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Transformation of Intermediate Size Cities in the U.S. and Spain: the Cases of Green Bay (USA) and Albacete (Spain)[1]

RESUMEN

Transformaciones en ciudades intermedias en Estados Unidos y España: los casos de Green Bay (EE. UU.) y Albacete (España).- La ciudad contemporánea se articula a partir de una constelación de nodos, de diferente tamaño y desigual densidad e intensidad, que están territorialmente fragmentados e interconectados por modernos sistemas de comunicación. Como resultado, la ciudad se ha transformado en mosaicos sociales metropolitanos discontinuos y fragmentados. En este trabajo se analiza, mediante una metodología que permite comparar con indicadores diferentes, la transformación en la corona urbana de dos ciudades intermedias, Green Bay, Wisconsin (Estados Unidos) y Albacete, Castilla-La Mancha (España).

RÉSUMÉ

Transformation des villes de taille moyenne aux Etats-Unis et en Espagne: les cas de Green Bay (États-Unis) et d'Albacete (Espagne).- La ville contemporaine s'articule autour d'une constellation de différents secteurs, inégaux en densité et en intensités, ce qui entraine un morcellement du territoire. De plus, ces secteurs sont interconnectés entre eux par des moyens modernes de communication. En conséquence, la ville se transforme en une métropole dont la mosaïque sociale est fragmentée et discontinue. Dans cette étude, nous analysons, à travers une méthodologie qui nous permet de comparer avec différents indicateurs, les transformations de deux villes de taille moyenne, Green Bay, Wisconsin (Etats-Unis d'Amérique) et Albacete, Castilla-La Mancha (Espagne).

ABSTRACT

The contemporary city is articulated as a constellation of different sized nodes of unequal densities and intensities that are territorially fragmented, which are interconnected by modern means of communication. As a result, the city is transformed into a discontinuous, fragmented metropolitan social mosaic. This paper analyzes, through a methodology that allows comparing with different indicators, the transformation of two intermediate cities, Green Bay, Wisconsin (United States) and Albacete, Castilla-La Mancha (Spain).

PALABRAS CLAVE/MOTS CLÉ/KEYWORDS

Modelo de ciudad global, dispersión urbana, morfología urbana, ciudades de tamaño medio.
Modèle de mondialisation urbaine, étalement urbain, morphologie urbaine, ville de taille moyenne.
Urban Globalization model, Urban Sprawl, Urban Morphology, Medium-sized cities.

INTRODUCTION

Urban sprawl has become widespread in large metropolitan areas, for different reasons and at different times, first in North America and then elsewhere, including Europe. Attention has been paid to this reality, the processes that have generated it, and its economic, environmental, social and political implications. The change of city model possibly responds to diverse reasons, although they act jointly and with uneven effect. Sometimes transformation engines are of global scope, and others are due to local situations. Some have a high processing capacity, while others accompany and increase the role of the first ones. Among the structural ones, we highlight those played by the information society and the spread of information and communication technologies —ICTs—. It is what has been termed as network society (Castells, 2006), that has favored new types of relations, substituting proximity by connectivity, distance by time… These changes have opened a new stage to the automobile and remote connection scope beyond the limits of the traditional city. The growing interest of the capital on investing and immobilize financial surpluses in urban spaces

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is global, thus supporting the construction of new buildings, in many cases under forms of urban dispersion. The strategies employed have been diverse: on the one hand, the granting of credits to the public sector (for new urban developments and creation and/or improvement of infrastructures); on the other hand, loans to the private sector (developers - who get big capital gains on the conversion of rural land into urban - and final homebuyers through the mortgage market) (Harvey, 2005, 2013). In most of cases, they have had a clear speculative function, in addition to the actual production.

The role of the Governments in recent decades has been strategic at different levels, in a generalized context of neoliberal policies. The Administration has progressively left aside the regulatory task of land markets, reducing their function, and limiting it to the intervention in urban, regional and spatial planning (Harvey, 2013, p. 52). On the other hand, we can also see this in the support to homeownership through tax reductions or exemptions from taxes. It has been therefore a crucial actor in the process of construction and reconstruction of traditional cities, but also of peripheral housing estates (Harvey, 2013, p. 77). Added to all this, the consideration of the real estate sector as an engine for employment and income generation, in a context of expansive economy and surplus of capital in the public and private sectors.

The territorial and urban effects of urban dispersion have been evident for the most part of the surrounding environs of the city. They have generated a decomposition of the traditional urban fabric benefitting new modalities that favor sprawl and territorial segregation. The inexcusable conditions have been associated with the improvement of connectivity (ITCs) and infrastructure improvements in transportation. It is in this context, that the perception of a certain tendency that approximates different cities with certain similarities of dispersion and with specific singularities in each case. But urban sprawl also becomes increasingly important in the environment of medium-sized cities. This paper reviews the theoretical contributions related to the concepts of medium-sized cities and urban sprawl. Attention is paid to urban sprawl in two different cultural contexts, with two case studies, a North American city in the upper Mid-West, Green Bay, Wisconsin, and a Spanish city in central Spain, Albacete. Two cities that in the last two decades have been affected with unequal intensities and with their own proper singularities by the same manifestations of urban sprawl in their respective peripheries.

For our purposes in this study, we will be using the European Union's statistical definition of medium-sized cities, as those with a population between one hundred and two hundred fifty thousand people, and the Brookings Institution Center on Urban and Metropolitan Policy and the National League of Cities classification of medium-sized cities, defined as having populations ranging from ninety-eight thousand to one hundred and seventy five thousand residents. In the Spanish case, we also use a functional definition for medium-sized cities used in Spain: a "medium size" as a center of social, economic and cultural interaction which is also a center for goods and services. In the case of the U.S., we use the research done on urban hierarchies and the term "second cities" which favors the attraction of medium and small cities for economic development. Urban researchers, such as Sweeny (2001), indicate the essential attributes that distinguish and mark its dynamics: having a population to support the urban economic base. It should have the presence of economic clusters that would provide the benefits of specialization and regionalization, with a transportation network that makes commuting easy, thus avoiding long transfers to workers.

Meanwhile urban sprawl is characterized by different territorial dimensions with low intensity of land use patterns (Galster et al., 2001), dealing with density, continuity, concentration, clustering, centrality, nodality, mixed uses and proximity. All these dimensions result in physical separation between residential units, shopping centers, business parks and communication networks (Duanay, 2000). Leaving an urban morphology and built form that is economically and ecologically unsustainable in the process. By using these parameters we find Albacete, Spain and Green Bay, WI, USA to be comparable in both population size and functional attributes in their respective regions and both are recently experiencing urban sprawl.

Green Bay is a city in the county seat of Brown County in the State of Wisconsin located at the head of Green Bay, a sub-basin of Lake Michigan, at the mouth of the Fox River. The population was 106,500 in 2016. It is the third-largest city in the state of Wisconsin, after Milwaukee and Madison. It is also the third largest city on the west shore of Lake Michigan, after Chicago and Milwaukee. Green Bay is the principal city of the Green Bay Metropolitan Statistical Area (MSA), which covers the counties of Brown, Kewaunee, and Oconto; the MSA had a combined population of 306,241 at the 2010 census. Albacete had a population of 172,121 inhabitants in 2016. It is the largest city in Castilla-La Mancha. It is an important centre of communication and transportation, which explains the fact that its com-

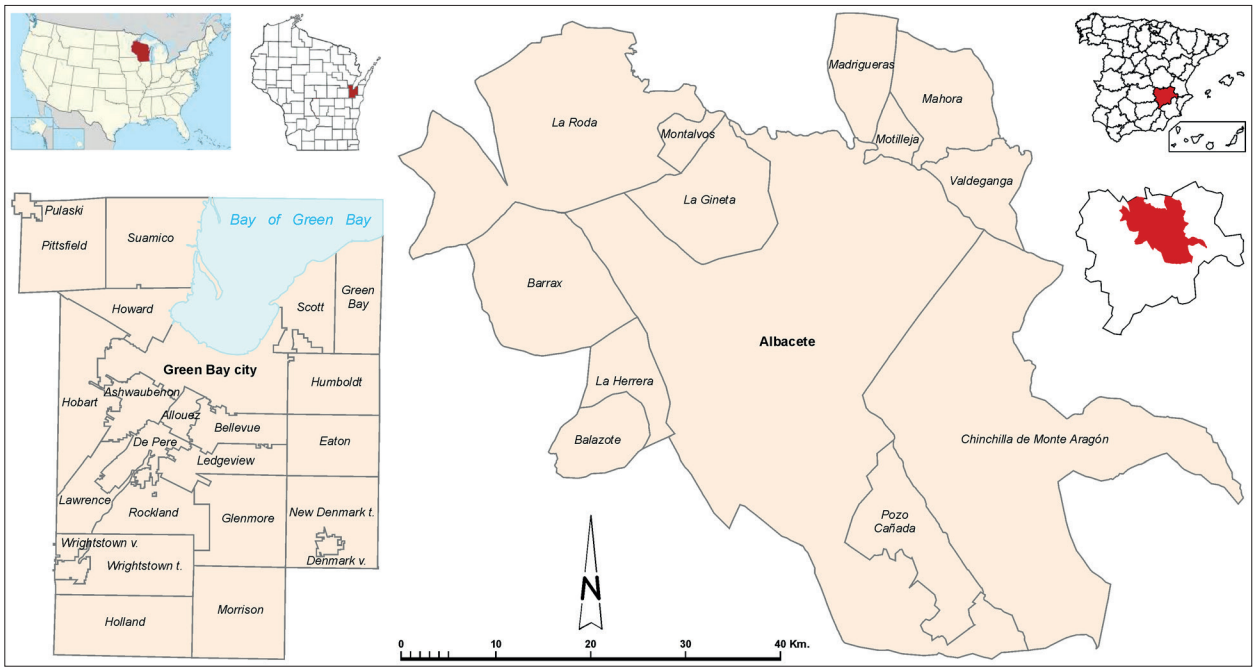

FIG. 1. Location of study comparative area: Green Bay in Brown Country, in the U.S. state of Wisconsin and Albacete in the province of Albacete, in the autonomous region of Castilla-La Mancha, Spain. Source: Own elaboration.

mercial area exceed provincial limits. Albacete is capital of the province of the same name having important educational, industrial and specialized services with a metropolitan area of more than two hundred thousand inhabitants (Figure 1).

