Description of the Intramunicipal Habitat with Significant Concentrations of Foreign Population. The Case of the Province of Málaga (Spain)

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Abstract. The presence of foreigners in the province of Málaga is highly noticeable, especially in specific municipalities such as the city of Málaga, coastal areas, or villages in the Axarquia region. But from a geographical point of view, there are comparatively few investigations dedicated to the definition of the space in which foreign immigrants reside. The aim of this research is to provide a description of the habitats where people who were born abroad tend to concentrate in the province of Málaga. The main novelty of the research is the scale of analysis we have used being intramunicipal, based on Nomenclator statistics. This is especially relevant when we are dealing with small municipalities in some of which the proportion of foreigners is quite high, because it is the only one that allows us to characterise the habitat of the foreigners.

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1. Introduction

The presence of foreigners in the province of Málaga (location in Fig. 1) is highly noticeable, especially in specific municipalities such as the city of Málaga, coastal areas or villages in the Axarquía region. The volume of foreign-born population living there more than tripled between 1998 and 2018, increasing from 89,914 in 1998 to 301,441 in 2018. In percentage terms, the increase was also of great magnitude, reaching 18% of total residents in the province. These percentages are much higher not only than those corresponding to Andalucía – to which the province of Málaga belongs – at 7.58%, but also to those of Spain as a whole (at 9.86%).

By origin, two fifths of the foreigners residing in the province came from the EU15, and mainly from the United Kingdom, at a figure slightly below 45,000, with Germans in a distant second place (12,500). Alongside the aforementioned Europeans, the most common origins were Africans (mainly Moroccans, 47,000 – four fifths of all Africans) and Latin Americans (mainly Argentineans, 21,000) with a much lower presence of all others (remainder of EU, non-EU Europeans, Asians, nationals from Oceania). This large increase in the population born outside of Spain took place on a broad spatial basis: people born in the EU15 have basically residential motivations, while those born in Africa and America have labour ones. As a whole, the foreigners found accommodation in a variety of habitats, both rural and urban; and, in the case of the latter, the characteristics of their residences also covered a wide spectrum, depending on their economic possibilities: from flats or penthouses on the beachfront, to small apartments in physically and socially degraded areas.

This variety of origins, together with the variety of habitats in which these immigrants settle, leads us to wonder about the specific characteristics of the built fabric in which significant numbers of foreigners reside. Although we have certain indications on this issue, the fact is that an investigation has not been presented that, in a systematic way, focuses exclusively on the characterisation of the habitat where foreigners reside, regardless of origin. This is precisely the objective of our research – to provide a description of the habitats where people who were born abroad tend to concentrate in the province of Málaga. The originality of our research lies in the fact that we will consider not only the urban space, but also the rural one, provided that the proportion of foreign-born residents exceeds a certain threshold. This is a relevant contribution, since, in general, the investigations we have at our disposal focus either on one or the other. Furthermore, the classification of residential space that we have used comes from the systematic observation of all the spatial units in which there is a significant presence of foreign-born persons, and not from a sample of them, which gives it robustness.

The paper is divided into two main sections. The first section is methodological and covers a description of the geographical area in question, the steps taken for the creation of an immigration typology, and a brief description of the basic habitat types that can be found in the province. The second explains the distribution of the migrant groups in the different habitat types, which is the core of this research.

2. Research review

During the 2011/17 period, immigrants arriving in the European Union tended to locate more often in cities than in rural areas (Natale et al., 2019). The specificities of the settlement of foreign immigrants in the southern European city have been extensively
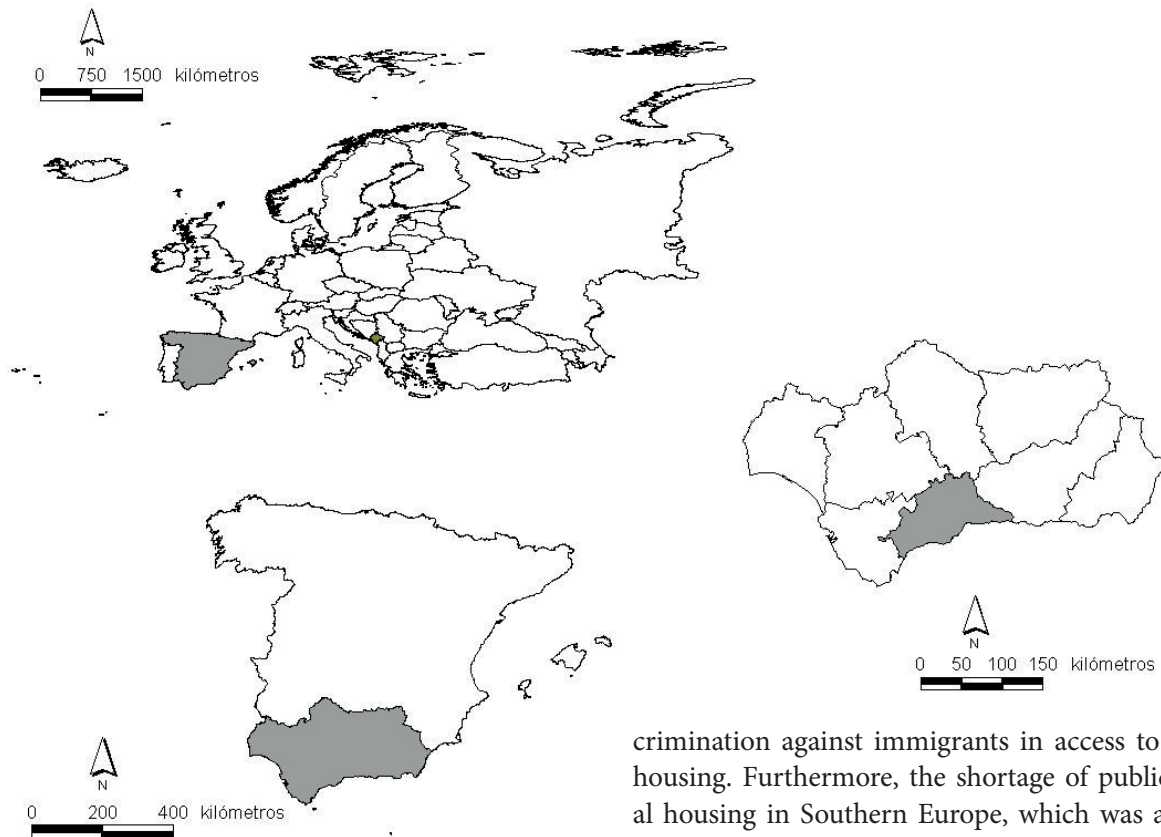
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Fig. 1. Location of Málaga province (Spain)

discussed in different investigations (Arbaci 2008a; 2019; Arbaci and Malheiros, 2012; Malheiros, 2002; Maloutas and Fujita, 2016). Arbaci (2008b) points out that one of the elements that decisively influence the territorial patterns of settlement of immigrants in the cities of southern Europe is the existence of a dualistic housing market, clearly biased towards property. This leads to a shortage of available housing for the populations of the lower and middle strata, due to less access to credit, which is aggravated in the case of labour immigrants (Allen et al., 2004).

