

# Systems Dynamics Case Study

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# Adult Social Care in England

- Stakeholders
  - Adult care users and their family
  - Care providers (organisations and workers)
  - Local authority
  - National Healthcare Service
  - UK Border Agency
  - And many more ...

# Demand for care services

- For the first time in history, the number of people over 65 in England is greater than those under 16 (2008/2009)
- In 2007/08, there were around 1.75 million adults using social care services
- By 2026, 1.7 million more adults in England are estimated to use social care services

# Care service provider

- Informal (carers)
  - family, friends, neighbours, or volunteers
  - one in eight people provided informal care
- Formal (care workers, social workers)
  - paid professionals
  - In 2007/2008
    - 35,000 organisation (estimation)
    - 1.5m people employed (estimation)
    - Roles: social workers, care workers, personal assistants, and occupational therapists

# Reforms

- Care Standard Act
  - quality of care
- Caring for Carers
  - formal sector would have an increasingly important role to play in providing care and support
- Personalisation agenda
  - informal carers becoming more formalised through personal budgets/direct payment

# Other observable problems

- High staff turnover
- Reliance on migrant workers

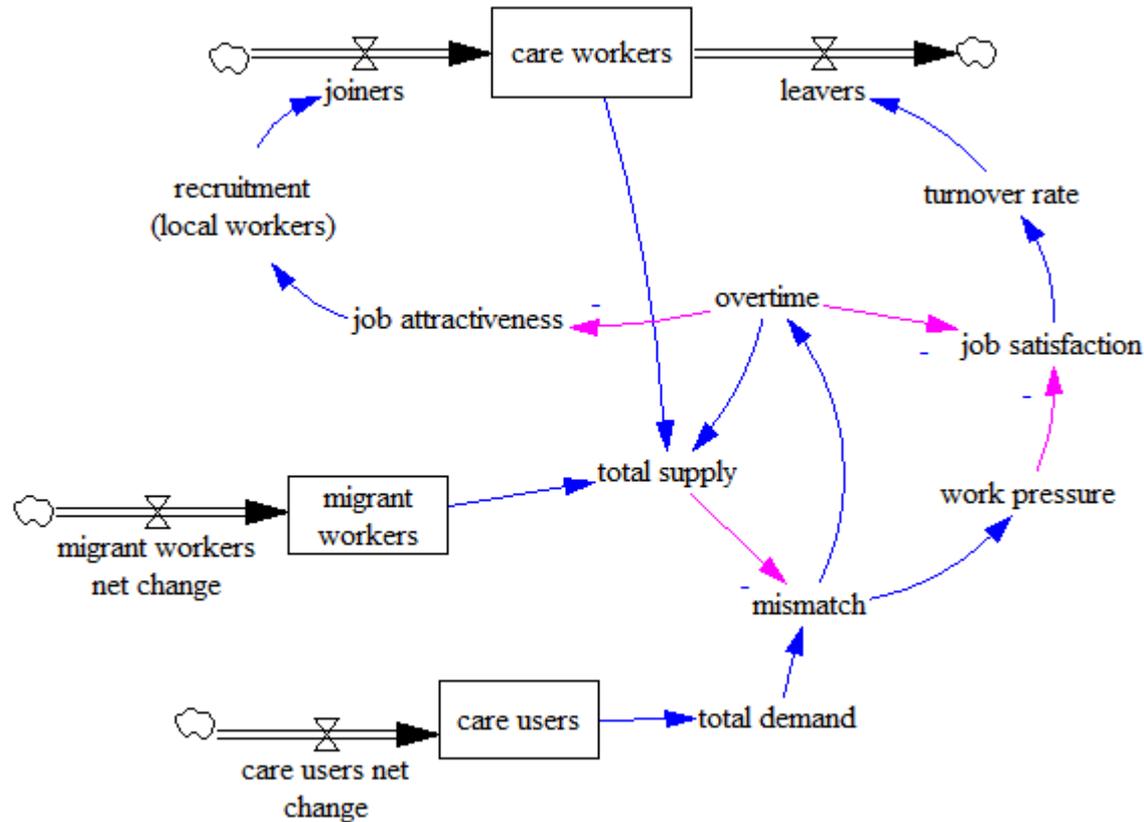
# Conceptual Model

- Objective
  - What is the impact of reducing migrant care workers?
- Input
  - Number of migrant care workers (size and time)
- Output
  - Number of overall care workers

