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Market dynamics in home care

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Introduction

- Research into home care markets is important:
  - A growing elderly population
  - Policy of prevention and community-based care
- Little known about the supply side of home care markets in England
  - Location important; market size fairly small (e.g. Matosevic et al., 2001; Bottery et al., 2018; Allan and Darton, 2021)
- Aim of this work: To explore the dynamics of the home care market in England using quantitative analysis
  - Why does supply vary by location? – Market supply analysis
  - How is supply changing over time? – Analysis of home care agency closures
- Wider project to increase understanding of home care workforce, quality and competition, as part of NIHR Policy Research Unit in Adult Social Care

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Theoretical considerations

- Use a simplified Cournot model with $N \geq 2$ firms (Sutton, 2007)
- It can be shown that profits of firm j depend on total consumer expenditure (demand) and number of firms (price, costs (w))

$$\pi_j = M/N^2$$

- Thus number of firms is endogenous to the model
- Closure model follows Allan and Forder (2015) for care homes:

$$Prob(S_j = 1) = \pi_j(1 - r_j)$$

- Where $S = 1$ is survival, 0 closure and r is probability of direct regulatory action for poor quality (q)
- Hypotheses for analyses: 1) $\frac{\partial N}{\partial M} > 0$; 2) $\frac{\partial N}{\partial w} < 0$; 3) $\frac{\partial S}{\partial N} < 0$; 4) $\frac{\partial S}{\partial q} > 0$

Home care market: Measuring supply

- Home care agencies registered with Care Quality Commission (CQC)
- Measuring supply
  - Count of the number of providers in the market, 2014-2018
  - Matched CQC ID, name/address, Organisation ID to identify agencies over time and closures/openings
- Market Size unknown
  - Middle-layer super output area (MSOA, n=6,791) – market supply analysis
  - At individual provider level use travel time radius – analysis of closure

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Quantitative analyses of supply and closures

- Analysis of drivers of supply and closure
  - Supply at small market level (MSOA)
  - Closure at individual provider level
- Include measures of demand and supply:
  - Demand: Population size, measures of need and income (small market level)
  - Supply: Alternative supply, cost factors, provider level characteristics (including quality rating for closure analysis)
- Market supply analysis – Random effects OLS, Poisson, Negative Binomial
- Closure analysis – Random effects probit
- Instruments for endogenous variables (competition, quality) – used spatial lags, i.e. measures of each at higher level geographies

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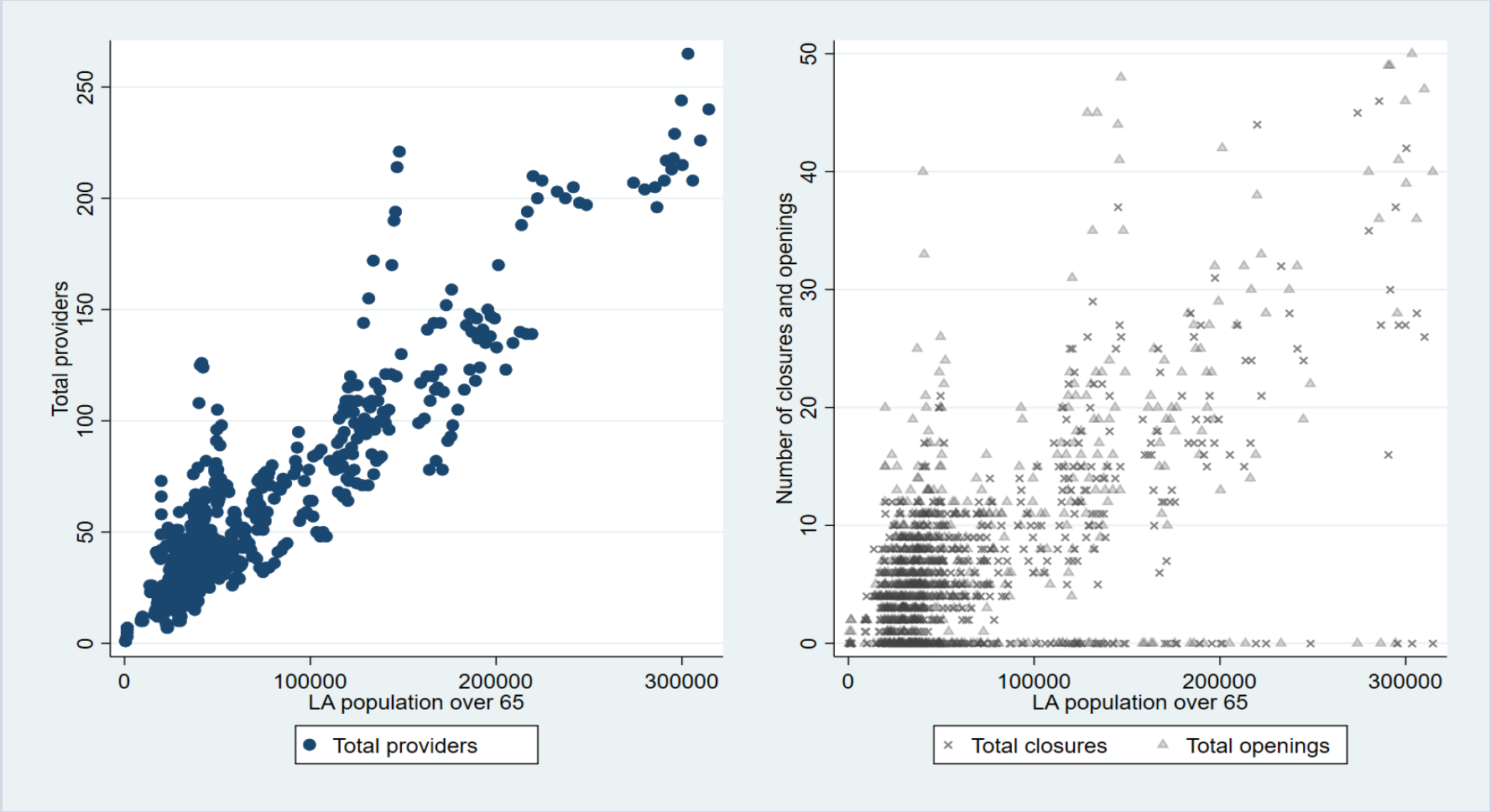
Relationship between home care supply and older population, 2014-18



