Article

Urban Studies

Urban Studies
1–22

DOI: 10.1177/00420980221135592
journals.sagepub.com/home/usj
SAGE

Ethnic residential segregation in the city of Milan at the interplay between social class, housing and labour market

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Abstract

This article analyses the spatial distribution of foreigners living in the city of Milan, based on data from the civil registry and relying on theories and methods from the residential segregation literature, exploring the dimensions of evenness, exposure, concentration, centralisation and clustering, as well as analysing migrants' over/under-representation in specific areas through maps of their location quotients. Despite the low degree of ethnic residential segregation detected, we highlight the presence of persistent dynamics that exclude ethnic minorities from the wealthiest areas of the city. The most relevant case is that of the Chinese, clustering in some peripheral areas north of the historic centre, where they have established an enclave economy, often making their residence coincide with their workplace and running commercial activities mostly directed towards their compatriots. The Egyptians, constituting the most numerous foreign group in the city, show a completely different settlement pattern, being more integrated into the social tissue and more scattered throughout the city. In the context of a city strongly polarised between a wealthy centre and progressively deprived peripheral belts, the only foreign groups with a marked presence in the city core are those traditionally employed in domestic work, which are however excluded from life in the public places in which they reside. Overall, the class dimension seems to prevail over the ethnic in shaping population settlement patterns within the city.

Keywords

ethnic segregation, urban segregation, residential segregation, Milan, foreigners

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摘要

本文基于民事登记处的数据，依托居住隔离文献中的理论和方法，分析了居住在米兰市的外国人的空间分布，探索了均匀度、暴露度、集中度、中心度和集群度等维度，并通过区位商地图，分析了移民在特定地区的代表情况，是过度代表了还是代表不足。尽管有资料显示米兰的民族居住隔离程度较低，但本文强调将少数民族排除在城市最富裕地区之外的现象是一直存在的。最相关的案例是中国人，他们聚集在历史中心以北的一些周边地区，在那里建立了飞地经济，通常他们的住所与工作场所重合，开展主要针对其同胞的商业活动。埃及人作为城市中数量最多的外来族群，表现出截然不同的聚居模式，他们更好地融入了社会组织，在城市中更加分散。在两极分化极其严重的城市，一边是富裕的城市中心，一边是日益贫困的外围地带，在城市核心地区，明显能够看到的外国群体只是那些传统上从事家政工作的人，然而他们被排除在他们所居住区域的公共生活之外。总的来说，在塑造城市内的人口聚居模式方面，阶级维度似乎比种族影响更大。

关键词

民族隔离、城市隔离、居住隔离、米兰、外国人

Received February 2022; accepted October 2022

Introduction

Population settlement patterns within the urban environment are mainly the consequence of the socio-economic and morphological structure of the city, local governance, housing policies, past migratory flows and social ties within ethnic groups. The study of residential segregation from an ethnic standpoint represents a fundamental dimension for the understanding of the urban structure as a whole, not exclusively concerning the question of foreign residents. This study is aimed at investigating the spatial distribution of foreigners living in the city of Milan,[1] making use of the most recent data available from the civil registry and relying on the theoretical and methodological framework of the residential segregation literature. As the presence of foreigners has increased in the last decades, it is relevant to grasp whether ethnic segregation emerged in Milan, exploring how settlement patterns of the immigrant population developed and discovering the potential drivers behind them.

Ethnic residential segregation

The concept of ethnic segregation (Massey, 1985) refers to the extent to which two or more groups of different ethnicities are separated from each other within the urban space (Musterd, 2005: 332). Such processes of residential location are structural in their origins, being the product of an interaction between the place itself and its residents, shaping urban relegation as a collective activity by means of relations of economic, social and symbolic power, driven by institutional mechanisms (Wacquant, 2016: 1078). The study of residential segregation has ancient roots in social sciences and represents one of the first and most influential contributions of the Chicago Ecological School, following the famous analysis of the spatial collocation of migrants conducted by Park et al. (1925). The pioneering investigations on American ghetto cities (Cutler et al., 1999; Massey and Denton, 1993) guided similar studies in the European context, highlighting distinct models of residential

segregation, with the racial dimension not playing such an important role, and the socio-economic dimension prevailing in shaping residential patterns in the urban space (Musterd, 2005: 335).[2] Following Wacquant (2016: 1080), American ghettoes and European working-class peripheries differ in their structure, function, and scale, and in the political treatments they receive. In his conceptualisation of segregation as the outcome of an interplay between class, ethnicity and state, repulsion in the American ghetto is determined by ethnicity, inflected by class and intensified by the state, whilst relegation in European peripheries is driven by class position, inflected by ethnonational membership, and mitigated by state structures and policies. Accordingly, housing market discrimination, access to information on housing, and accessibility of jobs have been detected as crucial drivers in the US, whilst in Europe–despite being relevant–these have contributed less to residential location as compared to deeply rooted cultural factors (language barriers, reliance on internal support, cultural identity), being attenuated by social housing, public transport provisions, and more redistributive policies and generous welfare systems (Musterd, 2005: 339). Notwithstanding this basic distinction, a single European model of residential segregation is hard to find, due to heterogeneities in countries' arrangements, colonial heritages, and in the geographical origins of migrants present in European countries (Bergamaschi et al., 2021: 153). Specifically, in the Southern European context to which Italy belongs, migratory flows have only acquired greater importance in relatively recent times (Ambrosini, 2011: 62), meaning that the phenomenon of foreigners' urban settlement is in perpetual change and needs to be constantly observed to be properly understood.

The Milanese context: Socio-economic profile, urban morphology and settlement schemes

Commonly defined as Italy's economic capital, Milan acts as one of the most attractive poles for migrants of various origins, due to an integrated labour market in a wider metropolitan area of over three million inhabitants that is capable of absorbing job supply across all economic sectors. After having recovered from the considerable impact of the 2007 Great Recession, the city is currently struggling with the aftermaths of the COVID-19 recession and the consequences of global events (international conflicts, energy crisis, global warming). It is the second city in Italy, after Rome, in terms of the absolute number of foreigners, and the first in terms of the foreign proportion of the total population. Structurally, the city is markedly distinguished between a wealthy centre and peripheral areas gradually characterised by situations of higher socio-economic disadvantage, in both relative and absolute terms. The urban structure traces the distinctions between the historical borders of the Municipality of Milan, coinciding with the current historic centre delimited by the *Spanish Walls*, and the surrounding territories. These latter areas are impacted first by internal migration flows from the southern regions that have taken place since the 1950s (Foot, 1997) – as a consequence of the settlement of national migrants in social housing complexes built following the urbanisation and industrialisation processes that took place from the 1940s to the 1970s (Petsimeris, 2018: 265) – and subsequently by the transnational migration flows that began in the 1970s and have intensified since the 1990s, which approximately replicated the settlement paths of Italian southern migrants (Davico and Mela, 1999: 38). Since the 1970s, the city has undergone a profound process of de-industrialisation due to global

changes in the division of labour, which has led to a reconfiguration of the social structure and the use of physical space by its inhabitants (Petsimeris and Rimoldi, 2015: 187). This transition towards a post-Fordist economy has contributed over the years to widening the economic gap between the rich and the poor (D'Ovidio, 2009: 55). It has reinforced the distinction between a centre increasingly less inhabited by middle and working classes (Barbagli and Pisati, 2012: 222), which became a prerogative of institutions, prestigious companies and the wealthiest groups (Petsimeris and Rimoldi, 2015: 187), and a periphery in perpetual redefinition as a result not only of urban regeneration and gentrification projects, but also of global economic trajectories and an orientation towards local neoliberal policies that tend to exacerbate existing socio-economic inequalities, with tangible consequences on the equitable access to residential places (Agustoni et al., 2015: 131; Bergamaschi et al., 2021: 154).