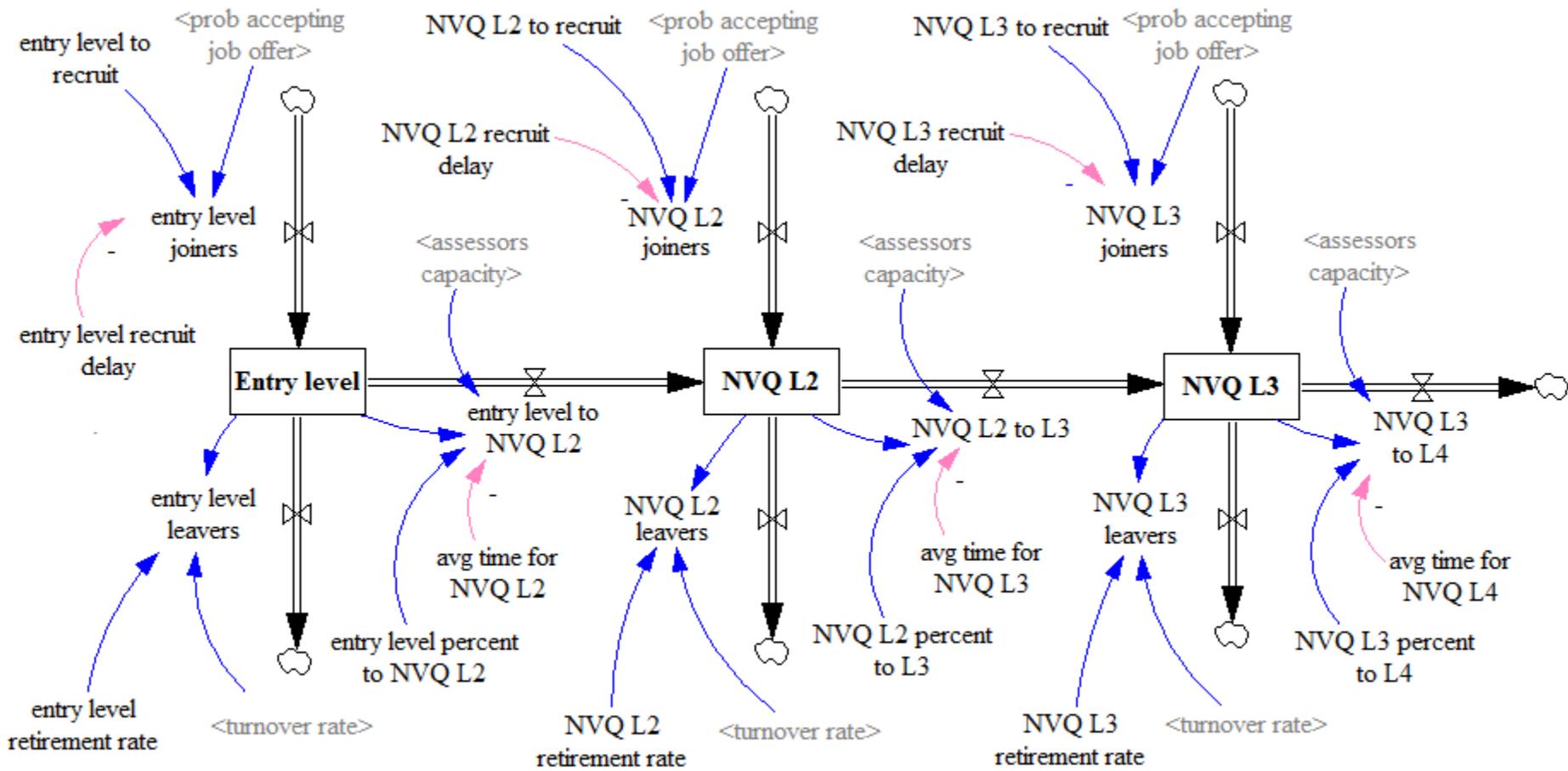
# Conceptual Model

- Model content
  - Boundary
- Input
  - Number of migrant care workers (size and time)
  - Number of local care workers (recruitment/retention)
- Output
  - Number of overall care workers

