

# The impact of workforce composition and characteristics on English care home quality.

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Stephen Allan

# Introduction

- Social care markets are highly labour intensive.
- Currently social care labour market has high levels of turnover (Skills for Care, 2015) and a potential future workforce shortage (ILC, 2015).
- Quality of social care markets politically important:
  - Regulation across countries (e.g. Mor *et al.* (Eds.), 2014; Malley *et al.*, 2016)
  - Rising demand, cost efficiencies – need to maintain quality.
  - Care Act 2014: Local authorities (LAs) must promote an effective and continuously improving social care market; workforce must be able to deliver high quality service.
- What effect does the workforce have on quality of care in England?

# Aims

- To estimate the impact of various staffing characteristics on the quality of care homes in England.
  - Quality measured using CQC quality ratings.
  - Using a national database of staffing levels and characteristics.
- Hypothesise that better staffing characteristics (e.g. fewer vacancies/agency staff, better skill mix) will lead to better quality.
  - Fewer staff make it harder to deliver given level of quality.
  - High turnover can mean poor skill mix.

# Previous literature

- UK:
  - Hussein *et al.* (2016) examined changes to vacancy/turnover rates from 2008-10.
  - RCN (2012) – staffing levels impacted on level of quality, poor skill mix, lack of training.
- US:
  - Turnover rates (e.g. Castle and Engberg, 2005).
  - Agency staff (e.g. Bourbonniere *et al.*, 2006; Castle and Engberg, 2008).
  - Skill mix and staff intensity (e.g. Konetzka *et al.*, 2008).
  - Training (e.g. Zimmerman *et al.*, 2005)

# Data

- Data comes from the National Minimum Dataset for Social Care (NMDS-SC), managed by Skills for Care on behalf of the Department of Health.
  - Nationwide database of staffing levels and other staff characteristics.
  - Provider maintained, voluntary system of registration and completion.
- Skills for care match CQC quality ratings at April 2016 to the NMDS-SC at April 2016.
- Match in local-area characteristics for need, demand and supply using geographical identifiers (Local Authority, Postcode District).

# Data 2

- NMDS-SC in April 2016 has data on over 22,000 social care establishments.
  - Use only the independent sector – private and voluntary sectors (n=16,166).
  - Concentrate on care homes for older people/those suffering with dementia only (n=5,083).
  - Only keep providers who have updated information in last calendar year (n=3,496).
  - Match to providers in April 2015 database (n=2,989).
  - Only use matched providers that also entered information in the year leading up to April 2015 (n=2,516).
- Quality ratings available for 1,675 of the 2,516 care homes as of April 2016.

# Staff characteristics

- Total staff (+)
- Vacancy rates (-)
  - Total vacancies to total workforce.
- Retention rates (+)
  - Retention rate: leavers in last year to total workforce last year
- Pool, agency, temporary (PAT) workers (-)
  - Ratio of PAT workers to total direct care staff
- Registered nurses (+)
  - Ratio of nurse to total non-management staff (nursing homes only).

# Quality

- Ideally, would look at resident outcomes.
- We use Care Quality Commission (CQC) quality rating system.
  - Formed from key lines of enquiry based on 5 questions:
    - Are they safe? Are they effective? Are they caring? Are they responsive to people's needs? Are they well-led?
  - Care homes can be rated as: inadequate; requires improvement (RI); good; outstanding.
  - Not linked to resident outcomes, but previous star rating scheme had significant positive relationship to SCQRoL (Netten et al., 2010).



# Empirical model

- Estimate a model of the following:

$$\Pr(Q_i = 1) = \alpha + \beta S_i + \delta X_i + \varepsilon_i$$

Care home  $i = 1, \dots, n$ ,

$Q$  = Quality rating (inadequate/RI = 0 and good/outstanding = 1).

$S$  = Staff characteristic.

$X$  = vector of control variables (characteristics of care home, need, demand and supply).

$\varepsilon$  = error term.

# Methodology

- There is possible endogeneity between staff characteristics (also competition) and quality.
- Use instrumental variables (IV) to predict staff characteristics and use this in the estimation of quality ratings.
- Estimate both a two-step GMM linear probability model and IV probit models.
- Instruments
  - For staff characteristics: use of time lags – helps mitigate any simultaneity bias.
  - For competition: use of spatial lags of need and demand characteristics (higher level geographies) – same approach as Forder and Allan (2014).

# Descriptive statistics

Variable	n	Mean	S.D.	Minimum	Maximum
<b>Home characteristics</b>					
Quality rating	1675	0.675	0.469	0	1
Voluntary sector	2516	0.147	0.354	0	1
Nursing home	2516	0.338	0.473	0	1
Total beds	2516	40.25	22.76	1	236
<b>Staff characteristics</b>					
Total staff	2516	46.92	29.34	1	339
Vacancy rate	1495	2.772	5.895	0	34.55
Retention rate	1555	74.91	20.85	13.04	100
Pool/Agency/Temp ratio	2509	4.807	8.123	0	36.78
Registered nurse ratio	851	12.53	6.886	0	34.48