On the other hand, another distinctive element of the southern European city is the fact that, unlike the reality of the United States, an increase in social status does not necessarily imply residential mobility (Amilcar et al., 2013). Nor should we forget the existence of obstacles that labour immigrants face to rent raised by owners or real-estate agents, an element that notably influences the real capacities of these minorities when obtaining a home. This is a reality that has been highlighted in Madrid and Barcelona by Bosch et al. (2015), who have found dis-

crimination against immigrants in access to rental housing. Furthermore, the shortage of public rental housing in Southern Europe, which was already indicated by Malheiros (2002) at the beginning of this century, continues to exist in the case of Spain – a fact that further limits the residential options of labour immigrants. In the case of Málaga in particular, and Spain in general, this situation is aggravated by the fact that there are no self-construction initiatives led by immigrants, as described by Semprebon and Vicari (2016) in Italy. Nor is public housing present in our province, as is the case, for example, in France (Verdugo, 2011). In this sense, Benassi et al. (2020) show how in Spanish and Italian cities there is a correlation between lower levels of low-income immigrants and higher levels of residential segregation, indicative of the difficulties that low-income immigrants have when it comes to accessing a home. At the other end of the scale, high levels of segregation can also be found: thus, Floch (2017), in his study of 12 French cities, shows that levels of segregation are higher in areas of high living standards.

With respect to rural immigrants, as Nori and Farinella (2020) have stated, rural immigrants can be considered as agricultural workers or as new citizens, who can offset declining local populations and revitalise the rural world. Rural immigrants as agri-

cultural workers have been widely studied, with research focusing on their living conditions: a recent compilation of such studies can be found at Rye and O´Reilly (2020); nonetheless, this approach is not extensible to our study area, as this type of rural immigrant is very scarce at Málaga.

Nevertheless, the second approach, rural immigrants as new citizens, can be seen as the main stream of foreign-born persons who live in rural Málaga. This is not the result of a counter-urbanisation process, but one from specific migration flows, incoming mainly from United Kingdom. In the same way that Lardies-Bosque (2018) or Beismann and Steinicke (2019) pointed out for Aragón and the Alps, in the case of Málaga these Britons have become the key point of the demographic revitalisation of very low-populous municipalities, which in their absence would show negative growth rates. In Kordel and Weidinger's (2020) words, it can be considered as an amenity/lifestyle migration, where landscape, environment quality and the knowledge of the amenities that Málaga can offer are the explaining factors of the immigration.

In the Spanish context, the reality we have shown in the introduction has been extensively addressed in studies dealing with either the province as a whole, specific areas, or the provincial capital itself. However, even at a national level, there are few studies that attempt to identify concentrations of immigrants in a specific area. In most cases concerning the urban environment, one group tries to identify statistically significant concentrations using spatial autocorrelation techniques (Natera, 2012; Batista and Natera, 2013), while others try to identify them by applying census unit classifications already proven in other areas. Thus, Echezarra (2010) and Achebak and Bayonne (2015) use a modified classification by Poulsen, Johnston and Forrest (2001); the former is applied to the metropolitan area of Madrid (considering foreigners as a whole), the latter to all Spanish census sections, but only covering the Moroccan population. On the other hand, Huete and Muñoz (2011), using their own classification, group together the neighbourhoods of the city of Seville and correlate the presence of foreign immigrants with the number of nationalities in each neighbourhood. In this area of study, the studies carried out by the Grup d'Estudis Demogràfics i de les Migracions (GEDER) are particularly noteworthy; this group provides a publicly available database with cartography of the census sections, that show the residential typology of the census sections of all Spanish municipalities (based on Poulsen's classification), and also indicate the evolution of the Dissimilarity and Isolation indices for the 1998–2013 period. This information is available at http://gedemced.uab.es/es/, and includes its main bibliographical contributions.

Previous research only superficially describes the areas in which foreigners reside, as this is not their main objective. In this respect, from a geographical point of view, there are comparatively few investigations dedicated to the definition of the space in which foreign immigrants reside. The most notable of these studies are focused on the Valencien coast (Torres, 2007; Mantecón et al., 2009; Domínguez Martínez et al., 2016). In any case, the studies show that migrant workers tend to live in poorer areas (Carrasquilla et al., 2007) due to their relatively low purchasing power (Onrubia, 2010). Furthermore, studies also show that migrant workers experience residential exclusion (Natera, 2015) and, at least in the case of the municipality of Málaga, are also affected by vertical segregation (Natera, Larrubia and Navarro, 2017). In contrast, residential migrants tend to reside in good residential areas, which are in some cases "segregated" (Huete and Mantecón, 2011). Indeed, most of the available literature indicates that the "residential" foreign population tends to be located in the best areas of the municipalities, whereas the "migrant worker" population tends to be at the other end of the scale, with some falling in between. However, in Spain, in spite of the large amount of foreigners living in the country, there is as yet no research available that objectively and systematically relates concentrations of foreign populations differentiated by origin to specific urban spaces.

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3. Sources and methodology

3.1. Baseline spatial unit

This research aims to show the characteristics of the intramunicipal areas that are inhabited mainly by foreigners. From an operational point of view, this does not pose any problems in urban municipalities, as their municipal districts are divided into many census sections, the greater the number of residents, the higher the amount of sections. However, when dealing with rural municipalities, there are significant difficulties in terms of selecting the baseline spatial unit. Indeed, it is widely known that census sectioning – the most widely used cartographic source when georeferencing statistical information – does not provide information on how the population is distributed within rural municipalities. Due to their small population, the entire municipality is divided into a single census section, hence the futility of this spatial division. However, a viable alternative is the Population Gazetteer, in which, through its mapping, it is also possible to georeference the census information, in this case by relating it to the different population groups in the municipality. At worst, the Gazetteer will indicate that the totality of the population registered in the municipality resides in one single area, from which we will at least know that the rest of the municipality is not inhabited. However, especially in historically fragmented rural areas, it is normal to have one central nucleus while the rest of the population is scattered around. Thus, using the Gazetteer's cartography is the only possible way to know how the population is spatially distributed in some rural municipalities. Moreover, as the census information is the same as in the Gazetteer, it is also possible to know the distribution by age, sex, nationality, place of birth, etc., making it a highly valuable source for this type of study.

The Statistical and Cartographic Institute of Andalusia has a cartographic base that provides the mapping of all the population groups included in the Gazetteer. This information can be obtained from the Spatial Reference Data of Andalusia (DERA). Also, the Spanish National Institute of Sta-

tistics can provide, upon request, census information from 2014 onwards on these specific spatial units, which makes is possible to georeference them. Moreover, as the cartographic base can be converted into a .kml format, it can be included in Google Earth and used in Street View, which, in turn, makes it possible to know the characteristics of the built fabrics of each population group. This possibility allows for a systematic characterisation to be carried out off site, leaving fieldwork for specific cases only. This means lower costs – in terms of both money and time – and opens up the possibility of carrying out studies that would otherwise be considerably more difficult.

Considering the above, the urban area for municipalities with more than 10,000 inhabitants, and the population group – as defined by the Gazetteer – for the rest, were selected as the spatial units related to statistical information from the Municipal Register of Inhabitants.

3.2. The migration typologies

When working on the population's residential differences, that is, on one of the most interesting aspects of its spatial distribution, there are two types of variables that can be used to differentiate groups (Rodríguez, 1993: 14):
• A group that describes socio-cultural segmentation, such as race, nationality, place of birth.
• A group related to socio-economic stratification, such as income, educational level, material living conditions, etc.

