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Intra-Urban Migration and Residential Concentration Patterns of Foreign-Born Migrants. The Case of Barcelona (2012–2021)

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ABSTRACT

The territorial concentration of the foreign-born population in large cities is determined by the evolution of international migration flows, as well as by the internal demographic and migration dynamics of both native-born and immigrant populations. Using data from 2012 to 2021, this study explores the role of intra-urban migration in the evolution of these areas of concentration in the city of Barcelona. Specifically, it analyses the ten most prevalent immigrant origins and their intra-urban migratory patterns in terms of spatial concentration, as defined through spatial analysis techniques, and how these patterns have evolved over the study period. The results show that, although patterns of immigrant concentration previously varied markedly by origin, they nevertheless converge towards a general trend of deconcentration.

1 | Introduction

Over the past three decades, major Spanish cities—most notably Barcelona—have experienced substantial growth in their foreign-born populations, similar to that observed in other Southern European cities (Arbaci and Malheiros 2010). This process has been characterised by both the intensity of inflows and the diversity of countries of origin involved (Domínguez et al. 2010; Domingo et al. 2021; Benassi and Iglesias-Pascual 2022). A first migratory boom began in the late twentieth century (Muñoz Pérez and Izquierdo 1989) and continued until the onset of the Great Recession. More recently, a second influx has taken place, led primarily by young Latin Americans with high levels of education (Domingo et al. 2024), propelling these cities to reach notably high proportions of immigrants in the European context. Barcelona exemplifies this trend, with foreign-born residents accounting for 32.9% of its population in 2024, alongside Madrid (28.0%) and Valencia (24.3%), the three largest urban centres in Spain. This demographic growth has

led to the emergence of neighbourhoods with high concentrations of immigrant residents, such as El Raval in Barcelona (62.5% foreign-born), Embajadores in Madrid (43.5%), and Els Orriols in Valencia (43.3%). These neighbourhoods often serve as gateways to the city (Andersson et al. 2018; Simon 1993) and have increasingly become areas of long-term settlement.

As the migratory phenomenon has matured, these initial areas of concentration have expanded both within cities and across the metropolitan scale. This has led to the emergence of new areas of concentration for some groups and patterns of high dispersion for others (Martori and Madariaga 2023; Galeano and Bayona-i-Carrasco 2018). In certain cases, these central areas have undergone processes of gentrification and touristification, whereby earlier immigrant populations have been replaced by more recent arrivals with greater economic resources. Such dynamics have been documented in the Russafa neighbourhood in Valencia, Lavapiés in Madrid (Torres Pérez and Gómez-Crespo 2024), and the Gòtic neighbourhood in Barcelona (López Villanueva and Crespi 2021).

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While migration flows of the foreign-born population have been examined in relation to suburbanisation (Bayona-Carrasco and Gil-Alonso 2012), less attention has been devoted to intra-urban movements within cities in Spain. This is partly due to the limited availability of relevant statistical data capturing residential moves at a fine spatial scale, which are not usually disseminated by statistical institutes. Intra-urban migration has generally received little attention, despite its significant impact on the redistribution of the urban population (Coulter et al. 2015), as individuals tend to relocate their residence to nearby areas with similar characteristics (Finney and Simpson 2008).

In this context, the availability of annual microdata from Barcelona's municipal population registers represents a significant opportunity to advance research on this topic and to make a valuable contribution to the national and international literature on the creation, diffusion, and dynamics of areas of immigrant concentration, as well as the impact of intra-urban mobility on these processes. The analysis of annual datasets provides detailed insights into intra-urban change and the evolution of the resident population, enabling the study of periods characterised by accelerated migratory flows, as well as phases of economic crisis. Intra-urban migration—defined as changes of residence within the same city—is a key factor in understanding the evolution of the immigrant population across neighbourhoods, along with their patterns of territorial segregation and concentration (Nieuwenhuis et al. 2020). This paper examines the role of intra-urban migration in the formation and transformation of areas of immigrant concentration. The study is based on the initial hypothesis that a process of dispersion is taking place from the historic centre, where international migrants initially settled, towards lower-income neighbourhoods. It is expected that the results will suggest that this process is driven by residential mobility within the city, while also revealing certain variations according to national origin, reflecting different trajectories of socio-spatial integration.

2 | Migration Context and Theoretical Framework

2.1 | Immigration in Southern Europe: The Case of Spain

In the European context, immigration to Southern European countries is a relatively recent phenomenon, beginning in the late 20th century (King 2000) and reaching significant levels during the first decade of the 21st century (Strozza 2010). This immigration is marked by considerable diversity in terms of both origin and socio-demographic profiles, occurring in countries with relatively weak welfare systems (Ribas-Mateos 2004). The process of migrants settling in Southern Europe has been significantly shaped by housing affordability (Arbaci 2008). In Spain, access to housing in major urban areas has traditionally been based on ownership. However, in recent years, rental housing has gained importance among younger populations (Módenes 2024), and precarious housing arrangements—such as subletting—have become increasingly prevalent among immigrants, as a response to growing difficulties in accessing housing (Orozco-Martínez et al. 2025). Such situations contribute to increased intra-urban mobility.

Immigrant integration in Spain has generally taken place under conditions of moderate segregation, which tend to be similar or lower than in other parts of Europe, although certain groups—particularly those of Asian origin—exhibit higher levels. This segregation tends to be greater in large cities and metropolitan areas and lower in medium-sized cities (Bellet et al. 2025). Inequality levels also tend to be higher in large cities, particularly in the most dynamic ones (Marciniczak and Iglesias-Pascual 2025). These relatively low or median segregation levels are largely attributed to widespread suburbanisation, although this does not necessarily imply improved socio-economic conditions (Arbaci and Malheiros 2010), and high degrees of spatial fragmentation persist (Bayona-i-Carrasco 2007; Rubiales-Pérez et al. 2025). Consequently, depending on the scale of analysis, segregation in Spain may be considered among the lowest or the highest in Europe (Marciniczak et al. 2023).

Beyond these general patterns, Southern European cities also display distinctive forms of micro-segregation, notably based on the floor level of dwellings, a phenomenon Maloutas (2024) terms vertical segregation. In Madrid, this involves the concentration of migrants on lower floors (Leal and Sorando 2022), a pattern that is also observed in Malaga (Natera-Rivas et al. 2017) while in Barcelona, this pattern additionally includes, in 2001, upper floors of buildings without lifts. Such patterns may even reduce conventional segregation indicators (Benassi et al. 2024) and concentration patterns.

Overall, segregation values across Southern European cities remain highly heterogeneous. These variations are closely linked to socio-economic vulnerability, particularly in Spain and Italy, where southern cities tend to have smaller immigrant populations and higher levels of vulnerability (Benassi et al. 2020).

2.2 | Geographies of Migration, Poverty and Minority Concentration

According to Wacquant (2023), the causes of segregation, concentration, and the regrouping of various marginalised ethnic groups are structural in nature. Spatial separation not only physically isolates disadvantaged groups but also restricts their access to labour markets, educational opportunities, language improvements and civic networks, thereby functioning as a mechanism of structural discrimination. In the American context, the African American population is actively 'retained' in degraded urban spaces through bureaucratic (e.g., zoning regulations, public housing policies), economic (e.g., real estate market dynamics), and social (e.g., stigmatisation) mechanisms. In the European context—specifically in Paris, France—Wacquant conceptualises the urban peripheries as zones of relegation characterised by ethnic stigma and state neglect, though not by coercive confinement. This negative view of segregated areas is later nuanced (Wacquant et al. 2014), acknowledging the protective functions of concentration, its role as a refuge from a hostile society, and its potential to foster collective identities, solidarity, and political mobilisation. These positive dimensions are contrasted with the characteristics of the hyper-ghetto, an area of relegation marked by territorial stigmatisation, concentrated poverty and ethnic difference,

lacking autonomous institutions and subject to intense control by the penal state (Wacquant 2008). Hence, the concentrated spatial separation of ethnic groups produces ambivalent effects, largely determined by its geographical configuration.

2.3 | The Concentration of Immigrants and Internal Migration Processes

The concentration and segregation of immigrant populations in Southern European countries has attracted considerable scholarly attention in recent years (Benassi et al. 2024; Arbaci and Malheiros 2010), in parallel with the growth of migration and immigration flows.

Urban areas of arrival and initial integration have been identified within neighbourhoods characterised by high levels of immigration (Hanhörster and Wessendorf 2020). These areas offer infrastructures that facilitate newcomers' settlement and early incorporation into the urban fabric, thereby evidencing the presence of zones with a high concentration of migrants.

The relationship between the internal mobility of immigrant and foreign populations and their territorial concentration has been examined across various contexts. In the case of London, Stillwell (2010) identifies a process of dispersion from initial areas of concentration towards less consolidated neighbourhoods, a movement associated with upward social mobility and inferred from the social categorisation of these neighbourhoods. He distinguishes two distinct dynamics: ethnic groups tend to disperse through internal migration, whereas the native population relocates from areas where they constitute a minority to those where they are more prominently represented. These movements have opposing effects on the concentration of ethnic populations. Comparable patterns have been observed in other European cities—for instance, BråmÅ (2006) in Sweden—while in other cases, intra-urban mobility has led to increased segregation (Mägi et al. 2016, in Tallinn), or to heightened concentration and clustering of foreign populations (Rimoldi et al. 2024, in Rome).