Ethnic segregation in Italy and Milan

Several empirical contributions have approached the issue of ethnic segregation in relation to the Italian case (Barbagli and Pisati, 2012; Bergamaschi et al., 2021; Bernardotti and Zanoni, 1996; Casacchia et al., 2012; Catalanotti and Consolazio, 2020; Cristaldi, 2012; Davico and Mela, 1999; Ferruzza et al., 2008; Marra et al., 2020; Mazza and Punzo, 2016; Petsimeris, 2018; Rimoldi and Terzera, 2017; Russo Krauss, 2014; Strozza et al., 2016), agreeing that the classic definition of ghetto as a place in which ethnicity and space combine to define, isolate and contain a minority group (Marcuse, 1997: 228),[3] finds no application. The most appropriate definition would be that of enclave, which is a spatial concentration developed voluntarily by a group for the purpose of promoting the well-being of its members (Marcuse, 1997: 228). In such a context, the concentration of ethnic groups in the urban space is due to the activation of social networks consisting of mainly strong ties (Ambrosini, 2011: 89), jointly with the reduced margin of choice of economically fragile individuals who must necessarily opt for the less attractive options available on the real estate market (Davico and Mela, 1999: 38), sometimes activating forms of extra-family cohabitation to lighten the economic burden (Lanzani, 1998: 98). Studies referring to the Milanese case, which are now mostly outdated, have highlighted a continuous turnover among the quantitatively most present groups in the territory, a progressive distancing of foreigners from the historic centre, and the establishment of enclaves in relation to specific ethnic groups in some peripheral areas, in a context of generally limited segregation. Following Lanzani (1998) it is possible to identify five types of foreign settlement in Milan. The first refers to the occupation of areas close to the historic centre, as in the case of the Chinese in the Sarpi neighbourhood, where migrants reuse spaces left empty by the Italians, typically buildings of low architectural and real estate quality, often used in a hybrid way as places of residence and working activity (Pisati et al., 2020: 26). The second type regards settlements that took place in somewhat peripheral areas, but that are still well connected to the centre, characteristics that together with low-quality – though not degraded – building heritage act as an attractive pole for migrants, fostering their concentration (e.g. Loreto and Corvetto). The third modality identifies those subjects and groups living in rooms or mini apartments in the place where they work, being employed in domestic activities (e.g. caregivers, cleaners, janitors). Their localisation is therefore common in the historic centre – the area in which the Italians who possess the economic resources to recruit domestic

workers live – but their public presence in the areas where they live is limited. A further modality favouring proximity between migrants and natives is given by the existence of buildings or neighbourhoods where public housing is equally assigned to Italian and foreign citizens, a situation that sometimes leads to conflict between migrants and natives or even between the latter and the public administration (e.g. Stadera, Umbria, Molise and Calvairate). Within this modality, the combination of the state's financial disinvestment in public housing and the growing number of precarious international migrants has led to the creation of informal markets of public housing squatting (Chiodelli et al., 2021). The affordable housing crisis started in the 2000s generated grey spaces of illegal occupations of vacant dwellings, often controlled by small criminal groups, with possible subsequent regularisation by the local authorities. Common to the whole national context, such a phenomenon has become particularly relevant in Milan, with some areas (e.g. Selinunte, via Gola, and Chiesa Rossa) acting as an informal magnet for newcomer migrants due to a combination of vacant dwellings and rooted networks of nationals abroad. Finally, the fifth settlement type does not produce concentration or territorial density, but rather an 'interstitial' geography that concerns the occupation, often illegal, of degraded areas close to the historic centre or in extremely remote, abandoned and sometimes hidden spaces that involve situations of deprivation, marginality and illegality.

In light of the above, it is interesting to outline an updated picture of the situation of foreign residents in the Municipality of Milan, to grasp ongoing trends and changes compared to the few studies that have focused on the city. This study sets out to empirically investigate the status of ethnic segregation in Milan, connecting the findings achieved with the current debate on the drivers of residential patterns in European cities and providing a descriptive and interpretive framework from which to understand segregation processes at the interplay between individual choices and structural forces.

Data and methods

Investigating ethnic residential segregation was possible due to access to the anonymised individual data of the civil registry of the Municipality of Milan. The extraction of the data – which is updated daily – was carried out on 22 November 2021. As a territorial unit for the analysis, a decision was made to use the subdivision of the Municipality into 177 Functional Areas (average area: 1 km^2; average population in 2021: 7,968 inhabitants), which is intermediate between the census blocks (6,085 units; average area: 0.03 km^2; average population in 2021: 232 inhabitants) and the NILs (*Nuclei di Identità Locale*, 'local identity units'; 88 units; average area: 2.1 km^2; average population in 2021: 16,026 inhabitants). Due to their small size, the census blocks are too detailed for the purposes of this analysis, sometimes corresponding to individual buildings and therefore failing to grasp the neighbourhood dimension. Conversely, the NILs, despite their identity connotation,[4] could fail to capture residential segregation at the right scale, given their large size. The Functional Areas – partially superimposable on the NILs, though not enjoying their identity characteristics – represent a balanced operational choice with respect to the need for territorial units that respond to the logic of the neighbourhood, being at the same time of small size. As a unit of analysis, we opted to use families rather than single individuals, as the use of individual data may distort the segregation indexes that are computed according to the size of the household, which are much diversified between families of different nationalities. The use of the family

Table 1. Descriptive statistics of the study population. Source: our elaboration of Milan civil registry data, 2021.

Country of origin	N households	% of tot. household	% of foreign households	N individuals	% males	% females	M/F ratio	Components per household	% change 2001–2021*
Italy	600,283	78.1	–	1110,291	47.8	52.2	0.92	1.85	−0.52
Egypt	22,904	3.0	13.6	44,483	69.9	30.1	2.32	1.94	+ 118
Philippines	19,625	2.6	11.7	41,480	44.4	55.6	0.80	2.11	+ + 76
China	18,062	2.4	10.7	35,667	48.8	51.2	0.95	1.97	+ + 251
Peru	9770	1.3	5.8	18,031	42.4	57.6	0.74	1.85	+ + 76
Romania	9141	1.2	5.4	15,913	41.0	59.0	0.69	1.74	+ + 527
Sri Lanka	9101	1.2	5.4	18,542	52.9	47.1	1.12	2.04	+ + 104
Bangladesh	7615	1.0	4.5	11,259	77.1	22.9	3.38	1.48	+ + 530
Ukraine	6320	0.8	3.8	8921	21.1	78.9	0.27	1.41	+ + 3.593
Ecuador	6238	0.8	3.7	12,103	43.9	56.1	0.78	1.94	+ + 211
Morocco	4863	0.6	2.9	8934	55.5	44.5	1.25	1.84	+ + 928
Other foreign	54,587	7.1	32.4	84,700	47.2	52.8	0.90	1.55	+ + 20
Overall foreign	168,226	21.9	100	300,033	50.6	49.4	1.02	1.78	+ + 92
Total	768,509	100	–	1410,324	48.4	51.6	0.94	1.84	+ + 10

*Based on SISI data (http://sisi.comune.milano.it/).

– as characterised in the civil registry by individuals living together in the same house – as a unit of analysis allows attention to be drawn to the place where the family resides, regardless of the number of its components. Each family has been assigned the nationality of the data sheet's reference person. To grasp the multidimensionality of concept, we relied on Massey and Denton's (1988) traditional identification of five dimensions of residential segregation, namely: evenness, exposure, concentration, centralisation and clustering, measured by means of the dissimilarity (D), isolation (xPx), relative concentration (RCO), absolute centralisation (ACE), and spatial proximity (SP) indexes. To visually observe and assess the over/under-representation of each of the main groups of foreigners, the location quotients (LQ) were calculated and displayed cartographically. All indexes were computed using the open-source software Geo-Segregation Analyser (Apparicio et al., 2014).

Results

As Table 1 shows, 168,226 foreign families were present in Milan at the time of data extraction (for a total of 300,033 registered individuals), corresponding to 21.9% of the registered households (21.3% of individuals). The 10 most represented countries, on which we focused our analyses, were Egypt, the Philippines, China, Peru, Romania, Sri Lanka, Bangladesh, Ukraine, Ecuador and Morocco, whose citizens living in Milan make up 14.8% of the overall families, as well as 67.6% of foreign ones. Including Italians, there are 169 different nationalities in Milan, plus 19 stateless residents.

The average number of components per household and the different composition by gender of the nationalities examined denote the existence of different settlement patterns, where Bangladeshis and Ukrainians show both the lowest number of average

Table 2. Segregation indexes for the 10 most represented foreign groups in Milan.

