Vienna Yearbook of Population Research 2023 (Vol. 21), pp. 277–309

Is Spanish depopulation irreversible? Recent demographic and spatial changes in small municipalities

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Abstract

Many small Spanish municipalities (those with less than 2000 inhabitants) experienced population growth during the first decade of the 21st century due to a large influx of foreign immigrants. However, the Great Recession put an end to this trend. The first aim of this paper is to analyse the demographic impact of the new phase of economic growth – known as the "post-crisis" period (2014–2020) – on small Spanish municipalities. The second aim is to carry out an initial analysis of the impact of the Covid-19 pandemic crisis on the growth of these municipalities. The results of a nine-category typology show that during the post-crisis period, the vast majority of villages continued to depopulate, while a minority gained population or had stagnant population figures. The Covid-19 pandemic represented a turning point, with small municipalities as a whole starting to grow again. However, the population did not increase in all categories of villages or in all regions of rural Spain. The results for both periods (post-crisis and Covid-19 pandemic) highlight the growing importance of migration to demographic change in the smallest municipalities.

Keywords: rural depopulation; post-crisis period; Covid-19 pandemics; small municipalities; Spain

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https://doi.org/10.1553/p-9fd9-h7g5

1 Introduction

While Spain experienced strong population growth throughout the 20th century, with the total population increasing from 18.6 million inhabitants in 1900 to 41.1 million in 2001, municipalities with less than 2000 inhabitants experienced considerable population losses due to high levels of migration from the countryside to urban areas. This phenomenon has been called the Spanish "rural exodus". While this exodus began in some areas as early as the 19th century (Recaño, 2017; Silvestre, 2005), it intensified in the first 30 years of the 20th century. Then, after declining during the Civil War and the post-war period, it accelerated again from the 1950s to the 1970s (Collantes and Pinilla, 2019; García-Docampo and Otero-Enríquez, 2012; Gutiérrez et al., 2020; Pujadas, 2007). During this period, industrial, tourist and urban areas – particularly Madrid and Barcelona, but also other large cities and provincial capitals – underwent exponential growth as a result of internal migration. Simultaneously, small municipalities progressively lost population. The 1970s oil crisis and the recovery of democracy coincided with the end of this rural exodus, which occurred largely because of the depletion of demographic reserves. Since then, the main features of the dwindling populations of these small municipalities have been ageing and masculinisation (Comisionado del Gobierno para el Reto Demográfico, 2018), as these towns have not recovered from decades of population losses due to migration. These losses are relevant, as a municipality's population size is a key determinant not only of its ability to provide efficient services, but also of its capacity to reproduce itself and survive demographically (Camarero et al., 2009; Molinero, 2019; Pujadas and Bayona-i-Carrasco, 2019).

The following figures illustrate the long-lasting depopulation process in Spain and the predominance of small municipalities within the Spanish municipal structure. In 1900, 27.5% of the total population of Spain could be categorised as "rural population", a concept applied to municipalities with under 2000 inhabitants by the Spanish National Statistical Institute (INE). In fact, at the time, 77.8% of municipalities in Spain had fewer than 2000 residents. The share of the rural population in the total population had decreased to 15.5% by 1950, and to 8.6%, by 1981. During the 1980s, the decline in the rural population slowed, as the number of people living in these small municipalities was already extremely low. Indeed, the share of the rural population in the total population had fallen to just 7.3% by 2001, and to 5.7% in 2021, when 2.7 million inhabitants were living in small municipalities (last available data). Out of the 8131 municipalities in Spain in 2021, 5871, or 72.2%, had less than 2000 inhabitants. Out of these 5871 municipalities, 61% currently have less than 1000 inhabitants, and less than 1.5 million people, or 3.1% of the Spanish population, live in them, even though these municipalities spatially occupy 40% of the country's territory (Recaño, 2017).

Due to their older population structure, natural growth is negative in the vast majority of the small municipalities; i.e., there are many more deaths than births. In addition, in most Spanish municipalities, internal migration growth is also negative. Therefore, in these areas, foreign immigration is an important determinant of future

changes (Bayona-i-Carrasco and Gil-Alonso, 2013a; Camarero et al., 2013). During the first decade of the 21th century, many small municipalities started to grow (Collantes et al., 2014), as large numbers of foreign migrants entered the country in those years. Due in part to this influx of international migrants, the population of Spain reached more than 47 million in 2010. However, this period of demographic growth ended with the onset of the Great Recession. During the period from 2009 to 2014, Spain lost around 500,000 inhabitants, while small municipalities resumed their traditional depopulation trends. In this paper, our first aim is to answer the following questions: What effects did the new economic growth or "post-crisis" phase – defined as the period from 2014 to the onset of the Covid-19 crisis – have on the populations of small Spanish municipalities, and how did these effects differ from those in the economic crisis phase? Did they regain population as a whole? Did some municipalities gain population while others lost inhabitants? Which geographical characteristics of Spanish rural areas were associated with demographic revitalisation, and which were associated with depopulation?

The second aim of this paper is to carry out an initial analysis of the impact of the health and economic crisis caused by the Covid-19 pandemic on population growth in small municipalities. This exercise is interesting because it allows us to investigate whether the pandemic reinforced previous trends in small municipalities, or whether it introduced new demographic dynamics. This question is addressed by comparing the population registered in the *Padrón continuo* (local continuous register) on 1 January 2020 and on 1 January 2021 (the last official data available at the time of writing). Obviously, the Covid-19 pandemic had an impact on all demographic phenomena, increasing the number of deaths in municipalities with older populations, reducing the number of births (INE, 2021), and changing migratory flows. As international immigration slowed down during 2020 due to lockdowns and the closure of international borders (Arango et al., 2021 Fanjul, 2021), internal migration played a more prominent role, both because of its new intensity, and because the direction of flows changed (Del Romero and Arroyo, 2022; González-Leonardo et al., 2022; Recaño, 2020). Focusing on small municipalities is particularly important, as press reports[1] and provisional statistical data (Ajuntament de Barcelona, 2021; IDESCAT, 2022) indicate that there was a population flow from large cities to small

[1] The following are some newspaper articles on the subject: *El éxodo inmobiliario que viene tras el virus: de la ciudad al campo* (The real estate exodus, coming after the covid-19 pandemic: from the city to the countryside, *El País*, 2-5-2020) https://elpais.com/economia/2020-05-01/el-exodo-inmobiliario-que-viene-tras-el-virus-de-la-ciudad-al-campo.html; *El mapa del mayor éxodo desde las grandes ciudades de la última década: así se ha movido la población en la pandemia* (Map of the largest exodus from major cities in the last decade: how population moved during the pandemic, *El Diario*, 15-6-2021) https://www.eldiario.es/datos/pandemia-provoca-mayor-exodo-ciudades-ultima-decada-espana-rural-espana-vacia_1_8041708.html; *El fervor por dejar la ciudad decae al recuperarse la normalidad* (The desire to leave the city diminishes as normality is recovered, *La Vanguardia*, 12-10-2021) https://www.lavanguardia.com/vida/20211012/7783886/ciudades-pueblos-rural-vivir-habitantes-exodo-abandono.html.

towns. These were mainly people who were seeking to escape urban lockdowns and to live in less dense areas with better environmental conditions (Hamidi et al., 2020). We believe that examining whether these new migration flows from cities to rural areas have reversed depopulation trends, and have thus redrawn the spatial patterns that existed before the Covid-19 pandemic, is a good point from which to start predicting the demographic future of small municipalities.

2 Theoretical framework

In a dynamic definition of the term, depopulation refers to a chronic loss of population in a municipality that precludes the possibility that it will recover its previous maximum population size (Johnson and Lichter, 2019). According to Pinilla and Sáez (2017), depopulation is a demographic and spatial phenomenon that can be explained by economic factors, and that can, in many cases, be counteracted only by designing and implementing specific policies for this purpose (Collantes and Pinilla, 2020). Depopulation processes tend to be long-lasting, and to have distinctive features in each country depending on its stage of industrial development and of urbanisation (Bairoch, 1985). Britain led the way in Europe, followed by Belgium and the Netherlands, then by France and Germany, and, finally, by the southern European countries, including Italy and Spain. At the beginning of these processes of industrialisation and urbanisation, the rural population was declining slowly. After the Second World War, there was a period of acceleration in most countries. Like in Spain, rural depopulation began in Italy in the final decades of the 19th century, and accelerated between the 1950s and the 1970s (Del Panta and Detti, 2019). While rural depopulation slowed in the most advanced European countries in the 1960s, in the countries that were lagging behind, including in Spain, it did not start to slow until the 1980s (Collantes and Pinilla, 2011).

