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Social services of general interest in European regions: a look at "territorial cohesion" in the economic crisis context

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Abstract

Services of general interest (SGI) and specifically social services of general interest (SSGI) are a cornerstone of the European model of society. Nevertheless, the political and economic changes in most member states have evolved towards less public intervention, whereby regional disparities in service provision have increased, putting territorial cohesion at stake. This study identifies the main drivers of regional disparities in the provision of SSGI in different years (2006, 2012, 2016 and 2019). A Principal Component Analysis (PCA) followed by a cluster analysis for each year resulted in a common list of indicators (demographic, socioeconomic and provision of services), verifying their associations with European regions. Four main drivers were found, the most important ones being socioeconomic conditions and health/social care and Urbanization and higher education, showing that SSGI as economic services are susceptible to economic competition and agglomeration forces. Furthermore, the analysis indicates that regions located in more robust economies or in countries with stronger welfare regimes tend to have better scores on the provision factors. We conclude that SSGI, although it is dwarfed and commanded by socioeconomic aspects, greatly promotes territorial cohesion, even during harsh economic crisis.

Keywords

Services of general interest, European regions, Provision drivers, Regional disparities, Territorial cohesion

Introduction

Services of General Interest (SGI) are an important part of the population's everyday life. They correspond to services of health, education, energy, post, culture, and others, that could be provided by public or private sectors, but when the market fails, they must be ensured by the

state (public service obligation), safeguarding social equity and territorial cohesion. Bjørnsen et al. (2015) and CEC (2004) highlight the importance of these services to promote economic competitiveness, and social and territorial cohesion. Faludi (2009) also points out their role in lessening regional disparities to improve the quality of life of individuals and stimulating sustainable development. The Green Paper on SGI published in 2003, discussed and reaffirmed these services as an important factor to achieve the European Union's (EU) competitiveness and cohesion objectives while being a basic element in the notion and identity of the European model of society (CEC, 2003).

The insufficiency of SGI in low-density areas, due to the market failure in offering these services which in turn calls on the public sector to tackle such deficit, although often with little levels of attendance, promotes social exclusion and, therefrom, spatial (in)justice and lower levels of cohesion (Marques da Costa et al, 2015; Malý, 2018). Thus, improving SGI provision can conduce to an improvement in living conditions (Rauhut, 2018).

SGI provision strategies and structures are a convoluted outcome of the blend of social policy (production, financing, and attribution) and territorial planning (locations, access, and distribution) (Humer, 2014a, 2014b). In a way, the regional SGI context is delineated by the demographic and territorial systems, while SGI provision is explained by the dimensions of politics, society, and economy, all of which diverge in time and space, resulting in different specific conditions for the supply structure (Bjørnsen et al., 2015).

Classic theories of regional economic growth try to address regional inequalities, focusing explanations on the "first nature" factors – linked to the endowment of natural resources that conditionate the behaviour of actors –, but, other theories like the New Economic Geography (NEG), encompass the "second nature" factors – where the economic forces are overshadowed by the actions of humans and economic agents, who control the "first nature" factors and then decide the activities location (Ottaviano & Thisse, 2004). In NEG, the spatial configuration of economic activities results from a process where agglomeration (or centripetal) forces and dispersion (or centrifugal) forces battle each other (Fujita, 2007).

Since the work of Krugman (1991) that launched NEG, many models have been proposed. These rely on the interplay between market access and competition effects, where a region with better market access offers a higher remuneration to production factors, attracting even more of said factors (centripetal), while larger markets lead to more competition and lower factor remuneration (centrifugal) (Commendatore et al., 2017). Consequently, big cities attract more and more firms and workers from small cities, leading to structural changes in the urban system, with weaker spatial frictions potentiating more spatial concentration of economic activities. This also applies to rural settlements, where productivity rises in the sectors most associated with the rural world (such as agriculture), and the population moves into the big cities, diminishing the dispersion forces and augmenting the agglomeration forces through the production of more varieties of goods and services (Tabuchi & Thisse, 2011). The

economic integration shows that big cities (metropolises) supply all goods and services, while small and specialized cities only supply a few of them (Tabuchi & Thisse, 2011), potentiating regional disparities.

From the perspective of NEG, private providers of SGI do not invest in rural territories due to the small demand that characterises these low-density territories. This explains increasing disparities in the provision of services between urban and rural areas and highlights the need for public service obligations in vulnerable territories. The urban prevalence in policy-making, as the EU strategic documents and the Cohesion Policy (CP), are centred on an urban perspective that normatively gives the cities the responsibility towards their hinterland, is not promoting a dissociation between urban centres and the region's rural or more peripheral territories, which in turn can even aggravate the asymmetries between growing and stagnating (or shrinking) territories (Rauhut & Humer, 2020).

This work is developed within the framework of regional disparities in the provision of SGI and their impacts on spatial justice and territorial cohesion in the European territory. The article intends to identify the main drivers that explain regional disparities in SGI provision and hierarchize them according to their preponderance before proceeding to group the regions based on their associations with the dimensions. This is of the utmost importance because these services have the power to reduce disparities and improve cohesion, which is even more important for European regions at a time of social changes. The European NUTS 2 regions are analysed through a group of indicators for four years: 2006 (pre-crisis), 2012 (crisis), 2016 (post-crisis), and 2019 (most recent data).

Services of general interest in the EU context

SGI and their relevance within the territorial cohesion framework

SGI are an established EU term related to an array of services and infrastructures that are fundamental to citizens and businesses (Humer & Palma, 2013). Although appearing in the EU policy process, the term lacks consistency and a solid definition (Lenaerts, 2012; Szyszczak, 2018; van de Walle, 2008). The absence of any EU legal or political list or reference document addressing what is or is not an SGI contributes to this uncertainty, letting the theoretical and practice vacuum persist (Bjørnsen et al., 2013, 2015; Szyszczak, 2018). However, regardless of its ambiguity, SGI are marked and valued as the main element in the conception of the European model of society (CEC, 2003).

In the EC webpage¹, SGI are presented in three categories: services of economic general interest (SEGI, services that include fundamental economic activities to citizens, such as postal or energy services, for example), non-economic services of general interest (NESGI, services that are not affected by competitive rules, such as police and justice) and social services of

¹ https://ec.europa.eu/info/topics/single-market/services-general-interest_en

general interest (SSGI, classified as essential services to ensure equitable access to vulnerable people).

Nevertheless, most SGI studies point to two main groups divided into economic and social interests, where the social includes NESGI and SSGI (Rauhut et al, 2013). SEGI are constituted by services classified as economic activities whose provision may not be accounted for by market mechanisms and, at the same time, are services that have an economic dimension and are covered by the Competition Law (CEC, 2011; Szyszczak, 2018). The competition aspect in these services is a preponderant and complex one, as the regulation of state aid amidst the gradual liberalization of SGI challenges the capacity of a state to promote territorial cohesion through more interventionist public policies, enhancing the tension between the EU's objectives of competition and cohesion (Colomb & Santinha, 2014). NESGI do not need to comply with the existing regulations for economic activities and are only influenced by the non-discrimination principle (CEC, 2003; Zhu, 2020). Finally, SSGI, linked to the welfare state, are focused on risks and vulnerabilities of life, either economic or non-economic, although there is no Community legislation concerning them (Bauby, 2013; CEC, 2006; Van de Gronden, 2011). SSGI follow the five pillars of the welfare state logic: social benefits, education, health and care, housing, and labour market services (Humer, 2014a). SGI can also be characterized in terms of responsibility scope, either being national, regional, or local, nonetheless, this is subordinated to the state's administrative, territorial, and economic organization (Humer et al., 2013). Some examples of services that can be characterized as local SGI (LSGI) are social housing and childcare (Humer et al., 2013).