Dimension	Evenness; Dissimilarity Index (*D*)	Exposure; Isolation Index (*xPx*)	Concentration; Relative Concentration Index (*RCO*)	Centralisation; Absolute Centralisation Index (*ACE*)	Clustering; Spatial Proximity Index (*SP*)
Egypt	0.41	0.06	0.09	0.24	0.03
Philippines	0.24	0.03	0.16	0.31	0.03
China	0.39	0.05	0.20	0.29	0.27
Peru	0.22	0.02	−0.03	0.22	0.03
Romania	0.20	0.01	−0.08	0.22	0.03
Sri Lanka	0.23	0.01	0.07	0.30	0.02
Bangladesh	0.51	0.03	0.23	0.36	0.00
Ukraine	0.13	0.01	0.06	0.32	0.03
Ecuador	0.24	0.01	−0.01	0.23	0.03
Morocco	0.39	0.01	−0.07	0.19	0.19
Values	[0; 1]	[0; 1]	[−1; 1]	[−1; 1]	[0; 1]
Cut-off	<0.30 low; >0.60 high	<0.50 low; >0.70 high	<0.70 low; >0.70 high	<0.80 low; >0.80 high	<0.10 low; >0.60 high

Source: Our elaboration of Milan civil registry data, 2021.

components per family and the largest difference in terms of gender composition (followed closely by the Egyptians on the latter aspect), suggesting the presence of both male (Bangladeshi and partly Egyptians) and female (Ukrainian and partly Romanians and Peruvians) single-family settlement models. Conversely, Chinese, Filipinos, Sri Lankans and, to a lesser extent, Ecuadorians stand out for larger and more gender balanced households. It is worth noting that the foreigner population has nearly doubled over the last 20 years, counterbalancing the steady demographic decline of the Italian population in the same period.

Table 2 shows the indexes computed for each of the 10 most represented groups of foreign families, with the cut-offs for their interpretation[5] (Massey and Denton, 1989; Tammaru et al., 2014).

Dissimilarity Index (evenness)

Evenness refers to the differential distribution of two social groups among areal units in a city (Massey and Denton, 1988: 283). The *D* conceptually represents the proportion of minority members that would have to change their area of residence to achieve an even distribution (Massey and Denton, 1988: 284). Such an index does not allow an absolute assessment of the segregation phenomenon, but rather a pair comparison between each ethnic group, in our case each minority with the majority group. The index varies between 0 and 1, and for each combination values below 0.30 and above 0.60 identify, respectively, similarities and dissimilarities in residential models between the groups considered. In comparison with the Italian population, the Bangladeshi ($D = 0.51$), Egyptian ($D = 0.41$), Chinese and Moroccan ($D = 0.39$) families stand out for being characterised by a greater dissimilarity, whilst the Ukrainians ($D = 0.13$) were the most analogous to the Italian population. Moreover, the values indicate the absence of groups strongly distinct from each other in relation to their residential profile (Table A1 in the Appendix).

Isolation Index (exposure)

Residential *exposure* refers to the degree of potential contact, or the possibility of

interaction, between members of a minority group within geographic areas of a city (Massey and Denton, 1988: 287). The xPx measures the probability that the residence area is shared exclusively with members of the same group (Massey and Denton, 1988: 288), providing a measure of isolation (non-exposure). The values can be thus interpreted as the probability for a family to share the area of residence with another family of the same nationality. In our case, the values of the index are all very low.

Relative Concentration Index (concentration)

Concentration refers to the relative amount of physical space occupied by a minority group in the urban environment (Massey and Denton, 1988: 289). Groups that are settled in a small fraction of space compared to that potentially available are said to be concentrated. The RCO measures the share of urban space occupied by a minority group compared to the majority group, whereby a score of 0 means that the two groups are equally concentrated in urban space, a score of 1 means that minority's concentration exceed majority's concentration to the maximum extent possible, and a score of –1 the converse. The highest values are found for Bangladeshis (RCO = 0.23), Chinese (RCO = 0.20) and Filipinos (RCO = 0.16), the only groups showing a moderate tendency to concentrate in specific areas compared to Italians, bearing in mind that the scores are generally low.

Absolute Centralisation Index (centralisation)

Centralisation is the degree to which a group is spatially located near the centre of an urban area (Massey and Denton, 1988: 291). The ACE expresses the degree of proximity of a particular group to the city core. Positive values indicate the tendency of a group to reside in the centre, negative values indicate the tendency to live in the surrounding spaces, and a score equal to 0 indicates a uniform distribution between centre and periphery (Massey and Denton, 1988: 293). The central area has been identified by the borough (*Zona di Decentramento*) number 1, corresponding to the so-called ring of the Spanish Walls, namely the historic centre of Milan. Though they are all positive, the low values indicate an overall uniform distribution of foreigners throughout the city. The highest values are found for Bangladeshis (ACE = 0.36), Ukrainians (ACE = 0.32) and Filipinos (ACE = 0.31), representing the groups with the greatest tendency to be located in the historic centre. Moroccan families (ACE = 0.19) were the mostly settled in the peripheries.

Spatial Proximity Index (clustering)

Spatial *clustering* refers to the extent to which areal units inhabited by minority members adjoin one another, or cluster, in space (Massey and Denton, 1988: 293). If areas with a marked concentration of a given group are also contiguous and form a vast, compact and homogeneous whole, the segregation can be considered stronger than if the same areas were scattered throughout the urban environment and separated by areas with different profiles (Oberti and Préteceille, 2017: 41). The low values indicate that minority areal units are widely scattered around the urban environment, with the partial exception of the Chinese (SP = 0.27) and the Moroccans (SP = 0.19), reporting a moderate clustering.

Location quotients

The calculation of the LQs allows observation of the residential segregation patterns of the groups in the different areas, measuring

their relative concentration within the urban space (Isard, 1960). LQs' values vary between 0 and ∞; LQs equal to 1 indicate a distribution of the group in a specific area equal to the distribution of the same group in the rest of the city; values greater or less than 1 represent, respectively, an over- and an under-representation of the group in the area. The maps in Figure 1 provide a cartographic visualisation of the LQs for each foreign group, whereby white areas ($0.00 < LQ \leqslant 0.85$) denote an under-representation, light grey areas ($0.85 < LQ \leqslant 1.20$) denote a neutral condition, dark grey areas ($1.20 < LQ \leqslant 2.00$) identify an over-representation, and black areas ($LQ > 2.00$) identify a more marked over-representation, the intensity of which is to be related to the upper limit reported in the legend for each group.[6] The LQs highlight a general under-representation of foreign families in the historic centre, except for Sri Lankans, Ukrainians and Filipinos, for whom, however, no situations of marked over-representation in central areas were detected. Overall, foreign families are over-represented in peripheral areas and most groups are excluded not only from the historic centre, but also from its surrounding areas, which are indeed white in every map except for that referring to Ukrainian families, the most heterogeneously scattered throughout the study area. Despite these common traits, the settlement in the suburbs is not homogeneous among families of different nationalities. The Chinese tend to cluster north of the centre, with a relatively small presence in the rest of the city. The Egyptians are instead concentrated in various non-contiguous areas around the peripheral belt, similar to Bangladeshis and Moroccans. These groups are those with the highest LQ values (max. LQ Bangladesh = 11.20; China = 5.77; Egypt = 5.35; Morocco = 5.29), reflecting a greater trend to concentrate in certain areas, bearing in mind that the values are not particularly high in absolute terms. Contrarily, albeit with differences between them, Peruvians, Romanians, Sri Lankans, Ecuadorians, Ukrainians and Filipinos display a more heterogeneous settlement in peripheral areas, with appreciably lower LQs.

Discussion

The results reached were in line with comparative studies indicating that the foreigners living in Milan are among the least segregated minorities in the European panorama (Arbaci, 2007: 409; Lichter et al., 2016; Musterd, 2005: 334).[7] Indeed, we detected low forms of segregation, with marked specificities in relation to each group. Overall, we found a scarce settlement of migrants in the areas surrounding the historic centre, even less than in the centre itself, together with a strong concentration of each foreign group in small fractions of the urban space available. Compared to other European Cities, the Milanese case presents some peculiarities. Regarding socio-economic segregation, the clearly distinct centre–periphery pattern is not common elsewhere, with most major cities having their upper-class more scattered throughout the city (Tammaru et al., 2020). Exceptions closer to the Milanese case are seen in London (Manley, 2021) and Paris (Préteceille, 2016), though these do not show the same spatial overlapping between social and ethnic segregation, due to more historically rooted models of migration deriving from the colonial past of their countries. Compared to Milan, such cities are also characterised by far higher ethnic segregation levels.

