

## **THE DIGITAL DIVIDE IN ITALY AMONG INDIVIDUALS USING DOMAIN NAMES**

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Nowadays, the Internet network is playing a central role in the social and economic system. It is diffusing quicker and quicker, spreading from developed to developing countries and involving a wider and wider set of human activities. According to the Network Users Association (NUA), at the end of 2002, the Internet users all around the world were about 605 millions, with users from United States accounting for a decreasing percentage of the total. In the same year, the European Community Internet users were estimated around 190 millions against 47 millions of the 1999. Such a massive and manifold phenomenon clearly needs to be measured and analysed. The main difficulty in measuring the Internet, in fact, is its distributed nature: it has no central authority in control and no directory of users exists. It is not possible to give an unambiguous definition of an Internet user. Nevertheless, several indicators are available, including Internet hosts and domain names, which are the most used.

The widespread utilization of Internet hosts is probably due to the easiness in obtaining data. However, in general, this metric underestimates the Internet diffusion: the presence of firewalls, the use of dynamic IP addresses, the resource sharing, are only a few examples that demonstrate such a assertion.

Among endogenous metrics, second level domain names represent a valid alternative to Internet hosts. Even this metric underestimates Internet diffusion: not all the users register a domain, nevertheless domains identify a lower bound in diffusion mainly capturing the interactive use of the network.

The Institute of Informatic and Telematic of the Italian National Research Council (IIT-CNR), who is the “it” ccTLD Registry, is carrying out a study to analyse the diffusion of Internet in Italy.). Data were extracted from the databases of the registrations managed by the IIT-CNR through automatic and semi-automatic procedures. The total number of domains names registered by Individuals was 144315 at 15th October 2004. Our research shows the adoption of domain names by Individuals. Italy is divided into 20 administrative units called regions, which, in their turn, are divided into 103 smaller

units: the provinces. Taking into account that “it” registration procedures allow for multiple registrations, the dependent variables of our analysis are penetration rates at regional and provincial level calculated as the percentage of individuals that register at least one domain name. The data show that Internet diffusion is correlated to local development as measured by income, infrastructure endowment and innovation capabilities. Strong inequalities emerge between the three main Italian macro-areas (North, Centre, South).

Internet diffusion is larger in the North but there is a Digital Divide also within each macro-area. For each macro area we calculated the distribution of the provinces in term of standard deviations from the mean value of the Macro-Area. The penetration rates of eight northern provinces and six southern provinces fall more than one standard deviation below the respective mean values. In each macro-area there is a province that performs very well (more than two standard deviations above the mean). Moreover Levene test highlights that there are no statistical significant differences in the variances of the penetration rate between the three areas. In addition to a classical North-South divide, there are also severe within-region disparities. There are several poor provinces in almost all rich regions. Large metropolitan areas exhibit larger penetration rates and in most cases seem to spread over the territory. At a national level, the geographical distribution of domain names is skewed and highly concentrated. In brief it is possible to conclude that Digital Divide in Italy is not a monolithic phenomenon but displays various territorial dimensions that need to be explored separately. Further research is needed to test whether geographical concentration resembles other power laws phenomena that shape the structure of the Internet network (Barabasi et al., 1999, Adamic and Huberman, 1999, 2000).