SGI and its characteristics, especially the SSGI, can be seen as one of the last Keynesian policies in a very complex single-market economy. While states are privatising sectors, SGI represent the social side of European politics (Molle, 2007; Waterhout, 2007) in a post-Lisbon EU Agenda, that puts well-being and quality of life at the centre stage (Marques da Costa, 2021). SGI are very close to territorial cohesion, as the main objective of the latter is the reduction of regional disparities (Faludi, 2009). Nevertheless, it was only in recent years that CP's main vocabulary has shifted from economic production dissimilarities and maximization of efficiency to a perspective focused on access to SGI (especially SEGI) and distribution of opportunities (Weckroth & Moio, 2020). Thus, territorial cohesion cannot be achieved if problems in SGI provision remain (Gruber et al., 2019; Hamez & Ruffray, 2015). One advantage of the concept of territorial cohesion is that it offers added value to spatial policies while being a key topic in the EU political agenda (Othengrafen & Cornett, 2013). However, the spatiality of territorial cohesion is an underachievement, as the spatial imbalances and inequalities have been poorly addressed and not in an integrated territorial, economic and social CP (Madanipour et al., 2022; Marques et al., 2018), rekindling the battle for territoriality in politics, between a supranational entity and the reassertion of the territoriality of the state (Faludi, 2016a, 2016b). All this occurred while the EU does not have the financial

capacity, nor the discretion to act in social policy areas relevant to SGI and SSGI (Rauhut & Sielker, 2021), rendering the interoperability between space and social and economic areas even more difficult.

Regional disparities are a reality and a concern in the EU. One way for these territorial asymmetries to occur or aggravate is when social and economic conditions are reduced due to the inexistence or inadequate access to socially valued resources. The insufficiency of SGI is one of the most significant sources of dissatisfaction towards local amenities, lower standards for quality of life, and social exclusion, leading to the inexistence or the impairment of spatial justice and cohesion (Malý, 2018; Rosik et al., 2020; Sá Marques et al., 2020; Wiśniewski et al., 2021). Consequently, the improvement of living conditions in demographic and economically disadvantaged regions is linked to the existing level of accessibility to SGI (Rauhut, 2018).

Thus, it can be postulated that SGI can thwart territorial asymmetries and that territorial cohesion cannot be achieved if problems in SGI provision persist. Furthermore, it must be stated that a better understanding of regional disparities regarding this type of services is essential to promote their quality, but also in the assessment of CP at a time of social changes and inherent social model reorganization (Marques da Costa et al., 2015).

Provision of SGI in European regions, a tale of regional inequality

SGI are a normative term that emerges from EU policy and practice, nevertheless, these services are not regulated at the European level, except for the sectors present in the treaty (telecommunications, postal services, energy, and transport). Instead, strategies, policies and provision structures are the Member States' sole competence, which means that different States have different relationships with SGI (Franco & Marques da Costa, 2022a; Humer et al., 2013; Kolarič et al., 2019; Polacek et al., 2011; Rauhut et al., 2013; Zhu, 2020).

However, SGI are not "only services". As pillars of the welfare state, they represent much more than that. From the NEG point of view, regional development and the concentration of economic activities depends on the balance between centripetal and centrifugal forces (Commendatore et al., 2017). These services, due to their characteristics and familiarity with welfare, deserve greater attention from the state to ensure the counterbalance of forces in less dynamic territories.

As a part of national policy, supply thresholds are established internally, being a result of the interaction between providers and consumers and their ideologies and values (Littke & Rauhut, 2013). But from a comprehensive perspective, socio-demographic (different demographic structures determine different levels/necessities of demand) and territorial systems (determined by the settlement structures, that could be: monocentric or polycentric, based on a dense network of small and/or medium-sized cities; or sprawled occupation in peripheries of cities; or low density in rural territories) determine the provision context, while

the systems of politics, society and the economy drive its provisioning. All of which encompass spatiotemporal characteristics that give specific conditions to the supply structure (Bjørnsen et al., 2015). Hence, SGI provision is an intricate outcome of the mixture of social policy (politics, economy, and society) and territorial planning (Gruber et al., 2019; Humer, 2014a), evidencing a close relationship between territorial characteristics and CP results (Rauhut & da Costa, 2021a, 2021b).

SGI supply varies with territorial characteristics, with settlement structures having an important role (Humer & Granqvist, 2020). As the NEG postulates, companies will cluster in large urban centres and large metropolitan areas whenever transportation costs are low, and they sell differentiated products (Ottaviano & Thisse, 2004; Tabuchi & Thisse, 2011), therefore, a more concentrated typology conduces to better access to services, originating a dichotomy between urban and peripheral or rural areas (Clifton et al., 2016; Copus et al., 2013; Gløersen et al., 2012; Humer & Granqvist, 2020; Humer & Palma, 2013; Kolarič et al., 2019; Kompil et al., 2019; Marques da Costa et al., 2015; Milbert et al., 2013; Świątek et al., 2013; Vitale Brovarone & Cotella, 2020). The reality seems to be that low-centrality Christallerian services (like pharmacies or kindergartens) are well provided in urban and rural territories, while medium-centrality services (like hospitals or secondary schools) have a good level of provision in urban areas, but not in rural ones (Rauhut et al., 2018). Thus, there is a tendency for rural and intermediate areas to present worse levels of quality and access to SGI (Binder & Matern, 2020; Constantin et al., 2019; Ferreira et al., 2021; Freitas & Marques da Costa, 2021; Stepniak & Rosik, 2013; Vitale Brovarone & Cotella, 2020; Wiśniewski et al., 2021). In this sense, urbanization acts as a centripetal factor, conducing to even more agglomeration and the development of economies of agglomeration, even when concerning services linked to the welfare state.

Demographics play an important role in SGI, as distinct population structures show different SGI needs (Gruber et al., 2015; Marques da Costa, 2022). These services reveal better levels of provision in areas with a growing population, contrasting with the ones that are ageing and facing depopulation (Wiśniewski et al., 2021). Larger populations enable the existence of scale economies, which in turn facilitate service provision (Rauhut et al., 2013). Furthermore, regions that have endured severe processes of depopulation or ageing trends are the ones that suffer more and show more difficulties regarding service accessibility (Wiśniewski et al., 2021). Different age structures need different services and dissimilar intensities: an aged population needs more SGI (mainly proximity health, among others), nevertheless, they are the ones that normally denote a lower level of accessibility (Ferreira et al., 2021; Freitas & Costa, 2021; Marques da Costa et al., 2020).

As Ferencsik et al. (2015) point out, the decline of availability or accessibility to SGI leads to migration and loss of population. Depopulation and the migration phenomenon are obvious centripetal forces for the provision of SGI, as they do not promote agglomeration and an easier

provision structure, but they generate the opposite. Also, the influence of urbanization and its power of attraction on individuals can never be underestimated when looking at depopulation, as a wider offer of services and economic opportunities have a major impact on service location, but also on population location (Ottaviano & Thisse, 2004).

SIGI supply is also affected by the regional socioeconomic characteristics traduced in different affordability levels for the individual/household and in the existence of economic capacity to acquire goods and services, which in turn impact the service demand (Humer & Palma, 2013). This means that the need for a public intervention for the creation or maintenance of an SIGI provision structure depends on the regional characteristics.

Additionally, one way to solve regional and local problems happens by applying regional and local solutions, in the sense that different regional challenges call for different regional answers. Looking at SIGI, one can classify most of these services as being of local scope. Therefore, local administrations, with their policies and actions, play a fundamental role in combatting the vulnerability in supply (Malta & Marques da Costa, 2021). However, local administrations are not completely independent in the development of their policies towards SIGI (or other subjects). Furthermore, Gruber et al. (2019) show that in peripheral and rural regions the supply of these services is more dependent on the national policy, which seems to be more decisive for SIGI than the effect of demographic and economic conditions. The development strategies for peripheries must surpass the need for more to concentrate on the promotion of better place-sensitive territorial development policies (Rodríguez-Pose, 2018), while also connecting sectoral policies with regional planning and spatial sensitive strategic frameworks (Humer & Granqvist, 2020).

