A Quantitative Approach to Environmental Justice in Italy.
The Case of 'Napoli Orientale - SIN'

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XIII MEMOTEF RESEARCH DAY

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Who I am

- PhD Economic Geography (38th cycle)

- Main research interests:
  environmental justice, *socio-spatial inequalities*, *local development*

- Member of Memotef research group on EJ. Congress "Giustizia ambientale in Italia" April 4, 2023, at the Italian Geographic Society (Rome)

Shared glossary
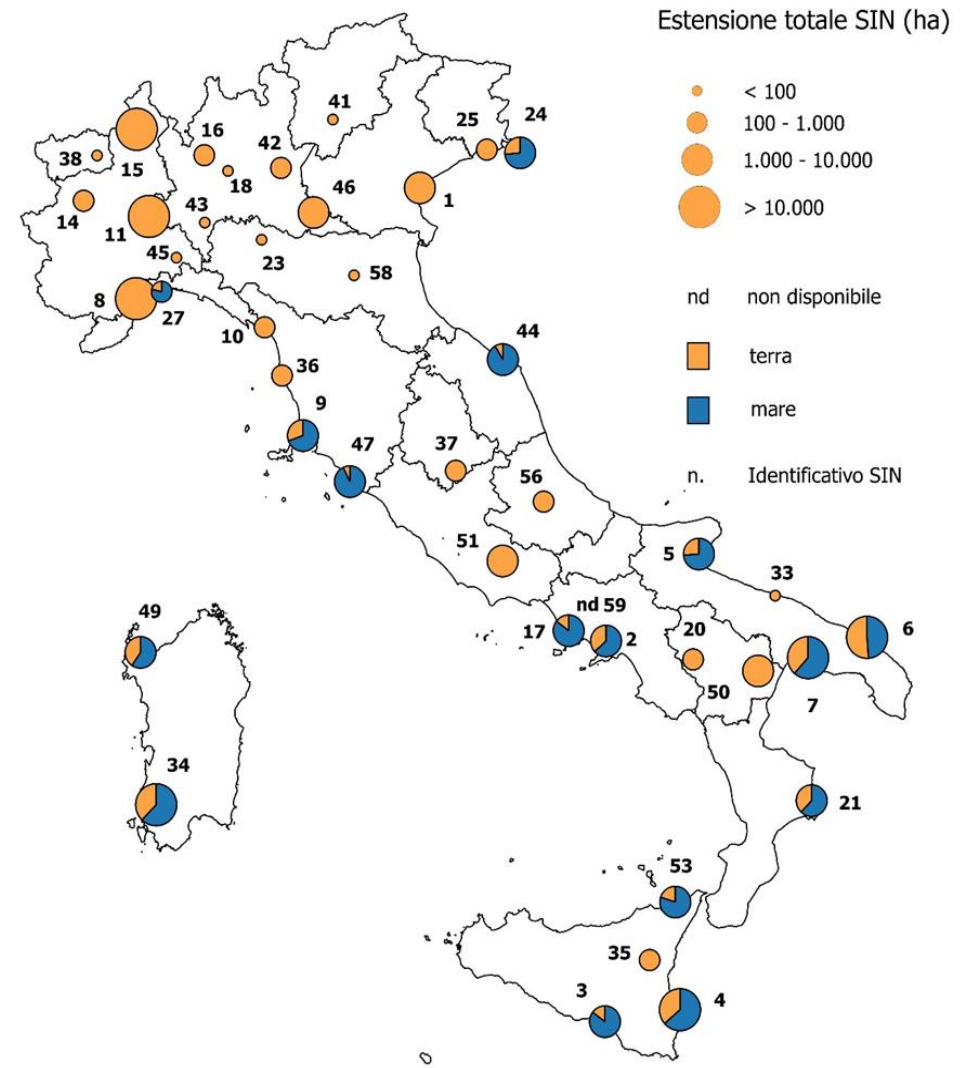

- **Environmental justice:**

equal distribution of environmental burdens and benefits and equal access to the decision-making process to have a healthy environment in which to live, learn, and work

