

Environmental Urban indicators: synthesis and interpretation¹

Gli indicatori ambientali urbani: sintesi e interpretazione

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Riassunto: Nel lavoro si propone una metodologia di classificazione per i 103 comuni capoluogo di provincia, basata sugli indicatori ambientali urbani, al fine di valutare il rischio ambientale in ambito urbano. In una fase preliminare viene proposta una lista di indicatori “ideali” necessari a rappresentare lo stato dell’ambiente nei comuni italiani e le pressioni antropiche in essi generate. Un’analisi critica della principale fonte di dati, rappresentata dagli indicatori ambientali urbani diffusi dall’Istat per i 103 comuni capoluogo di provincia, conduce alla scelta degli indicatori che saranno effettivamente utilizzati per l’applicazione.

Keywords: Urban environmental indicators, Classification, Environmental Risk

1. Problem description and working proposal

It is of general interest to be able to understand the environmental state and related pressures to which large human communities are subjected. Urban environmental indicators can be seen as a valuable support to face this issue.

In this paper we aim to define an “ideal” set of indicators useful to build a cities ranking or classification with respect to the above mentioned topics. Then we are going to verify what is really available. Our aim is to propose a critical analysis of the existing data. Our main data source is the Istat’s survey on urban environmental data (Istat, 2006). This choice is justified mainly by the large number of environmental issues investigated by the survey, furthermore the length of their time series, the high level of data quality control and the spatial coverage reinforce our decision. In the following we briefly describe the data source. We critically analyse Istat’s indicators, we select the ones that

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fit into the ideal set, while for the remaining we propose possible improvements in order to include them in the analysis.

In terms of methodological approaches we present an attempt to define a statistically coherent protocol for urban environment analysis, considered as a classification problem, with special focus on risk assessment in urban environment. Our approach moves from an idea developed in the pattern recognition literature. Several independent classifiers, each working on a subset of the covariates (indicators) space, produce a set of corresponding units classifications. Then a *gate*, modulating the partial results, produces a final, combined classification. This conceptual framework has already been used in Jona Lasinio et al. (2005) for Tuscany municipalities risk assessment.

2. Istat's Urban Environmental Indicators

Istat collects yearly urban environmental information (with 2000 as first reference year) for 103 Italian municipalities² (Istat, 2006). The environmental issues investigated are related to population and territory, air, energy, green areas, noise, transport, waste and water. Data are collected from different sources, mainly from statistical offices of municipalities and from some other sources or registers as public utilities (i.e. electricity and gas companies). From these rough data, in order to represent the main conditions of the environment at urban level, Istat elaborates over 70 urban environmental indicators. The reference framework applied to the construction of urban environmental indicators is the well known *Pressure-State-Response* (PSR) scheme, introduced in the seventies by OECD (OECD, 1993) and its development in *Driving-Pressure-State-Impact-Response* (DPSIR) realised by European Environmental Agency (EEA).

References

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² The unit survey referred to the municipalities centre of NUTS3 (the Nomenclature of Territorial Units for Statistics) established by Eurostat more than 25 years ago in order to provide a single uniform breakdown of territorial units for the production of regional statistics for the European Union.