

Mapping The Invisibles: A Spatial Analysis Of Urban Deprivation In Italy

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Summary

Deprived people are often invisible to official statistics. For that reason, data coming from shelters and charity services are an alternative and precious source of knowledge. This work aims to exploit this information by mapping deprived people in Ancona, a mid sized-town located in central Italy. Combining descriptive statistics and spatial analysis the profiles of deprived people are analysed, according to their residential location. The presence of the deprived in each area is related to the socio-economic characteristics of the neighbourhood. However, for some ethnic groups, living next to their ethnic co-peers is more a determinant than economic factors.

KEYWORDS: *deprivation, charity sector, GIS, spatial analysis, Poisson modelling*

1. Introduction

Deprivation is a complex and multidimensional concept, not restricted to the lack of basic necessities and material benefits. Multidimensional deprivation have been widely explored in the economic literature (Dorling, 1996; Alkire and Santos, 2010; Fremstad, 2010).

In the geographical context, the literature speaks of *residential segregation* (see O ' Sullivan et al., 2007; Wong, 2003; Harris, 2014). The issue of residential segregation has been treated in relation to the degree of ethnic mixing, showing for example that there is a significant segregation of Asian people - more than other ethnic groups - within English cities (Johnston et al., 2002).

Deprivation is difficult to measure and assess statistically. In spite of the increasing availability of geo-referenced data the spatial representations of deprivation are scarce in Italy, as it is the availability of official data. The extremely deprived and homeless are often said to be a non-sampling population: they are essentially *invisible* to official statistics. For that reason, the Italian National Institute of Statistics (ISTAT) referred to shelters and charity services (ISTAT-Ministry of Social Policy, 2010), to obtain an indirect estimate of the deprived population.

Nonetheless, data from charities are scarcely present in the scientific literature because they don't come from a randomized sampling. In spite of their limitations, charity data represent a unique source of information for extremely deprived people at micro-level. In smaller cities, and for specific groups of people (such as the homeless), they represent a census-like informative base which is nowhere else available. Therefore, we believe that data coming from voluntary based charities and other organization have a great informative potential, which deserves to be exploited more.

In social science there is in fact a growing need of big data to effectively analyse phenomena. For the deprived, who are an interesting yet often-neglected group of people, the issue is more about having 'alternative' data (in absence of real 'big' data). However, we can get out of those less orthodox and

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less conventional data relevant information to test our understanding of urban theory. In particular, in this study, we exploit those information to test the idea that the ethnic groups tend to live with their ethnic co-peers and that is more a determinant of where they live than economic factors.

In the next chapter the data and methodologies are briefly described. In chapter 3 the location of deprived people in town is mapped and analysed. Chapter four is dedicated to the regression model while chapter five discusses and concludes

2. Data and methods

Data come from the archive of the Caritas assistance point (CdA) located in Ancona, Marche, Italy. More than two thousand people (2470) visited the centre during 2014, for receiving help about shelter, food and basic needs. Out of the total database it has been possible to geo-code a small sub-sample (about 600 users), when excluding residents outside the municipality, homeless people and missing data (mostly due to unwillingness to reveal home addresses).

Table 1 – Number and share of deprived *people by nationality, gender and mean age.*

Country of origin	Number	%	Female	Female %	Mean age
Italy	155	27.3	70	45.2	51.0
Morocco	56	9.9	34	60.7	41.8
Tunisia	47	8.3	17	36.2	43.0
Romania	44	7.8	27	61.4	38.6
Bangladesh	29	5.1	8	27.6	38.1
Albania	25	4.4	18	72.0	38.9
Ghana	23	4.1	18	78.3	36.8
Nigeria	20	3.5	16	80.0	36.8
Peru	18	3.2	13	72.2	46.3
Ukraine	17	3.0	16	94.1	48.8
- other 40+ states					
Total (non-ITA)	415	72.7	225	55.8	40.7
Total	570	100	298	53.0	43.6

3. Location and density of the deprived people

Firstly, this work aims to explore and enrich the informative base on deprivation by creating a Geographic Information System (GIS) and mapping the residential location of deprived people in town (Figure 1).

