PAY-DIFFERENTIALS IN THE LOW PAID EMPLOYMENT OF SOCIAL CARE

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SOCIAL CARE LABOUR MARKET POSITION

- One of the fastest growing sector
  - Despite recession
  - Estimated 2 million people in the UK
- Secondary labour position
  - Migrants and BME workers contribution; gendered labour; value of care within the society
- Pay and working conditions
  - Wages are major cost component
- Private sector major supplier (75%)
- Increasing share of domiciliary care (48%)
  - Travel and shift duration issues
ANALYSING PAY IN THE CARE SECTOR

- (Un)availability of accurate estimates of the workforce
- Various data sources offer different stories and have different strengths and weaknesses
  - Coverage; accuracy of provided information; possible bias
- Defining duration of work
  - Travel time, night shifts etc.
- Defining hourly rate (enhanced or not)
  - Suitability of existing data sources
- Emerging national sector-specific data
  - Better coverage
  - Still possible biases and other weaknesses
PAY DIFFERENTIALS IN THE SECTOR

- One of the main low paying sectors for several years and since the introduction of NMW
  - Before and after the introduction of the NMW
- Various job roles with expected differences in level and patterns of pay
- Several potential macro/meso effects on pay:
  - Type of setting: care home, domiciliary; Sector: private, voluntary, public sector; size of organisation
- Micro, individual factors with pronounced wage gaps in other sectors:
  - Age, gender, ethnicity, several interactions
- Differences in the structure and organisation between children and adult social care
  - Focus on the latter (Long term care)
- Which data to use?
  - Large sector-specific data: National Minimum Data Set for Social Care- NMDS-SC
MODELLING PAY DIFFERENTIALS

- Using mixed-effect models
  - Controlling for measured and unobserved factors and cluster effects at different levels of hierarchy

- Separate models for different job role groups
  - Managers/supervisors
  - Ancillary
  - Direct care
  - Professional
DIRECT CARE WORKERS

Mixed-effect model results

- Significant and large in magnitude effect of individual providers (55% of variance)
- Major sector variations; lowest pay in private sector
- Significant fixed effects:
  - Type of care setting/service type; lowest pay in domiciliary and residential settings
  - Ethnicity – slight but significant difference
  - Interactions between age and setting
  - Interactions between gender and setting
  - Interactions between sector and setting

Descriptive statistics

LOW PAY COMMISSION
10 OCTOBER 2012
Results of final mixed-effect model of hourly pay of adult direct care workers, SCWP 7

<table>
<thead>
<tr>
<th>AIC</th>
<th>BIC</th>
<th>Log lik</th>
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**Random effects**

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<tr>
<th></th>
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<td>Groups</td>
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<tr>
<td>Region</td>
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**Number of cases**

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<tr>
<td>Sector within regions</td>
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**Fixed Effects**

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<th>Variables</th>
<th>Estimate</th>
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<th>t-value (F-value)</th>
<th>p-value</th>
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<th>Upper 95% CI</th>
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<td>0.003 **</td>
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<td>-3.492</td>
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<td>0.002</td>
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<td>-1.136</td>
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MEASURING LOW PAY

- Use NMW as a threshold
- Consider what different data sources can tell us and what they can’t
- Data provided by employers (NMDS-SC)
  - One figure for hourly rate (no indication of ‘enhanced’ rates etc.)
- Sector is not very well defined (LFS)
- Over-represents higher wages and more stable workforce (ASHE)
- Unrecorded ‘working’ time
  - Travel between clients
  - Extra work
  - On call – sleep in duties etc.
NEW RESEARCH QUESTION

- Previous analysis using sector-specific data indicates a two-tier pay levels:
  - Direct care and ‘other’ workers paid on, below or just above the NMW, very narrow pay distribution
  - ‘Top’ tier includes professional workers (SW, OT etc.) and managers
- Pay rates are significantly lower in the private sector and in domiciliary care settings
- Focus on estimating the percentage and number of ‘direct care workers’ paid under the national minimum wage (UNMW) in the UK as an indicator of low pay
APPROACH

- What are the existing estimates? (prior knowledge)
  - Range from 0.8% to 10%
- What are the strengths and weaknesses of different estimates
  - Representativeness of samples used; coverage of sample; over-representation of higher paid jobs and documented work; selected job roles; patterns of work
- What new knowledge could we generate?
  - Sector-specific data
  - Focus on one group of job roles (direct care workers)
  - Adjustments, why and how
- Combining different knowledge
  - Hierarchical Bayesian approach
ADJUSTING FOR UNREPORTED TRAVEL AND WORK TIME

- Consider what constitute working hours
  - Unpaid travel time ‘between’ clients
  - Unpaid work time, on call, sleep on, etc.
- Using data from a large survey of social care workers
  - Longitudinal Care Study; n=1,205
  - Direct care workers’ perspective
  - Only include information from workers indicating that such time is ‘unpaid’; not ‘partially’ paid
  - Account for possible bias, overestimation by workers- use only 20% of stated additional time
ADJUSTING FOR UNPAID TIME CONT.

