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The spatial diffusion of nonmarital cohabitation in Belgium over 25 years: Geographic proximity and urban hierarchy

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Abstract

Background

While previous studies have shown that nonmarital cohabitation is socially diffused, few have addressed the spatial dimension of this diffusion process. To our knowledge, no studies exist on this topic for Belgium. This article examines the spatial dimension of this demographic change in Belgium.

Objective

This study aims to answer the following questions: Is there a process of spatial diffusion of nonmarital cohabitation in Belgium? What is its spatial pattern? In which regions does nonmarital cohabitation increase first, and which are resistant to this demographic change? How has this diffusion taken place geographically?

Methods

We use data from the Belgian National Register. It makes it possible to achieve analysis at a detailed geographical level (the municipality) and a large time coverage (1991–2015). We use thematic cartography to reveal the spatial pattern of diffusion of nonmarital cohabitation in Belgium.

Results

There is a spatial diffusion of nonmarital cohabitation in Belgium. It is similar to that of the fertility decline during the first demographic transition. This process has occurred through expansion diffusion (by geographic proximity) and hierarchical diffusion (through the urban hierarchy).

Contribution

The article highlights the importance of investigating nonmarital cohabitation from a spatial and temporal perspective. It describes the spatial pattern of the spread of nonmarital cohabitation in Belgium, a truly original result in the literature. We have also clearly identified the importance of the hierarchical aspect. To our knowledge, this has never been done before in the literature on nonmarital cohabitation. Our results have important implications for statistical modelling of this process.

1. Introduction

In the early 1970s important sociodemographic changes took place in several European countries. These included a declining interest in marriage, diversification in the formation of unions and an increase in the dissolution of unions, the delaying of motherhood, and persisting subreplacement fertility. The theoretical framework of the second demographic transition (SDT) was developed in the 1980s to describe and explain these different transformations (Van de Kaa and Lesthaeghe 1986). Having attracted much discussion and criticism, the SDT has now been the subject of a very broad theoretical and empirical literature (Zaidi and Morgan 2017). Nevertheless, few studies have taken a spatiotemporal approach to the SDT, with the aim of analysing how the new demographic behaviours of the 1970s have been propagated in space over time. Several studies have already highlighted a process of spatial diffusion, with in particular a propagation diffusion (Bleha and Ďurček 2019; Caltabiano et al. 2019; Kurek 2011; Valkonen et al. 2008; Vitali, Aassve, and Lappegård 2015).

While several dimensions of the SDT have been studied from the point of view of spatial diffusion (single-parent families, births out of wedlock, divorce, etc.), this has not been the case for nonmarital cohabitation. However, there are indications that the spatial diffusion process would be appropriate for this type of union. Cohabiting without being married can be considered a demographic innovation, as can voluntary birth control during the historical decline in fertility (Casterline 2001). Studies have shown that nonmarital cohabitation is “contagious” (Nazio 2008:162) since its propagation in a population take place through social diffusion, that is, it spreads through social interaction (Guetto et al. 2016; Di Giulio and Rosina 2007; Nazio and Blossfeld 2003). An innovation that spreads through social interaction is spread in space (Hägerstrand 1967). However, to our knowledge, no paper has highlighted how the spatial diffusion of nonmarital cohabitation occurs. This is surprising since nonmarital

cohabitation is a very important dimension of the SDT because it marks a break with traditional family models, in which marriage is an obligatory prerequisite for a couple to cohabit in the same dwelling.

In this article, we attempt to fill this gap by examining the spatial diffusion of nonmarital cohabitation in Belgium. This is one of the countries where the SDT was first identified and where it became a privileged case study county, for its spatial among other aspects (Lesthaeghe and Lopez-Gay 2013; Lesthaeghe and Neels 2002), although not in the context of nonmarital cohabitation. In particular, no diachronic maps have been produced to describe the different stages of spatial diffusion. This study has two objectives: first, to verify the existence of spatial diffusion in nonmarital cohabitation in Belgium; and second, to describe the spatial pattern of the process, i.e., the precursor regions where nonmarital cohabitation first appeared, the directions of spatial diffusion, and the regions that are resistant to change.