This paper compares the demographic changes and the economic functional reorientation (secondary and tertiary sectors) of peripheral areas surrounding the urban centers of Albacete and Green Bay that are undergoing such transformations. The analysis pays attention to population growth and the dynamic housing industry, namely in the construction of new housing as a second variable. In addition to demographic changes, we will analyze the impact of economic restructuring comparing the intensity of land use, and the relationship between places of residence and employment, since many peripheral areas are becoming clusters of residential and employment areas. Thus we use economically active population by sector as a third variable. Finally, we look at transportation, especially the use of private vehicles, associated with selective improvement of the road network to understand the importance of accessibility between live, work retail and play spaces and the intensity of these relationships. Commuting patterns, therefore, is our fourth variable used in order to measure these intensities. The use of different data sources can be difficult because they do not always coincide, and the results can be relative. Despite this, the exercise of comparison seems interesting enough to meet the challenge of analyzing it.

I. THE FRAMEWORK OF TERRITORIAL TRANSFORMATION OF THE CONTEMPORARY CITY

Some years ago the French geographer Georges Benko pointed out that the reconstitution of space affects territories at different scales (Benko, 2000, p. 5). At the local level, there have been deep changes in the structure and territorial dimension of cities, regardless their size in the last thirty years. Along with these structural changes, some remarkable changes have been observed in the spatial organization in both European and North American cities. Urban forms that dominated the twentieth century. In the United States, the urbanization process took place during the latter part of the 19th century and it is associated with industrialization. The urban form was characterized by dense downtowns and central districts distinguished by financial, trade and services that gave way to residential uses of land irradiated in concentric zones. Meanwhile the cities of Western Europe and the

Mediterranean, with a longer urban history, kept their traditional historical centres alive, where a more compact mixed land use, commercial functions and services shared with residential uses prevailed. Yet both urban forms converge spatially as both are undergoing profound socio-economic deconstruction and reconstruction (Soja, 2000). The contemporary city is articulated as a constellation of different sized nodes of unequal densities and intensities that are territorially fragmented, which are interconnected by modern networks of means of communication and transportation. As a result, the contemporary Western city is transformed into a discontinuous, fragmented metropolitan social mosaic, punctuated by polycentric activity nodes.

The ultimate expression of this process is what Castells termed as megacity (Castells, 1996), a term used to characterize the spatial transformation of the modern metropolis, which social-spatial structure has become increasingly discontinuous, fragmented, polycentric and complex, and expands itself into a very large territory (Sudjic, 1992). The same process has its counterpart in the European metropolis, although with a different scale. European urban scholars have studied an emerging polynucleated urban structure (E.E.A., 2006). In both cases, new cities or towns appear at the outer limit of older, larger cities. These urban forms are known as edge cities (Garreau, 1991). A forest of terminologies that qualifies them as "technopolis", "technoburbs", or "post-suburbs" has emerged (Watson & Gibson, 1995; Soja, 1996). The varieties of names given to the contemporary, postmodern metropolis beg for a precise definition. For example, the term, "Exopolis" the city without, is an attempt to collectively emphasize its "ambiguity oxymoronic…the quality of non-city" (Soja, 1996), and produces a sense of urban poetics in the discussion, but does not help to define this new reality from a conceptual point of view. The apparent logic in city building in recent decades alter the traditional compact, intense and dense structure, giving way to a dispersed city and new ways of understanding the territorial, social, functional and morphological dimensions of the contemporary metropolis.

This model of suburbanization, born in North America, has spread to European urban modes (Indovina, 1998; Capel, 2002; Mallarach & Vilagrasa, 2002; Dematteis, 2015; Ewign & Hamidi, 2015). In recent decades many cities of old Europe have adopted and adapted rapidly to this imported model of dispersed city. Over time, it has become an expression of landscape, land use and a way to understand the contemporary morphology and urban lifestyles. While historical centers were experiencing increased land value and rejuvenating, and intra and inter urban networks were reorganizing, urban territories were increasingly becoming fragmented. But these processes and these manifestations of recomposition of urban spaces that are articulated most prominently in contemporary large cities, are not unique to them nor to their metropolitan areas. They are also reproduced in smaller medium size cities in which new settlement patterns take on new importance, with a clear residential focus that is influencing the morphology and functional relationships of the city with their peripheries.

II. THE DEBATE ON THE DEFINITION OF THE SMALL AND MEDIUM-SIZED CITY IN DIFFERENT CULTURAL CONTEXTS (U.S. AND SPAIN)

There are several conceptual proposals that aim to address the idea of medium and small city. But the weakness in terminology only adds complexity to an already confusing concept. The identities and multifaceted realities of small cities make them subject to investigation. The city, regardless of size, changes and adapts to unique or collective influences of economic, political, social and cultural actors. The transformation through time and space is symbolic, but also the result of an actual physical process, which hinders its definition. But there is a substantive debate on the population size, the location, and the urban functions performed, its pertinence in a particular urban system or the role of being a regional node or not, are some of the issues that are part of the discourse surrounding the small or medium sized city.

From a statistical standpoint, the medium-sized cities in Europe are understood under different criteria, since each country has different proposals regarding minimum and maximum thresholds in the population. The European Union defines "medium size" generically to mean those cities whose population is between one hundred and two hundred fifty thousand (Mega, 2000, p. 247). However, this statistical definition takes into account considerable differences between countries such as Portugal or Greece, with an urban structure that is less populous, having ranges between fifty and one hundred thousand inhabitants, in others like Italy or Germany have maximum thresholds reaching three hundred thousand. Thus, reaching an operational definition continues to be an unresolved issue. Despite this, there have been efforts to establish criteria to help understand and analyze this group of cities by analyzing the urban composition, functional affinities, demographic and intercity relationships.

In the Spanish case, Bellet and Llop understand "medium size" to be a "center of social, economic and cultural interaction which is also a center for goods and services specialized for a population that exceeds its limits and has established itself as a center regulating relations through transport infrastructure and communications at regional, national and/or even international levels, and that counts generally on public institutions for its administration. It is therefore a kind of city that has the demonstrated ability of territorial organization, which has a scale that makes it more homogeneous and livable than larger cities, in terms of mediating social or environmental conflict, although with less economic competitive capacity" (Bellet & Llop, 2004; in Andres, 2008). Spanish researchers on medium size cities statistically define these cities as being between fifty and two hundred and fifty thousand inhabitants.

In the case of the United States, much has been written on the subject attesting to the importance of this topic among U.S. researchers. The terms used to define urban areas of small and medium size cities also varied. The definition of small and medium size city is complex and there is no consensus on the differentiating elements of this urban category. The medium and small cities are classified based on the size of their population, establishing structures of urban hierarchies dominated by regional centers. Some researchers use similar terms to describe small towns, but they fluctuate much defining thresholds. They use the juxtaposition to the term "small cities", the terms "second tier", "third tier" (Markusen, Lee & DiGiovanna, 1999; Siegel & Waxman, 2001) or "first rank" and "third rank". There is much literature regarding the U.S. Midwest that recognizes the distinction between the larger cities of the nation and small urban areas, but avoids giving a consistent definition of small town (Siegel & Waxman, 2001; Connolly & Geelhoed, 2003; Mahoney, 2003; Adams & VanDrasket, 2007; Brennan, Hackler & Hoene, 2007; Buenker & Mesmer, 2003; Ofori-Amoah, 2007).

The Brookings Institution Center on Urban and Metropolitan Policy and the National League of Cities provide a classification system of medium-sized cities defined as cities with populations ranging from ninety-eight thousand to one hundred and seventy five thousand residents), and defining small cities as those with less than fifty thousand inhabitants (Brennan, Hackler & Hoene, 2007). What is problematic is that the study does not clarify the name given to those urban areas that have between fifty thousand and ninety-eight thousand inhabitants. Therefore, the term "middle-sized city" is more appropriate. Others set a population limit for "small cities" to be five hundred thousand inhabitants (Ehrlich & Gyourko, 2000). This creates problems of qualitative classification of cities in middle and lower rungs of the hierarchy. To overcome this problem, the Economic Development Administration of the U.S. Department of Commerce, has proposed to designate small towns based on three criteria: 1) Cities with between 15,000 and 110,000 inhabitants, 2) Cities that are primary in the regional economic base, 3) and cities that incorporated before 1950 and have not tripled its population since then (Siegel & Waxman, 2001).

III. THE DRIVING FACTORS OF THE DEFUSED CITY: SPRAWL

The postindustrial transition saw growth in the tertiary sector of the urban economy, the strengthening of agglomeration economies, the decline in the rate of population growth of city centers, the increased mobility of people, quick access to information and goods (by shorter distances with improved transport and communications) and a progressive integration into the global economy. In turn, these intense changes and adjustments gave way to industrialization processes of decentralization and the relocation of urban activities to the periphery, creating tendencies of counterurbanization and suburbanization (Ponce, 2006, p. 106).

