Group for enhancement of official statistics

Enhancement and Social Responsibility of Official Statistics

Principles, Methods and Techniques,
Applications for the Production and Dissemination

Istat
Istituto Nazionale
di Statistica

Ministero del Lavoro
e delle Politiche Sociali

SISVSP 2011 Workshop
Rome, 28th-29th April 2011

Abstract

UNIVERSITÀ EUROPEA DI ROMA

Enhancement and Social Responsibility of Official Statistics

Principles, Methods and Techniques,
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Abstract

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Session 1

Administrative archives for labour market studies

Chair: Silvia Biffignandi

The statistical units of the compulsory communications and the construction of jobs

Ciro Baldi, Giuseppe De Blasio, Marco Manieri, Leopoldo Mondauto, Roberta Rizzi

Key words: compulsory communications, labour market statistics, editing strategies.

The system of ***compulsory communications*** is a stream of declarations due by employers to notify the events of activation, termination, extension, or transformation of each employment relationship. In the process of transforming the administrative data for statistical purposes, the system allows to identify four types of statistical units [2]. The exclusion of communications of cancellation, correction and those not due gives rise to the set of ***transactions***. Each transaction contains information about the worker, the employer and the contract. From these primary units it is possible to derive the following statistical units: workers, employers and jobs.

The ***worker*** is identified through the unique identifier of the tax code and characterized by the following variables: sex, age, educational level, nationality, address.

The ***employer*** is identified through the unique identifier of the tax code and characterized by economic activity sector, registered office, place of work or local unit. The set of workers and employers represented in the system is constituted only by those that have been involved in at least one event since the implementation of the system (march 2008). For instance the set of workers represented does not include those engaged in a job activated before march 2008 and not subject to an event of transformation, extension or termination after that date (e.g. a permanent contract).

The fourth statistical unit is the ***job*** defined as an employment relationship between an employer and a worker and characterized by the starting date of the relationship. Each job is composed by one activation, (possibly) one transformation of a fixed-term employment to permanent, (possibly) one or more extensions, and (possibly) one termination. It is built by linking sequentially the activation to the other types of

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transactions referred to the same relationship (identified by the threefold key). The variables that qualify the job are: the duration (including extensions and transformation), possibly the end date, the type of the contract (open-ended, fixed-term, seasonal), working time (full-time, part-time…), occupation.

An implication is that the ***jobs*** can be obtained only if for each transaction referred to the same relationship, the information of the three key variables (id of the employer, of the worker and beginning date) is not affected by errors. If it is, a transaction is not merged with the correct job and the chain of events is interrupted. In this case, if the transaction is discarded, the number of terminations in the period when the job contract was supposed to end will be overestimated and the average duration of the jobs will be underestimated.

In order to accurately measure these target quantities the system should be able to match each new transaction with the appropriate job. Two strategies are available to accomplish this task. The first is setting up an editing and imputation procedure to clean the three matching keys. This in turn can be obtained by exploiting information internal to the source or by matching external registers (e.g. Business Registers, Tax data…). A second way is to explore the possibility of designing a record linkage procedure that maximizes the likelihood of matching each transaction with the correct job by exploiting further information contained in the transactions (localization, occupation, personal and corporate names…). This procedure could be based on deterministic rules and/or probabilistic algorithms, alternatively or in sequence.

A further possibility, that can be used as a provisional solution, is to use macro-like adjustments to produce estimates of parameters like the number of terminations per period. Such a strategy consists in correcting the number of terminations per period as estimated from the table of jobs that are properly built (*proper jobs*) with the number of transactions "that have not found place in the chain referred to the reference job" [1] (*discarded transactions*) as shown in Figure 1.

Figure 1: graphical representation of the algorithm for reconciliation of discarded transactions
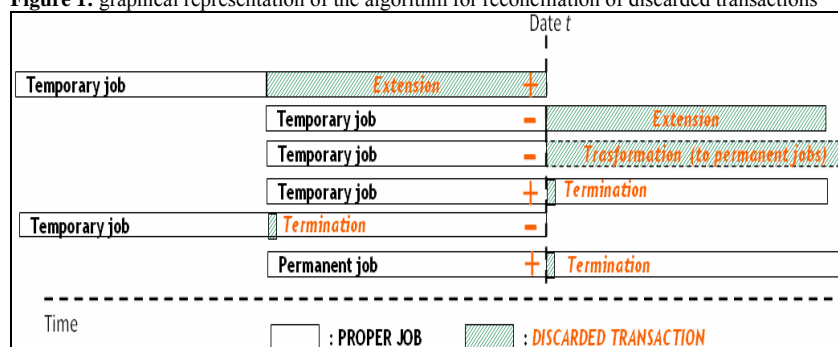
References

1. Anastasia, B., Disarò, M., Emireni, G., Gambuzza, M., Rasera, M.: Guida all'uso delle comunicazioni obbligatorie nel monitoraggio del mercato del lavoro, I Tartufi n.36, Agenzia Veneto Lavoro (2010)
2. Italia Lavoro: L'analisi delle comunicazioni obbligatorie. Nota metodologica (2010)

Monitoring the labour outcomes of graduates through communications on work ins and outs

Riccardo Benetti, Giuliana Coccia, Luigi Fabbris, Leopoldo Mondauto, Grazia Strano

Key words: obligatory communications, graduates, labour market**.**

The integration of data from institutional information sources may represent an important foot for knowledge, through which tailored political interventions can be defined.

In this paper, we:

- illustrate the research possibilities offered by the integration of administrative data from academic archives and the new Labour Informative System (LIS). The LIS is fed with the information that employers who either hire or dismiss employees should transmit via electronic channels to a common database (Obligatory Communications, from now on OC). The information system manages more than 45 million communications, corresponding to 47 million of employment contracts (24 million contract activations, ins, and 23 million contract suspensions; outs); out of the 47 million records, 48% refer to female employment;

- examine the data of a cohort of students who graduated at Padua University from March 2008 to June 2010 linked with the national and regional records of the OCs of LIS. In particular, we will examine the representativeness and the reliability of the data contained in the joint database – named PLUG_IN – formed linking the academic and the labour data from the two independent sources.

The data quality analysis is relevant since the LIS deals exclusively with the data flow relative to the dependent work and to that part of independent one that concerns the

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occasional collaborations. Furthermore, only the regular labour contracts are contemplated.

Moreover we will examine the PLUG_IN data content, that is job searching time, type and location of the work activity entered by graduates, type of labour contracts and tenure, and graduates' labour outcomes along time. The indicators can be broken down according to ascribed characteristics of graduates, school and academic curriculum, specific graduates' degree, and any other information given by graduates for job finding. The available data permit also to break down the available information on employed graduates by region, economic activity sector, type and composition of firm.

The first-glance analysis of PLUG_IN database shows that, among 65.202 graduates of Padua University:

• 30.596 registered at least one employment contract of the types above said, while 28.294 had at least one contract suspension;

• 30.211 obtained a contract after having achieved the last degree; about 75% of these started to work in Veneto, while the remaining 25% obtained their professional position out of this region.

The employment contracts were mainly concentrated in the following economic sectors:

• Real estate, rental, informatics, research and service for enterprises activities (31%);
• Health and social service activities (18%);
• Education (17%);
• Other service activities (17%);
• Manufacturing (13%).

More or less 60% of graduates who found a job after their degree benefited of a short term or of a provisional contract.

References

1. Fabbris L. (2010), Dal Bo' all'Agorà. Il capitale umano investito nel lavoro. Padova, CLEUP
2. Ministero del lavoro e delle politiche sociali (2009), Dossier Comunicazioni Obbligatorie - Il patrimonio della conoscenza attraverso la semplificazione amministrativa, Roma.

Workers' level of inclusion in the labour market: an example of territorial classification

Simona Calabrese, Giuliana Coccia, Marco Manieri, Leopoldo Mondauto

Key words: inclusion level, labour market, territorial analysis, cluster analysis.

The analysis of the main labour market indicators allows to observe regions' and provinces' reaction to the recent economic crisis. In this paper, we propose the comparison between the outcomes of two different multiple factorial analysis , based on a group of variables selected from the Italian Labour Force Survey (*Istat*). They are considered locally and observed for six consecutive years (*2004-2009*) and allow to reproduce the employment levels and activity participation to the labour market.

In particular, this study sheds light on those aspects that, unlike the traditional North-South distinction, may offer a clearer reading key of the Italian situation, focusing on those elements which influenced negatively, especially in the last biennium, the labour market inflows and outflows. Only the simultaneous evaluation of more indicators may increase significantly the ability to describe, in depth, the health status of a country's economy and the consequent occupational dynamics. On the contrary, an analysis based on single factors may induce to partial and misleading conclusions. Hence, in order to achieve our aim, we classified the Italian territories according to the performances registered during the last six years, proposing two different multidimensional data analysis approaches. The first one is obtained according to a *tandem analysis*, here based on a *Principal Component Analysis* (*PCA; Benzecrì, 1973-82*) followed by a *Hierarchical Clustering Analysis* (*HAC; Gordon, 1999*). This analysis is conducted on two - dimensional tables, composed by 120 active observations (*the regions for each year*) and 642 additional cases (*the provinces for each year*). In this model, territories per year are considered as different cases.

However, the dataset nature allows to observe the phenomenon's evolution. According to this point of view, we propose a second approach, the so called multiway approach

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(*Coppi and Bolasco, 1989*), in which observations for each region and province shall be considered as different occasions. Consequently, we obtained six two-dimensional tables, one for each observed year. Each table contains 20 active observations (*regions*) and 107 additional ones (*provinces*) and some indicators. They constitute a sort of parallelepiped, the dimensions of which are represented by units, variables and occasions. This latter approach allows to follow the time evolution of regions and provinces. Among the possible available multiway techniques, we selected the Multiple Factorial Analysis (*MFA; Escofier and Pages, 1990*) for its case of use and interpretation. This method is particularly widespread for the description of those phenomena for which a set of observations (*in our case regions and provinces*) is characterized by different groups of variables, relative to different occasions. Here, the groups are composed by the same variables, but observed in six consecutive years. Differently from the *PCA*, the *MFA* is able to show the evolutionary trend of variable groups. Finally, to classify regions and provinces, we decided to select, a pruning approach, based on a classification obtained at different branches of the dendrogram.

References

1. Camillo, F. (1994), «La stima dell'offerta comunale per il territorio della Lombardia Orientale: una strategia per la traslazione di modelli fattoriali e discriminanti dalle province ai comuni», Rapporti di Ricerca del Dipartimento Metodi Quantitativi, Università di Brescia, Quad. n.69.
2. Camiz, S., and L. Mondauto, Factorial and discrimination strategies for the estimation of the provincial rate of irregular work, Cladag, 2008.
3. Escofier, B., and J. Pagès (1990), *Analyses Factorielles Simples et Multiples,* Paris, Dunod.
4. Gordon, A.D. (1999), *Classification*. London, Chapman and Hall.
5. Lang, S. (1972), *Linear Algebra*, Reading (Massachussets), Addison-Wesley.
6. Lebart, L., A. Morineau, and M. Piron (1995), *Statistique exploratoire multidimensionnelle,* Paris, Dunod.
7. Longford, N.T. (2005), *Missing Data and Small-Area Estimation*, Berlin, Springer.
8. Satorra, A., and E. Ventura (2006), *Small-Area estimation at IDESCAT: current and related research*. http://www.idescat.net/cat/economia/saei.pdf
9. Ward, J.H. (1963), «Hierarchical Grouping to Optimize an Objective Function», *Journal of the American Statistical Association*, 58: p. 236-244.