Recalling Lanzani's (1998) typology, it is clear that the Chinese community has extended beyond the Sarpi neighbourhood, settling most of its adjacent areas in a contiguous way. This may have happened because of the growth of this group (+ 251% households over the last 20 years, corresponding

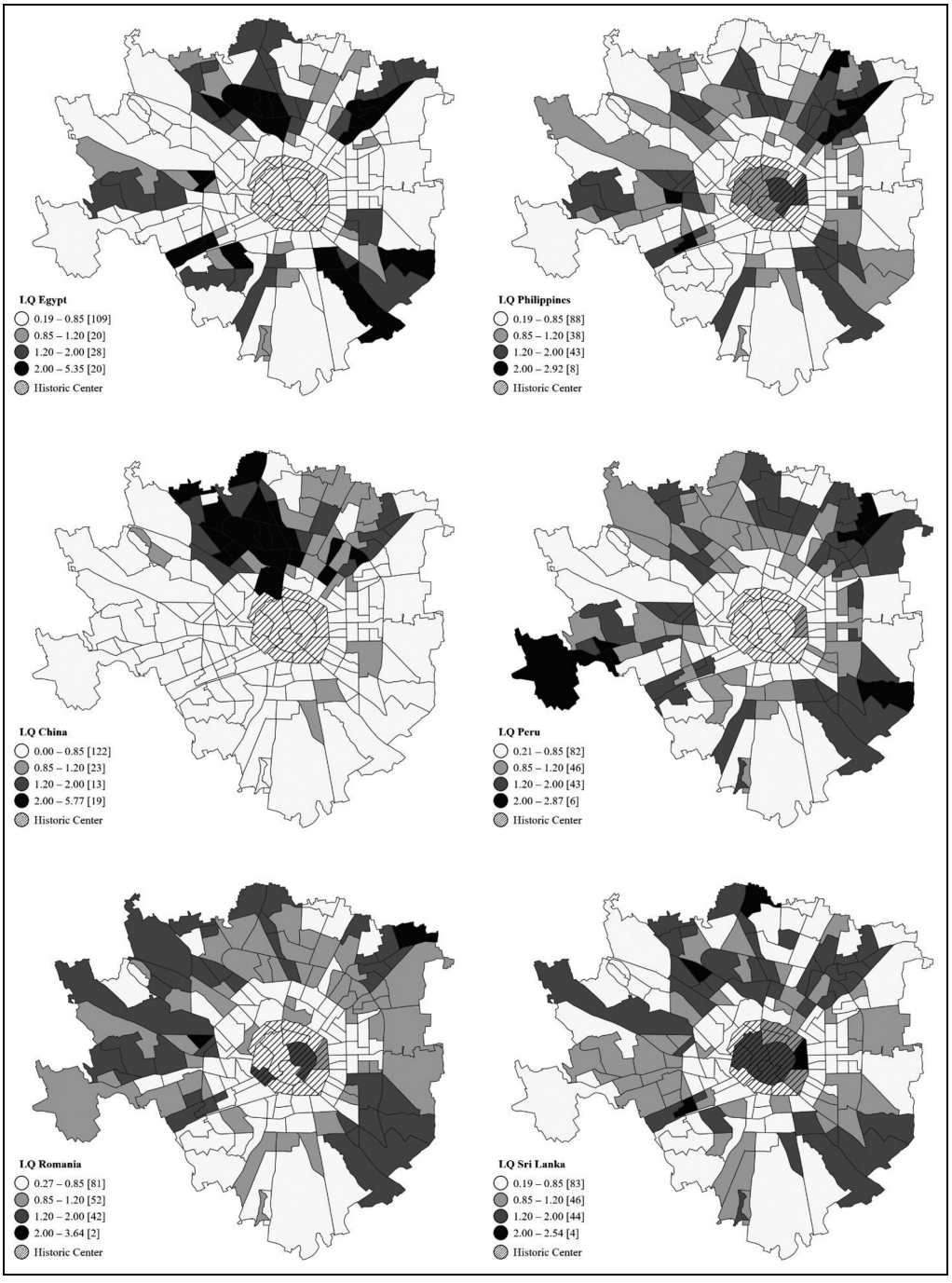

Figure 1. Continued

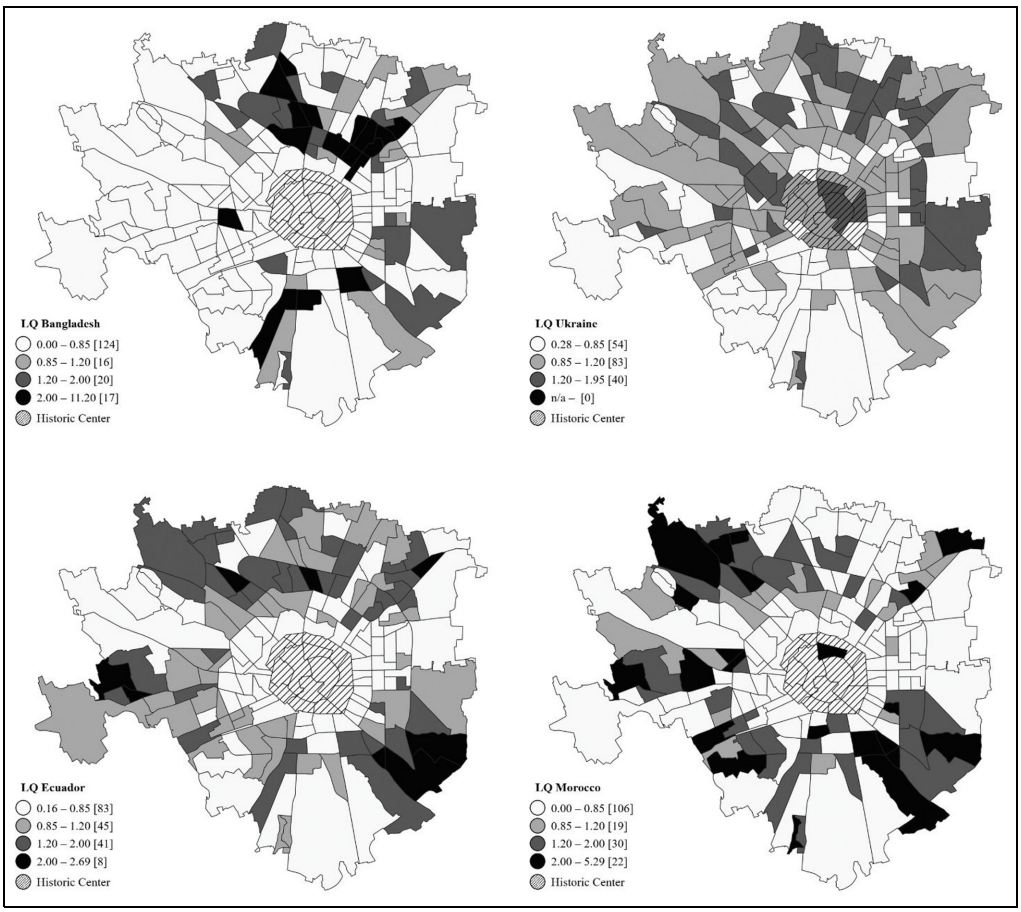

Figure 1. Location Quotients of the 10 most represented foreign groups in Milan. Numbers in brackets indicate the amount of areas in each class.
Source: Our elaboration of Milan civil registry data, 2021.

to an increase of 22,935 individuals), but also due to the gentrification that occurred in the area first in the 1990s and subsequently in the 2010s (Manzo, 2016), which may have contributed to pushing some residents to outer areas. The second modality, concerning migrants' settlement in peripheral areas, finds evidence in the spatial distribution of most of the foreign groups. Regarding the third modality, a relevant settlement in central areas was found for Ukrainians, Filipinos and Sri Lankans – those nationalities traditionally employed in the domestic sector not integrated in nor using the public space in which they reside. These are over-represented in the historic centre, where the highest incomes are concentrated and therefore is where the families best able to hire domestic workers are located. The fourth modality is witnessed by the overlapping between the areas where migrants are mostly settled and those identified by Petsimeris (2018: 271) as the object of public housing interventions over the years. Concerning the fifth modality, though the irregular status of this kind of micro-settlements prevents us

from having data to explore it, it is relevant to mention that nomad camps can be viewed as neo-ghettoes (Clough Marinaro, 2015), being the manifestation of a general escalation in anti-Gypsyism in Italy resulting in the spatial relegation of a stigmatised group, presenting key characteristics of the ghetto's definition: ethnic homogeneity, spatial confinement, shared cultural identity, mutual distancing and a retreat into the private sphere of the family (Powell, 2013).