Shared glossary

- **Sites of National Interest (SIN):**

contaminated areas defined by specific legal provisions on the basis of quantity and hazardousness of pollutants, extent of environmental impact in terms of health and ecological risk, and damage to cultural and environmental heritage

Estensione totale SIN (ha)

- < 100
- 100 - 1.000
- 1.000 - 10.000
- > 10.000

nd   non disponibile

terra

mare

n.   Identificativo SIN
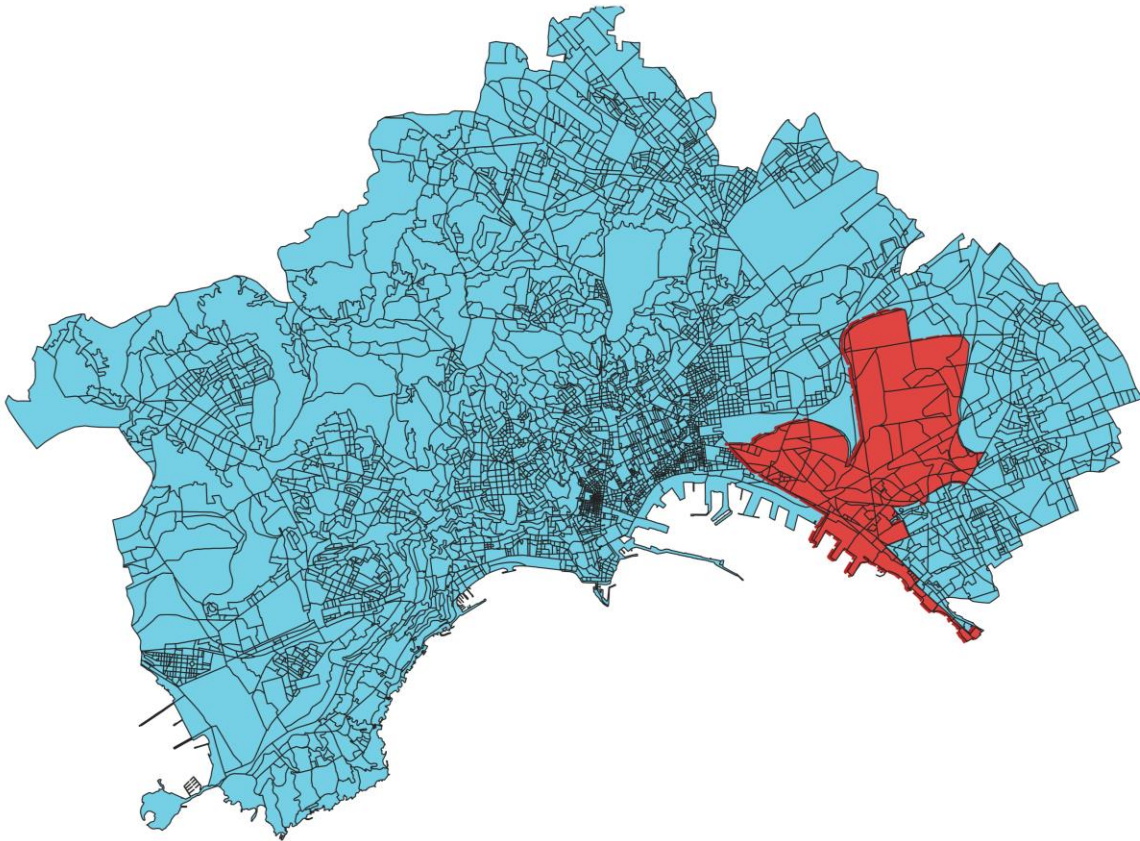
Elaborazione ISPRA   aggiornamento: dicembre 2021

Aim

Exploring the socioeconomic profiles of communities residing within the 'Napoli Orientale – SIN'
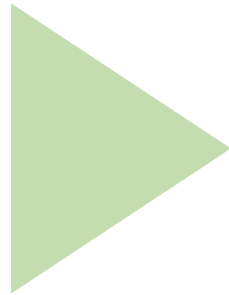
Examine whether environmental disadvantage resulting from residence within the SIN is accompanied by socioeconomic disadvantage

