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Efficiency in the provision of social care for older people. A three-stage Data Envelopment Analysis using self-reported quality of life

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ABSTRACT

Using a three-stage data envelopment analysis approach, this paper explores efficiency in the provision of social care for older people in 148 English Councils in 2009/10. Departing from D'Amico and Fernández (2012) [31] our measure of efficiency is inscribed within the production of welfare framework and based on self-reported quality of life of recipients of the services. Our results indicate a high level of efficiency, but once we control for the effects of a number of environmental variables, we found that more stringent eligibility criteria and higher assessment costs are negatively associated with the efficiency in the provision of social services.

1. Introduction

The production of welfare approach to social care services (Davies and Knapp, 1981; Knapp et al, 2004; Forder et al., 2007) [32,54,79] argues that the quality of life of individuals should be the outcome measure in the study of production or efficiency of social care provision. From this perspective, activity indicators —such as, for example, the number of weeks older people were supported in residential care or the number of meals per week provided-would be but intermediate outputs in the production function of social care.

The Draft Care and Support Bill presented to the UK Parliament in July 2012 echoes this approach in that it sets out as the general duty of a local authority, in relation to care and support of adults, the promotion of well-being, defined as any of the following: physical and mental health and emotional well-being; protection from abuse and neglect; control by the adult over day-to-day life (including over the care and support provided to the adult and the way in which it is provided); participation in work, education, training or recreation; social and economic well-being; domestic, family and personal relationships; and the adult's contribution to society [124; Clauses 1 and 2].

Using data from the Adult Social Care Outcomes Framework (ASCOF) [36,74], the National Health Service [75] produced a composite indicator (NI 127) of the self-reported experience of social care users in England which covers the following eight different domains related to quality of life: control, personal care, food, accommodation, personal safety, social life, occupation, and dignity.[1]

The NI 127 indicator "gives an overarching view of the quality of life of users based on outcome domains of social care related quality of life" [36; p. 8]. These domains have been identified in the adult social care outcomes toolkit (ASCOT) as described in Refs. [94,95]; and [13].

The NI 127 is measured for different age groups. We focus on responses by users aged 65 or over given that this age group make up the vast majority of clients of social care services in England (see Section 2 below).

This paper presents a benchmarking exercise using data envelopment analysis (DEA) of the efficiency of local councils in England with regards to the attainment of social-care related quality of life as reported by older users of their social care services in 2009/10. We understand it is the first analysis of efficiency in the production of social-care related quality of life outcomes for older people in England.

We concur with Netten (2011) [92] that there exist unintended outcomes in adult social care practice and that therefore outcomes for carers would ideally be measured as well as those for service beneficiaries. However, possibly it will not be until 2014 that a self-reported quality of life indicator for carers will be published for the first time using 2012/13 data [36; p. 16]. Consequently, we use the

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[1] The questions in the PSS Adult social Care Survey corresponding to each domain can be found in Ref. [75, p. 11].

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NI 127 indicator scores for older respondents by local council as our outcome measure.

The structure of the paper is as follows. Section 2 sets out the scene by describing the social care system in England. Section 3 provides a discussion of the method we used. Section 4 overviews the existing literature. Section 5 presents the data, while Section 6 describes the quantitative approach and presents the results. Section 7 acknowledges some methodological limitations of the study and Section 8 concludes.

2. The social care system in England

Social care services include "from help in the home for dressing, washing, getting in and out of bed and going to the toilet, to 24-hour support in a residential care home" [129].

In England, out of 353 local authorities, 152 have adult social care responsibilities.[2] They provide the services through a means-tested system whose threshold is set at £23,250. Below this sum, state financial support depends on the individual's care needs and income. Needs define whether the person requires domiciliary or residential care; if the latter, housing assets (provided there are no dependants living in the home) are also taken into consideration for means-testing.

There are 4608 care homes with nursing and 13,475 care homes without nursing and 5894 domiciliary (i.e. home) care agencies in England [27; p. 21]. Since 2005, there has been a gradual increase in the number of nursing homes and domiciliary care agencies and a reduction in the number of residential care homes —although there has been an increase in 2011/2 [28; p. 4]. In addition, 78 per cent of all registered long-term care providers are privately run and another 14 per cent are run by the voluntary (not-for-profit) sector [86].

In 2010-11 local authorities provided social care services to 1,064,000 people aged 65 or over (equivalent to 67 per cent of all adult users). Of these, 167,000 were in residential care; 79,000 in nursing care homes; and 873,000 received community-based services.