2. Data and methods

For this study, we used data from the Belgian National Register. This centralised population register provides continuous and exhaustive registration of information on individual residents: date of birth and dates of all demographic events that punctuate an individual's life, sex, marital status, places of residence, nationality, household status, and position of the individual in the household.

This data source has several advantages. The first is the quality of the data produced, as confirmed in several studies (Poulain and Herm 2013). The second is the long time coverage and the annual frequency of the data. Officially created in 1985, the National Register provides data from 1991 onwards. It therefore currently makes it possible to study the Belgian population

exhaustively and annually for a period of a quarter of a century. The third advantage is the availability of data at the municipality level, which is the local geographical level required for accurate identification of spatial diffusion, clearly distinguishing between urban and rural regions. These three characteristics make the National Register the best source for studying the spatial diffusion of demographic behaviour in Belgium. Indeed, based on this data source, it is possible to spatially analyse a phenomenon both at the local geographical level (municipality) and with a very fine temporal granularity (annual).

To study nonmarital cohabitation, we use the LIPRO household typology, created in 1991 by the Netherlands Interdisciplinary Demographic Institute (NIDI). This typology has eight types of households (Lodewijckx and Deboosere 2008): one-person, married couple without children, married couple with children, single-parent family, unmarried couple without children, unmarried couple with children, collective household, and other household.

By distinguishing married couples from unmarried couples, this typology is able to obtain an indicator of nonmarital cohabitation in Belgium. We chose to calculate the proportion of cohabiting unmarried couples among cohabiting couples (married and unmarried) whose head of household is between 15 and 44 years old. We did not calculate the proportion with respect to all households because if we had, our indicator would be biased by the change in the proportion of other types of households, such as single-parent or one-person households. In addition, we limited the calculation of our indicator to households with a head of household aged 15 to 44 years because this is an age group frequently used in the literature to measure cohabitation outside marriage with cross-sectional data (Gassen and Perelli-Harris 2015; Heuveline and Timberlake 2004; Kennedy and Bumpass 2008).

The objective of this article is to highlight the spatial pattern of the diffusion of nonmarital cohabitation in Belgium. To do this, we mapped our indicator at the level of Belgian municipalities. We aggregated the municipalities of the Brussels-Capital Region so that its area would be comparable to those of the other large Belgian cities, which are composed of a single municipality. Indeed, with 19 municipalities, the detailed spatial granularity of the Brussels-Capital Region is conducive to an intraurban analysis; however, this is not the geographical scale chosen for this article. Our result is a series of nine diachronic maps, with one map every three years between 1991 and 2015. Traditional data sources generally do not allow for the observation of a phenomenon both at a fine geographical level and at short time intervals. This is certainly true for nonmarital cohabitation, which is generally measured from census data, allowing for its evolution to be monitored approximately every 10 years for most countries. From this point of view, the Belgian National Register is an exceptional source.

To understand spatial diffusion from thematic maps, it is necessary to determine the number of classes and their boundaries. We opted for a common discretisation of values, i.e., the same discretisation for each map. Since the distribution of nonmarital cohabitation rates is uniform, we use the method of discretisation by equal amplitudes in six classes.

To make it easier to read the maps, we used a black line to represent the linguistic border between Flanders (Flemish-speaking) and Wallonia (French-speaking) regions, because several studies have shown that this frontier is a barrier for the spread of fertility behaviours during the fertility transition (Costa 2015; Lesthaeghe 1977) and also during the SDT (Lesthaeghe and Lopez-Gay 2013). In addition, two types of spatial diffusion of innovation are generally distinguished in the literature (Saint-Julien 2007): propagation diffusion by geographic proximity, and hierarchical diffusion, where the urban hierarchy can constitute a diffusion

channel. Innovation generally spreads from large urban centres to small towns. While mapping makes it easy to assess propagation diffusion, this is less obvious for hierarchical diffusion. To achieve this, we depict the urban hierarchy of municipalities with more than 50,000 inhabitants in 2015, distinguishing between two levels: those with more than 100,000 inhabitants and those between 50,000 and 100,000 inhabitants, represented respectively by a circle and a smaller square (see Figure 1).