Some of the economic causes of rural depopulation are obvious: a change in the economic model, such as a shift from a traditional agrarian society to an industrial and service-based economy, can lead to a rural exodus (Molinero, 2022). However, the causes of rural emigration are diverse. Although economic considerations, and especially the desire to get a better job, are the most intuitive reasons for moving to other areas, some studies have suggested that the reasons why people move from small towns to cities go beyond a desire for better job opportunities. Other potential reasons for such moves include a desire to pursue educational opportunities, personal issues, and the feeling of belonging or the desire for personal experiences in urban areas. Indeed, several multidimensional issues are involved in the process of depopulation, which is always accompanied by social changes in rural communities (Rodríguez-Soler et al., 2020). In addition, in many European countries, low fertility levels and population ageing have led to the expansion of areas with negative natural growth, and particularly of rural areas (Johnson et al., 2015). From a demographic perspective, depopulation tends to be cumulative, as municipalities that have lost population in the past are also among those that are most likely to do so in the future,

which contributes to the perpetuation of regressive trends in the rural population (Nieto-Masot et al., 2020; Reynaud et al., 2020).

In rural areas experiencing negative natural growth, a potential population increase can only come from positive migration growth; i.e., from more people arriving and settling in those areas than are leaving them. Moreover, these flows, whether international or national, must be big enough to offset negative natural dynamics. International migration has been one of the main sources of population recovery in small municipalities, both in the United States (Johnson and Lichter, 2019) and in Europe (Kordel et al., 2018; Rye and O'Reilly, 2020). Hence, there is a large body of academic literature that has analysed this phenomenon at both the international comparative level (Jentsch and Simard, 2009; Halfacree, 2008; Hugo and Morén, 2008; Milbourne, 2007) and the individual country level in the last two decades. For instance, in southern Europe (Döner et al., 2020), the cases of Greece (Kasimis et al., 2003), Italy (Reynaud et al., 2020) and Portugal (Fonseca, 2008) have been analysed. Moreover, international immigration settlement patterns in rural areas in Spain have been studied, both in the country as a whole (García-Abad and Otero-Enríquez, 2014; Lardiés-Bosque, 2018; Morén and Solana, 2004; Morén-Alegret et al., 2018) and in specific autonomous communities (Camarero and Sampedro, 2019; Delgado-Viñas, 2019; Esparcia, 2002; Gil-Alonso and Bayona-i-Carrasco, 2021; García-Coll and Sánchez-Aguilera, 2005; Solé et al., 2012). The results of these studies show that the arrival of foreign immigrants in rural areas has helped to counteract population losses; to change population trends; and, in some cases, to even reverse these trends. However, these effects have varied over time depending on fluctuations in the international economy that can lead to population changes (Gil-Alonso and Thiers, 2019). In addition, the effects of the arrival of foreign immigrants have varied across different parts of the country, strengthening long-standing polarisation processes between the more dynamic areas and the more regressive rural areas (Camarero, 2020; Roquer and Blay, 2008). Molinero (2022), for instance, has argued that the former areas are mainly located in peripheral (coastal) provinces, but also in some interior development axes; whereas the latter areas are mainly located in inland Spain. Among these more regressive areas, the author distinguished between "remote" rural areas and "ambivalent" areas, which are also largely located in the interior provinces, but are more economically diverse and resilient. However, changes in the functions of rural space are especially visible in the coastal regions. There, agricultural activities have become less relevant, while industrial activities, including agro-industry related to intensive agriculture, and above all services, have become increasingly important. Indeed, these new activities in the peripheral rural areas have helped them to retain their native populations, while also attracting international immigrants.

Internal migration, which is a key factor in population distribution in many European countries (Rowe et al., 2019) and in the world (Rees et al., 2017), has also had a very diverse impact on rural areas (Rivera, 2020). Generally, most Spanish rural municipalities have experienced negative internal migration growth: i.e., more people have left than have arrived. This internal migration growth has been particularly negative in places where population dynamics are especially

regressive; that is, in small municipalities with an older, masculinised population that is decreasing. As more women than men migrate from villages to urban areas, 85% of the municipalities with less than 1000 inhabitants currently have a predominantly male population (Comisionado del Gobierno para el Reto Demográfico, 2018). The opposite trend has occurred in large urban areas, which have, in recent years, become increasingly attractive (Otero-Enríquez et al., 2019) as global centres where human capital is concentrated. These global cities (like Madrid and Barcelona) have attracted highly educated young people, most of whom come from medium and small cities, rather than from small municipalities. Recently, internal migration growth has even become negative in many provincial capitals of inland Spain as a consequence of this brain drain (González-Leonardo, 2021).

However, not all small municipalities have lost population as a result of internal migration. Two categories of small municipalities have received more internal migrants than they have lost. The first category includes municipalities that are located on the periphery of large urban areas (Bayona-i-Carrasco and Pujadas, 2020), or of large, medium or even small cities. For example, the municipalities located around county capitals in Catalonia (Gil-Alonso and Bayona-i-Carrasco, 2021) have benefited from suburbanisation flows. In addition to these small municipalities affected by urban sprawl, there is a second category of rural towns that are located further away from urban areas, and that have also attracted internal immigrants and gained population. This phenomenon, known as "counterurbanisation" (Berry, 1980 Mitchell, 2004), is not common in Spain. It tends to occur in rural areas of great scenic beauty and high environmental value, particularly in those located in high mountains or near the coast. As a result, these areas have managed to develop tourist activities that have enabled them to retain population and attract new inhabitants (Solé et al., 2012). Some of these new residents, called "neo-rurals", have left the city to move closer to nature; while others have brought their urban lifestyles to the countryside, creating rural gentrification processes (Paniagua, 2002; Solana-Solana, 2006, 2010).

Another factor that can affect the survival of small municipalities is that some are used temporarily by a floating population who live in them for part of the year, mainly on holidays or weekends. The population of these towns multiplies during these periods. "Numerous studies by the Autonomous Communities estimate that, in summer, the rural floating population multiplies on average by 5 or 6. In smaller towns it increases by 2 to 3 times, and in the more tourist towns – which have sports facilities and other attractive elements – it multiplies by 10 times or even more" (Molinero and Alario, 2022: 195).

According to the 2011 census, the percentage of the population in small municipalities who belonged to the non-resident "linked" population was high, ranging from 29.5% for villages with less than 100 inhabitants to 21% in villages with between 100 and 500 inhabitants (Pujadas and Bayona-i-Carrasco, 2019). Many of these part-time residents, who might have been born in the village or come from an urban area, have restored old houses or built new ones, and thus have helped to prevent

the abandonment of these small towns. Hence, while the permanent population has been decreasing in these municipalities, the number of houses has been increasing (Molinero and Alario, 2022). This housing stock of secondary homes used by a temporary, floating population is particularly important in the smaller villages. In fact, in many of these villages, there are more secondary homes than main residences (Bayona-i-Carrasco and Gil-Alonso, 2013b).

Therefore, global figures on the rural population crisis reflect a wide range of local situations resulting from the multiple changes that have occurred in the rural areas of Spain since the mid-20th century. The shift from the paradigm of traditional agriculture to the paradigm of productivist, modernised and mechanised agriculture produced a surplus of labour. In response to this change, millions of people migrated from rural areas to cities in search of a better life. More recently, the third paradigm of integrated rural development and territorial cohesion, which is supported by the EU Common Agricultural Policy (CAP), has sought to promote the endogenous development of rural areas: i.e., development leading to the revival of rural areas and the return of people to them. However, these policies have not had the same results throughout Spain, or across Europe as a whole (Molinero, 2022). To make this rebirth possible, the "urban-rural divide" must be eliminated, or at least mitigated. Differences between urban and rural area in terms of socio-economic conditions and the availability of services should be minimised to improve the quality of life and the opportunities of rural inhabitants. Hence, rural inhabitants are calling for better access to the welfare state, and have argued that government services should be fairly distributed to citizens throughout the country, regardless of their place of residence (Camarero, 2022). As teleworking has become more widespread in the wake of the Covid-19 health crisis, some authors have identified a fourth potential paradigm of rural development: that of a complex, open and multifunctional rural society (Molinero, 2022). To assess how far we are from achieving such a shift, we need to know where the country stands. To this end, this paper analyses the emerging spatial patterns of population growth and decline in small municipalities in the 21st century, and the impact of the Covid-19 crisis on them.

3 Statistical sources and methodology

In this paper, microdata from the *Padrón Continuo*, the continuous population registration system that is supervised and coordinated by the Spanish National Statistical Institute (INE), are used. This system provides official population data for Spanish municipalities on 1 January of every year. The 21st-century demographic changes are analysed using population data from 2001 to 2021, which allows us to compare population changes in the period of intense economic growth with those that occurred during the deep economic crisis and the subsequent expansion phase. In addition, the initial effects of the Covid-19 pandemic on population growth are

studied. To this end, 5678 municipalities with less than 2000 inhabitants[2] in 2009[3] were selected. These municipalities represented almost 70% of the more than 8000 municipalities in Spain in 2009. A total of 2,791,582 people, or just 6.0% of the Spanish population, were living in these municipalities in that year. Their population in 2009 was taken as a reference because, after years of demographic growth and foreign immigration, this year marks a turning point for the population figures of many of these municipalities, largely due to the effects of the economic crisis.