INPS administrative archives for labour market analysis

Antonietta Mundo

Key words: administrative archives, labour market policy, longitudinal sample.

INPS, in its quality of the main social security agency, has the task to manage the Italian insurance positions of almost all self-employed and employees in the private sector, providing the benefits relating to social security benefits and pensions. The abundance of information existing in INPS administrative records is increasingly being required to supply data to make assessments on employment policies.

To meet the growing demand for data and statistics and also to facilitate its institutional activities, the Institute has provided "Longitudinal sample of elementary data" extracted from its administrative records. Until now, the complexity and heterogeneity of the INPS archives have limited the possibility of applying sophisticated sampling plans from a methodological point of view, imposing a selection of sample units based on the date of birth, compensated by the high amplitude of the samples (up to 7 million insured and retired), which is, however, an undeniable advantage over normal investigations, in which the huge number of samples have to deal with the costs of the surveys.

INPS has recently begun to follow longitudinally certain types of atypical workers and the unemployed, a whole group of workers employed or present in a given year, in order to study, in retrospect, state transitions, career development and time required for complete replacement of each group with the next (times of stabilization of the work for the whole generation).

The paper will handle only this second aspect, illustrating the new analysis and published experience in the "First Report on social cohesion, " with the aim to facilitate and stimulate research on methods of analysis for the monitoring and evaluation of employment policies, the reintegration time of the unemployed in the labour market, combined with the quality of the new found job and all other aspects of employment.

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The analysis of atypical workers (temporary workers, temporary, apprentices, workers on call, parasubordinated, etc..) allows to follow over time different generations of workers, employed or belonging in a given year to the same type of workers and allows to evaluate the market effects of atypical work and the system of social safety nets in different economic situations, the impact of new regulations and to observe the state transitions.

There are many INPS administrative records involved and their use requires a deep knowledge of the information and the relative legislation about the information flows; administrative experience is required for the correct normalization and, finally, it is necessary to coordinate the information contained in different archives.

For example for the monthly economic analysis of policies on groups or globalism the estimates about the failed population of administrative records are used on the basis of specific probability, built by observing a long series of monthly data.

Knowledge of administrative flows of payments of benefits to provide income support allows to estimate the number of entrances and exits from unemployment, mobility, and the number of workers in CIG.

References

1. Fabio Berton, Francesco Devicienti, Lia Pacelli (2008) Are temporary jobs a port of entry into permanent employment? Evidence from matched employer-employee data, Working papers Lrr 79
2. Bruno Contini e Ugo Trivellato (2006), Eppur si muove. Dinamiche e persistenze nel mercato del lavoro italiano. Il Mulino
3. Trivellato U. (a cura di) (2008), Cnel, Il lavoro che cambia, contributo n. 9 "SARA Lavoro: un Sistema di Archivi per Analisi sul lavoro"

Young entrants and temporary jobs

Francesco Chelli, Chiara Gigliarano, Marco Lilla and Stefano Staffolani

Key words: temporary jobs, flexibility, young workers.

The latest estimates from the labour force survey in Italy state that more than 1 out of 4 individuals aged between 15 and 24 years are officially unemployed[3]. Furthermore, the incidence of temporary contracts is higher for the younger cohorts and young workers who receive very low initial wages [1].

We aim at evaluating the job market entrance of the younger cohorts (aged between 15 and 34) in Italy by using two years job histories from a representative sample of the compulsory communications dataset[4] ("Comunicazioni Obbligatorie", CO).

As shown in Figure 1, different types of temporary contracts have very different average duration: apprenticeships are the most long-lastings while internships have the lower durations. Table 1 shows the estimates for the probability of getting a permanent position and the hazard for the termination of a temporary contract for some individual and job characteristics, controlling for period, regions, occupation and sector.

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3   For a comprehensive report on Young Italians conditions see [2].
4   They contain all contracts start-up, transformation and termination since 2008 [3].

Table 1: Logit estimates of being hired with a permanent contract (L1 & L2) and Survival estimates of the hazard for a temporary contract (S1 & S2), β coefficients

Independent variables	L1	L2	S1	S2
Age	0.060***	0.075***	0.001	-0.022***
Female	-0.215***	-0.166***	0.055***	0.010
Edu: secondary	-0.268***	-0.208***	0.032***	0.045***
Edu: tertiary	-0.442***	-0.121***	-0.352***	-0.437***
Italian	-0.755***	-0.582***	0.086***	0.123***
Working time: part-time		0.189***		-0.234***
Contract: apprentship				-1.197***
Contract: parasubordinate				0.250***
Contract: internships				-0.040
Controls:	quarters, regions	quarters., reg., sect., occupation	quarters, regions	quarters., reg., sect., occupation

Note: reference categories are males, with primary educ., immigrants, full-time, temporary employm.

Figure 1: Survival estimates by kinds of non-permanent contracts, months
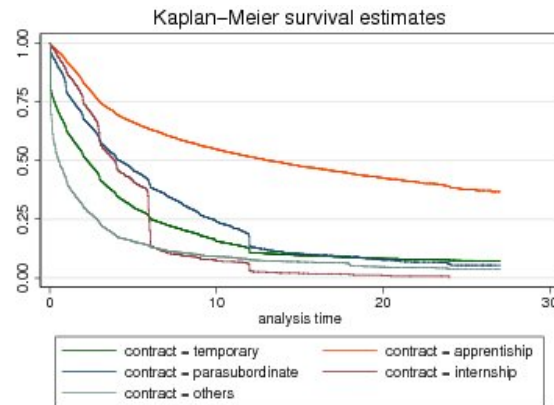
References

1. Berton F., Richiardi M. e Sacchi S., Flex-Insecurity - Perchè in Italia la flessibilità diventa precarietà, Il Mulino, Bologna, (2009)
2. Coccia G., Rossi B., I giovani in Italia, Ministero del Lavoro e delle Politiche Sociali, (2010)
3. Strano G., Lang T., Rossi B., Sorci V., Il sistema delle comunicazioni obbligatorie: uno strumento per l'analisi del mercato del lavoro, Ministero del Lavoro e delle Politiche Sociali, (2010)

Session 2

New knowledge challenges for the policies

Chair: Marisa Civardi

Measuring cultural and social dimensions of economic development: challenges and opportunities

Alessandra Righi and Leonello Tronti

Key words: knowledge, human capital, social capital, sustainability.

The scientific literature has long pointed out the importance of cultural and social dimensions of economic development for understanding both economic growth and non-monetary aspects of social development (Becker, 1964; Coleman, 1988; Putnam 1993).

For example, the concepts of social capital and human capital, for several decades at the centre of theoretical debates, have finally assessed their importance not only for understanding and easing present economic development, but also for assuring its sustainability for future generations. Unfortunately however, a sometimes harsh theoretical debate has not so far succeeded, in producing appropriate consequences in terms of measures and indicators, as also recognized by the Stiglitz-Sen-Fitoussi Report, as well as by the First Report of the Task Force for Measuring Sustainable Development of the Joint UNECE-Eurostat-OECD Working Group on Statistics for Sustainable Development. Attempts in this direction have often failed to reach a value widely shared not only internationally, but even at national level.

Mainly for this reason, official statistics has long been delayed in building the conceptual framework and in producing indicators on these issues. And, consequently, the lack of information on these aspects has not improved, if not even weakened, the ability of individuals to make informed choices on their education and training paths no

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less than that of policy makers to guide collective choices on important issues such as fertility, education, health, social participation or the organisation of the workplaces.

Recently, however, this challenge has begun to be accepted by official statisticians, on the basis that, if in order to progress on these issues a broad theoretical and methodological convergence is necessary, now the time has come to assume the responsibility and take brave and forward-looking decisions. This commitment has therefore been shared internationally, so to overcome together the most relevant difficulties. These are the cases of the NIS's Consortium for the OECD Human Capital Project (OECD, 2009; Mira, Liu, 2009), that aims at the production of harmonized human capital measures based on the discounted lifetime income approach (Jorgenson, Fraumeni, 1992), or of the indications on the measurement of Social capital coming from the Task Force for Measuring Sustainable Development of the Joint UNECE / Eurostat / OECD Working Group on Statistics for Sustainable Development.

Furthermore, in Italy a growing demand for information about knowledge and learning has recently developed, mostly under the impulse of Italian academic researchers and International Organizations (OECD, UNECE) as well, pushing for the development of official measures on the issue. The Italian participation to international projects focused on the topics of education and the quality of learning (OECD-PISA, IALS, OECD PIAAC) shows the interest of the official statistics to the measurement of education and HC.

The definition and measurement of human capital (HC), for instance, bears on very different issues, like measuring tangible HC (fertility, migrations, growing children up to working age, health of the population), that mostly belong to the area of non-market production, as opposed to intangible HC (education, training, experience and learning as input, wages and salaries or productivity as output), belonging to the spheres of public expenditure and market production. But only a thorough and harmonised measurement of these issues can provide to the various users an effective guidance for their choices, being them individual or collective. The paper aims, therefore, at accounting for the main activities under way, as well as for the major conceptual aspects related to the development of these measures, giving some hints on the information advancements that the availability of indicators on these issues will allow.

References

1. Becker G. S.: Human Capital, Columbia U.P., New York (1964; 3rd ed. 1993)
2. Coleman S. J.: Social Capital in the Creation of Human Capital, Am. Jou. of Sociology, 94, supplement (1988)
3. Jorgenson D. W., Fraumeni B., The Output of the Education Sector, In Griliches Z. (ed.), Output Measurement in the Services Sector, University of Chicago P., Chicago (1992)
4. Mira M., Liu G.: The OECD Human Capital Project: Progress Report, Paper prepared for the 31st General Conference of the International Association for Research in Income and Wealth, St. Gallen, Aug. 22-28. (2010)
5. OECD-Statistics Directorate: Building Human Capital Accounts for the Purpose of International Comparisons: A Project Proposal, Paper presented to the OECD Committee on Statistics Meeting, UNECE, Geneva, 10–11 June (2009)
6. Putnam R.D.: La tradizione civica nelle regioni italiane, Mondadori, Milano (1993)

A proposal for a new system of Italian university student satisfaction indicators

Laura Antonucci, Barbara Cafarelli, Corrado Crocetta

Key words: student satisfaction, SISTAN, total quality management.

In the last decades the demand for information from policy makers and stakeholders has been considerably increasing. A large part of the information available is referred to data collected on objective bases but there is an increasing need for subjective data and in particular for customer satisfaction judgments.

As regards to the University System there is a strong interest from potential students, families and institutions to have information about the reputation of the Universities (Giuditta and Costabile, 2006; Iezzi, 2005; Milioli and Zani, 2000). This kind of information is usually difficult to collect but our proposal is devoted to build a very cheap, extensive and trustable monitoring system. Our proposal can be implemented in cooperation with ANVUR and MIUR along with SISTAN and is aimed to evaluate the Italian university student satisfaction with respect to the following aspects:

1. availability of information and communication technology
2. library resources
3. accommodation facilities offered by the campus or the city
4. availability of laboratories, classrooms, parking and public transportation
5. feeling with academic institutions
6. efficiency and dynamism of the local labor market
7. security of the area
8. quality of life in the area
9. efficiency and effectiveness of services offered
10. international relations

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In order to build a reliable and inexpensive system of monitoring the student's opinion can by collected by using a CAWI method (Biffignandi and Pratesi, 2003) able to split the different considered aspects, in many questionnaires, that can be randomly administered to the students at the time of booking exam**s.** The monitoring system can be administered directly by ANVUR with the collaboration of the Italian universities that shall adapt their reservation systems to the needs of the central system.