The evolution of urban sprawl has been rapid and relatively recent, but as in the case of the concept of medium-sized cities, the term sprawl has spawned a large terminological forest. The term emerges from the Anglo-Saxon literature, trying to bring light to a complex and multifaceted reality. The theoretical framework developed is plentiful, although it lacks a widely accepted consensus when providing an operational definition. This is due to the different forms and time, in which sprawl occurred and the different territorial relocations of traditional urban functions out to the periphery. Galster has defined sprawl as a form or pattern of land use "that exhibits low levels of eight different dimensions: density, continuity, concentration, clustering, centrality, multinuclear, mixed uses and proximity" (Galster et al., 2001). Meanwhile, Duanay et al. (2000) has defined it from the distribution of the different functional and physical units within the city: residential units, shopping centers and retail zones, business parks, floating civic institutions and roads. Gillham presents it from the perspective of most types of construction and urban development that were

produced in the late twentieth century, coining the term de-urbanization (Gilham, 2002).

In the U.S. these structural changes that have affected the different dimensions of cities have been accompanied by public policies that have driven the processes of urban sprawl. The strong development of urban North American sprawl must be associated to the post Second World War, when massive public financial support was given to build up cities in the 1950s. This was possible through federal grants for affordable homes for returning veterans, and investments in public infrastructure, especially roads and motorways. In addition, planning regulations and zoning contributed to urban sprawl (Blais, 2010, p. 5). Thus, in the U.S. context, urban sprawl resulted from the support of local governments, and facilitating business opportunities and market forces that favored a modality of dispersion over the more traditional compact urban forms. Population and technological changes, such as new housing preferences and improved communication systems, along with cheap energy facilitated the use of the private automobile (Blais, 2010, p. 40).

Whatever definition is assumed and whatever factors contribute to urban sprawl, the fact is that these changes provide alternative ways to understand and plan the contemporary city, with growth models that are discontinuous and lax, responding to local and global factors. Economic maturation is seen in increased consumption patterns, with increasingly diversified tastes, lower fertility rates, or new housing preferences (Valenzuela & Salom, 2008, p. 11). The widespread use of the automobile and construction of new road infrastructure that has improved high speed travel has also created transport and communication networks that serve to give prominence to growing urban forms outside the traditional boundaries of the compact city. These changes have been interpreted by some to be the advent of the era of communication, and the increase in the value of innovation and knowledge (Bell, 1991; in Otero & Gómez, 2007, p. 261).

With increased population mobility due to private vehicles, increasing territorial accessibility, associated with the emergence of new forms of communication and new information technologies (Bell, 1991; in Otero & Gomez, 2007, p. 261). These changes have enabled the disassociation and increasing the distance between residence and workplace. The capacity for rapid change, in social, economic, technological and cultural processes in the last decades has allowed for the genesis of a new model of the decentralized city (Fishman, 1994). These processes explain the phenomenon of territorial urban dispersion, the fragmentation of space, function and social processes of the city (Bellet, 2007, p. 95). The most visible results are the exponential increase in the commuting patterns of the population, and the appearance of forms of urban growth outside cities without apparent logic in distribution and temporality, despite being guided by road infrastructure and development along the road network.

The territory is reflected in new fragmented and dispersed landscapes, but in turn mono-functional and homogeneous in urban neighborhoods with a predominantly residential character, with predominantly single-family homes in Europe, while in the United States dispersed economic activities in the edge of the urban periphery are shared by single detached houses. New urbanizations inspired by residential development have emerged in the urban periphery, thus forming dense nuclei that are well connected to the transport infrastructure. The proximity to road networks is a necessary component for the profusion of residential and industrial complexes emerging at the edge of cities. As a result, residential, industrial or commercial fragmentation is generating a growing intensity of daily flows (commuting) of new spaces and the conventional city, where jobs still draw in people from the outlying areas. It ultimately reproduces an urban model defined by a sharp separation or break between place of residence and space for production, leisure and commerce (Cebrian, 2007).

IV. THE CRITIQUE OF THE MODEL OF URBAN DIFFUSION OR SPRAWL

The change in the city model (from the compact to the diffused city) has been questioned, especially in European literature, from ecological, economic and social perspectives (López de Lucio, 1993; Indovina, 1998; Monclús, 1998; Rueda, 2001, Borja, 2003, Serrano, 2004; Calderón, 2004; Nel-lo, 2004; Ewing & Hamidi, 2015, Capel, 2016). The growing need to increasingly generate denser infrastructure (networks) in order to facilitate daily urban commuting between center-periphery and periphery-center is greatly criticized. From the social point of view, the increased mobility and increased travelling time results in weak social cohesion. The argument follows that urban sprawl generates dynamic destructuration, characterized by urban dissolution, fragmentation of the social fabric and privatization of public space. Environmentalists are concerned with the extensive use of space and the high consumption of land, with increasing demands on resources and energy, increased emissions

of pollutants all due to the separation between places of residence, production, trade and leisure. Not to mention the increasing noise pollution that heightened automobile traffic generates (Rueda, 2001). Some researchers have analyzed this urban process organized around the concept of the diffuse regional city (Precedo, 2004). This diffused regional city is characterized purely by new residential spaces, which often suffer from costly public and private services. One of the consequences is a broadening conflict between new residential functions and local rural economies that collide, placing this latter at a disadvantage. There is also a weakening of urban public space and citizenship. These are seen as the effects of lack of territorial continuity of the city, replaced by a model of high consumption of land, new impacted landscapes, growing energy consumption, and increasing demands on infrastructure and public facilities.

Much of these new scenarios of urban sprawl are cause and consequence of a lack of state regulation. The lack of regulation of these processes, whose policy planning has been unable to respond, and when it has, it has been weak and with a slow response time, and without being conscious of the territorial impacts. Along with this administrative failure, increased gains in property values have created these dynamic spaces. This behavior has led to the relocation of urban forms outside the boundaries of the compact city, consolidating suburban areas that are born without a regulatory body, capable enough to respond to their needs and without a clear desire for a regional strategic design.

In the Spanish case, since the eighties urban growth of medium and small size cities in the form of suburbanization have outpaced growth of larger national metropolitan cities, thus generating profound changes in the production models of these urbanizations, and rapidly changing the urban fabric of the region. The medium-sized cities have evolved historically marked by its compact structure and size, their location and position in the national communications network (road and rail) and its function in the Spanish urban hierarchy (Cebrián, 2007). However, the last decade has dramatically changed the dynamics of these medium-sized cities that have dissolved the compactness of the traditional Spanish urban form. In the U.S. case, suburbanization reached population levels that outpaced the U.S. city center since the 1970s. New urban patterns emerged, creating edge cities of small and/or medium size with new urbanist design and commuting patterns that are more diverse and complex. These urban patterns have challenged local and regional urban policy.

V. DATA AND METHODOLOGY

For a comparative analysis of the process of suburbanization around the two cities surveyed we have used a methodology that seeks to identify within the respective metropolitan areas, the process of formation of urban areas that transcend the boundaries of the traditional city. For the purposes of this spatial analysis, we use an area of between 20 and 30 km radius in the vicinity of Albacete and Green Bay. To understand the structure and character of the respective areas of urban expansion (or urban areas) we use four variables generated for the respective administrative areal units for the United States and Spain. They aim to analyze, in a comparative way, different expressions associated with the phenomenon of urban expansion from four variables: population growth, daily labor mobility, socioeconomic structure of the population, and dynamics of housing. We argue that the process of urban expansion and population redistribution and housing, as well as activities related to the proliferation of industry and services within each of the peripheral administrative units can be used to better understand the dynamism of urban expansion in contemporary urbanism. The study of specific cases and comparative analysis of different medium size cities help understand the responses that result in different socio-economic contexts. In this study, we analyze two cities, Green Bay, Wisconsin in the United States (106,500 habitants in 2016) and Albacete in Spain (172,500 habitants in 2016). Both have relatively similar demographic sizes, but there have been different responses in the process of formation of what we call the diffused city.

The time period used for the study is the decade 2000 to 2011. The time period includes the economic boom years between 2000 and 2008, which witnessed the maximum growth of the city and urban dispersion (Harvey, 2013). In analyzing the case studies, we used variables extracted from the census of population and housing for Spain and the United States. The variables used are comparable in terms of the data that permit to allow to relate what happened in the processes experienced in Green Bay (census period between 2000 and 2010) and in Albacete (census period comprised of 2001 and 2011). Specifically, population data have been used (census and census of 2001 and 2011 for Albacete and 2000 and 2010 for Green Bay), Housing (housing census 2001 and 2011 for Albacete and 2000 and 2010 for Green Bay), Economically active population (population census of 2001 for Albacete and 2000 for Green Bay) and daily mobility of population (population census of 2001 for Albacete and 2000 for Green Bay).

VI. THE EVOLUTION OF THE URBAN FABRIC OF ALBACETE AND GREEN BAY

6.1. THE DRIVING FACTORS IN THE CONSOLIDATION OF THE CITY OF ALBACETE AND THE CITY OF GREEN BAY IN THE NINETEENTH CENTURY

In the early years of the nineteenth century, Albacete was a small town devoted primarily to commercial activities, crafts and agriculture. At the beginning of that century the town had fewer than nine thousand people, but a number of changes explain its growth above other towns of similar size in the region. With an increasing population growth, Albacete became the most important center of the province with the same name, and consolidated its position as a medium size city in the Spanish urban hierarchy during this time. The main explanatory factors are the emergence of new industries, political administration and services and improved transport infrastructure.

