SRI LANKANS' RESIDENTIAL SEGREGATION: COMPARATIVE EVIDENCE FROM THE MAIN ITALIAN MUNICIPALITIES[1]

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1. Migration and urban segregation

To date, the problems relating to socio-economic segregation and inequality within urban realities have gained international relevance, so that the OECD has published an entire report focusing on the so-called "divided cities" (OECD, 2018): cities in which economic and social divisions generate exclusivity of the spaces. Inequality, and in particular the socio-economic heterogeneities within cities, hinder the integration of migrant populations within the host society. The distrust of locals and linguistic and cultural diversities often expose immigrants to the perpetuation of the inequalities that van Ham *et al.* (2018) defined as "vicious circles of segregation", according to which ethnic and social inequalities and segregation propagate in the family context, working place, and other contexts, but also from one birth cohort or first (migratory) generation to the other(s).

Several studies enrich the existing literature on residential segregation and, with regard to Europe, they have detected that in recent years the increase in urban segregation in the South has reduced its distance from the North, which generally recorded a higher level of inequality and segregation (Arapoglou, 2012; Panori *et al.*, 2019). Studies focussing on Italy are fewer than those concerning the realities of Western and Northern Europe. Still, they are constantly growing in number and highlight a North-South duality in which the North exhibits a higher proportion of foreigners but manages to maintain levels of inequality generally lower than those recorded in the South (Benassi *et al.*, 2019; Busetta *et al.*, 2015; Mazza and Punzo, 2016; Mazza *et al.*, 2018; Petsimeris and Rimoldi, 2015; Rimoldi and Terzera, 2017). In any case, studies comparing different Italian urban contexts are very few. This is quite surprising because in Italy do exist foreign communities, like Sri Lankans, that, contrary to most of the other migrants' communities residing in Italy, show peculiar residential distribution over the territory (Benassi *et al.*, 2022).

[1] Author contributions: "Migration and urban segregation" section: Benassi F., "Sri Lankans in Italy" section: Strozza S., "Materials and methods" section: Mazza A., "Results" section: Bitonti F., "Discussion and conclusions" section: Benassi F., Bitonti F., Mazza A., and Strozza S.

Based on these premises, the paper proposes an entirely original spatial analysis of residential segregation and settlement models of Sri Lankans, referring to the eight Italian municipalities hosting the highest share of this foreign community: Milan and Verona in the North, Florence and Rome in the centre, and Naples, Palermo, Messina, and Catania in the South.

2. Sri Lankans in Italy

Sri Lankans' presence in Italy dates back to the 1970s, and it is characterised by a particular settlement model with a double specificity (Benassi *et al.*, 2022). First of all, the Sri Lankans prefer to settle in large cities[2] and in particular those listed in Table 1, which together host almost 55% of the total amount of Sri Lankans residing in Italy at the beginning of 2021. It is interesting to notice that as regards the other foreign communities present in Italy, it would be necessary to consider hundreds of cities in order to reach a similar percentage. Secondly, conversely to the other foreign communities, Sri Lankans tend to concentrate mainly in the southern cities (Naples, Messina, Palermo, and Catania) which are rarely among the main Italian settlement municipalities for other foreign communities.

Table 1 – *Sri Lankans citizens residing in the top eight Italian cities according to their numerosity at the beginning of 2012 and 2021 (absolute values in thousand and percentages).*

Municipality (2012)	A.V. (000)	%	cum. %	% of foreigners	Municipality (2021)	A.V. (000)	%	cum. %	% of foreigners
Milan	11,1	15.5	15.5	6.3	Milan	16,1	14.8	14.8	6.3
Naples	7,2	10.1	25.6	**22.9**	Naples	15,3	14.1	28.9	**26.3**
Verona	5,2	7.3	32.9	17.3	Rome	9,1	8.4	37.3	2.7
Rome	4,9	6.8	39.7	2.2	Verona	7,4	6.8	44.1	20.1
Messina	3,6	5.0	44.7	**32.4**	Messina	3,8	3.5	47.6	**32.2**
Palermo	3,3	4.6	49.3	**16.7**	Palermo	3,1	2.9	50.5	**13.1**
Florence	1,6	2.2	51.5	3.7	Catania	2,4	2.2	52.7	**18.3**
Catania	1,4	2.0	**53.5**	**20.1**	Florence	2,1	1.9	**54.6**	4.2
Others	33,3	46.5	100.0	1.0	Others	49,3	45.4	100.0	1.2
Total	71,6	100.0		1.8	Total	108,6	100.0		2.2

Source: own elaboration on Istat data (Demographic Census and Municipal Population Registers).