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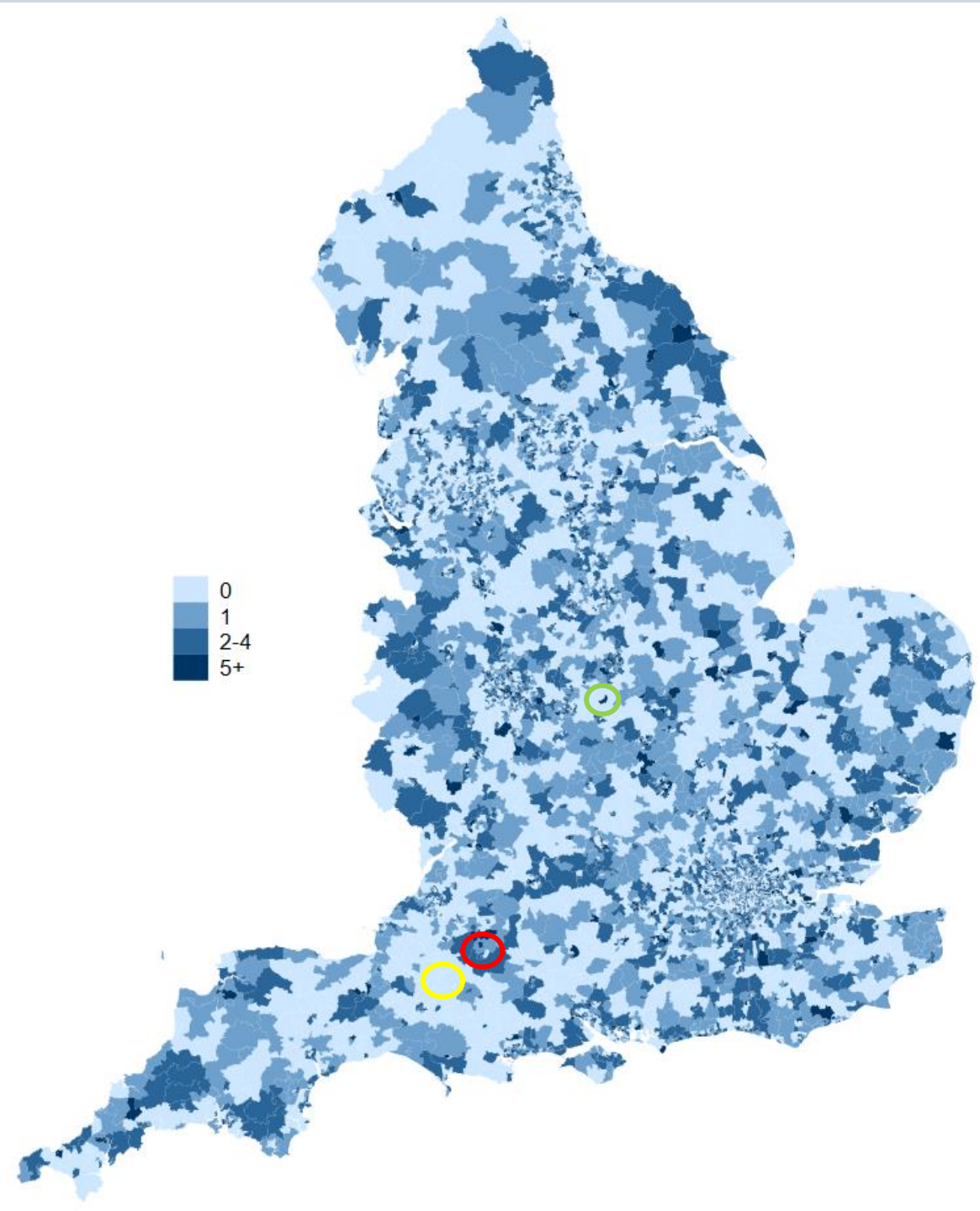
Smaller level markets