# Model Boundary / Top Level View



# Level of detail – care workers



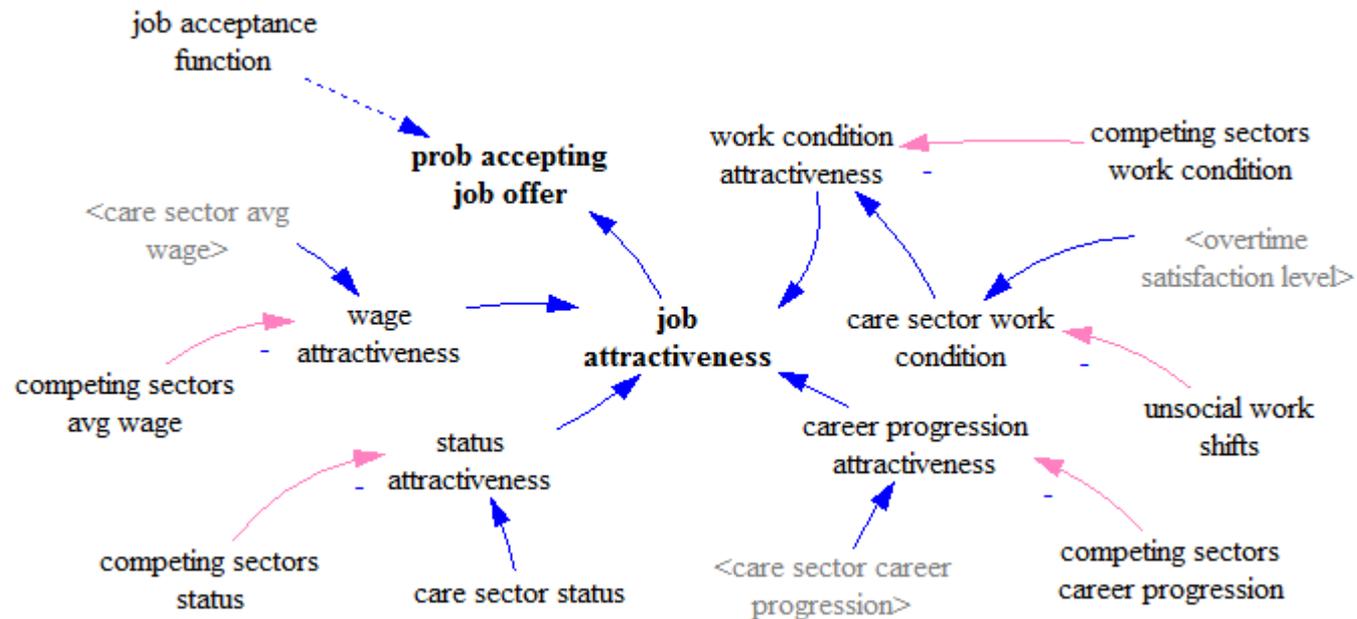
# Note on care workers

- Many care workers are not interested in moving up the career ladder (Stone, 2004)
- The national survey of care workers (Hall & Wreford, 2007) showed that
  - 64% of care workers were happy at their level and were not seeking any career progression
  - More than 40% of care workers took such training as dementia awareness, disability awareness, manual handling/lifting, etc.

# Note on care workers

- The retirement rates include people who leave due to age or health condition only
- The average times spent on acquiring higher qualifications are constants
- People with a qualification equivalent to level 4 or higher are likely to be involved in providing indirect care services or to be employed at the managerial level

# Level of detail – job attractiveness



# Note on job attractiveness

- Job participation and occupational choice are two research areas in labour economics
- There exists a pool of labour entrants who have decided to enter the job market and to choose any of these two occupations: jobs in the social care sector and jobs in other competing sectors