Central to this change of the city was the coming of the railway Madrid-Zaragoza-Alicante (MZA) in 1855. It was the fourth line to be built in Spain, and thus became a focal point in the national network of rail communications between the state capital and the Mediterranean coast. This new situation had a significant influence on its commercial and industrial activity. In 1862 Queen Isabel II gave Albacete the status of city. In the late nineteenth century Albacete began a rapid process of modernization: processing industries appeared and they transformed local products for outside markets connected by a rail system to the national communications rail network. In addition, the spread of electricity as new energy source, also added to the economic boom that reflected the growth of the city (Panadero et al., 2004).

Wisconsin became a state in 1848, and its economy shifted from the fur trade, toward lumbering. "For a short time in 1860s and 1870s, iron smelting in charcoal kilns rivaled the timber industry while the port handled increasing amounts of fuel, feed, and lumber. Today's major local industry had its start in 1865 when the first paper mill was built. The introduction to Green Bay as a sprawling city in the later 1800's was due to European immigration. With Green Bay's strong German influence and natural flow of water from the river and the Bay, Green Bay started beer brewing businesses. The local industry for brewing beer developed around the mid 1800's and declined at the end of the 19th century" (Tammen & Heggland (1988) as more competition came from national beer brewing industries in Milwaukee.

The railroad arrived in the 1860s. Chicago and Northwestern Railroad companies were formed, which allowed people and products to travel all over the state, increasing business and trade opportunities. The area was able to grow and enrich itself with the use of the river and the plentiful timber resources. Green Bay's economic growth continued with the start of the sugar beet factory in 1897 (Tammen, Bergendoff, & Heggland, 1988). Growing investment in the sugar beet production provided expansion of the industry and helped keep surrounding farmland arable and improved crop yield (Nelson & Madisen, 1951).

6.2. CHANGES IN THE TWENTIETH CENTURY THAT MADE ALBACETE AND GREEN BAY MEDIUM-SIZED CITIES

The twentieth century saw an accelerated growth of its population and urban development, especially in the second half of the century for both cities. In Albacete, the first decades of the twentieth century, saw a network constructed providing potable water and sewerage. Also in the early twentieth century new avenues and open green spaces that perfectly suited the fashions of the moment in European urbanism were constructed. During these early decades, modern infrastructure and civic buildings dedicated to cultural, educational pursuits appeared. These decades saw the expansion of commercial, as well as industrial and service sectors in the economy. The post-civil war slowed the economic activity across the country, and its cities saw decrease in population growth and the dynamics of the previous years truncated. The municipal administration was responsible for meeting the new demands for housing. A perimeter road of the city, known as the "ring", was built during this time which became the new city limits and served to compact and direct its growth, which began to be filled with housing constructed for military personnel associated with the Air Base Los Llanos, an important element to the city. The suburbs added a particular aesthetic in one sector and in another, blocks of social housing aimed at low-income populations were constructed to solve problems of housing shortage and quality.

During the sixties and early seventies, the city witnessed a spectacular economic growth and a social revolution. Industry, services and population grew. Also in those decades there were some improvements in communications infrastructure. The location of the railway station was moved (1969), enabling the growth of the city to the Northeast. They finished building the ring road or belt

way in those years. This enabled the densification of the Southern area marked by social housing, and to the North by an increasing emergence of new blocks of buildings. These developments marked a renewal in the urban zone determined by transportation links (Panadero, García & Cebrián, 2004, pp. 201-202).

Also in those years the relocation and provision of land for industrial activities was prompted. In 1974, for example, Campollano Industrial Estate was opened at two kilometers either side of the road to Madrid, which served to meet the needs of industrial use of the land in the city. Having over four hundred hectares, it has become the benchmark industrial complex of the city and province (Panadero, García & Cebrián, 2004, pp. 217-218).

In Green Bay, through the twentieth century, as population and industry grew, there was a shift into new identifiable industries which shaped the economics and urban uniqueness of the city. The shift to food processing and paper production began near the Eastern side of town where bay and river ports were available for exportation of such goods ((Laatsch and Calkins, 1992). Northern Paper Mills makes bath tissues for distribution and for a prominent time in its history it was responsible for producing paper used for the Sears catalog. The paper industry dominated the Fox Valley producing five million tons of paper per year (Steinbrinck, 2015).

Green Bay's sprawling industry and complexes have also provided a rich downtown center for community members and visitors alike. In the downtown area, Green Bay's use of the water was important historically for industrial growth and trading links. With the decline in manufacturing today the city center has lost 80% of its manufacturing infrastructure. With economic restructuring Green Bay has seen the increasing importance of the tertiary sector of the urban economy. The Fox River downtown area is now an entertainment and tourist district.

One of the biggest impacts for Green Bay downtown was building Port Plaza Mall as part of an urban renewal project in the 1980s. This mall was considered a "contemporary mall" within the city's inner-core and it is a huge retail development for Green Bay. The mall was also considered the only large shopping complex of Northeast Wisconsin attracting surrounding communities into the Green Bay area. Unfortunately, the Port Plaza mall closed in 2006 due to the westward relocation of Green Bay retail services. Bay Park Square, in neighboring Ashwaubenon took over as the main commercialized center for the city and surrounding suburbs.

6.3. Changes that occurred at this turn of the 20th century in Albacete and Green Bay

The growth of Albacete in the 1990s had been channeled in various directions, overflowing the ring road. On the one hand, the city grew Southward, urbanizing areas near the University that was founded in the mid-eighties on the outskirts of the city. Also growth occurred Northwest of the city, spreading along the axis of the road to Madrid, in the area known as "Llanos del Águila". To the West the city's urban development concentrated on the exit road to Jaén. In the same decade new elements in the design of the city in Albacete have profoundly influenced the expansion of its urban fabric. It is the appearance of large commercial retailing malls that have had undeniable effects and has become the unquestionable actors in the process of urban renovation and sprawl. Opening in 1990 on the Southern border, "Los Llanos" shopping center (Carrefour), marked the beginning of the urbanization process of this whole area. Six years later (1996) the same process was repeated to the East of the city with the shopping center "Albacenter" (Eroski), which led to the recovery of the historical and degraded neighborhood of Carretas. In 2005 the new mall called "Imaginalia" helped to accelerate the growth of the city and lead to connect the urban area of the city to the industrial zone of Campollano. In 2008, Albacete saw the opening of the mall "El Corte Inglés", next to the University, which filled an area where there were still some empty spaces.

Parallel or due to these urban developments, a great deal of new housing has emerged since 2000. We should highlight three areas: One is located at the exit of the highway to Murcia and crosses over the new ring road, where there are still significant gaps that are already included in the urban plans of the city. Another similar area of expansion of the city is located between the two ring roads and the highway exits leading to Murcia and Alicante-Valencia. The latest growth initiative of the city is located in the vicinity of the railway line at the end of the ring road AB-20. In the case of the city of Albacete, recent urban development on the edge of the city respond to more general processes, and in others, more specific as their position and their territorial logics, the production of the city, the emergence of new functions or the dynamics that accompany these processes in the expansion of the city, the large department stores and new residential construction that have marked the direction of the urban sprawl. Finally, in 2010 the high speed railway came to this city, making distances more accessible and quicker.

The last decades of the twentieth century and early twenty-first century, have marked new forms in the sprawling city. The current population and urbanization has transcended these traditional boundaries and the city has expanded its thresholds further out, which are manifested in various forms and different geometries in close juxtaposition, in many cases only 30 km away. These changes can also be seen in the population dynamics, with heightened mobility of the coupled population with new housing developments in the peripheral municipalities, which can be traced to their links to the economic activities, namely retail and office development in the territory.

Green Bay has also witnessed this development. Since the 1960's, there has been a change in demographics to the area in age and ethnicity. The demographic characteristics of many Green Bay metropolitan area residents were characterized by young, single people within the city center. Today the city has an aging population. Young people are still moving into the city, however, white families with school-aged children are migrating out to suburban areas of the city. This phenomenon is called "net out-migration", which has been taking place since the early 1960's, and continues today (Bather, Ringrose, Wolsfeld, Jarvis, & Gardner, Inc. 1976). Since net out-migrations began in the 1960's, Latino populations in the city center have increased significantly. By 1990, there were over 1,500 Latinos of any origin in Brown County. During that decade and into the first decade of the 21st century, the Latino population has dramatically changed the demographic face of the city. From 2010 to 2013, the percentage of the white population has fallen from 73.3 percent to 62.6 percent. The largest growths have been among Hispanics/Latinos and black/African Americans. Latinos grew in population from 2010 to 2013 from 13.4 percent to 17.1 (Census 2015).

Beyond demographic changes, Green Bay still has success with keeping and expanding higher education in the metropolitan region. Located in the far Western fringe of the city, Northeast Wisconsin Technical College (NWTC), it has 42,000 students and transfer agreements with 28 surrounding universities today. Green Bay also holds two four-year universities in its metropolitan area. The private university, St. Norbert's College is the oldest, opening its doors in the early 19th Century and located in the suburb city of De Pere along Fox River. The state university, University of Wisconsin [UW]. Green Bay started as a branch of the University of Wisconsin- Madison's College of Agriculture in 1965. Today the university is classified as a full-fledged liberal arts institution of upper education, with a student population of over 6 thousand and located in the Northeastern fringe of the city.

Another important factor contributing to the development out to the urban fringe is the opening of the landmark Lambeau Field in 1957, home of the professional NFL team, the Green Bay Packers located in the outskirts of the city. The city has recently renovated the stadium increasing seating capacity to over 55 thousand seats and modernizing the amenities. Along with the stadium, the Brown County Arena and the Resch Center, located in close proximity with each other, and next to Ashwaubenon have made this part of the city edge, the new entertainment district for the region.