Case-study: 'Napoli Orientale – SIN'

Method

Indicator calculation from 'Census of Population and Housing' variables for census sections in Naples municipality

Intersection between perimeter of the SIN and census sections (*host area*)

Intersection between the perimeter of the area that falls outside the SIN and the census sections (*non-host area*)

Comparison of indicators between the SIN *host* area and the *non-host* area (*SPATIAL COINCIDENCE)*

Mann-Whitney U-test

Density distribution (*kernel*) analysis

Logit Regression Analysis

Method

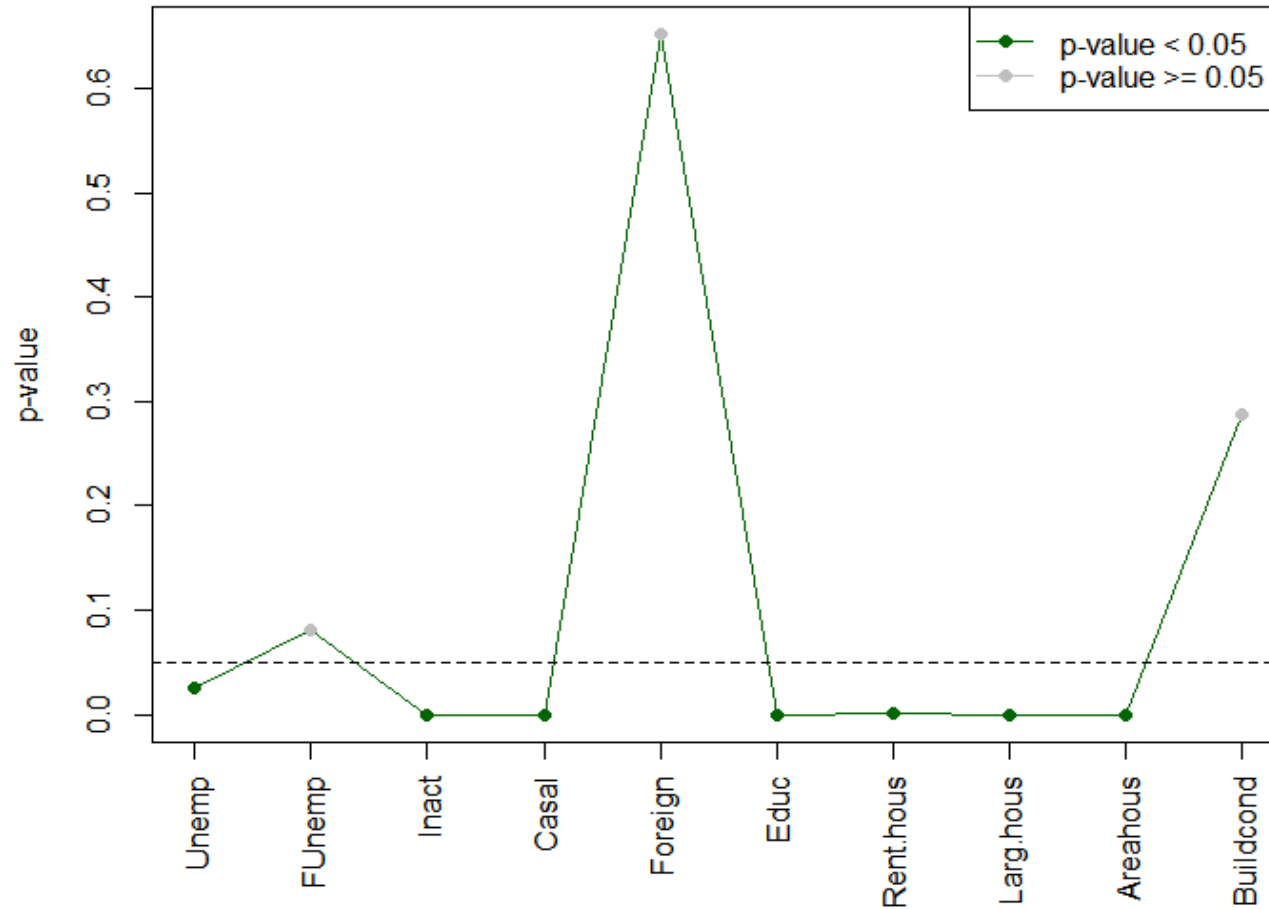|		