2.4 | Intra-Urban Migration Changes

Residential changes within the same city have been attributed to a range of factors, including individual life trajectories (Bonvalet and Fribourg 1990), personal preferences and social class (Newberger et al. 2024), as well as the characteristics and geographical location of both origin and destination neighbourhoods (Brown and Moore 1970). Wachter and Hornstra (2024) identify three principal theoretical frameworks for explaining intra-urban mobility decisions. According to the theory of spatial assimilation (Massey and Denton 1985, following the ecology models of the Chicago School), an improvement in socioeconomic status typically leads individuals to relocate from areas of high concentration to neighbourhoods with more favourable socioeconomic conditions. However, in certain contexts, such improvements, particularly when linked to a shift in housing tenure from renting to ownership, do not necessarily result in relocation to better neighbourhoods, as the enhancement may be limited to housing quality alone (Wessel

et al. 2016). In contrast, the theory of place stratification posits that such upward mobility may be hindered by discriminatory practices, preventing segments of the immigrant population from accessing more desirable urban areas and thereby constraining their ability to act on their residential preferences (Lersch 2012). A third perspective, grounded in social network theory and the concept of homophily, suggests that individuals tend to prefer living in areas with a demographic composition similar to their own (Galster et al. 2024). Indeed, the presence of co-nationals has a negative effect on the probability of out-migration, as shown by McAvay (2018) for France.

In Southern Europe, Crisci et al. (2025) find that Filipinos in Rome tend to relocate to areas with a significant presence of co-nationals, with family structure emerging as one of the key determinants of intra-urban mobility. The same authors also note that certain central districts of the city remain “inaccessible” to these migrants, a pattern similar to that identified in Barcelona and Madrid (Bayona-i-Carrasco and Recaño 2026), whether due to the socio-economic profile of these areas or to prejudices within the local society (Iglesias-Pascual 2019). This difficulty in accessing specific urban areas is likely to foster suburbanisation (Crisci et al. 2025), displacing lower-income populations from city centres towards peripheral zones, as documented in the case of Madrid (Ariza et al. 2024).

The internal migration of foreign-born nationals in Spain has been examined in cities such as Valencia, where these movements have reinforced pre-existing patterns of social differentiation (Salom-Carrasco 2021). In contrast, Zaragoza has exhibited fragmented intra-urban mobility, with proximity and working-class neighbourhoods playing a predominant role (Escolano-Utrilla et al. 2021). Similar dynamics have been observed in Barcelona (Bayona-i-Carrasco 2011), where, during the first decade of the 21st century, the immigrant population gradually dispersed from the historic city centre to lower-middle-class neighbourhoods that had previously accommodated internal migrants during the rural exodus of the mid-20th century. A particular case is that of the group of migrants with high levels of education, who would tend to prefer settling in the central and more tourist-oriented areas of these cities (López-Gay et al. 2020).

3 | Statistical Sources and Methodology

3.1 | Statistical Sources

A series of microdata on intra-urban residential mobility, provided by the Statistics Department of Barcelona City Council (*Oficina Municipal de Dades*), is available for the period 2012–2021. The starting point of 1 January 2012 coincides with the peak of the economic crisis, which also marked the end of the first international migration boom and a subsequent decline in the arrival of immigrants from abroad. The series concludes in 2021, a year still subject to mobility restrictions due to the Covid-19 pandemic. Nevertheless, international migration flows began to recover towards the end of the year, reaching historic levels shortly before the onset of the pandemic.

The data, derived from the Continuous Population Register, encompasses the entire foreign-born population residing in Spain, irrespective of their administrative status. The coverage

of the immigrant population is considered to be high, as registration serves as proof of residence and is often a prerequisite for subsequent regularisation through the *arraigo* process. Nonetheless, recent concerns have emerged regarding the registration of immigrants living in shared accommodation, as property owners do not always permit residents to register under such circumstances.

The statistical unit of analysis is the Basic Statistical Area (BSA), which has divided Barcelona into 233 study zones since 2009. This is the unit through which the data are provided. A series of intra-urban changes of address in the city is available, which includes registrations and deregistrations from the municipal register due to changes of address within the city of Barcelona. The BSA for registration and deregistration is available, plus the country of origin, nationality, sex and 5-year age group. As this data is derived from the Continuous Population Register, no further statistical information is available.

3.2 | Methodology

Based on place of birth¹, ten countries of origin with the largest representation in the city have been selected: Argentina, Peru, Colombia, Venezuela, Pakistan, Ecuador, Italy, Morocco, China, and the Dominican Republic. Collectively, these groups accounted for 50.6% of the 477,000 immigrants registered in the city in 2022.

Through the application of local indicators of spatial association (LISA, Anselin 1995), residential concentration areas for the main immigrant origins in Barcelona have been identified. These indicators are constructed based on a hypothesis test for the local values of spatial autocorrelation, specifically Moran (1948):

$$I = \frac{n \sum_{i=1}^n \sum_{j=1}^n W_{ij} Z_i Z_j}{S_0 \sum_{i=1}^n Z_i^2}$$

Where:

- z_i : It is the extent to which the variable of interest deviates from the mean; $(x_i - \bar{x})$.
- Z_j : It is the difference from the average value in the unit of j , neighbouring i .
- W_{ij} : It is the value of the matrix that indicates whether i and j are considered neighbours (1) or not (value 0).
- n : It's the number of spatial units
- S_0 : It is the sum of all the intersections between neighbours.

The weight matrix was constructed by defining neighbours based on queen-type contiguity, which refers to neighbours that share a line segment (or border) or a point (or vertex). When defining the typology, the areas of concentration were identified as groups 1 (high-high) and 4 (high-low) of the classification, as these indicate the presence of high percentages of the reference population.

These areas of high concentration have been identified at two points in time, in 2012 and in 2022. The former coincides with the highest number of international migrants following the initial migration boom, while the latter is the first available count at the end of the internal mobility flow data (2021). In addition to identifying areas of concentration, their evolution has also been taken into account. Four types of evolution have been considered: (1) Areas of high concentration at both the beginning and end of the analysis period (Concentration); (2) New areas of high concentration that did not exist in 2012 and which appear in the 2022 analysis (New Concentration); (3) Areas that are no longer areas of high concentration in 2022 compared to 2012 (Deconcentration); and (4) Areas that do not appear as areas of concentration in either 2012 or 2022 (Rest or No Concentration).

Secondly, to indicate the intensity of concentration, the results were validated using the location quotient (LQ), which determines the degree of concentration. The immigration, emigration and net migration rates were then recalculated according to the degree of concentration of the different origins. The LQ is expressed as follows:

$$LQ = \frac{X_i/T_i}{X/T}$$

Where X_i refers to the population of the group under analysis in BSA i , T_i to the total population in the same BSA, and X and T to the total populations of the group under analysis and of the city as a whole, respectively.

Finally, a Dissimilarity Index (DI) was calculated in Table 1 to illustrate the territorial distribution patterns of each origin. The dissimilarity index is computed as follows:

$$DI = \frac{1}{2} \sum_{i=1}^n \left| \frac{x_i}{X} - \frac{y_i}{Y} \right|$$

where x_i is the population of group x in spatial unit i , y_i is the population of group y in the same unit i , and X and Y are the total populations of these groups in the city. The results are presented on a scale between 0 and 100.

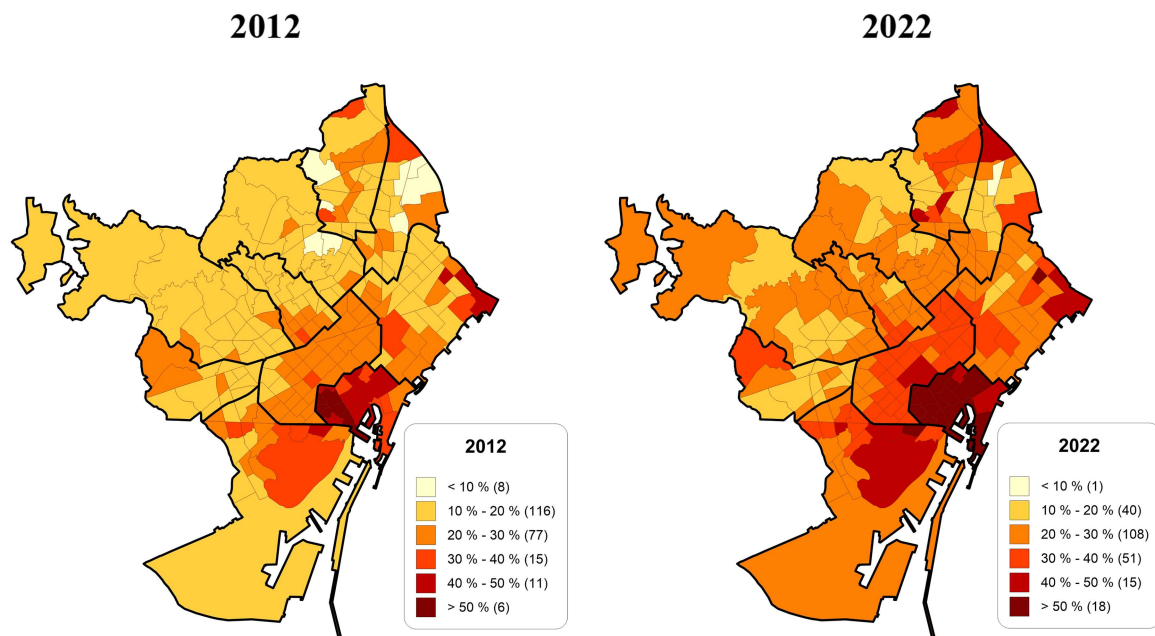
3.3 | Immigration in the City of Barcelona