Discovering the main factors for regional disparities in SIGI: data and methods

This study is built around a quantitative methodology that finds the main factors for regional disparities in SIGI provision and makes evident how they are expressed in the European NUTS 2 regions. We analysed these relations in four different years: one corresponding to a pre-crisis context (2006), another to a crisis (2012), another one to a post-crisis (2016), and the most recent year with data completion (2019).

The choice of data was dependent on statistical indicators freely available to the public, which guarantees data transparency and makes possible discussions and comparisons with other future analysis. As such, the online databases of Eurostat and EC were used, the latter reporting to indicators produced in a work by Ladner et al. (2016). However, due to the lack of data on specific indicators – on a small group of occasions – it was necessary to utilize the national statistical institutes to complete the database.

The indicators refer to regional data and were chosen to consider the dimensions that interfere with SIGI provision. They can be synthesized into the following categories:

demographic; economic; political; social; and environmental (Humer et al., 2015; Marques da Costa et al., 2013; Rauhut et al., 2013). Table 1 shows the used indicators which were selected both due to their affinity with the enunciated dimensions and their availability and level of completion. Unfortunately, regional data regarding such themes with a great degree of diversity and acceptable levels of completion is scarce. Consequently, these indicators not only are the best available – despite having two different “roles” (context indicators and performance of SSGI indicators) (Marques da Costa et al., 2013), which is impossible to avoid due to data scarcity and variable completion – but also demonstrate the greatest relationship and suitability to enhance the followed methodology. The “context” indicators “allow deeming a situation in a starting period of analysis. They are mostly indicators or indices of characterization of the territory in different domains. This includes [...] general indicators in demographic, economic, social, and institutional topics” (Marques da Costa et al., 2013, p. 10). The second group of indicators corresponds to performance indicators, which “are related to policy implementation and the policy’s performance in territories” of SSGI’s domains (Marques da Costa et al., 2013, p. 10). Hence, 13 variables in two groups were selected, which relate on a broader spectrum to the context of territorial characteristics and the level of SSGI provision: the first group encompasses the demography, settlement structure and socio-economic conditions topics of which indicators characterize some territorial specificities. The second group is linked with the provision of services, that is, related to the intricate outcomes of policies and planning. This last group of indicators addresses three distinct centrality levels (low, medium, and high), with the Local Autonomy Index being a proxy for the capacity of provision of LSGI, the tertiary educational attainment as an effective high centrality service, and the remainder education and health services as medium centrality services.

In this article, we followed a two-stage statistical analysis methodology. We selected this analysis structure and not a pure econometric one as we wanted to emphasise the regional results instead of discussing the results from the economic model perspective.

The first stage seeks to recognize the associations between indicators, not only comprehending how the indicators will be materialized in dimensions but also understanding the importance of each dimension for regional SGI supply. For this, a Principal Component Analysis (PCA) was performed. We opted for this method because it starts from the assumption that all the variance in the dataset is common (communality) – rather than being univocal – and due to its effect in reducing the data size while minimizing the loss of information and easing its interpretation (Jolliffe & Cadima, 2016). With this method, we obtained new uncorrelated indicators (components or factors) that maximize the variance of the original dataset. We opted to use the Varimax rotation technique, which consists of a change in the coordinates that maximizes the sum of variances, returning values tending towards the extremities (0 and 1) and few intermediates, this way each indicator is associated with one or no component. Four analyses were carried out, one per period, in which, regarding

the associations between factors and variables (loadings), only values of 0.500 or more were considered as significant values.

Table 1: Indicators utilized, and the main source for each

Type	Indicator	Source	
Territorial characteristics (Context indicators)	Population density (inhabitant/km ²)	Eurostat	
	Demography and Settlement structure	Percentage of the regional population living in cities with 500,000 or more inhabitants	Based on Eurostat
		Population aged 65 or more as a percentage of the total population	Eurostat
		Regional gross domestic product (GDP) (PPS per inhabitant)	Eurostat
	Socioeconomic conditions	Unemployment rate	Eurostat
		Disposable income of private households	Eurostat
		Population at risk of poverty or social exclusion	Eurostat
SSGI (Performance)	Education Services Provision	Tertiary educational attainment in the 25-64 age group	Eurostat
		Students (all ISCED levels) aged 17 at the regional level – as % of the corresponding age population	Eurostat
	Health Services Provision	Physicians and doctors per 100,000 inhabitants	Eurostat
		Nurses and midwives per 100,000 inhabitants	Eurostat
		Long-term care beds in nursing and residential care facilities per 100,000 inhabitants	Eurostat
	Local services provision	Local Autonomy Index	CE

After the factors were extracted, in the second analysis stage the purpose was to group European regions considering the existing relationship between the principal components. For this we run a hierarchical cluster analysis, using Ward's method and the Squared Euclidean Distance as a measure, understanding the suitable number of clusters. Then, with the K defined (number of clusters ascertained), a K-Means cluster was developed.

The sample used in this study is suitable for an analysis such as the PCA. At the outset, with a total of 296 regions and 13 indicators per year, it exceeds the minimum ratio of observations/indicators (Hair et al., 2018). The Kaiser-Meyer-Olkin Measure ranges from 0.67 to 0.70, higher than the minimum of – depending on the authors – 0.5 or 0.6 (Hair et al., 2018; Johnson & Wichern, 2014; Pallant, 2020; Tabachnick & Fidell, 2019), classifying as a median value (between 0.70 and 0.79) or as a mediocre value (between 0.60 and 0.69)

(Figueiredo Filho & da Silva Júnior, 2010). In addition, Bartlett's sphericity test has a p-value of <0.05, allowing for factorization. Also, the anti-image correlation coefficients have values above the minimum of 0.5 (Hair et al., 2018). Finally, the extracted communality shows a value higher than the minimum postulated by several authors, which varies between 0.3 and 0.5 (Hair et al., 2018; Tabachnick & Fidell, 2019)

In this analysis, we chose to extract four factors, following the Kayser criterion, but not only, since the fourth factor, in 2012, had an eigenvalue of 0.942. This option was taken as the scree plot showed that the great drop in the variance in this year occurred after that component. Also, through all years the factors explain a considerable part of the total variance.

SGI in a heterogeneous regional Europe: a complex issue for service provision

Drivers for SGI: the regional inequalities enhancers

Regional inequalities in SGI provision are a constant in European territories and we found that these disparities are largely related to four main drivers (Table 2).

Table 2: Components ranked by importance and percentage of total variation explained

	Factor	Components	Variation explained (%)	Total variation explained (%)
2006	1	Socioeconomic conditions and health/social care	24.2	70.5
	2	Urbanization and higher education	19.7	
	3	Local public administration	13.5	
	4	Age structure and health services	13.1	
2012	1	Socioeconomic conditions and health/social care	26.6	67.3
	2	Urbanization and higher education	20.3	
	3	Local public administration	11.3	
	4	Age structure and health services	9.2	
2016	1	Socioeconomic conditions and health/social care	26.5	68.1
	2	Urbanization and higher education	21.2	
	3	Age structure and health services	10.7	
	4	Local public administration	9.6	
2019	1	Socioeconomic conditions and health/social care	24.9	67.0
	2	Urbanization and higher education	20.9	
	3	SSGI provision	11.0	
	4	Local public administration	10.1	

The major factor, "Socioeconomic conditions and health/social care", is the one that denotes the biggest impact on total sample variance (Table 2). Hence, it can be considered as the main reason for variations in SGI provision in European regions. The results show that higher regional GDP per capita and higher disposable income of private households appear associated with better levels of health and social services represented by higher levels of

nurses/midwives and long-term care beds indicators. While only having a value higher than .500 in 2006 (high .400 in other years), it shows a somewhat important proximity with high centrality services as the tertiary education. On the contrary, the lowest socioeconomic conditions (represented by high unemployment and risk of poverty rates) are not associated with the provision of these services. This finding follows Humer & Palma's (2013) conclusions about SGI provision, in which they also attribute socioeconomic characteristics the biggest significance for service supply. Furthermore, the linkage between socioeconomic characteristics and SGI provision demonstrates that the capacity to afford these services has a major impact on their supply. However, while this is normal for a typical service integrated into an open market economy based on concurrence, it should not be for an SGI that abides by a public/universal service obligation rule.