Besides population stock data, birth and death figures obtained from *Movimiento Natural de la Población* (MNP) microdata were used to calculate natural growth rates by population size and their changes from 2001 to 2019, which was the last year for which data were available at the time of writing. Finally, migration growth was estimated by subtracting natural growth (births minus deaths) from total population growth in a given period.

$$P^{t+n} = P^{t} + B^{t,t+n} - D^{t,t+n} + I^{t,t+n} - E^{t,t+n}$$

For the analysis, the municipalities with less than 2000 inhabitants were classified according to their population growth during the 21st century. Cumulative annual growth rates were calculated for two periods. The first period, corresponding to the years before the economic crisis, runs from 1 January 2001 to 1 January 2009; while the second period, which covers the years affected by both the deep economic crisis and the recovery, runs from 1 January 2009 to 1 January 2020.[4] The following formula was used for this purpose:

$$\mathrm{r} = \left(\sqrt[n]{\frac{P_{i+n}}{P_i}} - 1 \right) \cdot 100$$

Where n represents the number of years, P_i the initial population and P_{i+n} the final population of the municipality under analysis.

The resulting rates were used to assign the municipalities to nine separate categories. The categories were formed based on whether the municipalities'

[2] Analysis is carried out at the municipal level, the unit normally used in these kinds of studies. However, this means that some areas of Spain are underrepresented. This is particularly the case in Galicia and Asturias, in the north-west of Spain, where small rural settlements are grouped into parishes. These parishes are grouped into municipalities containing more than 2000 inhabitants. Therefore, they are not included in this analysis.

[3] As 2009 is the first year in which the strong population growth that Spain experienced from the mid-1990s onwards began to slow down due to the Great Recession of 2008, the population on 1 January 2009 is considered as the turning point between the expansion and crisis phases.

[4] Twenty-three municipalities were not considered in the analysis, as they were either split or grouped to form a new one during the period under study.

population growth was positive, stable or negative in the first period (2001–2009) and in the second period (2009–2020). This resulted in nine different combinations. In those municipalities where growth ranged from −0.1% to 0.1%, population was considered stable. Table 1 and Figure 4 show the results obtained, and present the geographic distribution of each category.

Finally, in a last section, preliminary data for 2021 were analysed to determine the impact of the Covid-19 pandemic on the municipalities of the typology used in this research. As data on birth and deaths were not yet available at the time of writing, the analysis was based only on *Padrón continuo* stock data.

4 Recent population changes according to municipality size

The Spanish population grew from 41,116,842 in 2001 to 47,385,107 in 2021, according to the most recent *Padrón continuo* of 2021. Thus, over the first two decades of the 21st century, the country gained 6.2 million people, which represents an annual growth rate of 0.71%. International immigration boosted population growth rates in the early years of the century (1.62% from 2001 to 2009). From 2009 to 2020, these population growth rates declined to barely 0.14%.[5] However, not all municipalities followed these patterns, as the international migration boom mainly affected large municipalities. In small municipalities, population growth was also positive from 2003 to 2007, and even increased by 24,000 inhabitants in 2006. Thus, when population size is taken into account, it is clear that the positive population growth stage mainly concerned municipalities with more than 1000 inhabitants. In municipalities with 500 to 1000 residents, population growth was positive, but at much lower levels. Nonetheless, the population growth trend in Spain ended secular population losses in many small municipalities. However, among municipalities with less than 500 inhabitants, there was no such recovery, and the population continued to fall (Figure 1).

During the economic crisis, small municipalities again began to lose population, with the heaviest losses occurring in 2012. From then on, growth rates slowly recovered, but remained consistently negative until the outbreak of the Covid-19 pandemic. The population decreased mainly because foreign immigration fell while emigration increased. Additionally, the *Padrón continuo* data were corrected through the deletion of emigrants who had left Spain a few years previously, but were still

[5] Despite the economic crisis, the total population count in the *Padrón* continued to grow, peaking at 47,265,321 in 2012. It then registered a period of population losses, with the total population count falling to a low of 46,557,008 in 2016. Since then, population numbers have been recovering.

registered in the country. While this process initially affected non-EU citizens only, it was later applied to EU citizens as well.[6]

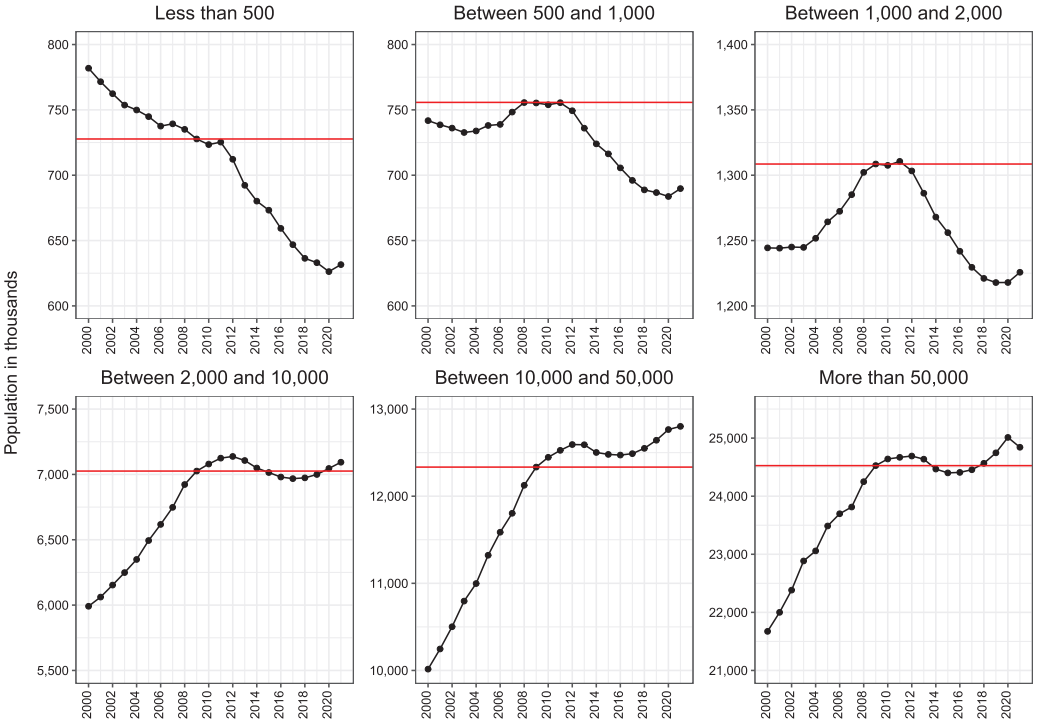
The period of economic crisis was followed by a period of slow economic recovery lasting from around 2015 to 2019, during which the populations of the largest municipalities were growing once again, initially slowly, and then at a faster pace. At the other end of the spectrum, the populations of municipalities with 1000 to 2000 inhabitants barely stabilised, while the smallest municipalities continued to lose inhabitants (Figure 1).

These trends were interrupted by the Covid-19 pandemic. During this period, substantial shares of urban residents wanted to live in less dense areas because of the lockdowns, while cities lost the capacity to attract new residents for the same reasons. These shifts in preferences led to abrupt changes in population. For the first time since 2009, small municipalities started to gain population, while large cities with more than 50,000 inhabitants experienced significant losses (Figure 2). However, whether these developments represent a change of paradigm or a temporary shift in internal migration remains to be seen.

As a result of these changes, the population of municipalities with less than 2000 inhabitants accounted for only 5.7% of the population of Spain in 2021. Thus, these municipalities lost 210,000 inhabitants (i.e., −8.2% of the initial population) over the first two decades of the century. As Figure 2 shows, the relationship between population growth and municipality size was heterogeneous. In general terms, the larger the municipality, the more its population grew; except in the largest cities, where the dominant reason for population loss was suburbanisation. Despite this overall pattern, population growth was positive in a considerable share of the small municipalities during the first period (2001–2009). However, except in a very few cases, population growth was no longer positive in the second stage (2009–2020). Dispersion was even greater in 2020, when, because of the pandemic, the relationship between population growth and municipality size was reversed. In 2020, small municipalities had extremely diverse growth levels – an issue that will be explored in the last section of this paper – with half of municipalities with less than 500 inhabitants even experiencing positive growth. These figures were unprecedented in the 21st century.