Data collection will take place throughout the year. The data will be published in an annual report and in the MIUR website. It will be possible to do some on-line query to obtain the requested information. The annual report will contain dashboard indicators useful to compare the reputation with regards to the aspects of the different institutions considered according to their students. This opinions data can integrate the objective indicators, actually published by MIUR for the evaluation of universities, the data base *OFF.F,* the *Anagrafe degli Studenti* and the new *Sistema Informativo sulle professioni*. Each university will have access to the data base on line in order to continuously monitor students' opinions. The advantages of our proposal of putting through the MIUR some subjective indicators of customer satisfaction in the SISTAN system can by summarized as follows:

1) the actual system of objective indicators of performance, used to evaluate effectiveness and efficiency of the Italian university system, can be integrated with customer satisfaction indexes able to take into account some latent dimensions such us the reputation and the feeling for an institution playing an important role in the decision-making process of the families of students and of the institutions where universities are located.

2) the availability of data inside the SISTAN system guarantees quality of information, certified data, respect for privacy, high visibility and accessibility to the data base.

3) the procedure proposed is inexpensive, easy to deploy and manage. It provides a continuous and reliable monitoring system.

References

1. Biffignandi S., Pratesi M., (2003). Tempestività e qualità: aspetti concettuali e comportamenti di risposta nelle indagini via Internet. Un'applicazione ad un'indagine regionale sulle imprese. In *Qualità e Informazione Statistico Economica Territoriale: Aspetti del Processo di Formazione dei Dati e delle Metodologie di Analisi*. A cura di Biffignandi S., Gozzi G. F. Angeli. Milano.
2. Giuditta A. and Costabile M. (2006), l'orientamento ai clienti delle università riflessioni sulla customer satisfaction delle imprese che utilizzano ALMALAUREA. In *VIII Rapporto sulla condizione occupazionale dei laureati – I laureati di primo livello alla prova del lavoro*. A cura del Consorzio Interuniversitario ALMALAUREA. Il Mulino.
3. Iezzi D.F. (2005). A new method to measure the quality on teaching evaluation of the university system: the Italian case. In Social Indicators Reasearch, Vol. 73, No. 3, pp. 459-477
4. Milioli M. A., Zani S. (2000). Analisi della "student satisfaction" nella Facoltà di Economia di Parma. In *Atti della XL Riunione Italiana di Statistica, Processi e metodi statistici di valutazione*. Firenze, 701-704.

How the household production enriches GDP: a new opportunity for the policy

Alessandra Righi and Monica Montella

Key words: national accounts, satellite accounting, household production.

Households are one of the major groups of economic actors in the national economy. Their principal roles are those of consumers, employees and unincorporated producers. The Italian statistics can illustrate their importance: in 2009 households are responsible for 26% of Gross Domestic Product; compensation of employees received by households amounts to about 44% of Gross National Income; their actual final consumption is about 74% of Gross National Income.

For many years economists have argued that ignoring the income and wealth generated by housework introduces a bias in various areas of economic analysis. Kuznets (1944) and Clark (1958) have pointed out that national income is significantly underestimated by not taking into account income in kind provided by productive household activities. Kende (1975) argued that, as conventionally measured, final consumption gives a misleading picture of "real" consumption when the goods and services produced by unpaid labour of household members are excluded. Nordhaus and Tobin (1972) contended that the production of non-market services by household members contributes to economic welfare which, as a result, is not properly measured by conventional GNP. Walker and Gauger (1973) argued that the economic contribution of women to production is grossly understated by conventional statistics because women perform about two thirds of overall housework.

These considerations have prompted studies in several OECD countries in which authors develop measurement methods and provide monetary estimates of value added by productive activities of households outside the market (OECD, 1999).

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However, so far in the National Accounts households are taken into account mainly as consumers and as producers of market activities, that is within the production boundary of the SNA. As the value of goods and services produced by households to satisfy their needs is quite large, its measure is essential to estimate the level of overall economic activity of a country (including informal production). Considering the trends to the broadening of well-being measures, proposed by the Stiglitz-Sen-Fitoussi Report and by the European Commission, it is important to extend the role of the household also as a producer of non-market activities (informal production).

From the foregoing emerges the need to promote the construction of a satellite account of household production by extending the analysis also to cover the non-market activities carried out within the household (that is, unpaid work; family care and capital formation).

Several international studies have drawn attention to the need to evaluate the domestic work and to develop a satellite account on household production, according to a consistent methodology allowing comparisons between different countries (Abraham and Mackie 2005, Eurostat, 2003).

Unfortunately, in recent years, the lack of this information has prevented the development of economic policies best suited to the context of real social development of the country. Instead, the inclusion of the household production as a national output has an impact both on the measurement of GDP - by providing a parallel alternative measure - and on the analysis of the short and long term economic cycle.

The paper aims at accounting for the main activities under way, as well as for the major conceptual aspects related to the development of this satellite account, giving some hints on the information advancements that the availability of indicators on these issues will allow.

References

1. Abraham K., Mackie C.: Beyond the Market. Designing Non market Accounts for the United States, In Panel to Study the Design of Non market Accounts, The National Academies Press, National Research Council (2005)
2. Clark C.: The Economics of Housework, Bull. Oxford Institute of Statistics (May) (1958)
3. Eurostat: Household Production and Consumption: Proposal for a Methodology of Household Satellite Accounts, Brussels (2003)
4. Kende P.: Vers une valuation de la consommation réelle des ménages, Revue Consommation (1975)
5. Kuznets S.: National Income and its Composition, 7979-7938, National Bureau of Economic (1944)
6. Nordhaus W., Tobin J.:, Is Growth Obsolete?, National Bureau of Economic Research (1972)
7. OECD: Proposal for a satellite account of household production (1999)
8. Walker, K., Gauger W.H.: Time and its dollar value in household work, Family Economics (1973)

The importance of official data for the definition of municipal policies for social housing

Maria Gabriella Grassia, Emma Zavarrone, Vincenzo Pastena

Key words: air, social housing, population data, cadastral data.

1 The house plan of Campania Region

The State-Region agreement signed on 31st March 2009, has initiated a program to determine opportunities for urban renewal, encouraging households and businesses to invest in house as a primary asset [1].

In the framework of this Agreement, Campania Region approved the Law nr. 19/2009. Subsequent modifications to this Law have allowed municipalities to identify areas in which carry out urban renewal initiatives, in order to promote social housing.

In our paper, we will explain the case of the Municipality of Succivo that, according to the regional housing plan, has identified the areas to be allocated for social housing. However, before, to make changes in the existing "Development Plan", the Municipality of Succivo decided to undertake an assessment of the 'impact' of the future Regulation and to implement a model of integrated planning and negotiation between public and private actors involved. The aim of the integrated planning has been to identify the main choices on which it is important to focus to ensure economic growth, social sustainability and citizen satisfaction in the medium and long term. Necessary data for the screening of the area and possible strategies for the use of administrative city sources

The screening of the territory started with the placement of the municipality of Succivo into a set of neighbouring municipalities referred as "Atellana conurbation". Succivo,

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together with the municipalities of Atella Orta, Sant'Arpino and Frattaminore, seems to form a single village, hence the definition of conurbation. The municipalities of the "conurbation Atellana" are located within the wider area of "agro-aversano", with an estimated population of around 270,000 inhabitants, constituting the western-end of the Naples conurbation.

For the screening of the territory, the first problem has been the identification of the sources of statistical and administrative data to be analyzed.

The data that form the basis for operational planning of a policy of social housing are: The dynamics of the resident population; Population structure; Family structures; Buildings of available and potential users (it will be treated in this way, the facilities for community activities, urban, residential and public housing, rents, and their dynamics); Employment, unemployment and labour market structure; Households' income; Economic activities in the area.

These data enable us to measure the homelessness, through the construction of indexes summaries of possible alternative scenarios to start up local development [2].

If the "Register Office" is the primary source to restore the population structure and its dynamics for is the primary source, for other data the statistics sources are more limited [3]. How can we find updated data and local details?

The Cities of "Atellana conurbation" allowed access to its archives in order to obtain the largest number of information. Apart from the Registry Office, data from the following sources were analysed: "Collection Office on TARSU", water canons, data of one-stop production activities and commercial activities, ISEE models of income self-certification. However, the possibility of using administrative data has not completely met the need of information useful to analyse the land and to ensure a proper planning of local development. This experience opens a wide debate on the information needs of local governments on a wide more political and economic federalism.

References

1. Baldini, M., Federici, M.: Il social housing in Europa, CAPPaper n. 49, Dipartimento di Economia Politica – Università di Modena e Reggio Emilia (2008).
2. CLES - Centro di Ricerche e Studi sui Problemi del Lavoro, dell'Economia e dello Sviluppo, Politiche abitative nella Regione Campania (2008).
3. Mariani, P., Mezzanzanica, M., Zavanella, B.M.: "Statistical information systems and data warehouses for job marketplaces". In: Atti della XLIII Riunione Scientifica della Società Italiana di Statistica, Turin, Italy, (2006).

Foreseen developments in environmental accounts *vs* policy information needs

Carolina Ardi, Cesare Costantino, Angelica Tudini, Giusy Vetrella

Key words: environmental accounting, satellite accounts, national accounts, development policy.

Environmental accounts integrate economic and environmental information in a standardised accounting framework which adopts national accounts principles, definitions and classifications, thus providing significant value added in the analysis of the interaction between the economy and the environment to all users, with a particularly high potential in terms of policy use. Results of a joint work carried out by the Italian Department of Development Policies and Istat in 2005 show how environmental accounts can significantly contribute to the design, implementation, monitoring and evaluation of development policies. The contribution can either be direct, when data are used to improve the available evidence on interactions between the economy and the environment, or indirect, when data are used as input for modelling.

Beyond the domain of development policies, awareness of the significant contribution of environmental accounts to decision-making led in 2007 the Italian government to adopt a bill that would introduce green budgeting in all public economic and financial planning, complementing the financial budget. Under the proposal, all national, regional and local administrations would gradually implement a green budgeting system including: a budget showing planned expenditure on actions aimed at reaching ecological sustainability targets and a final balance showing actual expenditure; both

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the budget and the final balance would be complemented by data derived from a system of physical and monetary environmental accounts and indicators.

Which modules of environmental accounts are in practice developed enough to adequately inform policy? At present, both in Italy and EU-wide, the production of environmental accounts has proved to be relatively mature in three areas where suitable basic data exist: economy-wide material flow accounts, air emission accounts, environmental protection expenditure accounts and environmental taxes. In order to meet policy demand for regular and standardised environmental accounts data, the forthcoming EU Regulation on environmental accounts will make it compulsory for each Member State to regularly deliver time series for economy-wide material flow accounts, air emission accounts and environmentally related taxes by economic activity.

The core well-advanced and soon compulsory modules, although proving to be very informative, cannot by themselves fully satisfy users' needs in general and particularly policy needs.