Though not noticing intense forms of segregation, it is evident that some urban areas emerge as particularly attractive for foreigners, due to a combination of social networks and market logics. Concerning the latter, the overlap between the spaces inhabited by migrants and the socio-economic characterisation of the Milanese area is clear: the territorial distribution of incomes is highly unequal, with a much higher concentration in the centre and a gradual decrease moving to the surrounding areas and finally to the suburbs (Figure A2 in the Appendix). Real estate prices for both ownership and rent contribute to an even more marked geographical subdivision in the comparison between centre and periphery (Morena et al., 2021) (Figures A3 and A4).[8] Though we did not perform a quantification of socio-economic residential segregation, superimposing the maps of the distribution of foreigners, income and real estate, suggests that – in line with existing knowledge (Musterd, 2005; Wacquant, 1996, 2016) – in the Milanese case the class dimension plays a greater role in determining housing location compared to the ethnic dimension. Consistently with this, municipal-level survey data highlights the lower socio-economic status of the Milanese migrant population compared to the Italian one, with lower educational levels, a higher share of employment in manual jobs (Table A2 in the Appendix) and lower incomes (Table A3). Moreover, foreigners are more likely to be overqualified (e.g. among university graduates they are far less likely to reach managerial/executive positions compared to Italians), indicating a problem not only of job credentials but also of social integration (Table A4).

Hence, the reasons for migrants' non-establishment in central areas are attributable not so much to intentional processes of self-exclusion or to the exclusion by the majority group who lives there, but rather to the inaccessibility of these spaces for the most disadvantaged classes, whether they are of Italian or foreign origin. The foreign presence in the historic centre, relatively consolidated up to the early 2000s, has gradually decreased to the point of becoming underrepresented a decade later and even shrank in the following decade (Bergamaschi et al., 2021: 163). This gradual abandonment of central areas by migrants seems to be driven by the growing gentrification of the areas in question, becoming less and less accessible to foreigners once they have been redeveloped to become more attractive for the wealthiest groups (Barbagli and Pisati, 2012: 222). Despite the implications in terms of segregation, the process seems to be driven by socio-economic forces rather than ethnic, whereas the abandonment of central areas would be a common condition of the most disadvantaged groups, whatever their origin. As noticeable from the LQs, most of the peripheral areas stand out for hosting several nationalities, still being inhabited chiefly by Italians, characterising themselves as multiethnic yet likely not socially mixed neighbourhoods.

In the marked centre–periphery dualism that distinguishes Milan, the central areas would be characterised by a form of reverse segregation, being inaccessible to the most disadvantaged classes of any origin, as well as to foreigners from low-income countries not included in the third modality identified by Lanzani. This self-segregation does not

take place in the form of the third modality identified by Marcuse (1997) in addition to the ghetto and the enclave, namely that of the citadel, voluntarily and physically isolated by the dominant group to distance itself from those who do not belong to the elite.[9] Rather, entry barriers rest on solid economic, social and cultural foundations, intangible but no less concrete and insurmountable. A further proof of the segregation dynamics present in the territory was provided by the analysis not of residential patterns, but rather of school choice, whereby it has been ascertained that in the choice of school for their children in compulsory education, Milanese families often do not opt for the nearest public institution, but for private or public schools that may also be located far from home, as long as they do not have high ratios of non-Italian students, following white flight logics (Cordini et al., 2019; Pacchi and Ranci, 2017).

Concerning the groups investigated, the most interesting case is that of the Chinese population, traditionally settled in the Sarpi neighbourhood and nearby. From the segregation indexes it emerged that in a context of moderate segregation, Chinese families are the most spatially grouped, as confirmed also by their LQs map, showing an over-representation in contiguous areas in the first northern periphery. The settlement of this ethnic group – whose presence in Milan amounts to over 35,000 individuals[10] – is to be read jointly with the predominant work dynamics in this community. A recent study on the entrepreneurship models of the Chinese community in Milan (Pisati et al., 2020) has highlighted how Chinese companies tend to cluster in specific areas, which coincide with those in which the community resides, taking advantage of the concentration of resources and opportunities (customers, suppliers, workforce, know-how). Rather than being a peculiarity of the Milanese Chinatown, such characteristics relate to Chinese settlements in several metropolises (Light, 1972; Zhou, 1992, 1998), with the presence of enclave economies (Portes and Manning, 1986), in which the products and services of ethnic businesses, typically small-sized and family-driven, are primarily addressed to the group they belong to and not the overall population or other ethnic minorities. In the Milanese case, such a model does not just relate to Chinese families; indeed, the territorial distribution of companies is not homogeneous in the urban space: spatially proximate companies tend to be more similar to each other – in terms of activities, characteristics and the ethnic origin of the owners – compared to those who are more distant (Riva and Lucchini, 2014). The peculiarity of the Chinese community is the marked overlap between their places of living and working activity, a characteristic that contributes to making it the most evident and significant case of an ethnic enclave present in the territory, with residential choices much more influenced by the weight of ethnic ties than for other nationalities. Such a model is in line with the historical formation of Chinatowns in the US, with the Chinese leaving small town and rural areas to concentrate in depressed inner city areas as a way to protect themselves from discrimination and violence in the host society (Li, 2005), characterising their districts as residential and economic zones where they can practice traditional culture and live in socially cohesive environments (Wong, 1982). Such an urban form exemplifies the distinction between the enclave, as a positive and enabling clustering, and the ghetto, in its more negative meaning, bearing in mind that these are two opposite poles of a continuum (Marcuse, 1997; Wacquant, 2004).

The case of the most present group of foreigners in Milan, the Egyptians, is completely different from that of the Chinese.

Italy is the main European country for Egyptian immigration, with the Lombardy Region and Milan in particular being the preferred destinations, where migrants are mainly employed in industry, commerce, catering and business services (MLPS, 2020) – commercial activities devoid of ethnic connotations and aimed at the entire population. Accordingly, the Egyptian population is fairly integrated in the territory (Zohry, 2009) and oriented towards a long-term stay (MLPS, 2020). Therefore, compared to the Chinese case, residential settlement patterns have less need to be guided by ethnicity and proximity between places of residence and work, being more influenced by market logics, with the consequent greater residential dispersion and the formation of more territorially scattered groupings. This settlement pattern, with differing configurations and specificities, would also seem to be the prevailing one among the other nationalities examined (except for those mainly employed in the domestic sector), differently from the Chinese pattern, constituting an isolated case among the most represented foreign groups in Milan.

From the picture outlined, the geography of settlement for some citizenships is clearly linked with their labour market patterns (e.g. the Chinese's enclave economy, the Egyptians' integrated employment, the Ukrainians, Filipinos and Sri Lankans' domestic labour), highlighting the intertwining of class and urban structure. Related to this, in the neo-liberal era, the polarisation of occupational structure fed by the fragmentation of wage labour (unstable, part-time, short-term, low-pay, dead-end employment) fostered processes of territorial polarisation flowing into territorial stigmatisation for those areas characterised by a concentration of the underclass, inducing public and private disinvestment (Wacquant, 2016: 1082), triggering a vicious circle of individual and spatial marginality.

As limitations, first, having used citizenship to identify belonging to a specific foreign group, we are aware that our data may include migrants in possession of Italian citizenship, who have been categorised as Italians. However, the use of citizenship was less subject to bias than the only other strategy pursuable – using information about country of birth. Second, having focused on families as a unit of analysis and having chosen to assign to the household the citizenship of the data sheet's reference person, we are aware that the presence of mixed household may have altered the results. To account for this potential bias, we also performed the analyses on individuals as a robustness check, reaching analogous results.[11] Third, our study unavoidably focused on foreign individuals regularly present in the civil registry, however, according to 2016 estimates in Milan, there were 26,150 irregular migrants, corresponding approximately to 9% of the foreign population (Fondazione ISMU, 2017).[12] Our indexes might be affected by such distortion, for which there is no possibility of correction through the lack of individual data on irregular foreigners. Fourth, dealing with ecological analyses, spatial measurements may be significantly influenced by the choice of territorial unit. Therefore, we also performed the analyses at the NILs scale to check for potential bias introduced by the Modifiable Area Unit Problem (Reardon and O'Sullivan, 2004: 123; Waller and Gotway, 2004: 104), reaching comparable results.[13] Finally, we limited our analyses to Milan, although it would have been interesting to focus on the whole metropolitan area, made up of the 133 municipalities of the province, accounting for more than three million inhabitants, given its importance in defining urban processes and dynamics (Oberti and Préteceille, 2017). Extending the analysis to the whole province would constitute a relevant next step in the study.