Fig.1: Scatterplot of deprived people in Ancona, by nationality (left) and by area of origin (right)

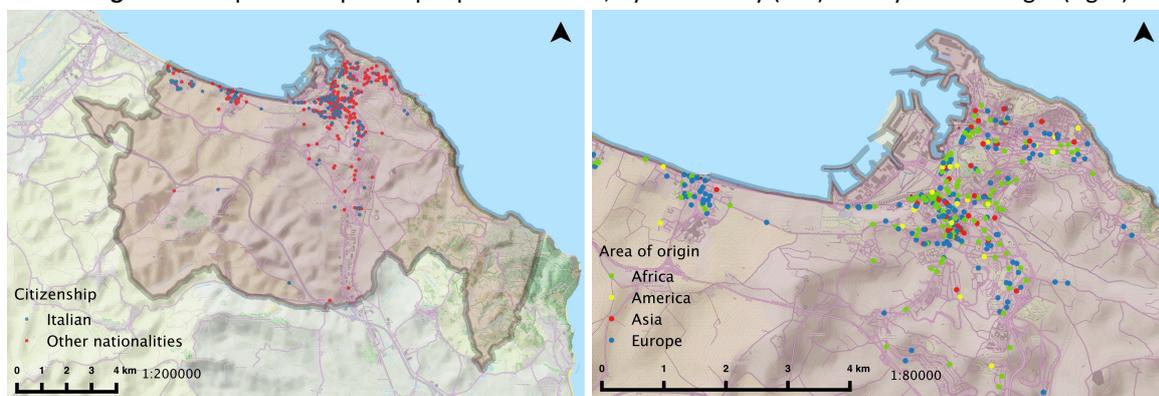
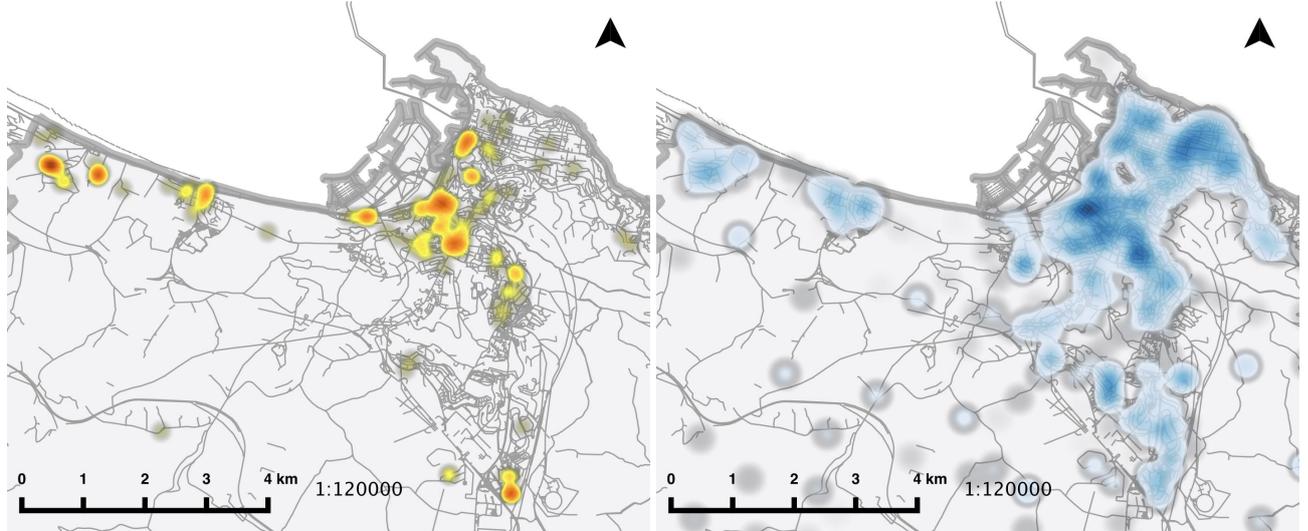
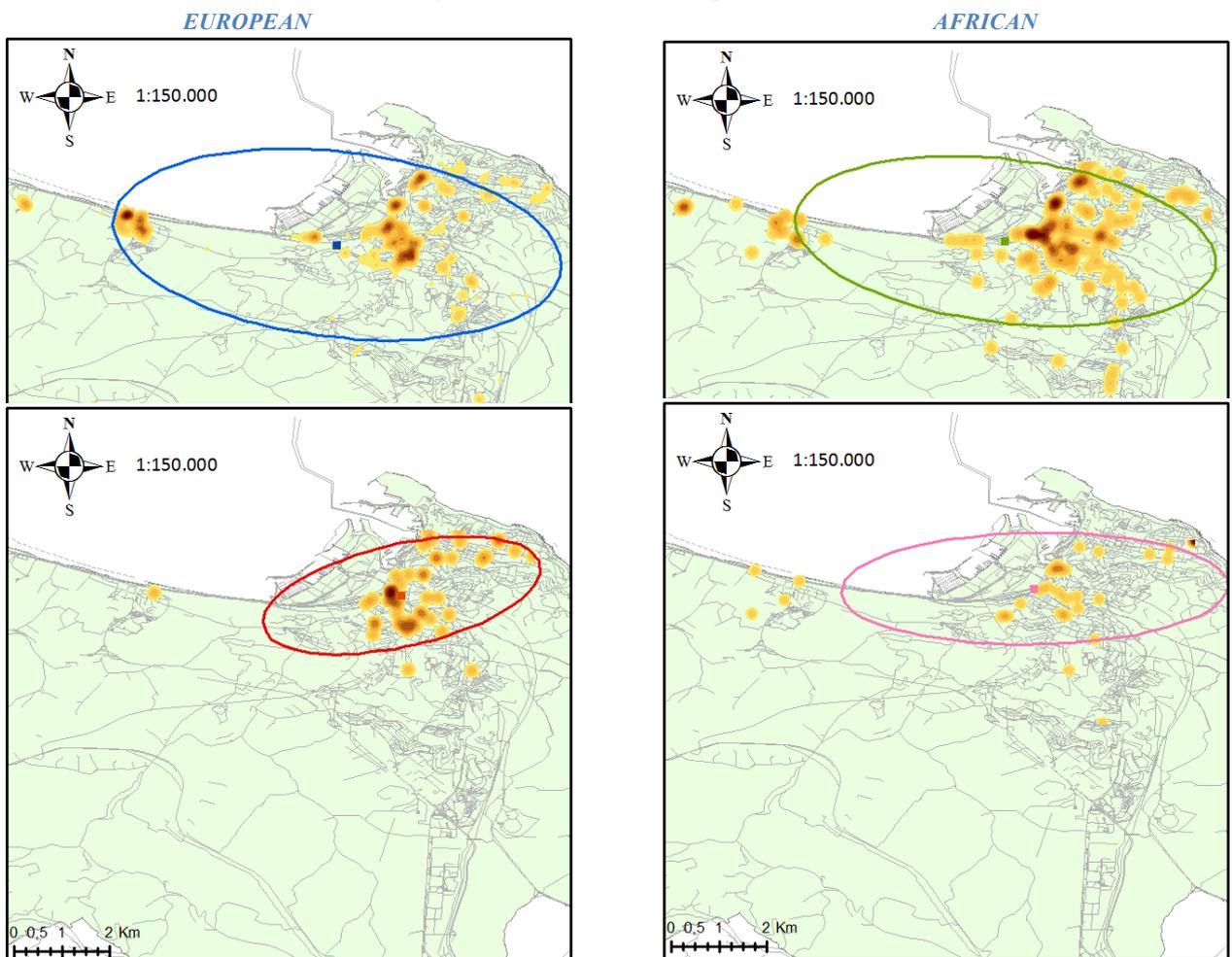