Foreign resident incidence	Total and Female unemployment rate	Inactivity rate
Incidence of Homemakers in the non-labor force (NFL)	Incidence of population 15 years of age and older with education at or below middle school level	Incidence of renter households
Incidence of large households (more than 5 members)	Average area of housing occupied by at least one resident	Concentration of residential buildings in mediocre and poor condition
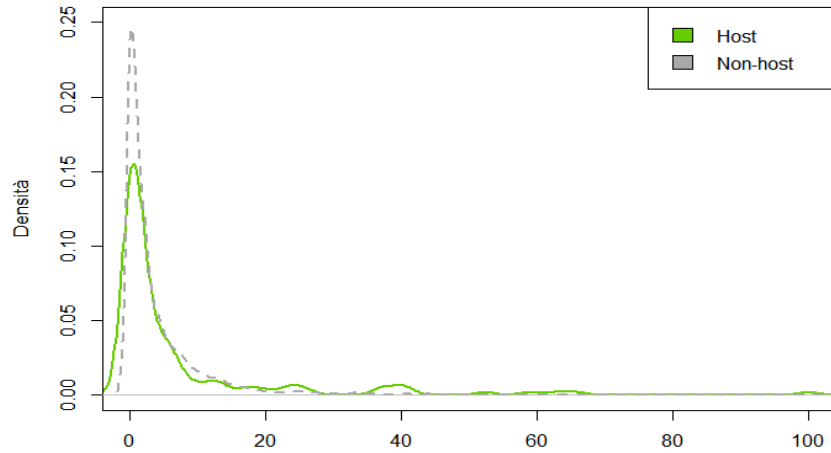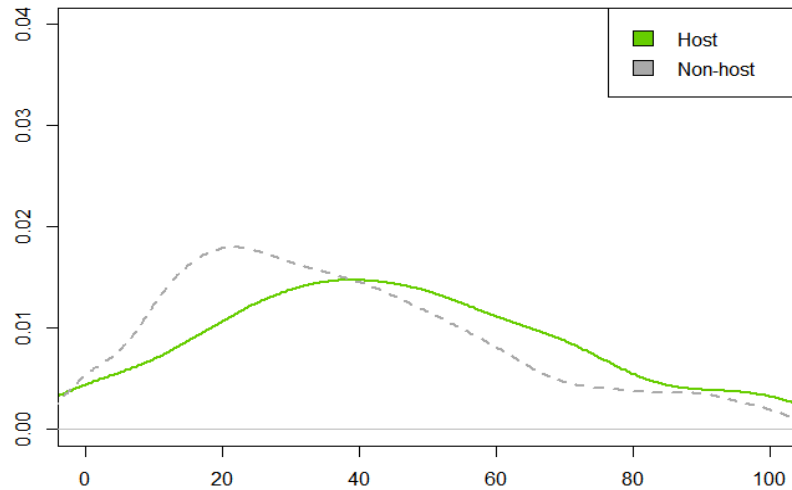
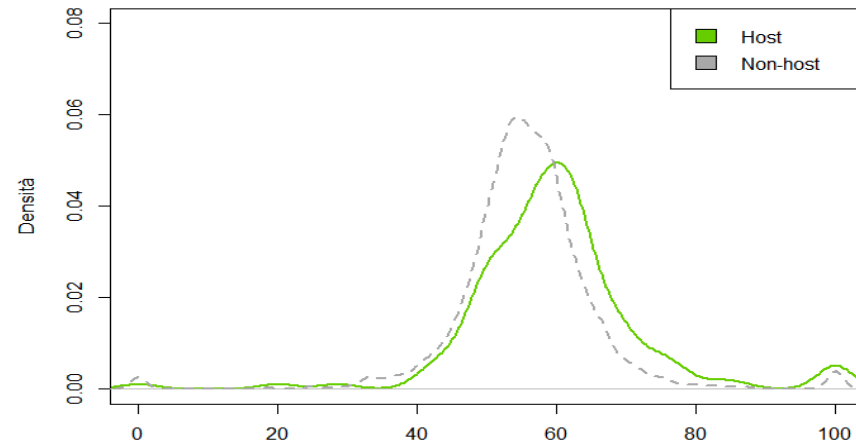# Indicators

