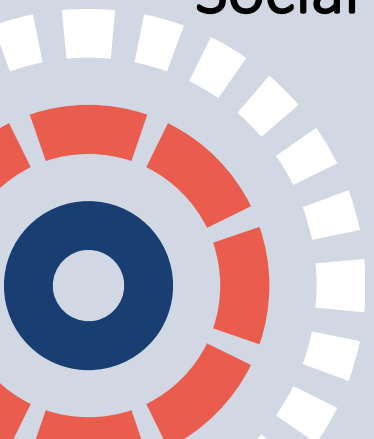


Wage differential and wage elasticities labour supply to the firm in England's LTC sector



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Motivation

- LTC quasi-market
 - supply of LTC – marketisation of LTC; 18k providers (39k establishments); ~85% of workforce employed by independent providers
 - demand – 65% commissioned by local councils; underfunding & market power -> downward pressure on care fees -> limited wage competition and low wages
- Effects of competition in care home markets
 - small negative effect on prices (Forder and Allan, 2014)
 - negative effect on quality: ↓ prices -> ↓ revenue -> ↓ quality (Forder and Allan, 2014)
 - negative effect on fees paid by self-funders (Allan et al., 2021)



Motivation

- Labour market competition in care home market (Machin and Manning, 2004)
 - survey of care homes in South England in 1992/1993
 - employers as having considerable discretion in setting wages
 - 33% of CH (employing 25% of care workers) – one wage for all care workers; further 33% of CH (employing 35% of care workers) – two different hourly wages
 - 65% of variation in wages was between CHs and only 35% within CHs
 - wage differences within care homes not associated with higher productivity
- Aim: (re)assess wage differentials and labour market competition
 - substantial marketisation process of LTC in England since 1990s
 - pressures on LTC labour markets from monopsonistic LTC services markets and NMW policy



Model and econometric framework

- Dynamic monopsony model of labour market (Manning, 2003)
 - Some level of employer market power generated by frictions in the market, e.g. alternative preferences, mobility costs
 - Steady state – total job separations equal the inflow of recruits → elasticity of labour supply facing the firm: $\varepsilon_{NW} = \varepsilon_{RW} - \varepsilon_{SW} = -2\varepsilon_{SW}$
- Estimating wage elasticity of job separation
 - Discrete time proportional hazards model (Jenkins, 2005)
 - Omitted variable – wage elasticities of job separations biased towards zero
 - Covariates: large set of individual, job, employer, and local market characteristics
 - shared frailty models (RE); correlated random effects (CRE) probit (i.e. Mundlak type FE)