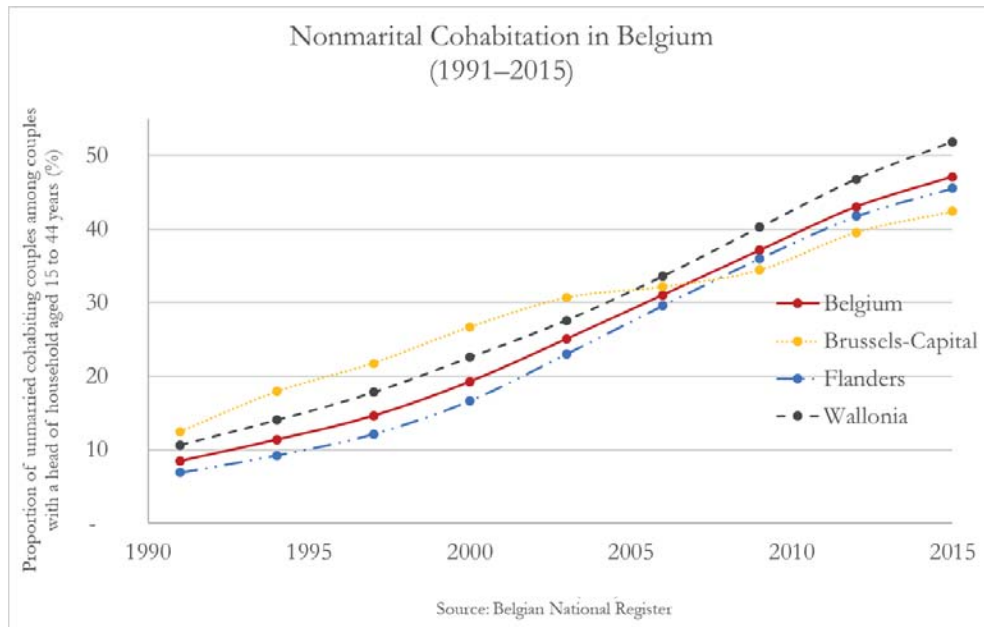
Figure 1: Location map



3. Results

First we display of the evolution of nonmarital cohabitation in Belgium (see Figure 2). In 1991, the prevalence of this demographic behaviour was very low (less than 10%). This level reached almost 50% in 2015, a very rapid transition since it has taken place in less than 25 years. Although all Belgian regions are experiencing this increase, Wallonia is ahead of Flanders. The Brussels-Capital Region has a particular profile: its increase in nonmarital cohabitation slowed between 2003 and 2009, recovering thereafter, and it thus has a lower level of nonmarital cohabitation than Flanders or Wallonia.