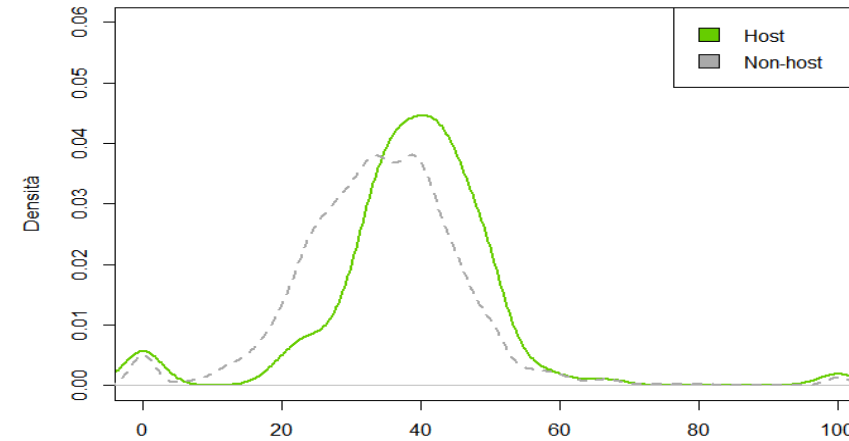# Results: Mann-Whitney U-test

Mann-Whitney U Test - p-values

For 7/10 variables there is a significant difference between host and non-host areas
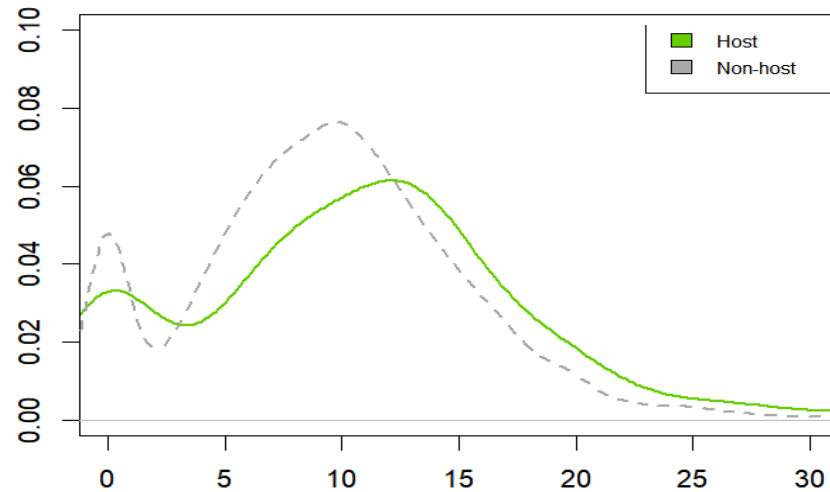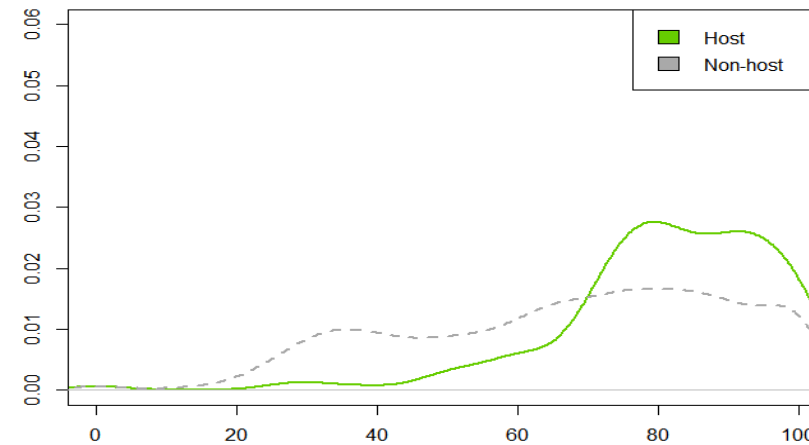
Results: Density distribution (kernel)