The dispersal of educational, residential, commercial and leisure activities moving away from the city center to suburban areas induced urban sprawl. These processes have become possible due to the infrastructure investments in the later part of the 20th and into the 21st centuries. Transportation links have been reconstructed to help the flow of traffic and commerce. Much of the expansion of roadways and state highways were pushed outward, creating a ring-shape around the urban center of Green Bay. This allows traffic flow to bypass downtown and gives rise to suburban urbanization (Bather, Ringrose, Wolsfeld, Jarvis, & Gardner, Inc. 1976). Important links are Velp Avenue near I-43, the I-43 business park area, the West side of Fox River, and Southwestern areas beyond Bay Beach Park. The construction and upkeep of the I-43 business center has been essential for business executive's connection between transportation and the economics of the region. I-172 and I-141 ring the city and connects the large commercial and entertainment districts with new residential areas developing along the edge or fringe of the city proper.

The processes discussed in the first part of this work have had a dramatic impact on urban morphologies. Often appearing with varying and unequal intensity, varying forms of urban expansion in their respective peripheries, generated by the joint action of different local actors, local governments, developers, financial institutions and ordinary citizens, which have channeled part of the dynamic urban group to their immediate surroundings. Acting as agents of change and modernization, they have promoted growth, improving transportation infrastructure, promoting and participating in hypermarkets, with a great capacity for redevelopment of urban neighborhoods, and associated with permissive land use regulations that promote economic and demographic recovery in inner cities and in adjacent nearby towns. Both urban processes in Albacete and Green Bay have seen urban

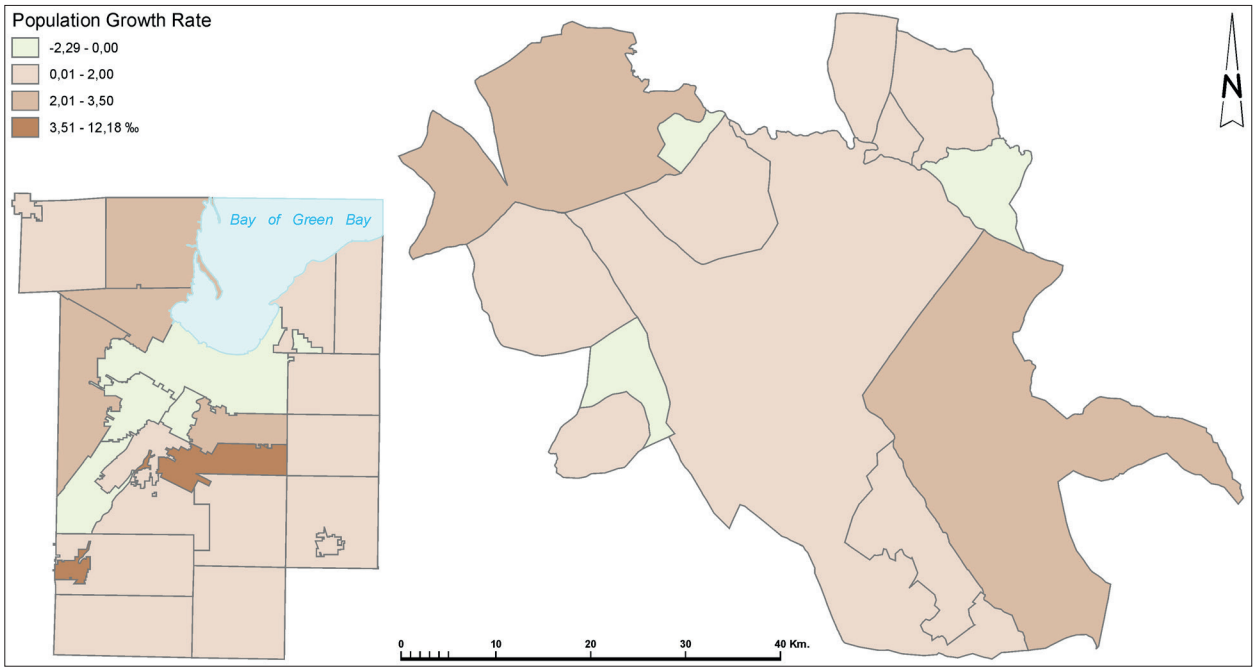

FIG. 2. Growth rates. In Green Bay between 2000 and 2008, in Albacete between 2000 and 2009. Source: Population census. Own elaboration.

expansion outward, constantly seeking cheap land and well-connected areas, in order to obtain higher property values by changing the status of rural land into urban land for much of the 19th and early 20th centuries.

VII. THE PROCESS OF URBAN CHANGE IN THE PERIPHERIES OF ALBACETE AND GREEN BAY

7.1. THE DEMOGRAPHIC TRANSFORMATIONS PRODUCED IN METROPOLITAN AREAS SINCE THE BEGINNING OF THE CENTURY

Urban sprawl is closely linked to population dynamics. Population growth rates of administrative units located in the vicinity of the two cities were calculated as an indicator to this dynamic. The metropolitan regions of both Albacete and Green Bay experienced positive urban growth rates of 1.62 for Albacete (between 2000 and 2008), and 0.95 for Green Bay (between 2000 and 2009). Yet there are variations within the regions, showing unequal growth rates. For Albacete, the very high growth rates have occurred in the fringes of the metropolitan region, with Chinchilla de Montearagón and La Roda registering growth rates of 2.98 and 2.2 respectively. Albacete experienced a positive growth rate, as other adjacent administrative units did. Three suburban areas experienced negative growth rates. La Herrera experienced the highest negative growth rate of -2.29 (Figure 2).

Green Bay, in contrast experienced negative growth rates for the city of Green Bay (-0.15) and the adjacent suburbs of Allouez (-0.36) and Ashwaubenon (-0.03). The surrounding towns and villages experienced modest to very high growth rates. Suamico, Howard, Hobart and Belleview had growht rates over 2.0. Ledgeview, had the highest growth rate of the region with 7.49 (Figure 2).

7.2. THE DYNAMICS OF THE CONSTRUCTION INDUSTRY IN URBAN AREAS

To analyze the behavior of the construction sector of the two urban areas, we generated a rate that aims to identify the dynamics of building new houses. The indicator reflects the total number of homes built between 2003 and 2010 (data available), in conjunction with the total population during the same period. The result shows high construction activity in Albacete, reflecting a dynamic real estate in the early twenty-first century. This explains the relatively high rate of 84 new homes per thousand in Albacete, compared to 19.8 of Green Bay. To establish a typology of new housing construction, four categories were created: very high dynamics (over 100), high dynamics (75 to 100), medium dynamic (50 to 75)

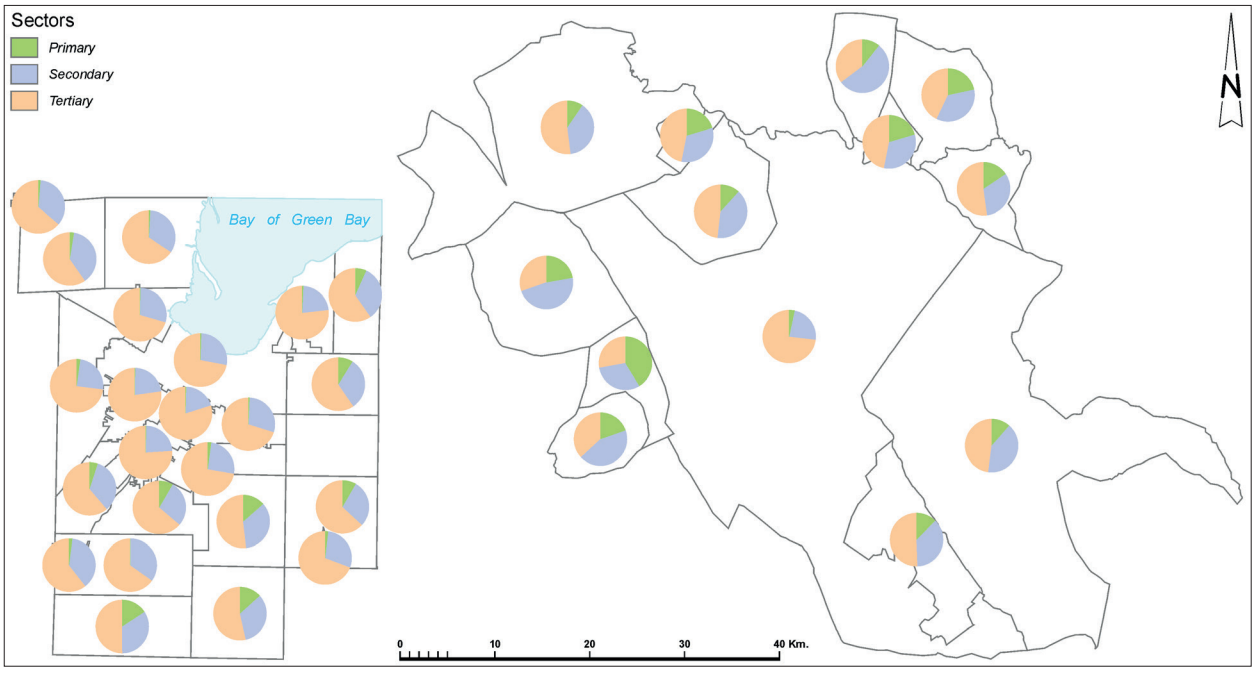

FIG. 3. Population by Economic Activity in Green Bay (2000) and Albacete (2001). Source: Population census. Own elaboration.

and low dynamic (less than 50). In the case of the urban area of Albacete, the construction industry was more dynamic in the outlying areas. The highest occurring in Motilleja, Chinchilla de Montearagón, La Herrera, La Gineta, La Roda and Valdeganga. With high growth occurring in Mahora, Balazote, Pozo-Cañada, Madrigueras and Albacete (Figure 6).