Conclusion

Although the analysis of the segregation indexes traditionally used in the literature has led to relatively low values, it is evident that the phenomenon of social segregation among foreign minorities in Milan is anything but negligible, going beyond the purely residential dimension and touching aspects of social and economic integration of families, being intertwined with the dynamics and the forms of socio-economic inequality that already exist in the territory. The issue is of crucial relevance for local public policies, with the aim of contrasting the growing dualisation of the Milanese territory, with the evident fragmentation between areas of strong commercial and economic interest and areas becoming more and more peripheral not only geographically, but also from a socio-economic perspective.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The study has been conducted in the context of the project 'Enhancing healthcare and well-being through the potential of big data: an integration of survey, administrative, and open data to assess health risk in the City of Milan with data science' (Project Code 2020-4269) funded by Fondazione Cariplo (https://www.fondazionecariplo.it/en/index.html) within the call 'Data Science for science and society'. The funder had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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Notes

1. It is important to bear in mind that categories such as 'race' and 'ethnicity' are socially constructed, and that the categorisation of 'foreigner' might not match with the real experience of an individual or a group, also contributing to the racialisation of migrant populations. Though being aware of such an issue, when investigating spatial segregation by means of secondary data in a quantitative framework it is unavoidable to rely on some heuristic procedures based on the information available.
2. American segregation is influenced by the country's slave-owning past: racial minorities are still subject to accumulated economic disadvantages and socio-economic discrimination. In Europe the structural conditions for the development of ghettoes were lacking thanks to the protections implemented by various welfare state arrangements (Musterd, 2005).
3. The use of the term 'voluntarily' does not mean that the processes of residential settlement are the result of choices freely made by individuals to maximise their well-being. Although *agency* may play an important role, individual choices are guided by the set of opportunities and constraints (the *structure*) characterising the context. Marcuse's reference to the concept of *voluntariness* is to be understood as opposed to an explicitly coercive spatial allocation (e.g. *ghetto*, *apartheid*).
4. According to the definition, 'they represent areas that can be defined as Milan neighbourhoods, in which it is possible to recognise historical and project districts, with different characteristics from each other' (https://dati.comune.milano.it/it/dataset/ds964-nil-vigenti-pgt-2030). Their location in the Milanese territory is shown in Figure A1 in the Appendix.
5. Except for the D and RCO, which were computed comparing each foreign group with the Italian population, all the other indexes were computed comparing each group with the rest of the population (Italians plus other foreigners).

6. The cut-offs adopted are suggested by Brown and Chung (2006).
7. The comparison between indexes across different contexts must be performed with caution, as they are computed from territorial units of different sizes.
8. Such maps were made with territorial units other than those used for the computation of the indexes. Nevertheless, for descriptive purposes it is possible to overlay the maps to compare the distribution of the indicators without running into the methodological issue of the Modifiable Area Unit Problem (Reardon and O'Sullivan, 2004: 123; Waller and Gotway, 2004: 104).
9. Regarding the Milanese case, the so-called *gated communities* are limited to a few situations in peripheral areas.
10. The number refers to residents of Chinese citizenship, but with respect to the concept of 'Chinese community' it is necessarily underestimated as it excludes all subjects of generations after the first who, while maintaining strong ties with the community of origin, are in possession of Italian citizenship.
11. The results are available from the authors upon request.
12. According to the estimates, the irregular foreigners had the following origins: 35% Asia, 27% North Africa, 20% South America, 11% Eastern Europe (extra EU), 7% Africa and others.
13. The results are available from the authors upon request.

References

Agustoni A, Alietti A and Cucca R (2015) Neoliberalismo, migrazioni e segregazione spaziale: politiche abitative e mix sociale nei casi europeo e italiano. *Sociologia Urbana E Rurale* 1(106): 118–136.

Ambrosini M (2011) *Sociologia delle migrazioni*. Seconda edizione. Bologna: Il Mulino.

Apparicio P, Martori JC, Pearson AL, et al. (2014) An open-source software for calculating indices of urban residential segregation. *Social Science Computer Review* 32(1): 117–128.

Arbaci S (2007) Ethnic segregation, housing systems and welfare regimes in Europe. *European Journal of Housing Policy* 7(4): 401–433.

Barbagli M and Pisati M (2012) *Dentro e fuori le mura: città e gruppi sociali dal 1400 a oggi*. Bologna: Il Mulino.

Bergamaschi M, Daconto L and Grazia Montesano M (2021) Diffusione periferica e concentrazioni. La dinamica insediativa dei residenti stranieri a Bologna e Milano. *Mondi Migranti* 1(2): 151–168.

Bernardotti MA and Zanoni M (1996) Le dinamiche migratorie ed il loro impatto residenziale. Un'analisi condotta attraverso lo studio degli indici di segregazione etnica sul territorio provinciale e comunale. *Metronomie* 7: 99–131.

Brown LA and Chung SY (2006) Spatial segregation, segregation indices and the geographical perspective. *Population Space and Place* 12(2): 125–143.

Casacchia O, Natale L and Martino G (2012) *La presenza straniera all'interno della città. Roma e Parigi a confronto*. Roma: CISU.

Catalanotti C and Consolazio D (2020) Patterns of ethnic and social segregation in Naples: An update of the literature. *Territorio* 1(92): 108–120.

Chiodelli F, Coppola A, Belotti E, et al. (2021) The production of informal space: A critical atlas of housing informalities in Italy between public institutions and political strategies. *Progress in Planning* 149: 100495.

Clough Marinaro I (2015) The rise of Italy's neoghettos. *Journal of Urban History* 41(3): 368–387.

Cordini M, Parma A and Ranci C (2019) 'White flight' in Milan: School segregation as a result of home-to-school mobility. *Urban Studies* 56(15): 3216–3233.

Cristaldi F (2012) Immigrazione e territorio: la segregazione residenziale nelle aree metropolitane. *Geotema* 43-44-45: 17–28.

Cutler D, Glaeser E and Vigdor J (1999) The rise and decline of the American ghetto. *Journal of Political Economy* 107(3): 455–506.

Davico L and Mela A (1999) Aspetti spaziali dei nuovi fenomeni migratori in Piemonte. *Sociologia Urbana E Rurale* 59: 33–60.

D'Ovidio M (2009) Milano, città duale. In: Ranci C (ed.) *I limiti sociali della crescita: Milano e le*

città d'Europa, tra competitività e disuguaglianze (9-72). Milano: Maggioli, pp. 9–72.

Ferruzza A, Dardanelli S, Heins F, et al. (2008) La geografia insediativa degli stranieri residenti: Verona, Firenze e Palermo a confronto. *Studi Emigrazione* 171: 602–628.

Fondazione ISMU (2017) Ventiduesimo Rapporto sulle migrazioni 2016. Milano, FrancoAngeli

Foot J (1997) Migration and the 'miracle' at Milan. The neighbourhoods of Baggio, Barona, Bovisa and Comasina in the 1950s and 1960s. *Journal of Historical Sociology* 10(2): 184–213.

Isard W (1960) *Methods of Regional Analysis: An Introduction to Regional Science*. Cambridge, MA: The MIT Press.

Lanzani A (1998) Modelli insediativi, forme di coabitazione e mutamento dei luoghi urbani. *Urbanistica* 111: 32–39.

Lichter DT, Parisi D and De Valk H (2016) Residential segregation. *Pathways. The Poverty and Inequality Report* 2016: 65–74.

Light I (1972) *Ethnic Enterprise in America: Business and Welfare Among Chinese, Japanese and Blacks*. Berkeley, CA: University of California Press.

Li W (2005) Beyond Chinatown, beyond enclave: Reconceptualizing contemporary Chinese settlements in the United States. *GeoJournal* 64(1): 31–40.

Manley D (2021) Segregation in London: A City of choices or structures? In: van Ham M, Ammaru T, Ubarevičienė T, et al. (eds) *Urban Socio-Economic Segregation and Income Inequality*. *The Urban Book Series*. Cham: Springer, pp. 311–328.

Manzo LKC (2016) «Via via, vieni via di qui!» il processo di gentrificazione di via Paolo sarpi, la Chinatown di Milano (1980–2015). *Archivio di Studi Urbani e Regionali* 1(117): 27–50.

Marcuse P (1997) The enclave, the citadel, and the ghetto: What has changed in the post-Fordist US city. *Urban Affairs Review* 33(2): 228–264.