Data

Adult Social Care Workforce Data Set (ASC-WDS) at Oct 2016 to 2019

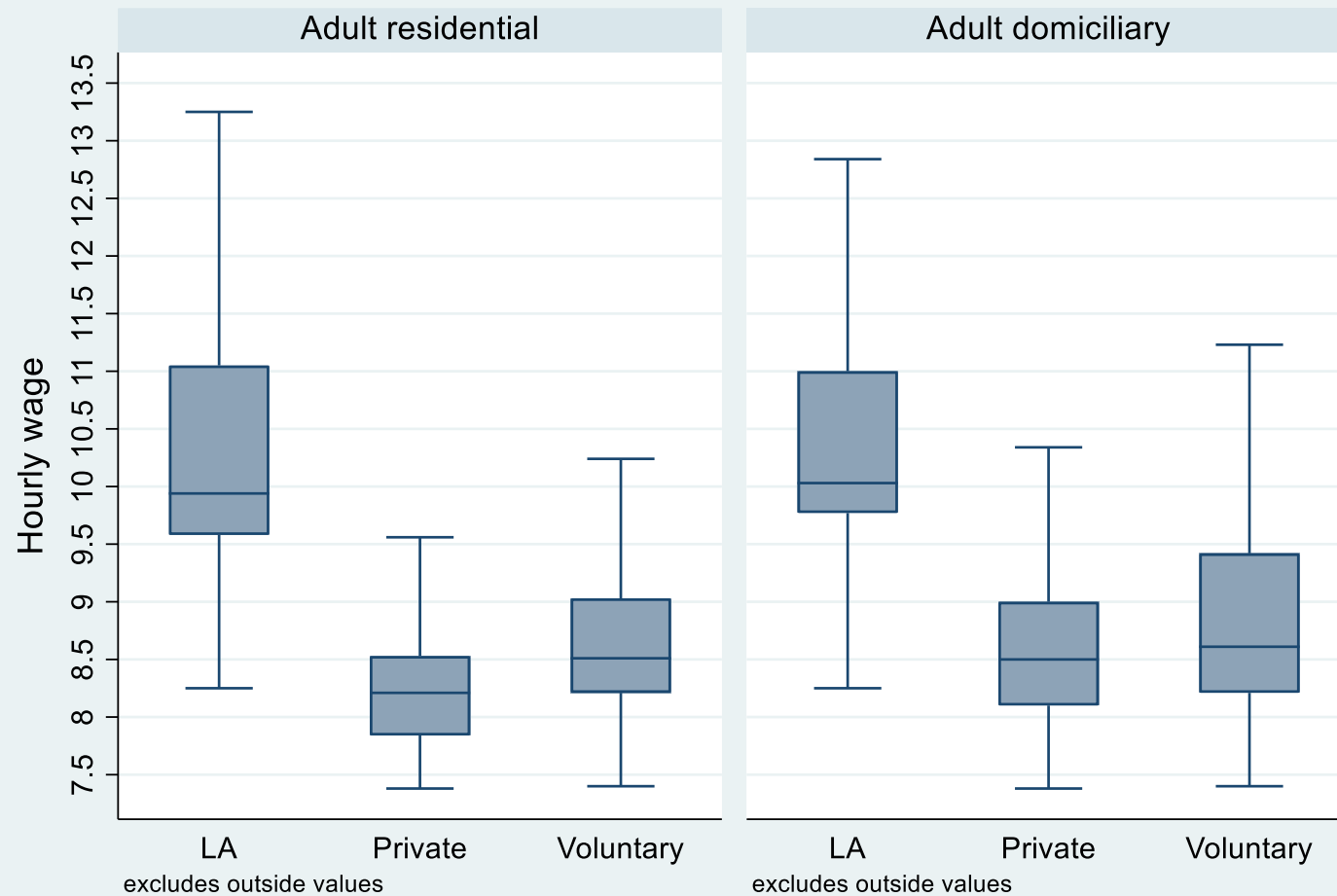
- >700k LTC staff, >20k establishments; ~50% of LTC market
- unique/permanent IDs for both establishments and workers → traced over time to identify of job separations
- Inclusion criteria
 - Establishments – statutory LA (i.e. public), private (i.e. for-profit), and voluntary (i.e. not-for-profit) establishments; care home services with nursing, care home services without nursing and domiciliary care (i.e. home care)
 - Workers – employed under a permanent or temporary contract; aged 16 to 64; direct care role (i.e. 86% care workers, 10% senior care workers, 4% other care providing)

Final sample

- 355,170 observations of 211,294 job-spells in 8,313 care establishments
 - Sector – statutory LA (6%), private (79%), voluntary (15%)
 - Care setting – CH w/ nursing (23%), CH w/o nursing (33%), domiciliary care (44%)



Wage distribution 2019



Graphs by MAINSERGP1

- **Narrow distribution**

- Private sector, residential care: p90/NLW = 1.12
- Private sector, domiciliary care: p90/NLW = 1.20
- Public sector: p90/NLW = 1.50