The City of Barcelona, with 1.68 million inhabitants in 2024 and just over 100 km², is a densely populated city and the core of a metropolitan region with more than 5.5 million residents. At present, one in three city residents was born abroad, amounting to over half a million individuals. Although the city underwent significant internal migration during the early and mid-20th century—resulting in the development of new working-class neighbourhoods to accommodate incoming populations—it was not until the late 20th century that international immigration began to exert a substantial influence. As in other Spanish cities, Latin Americans constitute the main origin group among immigrants (50.5%), although migrants from high-income countries (17.9%) and Asians (16.7%) also stand out, with a smaller proportion of Africans (6.6%). Patterns of territorial concentration by country of origin have been identified, with notable differences between national

TABLE 1 | Population by Country of Birth in Barcelona, 2012 and 2022, and Segregation by BSA.

Country of birth	2012	2022	2012–2022		Women (%)		Dissimilarity index		
			abs.	(%)	2012	2022	ID 2012	ID2022	Dif 2012–2022
Total	1,620,943	16,36,193	15,250	0.94	52.5	52.4			
Spanish-born	1,269,957	11,58,469	−111,488	−8.78	53.2	52.8			
Foreign-born	350,986	477,724	126,738	36.11	50.1	51.4	19.2	19.6	0.4
Argentina	21,732	35,525	13,793	63.47	48.7	50.4	21.2	26.8	5.6
China	14,726	18,536	3810	25.87	52.2	55.5	26.1	25.7	−0.4
Colombia	19,303	29,095	9792	50.73	55.6	55.6	15.6	18.1	2.5
Dominican Rep.	11,922	13,312	1390	11.66	60.4	58.2	33.0	32.9	−0.1
Ecuador	25,760	23,421	−2339	−9.08	54.8	55.8	29.6	28.9	−0.7
Italy	13,038	21,925	8887	68.16	42.4	44.5	34.0	32.8	−1.2
Morocco	16,155	19,353	3198	19.80	42.9	41.9	35.3	36.2	0.9
Pakistan	23,015	24,527	1512	6.57	18.2	24.9	61.1	57.7	−3.4
Peru	24,277	29,496	5219	21.50	56.6	57.6	19.5	19.6	0.1
Venezuela	8510	26,612	18,102	212.71	52.6	53.1	21.8	16.3	−5.5

Source: Padrón continuo de población, with INE data.

**FIGURE 1** | Proportion of foreign-born population, by BSA, 2012 and 2022. Source: Padrón continuo (INE).

groups (Galeano and Bayona-i-Carrasco 2018; Martori and Madariaga 2023). High levels of concentration are typically observed among Pakistani and other Asian communities (e.g. Indian and Filipino), as well as among sub-Saharan African populations (Gastón-Guiu and Bayona-i-Carrasco 2023). Moderate concentrations are found among Moroccan and Dominican residents. Although located in somewhat different areas, a similar degree of concentration is also observed among European Union immigrants, who tend to reside in central and higher-income neighbourhoods. In contrast, Latin Americans and other European migrants are characterised by a high degree of spatial dispersion.

The period under study (2012–2021) also witnessed renewed migration growth (Domingo et al. 2021), alongside emerging

challenges such as increasing touristification and gentrification (Cocola-Gant and Lopez-Gay 2020), which further constrained access to housing in the city, particularly in recent years.

4 | Results

4.1 | Foreign-Born Immigration and Spatial Concentration in the City of Barcelona

During the decade under analysis (2012–2022), the immigrant population in Barcelona grew significantly, rising from 351,000 individuals in 2012 to 477,000 in 2022. This represents an increase of over 126,000 residents and a growth of 36% (Table 1). In terms of spatial distribution, the analysis based on

BSA data reveals a widespread rise in the presence of foreign immigrants across nearly all areas of the city (Figure 1). The zones with a predominant immigrant population expanded from six in 2012—concentrated in the same neighbourhood, El Raval—to 18 in 2022. These new concentrations emerged not only throughout the central district of Ciutat Vella² and its adjacent areas, but also for the first time in BSAs located farther from the initial integration zones, particularly in the north-eastern part of the city along the Besòs River.

2012, 2022

Of the ten origins considered in this study, nine will experience population growth between 2012 and 2022. This growth will range from a minimum of +6.6% among Pakistanis to a maximum of +212.7% among Venezuelans. Meanwhile, the number of Ecuadorians will decline by −9.1%. This reflects the evolution of these origins in Spain. Some of these groups exhibit significant differences in gender composition, ranging from the feminisation of most Latin American nationalities (with the exception of Argentina) to a higher proportion of men among Moroccans and, in particular, Pakistanis, where only 18.2% are women. In terms of their territorial distribution, the degree of residential segregation at the BSA level has been calculated using the dissimilarity index (DI). Overall, the results indicate that segregation remains low (see Table 1), with a slight increase for the immigrant population as a whole between 2012 (19.2) and 2022 (19.6). Notable increases in population have led to higher segregation among Argentinians (from 21.2 to 26.8) and Colombians (from 15.6 to 18.1), while it has decreased among Venezuelans (from 21.8 to 16.3). All of these groups remain at levels considered low. Despite the decrease in segregation, Pakistanis continue to exhibit figures significantly higher than those of other ethnic groups (57.7), reflecting the higher levels of segregation observed in previous studies of the Asian population (Gastón-Guiu and Bayona-i-Carrasco 2023). Meanwhile, the segregation of Moroccans, which increased from 35.3 to 36.2 between 2012 and 2022, is close to that of Italians (32.8) and Dominicans (32.9).

With regard to the areas in which these groups are concentrated, both Morocco and Pakistan exhibit a notable presence in the historic district of Ciutat Vella. However, Pakistanis are almost exclusively concentrated in the Raval neighbourhood, whereas Moroccans are also found in other clusters located in the eastern part of the city, along the Besòs river. These areas are characterised by low-income levels and have expanded in recent years (Figure 2). A total of 31.4% of Pakistanis and 33.4% of Moroccans reside within these concentration zones.

Argentinians and Italians also exhibit a significant presence in the central area, although their distribution extends well beyond the district boundaries and into adjacent districts characterised by considerably higher income levels. In these cases, 40.7% and 38.4% of the population, respectively, reside in these central areas. The nature of centrality differs markedly between the first two groups and the latter two, reflecting the distinct functions performed by the urban core. This area is characterised by a high proportion of rental housing and by clear processes of gentrification and touristification. It is an

example of competition between population groups with marked socio-economic differences.

Individuals from other countries are not commonly found in this part of the city centre. Ecuadorian and Peruvian populations are generally located in the north-western areas of the city, without forming concentrated enclaves. This settlement pattern resembles that of the Dominican community, whose areas of concentration are relatively recent and are gradually disappearing from the historic centre. These areas account for 26.1%, 30.5%, and 23.6% of the populations of Ecuadorians, Peruvians, and Dominicans, respectively. The latter group has largely vacated Ciutat Vella, with new concentrations emerging in the northern parts of the city. Colombians and Venezuelans exhibit a similar spatial distribution, although they are also present in certain sectors of the Eixample district, located in the central municipality. In these areas, 21.8% and 24.8% of the Colombian and Venezuelan populations reside, respectively. Lastly, 31.9% of the Chinese population is concentrated in two clearly defined enclaves situated on the periphery of the city centre.

4.2 | Intra-Urban Migration and Its Evolution

Between 2012 and 2021, over half a million intra-urban migrations (515,502) were recorded among the immigrant population in Barcelona. The number of moves in 2012 stood at 58,808, followed by a steady decline until 2016 (38,416). This downward trend was then reversed, culminating in a new peak of 66,256 in 2021, after a temporary drop in 2020 due to mobility restrictions imposed during the Covid-19 pandemic (from 53,000 in 2019 to 46,000 in 2020). This evolution reflects a shift in the share of total intra-urban moves accounted for by immigrants: from 53.7% in 2012% to 47.3% in 2020, before rising again to 56.4% in 2021. In certain age groups where immigrants are overrepresented—particularly among young people—their share of internal mobility reaches as high as 70%. This is largely attributable to the small size of native-born cohorts, a consequence of persistently low fertility rates since the early 1980s, especially in large cities, as well as delayed emancipation, with many individuals aged 20–29 still living with their parents. These patterns are shaped by fluctuations in international immigration and pressures in the housing market (Bayona-i-Carrasco and Recaño 2026). Mobility declined during the years of economic crisis, while both new immigrant arrivals and rental prices increased.

