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The self-reinforcing effects of population decline: An analysis of differences in moving behaviour between rural neighbourhoods with declining and stable populations

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ABSTRACT

The consequences of population decline are present at different geographical scales and are often believed to be self-reinforcing. This means that population decline possibly causes changes in the living environment, which brings about more population decline. This research analysed if population decline at the neighbourhood level has an effect on the probability to move out or within rural neighbourhoods in North-Netherlands. It was expected that a preceding decline of the population in the neighbourhood increased the probability to move out of the neighbourhood, but that this effect differed for categories of the population and for moves over short and long distance. Using register data and additional surveys for 2006, a multinomial logistic regression model was constructed to estimate the effects of a preceding decline of neighbourhood populations on the probability to move over short and long distances for different categories of the population. It was found that a preceding decline of the neighbourhood population increased the probability to move out of the neighbourhood. However, this effect was only found for moves out of the neighbourhood up to 10 km of especially young adults, couples with children, and people aged 65 to 75. Moreover, by calculating estimated probabilities of moving out of neighbourhoods with declining and stable populations, it was shown that the difference between actual numbers of people moving out of these two types of neighbourhoods, was small and could therefore take a long time to have serious impact on the neighbourhood population.

1. Introduction

As a growing number of developed countries and regions across the world are reporting falling population numbers (Lee and Reher, 2011; Martinez-Fernandez et al., 2012), both scholars and public policymakers have become increasingly interested in the issue of population decline over the past decade (Feser and Sweeney, 2003; Stockdale, 2006; Reher, 2007; Haartsen and Venhorst, 2010; Matanle and Sato, 2010; Coleman and Rowthorn, 2011; Matanle and Rausch, 2011; Martinez-Fernandez et al., 2012; Bontje and Musterd, 2012; Haartsen and Van Wissen, 2012; Hoekveld, 2012). Regardless of the scale at which population decline is being observed, it is clear that such decreases can happen for a variety of reasons, and can have a wide range of consequences. In order to simplify the discussion of these complex processes, scholars often make a distinction between population decline in urban and in rural areas. In this study, we examine rural population decline.

Population decline is sometimes thought to be a self-reinforcing process (Myrdal, 1957; Friedrichs, 1993). The belief in the self-reinforcing effect of population decline is based on two assumptions. First, it is assumed that population decline leads to changes within the areas in which the process occurs. Second, it is thought that the changes that take place within these areas will influence moves to and from these places: i.e., that more people will leave, and/or that fewer people will enter. When taken together, these two assumptions suggest that there is a downward spiral of self-reinforcing population decline.

Until now, the self-reinforcing effects of population decline have been analysed at the national or at the regional level (Myrdal, 1957; Richardson, 1978; Friedrichs, 1993; Lehtonen and Tykkyläinen, 2010), but not at the local level, which more closely approximates the direct living environment of an individual than the national or regional level. It is reasonable to assume that population decline at

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the neighbourhood level interacts with other aspects of the neighbourhood, like housing and services. The availability of population register data in the Netherlands now makes it possible for us to analyse whether there is a self-reinforcing effect of population decline at the neighbourhood level. In this article, the Dutch administrative unit of the neighbourhood is used to operationalise the local level.

One way to determine whether a self-reinforcing effect of population decline exists at the neighbourhood level is to test whether a preceding decline in the population of a neighbourhood has influenced subsequent moving behaviour. Thus, in this study, we will look at whether adults who live in a rural neighbourhood in North-Netherlands where the population has been declining over time are indeed more likely to move than adults who live in a neighbourhood where there has been no decrease in the population in recent years. We have chosen to focus on rural North-Netherlands because in this area the changes in population vary greatly at both the regional and the neighbourhood levels.

An important aspect of rural population decline is selective moving behaviour. In rural regions, talented young adults in particular are more likely than others to move to pursue education and employment opportunities (Zelinsky, 1971; Rees et al., 1997). This is of major concern to local policymakers, who may fear that as a result of brain drain certain neighbourhoods will become repositories for low-educated and unemployed people. Over the past few decades a number of scholars have studied the phenomenon of brain drain, but usually in relation to the regional economy of the sending and receiving regions (Mountford, 1997; Beine et al., 2001; Docquier and Rapoport, 2012). Selective migration has not yet been investigated in the context of neighbourhood-level population decline. Thus, in this research we analysed whether the effect of a preceding decline in the population on moving behaviour varies across different categories of the population.