Although there is no doubt that there are certain correlations between these two aspects (hence terms such as "economic migrants" that apply to foreigners of certain nationalities), when it comes to differentiating groups, our focus will be on the first, i.e. the socio-cultural group. There are two options when identifying a registered person as a "foreigner". They can be identified according to their place of birth (an option that can be found in sociological works, such as Gualda's in 2012); or according to their nationality (an option mostly used in geographical research, a notable exception being the work of the Grup d'Estudis Demogràfics i de les Migracions [GEDEM]). The use of one or the oth-

er option entails important differences, as it means a variation in the volume of the population under study, a variation that can have important implications. As an example, in studies regarding how foreigners are perceived, nationality was considered of secondary importance whereas racial differences associated with place of birth were considered more important.

Once the variable that will allow us to differentiate population groups has been specified, the next important element to consider is the different types of spatial units that can be identified based on the presence of people born outside Spain.

As mentioned by Johnston et al. (2003: 4), two approaches have been used when dealing with the geography of spatial concentration. The first involves the calculation of various indices of residential differentiation, such as the Dissimilarity Index (D), Segregation Index (S), etc. The second, which is the subject of this paper, is the identification of areas of concentration – an approach that involves classifying the areas according to one of these three options:

1. A cluster analysis to group homogeneous areas according to their profile into a certain number of variables.

2. The creation of choropleth maps, mapping defined groups from, generally, a single variable.

3. The use of a threshold analysis, which implies, like the previous one, categorising areas based on, generally, a single variable and a single category according to the percentage of the group under study that resides in those areas.

This study will follow the third option and will ultimately obtain a typology of spatial units based on the population born outside Spain. The advantage of this type of approach is perfectly summed up in the following statement by Mikelbank (2004: 936):

Typologies serve as a springboard from which the behavior of complex and diverse phenomena can be more clearly understood. Classification research can help bridge the conceptual gap between the seemingly unique character of an individual observation and the well-understood behavior of groups of similar observations. l

The design of our typology will involve the establishment of thresholds in a context where the variable used is highly continuous. Technically, the challenge is to define and operationalise thresholds – thresholds that must be consistent with the theory (Reibel, 2011: 305). Again, there are at least two options when it comes to setting the thresholds that will separate the categories. The first is the use of classification techniques to determine both the number of groups that will make up the classification and the thresholds that will delimit them. The research of Logan et al. (2011) is an example: they use complex methods to identify and delimit migrant neighbourhoods. These include Bayesian approaches, cluster analysis, or K-functions; but the main problem when replicating them in this context is the origin and scale of the data. In fact, the data they used are 100% digitally transcribed from an 1880 Census (organised by the Church of Jesus Christ of Latter-day Saints) that contains individual information on 50 million people (Logan et al., 2011: 338).

More numerous are studies that have operationalised the theory into classifications or typologies, defining a priori the thresholds that separate them. From these, the one that has had the greatest impact is that of Johnston et al. (2003), who use 50% as the basic threshold when identifying areas where the host population is a minority. From there on, they use a 70% threshold to differentiate between what they call "assimilation-pluralism enclaves", where ethnic minorities account for between 50% and 70% of the population, and "enclaves", where this percentage is over 70%. The importance of this classification – and of previous works on the same subject (Poulsen et al., 2001; 2002) – lies in the fact that it can be calculated in the Geo-segregation Analyzer application (Apparicio et al., 2013), an application widely used in residential segregation studies. Furthermore, it has been adapted by other researchers when identifying areas with a significant presence of foreigners as part of their studies. Examples in the Spanish arena are the works of Acheback and Bayona (2015) and Echezarra (2010).

The procedure followed for the development of the migrant typology of spatial units is as follows:

First step: determine if the percentage of the foreigners residing in the spatial unit is higher than 18.367%, a percentage that corresponds to the en-

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tire province of Málaga. If so, the area will be considered in the investigation. Otherwise, it will be dismissed.

Second step: Determine the percentage of the foreigners resident in the spatial unit and classify them into four groups according to that percentage: between 18.368% and 30%; between 30.001% and 50%; between 50.001% and 70%; and over 70%. These percentages indicate the presence of foreigners and, from the third category onwards, this group is predominant in the spatial unit. We named the groups: minority community; pluralistic community; majority community; and enclave, respectively.

Third step: Determine whether a single group of foreigners accounts for more than 50% of the total number of persons born outside Spain. The groups are divided according to their region of origin: EU Europe; non-EU Europe; Africa; America; Asia; Oceania (in the Spanish Population Gazetteer, Oceania includes Australia, New Zealand and other minor countries, as Fiji, Cook Islands, etc.). If one of these groups accounts for more than 50% of the total number of foreigners, the spatial unit is considered polarised; otherwise, it is mixed.

Finally, this study considered 457 spatial units, and their allocation in the eight resulting groups is given in Table 1. A majority – but not an overwhelming majority, only 52.1% – of polarised spatial units can be observed, while there are none corresponding to the "mixed enclave" type.

The first element of the classification of the type of spatial unit refers to the amount of foreign-born residents, with the minority community having the least presence, and the enclave community the highest. In turn, the second element indicates the presence, or absence, of a group of foreign-born residents that accounts for more than half of this population, adding the terms "mixed" or "polarised" to the previous classification. In this line, it should be noted that there could potentially be up to six subtypes of polarised spatial units – one for each region of birth. As long as nationals from Asia and Oceania are very scarce, in practice these subtypes are reduced to four; EU Europe, non-EU Europe, Africa and America, with those born in EU Europe accounting for the vast majority of cases, a total of 212 out of 231 polarised spatial units.

3.3. Built fabric classification

The 457 spatial units that are the object of this study are also not homogeneous from the point of view of the built fabric. Indeed, by simply looking at the space they delimit, it is possible to ascertain that some contain tall buildings, while others were placed in purely rural spaces. On the other hand, there is also a relationship between the characteristics of the built fabric and the origin of the foreign population living there. It has, therefore, been

Table 1. Number of spatial units according to migration type

		Classification			
		Percentage of foreigners over the total number of residents in the spatial unit			
		18.368% to 30%	30.001% to 50%	50.001% to 70%	Over 70%
Percentage of a single group over the total number of foreigners	Over 50%	Polarised minority community TYPE 1 **101**	Polarised pluralistic community TYPE 2 **75**	Polarised majority community TYPE 3 **37**	Polarised enclave TYPE 4 **25**
	50% or less	Polarised minority community TYPE 5 **161**	Polarised pluralistic community TYPE 6 **53**	Polarised majority community TYPE 7 **5**	Mixed enclave TYPE 8 **0**

Compiled by the authors

demonstrated that migrant workers tend to live in poorer residential areas (Carrasquilla et al., 2007), due to their comparatively low purchasing power (Onrubia, 2010). Furthermore, it has also been shown that migrant workers suffer residential exclusion (Natera, 2015) and, at least in the case of the municipality of Málaga, they are also affected by vertical segregation (Natera, Larrubia and Navarro, 2017). In contrast, residential migrants tend to reside in comparatively good residential areas, which are in some cases "segregated" (Huete and Mantecón, 2011).