Marra G, Marra M and Calafati L (2020) The relation between ethnic segregation and neighbourhood deprivation: The case of Turin. *Territorio* 1(92): 97–107.

Massey DS (1985) Ethnic residential segregation: A theoretical synthesis and empirical review. *Sociology and social research* 69(3): 315–350.

Massey DS and Denton NA (1988) The dimensions of residential segregation. *Social Forces* 67(2): 281–315.

Massey DS and Denton NA (1989) Hypersegregation in US metropolitan areas: Black and Hispanic segregation along five dimensions. *Demography* 26(3): 373–391.

Massey DS and Denton NA (1993) *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, MA: Harvard University Press.

Mazza A and Punzo A (2016) Spatial attraction in migrants' settlement patterns in the city of Catania. *Demographic Research* 35(5): 117–138.

MLPS and Ministero del Lavoro e delle Politiche Sociali (2020) La comunità egiziana in Italia. Roma: Rapporto Annuale Sulla Presenza Dei Migranti.

Morena M, Cia G, Baiardi L, et al. (2021) Residential Property Behavior Forecasting in the Metropolitan City of Milan: Socio-economic characteristics as drivers of residential market value trends. *Sustainability* 13(7): 3612.

Musterd S (2005) Social and ethnic segregation in Europe: Levels, causes, and effects. *Journal of Urban Affairs* 27(3): 331–348.

Oberti M and Préteceille E (2017) *La segregazione urbana*. Roma: Aracne editrice.

Pacchi C and Ranci C (eds) (2017) *White flight a Milano: La segregazione sociale ed etnica nelle scuole dell'obbligo*. Milano: Franco Angeli.

Park RE, McKenzie RD and Burgess E (1925) *The City: Suggestions for the Study of Human Nature in the Urban Environment*. Chicago: University of Chicago Press.

Petsimeris P (2018) Social and ethnic transformation of large social housing estates in Milan, Italy: From modernity to marginalisation. In: Baldwin Hess D, Ammaru T, van Ham T, M. (eds) *Housing Estates in Europe: Poverty, Ethnic Segregation and Policy Challenges*. Cham: Springer Nature, pp.265–288.

Petsimeris P and Rimoldi SML (2015) Socio-economic divisions of space in Milan in the post-Fordist era. In: Tammaru T, Marcińczak S, van Ham M, et al. (eds) *Socio-Economic Segregation in European Capital Cities. East Meets West*. London: Taylor & Francis, pp.186–213.

Pisati M, Riva E and Lucchini M (2020) The spatial location of Chinese businesses: A longitudinal analysis of clustering patterns in Milan, Italy. *Polis* 35(1): 5–32.

Portes A and Manning R (1986) The immigrant enclave: Theory and empirical examples. In: Nagel J and Olzak S (eds) *Ethnicity: Structure and Process*. New York: Academic Press, pp.47–68.

Powell R (2013) Loïc Wacquant's 'Ghetto' and ethnic minority segregation in the UK: The Neglected Case of Gypsy-Travellers. *International Journal of Urban and Regional Research* 37(1): 115–134.

Préteceille E (2016) Segregation, social mix and public policies in Paris. In: Fujita K and Maloutas T (ed.) *Residential Segregation in Comparative Perspective: Making Sense of Contextual Diversity*. London: Routledge pp. 153–176.

Reardon SF and O'Sullivan D (2004) 3. Measures of spatial segregation. *Sociological Methodology* 34(1): 121–162.

Rimoldi SML and Terzera L (2017) Neighbours and friends? Can residential segregation explain ethnic separation? The Case of Milan (Italy). *Spatial Demography* 5(3): 193–214.

Riva E and Lucchini M (2014) La natalità delle imprese straniere a Milano: un'analisi spaziale. *Imprese & Città* 5: 85–94.

Russo Krauss D (2014) Some considerations about spatial concentration and segregation of immigrants in Naples 10.4458/4526-07. *Documenti geografici* 2: 113–124.

Strozza S, Benassi F, Ferrara R, et al. (2016) Recent demographic trends in the major Italian urban agglomerations: The role of foreigners. *Spatial Demography* 4(1): 39–70.

Tammaru T, Marcińczak S, Van Ham M, et al. (2014) *Socio-Economic Segregation in European Capital Cities*. Abingdon: Routledge.

Tammaru T, Marcińczak S, Aunap R, et al. (2020) Relationship between income inequality and residential segregation of socio-economic groups. *Regional Studies* 54(4): 450–461.

Wacquant LJ (1996) Red belt, black belt: racial division, class inequality and the state in the French urban periphery and the American ghetto. In: Mingione E (ed.) *Urban Poverty and the Underclass: A Reader*. London: Wiley, pp.234–274.

Wacquant LJ (2004) Ghetto. In: Smelser NJ and Baltes PB (eds) *International Encyclopedia of the Social & Behavioral Sciences*. Amsterdam: Elsevier, 1–7.

Wacquant LJ (2016) Revisiting territories of relegation: Class, ethnicity and state in the making of advanced marginality. *Urban Studies* 53(6): 1077–1088.

Waller LA and Gotway CA (2004) *Applied Spatial Statistics for Public Health Data*. London: Wiley.

Wong BP (1982) *Chinatown Economic Adaptation and Ethnic Identity the Chinese*. New York: Holt, Rinehart and Winston.

Zhou M (1992) *Chinatown: The Socioeconomic Potential of an Urban Enclave*. Philadelphia, PA: Temple University Press.

Zhou Y (1998) How do places matter? A comparative study of Chinese ethnic economies in Los Angeles and New York City. *Urban Geography* 19: 531–553.

Zohry A (2009) *The Migratory Patterns of Egyptians in Italy and France*. CARIM Research Reports 17. San Domenico di Fiesole, FI: European University Institute.

Appendix

1	Duomo	45	San Cristoforo
2	Brera	46	Barona
3	Giardini Porta Venezia	47	Cantalupa
4	Guastalla	48	Ronchetto sul Naviglio
5	Vigentina	49	Giambellino
6	Ticinese	50	Tortona
7	Magenta - San Vittore	51	Washington
8	Parco Sempione	52	Barde Nere
9	Garibaldi Repubblica	53	Lorenteggio
10	Centrale	54	Muggiano
11	Isola	55	Baggio
12	Maciachini - Maggiolina	56	Forze Armate
13	Greco	57	Selinunte
14	Niguarda - Ca' Granda	58	De Angeli - Monte Rosa
15	Bicocca	59	Tre Torri
16	Viale Monza	60	San Siro
17	Adriano	61	Quarto Cagnino
18	Parco Lambro - Cimiano	62	Quinto Romano
19	Padova	63	Figino
20	Loreto	64	Trenno
21	Buenos Aires - Venezia	65	Gallaratese
22	Città Studi	66	QT 8
23	Lambrate	67	Portello
24	Parco Forlanini - Ortica	68	Pagano
25	Corsica	69	Sarpi
26	XXII Marzo	70	Ghisolfa
27	Porta Romana	71	Villapizzone
28	Umbria - Molise	72	Maggiore - Musocco
29	Ortomercato	73	Cascina Triulza - Expo
30	Mecenate	74	Sacco
31	Parco Monlué - Ponte Lambro	75	Stephenson
32	Triulzo Superiore	76	Quarto Oggiaro
33	Rogoredo	77	Bovisa
34	Chiaravalle	78	Farini
35	Lodi - Corvetto	79	Dergano
36	Scalo Romana	80	Affori
37	Ex OM - Morivione	81	Bovisasca
38	Ripamonti	82	Comasina
39	Quintosole	83	Bruzzano
40	Ronchetto delle Rane	84	Parco Nord
41	Gratosoglio - Ticinello	85	Parco delle Abbazie
42	Stadera	86	Parco dei Navigli
43	Tibaldi	87	Parco Agricolo Sud
44	Navigli	88	Parco Bosco in Città