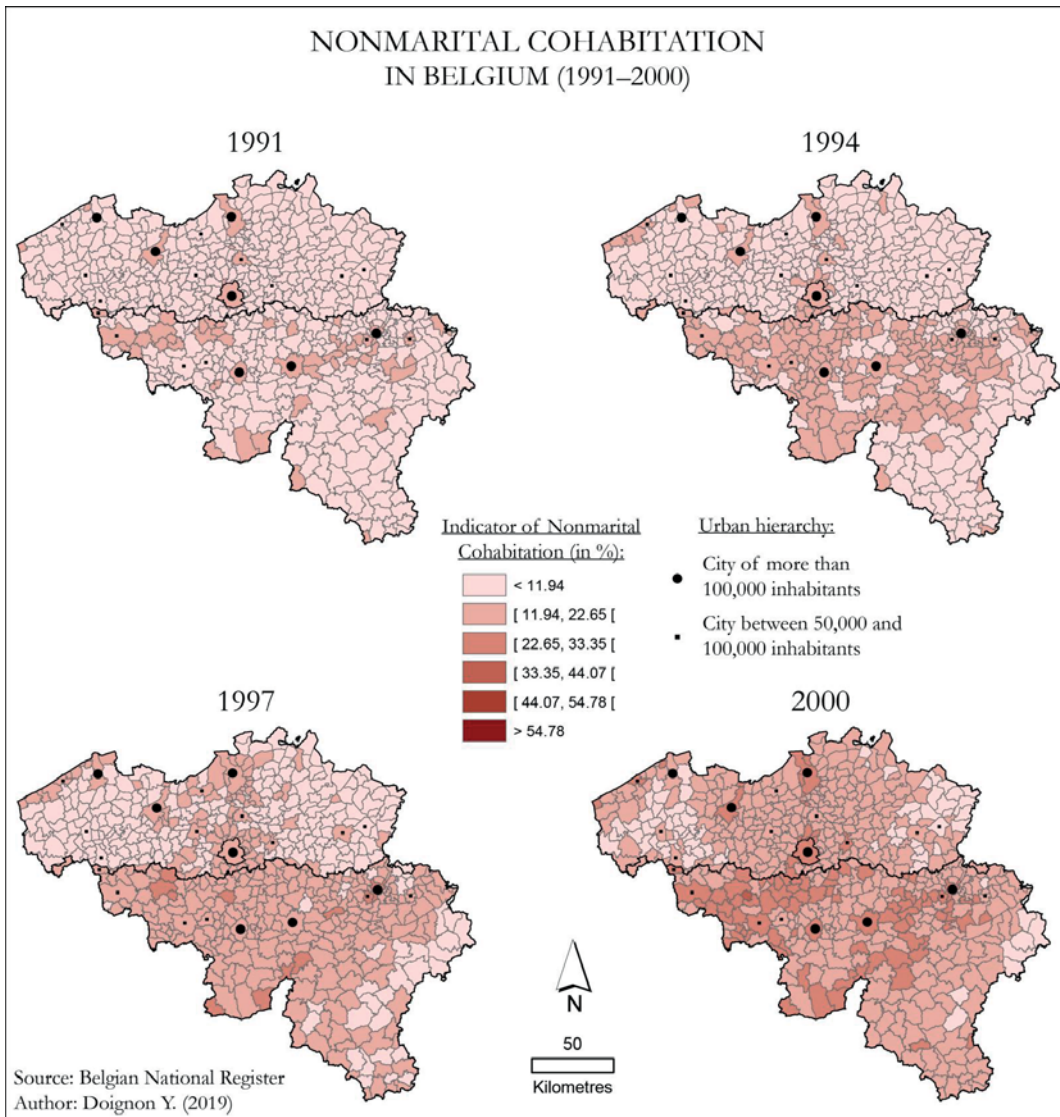
Figure 2: Evolution of nonmarital cohabitation in Belgium (1991–2015)



Using maps, we analyse how nonmarital cohabitation has evolved in the Belgian territory (see Figure 3 and Figure 4). In 1991, nonmarital cohabitation was a minority behaviour (less than

12%) in the vast majority of municipalities. However, some regions already had a higher prevalence (between 12% and 22%), mainly in northern Wallonia and in some Walloon industrial cities. In Flanders, these levels were only observed in Antwerp, Ghent, Mechelen, and some coastal municipalities. These regions, as well as all the country's largest cities (except Bruges), were pioneers in the process: they were the first to see an increase in nonmarital cohabitation. In the post-1991 maps, we focus on regions that reach higher levels of nonmarital cohabitation, that is, those whose cohabitation without being married ceases to be a very minority behaviour in the population.

Figure 3: Nonmarital cohabitation in Belgium (1991–2000)



In 1994, nonmarital cohabitation spread to the whole of the northern half of Wallonia from the forerunner regions, encompassing all secondary Walloon cities. There is a very clear differentiation between Wallonia and Flanders. Indeed, in Flanders, spatial diffusion takes place only on the littoral and around the Brussels agglomeration. Although the administrative region encompassed by the Brussels agglomeration is in Flemish territory, the large majority of its population is French-speaking. In addition, the proportion of French speakers in the area around Brussels is very high, with its municipalities offering “language facilities”, that is, bilingual services. Elsewhere in Flanders, the process is much more limited than in Wallonia since the increase in nonmarital cohabitation is limited to only a few cities (Antwerp, Ghent, Ostend, Mechelen). The linguistic boundary therefore seems to constitute a barrier to spatial diffusion.