It is therefore necessary to classify the built fabric of the spatial units in question. However, in this case, the classification was made based on the individual observation of the 457 units. This particular observation was not obtained by making on-site visits, but by using the Google Earth application and, more specifically, its Street View tool. The use of this application is relatively widespread when teaching geology and physical geography, (Montealegre, 2006; Alfaro et al., 2007), and examples of the integration of historical urban cartography in Google Earth images are also available (Souza and Costa, 2012). Moreover, Street View has also been used to study known or unknown urban realities, a different approach to the one used in fieldwork (Nolasco-Cirugeda et al., 2015). Street View has not only been used when studying towns and cities, but also in areas such as Earth sciences (Gómez-Heras et al., 2015), as an instrument that allows the study of outcrops on motorway embankments that, for safety reasons, cannot be directly accessed.

In order to identify the spatial units in question without any errors, and to have their exact delimitation on Google Earth images, the following procedure was followed. Firstly, two shapefile (shp) format coverages were constructed. The first corresponds to the census sections selected from the information obtained from the National Institute of Statistics mentioned in the Baseline spatial unit section. The second corresponds to the population groups that are the object of this study, based, in this case, on the information obtained from the Andalusian Institute of Statistics and Cartography also mentioned in the Baseline spatial unit section. Once both coverages were obtained, they were converted to Keyhole Markup Language (KML) format, which allows their integration into Google Earth. The result is the exact location and delimitation of this study in Google Earth and, by extension, in Street View. This technique avoids field trips to check the type of built fabric of the spatial units, resolving any incongruities or doubts through corroborative field work.

From the information gathered, a classification was built that, first of all, differentiates types of habitat: cluster housing, dispersed housing, urban fabric, and mixed. The general characteristics of the habitat types are as follows:

1. Cluster housing habitat. This is a cluster housing fabric, which does not need to be surrounded by undeveloped space, as its boundaries are easily recognisable. It refers to both the municipal capitals of small municipalities as well as to traditional secondary cluster housing. They are part of the original, i.e. inherited, settlement system of the municipalities. These cluster houses include single-family housing developments, which include detached, semi-detached, and terraced houses.

2. Dispersed housing habitat. These are dispersed houses that do not constitute a cluster. They can be found in rural areas.

3. Consolidated urban fabric. This is an urban fabric that corresponds almost entirely to the coastal area. It corresponds both to the city of Málaga, and to the built-up areas of the coastal municipalities located both to the east and west of the capital. There is virtually no separation between these spatial units, since they are adjacent to units that are either included in the study, or not if they do not reach the minimum established percentage of foreign-born population. In this respect, it is significant that the vast majority are census sections and not population groups, the latter being the spatial unit of reference predominant in the two previous groups.

4. Mixed habitat. It is mixed in the sense that two types of habitat can be found in the study units; they are not only clearly differentiated, but also have clearly defined boundaries between them. The spatial units included in this type are coastal, one of their boundaries being the beach line; furthermore, they

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are located in areas where the development process, although present, has not "saturated" the space available for construction.

These four habitat types are in turn divided into 20 categories. Six belong to cluster housing: single-family houses in rural areas, either exclusively traditional or combined with new houses; municipal capitals; housing developments on golf courses, with or without sea views, with a significant amount of registered population in general; housing developments with detached houses combined with blocks of flats or terraced houses linked to specific facilities; housing developments with detached houses combined with blocks of flats or terraced houses; and detached houses in housing developments in completely rural environments.

Two categories belong to dispersed housing: newly built detached houses, with swimming pool, in high-density rural areas; and newly built detached houses, with swimming pool, in low-density rural areas.

One category belongs to the intermediate type: differential growth beach/inland area.

The remaining eleven belong to the consolidated urban fabric: historic quarter; apartment blocks without enclosure, orthogonal layout in rectangles; refurbished single-family houses, ground floor and two stories, close to small blocks; apartment blocks without enclosure. Mixed fabric: apartment blocks without enclosure, refurbished single-family houses, ground floor and two stories, close to small blocks. Mixed fabric: apartment blocks with enclosure, refurbished single-family houses; high-density blocks; most blocks with enclosure, no proximity to the beach; apartment blocks with enclosure, on the beach or close by; low-density urban fabric, with mainly single-family houses in housing development. Mixed fabric: apartment blocks without enclosure, self-built single-family houses, terraced houses.

4. Results: Distribution of migration types

4.1. According to type of habitat

This section will focus on how similar or dissimilar the migration types are to the overall total, according to two aspects. The focus will be: firstly, on the distribution of spatial units according to habitat types; secondly, on a comparison of the registered population distribution in each of these habitat types. The relevant statistical information is provided in Table 2; specifically, the percentage distribution of the habitat types and the percentage of the population living within them.

Differences, sometimes considerable, can be observed between the different types of migrants and the total, which can be considered the "normal" situation. The differences are even more noticeable when the variable in question is the percentage of spatial units according to habitat type rather than the resident population in each of these types. A graphic representation of the differences has been drawn up to show them more clearly. The type of graph used for the purpose is a triangular diagram; the decision was made to exclude the mixed habitat type, since it has a very reduced presence both in number of spatial units (only two, or 0.48% of the total) and in population (a total of 1,186 registered inhabitants, 0.65% of the total population), reducing the number of habitat types represented to three. As a result, the use of the triangle diagram was considered to be one of the best options to represent, in a synthetic way, the distribution by habitat type corresponding to each of the five regions of origin, and to the total number of foreign-born residents.

The first graph represents the distribution of the spatial units according to the type of habitat (Fig. 1). It clearly shows that there are two extreme types: on the one hand, type 7 (mixed majority communities), which concentrate all the spatial units included in it in cluster housing; on the other, type 5 (mixed minority communities), which does so almost entirely in a consolidated urban fabric.

In addition, from the point of view of the distribution in habitat types, it can also be seen how

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Table 2. Percentage distribution of habitat types according to migratory type

	Cluster housing		Dispersed housing		Urban area		Mixed area	
	Spat. Units	Pop.	Spat. Units	Pop.	Spat. Units	Pop.	Spat. Units	Pop.
Type 1	36.63	35.09	34.65	12.47	27.72	50.10	0.99	2.34
Type 2	42.67	55.41	36.00	4.65	21.33	39.94	0.00	0.00
Type 3	51.35	65.23	35.14	4.92	13.51	29.85	0.00	0.00
Type 4	64.00	50.52	36.00	49.48	0.00	0.00	0.00	0.00
Type 5	3.73	5.76	0.00	0.00	96.27	94.24	0.00	0.00
Type 6	24.53	30.75	1.89	0.06	71.70	67.72	1.89	1.47
Type 7	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**28.01**	**28.85**	**18.60**	**3.81**	**52.95**	**66.76**	**0.44**	**0.58**

Source: Statistics from the Townhall registry. Compiled by the authors

there is a gradation from type 1 to type 4, which is shown in the figure as a shift to the left and upwards of the dots. A shift that is also "ordered" in the sense that it starts with type 1, continues with types 2 and 3, and ends with type 4, in that order. The upward shift means that the percentage of spatial units in cluster housing habitats progressively increases (from 36.63% of type 1 to 64% of type 4), while the leftward shift implies that the percentage of spatial units in the urban fabric habitat type decreases (from 27.72% of type 1 to its total disappearance in type 4). At the same time, the percentage of spatial units in dispersed housing habitats remains virtually constant, at around 35% among the four types, as shown in Table 2. At this point, it is useful to remember that what the four migration types have in common is that, amongst the foreign-born residents, the majority (50% or more) were born in the EU; and what differentiates them is the percentage of foreigners represented in the total population, which ranges from a maximum of 30% in mixed minority communities (type 1), and up to 70% in polarised enclaves (type 4).