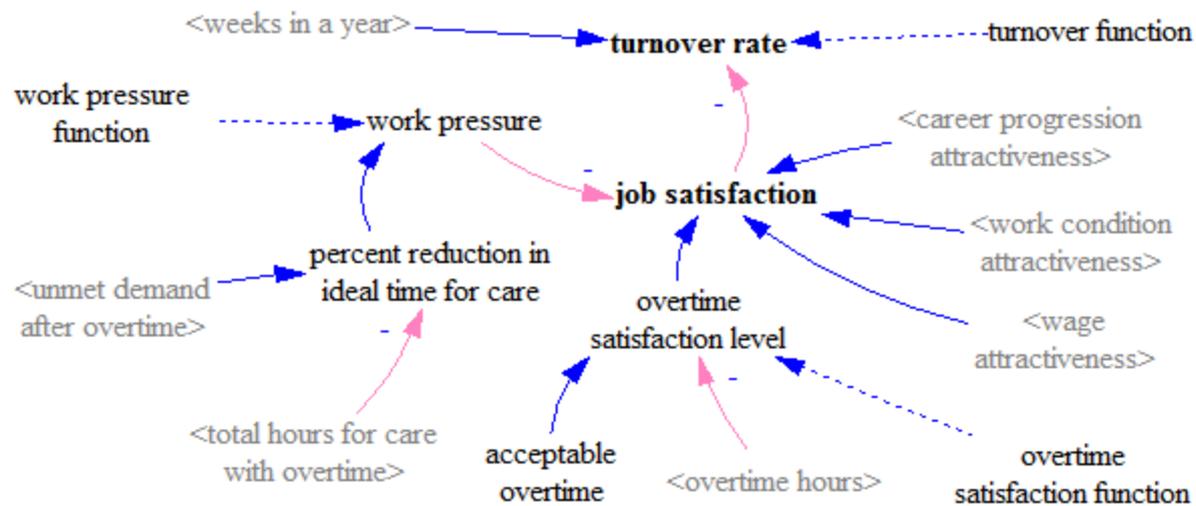
# Note on job attractiveness

- A number of studies (e.g., Cangiano et al., 2009; Moriarty et al., 2008) have attributed factors such as job status, wage, working condition, and opportunity for career progression to the high vacancy rate in the social care sector
- Job attractiveness is modelled as the weighted average of these factors. In the absence of data, the model assumes that all factors have an equal weight

# Note on job attractiveness

- The propensity of a labour entrant to accept a job offer in the social care sector using a standard logistic function
- The use of logistic function to relate job attractiveness with the propensity to take up employment (or unemployment) is common (for example, Freeman 1977; Kahn & Low 1984).

