City users and daytime population. An approach with administrative data.

**Keywords:** city users, daytime population, mobility, functional territorial partition, register, integration.

# Introduction

This paper presents the first results of a prototypal statistical register on the city users and the daytime population on a territory.

The data on the resident population is no longer sufficient to govern the present complexity of the territories, in particular for those attractive ones, for universities sites or those with an economic vocation.

Incoming and outgoing flows, daily and periodic mobility, short and long migrations, etc. are a very anthropic pressure that requires services, produces consumption of energy and land. The local government must provide: transport, energy, housing for temporary residents, etc.. Population movements also affect the quality of the social frame both in the territories of departure and arrival.

This information is strategic for the optimal sizing of the collective services and the quantification of the housing needs of the cities and their hinterlands, but also for prevention and intervention plans in the event of natural disasters.

The questions we are trying to answer with this register are "How many are daily these people?, Who are they?, Where do they come from?"

# Methods

The register is obtained by integrating variables from administrative sources and statistical registers in order to suit a multidimensional framework for the units: type of individual, place of origin and destination, citizenship, scholarship, family income, etc. The classification of the city users is an upgrade of the one beforehand developed (Vivio, R., 2014). The repository for administrative data supporting the register is Microdata Integration System (ISTAT).

The production process has been specifically automatized in order to improve the timeliness of the release and the possibility of carrying out automatic controls while processing.

It has been used a deterministic linkage based on the statistical key. In order to achieve specific quality, consistency and coverage analyses with respect to the official sources and checks on non-sampling errors were carried out. Soft editing to recover missing values, and reconciliation methods to standardize information have been applied. For the protection of confidentiality: aggregations of the variable modes, cross-classifications were limited to a minimum and cells at risk of violation were suppressed/encrypted.

# Results

The output is the number of daily city users classified by the type of activity (students, workers, others), by the direction of mobility (from/to), by standard and not standard territorial partition (Functional Urban Area, Local Labour Systems, Metropolitan Cities, cities over 100,000 inhabitants, university cities). Other details are furnished by indicators (attraction index, self-contained index).

Table 1 and 2 show, by way of example, some data on five large Italian municipalities. Consider Rome: it counts 2.864 million residents among which 1.348 are workers or students who live and carry out their activities within the municipality. If we turn at the number of those who are not resident in the municipality but work/study there, we find that 290 thousand are short migrants (they live within the provincial territory), and 895 thousand are long migrants (they come from all over Italy). By adding the inbound flows and deducting the outflows from the resident population, we obtain that the daily population of Rome is 27% greater than the resident population.



It is partly composed of daily flows and partly of periodic flows, and is due to the great attractiveness of the city from any point of view: business, university, tourism. For Milan, the balance is even higher: +47%, while for Palermo it is only +11%. In any case, we are talking about hundreds of thousands of people.

It can be seen how much the cities change in size, passing from the classic resident population to the daily population on the territory.

The indicators allow us to compare the cities: the most attractive at the national level among the five taken into consideration is Milan (50.2%), and the least attractive is Palermo (27.0%): the latter is, however, very self-contained at the provincial level (86.2%). Milan is on a par with Turin and Florence if we talk about the attractiveness of medium range (province).



# Conclusions

The analyses carried out allowed to identify critical points on which it will be possible to act and improve the quality of the data with an integration of new sources, integration of other variables, more accurate editing. However, the level of current estimates is such as to have allowed the product to be presented as experimental statistics in Istat.

The next steps in the development of the register include models for estimating daily movements and periodic movements within the general mobility, both with the use of administrative sources and experimentally with the use of big data.

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