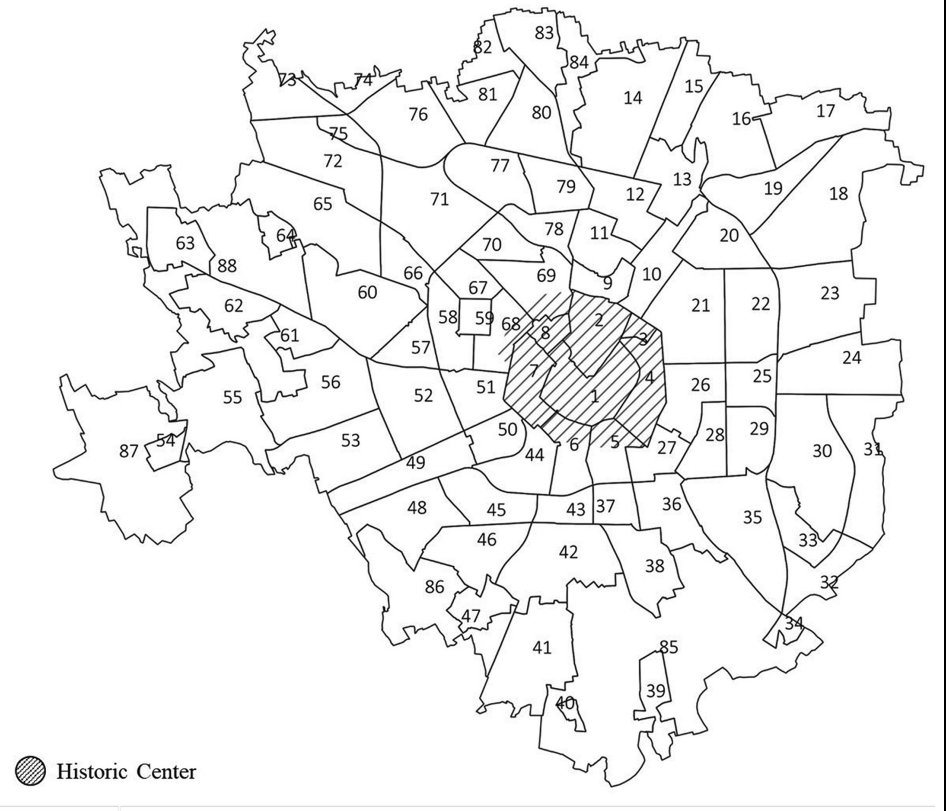

Figure A1. Positioning of the 88 Milan neighbourhoods (NILs).

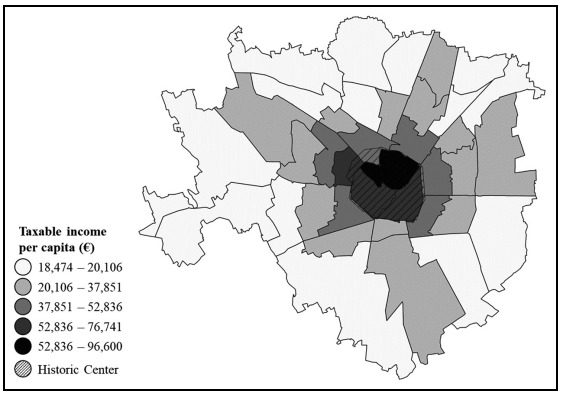

Figure A2. Taxable income per capita in the Municipality of Milan, in 2019 (38 Postal Code areas).
Source: Our elaboration of Ministry of Economy and Finance data. Classification method: natural jenks.

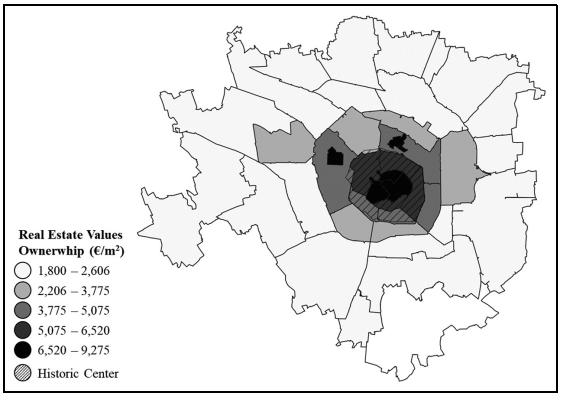

Figure A3. Real estate ownership values (median between minimum and maximum price for residential use buildings), in 2021 (41 OMI areas).
Source: Our elaboration of Revenue Agencies – Real Estate Market Observatory. Classification method: natural jenks.

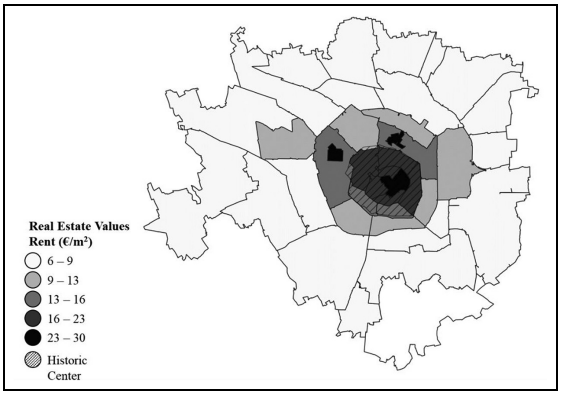

Figure A4. Real estate rent values (median between minimum and maximum price for residential use buildings), in 2021 (41 OMI areas).
Source: Our elaboration of Revenue Agencies – Real Estate Market Observatory. Classification method: natural jenks.

Table A1. Dissimilarity Index among the 10 most represented foreign groups in Milan.

	Egypt (0.30)	Philippines (0.25)	China (0.37)	Peru (0.24)	Romania (0.25)	Sri Lanka (0.25)	Bangladesh (0.45)	Ukraine (0.28)	Ecuador (0.24)	Morocco (0.34)
Egypt	–									
Philippines	0.27	–								
China	0.35	0.35	–							
Peru	0.28	0.16	0.36	–						
Romania	0.28	0.18	0.36	0.14	–					
Sri Lanka	0.27	0.16	0.33	0.18	0.18	–				
Bangladesh	0.37	0.43	0.41	0.46	0.47	0.44	–			
Ukraine	0.37	0.20	0.37	0.18	0.17	0.19	0.49	–		
Ecuador	0.26	0.17	0.33	0.13	0.15	0.17	0.44	0.20	–	
Morocco	0.26	0.34	0.45	0.30	0.29	0.31	0.50	0.35	0.28	–
Italy	0.41	0.24	0.39	0.22	0.20	0.23	0.51	0.13	0.24	0.39

Source: Our elaboration of Milan civil registry data, 2021.

Table A2. Percentage distribution of educational level and occupational class by citizenship status in the Municipality of Milan, 2020.

	Citizenship		Total
	Italian	Foreigner	
Educational level			
Primary	7.8	7.8	7.8
Lower-secondary	18.9	52.1	24.3
Higher-secondary	36.8	26.0	35.1
Tertiary	36.5	14.1	32.9
Total (n = 3586)	100	100	100
Occupational class			
Manager	9.2	0.9	7.4
Executive	20.5	1.4	16.4
Office worker	56.0	13.7	46.8
Manual worker	14.4	84.1	29.1
Total (n = 1368)	100	100	100

Note: Survey data representative at the municipality level, percentages weighted by population sampling weights.
Source: Our elaboration of ISTAT's Rilevazione Continua sulle Forze di Lavoro 2020 data.

Table A3. Latest net monthly income (€) at the time of survey, by educational level in Italians and foreigner in the Municipality of Milan, 2020.

	Citizenship		Total
	Italian	Foreigner	
Educational level			
Primary	756	930	870
Lower-secondary	1112	963	1027
Higher-secondary	1509	1028	1416
Tertiary	1991	1319	1951
Total (n = 1373)	1719	1026	5571

Source: Our elaboration of ISTAT's Rilevazione Continua sulle Forze di Lavoro 2020 data.

Table A4. Percentage distribution occupational class by educational level in Italians and foreigner in the Municipality of Milan, 2020.

	Educational level				Total
	Primary	Lower-secondary	Higher-secondary	Tertiary	
Italian					
Manager	0.0	0.0	2.1	15.9	9.2
Executive	0.0	0.9	12.0	30.3	20.5
Office worker	0.0	29.5	68.6	53.3	56.0
Manual worker	100.0	69.6	17.3	0.5	14.4
Total (*n* = ,1082)	100	100	100	100	100
Foreigners					
Manager	0.0	0.5	0.0	5.1	0.9
Executive	0.0	0.0	0.0	11.6	1.4
Office worker	0.0	9.9	9.6	46.4	13.7
Manual worker	100.0	89.6	90.4	36.9	84.1
Total (*n* = 286)	100	100	100	100	100

Note: Survey data representative at the municipality level, percentages weighted by population sampling weights.
Source: Our elaboration of ISTAT's Rilevazione Continua sulle Forze di Lavoro 2020 data.