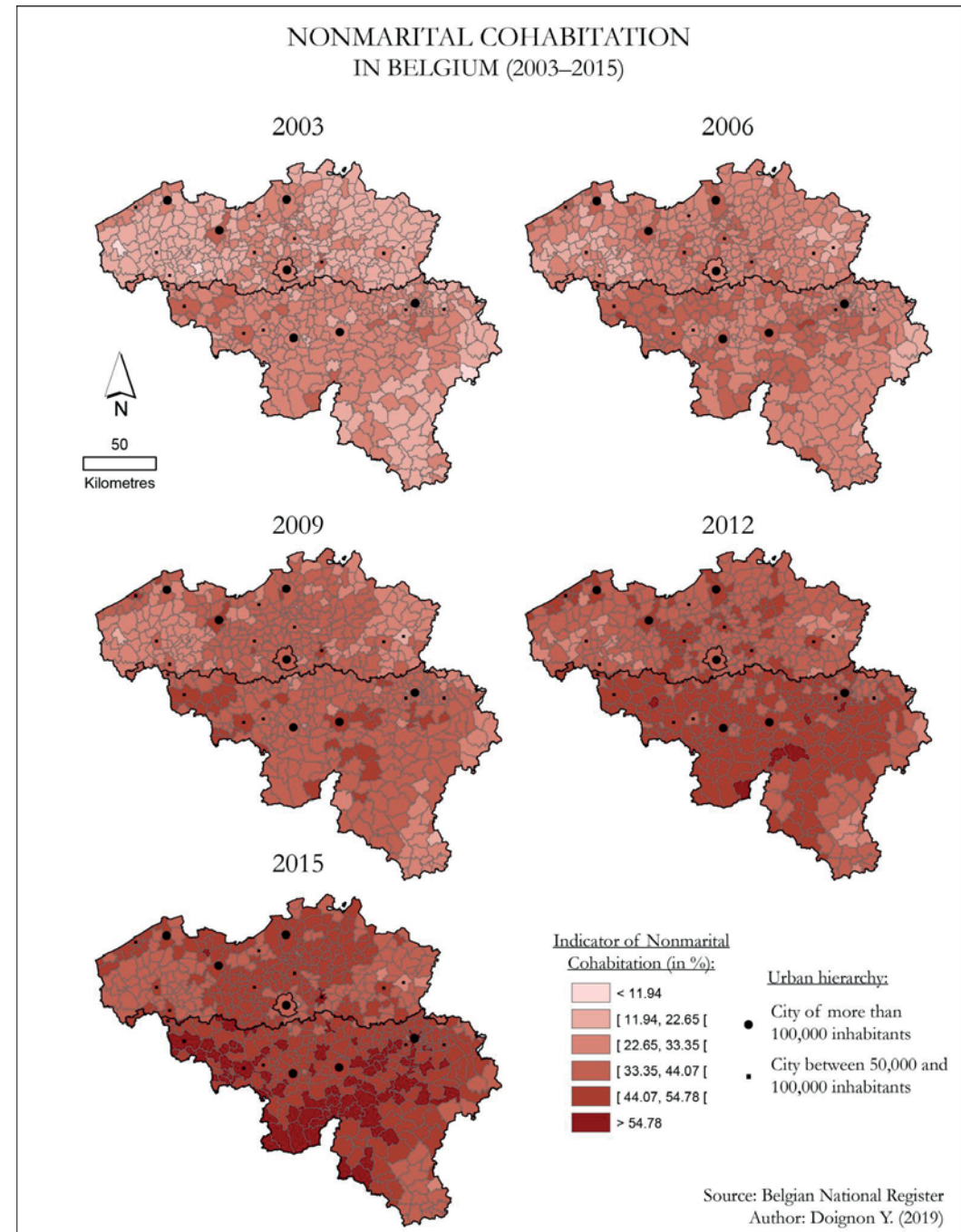
In 1997, the increase in nonmarital cohabitation affected all of Wallonia except the southeast. The Brussels agglomeration and Liège were starting to show even higher levels (between 22% and 34%) than the others. In Flanders, nonmarital cohabitation began to spread in the Brussels–Ghent–Antwerp triangle, but also in Bruges. Three regions were clearly resistant to diffusion: West Flanders, East Flanders, and the eastern Ardennes, including the German-speaking area. These are regions where nonmarital cohabitation remains a minority behaviour, together with three Flemish urban municipalities (Kortrijk, Roeselare, Genk), although nonmarital cohabitation has increased in all Belgian urban municipalities with more than 50,000 inhabitants. In these resistant regions, secularisation has historically been less important and slower than in the rest of Belgium (Lesthaeghe and Lopez-Gay 2013; Lesthaeghe and Neels 2002).