The evolution of mobility is significantly impacted by origin, gender and time period. The ten origins analysed here demonstrate varying degrees of intensity and evolution (Figure 3). The decline in intra-municipal migration caused by the pandemic was particularly intense among Pakistanis. Starting from high levels of migration, which were higher among men, Pakistani migrants have experienced a continued decline in migration rates, from values close to 300 per thousand per year to rates below 100 per thousand. Currently, female Pakistani migrants are more mobile than male Pakistani migrants. In the other cases, Venezuelans stand out for their high intensity, which has been the highest in the city since 2016, with similar

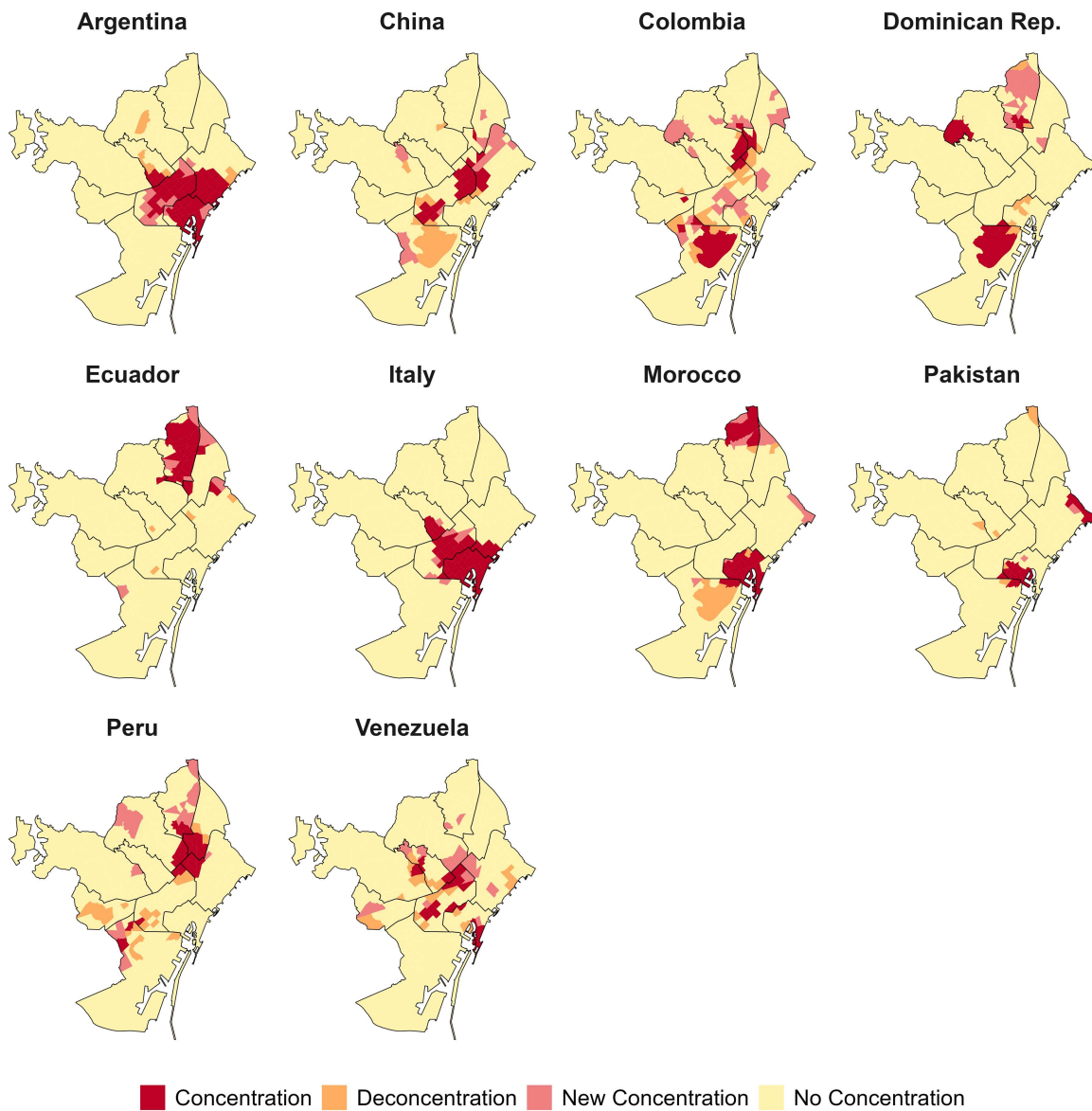


FIGURE 2 | Evolution of concentration areas by origin, 2012–2022. Source: *Padrón Continuo de población* (INE).

values between the sexes. The Moroccan community, especially women, shows the lowest intensity.

4.3 | Migration and Geographic Concentration

Having defined the four typologies in relation to concentration, the first step involved examining the overall volume of internal residential movements based on migratory exchanges between these four categories, aggregating the results for the ten origins analysed. Notably, areas classified as “non-concentration” play a significant role in intra-urban mobility. Although these zones are often overlooked in favour of areas with high concentrations of immigrant populations, it is precisely the non-concentration areas that account for 59% of residential movements among individuals from the ten main origin groups within Barcelona. These zones also constitute the principal destination: movements occurring entirely within non-concentration areas represent 44%

of the total. This highlights the limited role that concentration areas play for certain groups, which corresponds with low levels of segregation (Figure 4).

When comparing the two periods, the main change from 2017 to 2021, compared to 2012 to 2016, is the decline in the importance of areas of concentration in migratory flows. While 13.6% of intra-urban migration took place between these areas between 2012 and 2016, their weight fell to 10.3% between 2017 and 2021. Internal movements within these areas, therefore, decreased by 30%, while transfers from concentration areas to “Rest” areas increased by 15% (from 8.6% to 9.9%). This trend is widespread: flows from all types of areas to the rest are growing and account for around half of all mobility. These flows are also becoming increasingly important. At the same time, new concentration areas are receiving a higher percentage of flows, rising from 7.9% to 9.1%. This means their share is growing over time. Overall, areas of concentration account for one-third of flows.

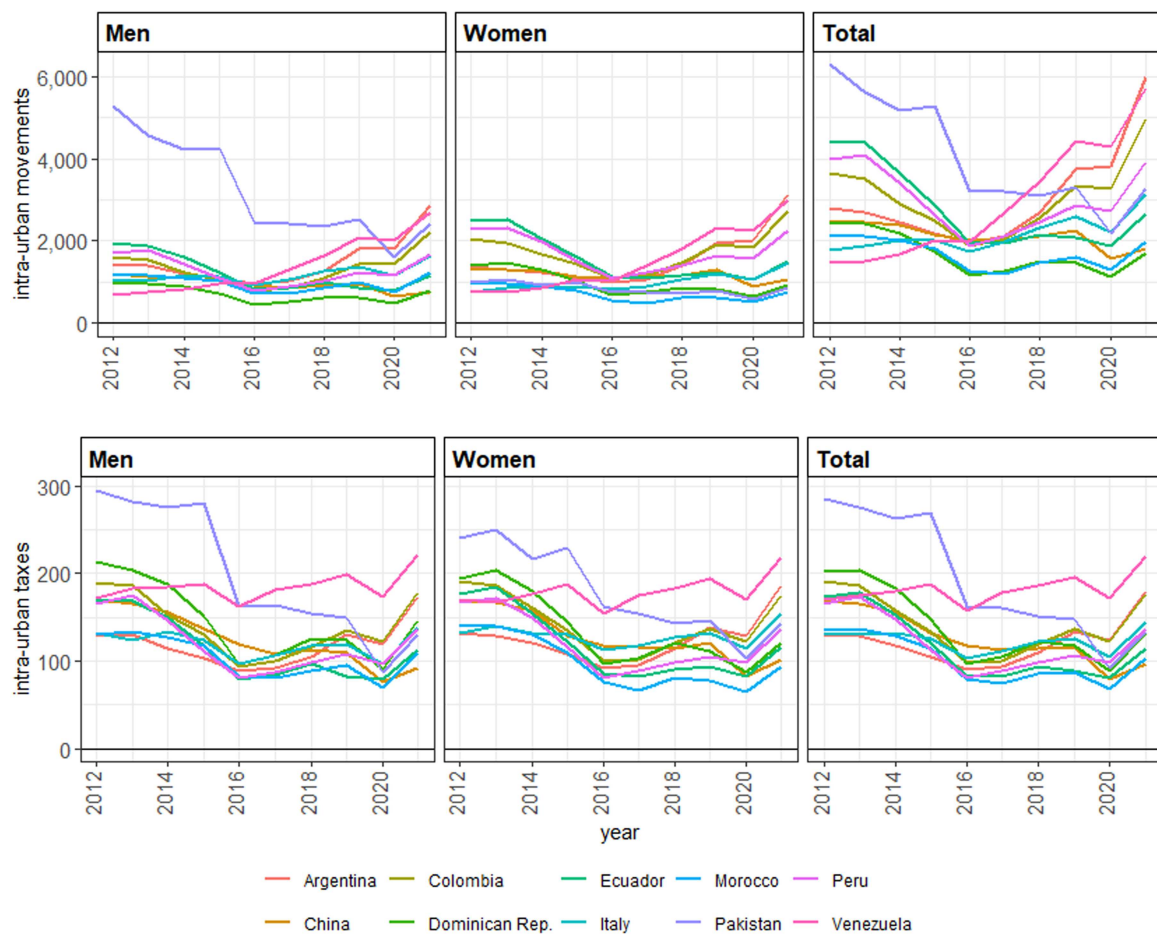


FIGURE 3 | Gross intra-urban mobility rates, by origin and gender, 2012–2021, Barcelona. *Source: Estadística de Cambios de Domicilio (Barcelona Statistics Office), and Padrón continuo de población (INE).*