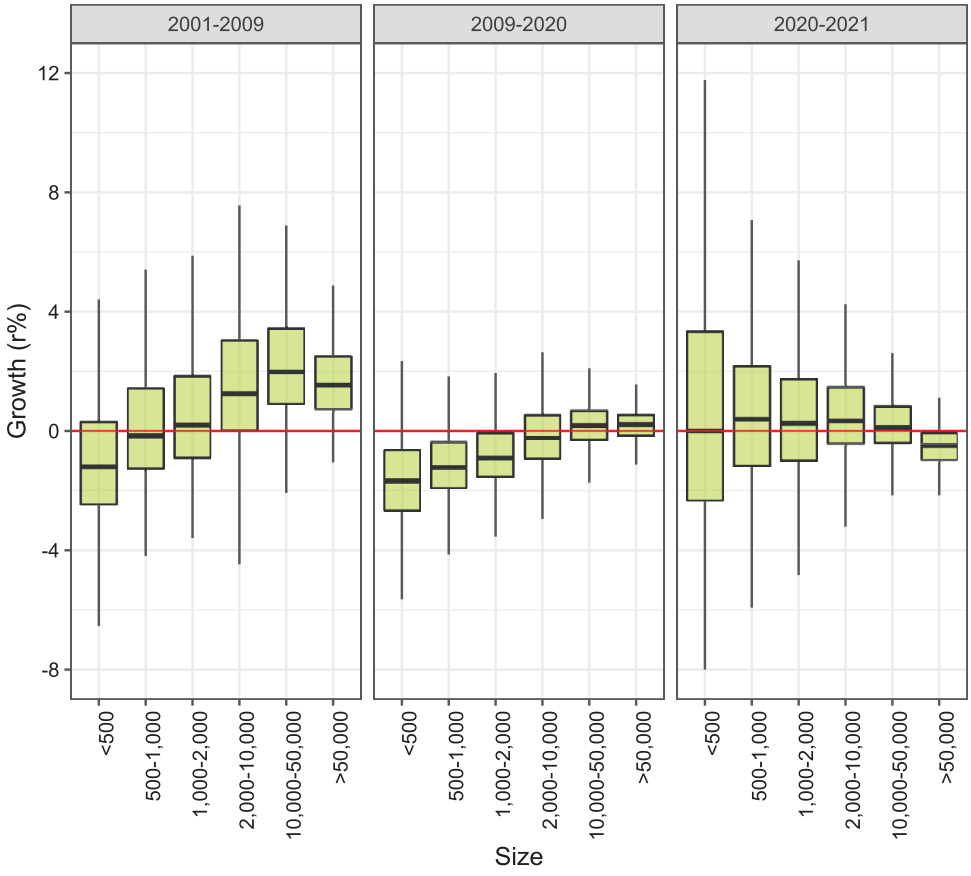
[6] The *Ley de Extranjería* (Foreigners' Act, 14/2003) establishes the process by which *Padrón* registrations expire. Since the law came into force, a non-EU foreigner without a permanent residence permit must renew his or her *Padrón* registration every two years. When this is not done, the foreign immigrant is deregistered (*caducidad de inscripción* or registration expiry). In addition to this change affecting the *Padrón* from 2005 onwards, a similar system, called "*Comprobación Periódica de Residencia*" (Periodic Residence Verification), was introduced for EU citizens or foreigners possessing other residence permits in March 2009, modifying the *Padrón* from 1 January 2013 onwards.

Figure 1:
Population (absolute figures) by municipality size, Spain, 2000-2021



Source: *Padrón continuo* (local continuous register), INE.
Note: The horizontal red line shows the population in 2009, the reference date between 2001 and 2021.

Figure 2:
Boxplot for municipal population growth by period and population size, Spain, 2001–2021



Source: *Padrón continuo* (local continuous register), INE.

5 A typology of small Spanish municipalities

5.1 The nine categories of small municipalities

This section presents a more in-depth analysis of the populations of small Spanish municipalities. To this end, the more than 5000 small municipalities that existed in 2009 were assigned to nine categories according to their population growth in the 21st century, divided in two periods: 2001–2009 and 2009–2020. Table 1 shows the results. The largest category, which includes more than half of all small municipalities (more specifically, 56.9%), is the negative-negative category. It contains more than 3000

Table 1:
Typology of the small municipalities grouped by population growth before and after 2009 (9 categories), Spain, 2001–2020

Typology	Mun. (<2.000)	%Mun.	Population (2001)	Population (2020)	Population (mean)	Total growth	Relative growth
Negative-Negative (− −)	3, 232	56.9	1, 509, 433	1, 105, 064	342	−404, 369	−1.63
Negative-Stable (− =)	59	1.0	23, 031	21, 073	357	−1, 958	−0.47
Negative-Positive (− +)	230	4.1	53, 849	52, 257	227	−1, 592	−0.16
Stable-Negative (= −)	141	2.5	91, 578	79, 913	567	−11, 665	−0.71
Stable-Stable (==)	7	0.1	6, 466	6, 471	924	5	0.00
Stable-Positive (= +)	23	0.4	8, 746	9, 357	407	611	0.36
Positive-Negative (+ −)	1, 278	22.5	654, 749	656, 276	514	1, 527	0.01
Positive-Stable (+ =)	108	1.9	67, 926	79, 170	733	11, 244	0.81
Positive-Positive (+ +)	600	10.6	338, 505	518, 290	864	179, 785	2.27

Source: *Padrón continuo* (local continuous register), INE.

municipalities that lost population in both periods. Currently, 1.1 million people live in these small, ageing and depopulating villages, which have lost more than 400,000 inhabitants in the two decades analysed, and thus around a quarter of their initial population (a negative annual growth rate of 1.63%).

Before 2009, population growth was also negative in two other categories that include a total of 289 municipalities. In the villages belonging to the negative-stable category, population stabilised at around zero growth in the 2009–2020 period; while in the villages belonging to the negative-positive category, the growth trend was reversed, as population started to increase in this period. Even though the trends changed in 2009, the populations of these villages were still lower in 2020 (73,000 inhabitants between the two categories) than in 2001, as their growth rates were low but negative (−0.47% and −0.16%, respectively).

In the next group of municipalities, population remained stable during the first decade analysed. However, these municipalities did not all follow the same trend in the second decade, which places them in three different categories (stable-negative, stable-stable or stable-positive). These three groups represent exceptional cases, as only 3% of all small municipalities fit into them; the stable-negative category is the most numerous of this subgroup, while the stable-stable category is composed of only seven municipalities. A common trend of these three categories is that their municipalities are on average bigger than those of the first three groups.

In the following group, there are approximately 2000 municipalities that grew during the first decade of the century. However, only 853 of these municipalities grew in the second decade. This means that a considerable share of municipalities that grew up to 2009 started to lose population in the second period (positive-negative category). These 1278 municipalities represent 22.5% of the total, and currently have 656,000 inhabitants. Due to this shift, total population growth in these municipalities in both periods was tiny (0.01%), and the final population was slightly higher than the initial population. In addition, there is a small group of 108 municipalities belonging to the positive-stable category that grew moderately (0.81% annual growth rate) during the entire period under analysis.

Finally, another group of 600 municipalities (positive-positive category) were able to increase their population in both periods. These small municipalities represent 10.6% of the total, and currently have 518,290 inhabitants. This means that their population expanded by 50% since beginning of the century, and thus at an annual growth rate of 2.27%. Indeed, this growth rate is even higher than that of the country as a whole. However, this exceptional increase partly masks a general pattern of decline (Table 1), as some of the municipalities with less than 2000 inhabitants are located within a large urban area, as defined by the *Statistical Atlas of Urban Areas in Spain* (Ministerio de Transportes, Movilidad y Agenda Urbana, 2021). More specifically, they are villages with (sub)urban dynamics located in peri-urban areas. Therefore, these villages should be considered (sub)urban or peri-urban, but not rural. Even though these 65 municipalities represent barely 1.1% of the municipalities with less than 2000 inhabitants in Spain, we have decided to present some of their results separately, as they exhibit purely metropolitan dynamics. In 2020, these municipalities had a total of 76,832 inhabitants, or 2.75% of the population under

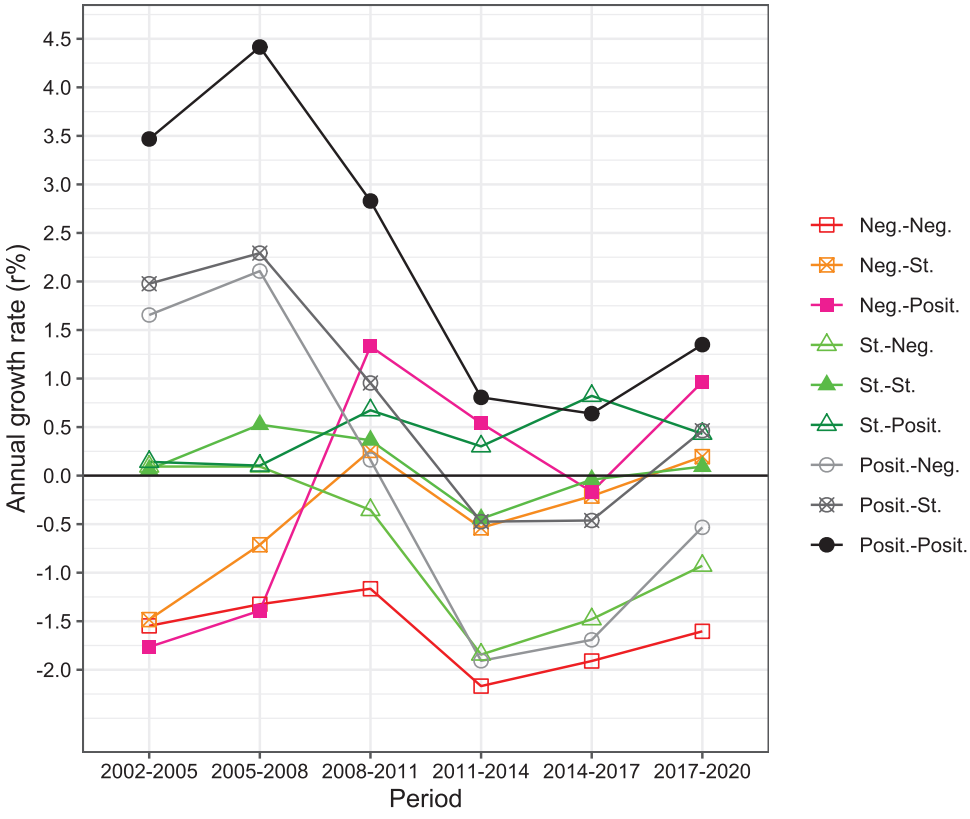
study. As they had only 59,558 inhabitants in 2001, they experienced significant growth over this period. Despite being located within metropolitan areas, not all of these municipalities fall into the same typology category. Most of them (37 villages) grew in both periods. These villages account for 6.2% of the municipalities and 12.8% of the population of the positive-positive category, shown in Table 1. There are also a significant number (17) of municipalities in the positive-negative category. These villages account for 1.3% of the municipalities and 3.3% of the population in this category. The remaining 11 municipalities are spread across the other categories, and have little impact on the results of each category. In sum, as they represent a very small share of the municipalities analysed and they hardly affect the overall results, we decided to keep these 65 municipalities within our study population to maintain the homogeneity of the purely demographic selection criterion used.

