



The age profile of the location decision of Australian general practitioners



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ARTICLE INFO

Article history:

Received 21 August 2014

Received in revised form

23 July 2015

Accepted 3 August 2015

Available online 7 August 2015

Keywords:

Australia

General practitioners

Age profile

Location decision

Unbalanced distribution

Retention

ABSTRACT

The unbalanced distribution of general practitioners (GPs) across geographic areas has been acknowledged as a problem in many countries around the world. Quantitative information regarding GPs' location decision over their lifecycle is essential in developing effective initiatives to address the unbalanced distribution and retention of GPs. This paper describes the age profile of GPs' location decision and relates it to individual characteristics. I use the Medicine in Australia: Balancing Employment and Life (MABEL) survey of doctors (2008–2012) with a sample size of 5810 male and 5797 female GPs. I employ a mixed logit model to estimate GPs' location decision. The results suggest that younger GPs are more prepared to go to rural and remote areas but they tend to migrate back to urban areas as they age. Coming from a rural background increases the likelihood of choosing rural areas, but with heterogeneity: While male GPs from a rural background tend to stay in rural and remote areas regardless of age, female GPs from a rural background are willing to migrate to urban areas as they age. GPs who obtain basic medical degrees overseas are likely to move back to urban areas in the later stage of their careers. Completing a basic medical degree at an older age increases the likelihood of working outside major cities. I also examine factors influencing GPs' location transition patterns and the results further confirm the association of individual characteristics and GPs' location–age profile. The findings can help target GPs who are most likely to practise and remain in rural and remote areas, and tailor policy initiatives to address the undesirable distribution and movement of GPs according to the identified heterogeneous age profile of their location decisions.

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1. Introduction

The unbalanced distribution of GPs across geographic areas is a serious phenomenon worldwide (Hann and Gravelle, 2004; Horev et al., 2004; Joyce and Wolfe, 2005). It implies unequal access to health care across areas and contributes to great disparities in health outcomes between urban and rural populations. The recent trends surrounding GPs' working environment, such as an ageing workforce, a greater emphasis on work-and-life balance, and a rising proportion of female GPs may exacerbate the unbalanced distribution of GPs. Additionally, the increasing number of overseas-trained doctors and medical students in Australia has an effect on physician workforce supply levels and patterns of career choice, such as specialty and location distribution. Therefore, the

knowledge of factors that influence GPs' location choices is essential for policymakers.

Recruiting more GPs to rural and remote areas is insufficient to overcome the GP shortage problem in these areas, the retention of rural GPs is another important aspect in addressing this shortage. Retaining GPs in their practice locations increases their experience, skills, knowledge and understanding of local communities, and thus provides continuity of care leading to improved health outcomes for people living in such areas. Whereas, a high mobility rate, particularly the frequent movement out of rural and remote areas, leads to a significant loss of these resources and hampers stability and continuity in medical services.

Understanding the age profile of GPs' location decision has important policy implications. During their life-cycles, GPs may have different preferences over practice location depending on their career objectives, family obligations, and work/leisure preferences at various stages of their lives. Age is related to GPs'

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location decisions and these decisions are correspondingly adjusted as they age. Moreover, different individual characteristics may have differential effects on how GPs change their locations as they age, suggesting that there may be heterogeneity in the age profile of location decision across different groups of GPs. For example, certain GPs may be willing to go to rural areas and stay there, while other groups of GPs may go to rural areas initially but migrate back to urban areas later. Therefore, describing and identifying different types of age profiles of male and female GPs' location decision can provide policy guidance on redressing the unbalanced distribution of GPs and optimising their retention.

This study describes the age profile of GPs' location decision, with particular emphasis on how age profiles vary by individual characteristics, such as gender, rural background, country of basic medical degree, and age at completion of basic medical education. I use the first five waves of the Medicine in Australia: Balancing Employment and Life (MABEL) survey of doctors. A mixed logit model that allows for random alternative-specific constants (ASCs) and the correlation between these ASCs is used to estimate GPs' location decisions. The age profiles are produced by calculating the predicted proportions of GPs in each location alternative over their careers using model estimates. In addition, taking advantage of the panel nature of MABEL data, I also perform location transition analysis to investigate mobility patterns of GPs and factors associated with their movement.