The second dimension "Urbanization and higher education" is associated with high population density and the presence of cities with more than 500.000 inhabitants. These territories are also linked with the highest regional GDP per capita, showing that capital is concentrated in urban areas. These indicators appear associated with positive tertiary educational attainment rates, demonstrating that differentiated educational services are primarily associated with urban centres as only there their supply threshold is reached. As discussed earlier, services as a whole and SGI provision are linked to their centrality level, and big cities encompass all services while more peripheral and rural settlements do not. This shows that the centripetal forces play a major role in the provision of SGI.

Concerning the Local Public Administration component, it measures the capacity of local administrations to deal with localized problems, contributing to administrations being enablers of LSGI provision (encompassing services associated with schools, general health services, or childcare (CEC, 2017)). This notion is supported by our results, showing a component connected with the provision of low and medium centrality services (Table 3). A higher level of freedom from the central administration is associated with a greater SGI provision. Also, it shows that planning policies that allow a focus on tackling local and regional problems impact the existence of LSGI or SGI at a regional level. Though this component never comes close to the top two factors, so our findings follow the ones from Gruber et al. (2019) until the factor ranking. We also must draw attention to the fact that this component is dependent on the freedom stipulated (or not) by central governments for regional and local administrations to manage a region. It is closely related to the political and administrative model followed by each State and is related to the characteristics of their Welfare State Regimes. Considering our results, we find that the local autonomy and its inherent capacity to supply these more local services impact the explanation of the total variance, although having a smaller impact than the top factors it cannot be ignored, as on its own originated one single component, showing its pertinence in diminishing provision inequalities.

Table 3: Factorial loadings for 2006, 2012 and 2019

Typology	Indicators	2006 Factors				2012 Factors				2019 Factors			
		1	2	3	4	1	2	3	4	1	2	3	4
Territorial characteristics	Population density (inh/km ²)	0.005	0.841	-0.119	-0.217	0.011	0.836	-0.051	-0.184	-0.009	0.867	-0.020	-0.046
	Percentage of the regional population residing in cities with 500.000 or more inhabitants	-0.052	0.832	0.079	-0.005	-0.036	0.809	0.176	0.008	-0.004	0.779	0.212	0.035
	Population aged 65 or more as a percentage of the total population	0.150	-0.310	0.034	0.827	0.140	-0.275	0.009	0.885	0.065	-0.638	0.378	0.218
	Regional gross domestic product (PPS) per inhabitant	0.550	0.653	0.007	0.147	0.589	0.595	0.120	0.046	0.519	0.636	0.184	0.134
	Unemployment rate (%)	-0.710	0.084	0.248	-0.095	-0.767	0.094	0.086	0.034	-0.742	0.080	0.106	0.215
	Disposable income of private households	0.736	0.384	0.009	0.346	0.786	0.383	-0.011	0.242	0.708	0.355	0.225	0.309
	Population at risk of poverty or social exclusion	-0.782	-0.036	-0.195	-0.036	-0.639	0.012	-0.373	0.028	-0.793	0.039	-0.069	0.051
	Local Autonomy Index	0.270	-0.236	0.710	-0.055	0.362	-0.354	0.519	0.035	0.198	-0.175	-0.037	0.831
	Tertiary educational attainment in the 25-64 age group	0.480	0.610	0.003	0.023	0.477	0.640	-0.011	-0.088	0.487	0.555	0.325	-0.227
	Students (all ISCED levels) aged 17 at the regional level – as % of the corresponding age population	0.054	0.121	0.725	0.192	0.041	0.134	0.804	-0.009	0.202	0.004	0.825	-0.128
SSGI provision	Physician and doctors per 100.000 inhabitants	-0.150	0.392	0.407	0.588	-0.109	0.357	0.569	0.512	-0.283	0.249	0.574	0.423
	Nurses and midwives per 100.000 inhabitants	0.731	0.127	0.242	-0.109	0.749	0.111	0.178	-0.089	0.658	0.127	0.129	0.219
	Long-term care beds in nursing and residential care facilities per 100.000 inhabitants	0.747	-0.004	0.203	-0.048	0.734	0.018	-0.002	0.181	0.674	-0.008	-0.059	0.346

Also, as Table 3 shows, in 2019 there was no component primarily/especially linked with the age structure (senior population indicator). In fact, the transition from an own factor to be encompassed on Urbanization started in the post-crisis period. Two readings can be drawn: On one hand, the impacts of an ageing Europe are now particularly seen in the younger populations, with the aged populations being the new normal in other regions. On the other hand, the agglomeration effect postulated by the NEG made itself felt, with urban centres captivating more population due to their economic and service provision characteristics, moving the population structure to a mere side note, approximating the provision of SGI to the basic postulations of NEG.

In 2019, the results show that the SSGI provision component emerged. This is due to the disappearance of the Age Structure factor and the grouping of the indicator for the population over 65 years in the Urbanization component, which removed the binding element (needs of the senior population – mainly health) and allowed the merging of these SSGI in one component. The fact that this component is associated with these indicators also points out the importance of the previous existence of an SGI provision structure to supply these services in the present and future, making it somewhat apparent that the provision prevails where the provision exists.

These findings postulate the influence of each of the four main factors in SSGI provision. This way, a good score in one component does not translate to a good score in another. This follows the notion that SSGI provision is not based on only one dimension, but in fact, it is the result of a complex and difficult combination and negotiation of many dimensions (Bjørnsen et al., 2015; Gruber et al., 2019; Humer, 2014a, 2014b). Therefore, a region does not need to have a decent result in every component to be more prone to the existence of a good SSGI situation, as was already discussed, factors possess different levels of influence. Hence, great scores in the Socioeconomic conditions and health/social care factor can lessen the effect of lower to mediocre results in other drivers. But, conversely, great results in one (or more) of the other factors may not be sufficient to attenuate a terrible score in the Socioeconomic conditions and health/social care component.

This makes it evident that economic capabilities are an (unwanted) factor for SSGI supply and, therefore, SGI emerge as enhancers and not as diminishers of territorial imbalances. In fact, it is in the harsh times of crisis that this factor shows its greatest impact on provision when compared to others, as shown in Table 2, evidencing that socioeconomic conditions are crucial for the regional SSGI provision even when these services should be more distant from these aspects and more focused on tackling inequalities and supporting the population. So, as the dominance of regional socioeconomic characteristics is observed even in services mostly linked to the welfare state, showing that centripetal forces – as are economic competition and prices and the urban agglomerations – prove to be too strong for an equitable provision across

all territories, as they centralize and concentrate the supply (population and urbanization) and offer (services) on themselves.

The importance of the centripetal forces, i.e. the agglomeration processes, for the provision of SGI, turns the discussion to polycentricity and territorial cohesion. The fact is that the formulation of the economic space has been structured around the dominance of large cities, their hinterlands, rural areas close to cities, and in a far distance rural remote areas (Garcilazo & Oliveira Martins, 2020), all with the existence of a considerable gap between cities in regions with various levels of socioeconomic development (Meijers et al., 2007). Thus, the role of the city and its area of influence is of the utmost importance for economic development and service provision. This way, the difficulties for peripheral regions to get the expected results from the CP – and, therefore, have the needed SGI provision – is alarming, as the lack of a polycentric structure will act as an obstacle to it (Eskelinen & Fritsch, 2009; Sá Marques et al., 2020). Polycentrism is a promising tool to achieve territorial cohesion and to address spatial justice and territorial imbalances (Schmitt et al., 2015), nonetheless, to achieve the wanted development, polycentrism as a paradigm needs to consider the areas outside the cities as much as the networks between cities, giving a framework that accommodates the relational and territorial proximity factors, while reflecting the theoretical, methodological and normative processes that guide polycentricity (Carmo, 2013; Schmitt et al., 2015). However, polycentrism cannot be shown as the only cure for this disparities malady, as its impacts on reducing disparities may differ in space and time. This is illustrated by the works of Meijers & Sandberg (2008, 2021), where initially, a greater predisposition was found for countries with monocentric structures to present smaller regional disparities (Meijers & Sandberg, 2008), but later the opposite was found, with states characterized by polycentric structures showing a greater tendency to show less territorial asymmetries (Meijers & Sandberg, 2021), thus showing that polycentric urban development may contribute to a more cohesive Europe.