In 2000, nonmarital cohabitation spread in Flanders beyond the Brussels–Ghent–Antwerp triangle. In addition, the resistance zones shrank. In some areas levels exceeded 22%: in the

northern half of Wallonia, in the former industrial belt, and in the largest Belgian cities (Brussels agglomeration, Liège, Antwerp, Ghent, Namur, Charleroi).

By 2003, the first stage of the spatial diffusion of nonmarital cohabitation was complete: all territories had seen their level of nonmarital cohabitation increase, and this behaviour was no longer largely a minority one. After 2003, nonmarital cohabitation continued to increase across the country, but the pace may have been different in different territories. In any case, this evolution follows the main characteristics of the spatial pattern highlighted above, where ever-higher levels are reached first by the precursor regions and last by the resistant regions. In 2015, the levels of nonmarital cohabitation achieved by some regions were sometimes high. For example, half of cohabiting couples were not married in some Walloon regions.

Figure 4: Nonmarital cohabitation in Belgium (2003–2015)



4. Discussion and conclusion

The results confirm the existence of a spatial diffusion of nonmarital cohabitation in Belgium. Based on data from the Belgian National Register, we have been able to describe all the steps of this process with great precision. The maps of nonmarital cohabitation covering the period of 1991–2015 are original, with no study having provided these before, especially at such a high level of geographical and temporal detail. It is possible to describe quite clearly the spatial pattern of this diffusion. The precursor regions are the cities (and their peripheries) of the former Walloon industrial belt, the Brussels agglomeration, and the large Flemish cities. Nonmarital cohabitation then spreads by geographic proximity from these precursor regions to the northern half of Wallonia in the first instance. The linguistic border therefore constitutes a barrier to diffusion. In a second stage, the spatial diffusion extends to the rest of Wallonia – except in the southeast – but also in Flanders, first along the coast and in the Brussels–Ghent–Antwerp triangle, and then finally in West and East Flanders and east of the Ardennes. These regions of resistance saw their increase in nonmarital cohabitation take place more than 12 years after the precursor regions. The spatial pattern of this diffusion is broadly similar to that of the decline in fertility during the first demographic transition in Belgium (Costa 2015; Lesthaeghe and Lopez-Gay 2013; Lesthaeghe and Neels 2002).

On the other hand, our study highlights an original characteristic of the spatial distribution of nonmarital cohabitation in Belgium: its hierarchical character. Through a local level of analysis, we show that this diffusion by geographical proximity is combined with a hierarchical diffusion, where demographic innovation spreads from large urban communes to smaller ones. In particular, we have shown that not all urban territories are affected by diffusion at the same time: the main cities are affected earlier than secondary cities, and cities in resistant regions are further behind in comparison to other cities.

However, spatial diffusion is not yet complete since there seems to be no saturation between 2012 and 2015: nonmarital cohabitation continues to increase in all municipalities. We think that this process will continue, at least in the near future. The question now is at what level nonmarital cohabitation will stabilise. Will nonmaritalit be at the same level in the Walloon territories as in Flanders and the Brussels-Capital Region?

The fact that nonmarital cohabitation has spread in space by geographic proximity and hierarchically has important implications for modelling the process. Propagation diffusion means that a region close to those where nonmarital cohabitation has spread is more likely to see its level of nonmarital cohabitation rise. In fact, the level of a region is dependent on those of neighbouring regions. This means that the nonmarital cohabitation levels of the regions are not independent, thus refuting the assumption of independence of observations in conventional regression models. It is therefore necessary to use specific models, namely spatial models (Anselin 1988; Elhorst 2010). Moreover, the hierarchical diffusion highlighted in this article means that the urban network may be a channel through which innovation spreads. The urban hierarchy must therefore be explicitly integrated into the modelling, which, to our knowledge, has been rarely done in the models used in the literature.

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Responsable

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