- Adjust pay distribution obtained from the larger sample; NMDS-SC

\[ \psi_n = \frac{\psi}{1 + \frac{\sigma^2}{\tau}} \]

- On average we estimated
  - 4.8 additional minutes unpaid ‘travel’ time per week
  - 22.7 additional minutes of unpaid ‘work’ time per week
  - A conservative adjustment of around 1% of hourly pay rate
ACCOUNTING FOR PRIOR KNOWLEDGE

- Each point estimate tells a different story
- All samples are drawn from the same population
- There is additional researcher ‘judgment’ element
- We want to end up with a distribution that accounts for all the above
- A Bayesian approach is most suited for the job and will provide a whole ‘posterior’ distribution not just a point estimate
- Hierarchical Bayesian approach Treats estimates as arising from a random process governed by different shape and rate (hyperparameters: \( \alpha, \beta \))
- Thus the ‘full’ posterior involves each posterior distribution of previous point estimates
Samples of posterior distributions with different hyperprior specifications

\[
\alpha_i / (\alpha_i + \beta_i)
\]

<table>
<thead>
<tr>
<th>$S_{\alpha}/R_{\alpha}$</th>
<th>$\sqrt{S_{\alpha}/R_{\alpha}}$</th>
<th>$S_{\beta}/R_{\beta}$</th>
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<td>159 60</td>
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<tr>
<td>309 30</td>
<td>2262 30</td>
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</table>
FINDINGS

- The results show that %UNMW of direct care workers has a mean around 10 per cent, with different values of the gamma hyperprior parameters.
  - When assuming different rates and shapes of hyperprior parameters; indicating consistent results.
- 95% credible intervals of the posterior inferences of $\frac{\alpha}{\alpha + \beta}$ range from 9.2 per cent to 12.9 per cent.
- Such probabilities are higher than, but intersects with, other previous estimates.
- If we use a separate set of adjustments that are less conservative; the posterior inferences is likely to indicate higher probabilities UNMW.
- Larger numbers of workers are affected due to differences in estimates of workforce.
  - Based on SfC workforce estimates in England; applying similar methodology to other parts in the UK.
  - 156,673 to 219,241 direct care jobs in the UK are likely to be paid under the National Minimum Wage.
WHAT ABOUT LONGITUDINAL CHANGES AND THE NMW

- NMDS-SC allows us to identify same employee/provider over time
- Great opportunity to:
  - Examine impact of changes in NMW rates
  - Follow workers when moving between different age brackets
  - Trends in providers’ position
- Several challenges in constructing longitudinal records from NMDS-SC
  - Structure, design, coverage, time span, archiving, SIZE
CONSTRUCTING LONGITUDINAL ANALYSIS: WORK IN PROGRESS

- Linked 18 separate databases - continuous process
- Each provider's dataset has records from 13,095 to 25,266 → 421,671 valid records included in the construction
- Number of updates ranged from 0 to 18 per provider
- Workers' level records: much larger datasets → c. 11M records
- Providers not required to complete information for 'all' workers
  - Structural/design missing data; True missing data
- Considerably large number of variables and fields
  - Careful planning; analysis-tailored data retrieval
- Changes in database
  - Amendments, new variables etc.
  - Programming intensive and demanding models (may not be replicable for different databases)
Patterns of returns (with repeated points)
Examples of repeated individual workers’ records

![Graph showing patterns of returns with repeated points](image)
BUILDING ON THIS WORK WE CAN

- Examine differentials due to employers and workers’ characteristics
  - Identify the characteristics of the most vulnerable to being paid UNMW, for tailored and targeted interventions
  - Particular focus could be on small private organisations and the growing domiciliary care work
- Consider the growing sector of personal budget workers
  - The NMDS-SC will soon produce a large enough sample but also through combining data from different sources
- Use longitudinal analysis to examine changes over time
  - For individual workers, different groups, employers with certain characteristics
ACKNOWLEDGMENTS

- Thanks to the Department of Health for funding this work
- Thanks to Skills for Care for providing the data on regular basis
- Thanks to Analytical Research Ltd for their technical and quantitative support
THANK YOU

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