
1 Introduction

Key points

- The Productivity Commission recently completed a study comparing the relative performance of public and private hospitals.
- This included a multivariate analysis of technical efficiency using 2006-07 data.
- This supplementary report extends that analysis by:
 - using three additional years (2003-04 to 2005-06)
 - addressing the poor quality of some of the data
 - exploring alternative ways to model technical efficiency
 - expanding the scope of the analysis to include cost efficiency
 - accounting for the under-reporting of not-for-profit hospitals in our sample.

1.1 What is this study about?

The Commission was asked by the Australian Government to report the costs of public and private hospitals, and to report on hospital-acquired infections as well as other indicators that might inform comparisons of hospital performance. The Commission published its findings in its report (PC 2009) drawing on a number of partial indicators that describe hospital performance.

The Commission also undertook a multivariate analysis of hospital efficiency because partial indicators suffer from two broad limitations. First, since they are by definition partial, no one indicator provides an overall assessment of a hospital's performance. Instead, a large number of indicators that cover costs, quality and patient safety need to be read in conjunction to infer an overall assessment of hospital performance.

Second, there is a large range of factors outside the control of a hospital that can influence its performance. These include the characteristics of its patients (such as the patient's socioeconomic status, gender, age and comorbidities), and the roles and functions of the hospital (such as whether it provides teaching and emergency department services, its location and size).

To overcome the limitations of partial indicators, the Commission compiled a dataset comprising 459 public and private hospitals for the period 2003-04 to 2006-07. To the Commission's knowledge, this is the first time such a dataset has been assembled at the national level. However, due to a range of delays in constructing the dataset, the multivariate analysis reported in PC (2009) was confined to a single year (2006-07) and only examined the technical efficiency of public and private hospitals. As a result, the multivariate analysis results of the Research Report are preliminary.

This supplement re-examines the multivariate analysis terms of:

- hospital-standardised mortality ratios (HSMRs) — a measure of a hospital's performance in reducing in-hospital mortality after accounting for differences in patient and hospital characteristics
- technical efficiency — which is a measure of the extent to which a hospital is able to increase its output without producing less of another output or using more of some input.

The key differences with the supplement are that it:

- includes three additional years of data (2003-04 to 2005-06)
- explores alternative approaches to measuring technical efficiency
- seeks to examine the determinants of cost efficiency — the extent to which the hospital is delivering services to the community at the least possible cost, for a given level of output and/or hospital quality
- explicitly accounts for the under-representation of private hospitals (especially not-for-profits) in the dataset.

The results of this supplement replace the preliminary multivariate analysis results of the Research Report.

1.2 Structure of study

This supplementary report is structured as follows:

- Chapter 2 provides a brief review of the literature concerning the multivariate analysis of public and private hospitals. It also provides a brief description of the techniques used to estimate the HSMRs, and technical and cost efficiencies. Detailed descriptions of the literature reviews and analytical techniques are given in appendices B and C respectively.

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- Chapter 3 provides a description of the Commission’s dataset, including the sources of data and how it was constructed. It also provides a discussion of how representative the Commission’s dataset is of the population of Australian hospitals.
 - Chapter 4 reports the results of techniques to measure HSMRs which are also subsequently used in the multivariate estimation of technical and cost efficiencies. More detailed results of the HSMRs are presented in appendix D.
 - Chapters 5 and 6 report estimates of the technical and cost efficiencies for public and private hospitals. More detailed results of the technical and cost efficiency analyses are presented in appendix D.

1.3 Conduct of the study

Consistent with its practices, the Commission consulted and sought feedback from relevant experts and interested parties. In addition to the consultation processes in PC (2009), the Commission:

- held a teleconference with interested parties from a number of organisations on 12 March 2010 (listed in appendix A)
- engaged two external referees to review the Commission’s methods and findings, and to provide independent written comments on the Commission’s analysis (appendix E).