# Level of detail – job satisfaction



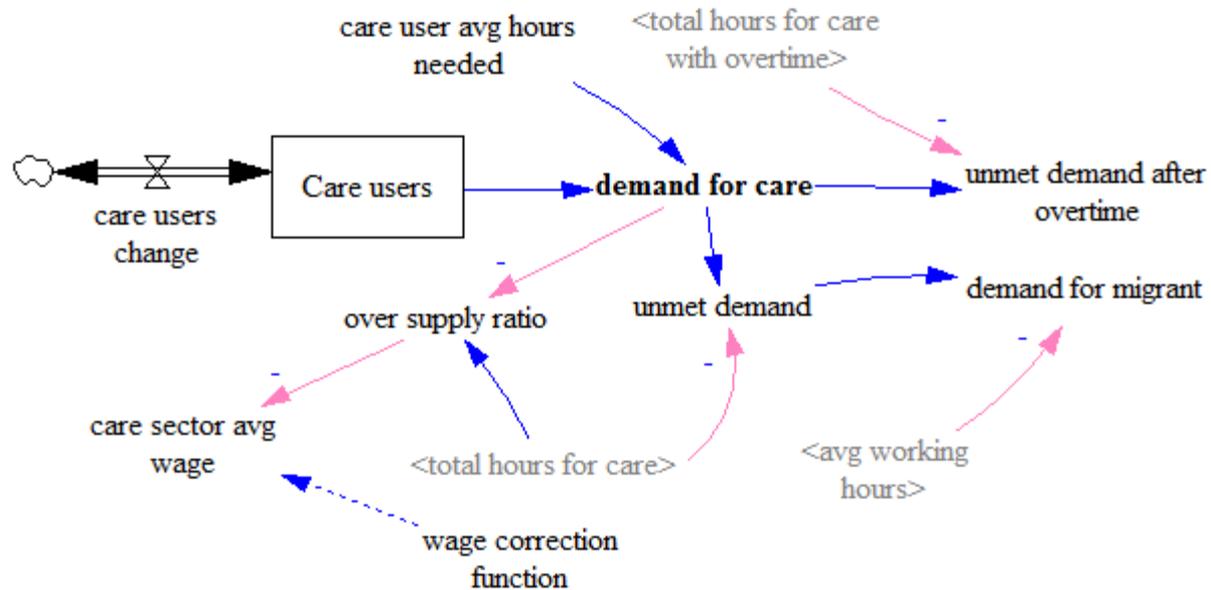
# Note on job satisfaction

- Many studies have shown that there is a correlation between job satisfaction and withdrawal behaviours such as turnover and absenteeism (Saari & Judge, 2004)
- Withdrawal behaviour is complex and is affected by the interplay between many factors. The model simplifies this by using job satisfaction as the only explanatory variable for the turnover rates

# Note on job satisfaction

- Research in withdrawal behaviour suggests that job satisfaction seems to produce a better prediction at the aggregate sector level (Saari & Judge, 2004)

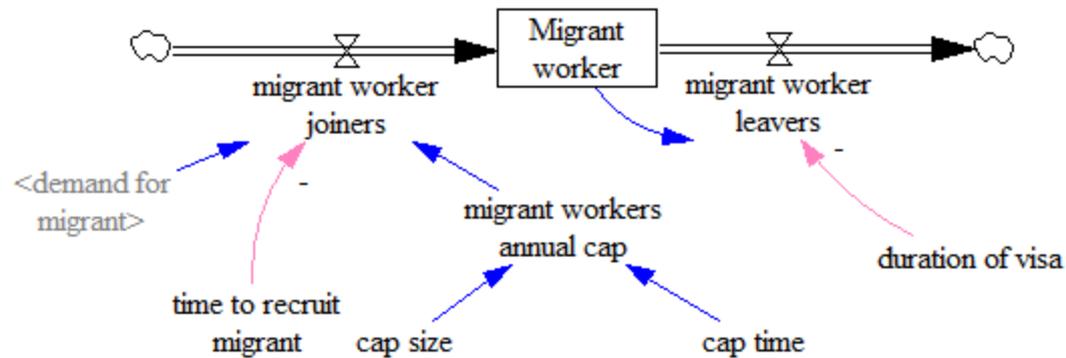
# Demand for care



# Note on demand for care

- Use existing demand projection data
- In order not to add more complexity to the model, we simplify the wage correction function as a linear function
- This function will be triggered only if the number of care workers is more than what is needed