[2] In the present work, the nouns "city" and "municipality" are considered as synonyms to make reference to the same geographical unit: the Local Administrative Unit (LAU), as defined according to the Eurostat's Nomenclature of Territorial Units for Statistics.

3. Materials and methods

In this work, we have considered the eight Italian cities with the greatest presence of Sri Lankans (as reported in Table 1), representing the phenomenon in the North, Centre, and South of Italy. The data on the national and foreign population and those relating to the work dimension come from the 2011 General Population Census, while those relating to the cost of rents for residential properties were downloaded from the OMI (*Osservatorio del Mercato Immobiliare* - Real Estate Market Observatory) database of the Italian Revenue Agency and are referred to the first half of 2016.

Since the aim of the work is to draw comparisons between the different urban realities and given that the data available pertain to different geographical units, namely the census tracts (for the data on population and working conditions) and the OMI sections (for real estate data), we performed areal weighted interpolation (Prener and Revord, 2019) to make data and urban contexts homogeneous. This procedure referred all the data at hand to a uniform spatial grid with 100 by 100 meters cells. This type of grid was exploited at the European level in the Data for Integration (D4I) project, which aimed precisely at making comparisons between different urban areas (Natale *et al.*, 2019).

To globally analyse the settlement model of the Sri Lankans, we used the traditional (Duncan and Duncan, 1955) and the correct version of the Duncan dissimilarity index (DI) proposed by Mazza and Punzo (2015), which reduces the upper bias intrinsic to the traditional DI.

To assess local heterogeneities, we also calculated the location quotients (LQs) (Haig, 1926) for Sri Lankans in order to highlight the neighbourhoods with the highest concentration of the ethnic group. Finally, we calculated two local bivariate Moran's I indices (Anselin *et al.*, 2004): in the first case to relate the concentration of Sri Lankans, described by the LQs, to the socio-economic conditions of the different areas of the cities, represented by the average cost of rent per square meter; in the second case to study the concentration in relation to the Human Capital Index (HCI)[3] in the labour market dimension. To assess the statistical significance of both the bivariate Moran's I indices we used a permutation-based approach.

[3] To capture the level of human capital in the labour market we consider the average between low human capital $LHC = \left(P_{litterate} + P_{illitterate} + P_{primary\ edu}\right)/P_{6+} * 100$ and unemployment $U = P_{15+job\ seeking}/P_{15+in\ the\ labour\ force} * 100$, resulting in the Human Poverty Index $HPI = (LHC + U)/2$, rescaled according to the min-max normalisation. The *HPI* is then reversed in its sign by taking its complement to 1 for the applications of this work, obtaining the Human Capital Index (HCI) in the labour market dimension. Hence, *HCI* taking values near to one implies high human capital, whereas *HCI* taking values near to zero implies low levels of human capital.

4. Results

Calculating the DI for the eight cities, we obtained the first global result. In particular, looking at Table 2, it is possible to make three considerations: a) the bias correction considerably reduced the segregation values calculated in the traditional way. The most relevant examples are Florence, Verona, and Rome; b) secondly, the different extent of the correction for the various cities has produced a different ranking compared to the one provided by the traditional DI. For instance, the city of Florence, which was in the fifth place in the ranking, fell to the last position because of the bias reduction; c) finally, it should be noted that generally, except for Messina, there is greater segregation in the Southern cities than in the Northern ones, in accordance with what has been found in the literature regarding the foreign communities present in Italy (Benassi *et al.*, 2019; Busetta *et al.*, 2015; Mazza and Punzo, 2016; Mazza *et al.*, 2018; Petsimeris and Rimoldi, 2015; Rimoldi and Terzera, 2017).