What kind of development can we foresee for environmental accounts in the medium-long term? A very clear path in the development of environmental accounts is set by Eurostat which is currently pursuing the objective to implement the recommendations provided by the 2008 European Strategy for Environmental Accounting (ESEA), mainly driven by the need to inform policy while taking into account technical feasibility constraints. Projects already under way include:

- within physical accounts: Energy Accounts (for the medium term) and Water Accounts (in the longer run), both based on a Supply and Use framework;
- within economic accounts: Resource Use and Management Accounts and statistics on environmental goods and services as well as on environmental subsidies.

The medium-long term course for environmental accounts will also be influenced by the international process aiming to provide stakeholders in general and particularly policy makers with improved data and indicators to measure societies' progress; crucial elements of this process are the European Commission's proposed actions to better measure progress in a changing world, the on-going OECD Global Project on Measuring the Progress of Societies and the recommendations of the Stiglitz-Sen-Fitoussi Commission on the Measurement of Economic Performance and Social Progress. In the EU context directions are expected to be defined by a high level group known as Sponsorship group. Priority objectives for environmental accounts stemming from this process include:

- to increase the timeliness of environmental accounts, thereby allowing the provision of short term integrated environmental and economic information to policy makers;
- to address distributional issues;
- to provide data at the sub-national level.

Examples do exist of national pilot initiatives that go in the right direction. The Netherlands is on the forefront as regards timeliness and distributional issues with its pilot CO_2 air quarterly emission accounts and households' air emissions account by income size. Italy is leading the way in the field of territorial breakdown with the production in 2009 of the first set of air emission accounts at the Nuts 2 level, driven by the aim to adequately represent the country's high degree of diversity in its economic and environmental endowment.

Session 3

Administrative archives for social and economic studies

Chair: Maurizio Sorcioni

The labour market participation of people with disability: key challenges for the use of administrative data for statistical purposes

Daniela Bonardo, Grazia Di Bella, Lorena Galiè, Valentina Talucci

Key words: disability, labour market, enterprise, employee, administrative data.

The revised Lisbon Strategy launched the challenge for the adoption of policies able to promote professional integration of people with disabilities. In the last years, the prevalent approach for analyzing the social integration level of disable people has moved from socio-sanitary conditions to employment conditions. In Italy, in order to improve social integration in the labour market, some measures and policies for promoting employment of persons with disabilities were adopted (Law 68/1999, Law 104/1992, Legislative Decree 276/2003). It's useful to verify the outcomes of these policy implementation during the last two decades. The availability of updated micro-data coming from administrative sources offers the opportunity to conduct statistical analysis on this issue.

The administrative source of monthly employers' social contribution declarations in the annualized version of INPS (National Institute of Social Insurance) includes extremely detailed information on the contributions paid by employers, particularly on all forms of business support for the integration of disabled workers. For this reason, this source has been selected to identify and study the population of disabled people employed in enterprises. Starting from the Inps source, it is possible to differentiate: a) people employed in compliance with Law 68/1999 (about 67%-79% reduced capacity to work or more than 79% reduced capacity to work) and people employed with placement contract, who have more than 45% degree of disability (Legislative Decree 276/2003), whereby

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there are social security contribution relief; b) people holding a certificate of disability with connotations of gravity that are entitled to monthly or daily rest periods (Law 104/92). This administrative source has the characteristic of LEED database (Linked Employer Employee Data; Bryson, Forth, Barber, 2006): it means that for each worker the business identification is available. The strengths arise from the possibility of integrating these data with those about individuals (administrative sources of Tax data, Social Security data, etc.) and about enterprises (Statistical Italian Business Register called ASIA). Put together, all this information generates integrated data sets referred to derived statistical units of analysis (Statistics Denmark, 2007); from a socio-economic point of view, it is interesting to consider the data sets for the following units: employees, enterprises and territorial units (i.e. aggregated data referred to NUTS2 level). In the integration phase, the variables may be attributed to statistical units through using sum/prevalence/mean algorithms. Regarding to the employee unit, the possible variables are: {gender, country of birth, place of residence, age} directly referred to individuals, {employment contract, contractual working time, professional status, economic sector of employment, annual working days}, referred to the primary employment in the year. Example of possible statistical analysis on employee is the study of the targeted population distribution related to the main characteristics of the involved enterprises. Among these characteristics, the economic activity (Nace Rev. 2 classification), the dimensional class (in terms of employees), the legal status and the geographical unit are of paramount interest. Table 1 shows the distribution of disabled population by economic activity of enterprises. In 2006 there were 16,368 disabled workers, that is equal to 0.13% of the total, mainly in manufacturing firms (36.9%), in real estate activities (17.2%) and companies working in the wholesale and retail trade (15%).

Table 1: Employed persons (in primary employment) in private firms by economic activity - Year 2006

Ateco	Disabled workers		Share on total
	n.	%	
Manufacturing	6,046	36.94	0.15
Real estate activities	2,809	17.16	0.15
Wholesale and retail trade	2,448	14.96	0.12
Financial and insurance	1,849	11.3	0.37
Transportation and storage	1,177	7.19	0.13
Construction	701	4.28	0.05
Food service activities	486	2.97	0.05
Other services	427	2.61	0.09
Energy	173	1.06	0.15
Education	164	1	0.22
Mining and quarrying	88	0.54	0.21
Total	*16,368*	*100*	*0.13*

Source: our elaboration on INPS and ASIA data

The statistical datasets for each reporting unit could be available in time series (2006 - 2009) in order to be able to produce both cross-sectional and longitudinal analysis.

References

1. Bryson, A., Forth, J. and Barber, C. (eds.) (2006) Making Linked Employer-Employee Data Relevant to Policy, DTI Economics Occasional Paper No. 4, Department of Trade and Industry, London.
2. Istat (2009) La disabilità in Italia. Il quadro della statistica ufficiale, Roma. Web site: http://www.istat.it/dati/catalogo/20100513_00/arg_09_37_la_disabilita_in_Italia.pdf
3. Statistics Denmark (2007) Declarations of content: Integrated Database for Labour Market Research (IDA).

Statistical challenges during economic crisis: shortcomings in exploiting administrative data

Maria Carla Congia and Silvia Pacini

Key words: administrative data, economic crisis, labour cost statistics, short-time work.

The latest recession has affected public statistics in a number of ways, requiring a greater attention in maintaining their statistical quality [4]. The use of administrative data may imply some specific issue to be dealt with in order to ensure that the methodological basis of statistics remain valid in a changing economic situation.

In Italy, during the recent economic crisis many enterprises have largely had recourse to the short-time work (hereafter STW) to overcome the contraction of the demand. Since the end of 2008 the number of STW employees has suddenly grown, jeopardizing the quality of some short-term statistics, like the gross wages and labour cost per capita quarterly indicators produced by the Istat Oros survey.

These short-term indicators are extensively based on National Social Security (Inps) data on the monthly social security contribution employers' declaration (DM10 form) integrated with Istat survey data on large firms (with more than 500 employees) [1, 3]. Catching the information on STW employment from such administrative data is not an easy task. Therefore when the Oros survey was implemented the cost of adjusting data for STW was too high compared to the relatively low impact of the phenomenon itself: year-on-year changes of the labour cost per full time equivalent (FTE) jobs were not significantly different if the employment estimate at the denominator of the indicators was calculated with or without STW employees.

The assumption of invariance of the STW level is not valid anymore from the end of 2008 when the number of STW hours subsidised to face off the deepest economic slowdown after the 1929 crisis has quickly risen [2].

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Paid to the employees by Inps, the STW allowance is not a component of the labour cost and it is not recorded in the DM10 monthly contribution declaration. It is the way the information on employees is declared on the DM10 form that may imply some incoherencies between the denominator and the numerator of the per capita indicators when STW is used.

The methodology for the estimation of the FTE jobs at the denominator of the Oros indicators is based on the summing up of full time (FT) employees and the part time (PT) employees reduced by a quotient which measures the proportion of hours paid to PT employees compared with the FT labour input stated in the national collective labour agreement. This method may lead to an overestimation of the labour input when a full time employee works partially in the month and receives an STW allowance by Inps for the other part of the month, because in the DM10 form a person with at least an hour paid in the month is recorded as an employee.

To overcome this administrative data shortcoming, a new methodology to get to a more accurate estimate of the labour input has been developed. While for large enterprises the survey data allow a correct estimation of the labour input, for small and medium enterprises a complex procedure was implemented. Initially, information on STW hours from administrative and survey sources was analysed to get to a measure of STW in terms of full-time equivalents to be subtracted from employment estimates. These sources turn out to be not suitable for short-term statistical aims, so a deeper exploitation of the DM10 data was necessary to directly obtain a correct estimate of the actual labour input. Hence, for small and medium firms with STW employees, the information on the paid days declared in the DM10 has been used to adjust the labour input of full time employees, allowing an estimation of FTE jobs coherent with the Oros indicators' numerator.

References

1. Baldi C., Ceccato F., Cimino E., Congia M.C., Pacini S., Rapiti F., Tuzi D.: Use of Administrative Data to produce Short Term Statistics on Employment, Wages and Labour Cost. Essays, 15, 497-519, Istat, Rome (2004)
2. Hijzen, A., Venn D.: The Role of Short-Time Work Schemes during the 2008-09 Recession. OECD Social, Employment and Migration Working Papers, No. 115, OECD Publishing, Paris (2011)
3. Rapiti F., Ceccato F., Congia M.C., Pacini S., Tuzi D.: What have we learned in almost 10-years experience in dealing with administrative data for short term employment and wages indicators?. Paper presented at the Eurostat ESSnet Seminar "Using Administrative Data in the Production of Business Statistics - Member States Experiences", 18-19 March, Rome (2010)
4. Simkins A., Smith P., Brand M.: Financial crisis and recession: how ONS has addressed the statistical and analytical challenges. Economic & Labour Market Review, Vol 4, No 1, 30-37, Office for National Statistics, Newport (2010)

Administrative archives for migration statistics

Cinzia Conti and Domenico Gabrielli

Key words: migrations, record linkage, archives.

Statistics on migrations and foreign immigrants in Italy are now rich and provide information about many different dimensions of the integration process. However further progress can and must undoubtedly be made either by carrying out sample surveys and through a better exploitation of the many administrative archives currently available.

Administrative data sources are already widely used for migration statistics, but it seems possible, by developing statistical harmonization and integration strategies, to make a better use of the collected data.

A starting point to improve the available statistical information about immigrants is the coordination among the statistical institutes and institutions which keep administrative records: "Currently, in many Member States, Ministries of Interior and Immigration Services do not have an accurate view of the statistics on migrants that are available, nor is there a realistic understanding of what statistics could be developed and to what timetable. Statistical services do not always have good information on current and foreseeable future needs for statistics. This poor communication is particularly damaging in that it reduces access of the statistical services to potentially valuable administrative data sources, as well as limiting opportunities for statistical services to press for statistical needs to be taken into account in the (re)development of administrative systems" [2].

In this sense, for our country, a collaboration is currently under way. It should lead to sharing of the metadata of key concern. This is a crucial step towards the continuity between administrative data and statistical information. Definitely, a significant contribution to the continuity between administrative files and statistical files about

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immigrants and migrations is given by the entry into force of Regulation (EC) 862 of 2007, involving, as providers of statistics to Eurostat, both the National Statistical Institutes and the Ministries of Interiors.