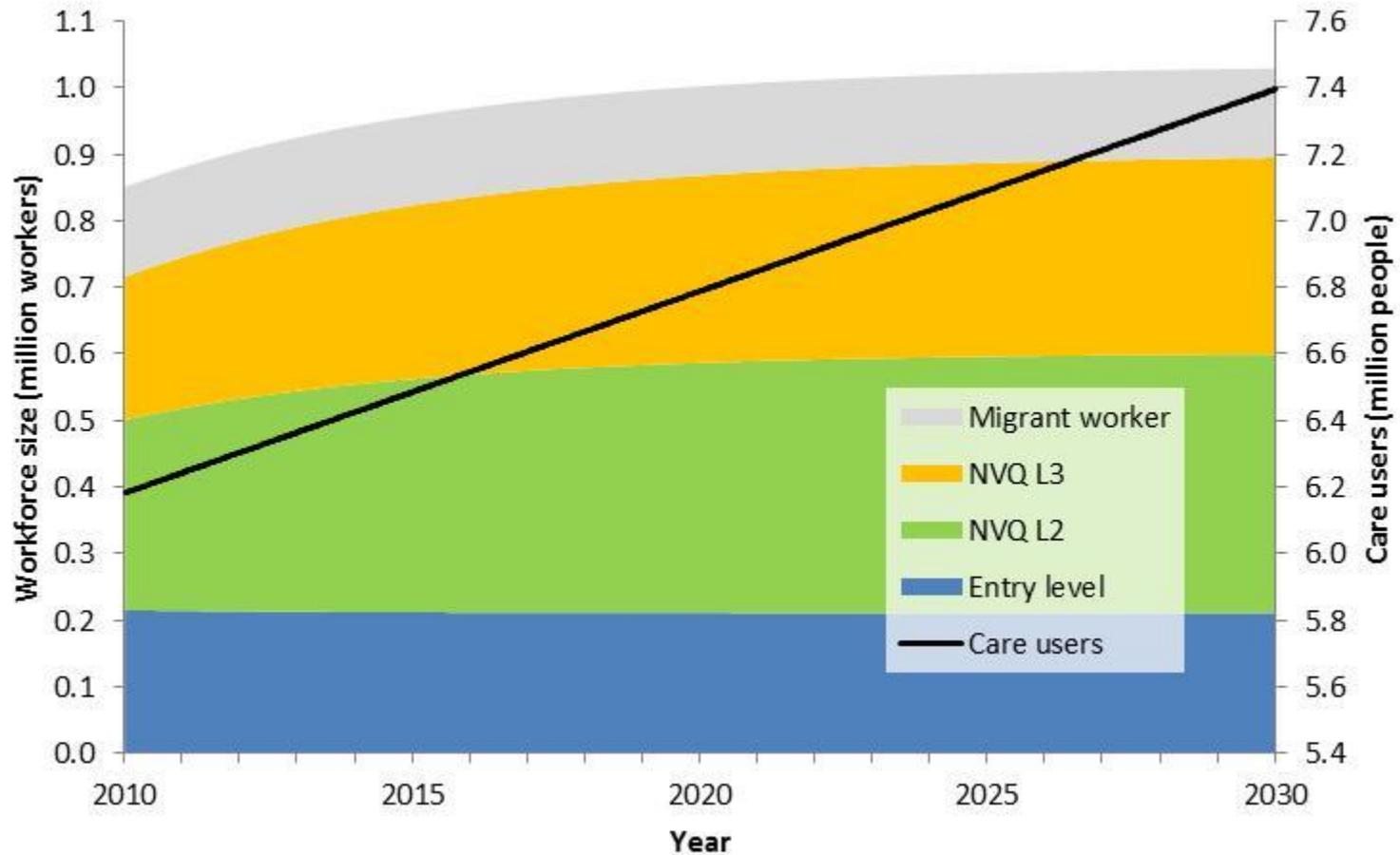
# Migrant care workers



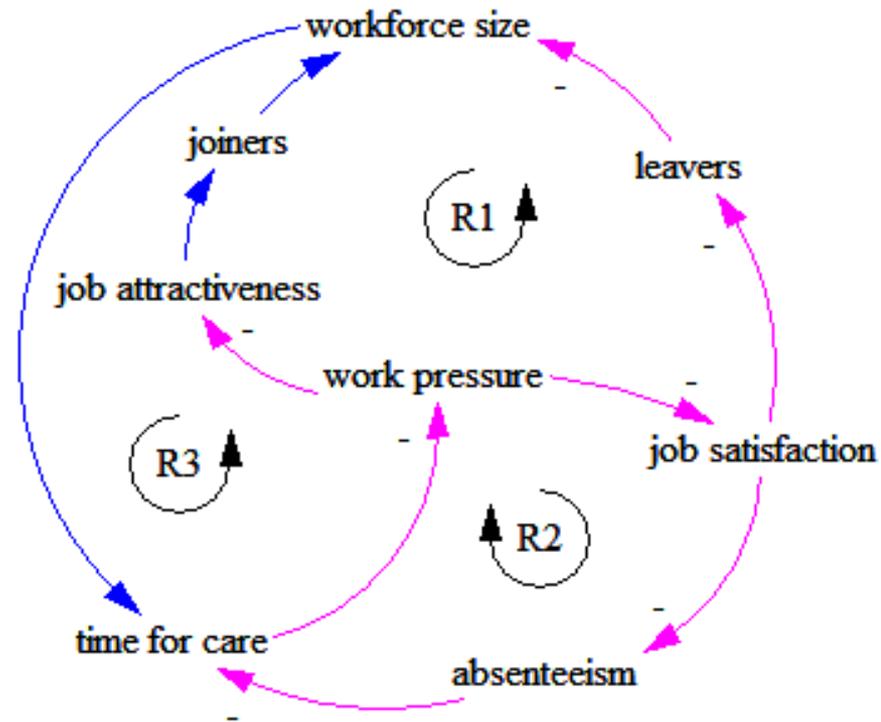
# Note on migrant care workers

- The existing data on migrant care workers is rather limited
  - Birth place is often used as an indicator for migrant worker
- It is difficult to separate the data between England and the rest of the UK. Hence, we use the information obtained from the UK data to parameterize the model with adjustments