Table 2 – *DI, bias-corrected DI (DI_{corr}) for Sri Lankans and Italians in the eight Italian municipalities considered, municipalities' decreasing DI_{corr} ranking, and municipalities' DI ranking variation after the bias correction, 2011, computed on 100 by 100 m cells.*

City	DI	DI_{corr}	DI - DI_{corr}	Rank DI	Rank DI_{corr}	Ranking variation from DI to DI_{corr}
Palermo	0.740	0.659	0.081	1	1	0
Naples	0.683	0.613	0.070	3	2	+1
Catania	0.678	0.497	0.181	4	3	+1
Rome	0.728	0.392	0.336	2	4	-2
Milan	0.463	0.332	0.131	7	5	+2
Messina	0.530	0.324	0.206	6	6	0
Verona	0.457	0.260	0.197	8	7	+1
Florence	0.547	0.104	0.443	5	8	-3

Source: own elaboration on Istat data (2011 General Population and Housing Census)

Looking at the LQs maps in Figure 1, a difference between the cities of the centre-north (Milan, Florence, and Rome) compared to those of the South emerges (Naples, Palermo, Messina, and Catania). While the highest concentration areas in the North are scattered throughout the urban areas, the Sri Lankans appear more localised in the most central neighbourhoods in Southern cities. The only exception is Verona which shows an arrangement more similar to the arrangement in the cities of the South.