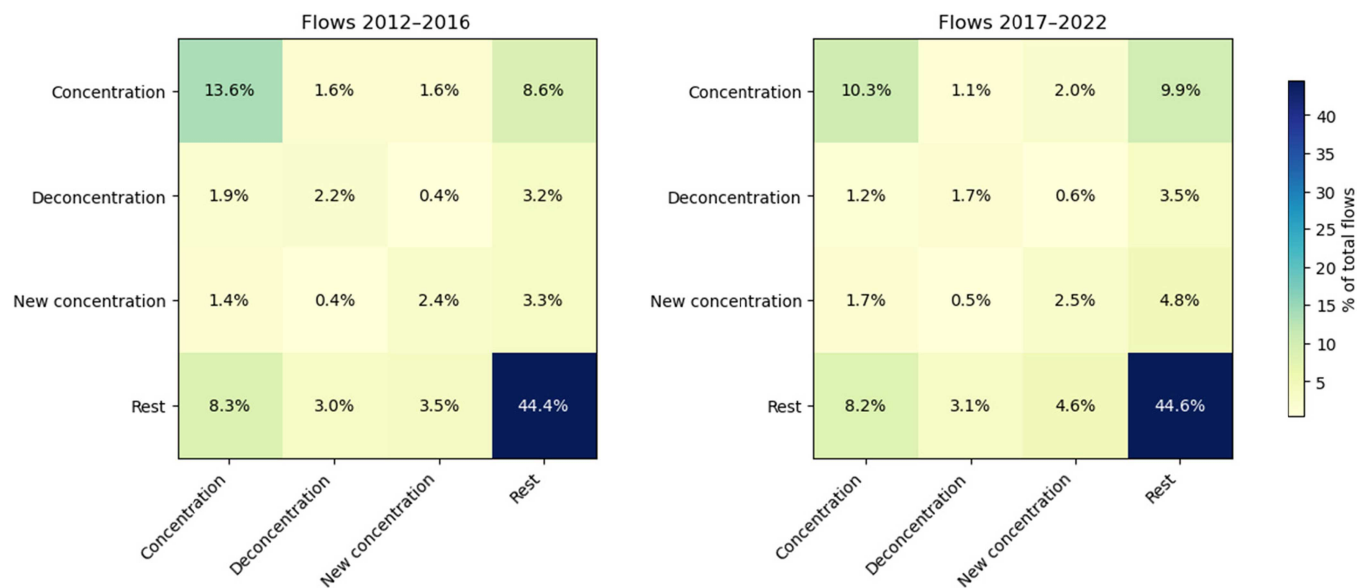


FIGURE 4 | Share of intra-urban movements by origin and destination concentration type, by period, Barcelona (all groups analysed). *Source: Estadística de Cambios de Domicilio, (Barcelona Statistics Office). Note: rows indicate origin, columns indicate destination.*

The annex provides detailed information on each of the ten origins analysed in this study (Figures A1 and A2). It illustrates the varying significance of mobility within the areas of concentration, ranging from a minimum of below 5% in both Venezuela and Colombia in both periods, to a maximum of above 20% in Pakistan, peaking at 24% between 2012 and 2016. High mobility percentages are also observed in Argentina and Italy. These figures provide insight into the volume and extent of mobility and the areas of concentration for each origin.

Secondly, gross immigration, emigration and net migration rates have been calculated for each of the origins, differentiating between the period 2012–2016, when internal migration in the city declined, and 2017–2021, when it showed signs of recovery (Figure 5). During the initial period, the rates were generally higher in areas of Concentration, in terms of both entry and exit. When this is not the case, the highest rates are observed in areas of New Concentration (as with Italians, Pakistanis and Dominicans). In any case, the values are always significantly higher than in areas of Deconcentration or in the Rest. The lowest relative mobility was observed in areas identified as non-concentration zones. Only one exception was noted: in the case of Moroccan nationals, the immigration rate was slightly higher in areas of Deconcentration. During the second period, 2017–2021, the rates were lower than during the first, with the exception of Venezuelans, whose rates increased markedly, and Argentinians, who experienced a more modest rise. Rates remained relatively stable among Colombians and Italians. These four nationalities are

precisely those that recorded the most significant growth in population stocks, particularly over the past 5 years.

For the remaining groups, the decline was substantial, especially among Pakistanis, Moroccans, Dominicans, and Ecuadorians—either due to a decrease in population, as in the Ecuadorian case, or due to minimal growth in the others. There appears to be a clear correlation between the evolution of population stocks and intra-urban rates, which we associate with greater internal mobility during initial settlement phases, and increased stability linked to longer periods of residence in the city. In this second period, emigration rates continued to be highest in areas of Concentration, whereas immigration rates were generally higher in newly concentrated areas. This would be the case for Pakistanis, with an emigration rate of 75.5‰ in areas of Concentration and an immigration rate of 69.8‰ in areas of New Concentration.

Figure 6 shows net migration to examine the difference between immigration and emigration rates in greater detail, revealing certain significant patterns. In most cases, net migration to areas of concentration shows negative balances, which are more pronounced in the 2017–2021 period than in the 2012–2016 period. Deconcentration is also accompanied by negative balances, though there are some exceptions (e.g. Ecuador and Morocco). By contrast, new concentrations experience positive intra-urban balances in most cases, particularly among those with more concentrated distribution patterns, such as Pakistanis, Dominicans and Chinese. The results indicate heterogeneity between different origins but also reveal a common pattern that supports the role of internal migration in the dynamics of concentrated areas.

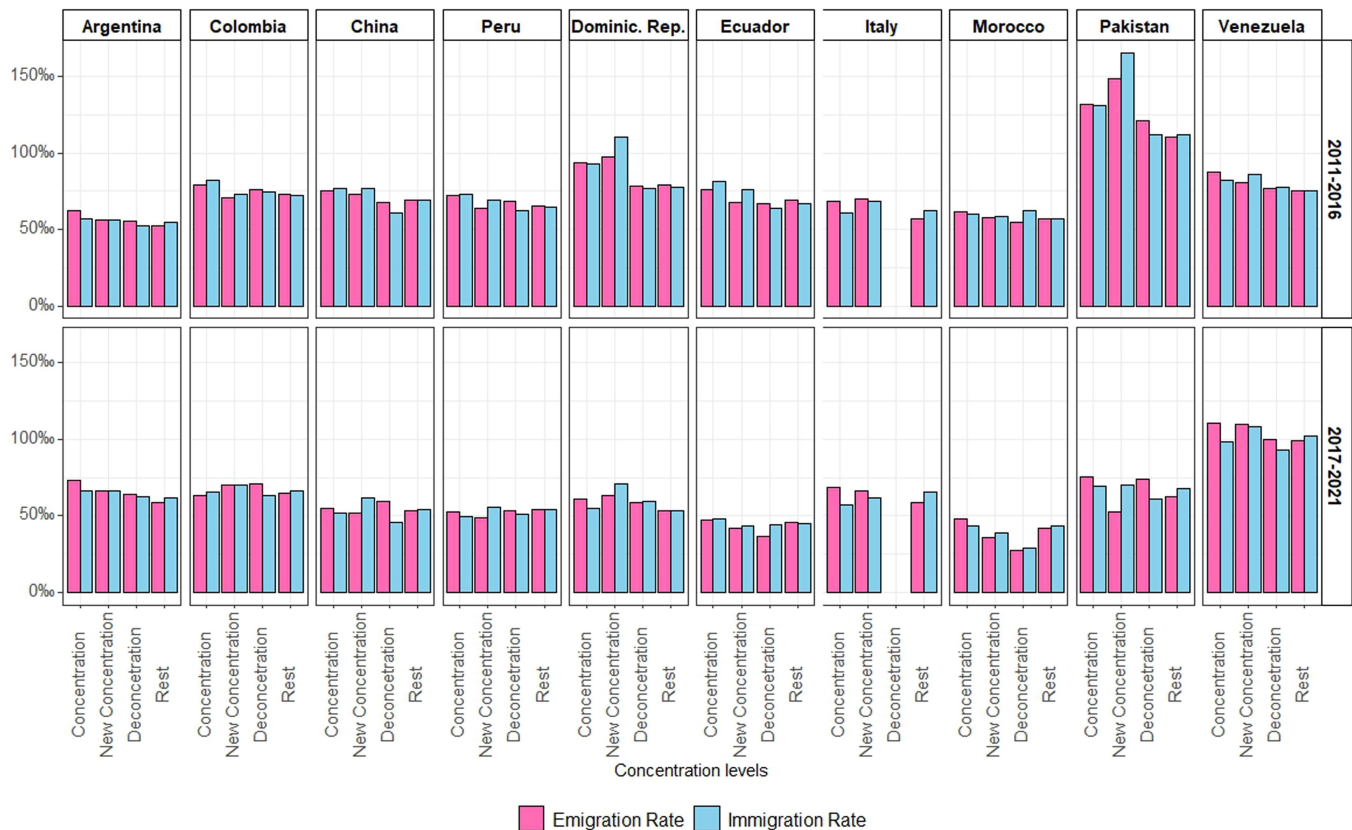


FIGURE 5 | Gross immigration and emigration rates, by origin, period and type of concentration, Barcelona. Source: *Estadística de Cambios de Domicilio* (Barcelona Statistics Office), and *Padrón continuo de población* (INE).