- **Share of frontline staff aged 25+ paid at (or below NLW)**

- residential care: 53%
- domiciliary care: 35%



Wage differentials

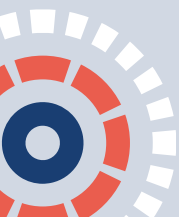
- Mincerian wage equations

1. qualifications, experience, experience squared + job role, sector (GLM)
2. + worker, job, employer, and local market characteristics (GLM)
3. + worker, job, employer, and local market characteristics (population-averaged GLM)

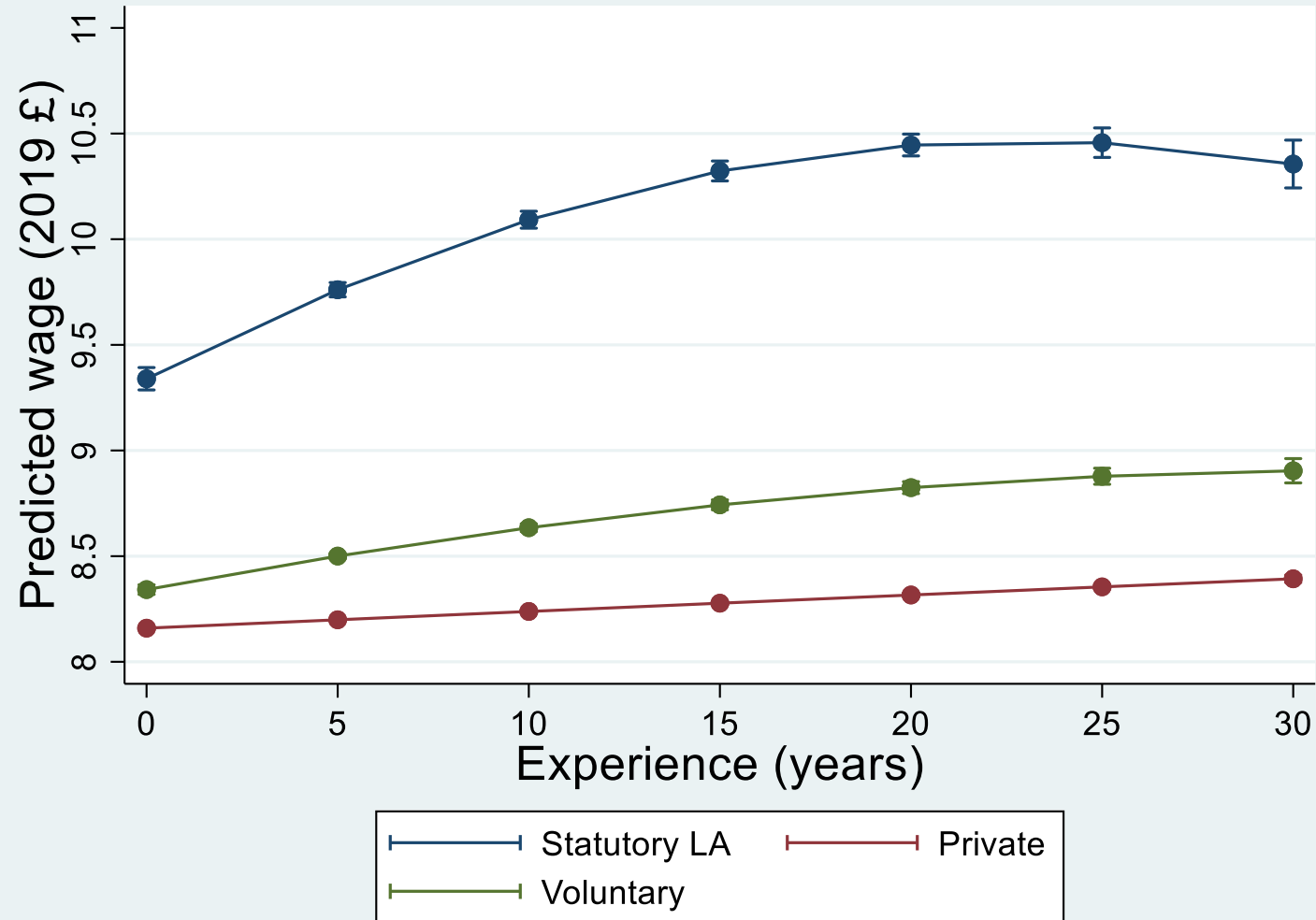
- Results

- training (-0.5%), ZHC (-0.6%) <-> lower wages;
- medium/large establishments (+0.3%), CH w/o nursing (+2.1%), domiciliary care (+5.1%), good leadership (+0.3%), care tariffs paid by LAs (+1.2 to +2.5%) <-> higher wages
- large wage differential between sectors: private vs public (-19%) and voluntary vs public (-15%); lower for care workers and highest for senior care workers

		Statutory LA	Private	Voluntary
Residential care	Senior care worker	11.23	8.63 (-23%)	9.50 (-15%)
	Care worker	9.78	7.94 (-19%)	8.35 (-15%)
Domiciliary care	Senior care worker	11.61	8.76 (-25%)	9.48 (-18%)
	Care worker	9.77	8.39 (-14%)	8.52 (-13%)



Rewards to experience



- Low real wage rewards to experience in private (2.9%) and voluntary (6.7%) compared to public sector (12%)

Variation of wages between employers

	Residential care	Domiciliary care
<i>All establishments</i>		
Job role and year fixed effects	0.66	0.70
Job role, year, and LA fixed effects	0.62	0.66
<i>Independent establishments</i>		
Job role and year fixed effects	0.57	0.64
Job role, year, and LA fixed effects	0.52	0.58
<i>Independent establishments with >5 DCWs</i>		
Job role and year fixed effects	0.53	0.63
Job role, year, and LA fixed effects	0.47	0.56

- High wage variation between employers