To analyse how individual out-migration behaviour from rural neighbourhoods in North-Netherlands is affected by a preceding decline in the population at the neighbourhood level, a multinomial logistic regression model is constructed around data from the Dutch population register and other relevant data sources for the year 2006, in which a preceding decline in the population is included as an independent variable. The model is multinomial because a distinction is made in the dependent variable between moves over short, medium, and long distances. This distinction was necessary because moves over short and long distances are different in nature (Biagi et al., 2011). While the overarching goal of the analysis is to explain the effect of a preceding decline in the population on moving behaviour in general, we pay special attention to the out-migration of categories of people with different educational levels and different occupational statuses.

2. Population decline at the neighbourhood level

Population decline takes place at multiple spatial-scale levels (Bontje and Musterd, 2012). In Europe, for example, population decline at the national level appears to be more prevalent in eastern Europe (Turok and Mykhnenko, 2007), but it has been occurring at the regional level in many parts of western Europe as well (Martinez-Fernandez et al., 2012). Urbanisation is often the driving force behind population decline in developed countries. People leave the countryside and move to urban environments, where they have better job prospects and educational opportunities (Zelinsky, 1971; Rees et al., 1997). Since these migration flows from rural to urban are, in general, not compensated for by sufficient urban to rural migration, this process often results in shrinking rural regions and expanding urban regions, and it takes place in a context of declining or negative natural increase.

The drivers of this macro-trend of rural population decline do not, however, explain why it is the case that within declining rural regions, population numbers are decreasingly sharply in certain places, while in other places numbers are stabilising or even growing. The heterogeneity of rural population trends cannot be explained by the lure of the city alone, which has the potential to affect all of the people who live in rural areas. Local factors are therefore expected to influence the pattern of winners and losers among the different places in rural areas. While these places can be towns, neighbourhoods, villages, hamlets, sparsely settled agricultural lands, or any other administratively bordered area; in this paper we simply refer to them as “neighbourhoods”. Statistics Netherlands also uses this term for the lowest spatial scale level, as it is assumed to capture the local living environment of the people.

Although this research focuses on the neighbourhood level, it is important to note that the living environment of individuals is by no means limited to this relatively small area. Across the Netherlands, the average person travels almost an hour a day over approximately 30 km. Because of the lower levels of urbanisation in the region, the average person living in North-Netherlands travels slightly farther in a shorter amount of time (Statistics Netherlands, 2013). People make daily journeys for a variety of reasons. First, people are often employed outside of their neighbourhood. Second, people may travel outside of their rural neighbourhood to provide for their daily needs, which often cannot be met by the services offered within the neighbourhood. Although the prevalence of services in rural areas is declining, most vital services can still be found within 10 km of the neighbourhood (Statistics Netherlands, 2013). The Netherlands can therefore be said to have a dense network of services, even in rural areas. Third, people may leave their neighbourhood to meet with other people, as many residents of rural areas have friends and relatives who live elsewhere. Research has shown that people in these areas travel an average of 5 km a day to meet with other people (Statistics Netherlands, 2013). After combining this information, we identified four levels in the living environment for the purposes of this study: the neighbourhood level (services and social contacts in the immediate vicinity of the residence), the broader living environment (additional services and social contacts), the region (employment and more specialised services), and the national level (special services and contacts).

2.1. North-Netherlands

North-Netherlands can be considered the most rural area in the Netherlands, based on both its low population density, as well as on the perceptions of the Dutch people (Haartsen, 2002). The area, which has traditionally been dominated by agriculture and other forms of primary production, consists of three provinces: Groningen, Friesland, and Drenthe. The combined population of these provinces in 2006 was around 1.7 million, or about 10% of the total Dutch population. Only six municipalities in the region had more than 50,000 inhabitants (Statistics Netherlands, 2013). Following Haartsen et al. (2003), who defined areas with an address density of fewer than 1000 addresses per square kilometre as rural, 66% of the North-Dutch were living in rural areas in 2006, compared with only 38% of the population across the Netherlands (Statistics Netherlands, 2013) (see Fig. 1).

The population of North-Netherlands is still growing, and will continue to expand up to 2028, according to official projections (Statistics Netherlands, 2013). Within North-Netherlands, however, large differences can be found between regions. For example, North-Drenthe, which is located within an easily commutable distance of the city of Groningen, has been growing since 1996; whereas the more remote Eemsdelta region has been shrinking during this period. In addition to looking at the differences between