This new framework for institutional relations makes it easier the integrated use of administrative records available also in view of a growing demand for information on migrations and the presence of foreigners from the EU for the purposes of policy. On the one hand, in fact, there is the Regulation 862 of 2007 which "....was a milestone but it should however not be seen as the end of the road" [1]; on the other hand the European Commission itself has noted that the necessary information for policy planning go far beyond those provided by the Regulation and introduced the "Migration Statistical Mainstreaming" which includes the provision of a set of comprehensive information on integration through a larger use of administrative records, particularly the residence permits.

As a result it is essential not only to make better statistical use of individual archives trough an increased cooperation with the institutions that keep the administrative archives but it is also essential the development of statistical integration strategies. At present Istat has carried out an attempt of longitudinal integration trough the record linkage of residence permits. The principal results of this experience are discussed in the paper. Other experiences of record linkage between data from different archives are also described. These examples can highlight the potential of record linkage in order to offer integrated statistics of high quality.

To sum up, on one side: "…. more coordination will be needed at national level between the different administrations collecting and producing data. Of course, the role of the national statistical institutes is essential. However, other bodies -Ministries of Interior, municipalities, courts, etc. - also produce valuable statistical information, which isn't always easy to access." [1].

On the other hand, starting from this cooperation, the national statistical institutes should invest resources on harmonization and integration of information from archives of different institutions for a multi-dimensional analysis of foreign immigration. Consequently the NIS should play an important role in transforming administrative data in statistics of high quality and in the development and application of statistical definitions (metadata) and methods.

References

1. DG Justice, Freedom and Security, European Commission: Relevance of migration statistics for the development of common EU policies - challenges for the future. 95th DGINS Conference "Migration - Statistical Mainstreaming", 1st October 2009, Malta.
2. Radermacher, W.: Meeting the growing needs for better statistics on migrants. 95th DGINS Conference "Migration - Statistical Mainstreaming", 1st October 2009, Malta.

Official statistics to define and to evaluate labour market policies: the potentiality of compulsory communication system

Claudia Poddighe, Barbara Rossi Maurizio Sorcioni

Key words: labour market policy, administrative archives

Labour market policies represent public measures defined and planned with various purposes. They shall improve individuals' placement in the labour market, support the identification of crises of particular economic sectors and territories, and, subsequently, introduce the necessary interventions to overcome the existing difficulties. This paper deals with the possible applications of the compulsory communications system to the labour market policies. The compulsory communications are those that each private or public employer should transmit electronically to the competent services in case of hiring, extension, transformation or termination of labour contracts. The informative system manages the entire data flow that moves from the peripheral to the national node. Particularly, the system collects data on regular occupational data flow, with reference to dependent labour, training and all those types of labour contracts related to Italian and foreign citizens with a regular residence permission. However, the passage from the administrative to the statistical information is complex. With reference to the

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compulsory communications, this procedure was relied on a technical group, formed by Ministry of Labour, Istat, Italia Lavoro and Isfol. Although this normalization phase has not been concluded, the first empirical evidences were published on the Social Cohesion Relation (www.lavoro.gov.it). They are referred to the period 2009 and the first semester of 2010. The data permit to analyse three different types of statistical units: labour contracts, workers and employers. These information allow to develop three different and priority areas of intervention.

- The monitoring of phenomena of firms' crises, which can be represented through an accurate time series analysis of the terminations of labour contracts. Following their evolution territorially and for each firm, it is possible to analyze in depth the economic development. This fosters the identification and planning of specific interventions.
- The monitoring of the request of salaried job. This is possible through a careful analysis of job contracts, focusing the attention on their typology, duration, and some worker's characteristics, like gender, age and education level.
- The monitoring of some particular targets' employability level in the labour market. We refer particularly to women, youth and senior citizens. Also in this case the territorial belonging plays a key role.

The above described fields of statistical data utilization represent knowledge priority functional for the planning of active and passive labour market policies and the evaluation of their expenditure commitment. Furthermore, in this paper we will recall the different problems and the techniques necessary to monitor the professional evolution of trainees, workers with collaboration contracts or for example the working inclusion of young graduates in economic sectors, like manufacturing and services. The aim is to explicit the extraordinary contribution that the monitoring of professional outcomes may determine, in terms of direct and indirect evaluation of labour market policies. Besides, we will show the potentiality of the integration of public services for employment archive with the individual information included in the compulsory communications system. Applying some of the most consolidated survival analysis models, we will focus our attention on the professional transitions registered in the labour market. Consequently it will be possible to identify the different targets' levels of employability or re-employability. As it seems clear, this approach may address policy programming in order to promote a better valorization of the human capital. Furthermore, it may develop the process of integration between active and passive labour market policies. In conclusion, this paper aims to illustrate how the monitoring of time series analysis may support and improve policy maker's activity in identifying particular targets and planning the necessary intervention measures for them.

References

1. Anastasia B., Disarò M., Emireni G., Gambuzza M., Rasera M. (2010), "Guida all'uso delle Comunicazioni obbligatorie nel monitoraggio del mercato del lavoro", Veneto Lavoro, I Tartufi n. 36
2. Ministero del lavoro e delle politiche sociali (2009), Dossier Comunicazioni obbligatorie - Il patrimonio della conoscenza attraverso la semplificazione amministrativa, Roma
3. Tronti L. (2009), "I dati amministrativi per le statistiche sui mercati del lavoro locali: il progetto Guida", IX Conferenza nazionale di Statistica, novembre, Istat, Roma.

A new administrative source on employment flows: aspects of the data consolidation process for statistical use

Grazia Di Bella, Giuseppe De Blasio, Massimo Callori, Annalisa Lucarelli

Key words: administrative data, timeliness, labour market statistics, data consolidation process.

The Compulsory Communication system (*Comunicazioni Obbligatorie,* from now on CO), is an administrative source, managed by the Ministry of Labour and Social Policy, which has great potential for statistical purposes, collecting data on employment flows which are highly detailed and timely. From an administrative point of view the law requires employers to report events of activation, termination, extension, or transformation of each employment relationship within very tight time constraints. In addition to the law time constraints other factors affect the stabilization process that need to be considered. This paper deals with these factors describing and analysing them, in order to measure and, if possible, to reduce their impact. We study the data consolidation process first analysing the time lags needed for completing the data acquisition process. Even if the employers are required to forward the activation communications within the day before the beginning of the employment relationship, a long acquisition process can be observed. The activations which took place in the month of April 2009 are an extreme example: the percentage shares of communications

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recorded in the system within one and two month reach only 76% and 79% of the total amount recorded at June 2010. The loading process is not completed even also one year after when the percentage share of communications is around 96%. The factors which contribute to make the CO data stabilization process longer, can be classified into three main groups: administrative factors; data transmission problems; and factors connected to processing and management of the information acquired at central level. The first group includes the *ex officio* communications, which are referred to events not declared by the employers but entered into the system only after administrative inspections. Amendments of the law regarding CO also belong to the first group. For instance, a long delay in the acquisition process of the domestic work communications was caused by the amendment, which came into force on 15 March 2009, stating that those communications have to be transmitted via the Social security institute (Inps). Insights on the effects of the two above mentioned factors have been gained trough an analysis of the activation communication time series broken down by region and economic activity sector. If both *ex officio* and domestic work communications are excluded, the percentage shares of communications recorded for the activations occurred in the month of April 2009 rise to over 85% and 88% respectively one and two month after and to over 99% one year after. Furthermore, in order to compare the acquisition process dynamics referred to activations occurred in different months, we have also simulated the process assuming that it ends within a year. The results of this further analysis support the evidence of a quite gradual data stabilization process. The second group of factors regards the data transmission from the local nodes to the central one. In the CO technological system each local node, such as each single region and also Inps, transmits data to the central national node according to specific rules. Problems in the data transmission from some nodes arose in the past. They caused either blocks, and then peaks of communications, or a wrong classification of the information acquired. The main factor belonging to the third group regards problems arising in the matching of the events related to the same job, identified by the threefold key (employer id, worker id and starting date of the job). More in detail, these problems arise when a communication of termination or extension of a job doesn't match with the corresponding activation communication, which should be already recorded in the CO system. The current data processing procedure provides that the event of activation is derived from the information contained in termination or extension communications and, thus, that it is recorded *ex post* into the system. In case of false negative matches, when the key variables are not correct and the activation communication is already recorded in the system, this procedure implies a double counting error, which has to be avoided as much as possible. If the negative match is correct this procedure causes a time lag between the date when the activation occurred and that of its recording into the system.

References

1. Anastasia B. et al. (2010), Guida all'uso delle comunicazioni obbligatorie nel monitoraggio del mercato del lavoro, I Tartufi n.36, Agenzia Veneto Lavoro.
2. Ministero del lavoro e delle politiche sociali (2010), Comunicazioni Obbligatorie. Modelli e Regole.
3. Italia Lavoro (2010), L'analisi delle comunicazioni obbligatorie. Nota metodologica.

Balance sheets and statistics information: the weaknesses in their compilation

Fabrizio Antolini, Silvia Patrignani

Key words: national account, balance sheets, cultural heritage, tourism

The aim of the study is to highlight the importance that the compilation of balance sheets has for our Country, in particular for the artistic and cultural heritage. The lack of ESA95 balance sheet compilation, regarding EU Countries, is due to the difficulties encountered in having an official methodology to evaluate artistic and cultural heritage, but also for some classifications and definitions aspects.

The ESA95 definition excludes from the asset boundary: human capital; natural assets as well as contingent assets (for example lines of credit or third parties of payments). But also we find a further definition of assets that are distingished as non-financial produced and non produced assets and finally, finacial assets. About cultural heritage, we strongly suggest to classify them within the non financial assets under produced asset section, as fixed assets and, in some cases as, intangible fixed assets. But otherwise we could have also a problem of applied definiton regarding "public sector. The existence of different institutional and organizational models within each country, with particular evidence in cultural or transportation branches, could effect final estimates of flows and stocks (Antolini,2002) .

Classification of cultural heritage, could be done in many ways, by using prices market or present value of expected future returns. This will determinate the "estimate".

After investigating some international experiences, we will consider, if, in our country, the existing economic information, as well as the one being developed, is responding to critical issues taken into consideration.

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References

1. Antolini F. (2002), Interpretazione ed evoluzione della contabilità nazionale:il ruolo dei comuni tra riforme contabili e nuovo welfare locale, in Lo Stato di Salute dei Comuni Italiani, Franco Angeli.

Session 4

New information needs for social responsibility

Chair: Saverio Gazzelloni

How to reduce the burden of population census data collection

Fabio Crescenzi, Giuseppe Stassi

Key words: population census, registers supported census, continuous census, geocoding, long form.

Till 2001 the Italian Population and Housing Census was carried out in a conventional way, by a complete field data collection not making any explicit use of information available in *anagrafi*. Relevant innovations in the survey process will deeply change the 2011 Italian population and houses census and will characterize it as a **registers supported census**. The significance of the change is evident if we look at the quality and quantity of innovations introduced:

- acquisition of municipality list of households and addresses (LAC) from *anagrafi*;
- mail out of questionnaires to all households in the LAC;
- multichannel collection of the "automatic response" (web, mail back, municipal office);
- recovery of non-response and under-coverage by enumerators;
- crucial role of a web survey management system (SGR).