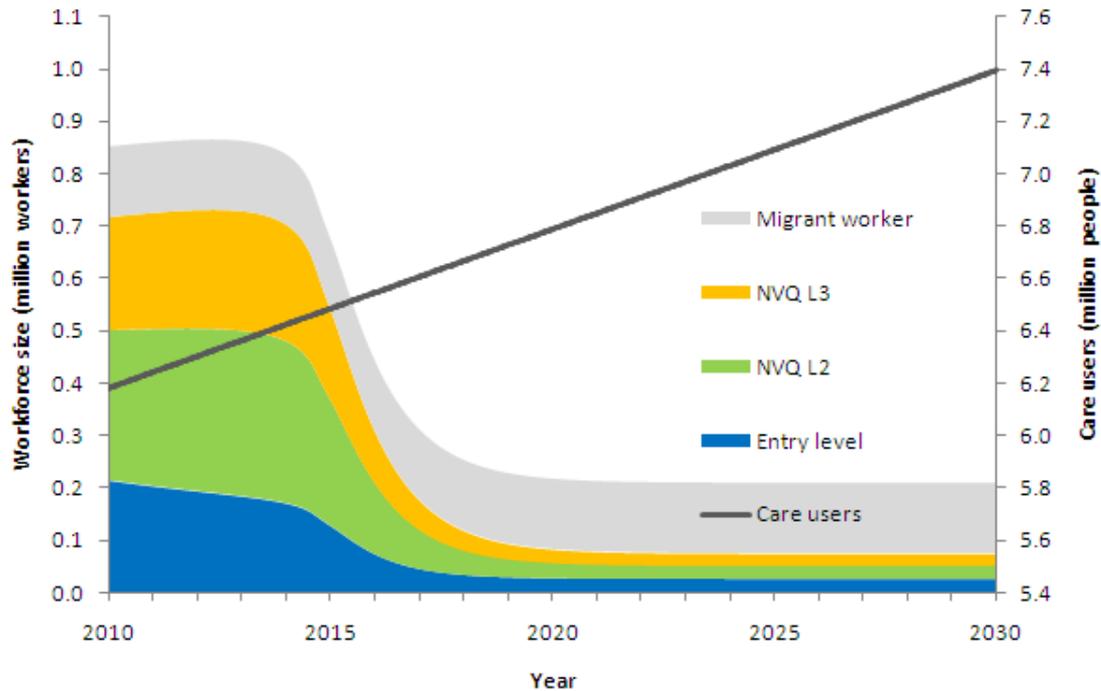
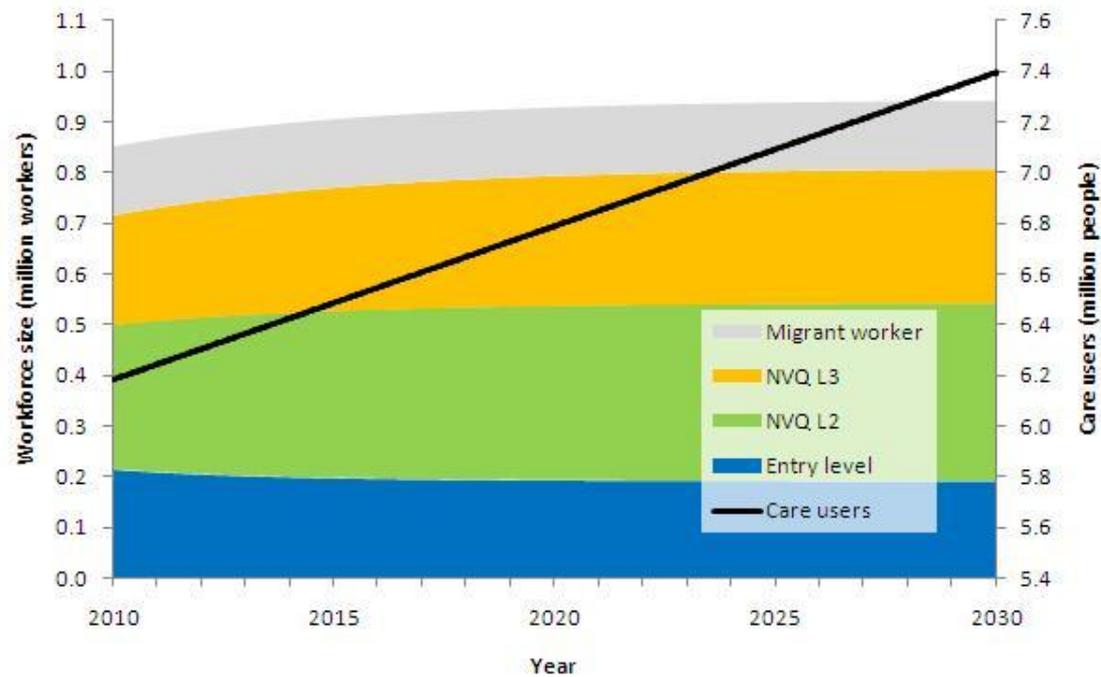
# Behaviour production test



