

Conference abstract

## **Benchmarking and DEA: how to teach to and to learn from relative technical efficiency models**

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### **Abstract**

**Introduction:** Information transfer is critical in evaluating the efficiency of health and social care systems. Data envelopment analysis (DEA) is a useful tool to evaluate technical efficiency when a range of comparable decision making units (DMU) are involved in an uncertain system. DEA models, based on expert knowledge, must be carefully fitted to represent the framework under study.

**Theory and methods:** We designed a Monte-Carlo DEA model based on adjusted expert knowledge. The model has been applied to the assessment of technical efficiency of small mental health areas (SMHA), composed by a complex array of social and health services. The DMUs Input/Output algebraic behaviour was adjusted to an Expert-driven Model of Community Care (B-MHCC). A preliminary version of the model has been applied to the assessment of divergent SMHA in Spain and in Chile. The probability of being efficient of 71 SMHA were analysed in Andalusia (Spain) using large health databases.

**Results:** The model has shown its usability to identify both efficiency and inefficiency under uncertainty of highly complex DMUs. For all non-efficient SHA, I/O improvements needed to reach efficiency were also evaluated. Results show significant differences between SHA in Andalusia.

**Conclusions:** Expert-driven Monte-Carlo DEA is a powerful tool to evaluate relative technical efficiency. Algebraic models need to be carefully fitted by expert knowledge and information transfer strategies should be included in model development.

**Discussion:** Due to the system complexity, there are many SHA that can be considered efficient and many I/O profiles can be used for benchmarking.

### **Keywords**

**knowledge transfer, data envelopment analysis, efficiency, Monte-Carlo simulation**

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