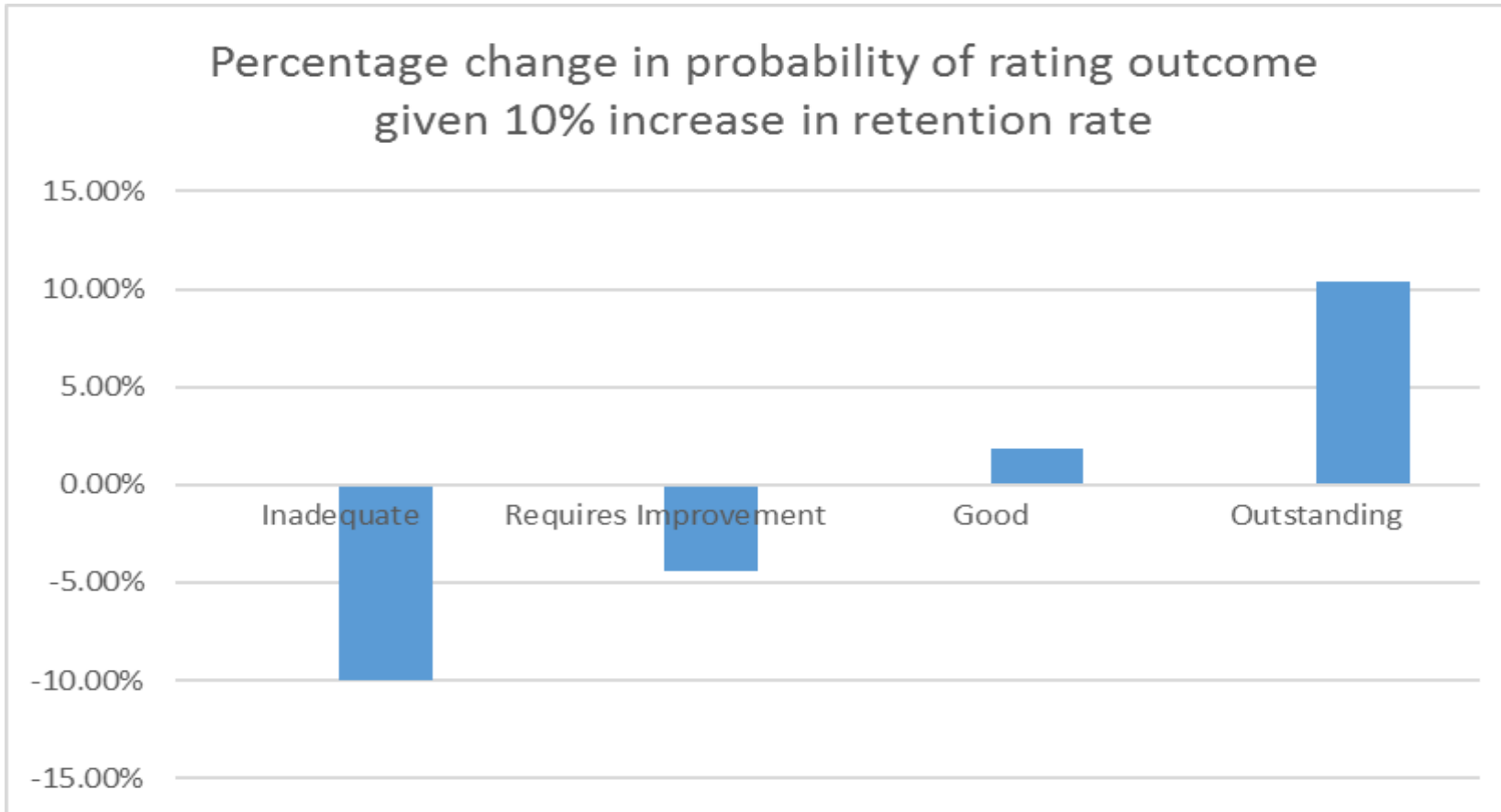
# Results

- Control variables:
  - Competition significantly decreases quality.
  - Nursing homes have significantly lower quality.
  - Voluntary sector has significantly higher quality.
  - Size relationship to quality quadratic – U-shaped.
  - All in line with Forder and Allan (2014).
- 1<sup>st</sup> stage results
  - No endogeneity with various staff characteristics.
  - No endogeneity with competition.
  - No sign of weak instruments or over-identification.
  - So proceed with probit models.
    - Results do not change markedly between IV and non-IV models.

# Results 2

Probit model of Quality					
Variable	n	Coefficient	S.E.	t-stat	Marginal Effect
Total staff	1670	0.004	0.003	1.34	0.14%**
Total staff squared	1670	-0.000003	0.00001	-0.26	
Vacancy rate	957	-0.020	0.007	-2.73***	-0.66%
Retention rate	944	0.008	0.002	3.78***	0.26%
Pool/Agency/Temp ratio	1579	-0.0002	0.003	-0.08	-0.20%
Nursing ratio	525	0.026	0.012	2.23**	0.93%

# Results 3



# Discussion

- Staff intensity and skill mix important for care home quality.
- No effect of employing short-term staff.
  - Difficult to unpick?
- Results support Care Act 2014
  - Improved staffing indicators does promote higher quality in care provision.
- Weaknesses
  - Cross section so no evidence of causality.
  - Link only between care home rating and staff characteristics?
- Future work
  - Extend analysis to examine wage rates, zero hours contracts.
  - Longitudinal analysis.

# Disclaimer

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