Even more incisive are the changes introduced in municipalities with a population of at least 20.000 inhabitants[2]:

- carrying out of a pre-censual survey (RNC) aimed at producing a field-checked geocoded lists of addresses and related number of housing units in each address;
- delimitation of census areas of 15000 inhabitants;
- collection of socio economic data by long form only from a sample of households.

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2   Including municipalities which are capital of provinces even if with fewer than 20.000 inhabitants

These innovations are designed to reduce, already in this round and as much as possible, most of the problems due to the operative burden on municipalities and on respondents, and maximize the benefits due to a broader use of registers.

Also in the Italian context, as in the US and France, it will be possible to move towards a continuous census which uses the waves of two sample surveys (the C-sample and the D-sample survey) in crucial stages of a continuous process designed to achieve separately the two main goals of census operations: counting usual residents and producing key data on the demographic structure of population and households; producing hypercubes of socio economic census data.

The two surveys will be very different in scope and requirements: the C-sample survey would be specifically designed to make usable enumeration and to contain the key structural data in registers; the D-sample survey would be designed to estimate hypercubes of socio economic data on households and individuals to be released at national and European level.

Continuous operations would bring significant growth of fieldwork efficiency and many benefits in terms of increased quality. A local permanent fieldwork would allow expertise to be retained and developed over time. A smaller but continuous operation would allow continual methodological improvements and gains in experience. Positive are also the effects on financing; in fact the demand of public financial resources will be diluted over time and continuous operations might make service contracts more attractive and possibly cheaper than a "one shot" operation. The constant production of data would allow much more significant and approachable dealings with users.

The objective of producing a good counting and good key data on demographic structure of population and households can be pursued through a C-sample survey, an area sample survey explicitly designed to measure under and over coverage of LAC of each municipality, and provide correction factors. Estimates will be produced employing the dual system (capture-recapture) method.

The C-sample survey will have to provide a complete repetition of the counting by an exhaustive field collection of short forms in selected enumeration areas or lists of addresses. The C-sample survey will be designed to give good municipal (LAU2) and sub municipal (census areas) estimates every 5 years (first occasion 2016). The socio economic data will be collected by long forms. The rolling D-sample survey will be designed to give good yearly estimates at regional (NUTS2) and provincial (NUTS3) level (first occasion 2017), and good municipal (LAU2) and sub-municipal (Census Areas) estimates every 5 years (first occasion 2021). The D-sample survey will work conditionally on the counting which will be taken as given.

References

1   Kish, L., Combining/Cumulating Population Surveys", *Survey Methodology*, 25, pp. 129-138 (1999)

2   Regolamento Anagrafico (Italian law on population registers. D.P.R. n.223 del 30 maggio 1989), Istat, Metodi e Norme serie B – n.29 (1992)

3   UNECE, Recommendations for the 2010 Censuses of Population and Housing http://www.unece.org/stats/publications/CES_2010_Census_Recommendations_English.pdf

Data quality in tourism: considerations and perspectives.

Claudio Quintano, Margherita Pagliuca, Monica Rosciano

Key words: data quality, tourism, availability, timeliness and completeness.

The availability of high quality tourism statistics is very important for policy makers and the society at large. The aim of this paper is to give an overview of the current country practices in compiling tourism statistics as well as of the methodological developments of tourism statistics to drop hints to the tourism data collectors.

Quality consists of a number of features reflecting user needs. In this setting, quality can be defined along a number of dimensions. All these dimensions constitute the product quality.

The Eurostat quality vector has the following seven main components: relevance of statistical concept, accuracy of estimates, timeliness and punctuality in disseminating results, accessibility and clarity of information, comparability, coherence and completeness (Eurostat, 2003).

The tourism data environment is still incomplete, fragmented and often perceived as not meeting sector needs. So the paper is focused upon the system of tourism statistics, rather than the statistics themselves.

In order to ensure the completeness and quality of data we underlined the importance of cooperation among the institutions being involved in the production of tourism

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statistics, namely the national statistical office, the intermediate organizations and the accommodation facilities.

The paper analyzes data source and data collection procedures, problems encountered in data collection and data quality assurance. Finally we present a set of recommendations to improve the availability, timeliness and completeness of tourism statistics. In identifying the requirements for data collection and understanding the uses of tourism statistics for decision making and tourism development, it is necessary to involve data collectors.

The Italian Statistical Institute (Istat) is the official producer of tourism data, and conducts two surveys which collect data on supply (e.g. number of accommodations, number of bedrooms, bedspace) and on demand (e.g. number of tourists, nights spent, occupancy rates) (Istat, 2010). For these surveys it turns to the intermediate organizations: the Local Tourist Boards. They play a basic role to improve data quality, because they are the link between producers and respondents. The Local Tourist Boards receive micro-data from the accommodation facilities and then they transfer them to the national statistical office.

To learn about critical points of the process -specifically on demand data collection -we have conducted a survey on the intermediate organizations. The survey can be defined a pre-test because it was administered to a subset of intermediate organizations (those located in Campania region) in order to test for applicability, survey duration, and level of understanding. The survey was conducted by telephone.

In the light of the actions undertaken in the last years by the statistical system in order to improve the quality of tourism data (e.g. computerization of data collection process; greater attention to respondent burden), the questionnaire was focused on the following points of view:

1.   the clearness of the required information;
2.   the accommodation facilities collaboration;
3.   the intermediate body organization for data collection;
4.   the ways utilized to transfer the information.

We thought that the analysis of the intermediate organizations' answers to these topics could give a substantial contribution to improve the quality vector of tourism statistical information in terms of relevance, comparability, completeness, and timeliness of the data.

References

1.   EUROSTAT, "Assessment of quality in statistics - Definition of Quality in Statistics", Working Group, Luxembourg (October 2003)
2.   ISTAT, Rilevazione statistica sul movimento clienti nelle strutture ricettive (2010) Available via DIALOG https://indata.istat.it/mtur/
3.   ISTAT, Rilevazione statistica sulla capacità degli esercizi ricettivi (2010) Available via DIALOG http://www.istat.it/strumenti/rispondenti/indagini/capacita_ricettive/

The new Istat survey about homelessness in Italy

Alessandra Masi, Isabella Siciliani

Key words: homelessness, extreme poverty, homeless service providers.

Despite homelessness and housing deprivation are the most severe aspects of poverty and social exclusion in developed countries, the homeless are neglected by the official estimates, based on the population living in private households; socio-economic research about them is still skimpy, because of the great difficulties in collecting information. Even though homelessness is a public policy issue in many countries, so far only United States, Australia, Netherlands, Sweden and France have developed methodologies to produce statistics about homeless [1]. In Italy, the social inclusion National Action Plan 2006-2008 by the Ministry of Welfare pointed out the need to fight extreme poverty, which raises the need for reliable data. Past estimates were produced at national level by Commission on Social Exclusion and the Zancan Foundation of Padua in 2000; other researches were conducted at local level [2,4]. To meet those important information needs, in 2008, Istat, the Ministry of Welfare, the Italian Federation of the Organisms for the Homeless (fio.PSD) and the Italian Caritas signed a formal agreement in order to realize a research project on the condition of people living in extreme poverty.

The current study represents the first experience in Italy about the homelessness involving a national statistical body as Istat. It aims to have a whole knowledge of the homelessness phenomenon at national level, with the twofold objectives of drawing an in-depth picture of: i) the extent, the status and profiles of the homeless; ii) the system of formal and informal services, both public and private, with specific reference to the homeless needs. Because of the specific conditions of people living in extreme poverty, mainly homeless, traditional methodologies, based on population registers, are not applicable. Therefore appropriate methods of data collection have been projected, based

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on the support of institutions and organizations which deal with homeless assistance and detection, as they represent the most suitable subjects to approach those people.

The survey consists of three operational steps. The first one is a census of the service providers for homeless people conducted, through a CATI survey, on a sample of 158 Italian municipalities[5]. Starting from the pre-existing Istat, Caritas and fio.PSD databases, to create the map, a "snowball" technique has been applied, in order to find new organizations, directly or indirectly, which provide homeless supports for primary needs, night and day shelter, social secretariat and social support measures.

The second operational step is a CAPI survey on the homeless services providers in order to collect detailed information on the organizations, their services and users groups[6].

The third operational step is a survey on the homeless, to collect some socio-economics information about them, according to the European guidelines [3]: more in detail the information to be collected regard mainly age, gender, nationality, household characteristics, previous accommodation, reasons and duration of homelessness, main activity, source of income, highest educational attainment, support needs/problems (disabilities, addiction problems etc).

For each centre, a systematic random sample of the users will be surveyed (using a list, if exiting, or randomly selecting people according to the order they pass a particular point). In order to deal with the issue of the increasing selection probability according to the frequency of using the services by the person, a weighting system taking into account that frequency is being implemented. In other terms, an indirect sampling method will be used based on the sampling of services to estimates indirectly the persons using those services.

References

1. Ardilly, P., Le Blanc, D.: Sampling and Weighting a Survey of Homeless Persons: A French Example, Survey Methodology, 1, Statistics Canada, 109--118 (2001).
2. Braga M., Corno L. Being an Homeless: Evidence from Italy, Working Paper, 17, Dipartimento di Scienze Economiche Aziendali e Statistiche, University of Milan (2009).
3. Edgar, B., Harrison, M., Watson, P., Busch-Geertsema, V.: Measurement of Homelessness at European Union Level, European Commission, DG Employment, Social Affairs and Equal Opportunity (2007).
4. Veneto Regione: Presenze nascoste. Viaggio nelle estreme povertà in Veneto, Assessorato alle Politiche Sociali, Volontariato e Non Profit, Grafiche Turato Edizioni, Padua (2005).

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2   All the municipalities with over 70 thousands inhabitants, the provincial capitals with more than 30 thousands inhabitants, and the municipalities bordering on the municipality with more than 250 thousands inhabitants have been selected.

3   More in details, the funding sources, the staff information, the ways of data user collection, the service access criteria, the cooperation among the services, the profiles of their users by age, gender, citizenship, household type are some example of information the survey has collected.

Towards a National Council of Official Statistics Users: the challenges of the official statistics demand

Monica Attias, Maria Francesca Loporcaro

Key words: user, official statistics, national statistical programme.

In the outlook of improving the engagement of users in defining the priorities of official statistics and overcoming self-referentiality of statistical production in Italy, within the National statistical System the need for a specific institution is progressively emerging. The institution of a National Council of Official Statistics Users (CNUIS) has been envisaged by Comstat with the objective of combining the different needs and views expressed by users. This work is aimed at presenting a model for CNUIS, examining its possible objectives, tasks and organisation, starting from the comparative analysis of the main models of councils and forums at European and international level[8].

The assessment of user needs is a key factor in the strategy of involving users in the production process. For more than a decade the Quality Circles within Sistan have represented the privileged place of encounter between producers and users; from 2007 to 2010, representatives of a selection of experts from the user community have been included in the Quality Circles. At the same time, a number of surveys were implemented, aimed at measuring user satisfaction of specific statistical products and identifying the information needs. For instance, in 2008, a user survey was carried out when implementing the statistical information system on the Labour Market. The purpose of the survey was: to define a segmentation of users in groups according to the type of need and use of data; to gather user informative needs in terms of weaknesses and strengths of the statistical production; to get suggestions for the implementation of statistical information system. Both producers and expert user members of the Quality Circle were interviewed for the purpose. In general the user involvement in the Quality Circles has emphasized some issues, such as the difficult relationship between producers and users and the lack of

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methods that help the user needs assessment. This suggests that the model of Quality Circles is no longer suitable.