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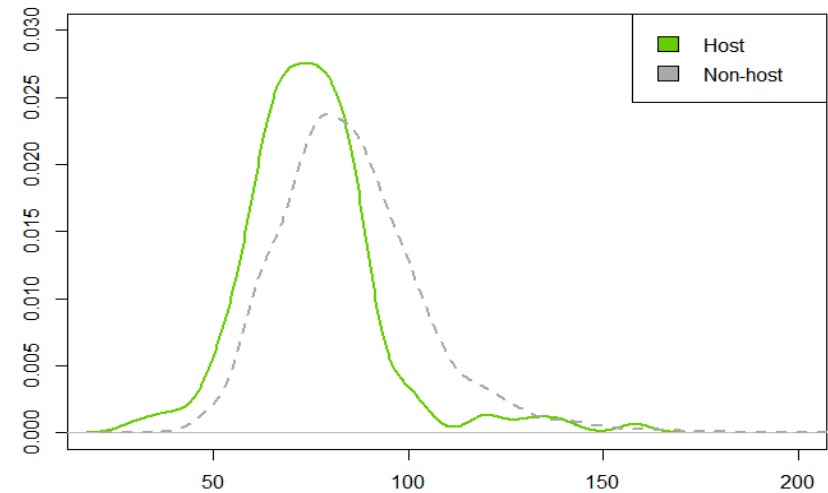
Results: Logit Regression Analysis

$$\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 Unemployed + \beta_2 Inactivity + \beta_3 Homemakers + \beta_4 Foreign + \beta_5 Education + \beta_6 RenterHouseholds + \beta_7 AvgAreaHousing$$

Variable	Estimate	Std. Error	z value	Pr(>|z|)	
(Intercept)	-6.002128	1.026879	-5.845	5.06E-09	***
Unemployment	0.02012	1.15E-02	1.756	0.07914	.
Inactivity	**0.034438**	1.13E-02	3.058	0.00223	**
Homemakers	0.017699	0.008443	2.096	0.03605	*
Foreign	**0.022188**	7.69E-03	2.886	0.00391	**
Education	**0.019058**	0.006994	2.725	0.00643	**
Renter households	-0.004547	4.14E-03	-1.099	0.27196	
Avg area of housing	**-0.017826**	6.76E-03	-2.638	0.00835	**

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Null deviance: 1210.4
Residual deviance: 1122.2
AIC: 1138.2

Odds ratio from Logistic Regression Model

Variable	Odd Ratio	Change in Probability (%) Y=1
Unemployment	1.020324027	**+2,03%**
Inactivity	1.035038022	**+3,5%**
Homemakers	1.017856732	**+1,8%**
Foreign	1.022435494	**+2,24%**
Education	1.019241071	**+1,92%**
Renter households	0.995463319	-
Avg area of housing	0.982332091	-

Results: summing up

- Initial results of the analysis suggest the existence of environmental (in)justice: the community residing in the 'Napoli Orientale – SIN' has a socioeconomic disadvantage that adds to environmental one

- Please note: the results are preliminary; they do not attempt to be generalizable nor make any assumption of causality, but do reveal a disadvantage that constitutes additional vulnerability of the population residing in the SIN

- Data used are old, updating the analysis to the newest variables as of 2021 and time series analysis may reveal interesting new aspects

Thank you for your attention

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SAPIENZA
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