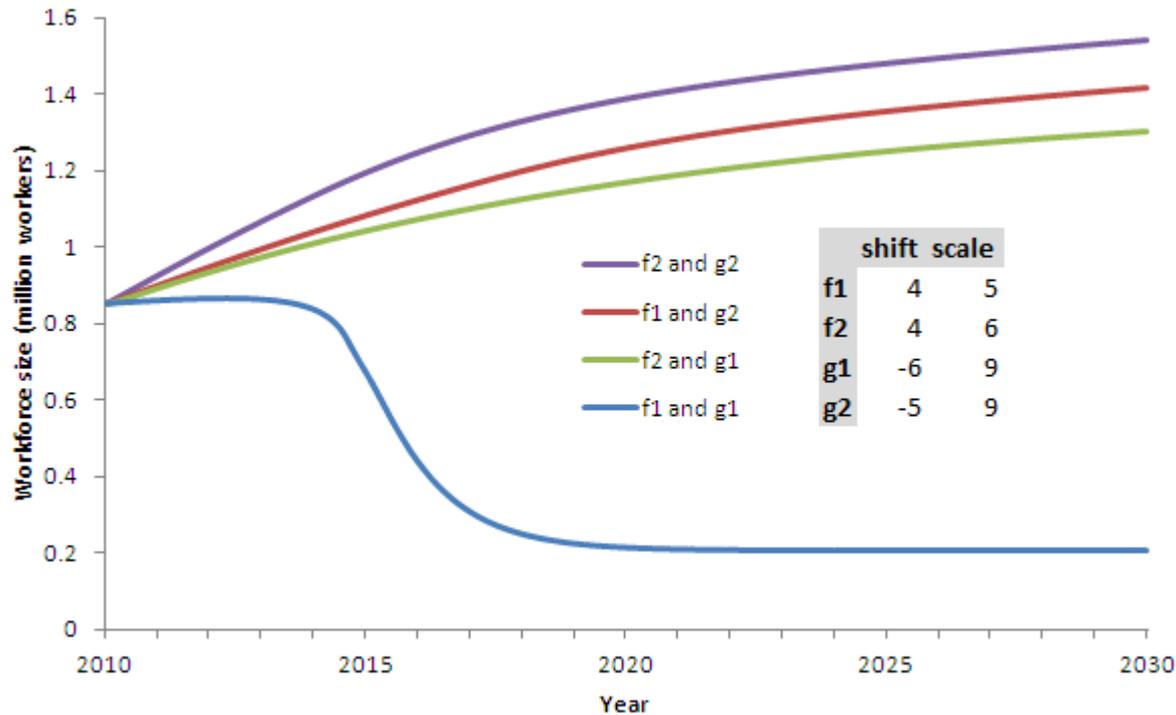
# Feedback loops



# Non linearity



# Sensitivity analysis



Fx: propensity to accept job  
Gx: propensity to leave job

# Effect of removing migrant workers

