

PROMs and hospital choice¹

Nils Gutacker, Luigi Siciliani, Giuseppe Moscelli & Hugh Gravelle

Centre for Health Economics

UNIVERSITY *of* York

¹The project was funded by the Department of Health in England under the Policy Research Unit in the Economics of Health and Social Care Systems (Ref 103/0001). The views expressed are those of the authors and may not reflect those of the Department of Health.

Introduction

- All patients in the English NHS have the right to choose their provider of inpatient care
- Providers are expected to compete for patients on the basis of (PROM) quality
- One of the stated applications of PROM performance data:

*“PROMs data can be used to [e]valuate the relative clinical quality of Providers of elective procedures. PROMs data can be used by clinicians, managers, regulators and PCT Commissioners to benchmark Providers performance. It can be used for clinical audit and it can be used **by patients and GPs exercising choice**” (Department of Health, 2008, p.6)*

Policy question

Are patients more likely to choose a provider with higher PROM quality?

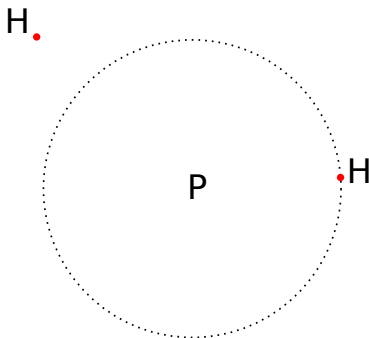
- Sensitivity of hospital demand to PROM quality has not been tested empirically
- Important policy question because
 - informative about the potential for *quality competition*
 - may help justify the *opportunity costs* of data collection

Methods

- Study period: April 2009 - March 2012
- Population: All NHS-funded elective hip replacement patients (N=182,951)
- Statistical approach: Multinomial logit model (MNL) of hospital choice ('Revealed preferences') (McFadden, 1974)
- Covariates:
 - Provider level: **Oxford Hip Score (OHS) change score**, 28-day emergency readmission and mortality rates [all case-mix adjusted], provider type, median waiting time
 - Patient level: Distance to provider, socio-demographics, Elixhauser co-morbidities, emergency admissions in past year, pre-operative OHS
- Data sources: HES, PROM, HSCIC

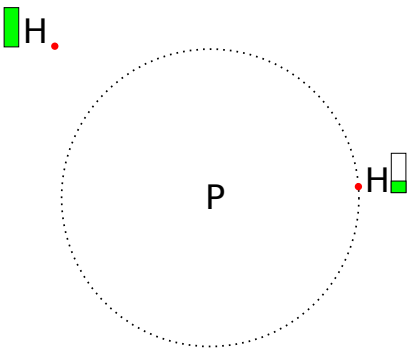
Choice modelling

- Patients are expected to choose the most desirable alternative
- Desirability ('utility') depends on hospital factors + patient preferences



Choice modelling

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Do patients choose?

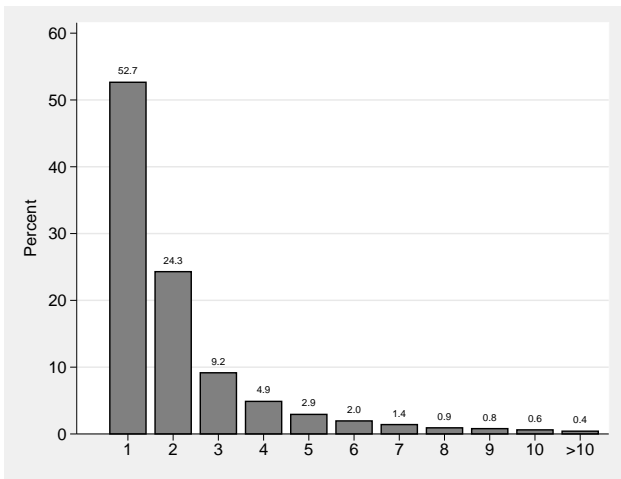


Figure: Percentage of elective hip replacement patients choosing the Nth closest provider

Is it worth choosing?