European regions at a glance

Having the factors as a base, this section discusses the identification of regional patterns, defined by clusters. With the hierarchical cluster analysis, the number of centroids to use in the K-means method was found, this way we used six centroids. The obtained clusters are dissimilar, being associated at different levels with different components. Furthermore, not only does its composition differ throughout the analysis, but its very association with the factors is not the same, as the factors are slightly different from year to year, as shown above. Inspecting each cluster, and in a generalized manner, they can be characterized as:

- *Convergence regions*: These include regions with great socioeconomic challenges and with a lower propensity to offer SGI, especially after 2012, as a result of the economic crisis;

- *Ageing regions*: These are regions in demographic decline, with great development problems, encompassing most of the regions from the Mediterranean countries. This group is only associated with some health services (medics per 100.000 inhabitants);
- *Cohesion regions 1*: This group consists of regions with a good socioeconomic situation, apart from the crisis year, in which the socioeconomic conditions and health/social care factor recorded somewhat lower values. Moreover, this group, in the post-crisis period, also presents an important association with population ageing. From the point of view of service provision, these are related to the supply of services of medium centrality, associated with the indicators referring to health services and medical personnel;
- *Cohesion regions 2*: This cluster contains regions with good scores in the socioeconomic conditions and health/social care and local public administration components. In fact, these regions constantly show better scores in the latter factor, evidencing that cohesion countries and regions (except for the Anglo-Saxon ones) have the strongest position in LSGI, following the already postulated by CEC (2017). The only lower performance of this cluster is observed in the Urbanization part, nonetheless, this does not necessarily mean that these regions are sparsely populated. The main services associated with this group are medium (essentially health care) and low centrality services;
- *Regions with large cities 1*: This group covers some of the large European metropolises, although certain socioeconomic constraints are observed (usually linked to the social issue). These are the most suitable regions for the provision of any type of service;
- *Regions with Large cities 2*: This group is almost identical to the previous one, although it has fewer disadvantages from a social point of view, less local administrative autonomy, and a smaller supply of medical personnel.

The clusters can be classified based on their relationships with the components and the preponderance of these in their composition. Therefore, the clusters that are most associated with the dimensions of Socioeconomic conditions and health/social care and Urbanization and higher education and, consequently, with the services analysed, are those where, preferably, the regions should fit. On the other hand, the Convergence regions, and the Ageing regions, present more gaps in the analysed services, especially in the most differentiated service, higher education (normally associated with the highest centrality).

In this way, it is possible to classify the integration of regions in clusters as positive (i.e., enhancing the supply of services) or negative, and therefore constituting a hindrance to provision. Thus, the groups *Cohesion regions 1* and *Cohesion regions 2* tend to have a better SGI supply than those that fall in the groups *Convergence regions* and *Ageing regions* which tend to show greater difficulty in provision. Quite apart from these are the *Regions with large cities* clusters, in which services are generally more plentiful. The clusters linked to the worst associations with the extracted components, and in which, in addition to impairing the

provision of SGI, have problems in achieving and maintaining territorial cohesion, are mostly regions:

- Of the Member States with weaker economies or which are not on par with the levels of development of the central countries of the EU; or
- Which are part of weaker welfare state regimes.

In addition, many of the regions of the Mediterranean States or the New Member States are in the clusters of *Ageing regions* and *Convergence regions* respectively, with only the most important or central national regions (capitals, economic centres, and the largest cities) being grouped in the other clusters.

The existence of such contrasting clusters is important evidence of the high degree of regional disparities in Europe. Furthermore, territories do not present the same relationship with each of the dimensions measured along the 4 periods. In fact, there are different behaviours from year to year of analysis (representing different contexts). States with distinct characteristics have also shown differing degrees of ability to overcome the difficulties imposed by the conjunctures of each period.

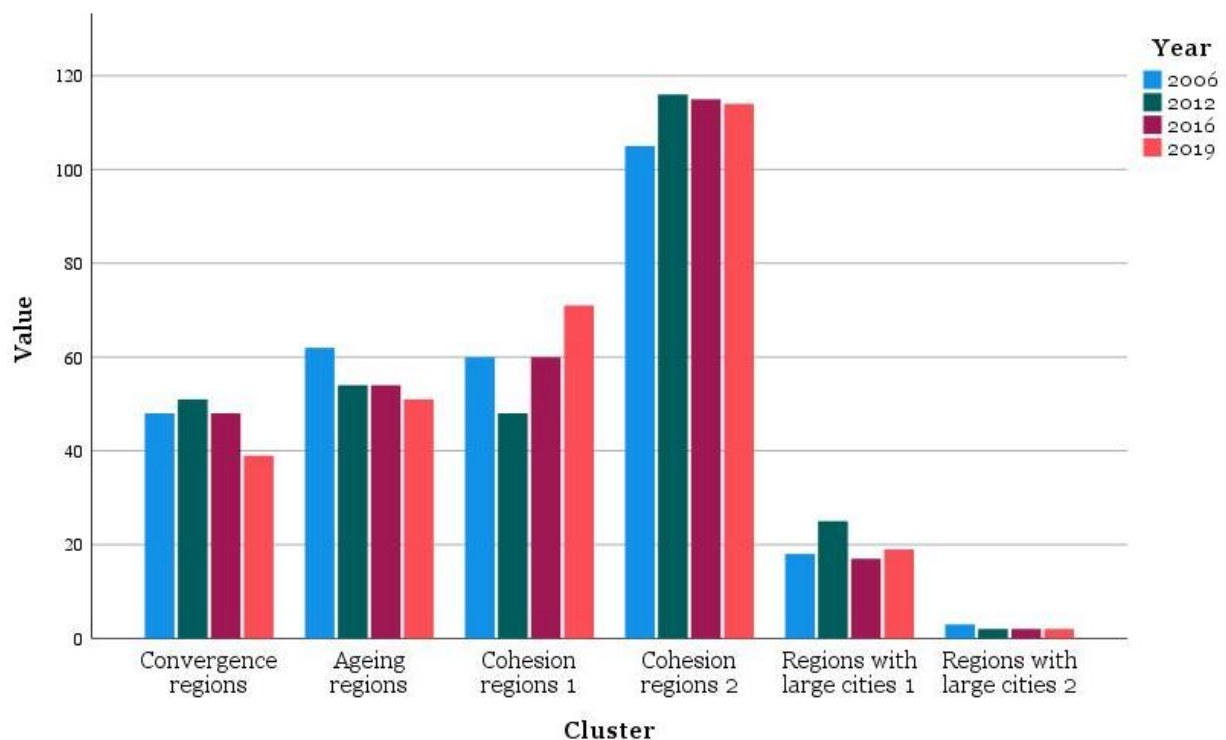
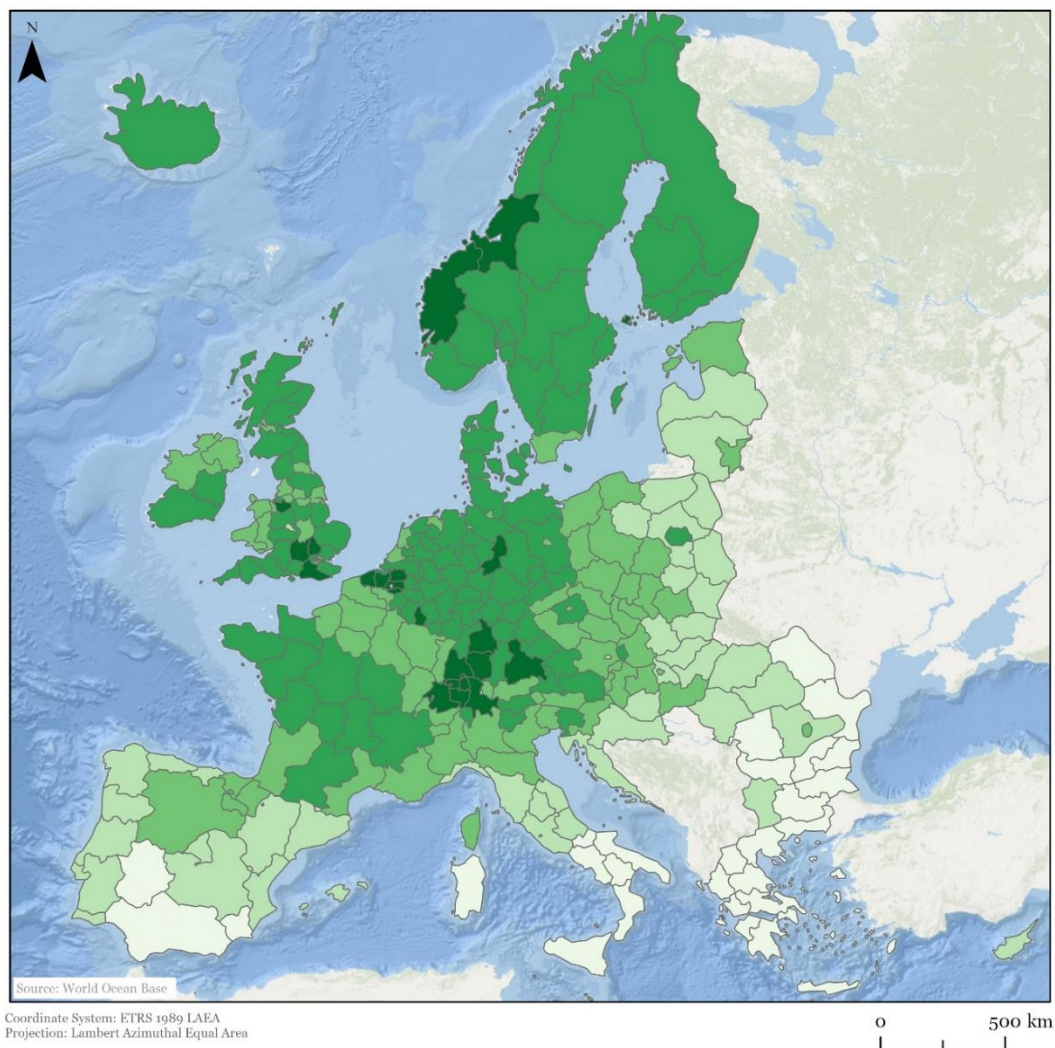