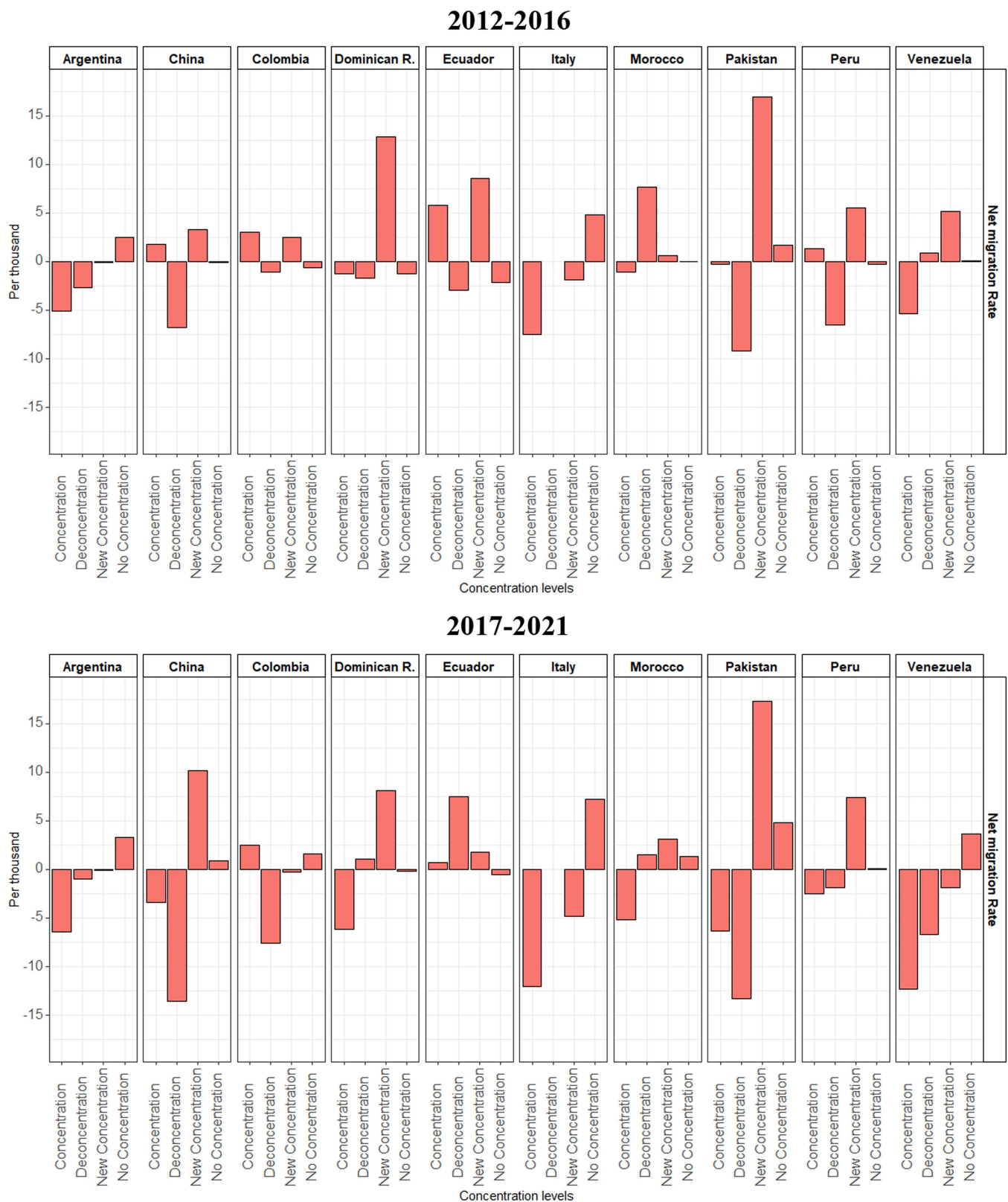


FIGURE 6 | Net migration rate by origin and type of concentration. Source: *Estadística de Cambios de Domicilio* (Barcelona Statistics Office), and *Padrón continuo de población* (INE).

2012-2016

In fact, in a context of strong migratory flows, such as that studied here, it is the migratory dynamics with the outside

world that most clearly influence the evolution of these areas. Figure 7 illustrates this: the weight of the Others on population dynamics is calculated based on total growth and growth due to intra-urban migration. This remainder, which includes natural

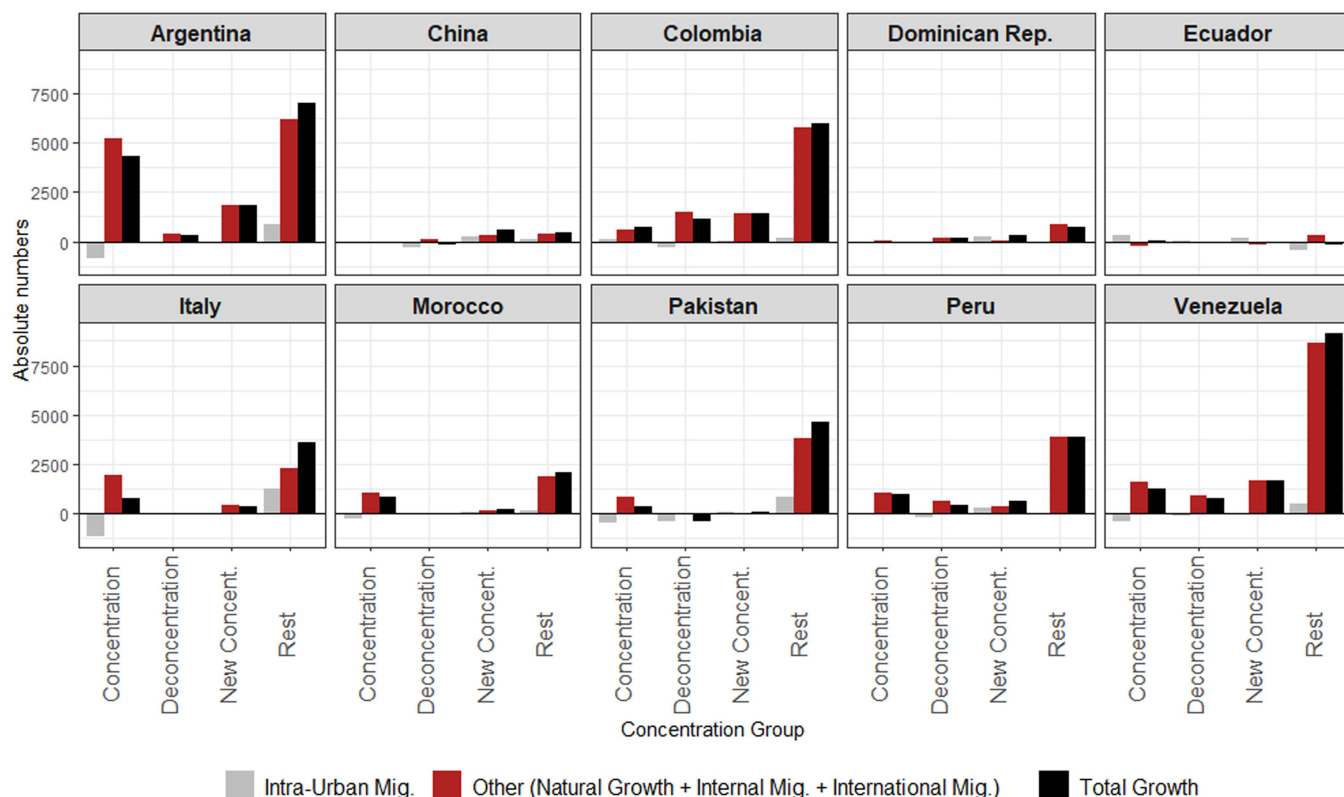


FIGURE 7 | Contribution of internal migration balance to population growth, Barcelona, 2012–2021. Source: *Estadística de Cambios de Domicilio* (Barcelona Statistics Office), and *Padrón continuo de población* (INE).

dynamics (births minus deaths) and migratory dynamics, is primarily the result of migration beyond the city limits, both within the rest of the country and abroad. Nevertheless, it is evident that internal migration negatively impacts the evolution of areas of concentration, except in cases where initial concentration is low (Ecuadorians and Colombians).