In the case of Green Bay, very high growth rates (value greater than 100) are located in the towns of Lawrence and Ledgeview. High growth rates were registered for De Pere, Rockland and Hobart town. The construction dynamism is lower in Green Bay and the inner suburbs of Ashwaubenon and the village of Allouez (Figure 6).

7.3. THE SOCIOECONOMIC STRUCTURE OF THE POPULATION IN METROPOLITAN AREAS AT THE TURN OF THE CENTURY

A third aspect to take into account to understand the dynamics of urban areas in relation to the respective central cities is the type of activity of their inhabitants. We focused attention on the working urban population in the secondary and tertiary sectors of the labour market, in order to differentiate peri-urban centers that maintain a productive rural structure with a clearly defined rural vocation from those that have been redirected to industry, construction or services as a result of the arrival of activities and population from nearby urban centers.

For Albacete we used the data collected in the 2001 Population Census, and for Green Bay we used the 2000 Census. The traditional division of labor force distributed between the primary, secondary and tertiary sector has served to illustrate this dynamic. A coefficient of non-agricultural working population was created, which classifies the different administrative units in different urban areas into four categories: very high ratio (> 95%) intensive (90-95%), average ratio (85 - 90%) and low coefficient <85%).

As a result of the application of the ratio and considering only employment in the service sector in the four main cities of the urban region, it highlights the fact that a structure appears linked to the service sector, with percentages set around 70% (the city of Albacete in 2001 had 73% and Green Bay with 72% in 2000). In the urban area of Albacete, the coefficient of non-agricultural workers has a marked imbalance between the main urban center, which has a high service employment compared to most of the municipalities located nearby, which have a lower proportion of population dedicated to services. Only the main city, Albacete, appeared within the category of very high coefficient (73% employed in the tertiary sector. La Roda (with 52% employed in the tertiary sector) was in the cluster group with a high coefficient.

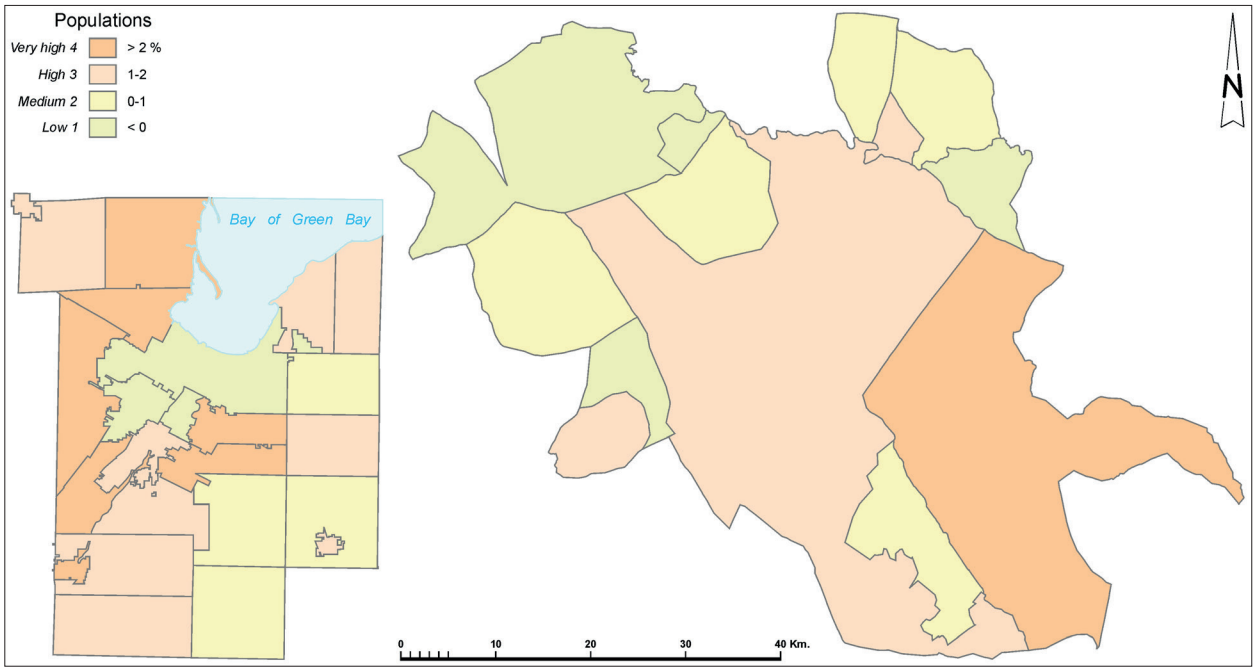

FIG. 4. Population growth indicator in Green Bay and Albacete between 2000 and 2011 derived by the following classification: 4, very high; 3, high; 2, medium and 1, low. Source: Population census. Own elaboration.

Chinchilla de Montearagón, La Gineta, Madrigueras and Pozo-Cañada had average ratios (between 85 and 90%, employed in the tertiary sector between 27% to 49%). Valdeganga, Balazote, Montalvos, Barrax, Mahora and La Herrera had their coefficient values not reaching 80%, employing 30% to 49% in the tertiary sector (Figure 3).

For Green Bay the reality is quite different, as there is a greater presence of population engaged in activities not related to agriculture, while highlighting the high level of employment in the services sector. With very high coefficient ratios (greater than 95% in activities not related to the primary sector), and therefore very industrialized, a total of fifteen towns, villages, and cities were identified: Green Bay, Ledgeview, Hobart, Pulaski, Scott, Lawrence, Pittsfield, Wrighstown, Denmark, De Pere, Ashwaubenon, Howard, Bellevue, Allouez and Saumico. Furthermore, they employed more than 60% and as high as 80% in the tertiary sector (Figure 3).

7.4. DAILY POPULATION MOVEMENT IN URBAN AREAS EARLY IN THE CENTURY

Analysis of the daily mobility of the population in the respective urban areas was made from available census data. We used the 2000 and 2001 censuses for Green Bay and Albacete respectively. The observation of the results reveals a traditional compact city model in the case of Albacete, and another model in which the diffusion and expanded commuting are characteristic of Green Bay. This leads to varying levels of intensity in daily mobility of the population, in response to the distances between places of residence, production, trade or leisure.

Commuting rates are particularly high in Green Bay, with average proportions reaching 65% for the city of Green Bay and its metropolitan area. Albacete, on the other hand, offers a much more moderate response, with more than 12% commuting on average. Considering the average thresholds for the respective urban areas, we established criteria that can be used for comparison in the respective behaviors in terms of mobility for the respective populations at the beginning of the new century. Four categories were created: very high commuting for urban areas in which the population has had percentages with higher daily mobility than 48%, which received a value of 4, high commuting for mobility with rates between 31 and 48%, receiving a value of 3; medium commuting for mobility rates between 14 and 31% receiving a value of 2; and low commuting for mobility rates lower than 14%, receiving a value of 1.

In the case of Green Bay and its urban area substantially all of the cities, towns and villages are within a

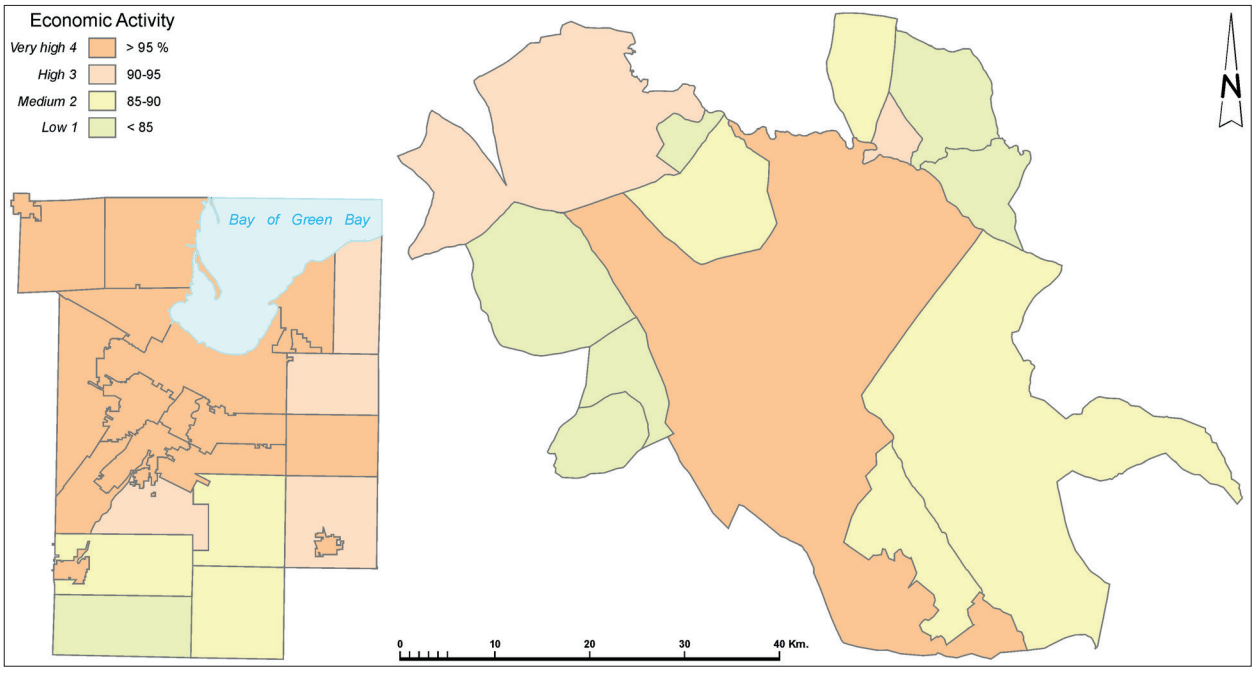

FIG. 5. Economic Activity indicator in Green Bay (2000) and Albacete (2001). The non-agricultural working population; therefore, the sum of secondary and tertiary sectors is classified as follows: 4, very high; 3, high; 2, medium and 1, low. Source: Population census. Own elaboration.

value of 3, commuting rates that are high, and very high, a value of 4. Only the city of Green Bay offers slightly reduced values, but despite this the daily mobility of the population affects nearly half of all residents (45%). These high rates of mobility and commuting within the urban region of Green Bay demonstrate a high degree of differentiation in land use: residential, employment, retailing and leisure activities (Figure 7).