These results confirmed that the groups are internally very heterogeneous, and that a closer analysis was needed. As an initial step, population growth was divided into six periods lasting three years each (Figure 3). This new perspective highlights how important it was for the most dynamic municipalities to have grown before the onset of the economic crisis. Indeed, while this crisis reduced population growth throughout the country, particularly from 2011 to 2014, the municipalities belonging to the positive-positive category increased their populations the most during the post-crisis recovery period. By contrast, among the municipalities in the negative-negative category, this trend barely changed in the two decades analysed, which underlines their vulnerability from the perspective of population growth.

5.2 Geographical distribution of the typology of rural growth in Spain

Mapping municipalities by typology category allows us to study the importance of geographic location for depopulating municipalities. The area where municipalities were most likely to lose population is the northern plateau, corresponding to the Autonomous Community of Castile and Leon. By contrast, the Ebro valley, the Mediterranean and Atlantic coasts, the archipelagos and Andalusia, plus the central part of Madrid, are densely populated areas where there are scarcely any small municipalities. The villages that grew are mainly situated in Catalonia, the Basque Country and the peripheries of Madrid or some provincial capitals. These are small municipalities that grew through suburbanisation or peri-urbanisation; that is, as a result of city dwellers moving to surrounding rural areas. This phenomenon was particularly intense during the economic expansion phase, which was one of the reasons for the emergence of the "real estate bubble". This phase ended in 2008 with the start of the Great Recession. As the economic recession reduced the pace of suburbanisation, most of the municipalities that grew until 2009 and then started to lose population are located in these suburban peripheries (Bayona-i-Carrasco and Pujadas, 2020). In sum, the spatial location of a municipality (the north or the south of Spain, along the coast or inland, near a large urban area or in a remote area),

Figure 3:
Population growth rates of the 9 categories of the typology, Spain, 2002–2020



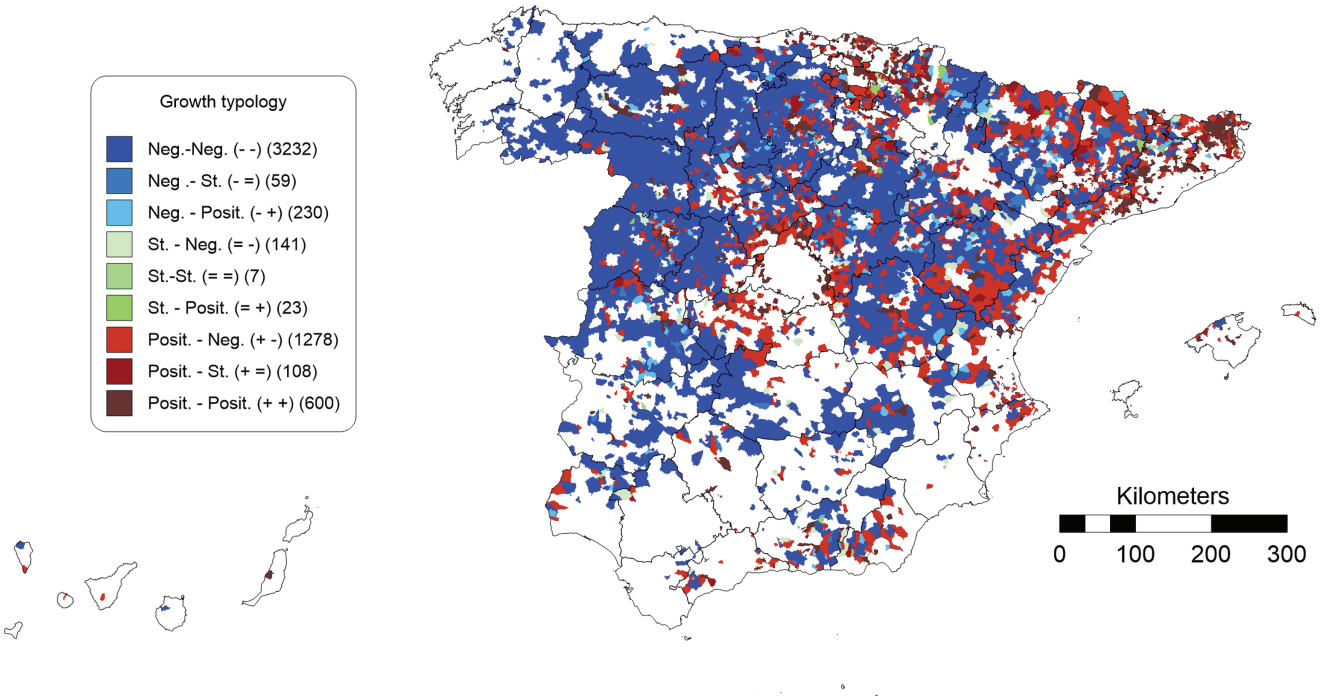
Source: *Padrón continuo* (local continuous register), INE.

together with its size, are key elements for understanding recent changes in small municipalities.

5.3 Increasingly negative natural population growth

Due to the declining birth rate and population ageing, natural population growth has been negative in Spain since 2015. Nevertheless, negative natural growth rates occurred earlier in some Autonomous Communities, particularly in those located in the north of the country: i.e., in Asturias and Aragon since the mid-1980s, and in Castile and Leon and Galicia slightly later. For small municipalities, natural growth was negative throughout all the years analysed, with these municipalities losing around 20,000 residents per year due to natural growth since the beginning of the

Figure 4:
Geographical distribution of the small municipalities grouped by the 9 categories of the typology, Spain, 2002–2020



Source: *Padrón continuo* (local continuous register), INE.

21st century. Like in Spain as a whole, in small municipalities, the number of births peaked in 2009 (18,444), and decreased thereafter. The number of births in 2019 (13,686) was well below that in 2001. On the other hand, the number of deaths (around 35,000 per year) was more stable during the two decades under analysis. Therefore, a total of 372,045 inhabitants were lost due to negative natural growth since 2001. Nevertheless, these deaths were partly compensated for by positive migration growth (145,633 people), resulting an overall loss of 226,412 residents.

In fact, it was only in those small municipalities where total population growth was positive in both decades (positive-positive category) that natural growth was also positive. However, even in these municipalities, natural growth was positive for a few years only, from 2004 to 2016, and then became negative (Figure 5). In the municipalities in the rest of the categories, natural growth was consistently negative due to very low birth rates and rising mortality rates. In the 2001–2019 period, the average crude birth rate in the small municipalities as a whole was 6.28, and the average crude mortality rate was 13.69‰. By comparison, in the municipalities belonging to the negative-negative category, the crude birth rate was particularly low, at 4.31‰. At the opposite end of the spectrum, the crude birth rate of the municipalities in the positive-positive category was 10.47‰, and was thus higher than the crude death rate of 9.41‰ (see the Appendix).