Fig.2: Density of deprived people (left) against density of total population (right)



Then, the distributional patterns of deprived in town are studied with spatial descriptive techniques (Figure 2). The Africans are slightly more agglomerated than Europeans or the overall sample. Asians are compactly located near the train station, showing evidence of a spatial segregation (Figure 3). The Asian ethnic group is the most concentrated also according to the concentration profiles, which were built for the various ethnic groups in comparison to the total population.

Fig.3: Clustering of deprived people, by area of origin. Distributional mean centres and standard-deviation ellipses are shown for each figure





Note: Kernel Density estimation, $cs=10$; $bw=250$.

4. Spatial analysis: neighbourhood deprivation and peer-group effect

Lastly, a regression model is performed to understand the reasons behind the observed clustering. Specifically, do the deprived tend to concentrate only because of economic purposes (e.g. in the disadvantaged neighbourhoods of the city) or is a peer-group effect identifiable?

In order to incorporate the characteristic of the neighbourhoods in the model two “deprivation indices” have been built by means of a factor analysis from the census data. The extracted factors can be tagged as a *social deprivation factor* (share of old people in the tract, divorced or widowed, living alone, out of the labour force, low education) and a *economic deprivation factor* (people unemployed, with a large family, living on a rent, in buildings in bad condition).

Table 3: GLM/Poisson regression model. Dependent var.: count of deprived people in census tracts for each ethnic group

	African (1)			Asian (2)			European (3)			American (4)		
	Coeff.	IRR (std)	SE	Coeff.	IRR (std)	SE	Coeff.	IRR (std)	SE	Coeff.	IRR (std)	SE
Deprivation factors:												
f1_Social	0.23*	1.26	0.09	0.41**	1.51	0.15	0.29*	1.33	0.12	0.29	1.34	0.21
f2_Economic	0.15*	1.17	0.07	0.19	1.21	0.13	0.23**	1.25	0.08	0.19	1.21	0.15
Peer group (share of people in census tract):												
African (%)	3.14**	1.13	1.06	0.16	1.01	3.06	1.49	1.06	1.74	-2.02	0.92	4.71
Asian (%)	3.44***	1.26	0.70	5.26***	1.43	1.08	2.45*	1.18	1.02	3.92**	1.31	1.52
European (%)	1.91**	1.16	0.59	2.26*	1.20	1.14	2.11*	1.18	0.82	1.53	1.13	1.63
American (%)	2.32	1.09	1.58	4.21	1.17	2.46	2.99	1.12	1.86	4.48	1.18	2.88
Female (%)	-0.57	0.57	0.78	0.27	1.31	1.60	0.27	1.30	1.19	-0.96	0.38	1.79
_constant	-1.54***	0.29	0.40	-3.50***	0.04	0.86	-2.61***	0.09	0.63	-3.06**	0.06	0.94
AIC	914.59			361.27			597.84			270.07		
Log-likelihood	-449.3			-172.63			-290.92			-127.03		

Note 1: N=722 census tracts, * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Incidence Rate Ratio (IRR) refers to standardized coefficients.

Note 2: Results for Model 4 (American) are significant at 5% only: LR $\chi^2(7) = 15.73$

Independent variables indicating the relative share of people of the various ethnic groups are also included in the model. If a peer-group effect exists a positive and significant relations among the outcome variable (e.g. the count of African deprived) and the relative share of people of the same nationality in the tract is expected to be found. A demographic control (relative share of females) is also included.

Results show that the social deprivation factor is significantly related with the expected number of deprived people. In terms of IRRs, a unit increase of the social deprivation factor in a tract corresponds to a 26% increase in the expected count of deprived Africans, 33% of deprived Europeans and 51% of deprived Asians. The results for the Latin-Americans are scarcely significant due to the low number of observations.

The economic deprivation factor is also significant for Africans and Europeans, but it is not for the Asians. On the contrary, the relative share of Asian population in the tract is highly significant: the expected number of deprived Asians is 43% higher in a census tract in which the share of Asians increases by 1%. Moreover, there is no statistical evidence of the fact that the deprived Asians reside in the census tracts which are economically disadvantaged.

The results for the Asians are remarkable. This study confirms the peculiar behaviour of the Asian ethnic group already shown in the literature (cf. Johnston et al., 2002), even in the case of the deprived people.

5. Conclusions

Form a spatial point of view, this study shows that the deprived reside in some specific neighbourhoods of the town. The census tracts in which they live share higher means in several deprivation-related indicators, encompassing both the social and economic dimensions.

In particular, the analysis showed that the deprived Asians are the most clustered and segregated. Their residential clustering is affected by a peer-group effect (the relative presence of other Asians in the area), more than by the impoverishment of the neighbourhood where they live in. Nevertheless, according to the evidences reported, many of those deprived Asians demand assistance in the immigration process and ask for a involvement in the society, via educational intervention and Italian language school.

Therefore, as a conclusion, it is possible that the observed segregation of the Asian community may be unwillingly caused by their cultural distance with the host territory, in terms of language, lifestyles etc. But, since a not-so-unspoken demand of involvement by the Asians exists, the local communities should do their best to favour active participation, in order to reduce segregation and to fulfil a truly inclusive society.

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