In most European National Statistical Systems appropriate structures are provided to engage with users and promote their active role in defining and orienting the official statistics production[9]. These are the main features:

Figure 1: Principal features of users council/forums in Europe

Model	Composition established by law	Joint presence of producers/users	Integration of the council/forum within the NSS	Evaluation of National statistical programme
France CNIS	Decree 318/2009	Yes, producers and users work together in all the CNIS groups	Integrated	Yes, in all its phases
UK SUF	No, only RSS Terms of Reference	No, ONS participates only as a guest; producers and users meet in a joint body called STATSUG	Independent	No, SUF is consulted on specific statistics
Europe ESAC	Decision 34/2008/CE	Yes, the DG of Eurostat and two DG of INS work with the users representatives	Integrated, with advisory functions	Yes, in its draft and final version

The purpose of CNUIS is to collect the information needs in an organised way, bringing them together in a shared policy document which could orient official statistical planning. The users' representatives should transfer their functions from the Quality Circles to the new council. The Italian model shall "borrow" elements from the French, UK and European Commission models. This paper wants to illustrate a possible pattern of council whose main features would be: 1. the inclusion within the Sistan framework; 2. the consultative nature and advocacy mission on behalf of official statistics; 3. a clear distinction of roles in order to avoid overlapping with the governing bodies of the System. CNUIS could be envisaged as an interface body, relating to Comstat, the Quality Circles and the wider users' community (a sort of umbrella organisation that can reach out to specific user groups for consultations) and advocate for the strength and independence of public statistics. The task of Comstat towards CNUIS could be that of collecting and assessing the users demand and translate it into a statistical language that can inform the National Statistical Programme (PSN), within the limits set by the legal framework and budget resources.

References

1. Duport, J..P.: Le Conseil national de l'information statistique, in: Courrier des statistiques, n° 128, septembre-décembre (2009)
2. Esac: 2nd Meeting of the European Statistical Meeting Advisory Committee (ESAC) Brussels, Minutes, 19 October (2009)
3. UK Statistics Authority: Strengthening User Engagement (2010)

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3 Duport, J..P.: Le Conseil national de l'information statistique, in: Courrier des statistiques, n° 128, septembre-décembre (2009); Esac: 2nd Meeting of the European Statistical Meeting Advisory Committee (ESAC) Brussels, Minutes, 19 October (2009); UK Statistics Authority: Strengthening User Engagement (2010)

New indicators to measure justice system performances in Italy

Laura Antonucci, Francesco d'Ovidio

1   The justice system efficiency[2]

A commonly held view is that the justice system in Italy is chaotic and rather poorly administered. The justice system is busy, with a very large number of transactions taking place annually.

Unanimous agreement exists that the justice system ought to be efficient, effective, and fair. Less consensus, however, exists about how best to secure these essential qualities or how to measure whether they have been achieved.

One of the main goals of the Italian government is to plan expenditure and measurement activities of the justice system. There is an attempt to determine measurement criteria and performance indicators, according to some best practices implemented by some courts (Cook, 1982, Lupo, 2011, Snipes, 1980, Sciacca, 2007, Wilodhorn, 1977).

Last January the Minister for Public Administration and Innovation, and the Vice President of CSM signed a protocol to monitor and to assess the quality and efficiency of the Italian courts.

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The project foresees a new system of governance, monitoring and evaluation of magistrates under the Best Practices Project (funded by 18 regions and 2 autonomous provinces with 18 million Euro) and the application of CAF (Common Assessment Framework) for Justice, a self-assessment tool designed to provide a model that highlights strengths and weaknesses.

2 The indexes to evaluate the efficiency

In our work we propose an aggregate index, obtained through a weighted synthesis of standardized ratios which should preserve the relevance of the context (Molteni, 1999).
Those synthetic indicators can be decomposed in sub indexes, in order to obtain a dashboard of indexes useful to evaluate the efficiency of the different subsystems.
The ranking of the Italian courts so obtained can be useful to compare the different departments and to reward to the courts which best perform.
A critical analysis, from the statistical point of view, finally evaluates the different alternatives proposed.

References

1. Cook T.J. *et al.* (1982) *Measuring Court Performance.* Research Triangle Institute, Research Triangle Park, North Carolina. USA
2. Lupo E. (2011) *Relazione sull'amministrazione della Giustizia nell'anno 2010*, http://www.cortedicassazione.it/ Documenti/Relazione%20anno%20giudiziario%202010.pdf
3. Molteni M. (1999) Attività e performance nelle aziende di servizi alla persona, in E. Gori e G. Cittadini eds., Qualità e valutazione nei servizi di pubblica utilità, ETAS, Milano, p. 49-120.
4. Procura della Repubblica di Bolzano (2008) Best practices negli uffici giudiziari, http://www.giustizia.it/giustizia/it/mg_2_9_4.wp
5. Sciacca M. (2007) Gli strumenti di efficienza del sistema giudiziario e l'incidenza della capacità organizzativa del giudice, in *Rivista di Diritto Processuale*, 643-661.
6. Snipes L.L. *et al.* (1980) Managing to Reduce Court, *Delay.* National Center for State Courts.
7. Vito D.P.A. (1972) An experiment in the use of court statistics. *Judicature 56,* (2) August-September.
8. Wilodhorn L., Wilodhorn P. (1977) *Indicators of Justice.* Rand Corporation Research Study.

Measurement administrative burdens in Italy

Antonio Pavone, Paola Pianura

Key words: administrative compliance cost, decision-making, integer programming.

Regulation is defined as "the diverse set of instruments by which governments set requirements on businesses and citizens". Administrative regulations support public policies (taxation, environmental protection, health and safety and employment rights) and create benefits for the participants in an economy by setting the framework for a competitive and low cost business environment. To comply with administrative regulations businesses and citizens spend time and money. The costs generated during a regulation process are defined "administrative burdens". The International Standard Cost Model manual (SCM Network, October 2005) defines administrative burdens as: "part of administrative costs that businesses sustain simply because it is a regulatory requirement". In Italy, number and length of administrative regulations have led to recognize the need for reducing quantity, duration and uncertainty of administrative procedures. Measurements have taken up a key role at international and community level within the Lisbon Strategy.

The European Commission and Council have fixed a 25% reduction goal by 2012 for the burdens resulting from the community legislation and have requested the Member States to adopt similar targets at national level. In 2007 the Italian Government launched a new national Multiannual Plan (2007 – 2010) for the Measurement of Administrative Costs and quantitative reduction of administrative burdens for enterprises. By the Law No. 133/08 Article 25 (so called "Taglia-oneri" – "Cutting red-tape") the Government has approved a number of measures aimed at cost cutting, structure simplification and administrative processes streamlining: the project is "Misurazione Oneri Amministrativi" (MOA). The effort is to identify the regulatory requirements that could be measured and eventually simplified, without altering the expected public interest objectives.

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National Statistical Institute (ISTAT) participates in the project within an ad-hoc convention with the Department for Public Administration. The purpose of this abstract is to present an overview of this process. In the first phase, the Government has identified costs that the businesses bear in complying with information obligations stemming from State legislation. These include administrative burdens (information to public authorities or to private parties) and exclude "substantive" compliance costs (related to production processes, products, activities) and fiscal and monetary costs (duties, stamps, taxes, etc.). The methodology to measure administrative costs is SCM (Standard Cost Model). In Italy, the method is applied taking into account peculiarities such as: the Italian regulatory scenario (presence of several government levels with regulatory powers); the structural features of the production system, with a strong presence of small and medium enterprises; the role of consultants/intermediaries and of entrepreneurs' associations.

Two procedures are used to estimate administrative burden costs: 1) expert assessment for enterprises with less than 5 employees: focus groups are organized involving enterprises, associations and service providers who are asked to assess the cost of all information obligations, and as far as possible, of each single administrative activity; 2) survey for enterprises from 5 to 249 employees: this procedure is carried out by Istat. An appropriate sampling design and a proper sample size are chosen and the sample frame is the list of Statistical Register of Active Enterprises (ASIA).

First of all, a telephone business survey is conducted using CATI technique, the sampling design is stratified where the optimality is defined in terms of costs (associated to fieldwork: number of units to be interviewed) and accuracy (standard error related to target estimates). The telephone survey provides an estimation of the number of businesses that are required to follow certain rules and complying with the specific activities involved. Moreover, the telephone survey is also necessary to identify the eligible population, since some information obligations do not involve the whole population of enterprises.

Businesses claiming to have complied with at least one administrative burden, in the reference year, are assigned into non-overlapping partitions. Each partition is identified by a string consisting of a concatenation of binary membership indicator digits. Each binary membership indicator refers to a specific type of administrative burden and other important features observed through the telephone interview, where 1 indicates the presence of the attribute, and 0 indicates its absence. An integer programming optimization problem is formulated in order to guarantee: fixed sample size, fixed proportion of business in each membership indicator, minimum quota of sampled units for partition. Then, sample units are randomly selected, independently, from each partition. The aim of this phase is to estimate the costs incurred by businesses in order to comply with information obligations. This survey is conducted using CAPI technique.

Public authorities but also private businesses demand reliable statistic information for decision-making: Istat efforts are meant to satisfy these requests. Between 2007 and 2010, Istat has estimated costs caused by 54 administrative procedures associated to eight different sectors. Some Central Administrations, coordinated by the Department of Public administration, have adopted Reduction Plans, in order to implement appropriate actions to reduce administrative burdens and costs for business.

Session 5

Statistical methods for production and data analysis

Chair: Francesco Chelli

Increase accuracy through the use of auxiliary information from survey sampling

Claudio Ceccarelli and Alessio Guandalini

Key words: sampling error, calibration estimator, sampling auxiliary information.

Auxiliary information highly correlated with the variable of interest are used in order to increase the accuracy of survey estimates. Generally, we refer to *generalized regression estimator* and/or *calibration estimator.* The calibration estimator, due to Deville and Särndal in 1992, is generally adopted in most sample surveys of National Institute of Statistics. Deville e Särndal, according to the idea " *…weights that the perform well for the auxiliary variable also should perform well for study variable…*" (Deville et al., 1992, p. 376), developed the calibration estimator that, in its original definition, uses auxiliary information (*known totals*) referred to the population in order to produce consistent estimations. For social-economic sample surveys, as Labour Force Surveys (LFS) and Italian Statistics on Income and Living Conditions (IT-SILC), auxiliary information usually concern demographic variables as population by age group, sex and territorial domain. In some circumstances, auxiliary information from sample surveys are used in order to guarantee high levels of coherence between estimates from different sample surveys or between estimates produced from the same survey on different occasions. The drawback is the possible growth of the sampling error. The aim of this work is to set a variance estimator in order to evaluate the additional error produced by auxiliary information from sample surveys introduced in

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the set of constraints. In particular, we present two cases. In the first, the sample information comes from an independent survey (in It-Silc). In the second, the sample information comes from the same survey in different occasion (the case of monthly LFS estimate). The introduction of sample variables on the whole of constraints of the calibrated estimator raises a question about its effect on the estimation and on the estimation error of the interest variable. The analytical form of the sampling error is defined. In addition, an evaluation of the efficiency due to the introduction of the sample constraints is presented. We compare sampling error of estimates obtained without sample constraints, with sample constraints and considered sampling as non sample constraint.