Self-funding represents around 45 per cent of care home places [75–77, p. 9]. Private long-term care providers represent around 72 per cent of all registered providers and voluntary organisations own another 19 per cent. In addition, 168,700 people aged 65 or over pay privately for home care services [27; p. 21]. Furthermore, around 93 per cent of residents in nursing homes and almost all residents in residential homes are aged 65 or over [86].

Total gross expenditure on personal social services (PSS) for people aged 65 or over amounted to £9.44 billion in 2010–11, equivalent to 55 per cent of all gross expenditure on all adult PSS. Total income from clients aged 65 or over amounted to just over £2.5 billion, of which £2.0 billion came from client contributions (i.e. sales, fees and charges). Residential provision for people aged 65 or over demanded £4.8 billion, whereas day and domiciliary provision required £3.5 billion and assessment and care management just over £1.0 billion [77].

Unit costs of residential and nursing care for people aged 65 or over have gone up by 1.2 per cent in real terms between 2008–09 and 2010–11, standing at £526 per person aged 65 or over per week (though those of nursing care alone increased by 3.5 per cent over the period, to £534 per person aged 65 or over per week). Home care unit costs grew by almost 15 per cent (to £175 per person aged 65 or over per week) and day care costs by 9.6 per cent, to £87 per client in this age group [77].

With regards to the social care workforce, there were 1.77 million jobs and 1.56 million people working in the adult social care sector in England in 2010. Around 38 per cent of the workforce is employed in residential care and another 39 per cent in the provision of domiciliary care services. Overall, 72 per cent of the workforce is involved in direct care services, with 9 per cent in managerial roles and 6 per cent in professional roles [114].

3. Method

Relative efficiency among productive units can be measured by means of non-parametric and parametric techniques [24]. The most popular techniques are, respectively, Data Envelopment Analysis (DEA) [17,25,46] and Stochastic Frontier Analysis (SFA) [2,82,88].

DEA allows for multiple dependent variables and does not require any assumptions concerning the functional form, but it assumes that any departure from the efficiency frontier is a measure of inefficiency. In turn, SFA breaks down the random error term into efficiency and statistical noise (i.e. not all deviations from the efficiency frontier would be due to inefficiency), which allows for statistical testing of the significance of the parametric estimates. However it requires an assumption about both the production/cost function and the distribution of the error term and it only accepts one dependent variable.

The presence of outlier may distort both DEA and SFA results [120]. Therefore, we checked for the existence of one or more outliers in the technological and environmental (i.e. variables outside the influence of the units, also known as non-discretionary) variables in our model by means of the influence-function approach developed by Wilson (1993) [127].[3] One outlier was found (Richmond-upon-Thames), which was deleted from the dataset. As a consequence, what follows is based on 149 local authorities.

Since Fried et al. (2002) [56]; a three-stage approach combining DEA and SFA has been used to control for both the effects of non-discretionary variables and statistical error. This is the approach we use in this paper[4]

The first step in the three-stage procedure consists in the estimation of the efficiency frontier by means of a simple DEA model with no environmental variables. DEA models can be input-oriented or output-oriented. The objective of input-oriented models is to minimise the amount of inputs to produce the given levels of output. In turn, the objective of output-oriented models is to maximise outputs while using no more than the observed amount of inputs [25; p. 58].

In the context of this study, an input-oriented model would investigate how to achieve the recorded levels of quality of life by using the least amount of experienced staff, staff per client, expenditure per capita, etc. Whilst this might be a valid exercise in itself, it is more appropriate given our output variable (i.e. a composite measure of quality of life) to apply an output-oriented model, thereby benchmarking local authorities in relation to their relative attainment of quality of life for older recipients of the social care services they provide. Consequently, the DEA models in the first and third stages have an output orientation – that is, the interest lies in the combination of resources deployed to maximise

[2] The Local Authority Social Services Act 1970, modified by the Local Government Act 1972, defined that adult social care responsibilities befall upon Unitary Authorities (currently, 55); Metropolitan Boroughs (36); London Boroughs (32); the City of London Corporation; the Council of the Isles of Scilly and some County Councils (27). These 152 local authorities cover the whole population of England.

[3] We used the ap and ap.plot commands in the FEAR package for R [128]. See also Ref. [9].

[4] See Ref. [103; Table 1] for a succinct comparison of the different approaches.