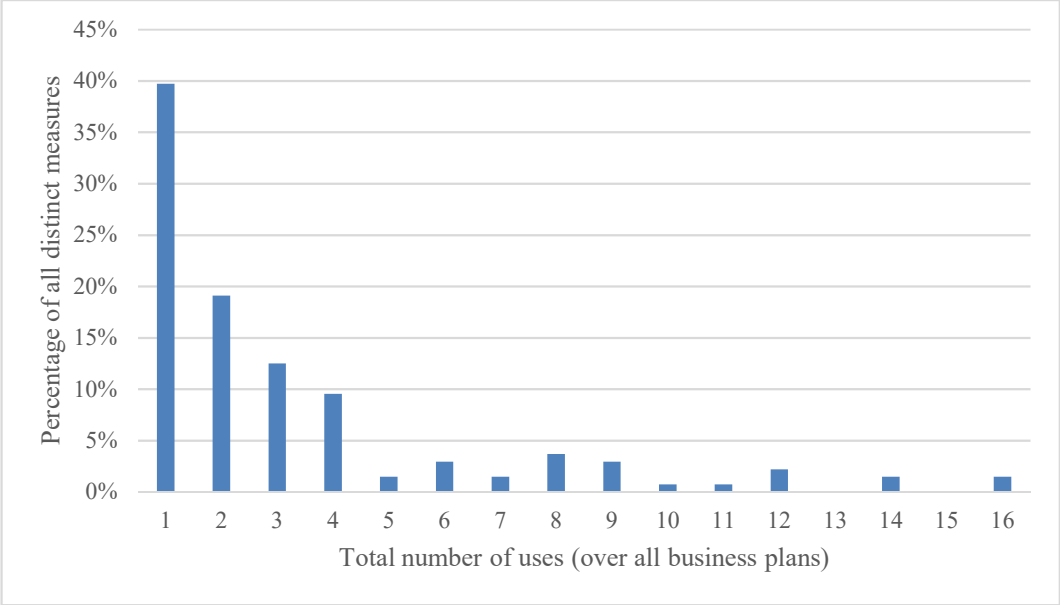

Figure D1

Frequency of performance measure use (as percentage of total)

Table D1

Longevity of Alberta Health's business plan performance measures (distinct), sorted by total number of use in all business plans (Question 9.4)

	Measure name	Total number of uses
1	Report own health / self, Alberta	16
2	Immunization, child	16
3	Influenza flu vaccine	14
4	Mortality / death by injury or suicide (major cause), rate	14
5	Mammography / breast screening rate	12
6	Life expectancy	12
7	Satisfied by care received, Alberta	12
8	Smoke - Do / do not	11
9	Quality of care received (include hospital), Alberta rate	10
10	Ease of access to health services, Alberta rate	9
11	Wait list - MRI / joint replacement / heart / hip / cataract / elective / long term care	9

12	STI	9
13	Health system overall, Alberta rate	9
14	Patient safety	8
15	Primary care access, Alberta enroll	8
16	Care provider access to Electronic Health Record / Netcare	8
17	Hospitalization for ambulatory care sensitive condition	8
18	Birthweight low	8
19	Ease of access to information, Alberta rate	7
20	Healthy weight / BMI	7
21	Failure to receive care, Alberta report	6
22	Knowledge of health system, Alberta rate	6
23	Use Health Link Alberta	6
24	Health Status Index	6
25	Heart attack survival rate	5
26	Wait - long term care facility	5
27	Access to continuing care	4
28	Active / exercise	4
29	Alcohol - use during pregnancy	4
30	Diabetes	4
31	Inquiries handle satisfy, Alberta	4
32	Satisfaction of cross ministry initiatives, stakeholder	4
33	Satisfied with service provide, Alberta	4
34	Wait - acute care hospital bed for continuing care placement	4
35	Wait - target time achieved for Regional Health Authority	4
36	Albertans with family doctor	4
37	Infant mortality rate	4
38	Length of stay - emergency department	4
39	Proximity to primary care providers / home region	4
40	$ - expenditure on community and home service	3
41	Alcohol - heavy use	3
42	Cancer survival rate	3
43	Cardiac - volume and rate	3
44	Cervical cancer death rate	3
45	Drug - Generic drug spend in Alberta, community	3
46	Drug - Household spend drug	3
47	Health workforce practitioner	3
48	Healthy eating / diet	3
49	HIV	3
50	Physician Alternate Relationship Plan	3
51	Physician utilization of electronic medical record	3
52	Post graduate medical education seat	3
53	Understand how work contributes, staff	3
54	Utilization rate of select surgery and procedure	3