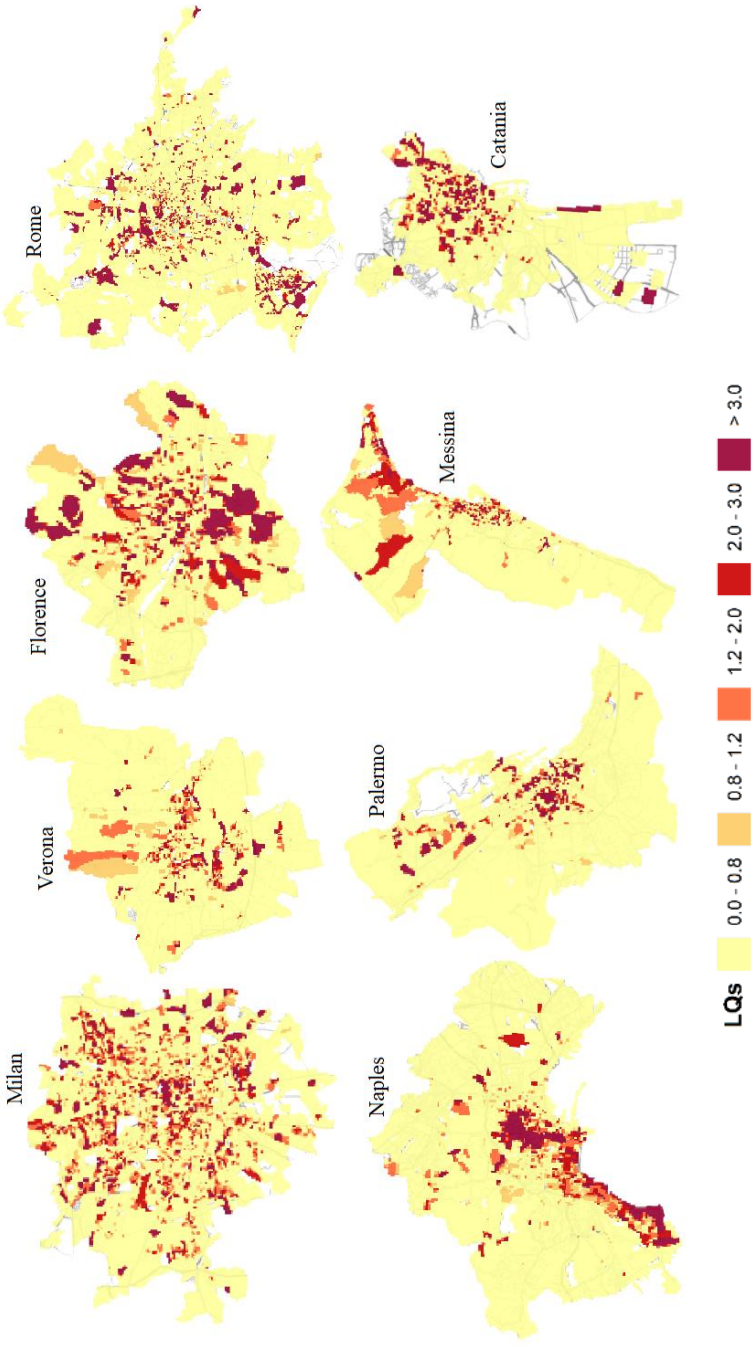
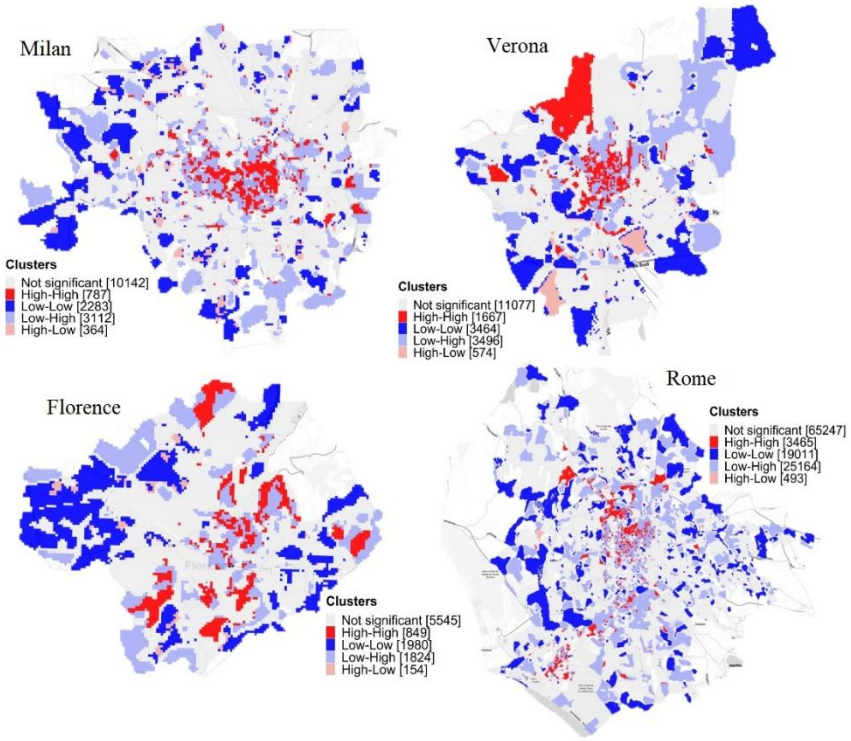
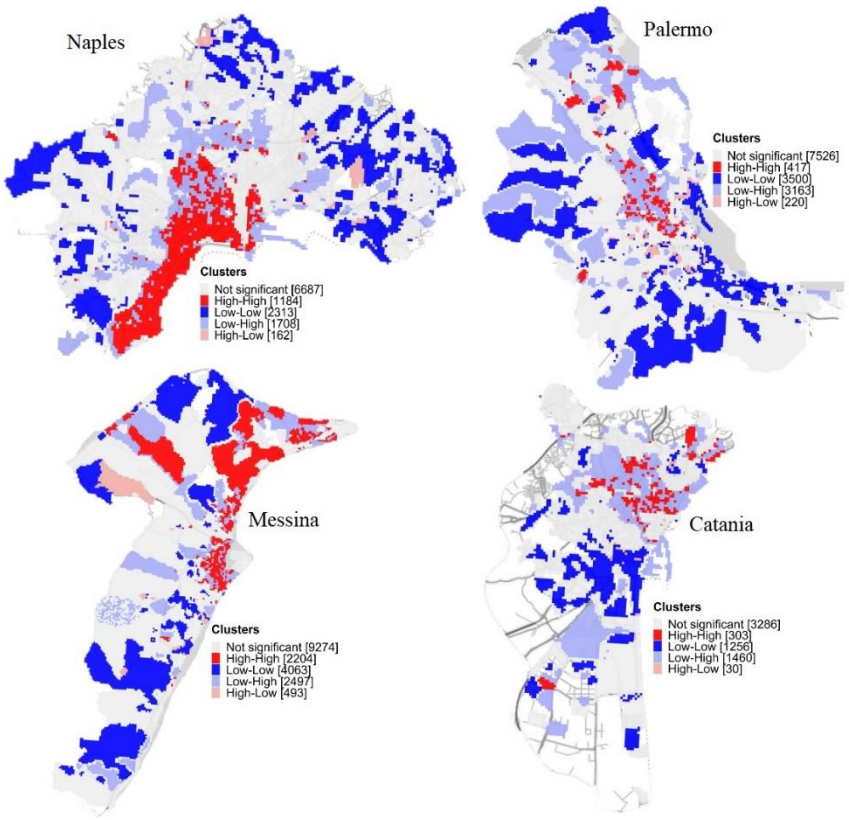