- Incompatible with uniform market wage for workers of equal quality expected in competitive labour markets



Wage elasticities of labour supply to the firm

- Discrete time proportional hazard model (cloglog)
 - job separation wage elasticities comparable to those found in previous studies: LTC workforce in US (Rapp and Sicsic, 2020);
 - Wage elasticities larger than those found for NHS nurses (0.066; Frijters, Shields and Price, 2007) or for the whole UK economy (0.75; Manning, 2003)
- ‘Shared frailty’ (RE) models – small unobserved heterogeneity bias correction
- ‘Within’ estimates (CRE probit) – large unobserved heterogeneity bias correction
 - Wage elasticities of labour supply: 4.08 for residential care and 4.01 for domiciliary care workers

	cloglog	RE cloglog	probit	RE probit	CRE probit (panel RE)	CRE probit (pooled)
Residential care						
Elasticity job separation	-0.79	-0.80	-0.72	-0.73	-1.59	-2.04
Elasticity labour supply	1.58	1.60	1.44	1.45	3.17	4.08
Domiciliary care						
Elasticity job separation	-0.37	-0.39	-0.38	-0.40	-1.51	-2.01
Elasticity labour supply	0.73	0.78	0.75	0.79	3.02	4.01



Wage elasticities of labour supply to the firm

	Elasticities of labour supply			
	Residential care		Domiciliary care	
A. Sector				
Statutory local authority	-0.25	***	3.00	
Private sector	4.99	***	7.10	***
Voluntary or third sector	6.31	**	0.35	**
B. Job role & Sector				
Senior Care Worker; Statutory LA	-0.95	**	1.91	
Senior Care Worker; Private	5.83	***	9.02	***
Senior Care Worker; Voluntary	2.17		-0.25	
Care Worker; Statutory LA	-0.19	*	2.91	
Care Worker; Private	7.52	***	7.98	***
Care Worker; Voluntary	5.31	*	0.25	
Other care-providing; Statutory LA	-0.31		-1.03	
Other care-providing; Private	1.57		5.11	
Other care-providing; Voluntary	5.59		0.51	
*** p<0.01, ** p<0.05, * p<0.1				