Figure 1: Number of regions per cluster in each year

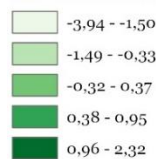
Therefore, cluster compositions vary throughout the analysis, with many regions changing their position and/or changing groups in different years due to the specific contexts in the observed periods. As Figure 1 shows, there was a reduction in the number of regions in the *Convergence regions* and *Ageing regions* groups, with the first registering an increase in the crisis year, and only really decreasing in 2019. On the other hand, the sets referring to the

Regions with large cities did not show major changes in the number of members between 2006 and 2019, although in the *Regions with large cities 1* group, there was a major growth between the pre-crisis year and the crisis year, and then a strong decrease between the crisis year and the post-crisis year.

Finally, the cluster of *Cohesion regions 2* is the one that includes the largest number of regions in all years. In this group, the increase occurred from the pre-crisis year to the crisis year (having then decreased very slightly the number of regions), while in *Cohesion regions 1*, a reduction was observed from 2006 to 2012 and a strong growth in the following years.



Socioeconomic conditions and health/social care

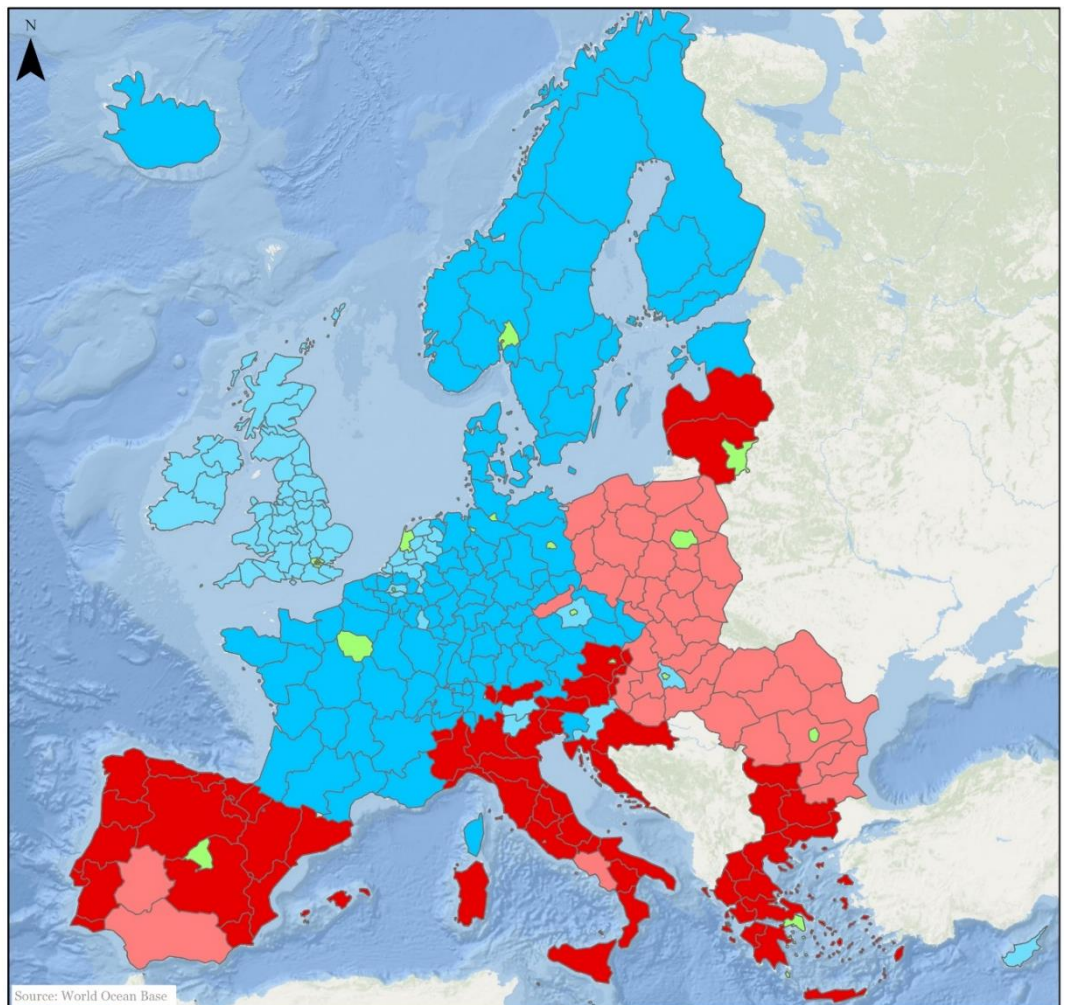


Source:
European Commission - Eurostat/GISCO (2016)

Figure 2: Regional scores in the Socioeconomic conditions and health/social care factor (2019)

The clusters, independently of the analysed year, show that regional disparities exist among regions in the same country, but also between regions from different countries. The fact is that clusters with the worst associations with the extracted components are (mostly) filled by regions of states with weaker economies or that are not on par with the development levels of the core countries. Likewise, the same applies to the inverse situation.