Therefore, by combining the migration types with this "evolution", it is possible to state that, when the percentage of foreigners within the spatial units increases and considering those born in the EU are the majority amongst foreigners, the built fabric progressively gains quality and, it must be said, exclusivity; we only need to remember the characteristics of the built fabric described in the previous sections. Accordingly, the weight of the consolidated urban fabric – already a minority in these groups – decreases, until it disappears entirely.

Finally, it should be noted that type 6 (mixed pluralistic communities) are the closest to the overall total (they are the closest to the symbol that represents it).

Figure 2 represents the distribution of the population according to the type of habitat, once again for the total of units and for the seven migrant groups. When observing it, what immediately stands out is the important differences when comparing it to the previous figure.

Indeed, in four (total of units and types 1 to 3) of the symbols there has been a shift to the right, which is very noticeable in the last three. In other words, the percentage of the population that resides in the urban area is substantially higher than the weight that spatial units have in this type of habitat. This is a graphic reflection of the concepts that have been systematically highlighted in the previous sections. Once the statistical origin of these differences has been established, how can the correlated loca-
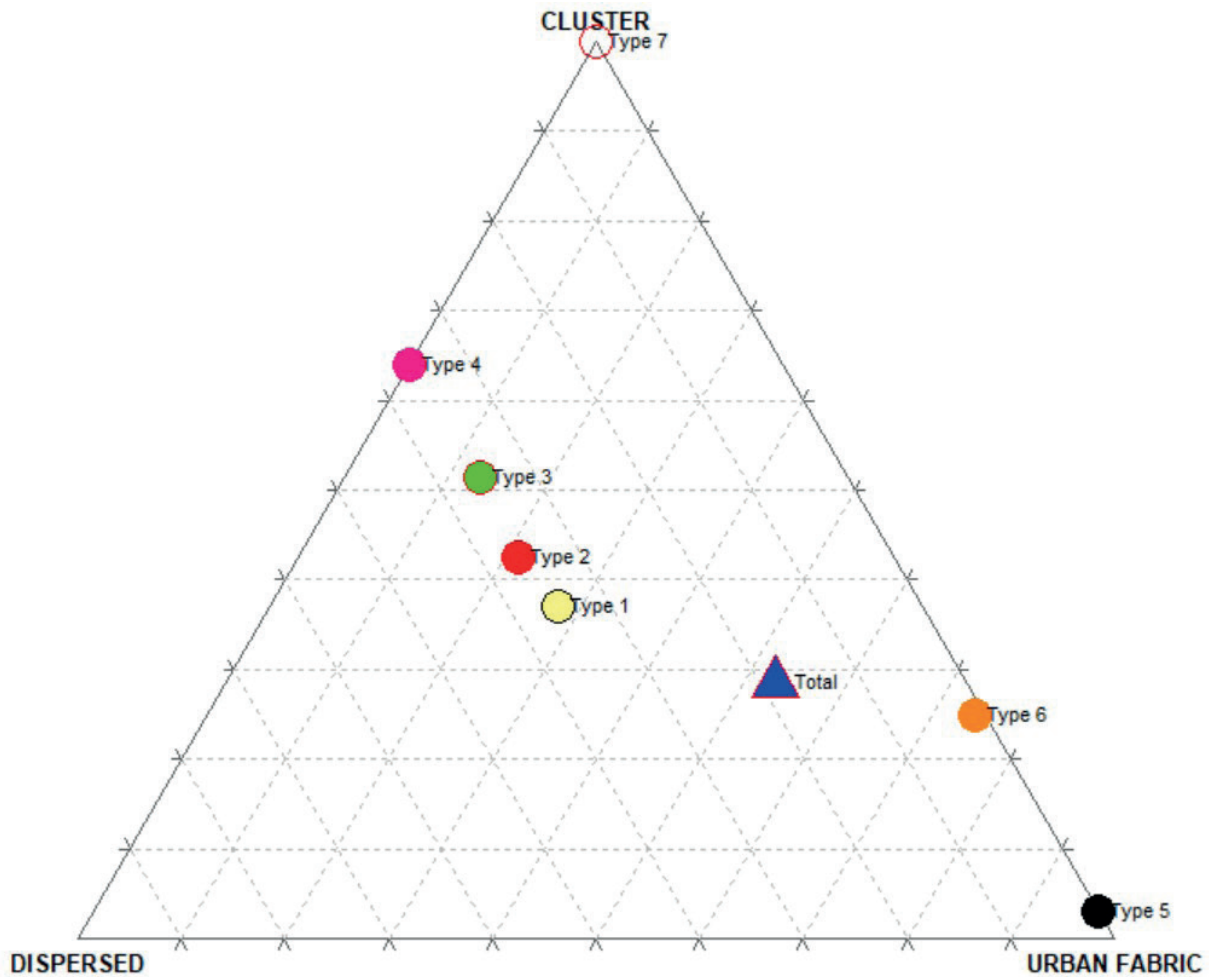
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Fig. 2. Percentage distribution of spatial units according to the habitat of total spatial units and immigrant types, Type 1: polarised minority community; Type 2: polarised pluralistic community; Type 3: polarised majority community; Type 4: polarised enclave; Type 5: mixed minority community; Type 6: mixed pluralistic community; Type 7: mixed majority community
Source: Statistics from the Continuous Register. Compiled by the authors.

tion of the symbols corresponding to types 1 to 3 be interpreted? Firstly, it should be noted that there is a gradation between these three types, reflected in an upward shift; a shift that is indicative of an increase in the percentage of the population living in cluster housing, from 35.09% in type 1 to 51.35% in type 3; an increase that is combined with a decrease in the population living in urban areas, from 50.1% in type 1 to 29.85% in type 3 (see Table 2). In other words, the higher the percentage of foreigners in the population resident in the spatial units and the higher the number of those born in the EU over the total number of foreigners, the higher the amount of population living in better areas. They go from living in significant numbers in apartment blocks with an enclosure near the beach, or in outskirts featuring single-family housing developments, to living more and more in developments located

between urban areas, which may have golf courses or be linked to specific attractions.