55	Complaints received, number / percent	3
56	Re-admission - unplanned (include mental health)	3
57	$ - expenditure recovered from 3rd-p liability charges	2
58	$ - expense / budget	2
59	$ - fee-for-service expenditure	2
60	$ - health expense as GDP	2
61	$ - health expense per capita	2
62	$ - receiving full/partial premium subsidies, Alberta	2
63	Acute beds	2
64	Acute care hospital separation per population	2
65	Cervical cancer screening rate	2
66	Communicable disease, rate	2
67	Ease of access to emergency service, Alberta rate	2
68	Effect of care on health, Alberta rate	2
69	Emergency visit due to drug use	2
70	Home care caseload	2
71	Incidence/prevalence for illness	2
72	Long-term beds	2
73	Patient days / 1000	2
74	Physician visits per capita	2
75	Report/exhibit various behaviors, Alberta	2
76	Short term / long term / palliative home care client, per population	2
77	Support healthy behaviors, friends/families/schools	2
78	Understand when/how to use health system, Alberta	2
79	Avoidable hospitalization, rates of	2
80	Length of stay - hospital post emergency department	2
81	Physician and health professional per population	2
82	Wait - child youth mental health	2
83	$ - accounts receivable collected	1
84	$ - compare quarterly results to budget	1
85	$ - Expenditure information technology management	1
86	$ - expense covered by premium revenue	1
87	$ - Expense to revenue growth	1
88	$ - health authority operating surplus compare revenue	1
89	$ - ministry expense compare government expense	1
90	$ - ministry operating expense	1
91	$ - per capita	1
92	$ - Premium revenue to expenditure, comparison	1
93	$ - public expense on drug	1
94	$ - Quarterly revenue with budget, comparison	1
95	Access to mental health, child	1
96	Age of admission to long-term	1
97	Alcohol - awareness of use during pregnancy	1

98	Alternative level of care	1
99	Aware of AADAC service	1
100	Bed days/restricted activity	1
101	Complaint handled satisfy, Alberta	1
102	Contact Alberta Health Care Insurance Plan	1
103	Develop maintain workforce capacity	1
104	Disability rate	1
105	Disabled living in extended care	1
106	Disabled receive community care	1
107	Disabled report functional limitations	1
108	Disabled report satisfy with services	1
109	Fund for service provide	1
110	Health service integration, provider rate	1
111	Home care funding per / # people served	1
112	Home care services provided	1
113	Hospital acquired infection, rate	1
114	Light care/Heavy care met by institution	1
115	Live independently at home, Alberta over 75	1
116	Long-term care resident classification	1
117	Ministry effective performance, ministry stakeholder rate	1
118	New mothers receive home care	1
119	Palliative care, number of	1
120	Patient days for new months / birth	1
121	People receive acute care service in home	1
122	Physical condition health facility	1
123	Physician doctor enroll physician office system program	1
124	Physician doctor link to Primary Care Network	1
125	Quality of health system information, stakeholder rate	1
126	Quality of health system, Alberta rate	1
127	Quality of service by registry and client	1
128	Receiving home care by type of service, clients	1
129	Report improve post after treatment	1
130	Same day surgery	1
131	Satisfy with health system, Alberta rate	1
132	Selected procedure, rate	1
133	Shift from fee-for-service to alt	1
134	Stakeholder evaluation	1
135	Support to acquire develop knowledge and skill, staff	1
136	Surgical wound infection, rate	1

Appendix E: Common Terms and Definitions

The table below provides a list of common terms and the definitions used by the research project (Table E1). The terms and definitions are derived from the literature review, and established a common understanding for use by research project. The compiled terms are intended to provide a single location for terms and definitions.

Table E1

Common terms and definitions used by the research project

Term	Definition
Performance measure	A metric used to quantify the efficiency and/or effectiveness of action
Performance measurement	The process of quantifying the efficiency and effectiveness of past actions
Performance measurement system	A set of metrics used to quantify both the efficiency and effectiveness of actions
Input	The resources needed to undertake the work and deliver the products and services of an organization
Activity	The work or tasks undertaken by an organization
Output	The products and services delivered by an organization
Outcome	A desired state or condition that is influenced by the activities and outputs of an organization
Input measure	An input measure is a metric to quantify the resources needed to deliver the products and services of an organization
Output measure	An output measure is a metric used to quantify the products and services provided by an organization
Outcome measure	An outcome measure is a metric used to quantify a desired state or condition that is influenced by an organization
Benchmark	A performance measure used to evaluate or check by comparison with another measure
Target	An anticipated or desired result of a performance measure