

Poster abstract

Knowledge discovery from data and Monte-Carlo DEA to evaluate technical efficiency of mental health care in small health areas

Carlos García-Alonso, PhD, Professor, ETEA Business Administration Faculty, Cordoba, Spain

Leonor Pérez-Naranjo, Economist, Lecturer, School of Management, University of Pablo de Olavide, Seville, Spain

Correspondence to: Leonor Pérez-Naranjo, E-mail: leonorpn@hotmail.com

Abstract

Introduction: Knowledge management, based on information transfer between experts and analysts, is crucial for the validity and usability of data envelopment analysis (DEA).

Aim: To design and develop a methodology: i) to assess technical efficiency of small health areas (SHA) in an uncertainty environment, and ii) to transfer information between experts and operational models, in both directions, for improving expert's knowledge.

Method: A procedure derived from knowledge discovery from data (KDD) is used to select, interpret and weigh DEA inputs and outputs. Based on KDD results, an expert-driven Monte-Carlo DEA model has been designed to assess the technical efficiency of SHA in Andalusia.

Results: In terms of probability, SHA 29 is the most efficient being, on the contrary, SHA 22 very inefficient. 73% of analysed SHA have a probability of being efficient (Pe) >0.9 and 18% <0.5.

Conclusions: Expert knowledge is necessary to design and validate any operational model. KDD techniques make the transfer of information from experts to any operational model easy and results obtained from the latter improve expert's knowledge.

Keywords

Monte-Carlo DEA, expert-based efficiency, bridging knowledge