- Sector (Panel A)
 - Higher wage elasticities (i.e., more competition) in the private vs. public sector
- Job role & Sector (Panel B)
 - Labour market competition in the private sector more evident for more homogenous senior care worker and care worker roles



Wage elasticities of labour supply to the firm

	Elasticities of labour supply			
	Residential care		Domiciliary care	
C. Region (v1)				
North East	4.34		3.99	
North West	2.26		3.74	**
Yorkshire and the Humber	4.30	**	1.30	
East Midlands	1.56		6.97	***
West Midlands	14.06	***	12.31	*
Eastern	1.76		10.14	***
London	2.67		0.24	
South East	4.89	**	5.94	***
South West	19.99	*	5.62	**
D. Region (v2)				
North (North East, North West, and Yorkshire and the Humber)	3.32	***	1.67	***
Midlands (East Midlands and West Midlands)	7.59	***	6.27	***
South (East, South West, South East, and London)	3.37	***	6.63	***
*** p<0.01, ** p<0.05, * p<0.1				

- Region (Panel C and D)
 - Highest wage elasticities (i.e. more competition) in the Midlands (in particular West Midlands); for domiciliary care also South (in particular Eastern, South East and London)
 - North East has fewer LTC providers; weakest regions in terms of domiciliary care provisions are the North East, North West, and South West (Allan, 2021; Allan and Nizalova, 2020)



Discussion

- Unexplained wage differentials of direct care staff between sectors (-20% private vs public; -15% voluntary vs public)
 - downwards pressure on care fees by LAs might have led to a downward pressure on wages
 - poor rewards to experience in the independent compared to the public sector
- High variation of wages between care establishments – consistent to previous findings (Machin and Manning, 2004); inconsistent with competitive labour market theory
- Wage elasticities of labour supply to the firm
 - similar to quasi-experimental studies and estimations taking into account worker unobserved heterogeneity (Bassier et al., 2022; Dube et al., 2019, 2018); 2 to 3 times larger than estimates not taking into account unobserved variable bias
 - LTC workers are responsive wage changes but LTC providers still have moderate market power
 - Higher labour market competition in private sector but not translating into higher wages



Forthcoming study: Wage elasticity of labour supply to the sector

- Job separations in ASC-WDS: i) sample of separations to other ASC-WDS employers; ii) mix of separations to ASC employment, employment outside ASC, and non-employment
- Wage elasticity of labour supply to the firm = weighted sum of wage elasticity of recruitment from inside the sector (ε_{RW}^I), wage elasticity of recruitment from outside the sector (ε_{RW}^O), wage elasticity of separation to other employment inside the sector (ε_{SW}^I), and wage elasticity of separation to employment outside the sector (ε_{SW}^O)

$$\varepsilon_{NW} = \theta_R^I \varepsilon_{RW}^I + (1 - \theta_R^I) \varepsilon_{RW}^O - \theta_S^I \varepsilon_{SW}^I - (1 - \theta_S^I) \varepsilon_{SW}^O$$

- Weights: share of recruitment from inside the sector (θ_R^I) and from outside the sector ($1 - \theta_R^I$), and the share of separations to inside the sector (θ_S^I) and to outside the sector ($1 - \theta_S^I$)
- Steady state assumptions: $\varepsilon_{RW}^I = -\varepsilon_{SW}^I$, $\theta_R^I = \theta_S^I$, and $\varepsilon_{NW} = \varepsilon_{RW} - \varepsilon_{SW} = -2\varepsilon_{SW}$
- Wage elasticity of labour supply to the sector

$$(\varepsilon_{RW}^O - \varepsilon_{SW}^O) = \frac{-2\varepsilon_{SW} + 2\theta_S^I \varepsilon_{SW}^I}{(1 - \theta_S^I)}$$

- ε_{SW} and ε_{SW}^I - can be estimated using ASC-WDS data
- $\theta_S^I \simeq 0.66$ - estimates by Skills for Care



Thank you!

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