4.4 | Intra-Urban Migration By Intensity of Concentration

Secondly, the same analysis was conducted using the location quotient, which enables the identification of varying intensities of spatial concentration. The areas identified as zones of concentration (Figure 8) largely coincide with those previously detected through spatial association techniques. In contrast to the initial analytical approach, this method reveals clearer distinctions between areas of underrepresentation, particularly highlighting the absence of immigrants in the city's more affluent north-western neighbourhoods. This pattern is especially evident in the cases of Ecuadorians, Peruvians, and Dominicans. At the same time, the analysis differentiates between origins characterised by low levels of segregation—such as Colombians and Venezuelans—and those exhibiting higher levels, such as Pakistanis, both in terms of concentration and underrepresentation (Figure 8).

In this case, only net migration rates are represented (see Figure 9). As can be seen, these behave similarly to the rates shown above, although they are more regular in this case. Therefore, areas with the highest concentration intensity

($LQ > 2$) exhibit negative net migration rates from all origins. Conversely, areas with lower concentrations (LQ between 1.1 and 2) continue to experience negative rates, except for the most segregated groups, such as Pakistan, Morocco and the Dominican Republic. The sole exception is Peru. Conversely, BSAs with no clear concentration (LQ between 0.9 and 1.1) or slight underrepresentation (LQ between 0.5 and 0.9) all exhibit positive internal migration balances. However, areas with lower concentrations do not always achieve positive intra-urban migration rates, which ultimately reinforces the idea that certain immigrant groups cannot access these areas, as demonstrated by their distribution within the city.

5 | Discussion and Conclusions

This paper contributes to the literature on intra-urban migration and immigrant spatial assimilation by providing longitudinal evidence on how residential mobility reshapes patterns of concentration within a Southern European context. Unlike much of the existing literature in Spain, which has focused on suburbanisation processes or static measures of segregation, this study emphasises the role of intra-urban mobility as a key mechanism of spatial redistribution.

During periods of intense international immigration, such as those observed in Barcelona, the challenge of linking territorial concentration dynamics with internal residential mobility lies in the significant influence of external migratory flows on the spatial distribution of the immigrant population and the formation of areas of concentration. These external factors often

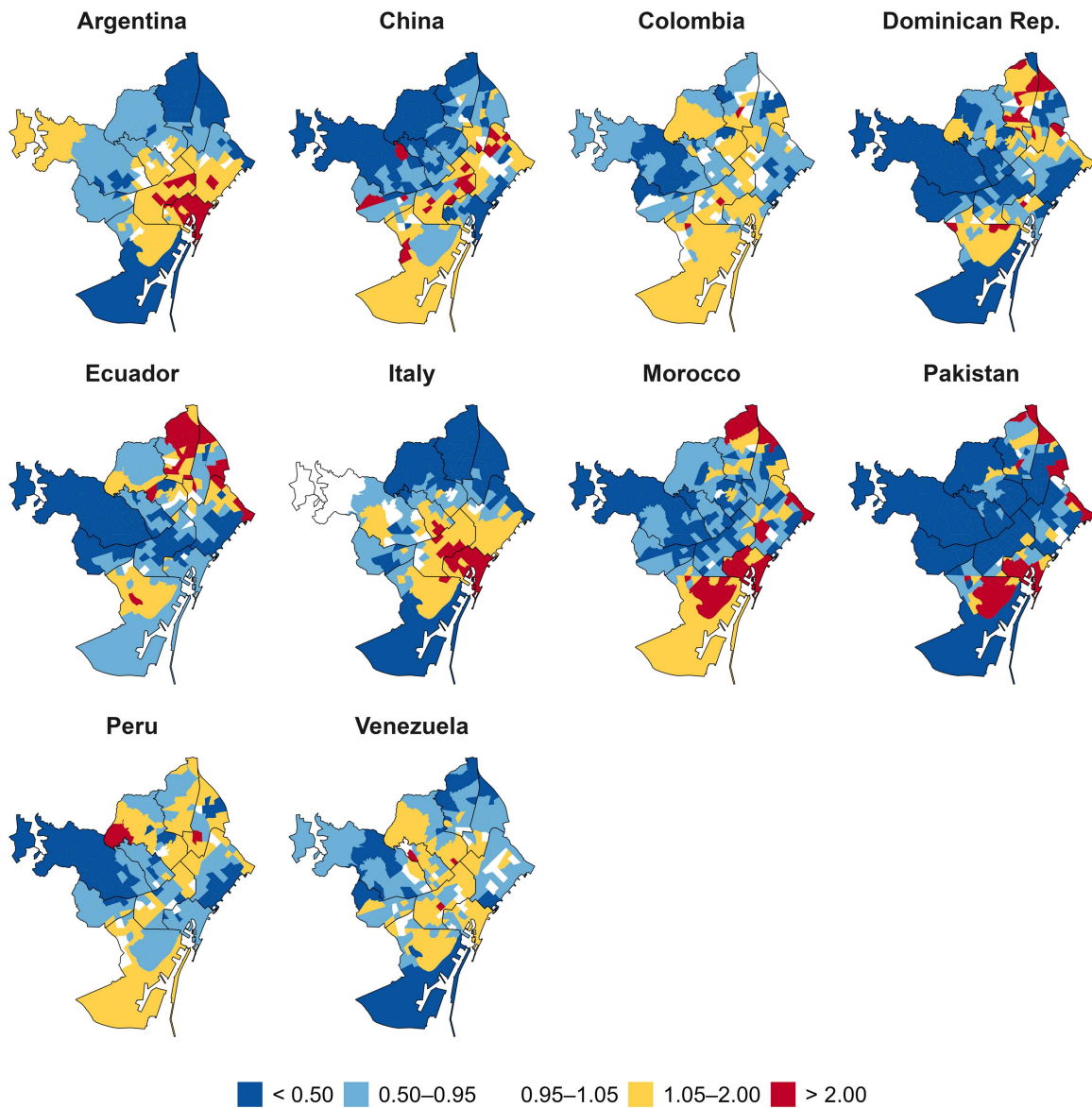


FIGURE 8 | Distribution of the foreign-born population according to the Location Quotient, Barcelona, 2022. Source: *Padrón continuo de población, 2022* (INE).

outweigh the effects of internal redistribution. Nevertheless, intra-urban mobility offers valuable insights into the spatial behaviour of immigrant groups already settled in the city, where patterns of deconcentration tend to prevail. The findings thus point to the coexistence of diverse dynamics related to concentration and internal mobility within the urban context, with immigrant populations adopting varied strategies of integration. In general, areas of concentration exhibit negative net migration rates, consistent with their role as zones of initial arrival followed by subsequent redistribution. However, many of these areas continue to function as entry points, as the immigrant population continues to grow overall.

The starting point was the hypothesis that the predominant movement was one of dispersion from an initial settlement centre experiencing high migratory pressure towards peripheral areas with lower incomes. While this may have been the case in Barcelona at the beginning of the century (Bayona, 2011), this is no longer evident in 2012 or in subsequent years. Moreover, these dynamics vary

according to the area of origin. The nature of the concentration areas and the sociodemographic characteristics of migrants partly explain the attraction and expulsion dynamics. Migrant groups with lower levels of education and higher vulnerability tend to be displaced from the city centre to the outskirts, as is also the case for the native population, as observed in Madrid (Ariza et al. 2024). By contrast, groups with greater purchasing power are more likely to remain in central areas or disperse into non-concentrated neighbourhoods. At the same time, rising property prices driven by processes such as touristification in the city centre (Singh and Botelho 2022) may reduce the presence of more vulnerable groups through a classic process of gentrification, leading to their displacement, which is often interpreted as dispersion.

This intersectional approach enables the identification of three types of urban spaces based on the internal mobility patterns of the migrant population: restricted spaces, characterised by limited access; rebalancing concentration spaces, where the previously high presence of migrants tends to decline; and distribution spaces,