Furthermore, types 7 and 5 continue to be extreme types; let us not forget that in the first case 100% of the population lives in cluster housing, and in the second 96% lives in urban areas (see Table 2). The population in type 5 is equally divided between cluster and scattered housing. Type 6 continues to be approximately in the same place as in the previous graph, reflecting the small differences between the percentages of the weight of spatial units and the population by habitat type, which was mentioned in the relevant section. Moreover, the displacement of the symbol corresponding to the total number of spatial units makes this topological group once again the closest – virtually equal – to the total set of the 457 spatial units under study.
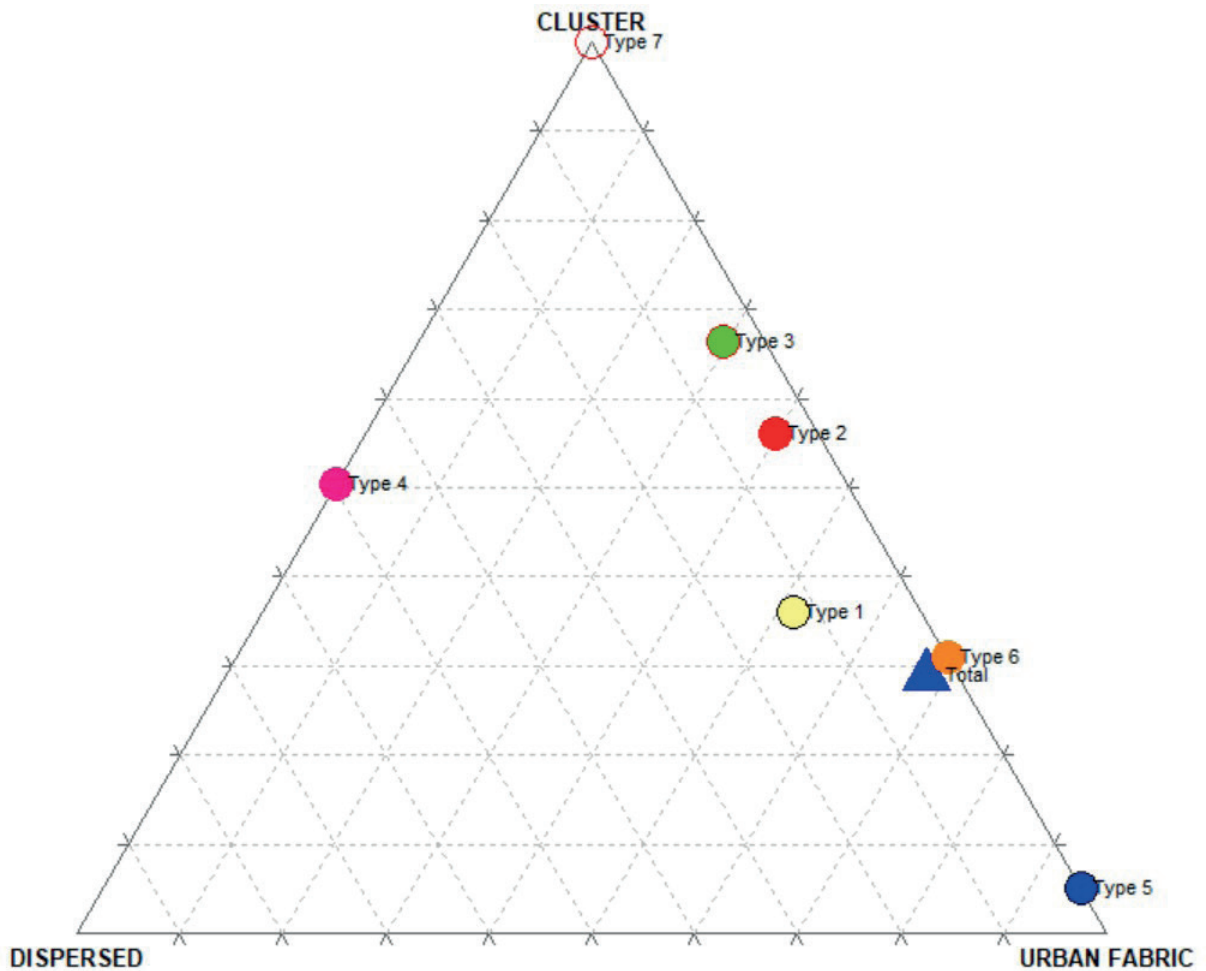
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Fig. 3. Percentage distribution of the population by habitat of the total spatial units and of the migrant types, Type 1: polarised minority community; Type 2: polarised pluralistic community; Type 3: polarised majority community; Type 4: polarised enclave; Type 5: mixed minority community; Type 6: mixed pluralistic community; Type 7: mixed majority community.
Source: Statistics from the Continuous Register. Compiled by the authors

4.2. According to category of built fabric

As already mentioned, these four types of habitats are in turn distributed among 20 categories of built fabric: six corresponding to the cluster housing habitat, two to the disseminated housing habitat, eleven to the consolidated urban area, and one to the mixed habitat. Therefore, we could ask ourselves what the distribution of these categories is according to the type of migration and the spatial units they inhabit. Table 3 shows the percentage distribution, and the final amounts are added in the bottom row.

One of the outstanding aspects of the table is the way in which the information is distributed, in the sense that not all immigration types are represented in the categories. This should not be surprising in, for example, Type 7, as it has only five spatial units. However, it is striking that more frequent types, such as 5 (with 161 spatial units), 1 (with 101), 2 (with 75) or 6 (with 53) are widely represented. Indeed, the gaps in category 2 are distributed approximately where types 5 and 6 are represented, and vice versa. An element that coincides with the different representation of these immigrant types according to the type of habitat, which was covered in the previous point.

These differences can be appreciated more clearly in Figs. 3 and 4, which shows how the units that make up the seven types of immigration are distributed in percentage terms among the 20 categories of built fabric. These are radial graphs that show the percentages corresponding to each of the seven migration types, and should be interpreted as follows: the closer the point is to the centre of the

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Table 3. Distribution of spatial units in categories of built fabric according to type of migration (percentages in brackets),

Fabric category	Migrant type							
	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Total
1	20 (44.44%)	12 (26.67%)	6 (13.33%)	6 (13.33%)	-	-	1 (2.22%)	45 (100%)
2	6 (60%)	1 (10%)	-	-	3 (30%)	-	-	10 (100%)
3	3 (25%)	1 (8.33%)	2 (16.67%)	3 (25%)	-	2 (16.67%)	1	12 (100%)
4	-	4 (22.22%)	3 (16.67%)	1 (5.56%)	1 (5.56%)	9 (50%)	-	18
5	4 (15.38%)	8 (30.77%)	7 (26.92%)	-	2 (7.69%)	2 (7.69%)	3 (11.52%)	26 (100%)
6	4 (23.53%)	6 (35.29%)	1 (5.88%)	6 (35.29%)	-	-	-	17 (100%)
7	5 (16.67%)	5 (16.67%)	12 (40%)	8 (26.67%)	-	-	-	30 (100%)
8	30 (50.91%)	22 (40%)	1 (1.82%)	1 (1.82%)	-	1 (1.82%)	-	55 (100%)
9	-	-	-	-	9 (90%)	1 (10%)	-	10 (100%)
10	4 (18.75%)	-	-	-	6 (43.75%)	6 (37.5%)	-	16 (100%)
11	-	-	-	-	12 (66.66%)	6 (33.33%)	-	18 (100%)
12	2 (4.65%)	-	-	-	43 (95.35%)	-	-	45 (100%)
13	3 (7.5%)	-	-	-	36 (90%)	1 (2.5%)	-	40 (100%)
14	2 (28.57%)	-	-	-	5 (71.43%)	-	-	7 (100%)
15	5 (20%)	2 (8%)	-	-	14 (56%)	4 (16%)	-	25 (100%)
16	1 (5.88%)	-	-	-	10 (58.82%)	6 (35.29%)	-	17 (100%)
17	4 (13.79%)	10 (34.48%)	2 (6.9%)	-	2 (6.9%)	11 (37.93%)	-	29 (100%)
18	4 (26.67%)	4 (26.67%)	3 (20%)	-	3 (20%)	1 (6.67%)	-	15 (100%)
19	3 (15%)	-	-	-	15 (75%)	2 (10%)	-	20 (100%)
20	1 (50%)	-	-	-	-	1 (50%)	-	2 (100%)
Total	101 (22.1%)	75 (16.41%)	37 (8.1%)	25 (5.47%)	161 (35.23)	53 (11.6%)	5 (1.09%)	457 (100%)

Type 1: polarised minority communities; Type 2: polarised pluralistic communities; Type 3: polarised majority communities; Type 4: polarised enclaves. Type 5: mixed minority communities; Type 6: mixed pluralistic communities; Type 7: mixed majority communities.