- Map shows number of home care providers by their registered location for 2018
- Plenty of small markets have no registered providers within boundary
  - May be located in nearby markets
  - Location of employees may differ
- Only 6% of small markets have 5+ providers



Closure analysis: descriptive statistics

Variable	n	Mean	Std.Dev.	Min.	Max.
Home care provider closed	24,710	0.14	0.35	0	1
Number of Providers, 10mins (weighted)	24,710	17.22	13.83	0	89.84
Quality	11,151	0.80	0.401	0	1
Total population (LSOA)	24,710	1830.1	493.9	840	11514
Population 85+ rate (LSOA)	24,710	2.64	1.988	0	18.82
Attendance allowance 65+ rate (LSOA)	24,710	14.18	5.211	0	46.36
Pension credit 60+ rate (LSOA)	24,710	23.81	16.15	0	123.31
Hip fractures 65+ (LA)	24,710	247.8	178.7	38	967
LA non-residential care ASC expenditure (£000s)	24,710	25111.5	17628.5	590.7	75135.6
Care home beds, 10mins (weighted)	24,710	618.0	351.7	0	2225.0
Female JSA rate (LSOA)	24,710	1.12	1.121	0	9.615
Average house price, £ (MSOA)	24,710	213365	141621	27513.9	2872631

Findings: Home care market analysis

- Demand factors significantly influence home care supply
  - e.g. Population, older population rate, needs (hip fractures)
- Rural markets significantly fewer agencies (higher costs)
  - Some demand factors (e.g. population) still influence supply at wider radius outside MSOA
- Competition
  - Significant negative marginal effects up to 20-30mins radius from MSOA.
    - e.g. 1% rise in competition within 10mins radius would decrease MSOA supply by 6.9%
  - Significant positive marginal effects of competition for 30mins+
- Use of time lags and dynamic panel model – findings for competition at 10mins radius remain significantly negative

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Findings: Closure analysis

	(1)	(2)	(3)
VARIABLES	IV Probit	PA Probit	RE Probit
Providers, 10mins (log)	0.198**		
	(0.0887)		
Providers, 10mins (predicted)		0.203**	0.214**
		(0.0904)	(0.0970)
Quality (predicted)	-0.355***	-0.363***	-0.378***
	(0.0699)	(0.0695)	(0.0738)
Total population (log)	-0.0463	-0.0461	-0.0478
	(0.0477)	(0.0477)	(0.0509)
Population 85+ rate	0.00753	0.00821	0.00909
	(0.00842)	(0.00861)	(0.00922)
Attendance allowance 65+ rate	-0.00713***	-0.00733***	-0.00776***
	(0.00264)	(0.00264)	(0.00283)
Pension credit 60+ rate	0.000628	0.000659	0.000762
	(0.00132)	(0.00131)	(0.00141)
Hip fractures (log)	-0.0420**	-0.0412*	-0.0429*
	(0.0212)	(0.0212)	(0.0225)
LA non-residential care expenditure (log)	0.0169	0.0161	0.0183
	(0.0185)	(0.0183)	(0.0196)
Care home beds, 10mins (log)	-0.177**	-0.181**	-0.192**
	(0.0792)	(0.0804)	(0.0863)

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Findings: Overall

- Demand and supply factors important in determining home care supply
- Some indication that the average market for home care is small (up to 30 mins travel time)
- Nearby home care competition decreases supply in local markets and increases likelihood of closure
- Higher quality decreases likelihood of closure
- No indication that LA unit cost of hour of care (price) or median female wage (both at LA-level) significantly influenced closure

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Policy implications

- Home care markets growing in terms of number of providers
  - Masks high turnover of firms
- Home care supply depends on demand
  - Access to care and availability of choice
- Home care closure determined by competition, demand and quality:
  - CQC quality rating system effective
  - Important policy consideration for commissioning decisions and market shaping (Needham et al., 2020)

- Limitations and next steps
  - Refine and extend the analysis – include measures of price and staff, alternative measures of supply?

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Disclaimer

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