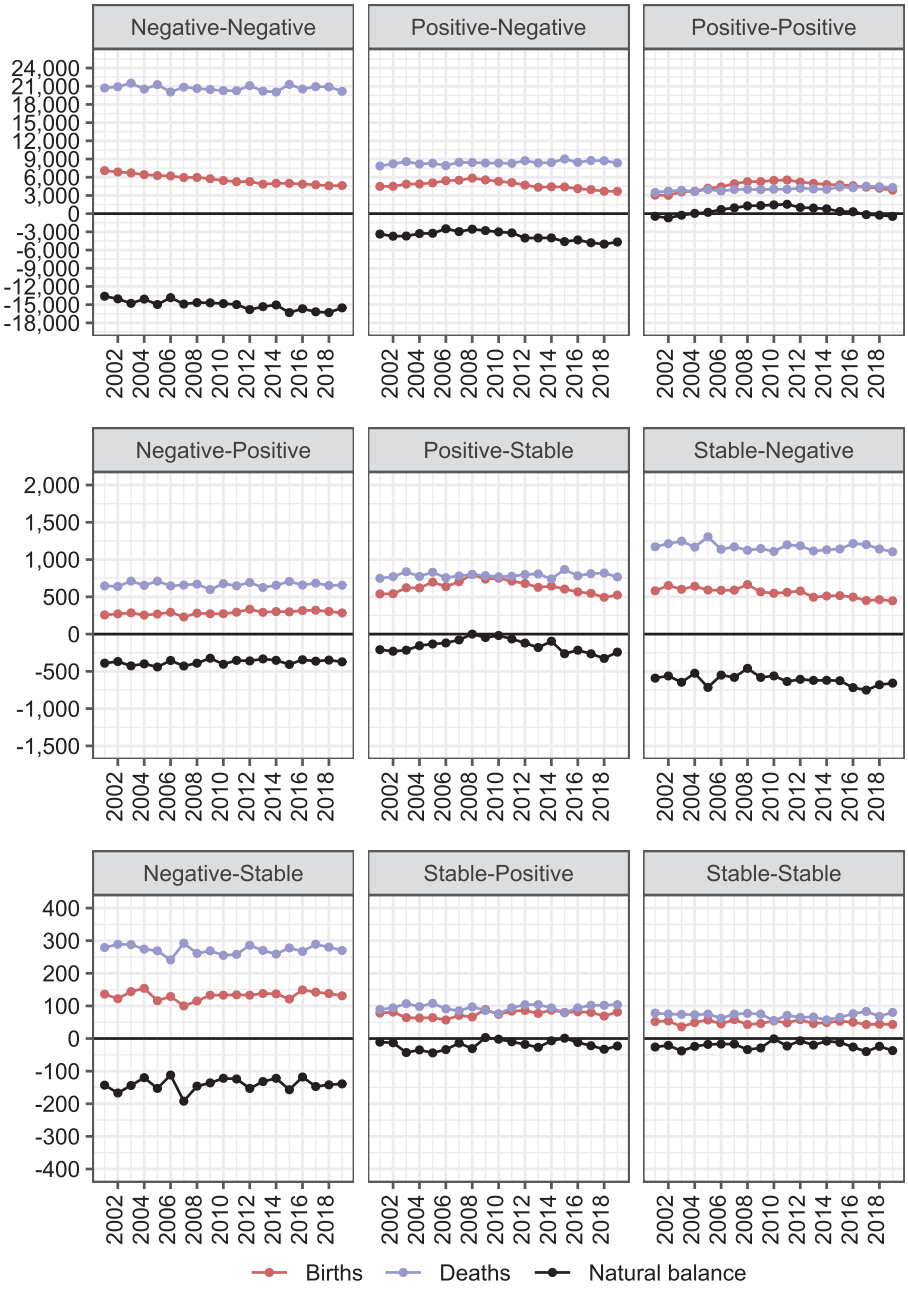
5.4 The unstable nature of migration trends

As natural growth was stable and mostly negative, migratory growth explains the fluctuations in total population growth in the rural areas as a whole, as well as in the diverse categories analysed (Figure 6). Despite alarmist discourses, migratory growth was positive in the small municipalities (+145,633 people) over the two decades. In fact, this figure was higher, at 220,949 inhabitants, from 2001 to 2010. Thereafter, migration growth again became negative, with 102,223 residents being lost from 2011 to 2017. But in 2018 and 2019, migration growth recovered, with 26,907 new residents being added.

The results of the analysis of natural, migratory and total growth according to the nine categories of municipalities can be summarised in three major groups (Figure 6).

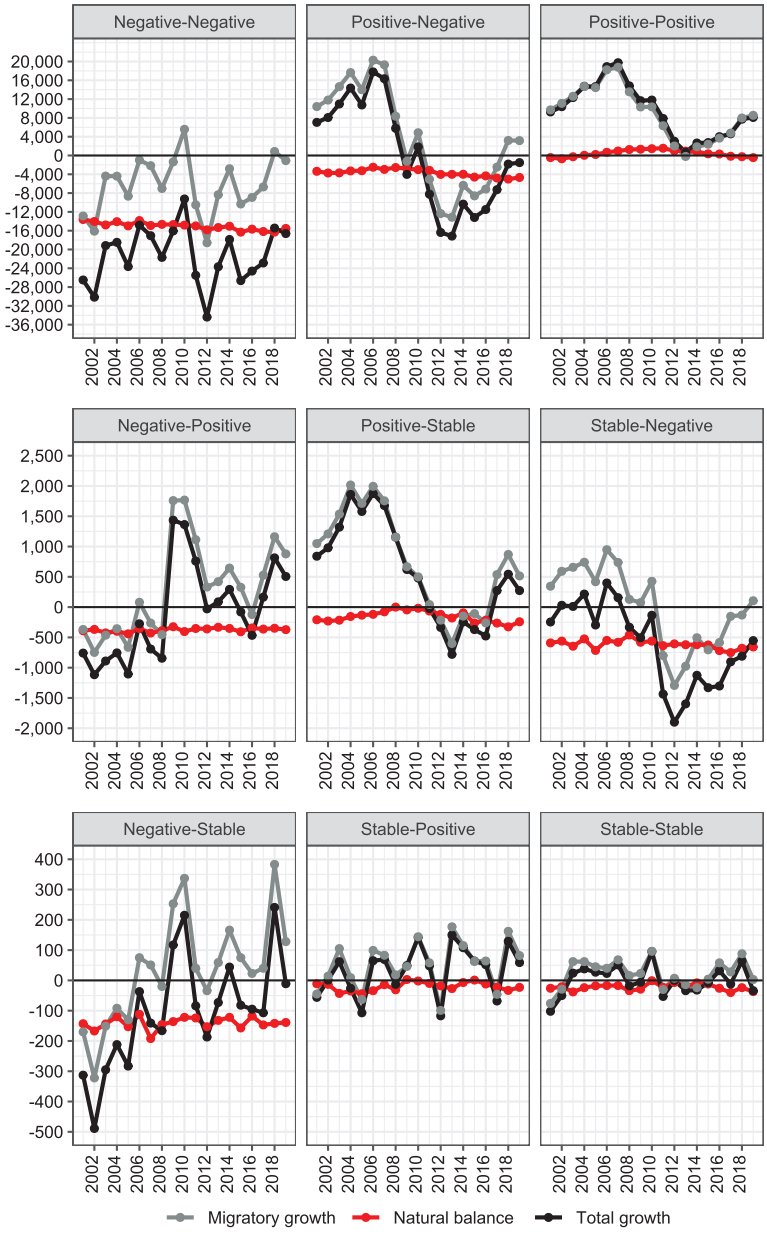
(1) In municipalities belonging to the negative-negative category, decreasing natural growth was accompanied by constantly negative migratory growth. Thus, this group lost 285,000 people due to natural growth and 118,000 people as a result of migratory growth during the 2001–2019 period.
(2) At the other end of the spectrum, both natural and migratory growth were positive in the municipalities in the positive-positive category.
(3) Finally, in the municipalities in the rest of the categories, migratory growth was positive as a whole in the two decades analysed, albeit with substantial fluctuations because of the economic boom and bust phases of the economic cycle. This migratory growth nearly compensated for the largely negative natural growth.

Figure 5:
Births, deaths and natural growth in the typology categories, Spain, 2001–2019



Source: *Movimiento Natural de la Población* (birth and death statistics), INE.

Figure 6:
Total, natural and migratory growth for the typology categories, Spain, 2001–2019



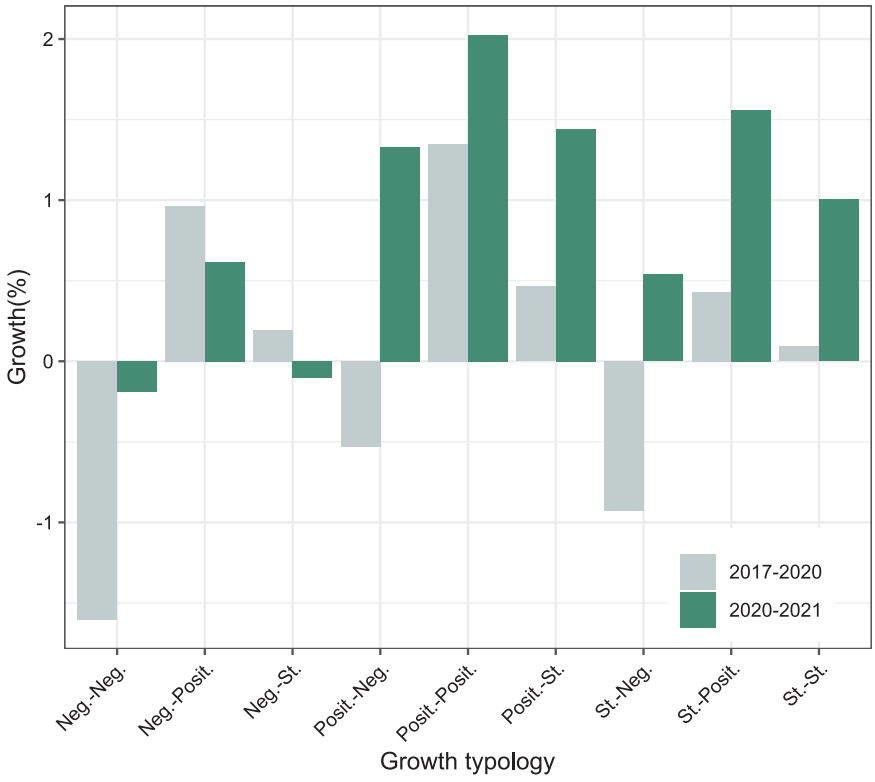
Source: *Padrón continuo* (local continuous register) and *Movimiento Natural de la Población* (births and deaths statistics), INE.