Source: Statistic from the Continuous Register. Compiled by the authors
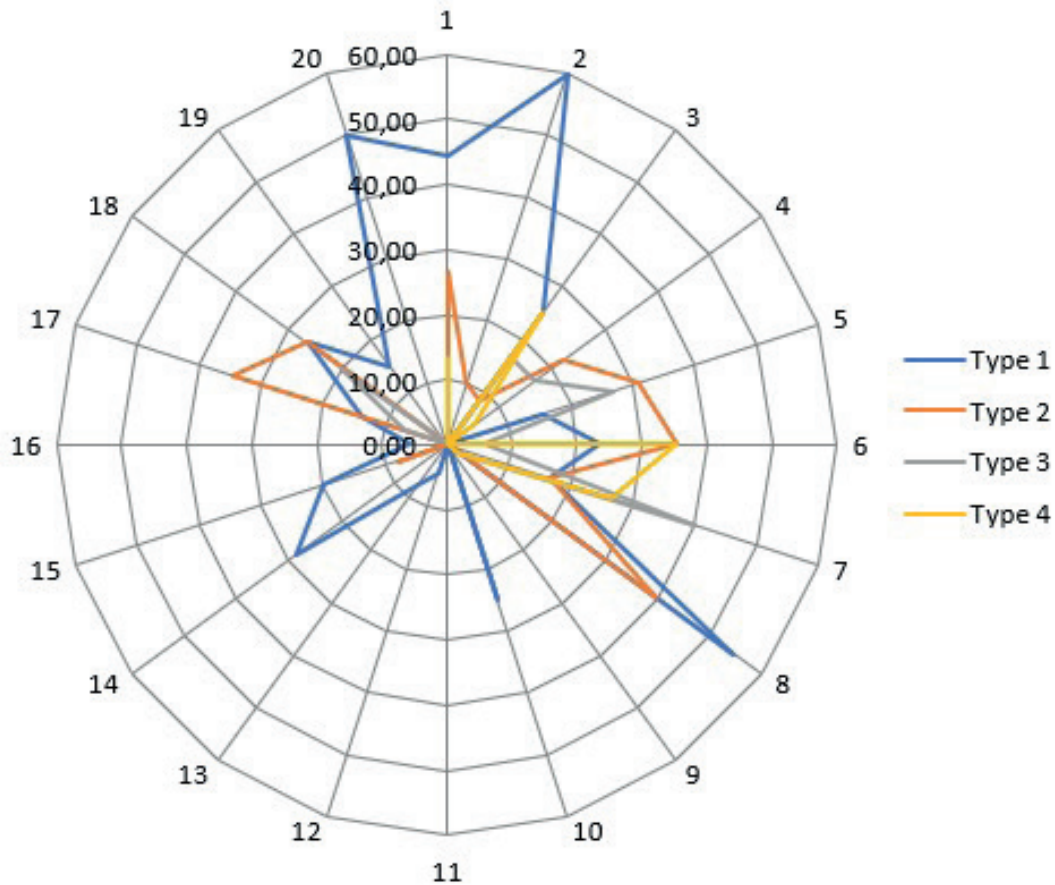
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Fig. 4. Polarised migrant types: percentage distribution of spatial units in built fabric categories,
Type 1: polarised minority communities; Type 2: polarised pluralistic communities; Type 3: polarised majority communities; Type 4: polarised enclaves
Statistics from the Continuous Register. Compiled by the authors

graph, the lower the percentage that a specific migrant type represents over the total of spatial units that make up the category, and vice versa; the further it is from the centre, the higher the percentage. The lines connecting the dots help understand the information.

The first graph shows the four polarised types, that is, the four types where there is a group of foreign-born residents who make up at least 50% of the total foreigners in the spatial units. The second group represents the three mixed types, i.e., those migration types in which none of the origins of the foreign-born residents reaches 50%.

What is worth highlighting from both graphs is the fact that there are trends – which are different according to whether the type is polarised or not – in the distribution, according to the category of built fabric. At this stage, we should remember that categories 1 to 6 refer to the cluster housing habitat, 7 and 8 to the dispersed, 9 to 19 to the consol-

idated urban area, and 20 to a mixed habitat. Thus, Fig. 3 clearly shows how the highest percentages of the four types of migrants are located in cluster or dispersed housing habitats – a concentration that increases as the percentage of foreigners in the different types increases. That is, the concentration is lower in polarised minority communities (where it is worth remembering that the percentage of foreigners is less than 30%), and it reaches its maximum in enclaves (which have a minimum of 70% of foreigners), where no spatial unit corresponds to an urban area or mixed habitat.

In contrast, Fig. 4 shows how the trend is towards categories within the habitat corresponding to the consolidated urban area – a trend that is greater, the lower the percentage of the foreign-born population. That is to say, the concentration in the urban area is at its highest in the mixed minority communities (where foreigners are fewer than 30%), and it diminishes until reaching the mini-
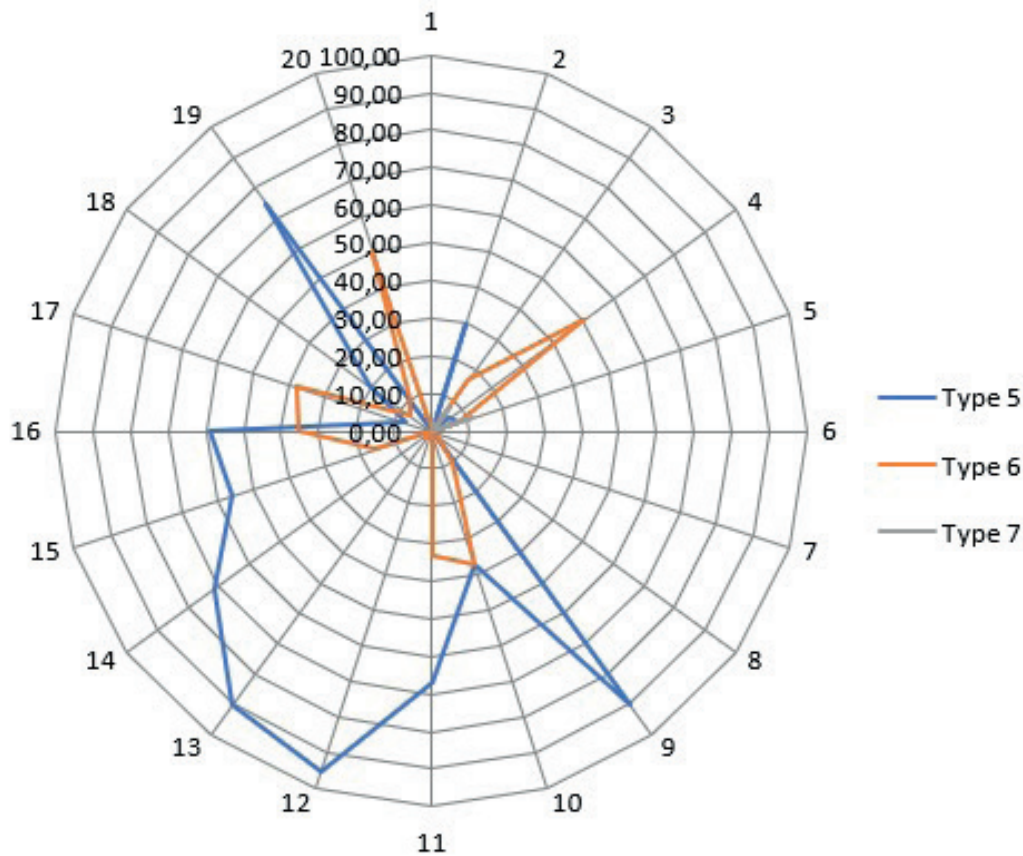
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Fig. 5. Mixed migrant types: percentage distribution of spatial units in built fabric categories,
Type 5: mixed minority community; Type 6: mixed pluralistic communities; Type 7: mixed majority communities
Statistics from the Continuous Register. Compiled by the authors

mum in the mixed majority communities, in which the percentage of this population ranges between 50% and 70% of the total number of registered people.