Only a residual number of regions of the strongest European States, those comprising the Nordic, Anglo-Saxon, and Continental Welfare State Regimes, are linked to the group of *Convergence regions* or *Ageing regions*. Furthermore, the connection with the *Convergence regions* category is seen from the crisis year onwards and is maintained in some regions in the following periods (although in smaller numbers).



Coordinate System: ETRS 1989 LAEA
Projection: Lambert Azimuthal Equal Area

Clusters

- Convergence regions
- Ageing regions
- Cohesion regions 1
- Cohesion regions 2
- Regions with large cities 1
- Regions with large cities 2

Source:
European Commission - Eurostat/GISCO (2016)

Figure 3: Clusters composition (2006)

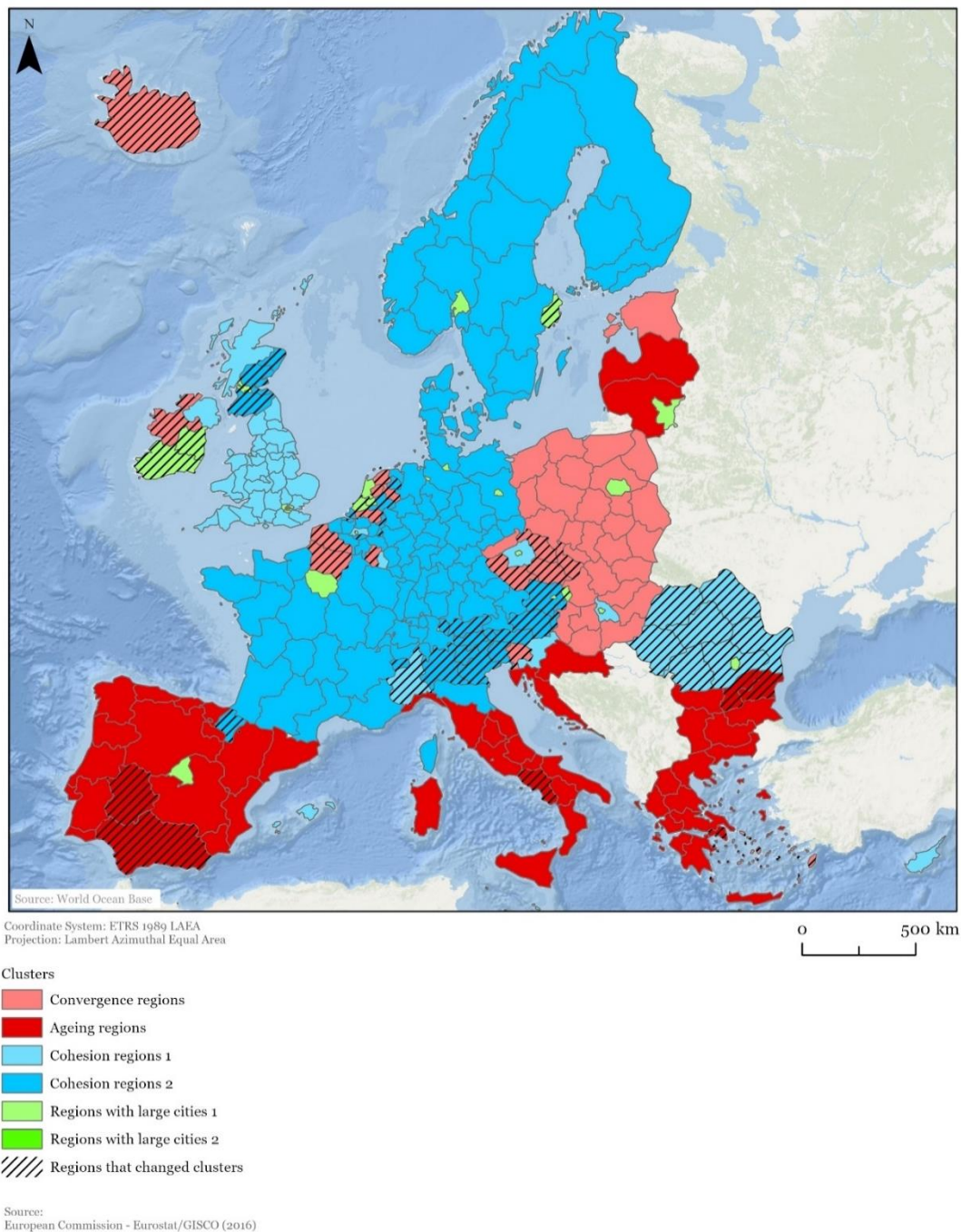


Figure 4: Clusters composition (2012)

However, in the Mediterranean or New Member States, most regions are either in the cluster *Convergence regions* or *Ageing regions*, except for the most important or most central regions (possible examples are capitals, economic centres, or the largest cities). But with a clear distinction, the situation of the Mediterranean States deteriorated from the beginning to the end of the analysed period, as the socioeconomic context worsened seriously, and service provision followed that downward trend. Regions in the New Member States found themselves in the opposite situation, with an increase over the initial year in economic capacities and social conditions, but also in the provision of services (some regions even moving to groups with better associations with the dimensions). It must be stated that these countries, especially

the Mediterranean ones, are some of the least polycentric countries concerning spatial structure (Brezzi & Veneri, 2015), which in turn will make the disparities persist in peripheral regions, hampering spatial justice.

There was an evolution from the pre-crisis to the crisis context, but regions from countries that suffered the most from the crisis, like Iceland, Ireland, and the Mediterranean States, were clustered around the worst groups, it is a known fact that these countries had a difficult period with the economic and financial crisis. In the other states, the regions moved between clusters in several cases but only in a small number of situations moved to a cluster connoted with bad results in the assessed dimensions. Some regions, namely the Romanian ones (see Figure 4), changed from the *Convergence regions* cluster to the *Cohesion regions 1* cluster due to the improvements felt in the analysed indicators, with rates of change much higher than other regions. The fact that these were some of the least developed regions in all of Europe, and that the crisis did not affect them as much as others, enabled a quicker development from their initial situation, here shown by their cluster membership in 2012. Likewise, this displays the role of SSGI in the approximation between regions with different contexts, being a clear contributor towards the promotion of territorial cohesion.

After the crisis period, there was a comeback in many regions, that is, they bounced back from the (more) negative clusters to be encompassed in the ones with the greatest scores. The example of Iceland is most striking, as it completely changed its scores in the components and therefore its cluster membership. This is also fairly evident in some eastern European regions (for example in the regions of Közép-Dunántúl or Dél-Alföld in Hungary, Slaskie or Dolnoslaskie in Poland, or Latvia). Nevertheless, many of those that had moved in the crisis period came back to the original clusters, as Figures 3, 4 and 5 illustrate. The Romanian regions are a great example of this, as the improvements in the assessed indicators, although still existing, started to lose some of the momentum, both in the socioeconomic conditions and in the service provision (mainly in the latter), and most of the other European regions begun to regain theirs, caused the Romanian regions to fall back to the *Convergence regions* group, where they started in 2006. Also, there is the situation of the Mediterranean regions, which never bounced back in regard to cluster membership and kept on a downward trend. In fact, as a group, these are the only ones that were in a worse position score-wise and membership-wise in 2016 and even in 2019 than in 2006. This shows that the metastases of the crisis persist more in some regions than others.

This composition of clusters and their evolution is a complex issue, as it shows that regions that are already behind tend to have started and remain in clusters (or fell into these) less likely to promote a good offer of SGI, thus decreasing spatial justice and territorial cohesion.