In sum, in a context of mainly negative natural growth, international migratory flow fluctuations were a significant factor in population change in most of the small municipalities analysed.

6 Depopulation and the Covid-19 pandemic: analysing population change during the year 2020

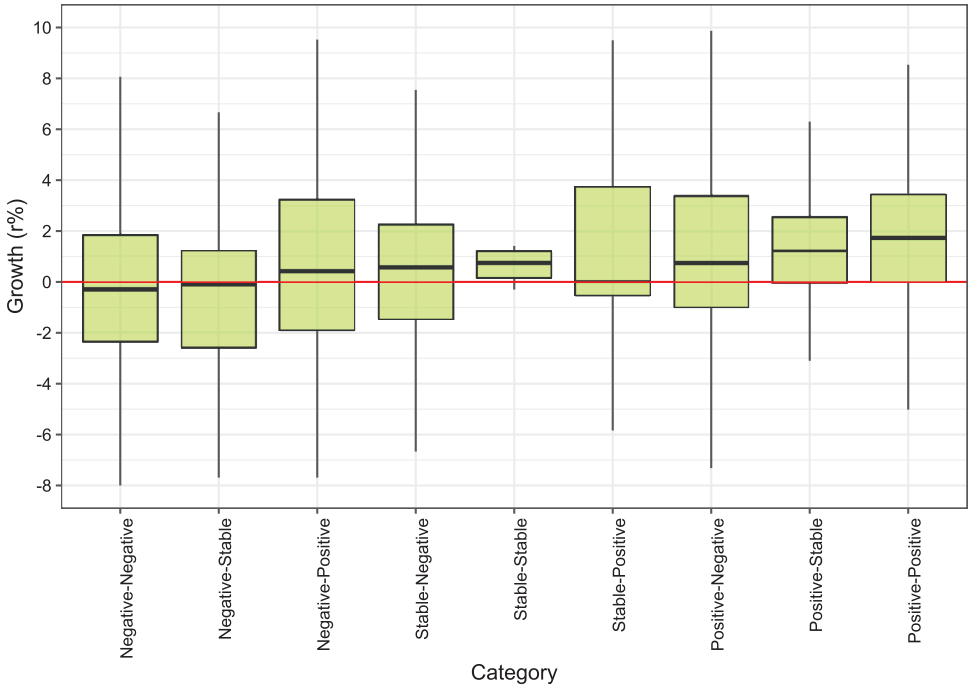
The initial impact of the Covid-19 pandemic on the population distribution throughout Spain can be analysed using *Padrón continuo* data for January 2021. First, it should be emphasised that the population figures for this year broke with some of the previous population trends. Due to internal migration flow changes

Figure 7:
Recent changes in population growth rates for the typology categories, Spain, 2017–2020 and 2020–2021



Source: *Padrón continuo* (local continuous register), INE.

Figure 8:
Boxplot for population growth by category, 2020–2021

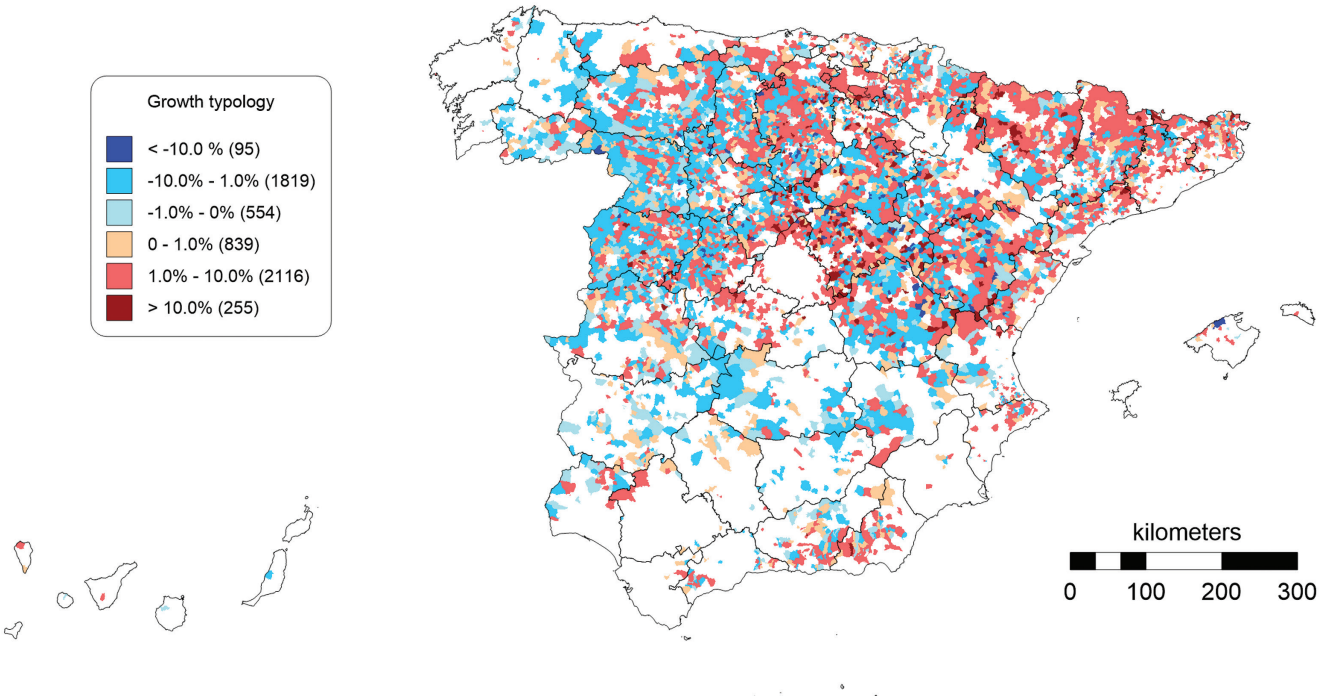


Source: *Padrón continuo* (local continuous register), INE.

(González-Leonardo et al., 2022), increasing mortality and decreasing birth rates, the Spanish cities with more than 50,000 inhabitants lost population (Figure 1). The magnitude of this decline was similar to that of 2013, when, due to the depth of the economic crisis and changes in how the *Padrón* was managed, especially concerning EU immigrants, a loss of around 170,000 inhabitants was reported. Unlike then, when municipalities of all sizes lost population, in 2020, the group of municipalities with less than 50,000 inhabitants gained population. This increase was especially significant in municipalities with less than 2000 inhabitants, which had a 0.77% growth rate (compared to a −0.45% growth rate between 2001 and 2020, see Table A.2 in the Appendix). It was a relevant change for small municipalities, even though it was partly fictitious: the registration of many people in the towns where they had a secondary residence, presumably in order to avoid the lockdowns, contributed to the growth of the registered population in these small towns.

Regarding the spatial patterns of this growth, it can be observed that the pre-Covid-19 trends and those in 2020 are strongly correlated, which means that pre-existing spatial inequalities were reinforced during the first pandemic year. In all the typology categories, the growth rates were higher in 2020 than in the 2017–2020 period.

Figure 9:
Geographical distribution of the recent population growth in small Spanish municipalities, 2020–2021



Source: *Padrón continuo* (local continuous register), INE.

However, two groups, the negative-negative and negative-stable categories, still lost population, albeit at a slower rate; i.e., at a growth rate closer to zero (Figure 7).

Figure 8 shows the distribution of municipalities by population growth rate in greater detail. While more than 75% of the municipalities in the most dynamic categories had positive growth in 2020, the proportion of municipalities with positive growth was less than 50% in the most regressive categories. These growth differences are confirmed, from a geographical point of view, by the map in Figure 9. Indeed, among the municipalities that experienced the heaviest population losses during the two decades analysed, and that continued to lose population in 2020, there are many small villages in Castile and Leon, particularly those in the western provinces; some small municipalities in Aragon, Castile-La Mancha and Extremadura; as well as certain villages situated far from the coast in Galicia, Catalonia and Andalusia.