As already pointed out, in the case of Albacete it is quite different. Here the daily mobility in 2001 has much smaller percentages as a general rule. The entire urban area was receiving values around 15% between 1 and 2. But it is noteworthy that two municipalities have percentages within the category of high commuting (Montalvos and Motilleja). Another large group of municipalities also had rates considered as medium commuting (Chinchilla de Montearagón, La Herrera, Mahora, Valdeganga, La Gineta and Barrax) (Figure 7).

7.5. THE FORMATION OF THE SPRAWLING CITY IN THE VICINITY OF THE TWO CITIES

For the analysis we used the synthetic indicator of suburban sprawl (Cebrián, 2007) from the variables used in the previous sections. From them you can assess the impact of these processes for the urban region. The application of the indicator permits us to assess the impact of suburbanization on the outskirts of the two cities. The method assigns a score ranging between a minimum value of one and maximum of four to each variable used for each administrative unit.

The variables used have been organized according to the following method:

A) Demographic dynamics. In the analysis of population dynamics, we used the Growth Rate of Population in the period 2000-2011 as an indicator, distinguishing four intervals: very high population growth (4), high population growth (3) average population growth (2) and low population growth (1).
B) Socioeconomic structure of the population (non-agricultural working population). For the construction of this variable we used the "coefficient of specialization of the activity" in 2001. These coefficients allow us to differentiate between very high coefficient (4), high coefficient (3), medium coefficient (2) and low coefficient (1).
C) Housing construction dynamics. To analyze this function, we considered the rate of housing construction between 2003 and 2010 in relation to the

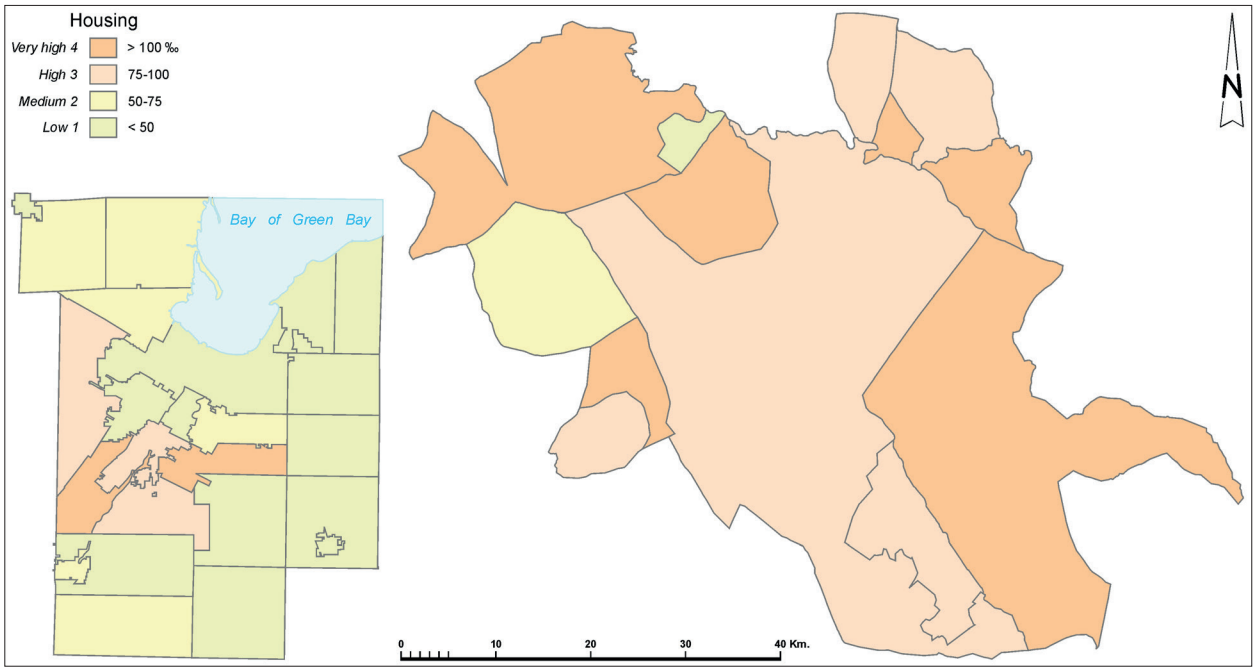

FIG. 6. Housing indicator in Green Bay and Albacete between 2003 and 2010. The indicator is obtained from the following classification of housing construction rates: 4, very high; 3, high; 2, medium and 1, low. Source: Population census. Own elaboration.

total population. In the variable we differentiated four intervals: very high dynamics (4), High Dynamic (3), medium or medium rate (2), and low dynamics (1).

D) Labour mobility. To analyze this aspect we have used the percentage of population living in a different town. We have employed the following ranges: very high labor mobility (4), high labor mobility (3), average labor mobility (2), low labor mobility (1).

We created a series of maps that regionalize the above indices created to measure the dynamic nature of the two urban regions. For example, for population growth to classify the behavior of the different administrative units four categories were established: very high growth (> 2), high growth (between 1 and 2), medium population growth (between 0 and 1), and low growth (<0). The result of the application of this indicator shows an uneven growth behavior of the cores included in different urban areas within the metropolitan region. Urban expansion has unequal dynamics. But these scenarios conceal different situations, since in some cases there are administrative units with tremendous growth, while others are rather in demographic decline.

In urban areas of Albacete municipalities listed within the category of very high growth are Chinchilla de Montearagón and La Roda. With high growth rates we can include Motilleja and the city of Albacete. The four have grown above the average of the urban area and appear to be the most dynamic. In Green Bay a number of villages and towns have higher growth rates above the average for the whole urban area. Municipalities with very high growth (> 2) are Lawrence town, Ledgeview Town, Village Suamico, Wrightstown Village, Bellevue Village, the villages of Hobart and Howard. All these have higher growth rates than the entire metropolitan area and have also grown more than the city of Green Bay, which has experienced a negative growth rate in these years. Municipalities with high growth (between 1 and 2), and fall within the average growth of the metropolitan area are a large group of villages and towns: Rockland town, Eaton town, Wrightstown town, Green Bay town, Holland Town, De Pere city, the villages of Pulaski and Denmark, and the towns of Scott and Pittsfield. What is of note is that the inner suburbs of the villages of Ashwaubenon and Allouez also had negative growth rates (Figures 4, 5, 6 and 7).

VIII. CONCLUSIONS

As a general trend the peripheries of both Albacete and Green Bay are taking on the specific characteristics

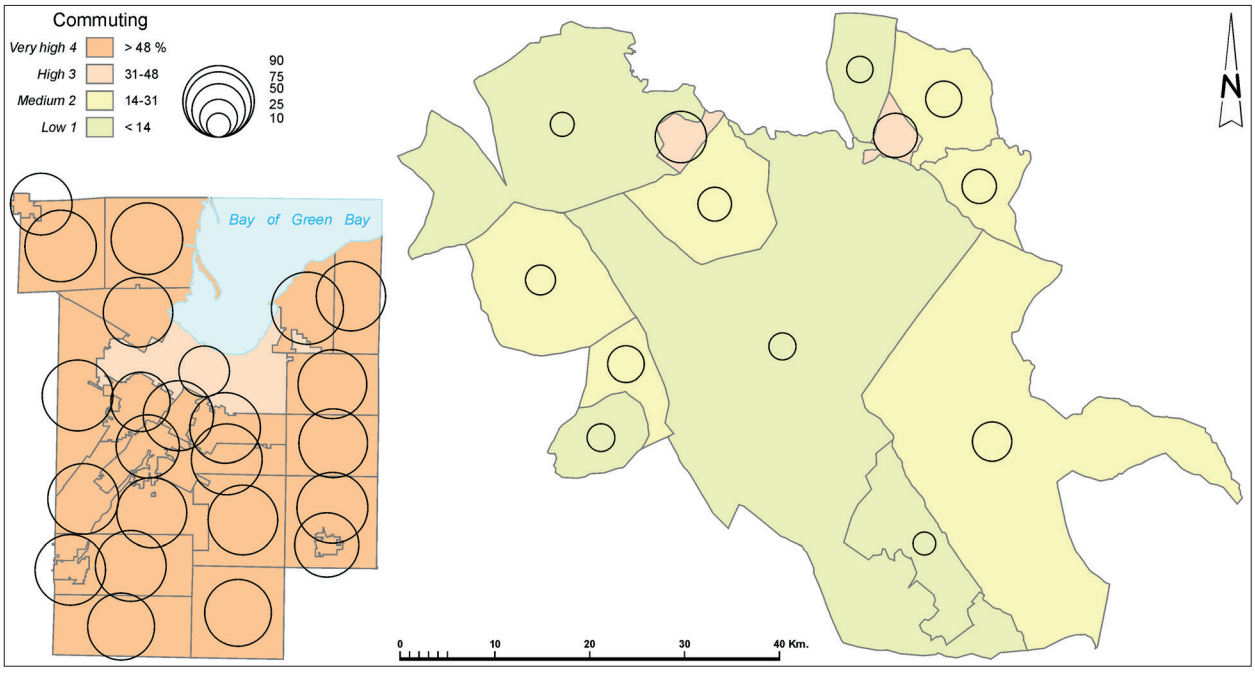

FIG. 7. Commuting in Green Bay (2000) and Albacete (2001). Circles represent the share of population commuting to work. Choropleths show the commuting indicator derived by the following classification: 4, very high; 3, high; 2, medium and 1, low. Source: Population census. Own elaboration.