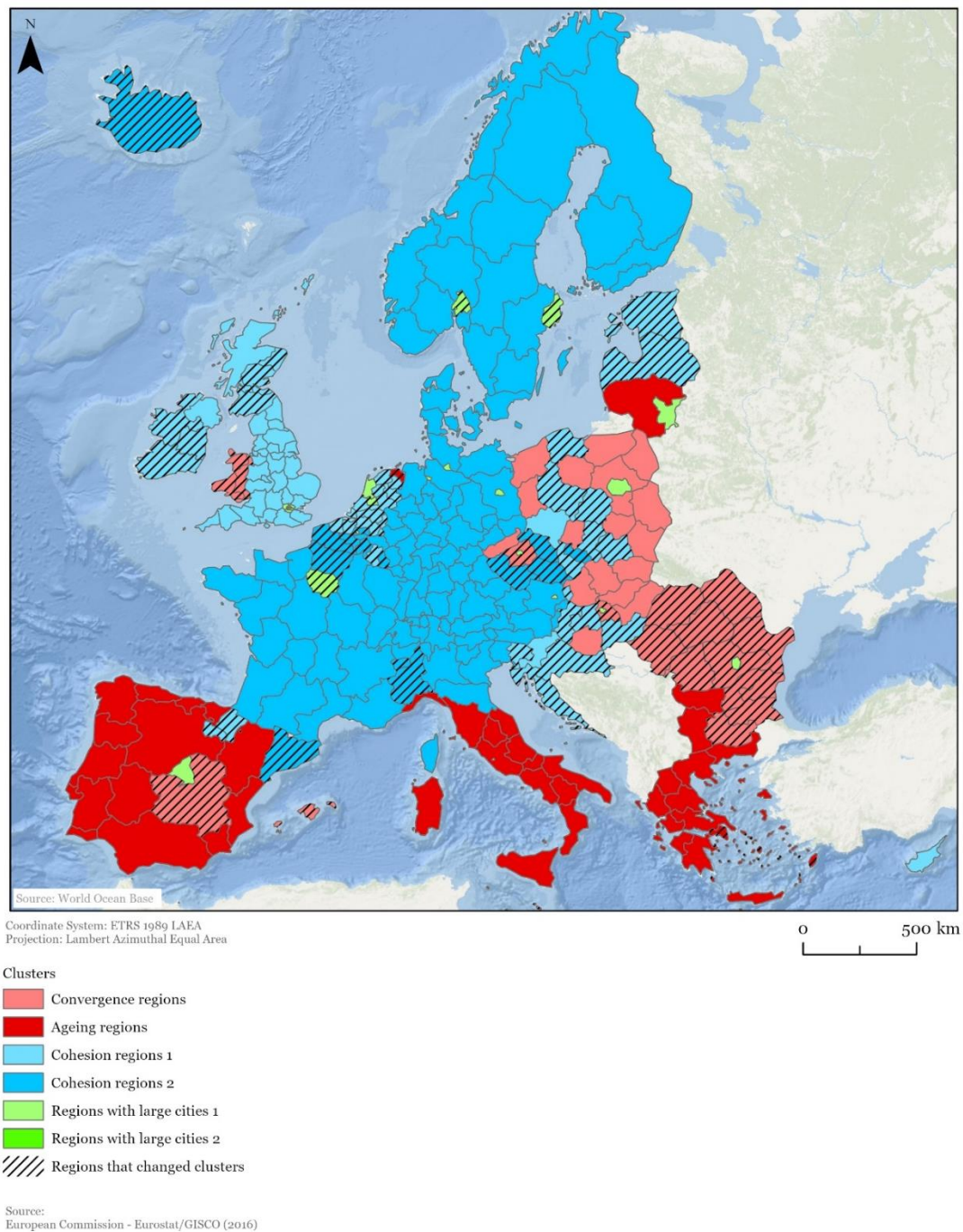


Figure 5: Clusters composition (2019)

Conclusion

The SGI, and particularly the current SSGI analysed, are present in the EU terminology, however, their supply is not regulated, being absent from any EU document (Bjørnsen et al., 2013, 2015; Szyszczak, 2018; Zhu, 2020). Hence, each Member State has complete competence and power to generate strategies, policies, and provision structures for SGI in its territory. Consequently, each state presents a distinct relationship with these services (Humer et al., 2013; Kolarič et al., 2019; Polacek et al., 2011; Rauhut et al., 2013; Zhu, 2020). Thus, regional disparities exist throughout regions, as not only do regions possess different

characteristics in many domains but also there is not a common approach towards SGI and its features and peculiarities (Franco & Marques da Costa, 2022a, 2022b).

In this work, we found the main factors that are associated with SSGI provision disparities in European regions, namely, Socioeconomic conditions and health/social care, Urbanization and higher education, Local Public Administration, and Age structure (and in 2019, more specifically the social dimension of SGI, the SSGI provision). These have a hierarchy, with Socioeconomic conditions and Urbanization being the strongest explanatory support for the level and diversity of SSGI provision. As they function independently, a region score in one component is not transferable to the others. Also, due to each possessing its own level of influence in SGI, a great score in one does not automatically imply the possible existence of said provision or higher territorial cohesion, nor does a reduced score connote the contrary. Furthermore, we found that the factors linked to the centripetal or agglomeration forces achieved their greatest impact on the crisis periods, showing that the disparities assume greater levels in such times. Therefore, dealing with SSGI provision problems is fundamental to thwart the impacts that the pandemic crisis will have (or already started to have) in the more rural and peripheral regions, but also, in the future, to accommodate the impacts of the energy crisis deriving from the war in Ukraine and the climate change effects that will be produced and felt.

In general, most of the regions that score best on these factors are the core European regions that are part of the most powerful states with dynamic and solidified economies. In other words, those regions encompass the already cohesive part and not the convergence part of Europe. Hence, the factors constitution and behaviour from the regional viewpoint are a complex matter, which translates into the obtained clusters and their memberships. Of the six clusters found, two (*Convergence regions* and *Ageing regions*) are linked with the worst socioeconomic characteristics and supply performances that condition the existence of SSGI and territorial cohesion and are mainly composed of regions that are already lacking in territorial cohesion. Thus, the SSGI in times of crisis are not enough to prevent the decline of cohesion or go further and promote the convergence process amongst Europe's core and peripheral regions. The socioeconomic factor is still the dominant one, as better provision comes mainly from greater socioeconomic conditions, while also urbanization characteristics cannot be ignored, and the peripheral countries and their regions have severe difficulties in catching or accompanying the socioeconomic development of core ones. This is problematic as it points to a deepening of disparities between European regions, putting territorial cohesion and spatial justice at stake.

From a planning point of view, policies regarding SGI provision should be developed with special attention to the agglomeration forces that guide provision structures, and that often compromise supply in the more sparsely populated areas. As we assessed, this service provision is prone to the centripetal/centrifugal processes as much as any other service, even

though being subject to universal service obligations. This is something that in theory should not happen, or at least should be mitigated. Therefore, the imbalances in regional SGI provision can be explained through the NEG principles for the localization of economic activities, with the agglomeration process and the production of scale economies being a preponderant aspect of it. This should be considered in the CP formulations and its focus on urban territories and cities, as it can be argued that this can be a factor that contributes to the augment of the centripetal forces, which in turn will deepen the already existing asymmetries between urban and rural or more peripheral regions.

Furthermore, the CP's focus on SGI is preponderant for cohesion, however, it should not disregard SSGI in favour of SEGI in general, because, as our findings point out, it is not only economic growth that brings the lagging regions closer to the core European regions. The performance in the SSGI provision has an important contribution to the existence of such convergence processes and, when absent, to a greater division between them.

To conclude, the socioeconomic matters and the urbanization structure are crucial to support better SGI provision, therefore we urge politicians and practitioners to pay close attention to it, especially in less polycentric regions or rural and low-density areas, where “market” perspectives are not enough to support levels and diversification of attendance. However, these are complex to deal with and the changes implemented can often seem like a major undertaking, since the transformation of demographic and territorial characteristics or social constructions of values and notions can be assumed to be a difficult long-term task.

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Conflict of interest

All authors declare that they have no conflicts of interest.

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