7 Conclusions

During the first two decades of the 21st century, population growth in small Spanish municipalities showed signs of increasing spatial polarisation. The two main explanatory features of this tendency were a municipality's population size and its geographic location. In general, the smaller a municipality was, the more population it lost in relative terms. However, not all small municipalities lost population. Growth rates were positive in several municipalities, largely because of their geographic location. Previous research on Catalan data showed that only small municipalities situated on the peripheries of large metropolitan areas (benefiting from suburbanisation), or in areas where the economy was based on tourism or agro-industry, were able to maintain positive growth during the period analysed (Gil-Alonso and Bayona-i-Carrasco, 2021). Current results for Spain as a whole confirm the importance of geographic location as a factor in rural population change, and are in line with other researchers' findings for several developed countries. Indeed, rural depopulation is an inevitable process, as societies shift from an agrarian economy in which 70% or more of the active population work in agriculture, to an industrial economy, and later to a service economy. In this context, small villages that rely on tourism (whether on the coast, near ski resorts or in picturesque locations) can maintain or even increase their population. Similarly, some small municipalities may be able to maintain or even grow their populations by interacting with medium-sized or larger localities. Such relationships are clearly visible in small towns located in or near peri-urban areas, and thus in the outer ring of large metropolitan areas. Moreover, such interactions can help to explain the population changes in small municipalities that are located far from urban areas, but that maintain links to them through family, social or economic networks. By contrast, the absence of these types of bonds or of interactions may be expected to act in the opposite direction, leading to the depopulation or total abandonment of smaller villages, especially of those in the most remote rural areas with weak communication networks (Li et al., 2019). The diversity of population dynamics found in Spain by Molinero and Alario (2022),

who distinguished between deep/regressive rural areas and dynamic/progressive areas, can also be observed in the United States. While many American counties far from metropolitan areas show negative population growth, there are others that show positive dynamics; and, as Johnson and Lichter (2019) have pointed out, not all of these counties are in tourist or retirement areas. These counties have, however, managed to enhance the value of their resources and establish positive economic and demographic relations with other regions.

Population shifts and economic changes cannot be separated from one another, since the latter is one of the main determinants of population growth through its influence on migratory flows. The population recovery phase that many small municipalities were experiencing in the first decade of the 21st century ended with the onset of the 2008 economic crisis, which led to a reduction in international immigrant flows. In the period after the economic crisis, population recovery was mainly observed in large cities, which are gateways for foreign newcomers and human capital attraction poles, and in intermediate-sized towns, particularly in those located on the peripheries of cities. By contrast, small municipalities were scarcely touched by this population recovery trend. In fact, municipalities with less than 2000 inhabitants have not regained their 2009 population levels, and the smallest ones even continue to lose inhabitants. Their less diverse economies could explain why small municipalities take longer to recover after recessions. Indeed, the post-crisis economic recovery had hardly any impact on most small municipalities.

The Covid-19 pandemic represented a turning point in previous population trends, reversing the relationship between population growth and population size. In other words, big cities were the spatial units that were losing the most people, while small municipalities were growing rapidly due to the arrival of urban residents fleeing lockdowns. In reality, many of these new inhabitants registered in the *Padrón* in a village where they already had a second home, or where they had previously lived (Molinero and Alario, 2022). Regardless of the reasons why, small villages as a whole began to recover. However, population did not grow for small municipalities in all categories or in every region of Spain. At this point, two questions arise. The first is whether these trends will or will not continue; in other words, whether the growth observed in rural areas in 2020 will continue over time, or whether it represents a one-time event attributable to the Covid-19 pandemic. The second is regarding the spatial relevance of this change, since the results of this research seem to show that this new growth has reinforced internal differences between the smallest municipalities and between the different areas of Spain.

The exceptionality of the pattern observed in 2020 underlines the importance of migration growth to population changes. Since natural growth was generally negative in small municipalities for several decades, migratory growth was the component that determined whether the populations of these municipalities grew or declined. Therefore, their dependence on economic fluctuations was strengthened, as migratory flows tend to be extremely sensitive to them.

Finally, the results of our analysis of population dynamics indicate that it will be very difficult for the populations of most small Spanish municipalities to recover.

In these towns, natural growth was nearly always negative, and did not depend on economic fluctuations, but was instead the result of a very old age population structure and a small reproductive-age population. Therefore, it is highly unlikely that the number of births in these municipalities will increase, especially within a context of very low fertility rates. The unstable and selective nature of migration flows should also be taken into account. Thus, it appears that more than half of the small municipalities analysed, or about 3300 of them, representing 40% of all Spanish municipalities, are facing a bleak demographic future. These unpromising prospects, which affect a substantial part of the country's territory, have recently attracted political attention, and have given rise to geopolitical concepts such as "the Spanish Lapland" (Cerdà, 2017) or "the Empty Spain" (Del Molino, 2016), both of which focus on Spanish depopulation. In fact, the latter concept has been turned into a political movement called "the Emptied Spain", which aims to defend the interests of the most depopulated provinces. While it has so far been successful in Teruel and Soria, the movement is seeking influence national politics. The creation by the present Spanish government of a Vice-Presidency for Ecological Transition and Demographic Challenge, which is responsible, among other objectives, for the design and implementation of policies to counteract depopulation, could represent a first sign of progress. Moreover, the Covid-19 crisis has also reminded people of the value of rural spaces, not only in Spain, but throughout the European Union, as many other member states are also affected by rural depopulation. This is why the new President of the European Union, Ursula von der Leyen, has created a Vice-Presidency for Democracy and Demography, with one of its functions being "coordinating work on a long-term vision for rural areas, including on the effects of demographic change on connectivity and access to services".[7] It is this same political impulse that explains why the Next Generation EU Funds for European reconstruction have rural development as one of their objectives, along with social cohesion, integration, inclusion and the reduction of regional disparities. We are, therefore, facing a new political scenario that could open up new opportunities for Spanish and European rural areas.

Acknowledgments

Research for the present paper was conducted within two projects: RTI2018-095667-B-I00, directed by Dr Cristina López-Villanueva and Dr Fernando Gil-Alonso, and PID2020-113730RB-I00, directed by Dr Andreu Domingo and Dr Jordi Bayona-i-Carrasco. It was funded by the Spanish Ministry of Science and Innovation, the Spanish Research Agency, and the European Regional Development Fund (MCIN/AEI /10.13039/501100011033/FEDER «A way to make Europe»).

[7] Vice-President Dubravka Šuica web page: https://ec.europa.eu/commission/commissioners/2019-2024/suica_en.

Fernando Gil and Isabel Pujadas are members of the *Territori, Població i Ciutadania* (Territory, Population, and Citizenship) consolidated research group, recognised by the Catalan government (ref. GRC_2021SGR01338) and coordinated by Dr Fernando Gil-Alonso. Jordi Bayona-i-Carrasco is a Serra-Húnter Fellow at the Geography Department of the University of Barcelona.

A previous version of this work was presented in the Wittgenstein Centre Conference 2021 "The causes and consequences of depopulation" (29 November–1 December 2021). The authors are grateful for the comments received, all of which contributed to improvements in the text.

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Appendix

Table A.1:
Population dynamics in rural municipalities by categories, 2001–2019

	Births	Deaths	Natural balance	Total growth	Migratory balance
Negative-Negative	106,940	392,555	−285,615	−404,369	−118,754
Negative-Stable	2,505	5,174	−2,669	−1,958	711
Negative-Positive	5,431	12,588	−7,157	−1,592	5,565
Stable-Negative	10,538	22,225	−11,687	−11,665	22
Stable-Stable	928	1,350	−422	5	427
Stable-Positive	1,433	1,808	−375	611	986
Positive-Negative	89,917	159,667	−69,750	1,527	71,277
Positive-Stable	12,040	15,017	−2,977	11,244	14,221
Positive-Positive	85,230	76,623	8,607	179,785	171,178
Rural	**314,962**	**687,007**	**−372,045**	**−226,412**	**145,633**
	Rates (‰)				
	CBR	**CDR**	**Natural increase**	**Growth rate**	**Migratory rate**
Negative-Negative	4.31	15.80	−11.50	−16.28	−4.78
Negative-Stable	5.98	12.35	−6.37	−4.67	1.70
Negative-Positive	5.39	12.49	−7.10	−1.58	5.52
Stable-Negative	6.47	13.64	−7.17	−7.16	0.01
Stable-Stable	7.55	10.98	−3.43	0.04	3.47
Stable-Positive	8.33	10.51	−2.18	3.55	5.73
Positive-Negative	7.22	12.82	−5.60	0.12	5.72
Positive-Stable	8.62	10.75	−2.13	8.05	10.18
Positive-Positive	10.47	9.41	1.06	22.09	21.03
Rural	**6.28**	**13.69**	**−7.41**	**−4.51**	**2.90**

Source: *Padron continuo* (local continuous register) and *Movimiento Natural de la Poblacion* (births and deaths statistics), INE.

Table A.2:
Comparison of population change by category, between 2020 and previous years

	Population			Population growth			
	2001	**2020**	**2021**	**2001–2020**	**(%)**	**2020–2021**	**(%)**
Neg-Neg.	1,516,263	1,109,622	1,107,575	−406,641	−1.63	−2,047	−0.18
Neg.-St.	23,031	21,073	21,052	−1,958	−0.47	−21	−0.10
Neg.-Posit.	54,312	52,642	52,973	−1,670	−0.16	331	0.63
St.-Neg.	91,578	79,913	80,344	−11,665	−0.71	431	0.54
St.-St.	6,622	6,629	6,699	7	0.01	70	1.06
St.-Posit.	8,746	9,357	9,503	611	0.36	146	1.56
Posit.-Neg.	659,086	660,616	669,448	1,530	0.01	8,832	1.34
Posit.-St.	67,926	79,170	80,312	11,244	0.81	1,142	1.44
Posit.-Posit.	339,830	520,307	530,951	180,477	2.27	10,644	2.05
Total	**2,767,394**	**2,539,329**	**2,558,857**	**−228,065**	**−0.45**	**19,528**	**0.77**

Source: *Padron continuo* (local continuous register), INE.