Despite the well-documented literature on factors that influence physicians' location decisions, almost all of the previous papers are based on cross-sectional data, which provide only limited insight into how GPs change their location preferences over the life-cycle. This study aims to contribute to the literature in two aspects. First, I investigate gender-related differences in the effect of geographical attachment variables on rural practice; this aspect has received little attention from previous studies. Gender differential is particularly important given there has been a large increase in the proportion of female GPs. Second, a series of papers that study the correlation between socio-demographics and GPs' location choices at one point in time would be useful. However, few of them examine whether, and how, GPs alter their location choices across the life cycle, leaving the age profile of GPs' location choice and how this profile varies by individual characteristics unexplored. This study strives to fill this literature gap.

The results suggest that the age profiles of GPs' location decision present distinct patterns across individual characteristics. Three types of age profiles are identified. First, male GPs from a rural background and GPs who complete basic medical education at a relatively older age tend to go to rural and remote areas and stay in these areas regardless of their age. Second, there is a group of GPs who are likely to go to rural and remote areas in the early stages of their life, however, migration to major cities is observed as they age. These include: GPs from younger generations, male GPs from a non-rural background, female GPs from a rural background, and GPs who obtained basic medical degrees overseas. Third, female GPs from a non-rural background and GPs who obtained basic medical degrees in Australia are inclined to stay in urban areas at any stage of their lives. These findings may help target GPs who are most likely to practise and remain in rural and remote areas, and tailor policy initiatives to address the undesirable distribution and movement of GPs according to the identified heterogeneous age profile of their location decisions.

The findings of the location transition model demonstrate that mobile GPs are more likely to be those who are younger, are trained overseas, and are not self-employed. Moreover, the estimated results of the location transition model further confirm the association of individual characteristics and GPs' location-age profiles.

2. Related literature

There is a vast literature highlighting the impact of personal characteristics and family situations on physicians' location decisions. It is documented that female GPs are less prone to go to rural and remote areas (Bolduc et al., 1996; Doescher et al., 2000; Dussault and Franceschini, 2006). They argue that long hours of work, few job opportunities for their partner, and few quality educational qualifications for their children may lead to a female physician's unwillingness to choose rural areas. Serneels et al. (2007) suggest that medical students' motivation to help the poor, which is an indicator of intrinsic motivation, is the main determinant of their willingness to work in a rural area. Additionally, where GPs complete their medical degree is found to be an important factor. Specifically, overseas trained physicians are found to be more likely to work in rural and remote areas, and they also exhibit higher rates of movement than non-migrant physicians (Basu and Rajbhandary, 2006; McDonald and Worswick, 2012).

In addition, many studies identify geographical attachment as an influential factor in rural practice choice. Using a logistic regression framework, Kristiansen and Forde (1992) find that physicians in Norway tend to work in the regions where they undertook their training and where they completed their hospital residency. Dussault and Franceschini (2006) perform a literature review on empirical studies examining the determinants of the undesirable distribution of the health workforce in developed and developing countries. They confirm that the presence of family members in rural and remote areas also increases the likelihood for a physician of choosing rural practice. Additionally, studies in the US, Canada, Australia, Japan, and many developing countries find consistent evidence that a rural background, defined as an experience of spending periods of one's childhood in rural areas, has a significantly positive correlation with rural practice (Chomitz et al., 1998; Laven and Wilkinson, 2003; Matsumoto et al., 2005; McGrail et al., 2011).

Few studies focus on how age affects physicians' location choices and movement. Bolduc et al. (1996) study location choices of newly trained GPs establishing their initial practice in Canada. They find that the older generation of GPs is less likely to practise in remote and isolated areas than younger GPs. Using a sample of new medical graduates in the US, Holmes (2005) finds that older medical graduates are more likely to enroll in government rural incentive programs to work in needy areas than their younger counterparts. In addition, from a dynamic perspective, age is found to be a major determinant of physicians' movements characterised by younger cohorts being more prone to migrate across regions than older generations (Basu and Rajbhandary, 2006; Dostie and Léger, 2009; Vanasse et al., 2007).

Although myriad studies report the factors that influence physicians' location decisions, some questions remain unanswered. Little attention is paid to a gender-related difference in the effect of geographical attachment variables on rural practice. In addition, none of these papers shed light on the effect of age on the direction of GPs' movements, such as moving to a relatively rural area or moving to one that is relatively urban. This paper aims to provide empirical evidence to answer some of these unexplored questions.

3. Data and variables used

3.1. Data source

The data are from the first five waves of MABEL survey that cover 2008 to 2012. The first wave of MABEL in 2008 undertakes a survey of the entire population of doctors providing clinical medical services in Australia (Cheng et al., 2012). The data contain

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