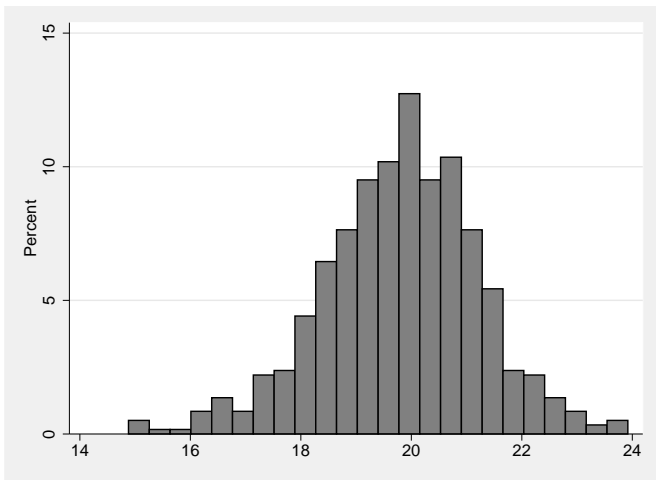


Figure: Change in Oxford Hip Score (mean=19.8, SD=1.4)

Estimation results I

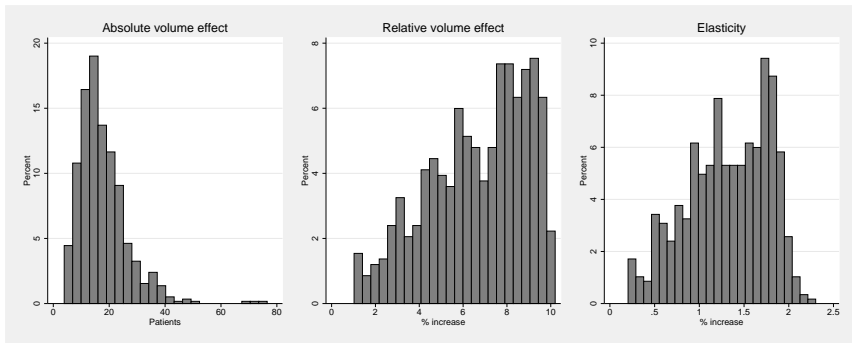


Figure: Effect of a unit / % increase in Oxford Hip Score

Estimation results II

Quality indicator	Observed		1 unit increase		1% increase
	Mean	SD	Activity	% Activity	% Activity
Oxford Hip Score	19.8	1.4	17.7	6.7	1.3
Readmission	5.7	2.5	-9.2	-3.5	-0.2
Mortality	0.2	0.4	-10.1	-3.8	-0.01

Table: Estimated effect of quality change on demand

Estimation results III

- Emergency hip replacement patients require urgent care and should not be sensitive to elective care quality (but perhaps reputation?)

Variable	Elective (A)		Emergency (B)		Difference (A-B)	
	Beta		Beta		Beta	
Distance (in km)	-0.185	***	-0.219	***	0.035	***
Distance ²	0.000	***	0.001	***	0.000	***
Waiting time	0.023		0.023		0.000	
Change in OHS	0.101	***	0.054	***	0.047	***
Readmission rate (in %)	-0.055	***	-0.041	***	-0.014	*
Mortality rate (in %)	-0.031		-0.051		0.020	

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$;

Provider type and interactions with patient characteristics omitted from this table.

Table: Comparison of elective and emergency patients

Discussion

- Statistically significant effect of PROM quality on demand
 - Causal effect likely to be smaller!
 - But may be underestimated because of non-choosers
- Low correlation between OHS and
 - readmission: $\rho = -0.28$ (95%CI: -0.35 to -0.20)
 - mortality rates $\rho = -0.05$ (95%CI: -0.13 to 0.03)
- Preference for quality does not vary by pre-operative OHS

Discussion

- Results informative about scope for quality competition in the English NHS
- Several ways to increase impact of PROM data:
 - ① Publicise provider PROM scores more widely (e.g. add to NHS Choices)
 - ② Ensure PROM scores are presented in a way that is meaningful to patients (Hildon et al., 2012)
 - ③ Ensure GPs know their local providers' PROM scores

Contact: nils.gutacker@york.ac.uk

References I



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Hildon, Z., D. Allwood, and N. Black (2012). “Making data more meaningful. Patients’ views of the format and content of quality indicators comparing health care providers”. In: *Patient Education and Counseling* 88, pp. 298–304.



McFadden, D (1974). “Conditional logit analysis of qualitative choice behaviour”. In: *Frontiers in economics*. Ed. by P Zarembka. Vol. 4. New York: Academic Press, pp. 105–142.