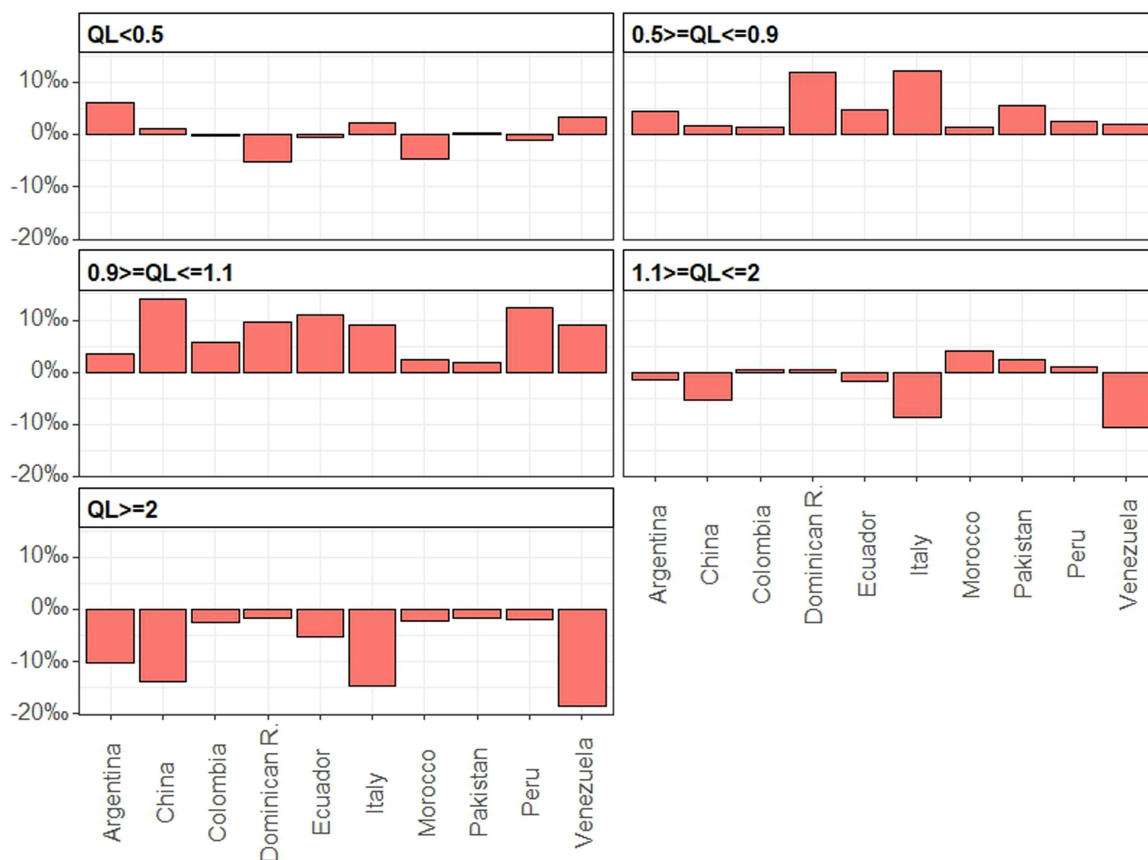


FIGURE 9 | Net migration rate by origin and type of concentration (Location Quotient), 2012–2021. *Source: Estadística de Cambios de Domicilio (Barcelona Statistics Office), and Padrón continuo de población (INE).*

which encompass the remainder of the territory and the majority of the city. In restricted spaces, pronounced differences linked to socioeconomic status are evident. For most of the groups analysed—such as individuals from Peru, Ecuador, the Dominican Republic, or China—these areas correspond to the city's higher-income districts, such as Sarrià-Sant Gervasi, in line with patterns identified in cities such as Rome (Crisci et al. 2025). These dynamics reinforce the concept of place stratification, particularly in the most desirable areas. In contrast, for Italians and Argentinians, restricted spaces are located in lower-income areas, such as Nou Barris. This interpretation is based on a qualitative assessment of neighbourhood socioeconomic conditions; future research should incorporate income data at the neighbourhood level to assess its effects on mobility.

The findings provide only partial support for spatial assimilation theory. While some groups exhibit patterns consistent with upward mobility and dispersion towards less concentrated areas, others remain confined to specific parts of the city, suggesting the continued relevance of place stratification mechanisms. Importantly, intra-urban mobility does not systematically lead to upward spatial assimilation. In several cases, movements towards less concentrated areas take place within lower-income neighbourhoods, reflecting residential mobility within similar socioeconomic contexts, often driven by housing constraints.

At the same time, the representation of areas of concentration and their relative weight within intra-urban flows encourages reflection on their analytical significance for understanding the internal

residential mobility of the migrant population. Firstly, these areas of high concentration, which are common to the different origins studied, have consistently experienced a reduction over time through internal migrations with negative net balances. Secondly, it is significant that more than half of the recorded displacements do not occur between areas of concentration, whether current or past, but rather correspond to the rest of the urban space. Therefore, while areas of concentration are important, there is a discrepancy between their quantitative significance and their place in our imagination and in academic and political narratives on segregation, migration, inequalities and mobility.

Considerable attention has been paid to so-called concentration zones and ethnic enclaves in literature, institutional practice and the mass media. Such areas are frequently stigmatised and associated with the concept of a “ghetto” or “problematic neighbourhood” (Wacquant 2007; Slater 2013). They are also the focus of a significant proportion of urban and social interventions. By definition, any “comprehensive” intervention combining social and urban regeneration plans is only applied in areas of this type. In many cases, these areas are symbolically associated with certain ethnic or national groups. For example, Barcelona's Raval neighbourhood is associated with the foreign population in general and with the Pakistani, Filipino, Bangladeshi and Moroccan populations in particular. This association reinforces an essentialist narrative about the territory and its relationship with the national origin and resources of the resident population. This leads to two considerations: Firstly, we must question whether research is excessively focused on these areas and, by doing so, whether we are reinforcing the ghetto

image. Second, the emphasis on these areas can cause us to project a distorted image of certain groups, exaggerating their connection to vulnerability and exclusion. It is also important to highlight the territorial and socio-economic heterogeneity of migratory trajectories in relation to concentration (Bayona-i-Carrasco 2007). Given their significant presence, it is advisable to include visual, cartographic and discursive representations that reflect the diversity of situations within each group. In the case of migrant groups in particular, these representations should not only reflect situations associated with vulnerability or concentration.

To avoid overemphasising the focus on areas of concentration, we must incorporate an interest in fragmentation at all scales and at a conceptual level (Rubiales-Pérez et al. 2025). This would encompass everything from the experience of individuals residing or passing through areas that “do not belong to them”, to the fragmented segregation experienced by small groups concentrated in buildings or small administrative areas. This also has methodological consequences, the most important of which is avoiding the hasty burial of “non-spatial indicators of territorial segregation” (Garrocho and Campos-Alanís 2013). As the results explain, LISA and spatial autocorrelation overemphasise some areas of concentration over others. For example, comparing the distribution of the Pakistani population in Barcelona using LISA indicators (Figure 2) with location coefficients (Figure 8) reveals that the former tends to render invisible areas with a significant presence of this group, such as one of the BSAs in the Gòtic Quarter, where over 10% of the total population resides. This bias stems from spatial autocorrelation and its ability to take into account the values of neighbouring units. Classifying according to autocorrelation patterns sometimes dilutes the intense but fragmented presence of certain groups in both peripheral areas bordering other municipalities and along the Besòs axis in the east of the city. A unit with high values may not appear as a significant cluster if it is surrounded by units with low values. Conversely, units with moderate values may be integrated into a cluster simply by contrast with their neighbours. These statistical effects mean that it is unwise to rely on a single indicator or scale to understand segregation and, in our case, intra-urban mobility. This means that areas with low levels of segregation exhibit large concentrations compared to more segregated and territorially concentrated areas. Finally, if we understand concentrations as dynamic, we cannot know to what extent the identification of new flows towards areas that until now had no presence of a specific origin is a trend towards deconcentration or whether we are facing the embryo of a new area of concentration, which only time will tell. Understanding the dynamics of internal displacement is crucial for discerning how the population is redistributed within the city, and how this alters the concentration and dispersal dynamics of different origins.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the Departament d'Estadística, Barcelona City Council. Restrictions apply to the availability of these data, which were used under license for this study. Data are available from the author(s) with the permission of the Departament d'Estadística, Barcelona City Council (Oficina municipal de Dades, OMD).

Endnotes

¹The data analysed concern the population classified by country of birth. This variable was selected in preference to nationality owing to the substantial incidence of naturalisation among Latin American populations. This choice necessarily excludes descendants, who could not have been comprehensively considered if nationality had been used as the criterion. Internal mobility among individuals born in Spain—an aspect not addressed in this study—tends to increase at younger ages, with descendants representing approximately 40% of this group.

²Figure A3 in the appendix identifies the main geographical locations referred to in the article.

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Annexes 8



FIGURE A1 | Percentage of internal movements according to the concentration of the area of origin and destination, by period and country of birth in Barcelona.



FIGURE A2 | Percentage of internal movements according to the concentration of the area of origin and destination, by period and country of birth in Barcelona.

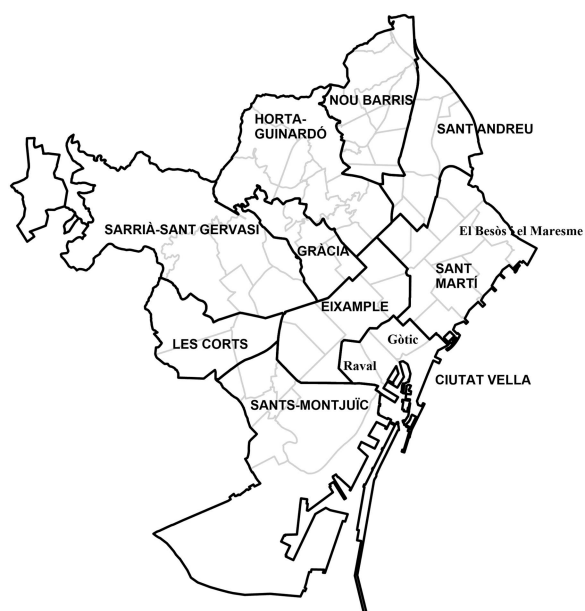


FIGURE A3 | Districts (in uppercase) and main neighbourhoods of the city of Barcelona.