Figure 1 –*Location quotients of Sri Lankans (ref. group: total resident population). The eight Italian municipalities hosting the majority of Sri Lankans, 2011. Spatial grid with 100 x 100 m cells. Source: own elaboration on Istat data (2011 General Population and Housing Census).*

On the other hand, analysing the relationship between the concentration of Sri Lankans and the level of human capital (HCI), it is possible to see that this ethnic minority resides mainly in areas with high human capital which are located mostly in the central districts (represented in red in Figure 2). On the contrary, there are few significant areas that correspond to a high concentration of Sri Lankans and a low level of human capital (those coloured in pink). Areas of this kind are mostly found in the centre of Palermo. On the other hand, there are numerous areas characterised by a high human capital in which the presence of Sri Lankans is low (in light blue).

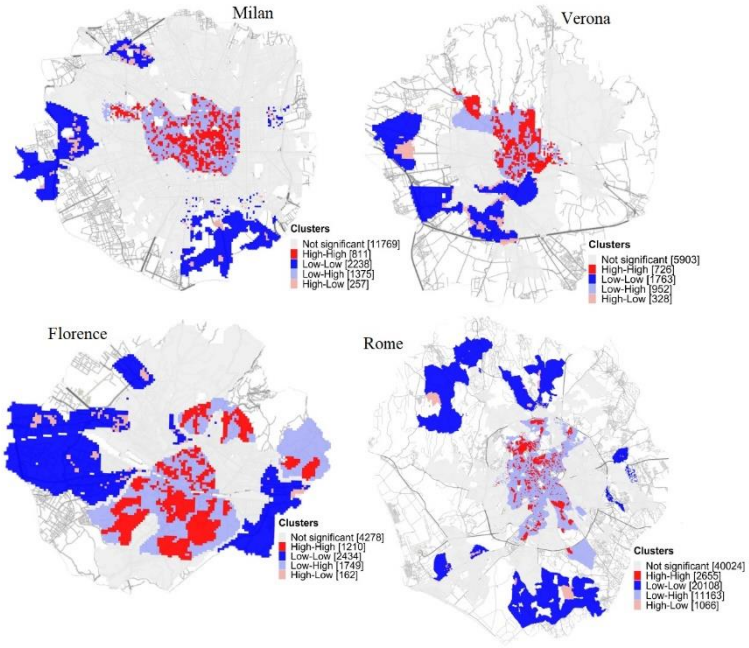
Figure 2 – *Bivariate local Moran's I between LQs and HCI. Reference group: total resident population. Main Italian municipalities hosting Sri Lankans, 2011. Spatial grid with 100 x 100 m cells. Source: own elaboration on Istat data (2011 General Population and Housing Census).*

