

# The Effect of Government Subsidies on General Practitioners' Location and Labour Supply Decision

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# Motivation: why study GP's location choice?

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- The undesirable distribution of GPs across regions
  - Unequal access to health care
  - High health care cost resulted from delayed cure
- Recent changes surrounding the working environments of GPs
  - Ageing workforce; emphasis on work and life balance
  - The increasing number of female GPs
- Many government incentives and huge annual expenditure
  - Identify and assess strategies to influence GPs' location choice

# Motivation: why incorporate labor supply?

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- Only focus on location choice is insufficient
  - Not only the headcount of GPs matters, but also their quality and effective working effort
- Take income effect into consideration
  - How do GPs' labour supply respond to government subsidies?
  - Large negative income effect will decrease working hours

# Motivation: why incorporate wage rate?

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## □ Endogeneity

### ■ Unobserved heterogeneity

- Ability, motivation, or productivity

### ■ Self-selection into locations

- GPs who choose rural area may be systematically different from those in major cities
- Different patterns for male and female GPs

# Contribution

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1. Simultaneously estimate the effects of government subsidies on GP's practice location and labour supply choice
  - Previous literatures
    - Location choice: Hurley(1989) and Denis et al. (1996)
    - Labour supply and earnings: Cheng et al.(2011)
  - Accounts for both self-selection and simultaneity
    - The first study to do it
2. Provide rich policy suggestions
  - The most effective subsidy programs

# Data

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- MABEL survey

(Medicine in Australia: Balancing Employment and Life)

- Advantages

- Nation-wide coverage

- Panel nature

- Discrete-choice experiment (DCE) component

- Wave 2008

- Response rate: 19.36%; Sample size: 3906 GPs

- Nationally representative (Joyce et al., 2010)

- Final sample size: 2473

# Empirical strategy

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- Simultaneous equations model
  - Location choice, labour supply, and wage equations
    - Express labour supply as a function as location choice and wage rate
    - Express wage rate as a function as location choice
    - Express location choice as a function as wage rate and labour supply
    - Government subsidies as an independent variable in location and labour supply equations
  - Take gender-specific difference into account
    - Allow for gender-specific labour supply and location choice equations
    - Allow for gender-specific variance-covariance matrix
  - Maximum likelihood estimation

# Empirical strategy (cont.)

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- Policy analysis: counterfactual experiments
  - Predicted location distributions by headcount of GPs
  - Predicted location distributions by hours-adjusted headcount of GPs
    - Increase the amount of government rural subsidies by 1%, 10%, \$1, and \$10

# Main results – simultaneous equations model

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- Higher rural subsidies is effective in attracting more GPs to rural and remote areas
  - A \$1 increase in hourly rural subsidies: 0.98% more male GPs and 0.59% more female GPs choosing rural and remote areas
- Higher subsidies increase the hours by male GPs and decrease the hours by female GPs
  - Hourly earnings have positive effect on male GPs' labour supply and negative effect on female GPs' labour supply

# Main results - counterfactual experiments

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- There is some effect when labour supply is incorporated into location choice, but the magnitude is trifling
  - The policy effect that more GPs are enticed to rural and remote areas by increased rural subsidies is
    - Magnified for male GPs
    - Attenuated for female GPs
    - Overall changes driven by labour supply are negligible

# Main results – labour supply equation

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- 1. Number of children
  - Decrease/increase hours worked by female / male GPs monotonically
- 2. The presence of a child under age five
  - Decreases hours worked by both male and female GPs, though more for females than for males
- 3. Non-practice income
  - Reduces hours worked by female GPs but not for male GPs

# Main results – wage equation

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- 1. Experience and its squared term
  - Wage rate increases up to 27 yrs of experient (concave)
- 2. Female GPs earn less than that of male GPs
- 3. More higher medical degrees correspond to higher wage rate
- 4. Urban GPs have higher wage rate than those in rural and remote areas

# Discussions

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- Pecuniary incentives
  - Government subsidies are effective to attract GPs to rural and remote areas
- Non-pecuniary incentives
  - To attract male GPs to rural and remote areas
    - Provide continued educational opportunity or training
  - To attract female GPs to rural and remote areas
    - Provide childcare
    - Facilitate job seeking for their spouse
    - Educational opportunities for children

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***- Thank you -***