5. Discussion

Taken as a whole, the distribution of those born abroad living in Málaga is basically urban, following the path that Natale et al. (2019) described for the rest of the EU: this is reflected in the fact that in Málaga two thirds of them reside in a consolidated urban area. By differentiating foreigners registered in the province according to their origin, it has been shown that by far the largest group was born within the European Union.

With this fact in mind, the detailed analysis of how the migrant types are distributed in the four types of habitat has shown how in situations of po-

larisation (immigrant types 1 to 4) an increase in the proportion of foreigners over the registered population in the spatial units also means an increase in the quality of the built fabric. In fact, a gradation has been identified that goes from the polarised minority communities at the bottom of the scale, to the polarised enclaves at the top. This means that, on the one hand, the proportion of habitats in cluster housing increases, while the proportion corresponding to the habitats in the urban fabric decreases in parallel, until it disappears completely in the enclaves. In other words, it can be said that as the percentage of foreigners in the spatial units increases, and considering that the majority of foreigners were born in the EU, the built fabric progressively gains quality and, also worth mentioning, exclusivity. Suffice to recall the characteristics of the built fabric described in precedent paragraphs. Anyway, in Málaga this process cannot be regarded as a gentrification one (as has been found in Barcelona, for example – Cocola-Gant and Lopez-Gay, 2020)

since the development of the urban fabric did not take place over a pre-existent, central one; it was instead developed as a part of the city growth, taking the beach line as the preferred location.

On the other hand, as the number of those born in the European Union increases, there is a move from living in apartment blocks with an enclosure near the beach, or in urban expansions featuring single-family housing developments, to living in greater numbers in developments located between towns, which may have golf courses or be linked to specific attractions. As Membrado, Huete and Mantecon (2016) pointed out for the Costa Blanca, in Málaga residential tourism was the force that drove the expansion of this type of residential developments, and, as has been reported at Comunidad Valenciana (Huete and Mantecon, 2011) EU immigrants live "encapsulated" in these touristic urbanisations.

In Malacitan rural areas, the vast majority of the foreign-born are Britons, and, in this sense, the situation of Málaga province differs from a majority of distributions reflected in the literature, where the bulk of immigrants could be regarded as labour ones. As Woods (2016) pointed out, international immigrants are not an homogeneous block, and their characteristics impact in a diverse way in the places they can be found: in Andalucía as a whole, the rural foreign-born are regarded as labour immigrants, and this is true in Almeria, for example, where a southern model of agricultural exploitation has been defined (Checa, Saveiro and Corrado, 2018). But in Málaga, the bulk of these immigrants can be situated at the other extreme of the scale, and their impact in terms of habitat characteristics is different.

In our case, the residential motivation underlies their migration flow; this fact explains why this is the only group in which the population in dispersed housing locations has some significant representation – a finding that is along the lines indicated by Williams et al. (2004) they show the process of holiday homes being converted into primary residential homes by Britons, as well as a tendency to buy detached houses in the rural areas, instead of a flat or a penthouse in truly touristic areas, due to their preference for living isolated from other expats. And, of course, in this fact, amenity migration is underlying, as Kordel (2016) has pointed out.

And from a spatial point of view, the process of spreading EU population across Málaga Eastern countryside has led to a variety of problems, related to legality of the dwellings. This is the same conclusion as Barrado, Mahleiros and Fernández (2019) arrived at: urban developments on this type of land tend towards deregulation, and flexibility. The processes of legalisation of these houses in the Axarquía that are currently underway point in that same direction – that is, towards the legitimisation of an unproductive consumption of the territory, as an alternative to traditional agricultural uses.

The contrast is set by foreign-born people with work purposes: Americans, Africans and Asians. First of all, their representation as a majority origin in the polarised migrant types is extremely low; therefore, the relationship with the built fabric categories mentioned in the previous paragraph is not applicable to them. Nevertheless, they do tend to be the most numerous – rather than the majority – in mixed migrant types (types 4 to 7); migrant types where most of the spatial units correspond to minority and mixed communities and where the Spanish population is the majority. It means that these labour immigrants have to contend with Spaniards for dwellings, a situation that has led to residential exclusion (Natera, 2012) some of the census tracts where they are represented in fairly high percentages are among those with some of the worst reputed of Málaga, so we could find social exclusion areas related with low income immigrants, in the Mahleiros (2002) sense.

In this context, the fact that they are over-represented in the consolidated urban fabric habitat categories – and that the location quotient values tend to be higher, the poorer the conditions of the urban fabric – shows that this group does not have much choice in terms of where they live, which means that many of them can only settle for mainly privately owned houses with low standards of fixtures, fittings and quality. The difficulties in order to get a dwelling that this population have to deal with, which have been raised by Arbaci (2008) or Malheiros (2002), are probably applicable here. And, needless to say, their ability to move away and reside in "exclusive" areas is, therefore, very reduced.

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6. Conclusions

As we have shown in the previous pages, not only is the distribution of those born abroad and living in Málaga mainly urban, but there is a majority of spatial units within this type of habitat – a figure slightly above 50%. This gap between the percentage of the foreign-born population residing in urban areas and that corresponding to the spatial units within this type of habitat should be considered normal, since it has higher population density. It is worth remembering that, precisely because of these densities, a clear majority of these spatial units within the urban fabric are census sections, and not population groups. In contrast, the habitat in dispersed dwellings is the one with fewer people (only 3.8%), despite the fact that 18.6% of the spatial units belong to it. Again, the explanation for this gap is to be found in the densities, which are much lower by definition in the dispersed areas, and this explains the fact that almost all are population groups located in rural areas.

In this regard, the application of simple statistical instruments in the category of built fabric makes it possible to delve deeper into these differences. The overall picture, therefore, shows that it is these residential immigrants who are over-represented (as per the location quotient) in all the categories of built fabric of cluster housing (which, let us not forget, includes different types of urbanisations and secondary clusters) and dispersed housing habitats; and they are also over-represented in the two urban areas with the best levels of facilities, location, density, etc.: apartment blocks with an enclosure, on the beach or close to it, on the one hand; or in residential estates in low-density urban expansion, on the other. These are precisely the categories where migrant workers are under-represented. Furthermore, the distribution of location quotient values for residential and migrant workers were classified as mirror images. For this reason, Americans, Africans and Asians are over-represented in all the categories corresponding to the urban area – with the exception of the two we have just referred to – while they are under-represented in the urban fabric categories in cluster and disseminated housing. This can only be interpreted as a further confir-

mation of the residential socio-economic differences behind these facts.

Acknowledgements

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