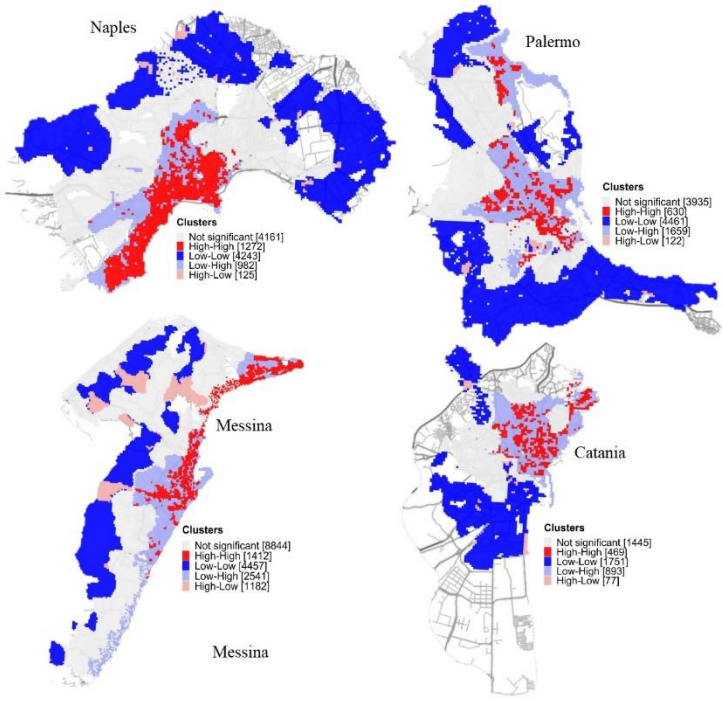




The bivariate Moran index between LQs and mean rental price (Figure 3) still confirms the high concentration of Sri Lankans in central areas where the cost of renting is high. In all cities, these areas, also called high-high, are surrounded by areas where rents remain expensive, but the presence of Sri Lankans is decreasing (in light blue). Finally, in the more peripheral areas, it is possible to identify some pockets where the cost of living is moderate, and many Sri Lankans reside (in pink).

Figure 3 – *Bivariate local Moran's I between LQs and mean rent cost. Reference group: total resident population. Main Italian municipalities hosting Sri Lankans, 2011. Spatial grid with 100 x 100 m cells. Source: own elaboration on Istat data (2011 General Population and Housing Census) and on OMI data.*





5. Discussion and conclusions

Our application has led to several results on which it is possible to draw the following considerations. Firstly, the distribution of the Sri Lankan community shows a duality between the cities of the North and those of the South. LQs have highlighted that the "scattered" configuration that characterises the North is replaced by concentration in central areas in the South. This different arrangement is indeed confirmed by the DI values, which are generally higher for the cities of the South. By correlating the concentration of Sri Lankans with socio-economic variables, it was possible to observe the relationship between the presence of the foreign group and the heterogeneity in the level of advancement and well-being of the various urban areas. In particular, we have recognised that Sri Lankans tend to establish their residence in central areas where the human capital and the average rent cost are high. This phenomenon could be partly explained by the need to reside near the workplace, and for the Sri Lankans, this mostly coincides with the Italians' households where they work as assistants to the elderly or cleaners. The similarity in the spatial trend of the bivariate local Moran's I across cities (both when related to the HCI and to the mean rent cost) suggests that macro-level

dynamics prevail over the local specificities. On the one end, these are the workplace and the specialisation in particular sectors, and on the other, the presence of migratory chains that guarantee the perpetuation of stable social networks over time and space. Lastly, the strong presence of Sri Lankans in areas with a high level of well-being could lead us to believe that there are no problems relating to inequality in the community under analysis. As a matter of fact, several old towns, especially in the South, are characterised by a high degree of building heterogeneity in which ancient noble palaces are located in the immediate vicinity of abandoned buildings or buildings left in a state of decay. We, therefore, believe that the ethnic mixing that often characterises historic centres can actually reveal states of socio-economic inequality that require ad hoc interventions and consideration.

Acknowledgements

This work was supported by the project "Immigration, integration, settlement. Italian-Style", funded by the Italian Ministry of University and Research, under the grant 2017N9LCSC_004 (PRIN 2017).

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SUMMARY

The paper proposes an entirely original spatial analysis on residential segregation and settlement models of Sri Lankans in the eight main Italian municipalities, where the largest part of the community lives.

Objectives: The purpose of the work is twofold. First, it attempts to compare the settlement patterns and the level of residential segregation of Sri Lankans across eight urban contexts and to evaluate similarities and specificities. Second, it concentrates to detect possible spatial polarisations of Sri Lankans in specific neighbourhoods and to verify spatial correlation with other key variables that are proxy of socio-economic inequality of territories.

Methods: Traditional global andlocal measures of segregation and concentration are considered and referred to a single geographic reference grid, allowing to homogenise different areal unit arrangements and to propose comparisons between urban areas.

Results: Peculiar residential behaviour in Sri Lankans' settlement patterns is paired with economic and labour market related conditions, configuring a situation going beyond the mere centre-periphery dichotomy. The ethnic mixing that often characterises historic centres can actually reveal states of socio-economic inequality that require ad hoc interventions and consideration.

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