of large metropolitan areas very rapidly and at different scales. It is a process that is repeated in medium-sized cities throughout Europe and North America, although with varying geometries, since the intensity is reduced as the distance increases, but in turn their effects are accentuated along the nexus of rapid communication and mobility (network of highways). The outcome is an increase in the consumption of land on the outskirts of medium-sized cities. Changes in land use have accelerated, transforming the landscape with more urban functions appearing outside the cities. These new urban landscapes on the fringe of the cities take on an urban aesthetic of low building density, single-family detached or terraced houses, large box retailers, large business parks, but also dense, compact housing inspired by new urbanist principles providing an alternative to new forms of "urban living" at the fringes of medium sized cities.

This model has been questioned because increases infrastructure costs, and it changes and increases the consumption of land on the outskirts, an accelerated transformation of landscapes in the fringe. Urban functions are introduced outside the cities, with increased fragmentation of new areas of residential character, more dependency on the private automobile, increasing travel times with a weak, integrated public transport, thus requiring greater energy consumption and pollution, nodes of large box retailers and large shopping centers, as well as entertainment districts together with employment centers of the secondary and tertiary sectors.

The perceived reality is that functional relationships are intense enough to think all this territory as part of the city, which together with the transfer of population, housing and productive activities to the peripheries, have also transferred values and habits of urban life. The urban peripheries of these cities are oriented to the residential households with industrial, commercial or recreational activities, with the particularity that workers are employed in the secondary and growing tertiary sectors of the urban economy. The process has been especially pronounced in the last century, supported by an accelerated and expansionary economic development. The result is the emergence of new residential areas in the suburbs located close to new centers of economic activity (industrial areas, shopping centers, entertainment, and educational centers) on the edges of the traditional cities, having the ability to transform nearby settlements that until recently had a clear rural focus.

By connecting arteries of communication, the accessibility within the region has improved, thus improving and intensifying commuting within medium size cities. And local actors have similar local interests linked to real estate, construction, environmental preferences, or some

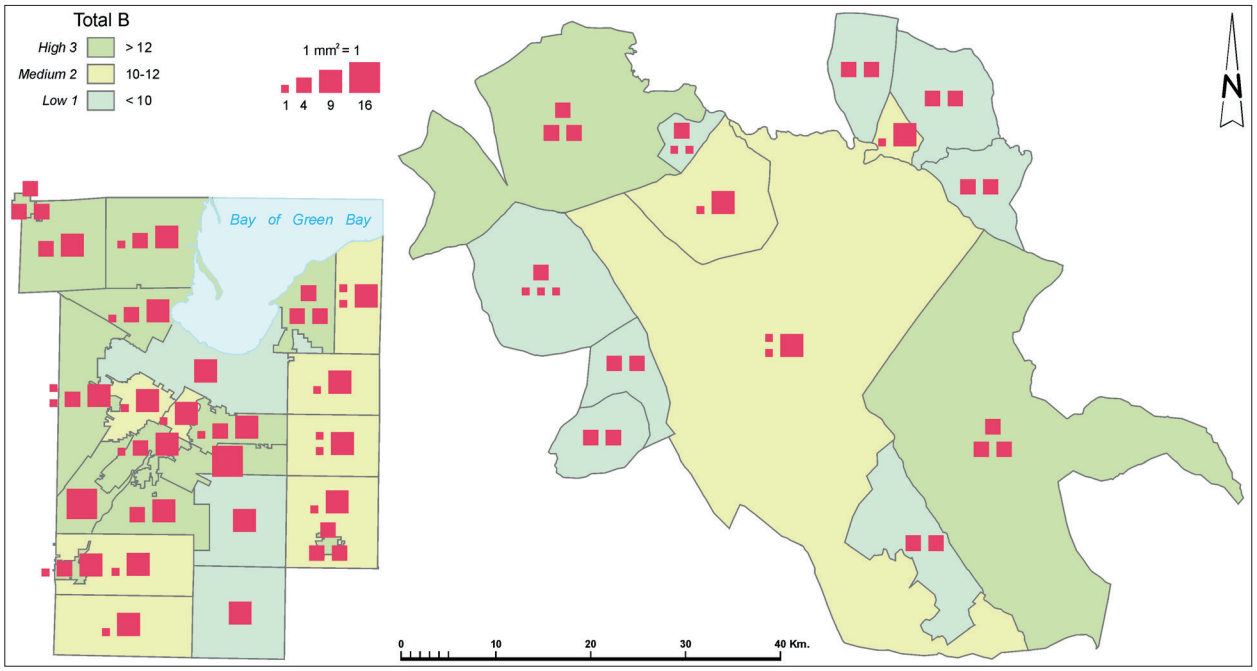

FIG. 8. Synthetic indicator of urban sprawl in Green Bay and Albacete summarize previous indicators; Population growth, Economic activity, Housing and Commuting. Source: Own elaboration.

combination of these factors, along with interests linked to commercial and economic development that result in urban areas outside the two cities studied, to be in a process of articulation, although with different intensities, creating a fragmented, polycentric urban landscape. We also need to note the role of urban planning, action or inaction that has led to this model of urban expansion.

The urban expansion of the two cities studied (Green Bay and Albacete), is fueled by growth rates in demography and housing higher than those of the central cities. Similar situations also arise in terms of a functional reorientation of their respective peripheries, now dominated by jobs related to activities of urban vocation (in the industrial sector and especially services). And in turn the daily mobility of the population increases and is made more accessible by investments in transportation infrastructure, creating a network of roads and highways. Concretely the result is expressed as follows:

The variables and methodology used allow us to establish two levels of integration of administrative units in both urban areas. We have used a threshold that marks a high level of integration which is close or above the average (from the scores of the four dynamic variables: demographic, socioeconomic population structure, dynamics of housing starts, and commuting with a value of 12.4 for Green Bay and a value of 9 for Albacete. From these values we have established two types of nuclei with high level of integration and complementarity with the city centers. In the following maps, we will only consider the first two groups, those who have very high level of integration and complementarity (>12.0) and those that have a high-level of integration and complementarity (10-12). We have excluded the third and fourth groups because these administrative units are below the average (Figure 8).

In the case of Green Bay, urban areas with high levels of integration and complementarity were the following: Pulaski, Hollandtown, the town of New Denmark, the town of Scott, the village of Denmark, the town of Humboldt, the village of Ashwabenon, the village of Allouez, the town of Green Bay, Eaton and the town of Wrightstown. Urban areas with very high levels of integration and complementarity were the cases of Pittsfield, Rockland, Ledgeview, the towns of Hobart and Lawrence, and the village of Wrightstown, the city of De Pere, the villages of Howard, Bellevue and Suamico. These are the two areas of urban expansion with very high and high levels of integration and complementarity for the urban area of Green Bay. The urban peripheries of these cities have transformed their functional uses, now being redirected as residential areas and they are selectively also becoming recipients of industrial, commercial and rec-

reational activities. These outlying areas to the central city have workers in the secondary and tertiary sectors of the urban economy. The very high levels are found along Fox River expanding towards the South and the extreme West and Northeast side (Figure 8).

In the case of Albacete, there are peripheral areas with very high levels of integration and complementarity. However, there are five administrative units with high levels of integration and complementarity: La Gineta, Motilleja, La Roda and Chinchilla have high levels of integration along with the city of Albacete (Figure 8).

In the last twenty years, the expansionary nature of the economy has prompted the emergence of new diffuse residential areas in the suburbs, or expansion relatively close the peripheral rural villages. We see the emergence of new development, often close to new centers of economic activity such as logistics centers for the distribution of goods, industrial areas, shopping centers near the central cities or on the edges. This relationship is intensified by taking into account the commuting or daily mobility patterns, scoring high and very high values of 3 and 4.

From our point of view, the most articulated spaces for the two cities are those areas that scored high and very high indices of dynamism found in the diffusion of these two medium sized cities. Both in Green Bay and Albacete the range is about 25 kilometers (approximately 15 miles). Therefore we are in a process of confluence of two urban models in different socio economic, and historical context with similar morphologies in the periphery. We believe that these observed morphologies will be strengthened in the future if population continues to grow, if housing construction recovers from the 2008 crisis, the tertiary sector continues to grow, and commuting levels continue to increase facilitating accessibility to the peripheral areas of the two cities.

Explanatory factors of urban development of medium-sized cities are related to aspects outlined above, among which the effect is exerted by the proliferation of industrial and business parks in the periphery with ready access to the city center. Together with the location of large "big box" retail businesses along main arteries in the periphery and in the suburbs. Moreover, lax regulatory policies by municipalities to promote new housing developments have facilitated the appearance of new neighborhoods of single family detached housing that has enabled the recovery and growth of population of many municipalities located in the outer rings of the urban metropolitan region that is functionally integrated into nearby towns by increased residential, work, retailing, and leisure linkages.

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