References

1. Ballin M., Falorsi P. D., Russo A.: Condizioni di Coerenza e Metodi di Stima per le Indagini Campionarie sulle Imprese. Rivista di Statistica Ufficiale. 2000, n. 2, pp. 31-52.
2. Bethlehem, J. G. e Keller, W. J.: Linear Weighting of Sample Survey Data. Journal of Official Statistics. 1987, vol. 3, n. 2, pp. 141-153.
3. Ceccarelli C., Cutillo A.: Il Trattamento della Mancata Risposta Totale nell'Indagine Eu-Silc: Una Valutazione Tramite una Misura del Cambiamento. Congiuntura. Udine: CREF, 2007, 1° trimetre, pp. 91-112.
4. Ceccarelli C., Guandalini A., Giorgi G.M.: Lo Stimatore di Ponderazione Vincolata in Presenza di Informazioni Ausiliarie Campionarie, 2000, Rapporto tecnico n. 18, Dipartimento di Statistica, Università "Sapienza" di Roma. http://www.dspsa.uniroma1.it/on-line/Home/Ricerca/Pubblicazioni/Rapporti Tecnicidal2009/articolo1003554.html.
5. Ceccarelli C., Guandalini A., Giorgi G.M.: Varianza dello Stimatore Calibrato in Presenza di Informazioni Ausiliarie Campionarie. Rivista Italiana di Economia Demografia e Statistica, 2011, Volume LXVI – n.1-2, Gennaio-Giugno 2011.
6. Ceccarelli, C., Di Marco, M. e Rinaldelli, C. (2008). L'indagine Europea sui Redditi e le Condizioni di Vita delle Famiglie. Metodi e Norme. Istat, 2008, n. 37.
7. Cicchitelli, G., Herzel, A. E., Montanari G. E.: Il Campionamento Statistico. Bologna: Il Mulino, 1992.
8. Commission Regulation (EC) n. 1177/2003 del 16 giugno 2003. Community Statistics on Income and Living Conditions (Eu-Silc). Official Journal of the European Union del 3 Luglio 2003, L165, p. 1.
9. Deville J. C., Särndal C.E.: Calibration Estimators in Survey Sampling. Journal of the American Statistical Association. June, 1992, vol. 87, n. 418, pp. 376-382.
10. Deville J. C., Särndal C. E., Sautory, O.: Generalized Raking Procedures in Survey Sampling. Journal of the American Statistical Association. September, 1993, vol. 88, n. 243, pp. 1013-1020.
11. Deville J.C.: Simultaneous Calibration of Several Surveys. Proceedings of statistics Canada Symposium 99. Combining Data from Different Sources. Ottawa: Statistics Canada, May 1999, pp. 207-212.
12. Estevao, V., Hidiroglou, M. A. E Särndal, C. E.: Methodological Principles for a Generalized Estimation System at Statistics Canada. *Journal of Official Statistics*. 1995, vol. 11, n. 2, pp. 181-204.
13. Gazzelloni, S.: La Rilevazione sulle Forze di Lavoro: Contenuti, Metodologie, Organizzazione. Metodi e norme. Istat, 2006, n. 32.
14. Lemaître G., Dufour. J. An integrated method for Weighting Persons and Families. Survey Methodology. December, 1987, vol. 13, n. 2, pp. 199-207.
15. Singh A.C., Mohl C.A.: Understanding Calibration Estimators in Survey Sampling. Survey Methodology. December, 1996, vol. 22 , n. 2, pp. 107-115.

Eu-Silc and Echp, two longitudinal European surveys on households living condition: statistical methods to measure multidimensional poverty at "local" and time frameworks

Gianni Betti, Achille Lemmi and Vijay Verma

Key words: multidimensional and fuzzy poverty, EU-SILC, ECHP.

Households living condition is a research theme of great and increasing interest in scientific literature and in applied socio-economic and statistical work. The reason is twofold and heterogeneous: (i) from the one hand the general de-pauperation of the average standard of living determined by the recent world-wide financial and economic crisis (however already anticipated by the end of the "social state" and by globalisation) has compelled governments to include poverty and segregation at the first places of their political activity,.(ii) from the other one the seminal contribution of the Nobel Prize Amartya Sen to economic theory has allowed to re-define living condition in terms of well-being instead than of welfare, abandoning the lemma of the traditional economic school according to which the maximisation of the households income (or consumption expenditure) implies the maximisation of their welfare.

Such a theme presents also an important characteristic: poverty and segregation must be considered together in order to take into account the multi-faced complexity of the present socio-economic and political communities, in other words statistical measures need to be established at a multivariate level, using an adequate number of deprivation indicators (variables). All that requires specific, reliable, efficient and scientifically correct data bases; moreover they should allow observing Elementary Statistical Units

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(ESU) in a time-dimension in order to distinguish different types of deprivation (at least chronic and temporary deprivation) for designing, performing and controlling different and adequate policies.

Two European data bases, Eu-Silc and, previously, Echp have these characteristics and therefore represent a fundamental instrument for the modern analyses of living conditions.

The paper contains such analyses using traditional and alternative (e. g. the so called Integrated Fuzzy and Relative, IFR) approaches; they are conducted in a comparative framework at a "local" and longitudinal level.

IFR consists of the "fusion" of two fuzzy multidimensional measures respectively proposed by Cheli and Lemmi and by Betti and Verma where the empirical distribution functions of the Elementary Statistical Units (ESU, households) and of a considered variable of risk of deprivation respectively appear together with an adequate weighting system taking into account the diffusion and the correlation among such variables.

As it is well known traditional poverty analysis divides into two sub-sets the population (or a representative sample) of ESU using a threshold, called poverty line (PL), established by some criterion (analytical or political, or some mixture of them) and considers as "poor" an ESU below the PL. Normally the only indicator of poverty is the ESU disposable income, therefore such an analysis is defined as unidimensional.

The fuzzy approach, on the contrary, given the fuzzy nature of poverty and using an adequate function of membership, considers the ordering of the degree of membership to the fuzzy-set of poor of an ESU in the population with respect to all the other ESUs. Therefore no PL has to be chosen and the analysis is performed on the entire population and not only on the sub set of ESU below the PL.

The measures obtained via IFR can be compared with the traditional ones introducing an appropriate parameter connected with the Head-Count Ratio of the traditional approach.

The choice of the deprivation risk indicators is, of course, a crucial aspect in the multidimensional measurement of poverty and such a choice crucially depends by the available data. In both ECHP an Eu-Silc longitudinal data bases many variables of interest can be found; some important aspects of the households living condition cannot be found or some problems of homogeneity among EU countries exist. Bu it is a matter of fact that the two aforesaid EU longitudinal data bases represent a very satisfactory source for living condition analysis.

From the overall list of deprivation risk variables, using explorative and confirmatory multivariate statistical analysis 7 dimensions of deprivation can be defined for the EU countries referring to Eu-Silc and the 2004-2007 panel waves.

Using IFR estimators a comparative analysis for Italy and Poland has been performed at Nuts 2 level, while a longitudinal analysis of economic poverty has been conducted using the entire 8 waves of the ECHP survey for the former 15 EU countries, from 1994 to 2001.

Spending habits of Italian households

Sabrina Barcherini

Key words: consumption, households.

The consumption behaviours depend on individual or familiar decisions and are linked to personal needs, to household's resources and to market characteristics.

The evolution of the market (new distribution channels, different pricing policies, etc.) influences household actions in order to maintain or to expand its own purchasing power and the satisfaction level for the quality and the quantity of the purchased products.

The phenomenon can be analysed using household budget survey by selected indicators of behaviour changes, such as the purchasing place and the spending habits.

The household budget survey is a continuous survey based on two-stage stratified sample: the first stage units are the municipalities, the second stage units are the households. Every year, the survey involves around 470 municipalities (the biggest 107 participate every month and 363 participate once a quarterly) and is base on a sample of around 24.000 households.

Two different survey techniques are used: i) a diary to daily record, for a seven days period, food expenditures and other non-food current expenditures; ii) a face to face interview to obtain information on social and economic household members characteristics, on dwelling equipment, on expenditures with a monthly or lower frequency and on spending habits. Referring to specific goods (with high purchasing frequency and with easily identifiable purchasing place), the interviewed households are asked to declare where they buy each single good and if their spending habits are changed as consequence of the price variation.

Two types of expenditure are taken into consideration: the expenditure for foods products (bread, pastry, meat, fish, fruit and vegetables) and the expenditure for clothing and footwear, implying higher money availability.

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For these goods, as a result of the change prices, the interviewed households are asked to declare if, in comparison with the previous year, they have been going on continue to buy the same or a higher quantity/quality or if they have modified their spending habits by diminishing the quantity/quality of the purchased goods.

For the same goods, the interviewed households are also asked to declare where more frequently they buy these goods: hard-discount, hypermarket, supermarket, traditional store, market. The adopted classification of the purchasing places associates each place with a prices differential and a different supply. Taking into account the association between the purchasing place, the products variety, the range of available prices and the supply all over the territory, it has been possible to associate each purchasing place typology to a specific strategy of consumer behaviour optimization (the consumer can save by choosing lower price products or by diminishing storage and distance costs).

The paper highlights how the households changed their consumption behaviour over the years ranging from 2006 to 2009, also as a result of the economic crisis. The analysis was conducted taking into account the territorial differences and the household characteristics.

The analysis is based on the following information, available for each consumption expenditure category: i) average monthly expenditure on the total households; ii) average monthly expenditure on the households having spent for the specific category; iii) percentage of households by class of spending habits. For food, clothing and footwear products, the percentage of households having diminished the purchased quantity and/or the quality decreases from 2006 to 2008 and rises again in 2009.

The households' strategies seem to follow the consumer price index dynamic for the same period: both food and clothing/footwear products show the highest value for the price variation in 2008. The spending habits change is shown also by a change in the purchasing place: the percentage of households choosing the hard-discount, as main place to buy food or clothing/footwear products, increases from 2006 to 2008 and slightly decreases in 2009. At the same time, the percentage of households buying at the traditional store slightly decreases, even if it remains the main purchasing place for clothing and footwear products.

References

1. Fabbris L.: Statistica multivariata: analisi esplorativa dei dati, McGraw-Hill Libri Italia, Milano (1997)
2. Fabbris L., Provasi C.: I comportamenti di acquisto nel Veneto, Cleup editore (2004)
3. Istituto di servizi per il mercato agricolo alimentare: Rapporto sui consumi alimentari in Italia, Direzione mercati e Risk management (2005)
4. Istituto Nazionale di Statistica: I consumi delle Famiglie. Anno 2008. In Collana Annuari, n. 15, Famiglia e Società, Roma (2010)
5. Pellegrini L., Zanderighi L.: Le famiglie come imprese e i consumi in Italia, Egea (2005)
6. Poppe C., Kjærnes U.: Fiducia e consumi alimentari. Indagine comparativa in sei paesi europei. In Professional Report n° 11-2003, National Institute for Consumer Research (SIFO) (2003)

Archive and sampling information: is an integration possible? The case of the confidence survey on manufacturing

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Key words: administrative sources, sample survey, business tendency surveys.

The Confidence survey was born in the frame of the European Harmonised project in 1959. Although initially conceived mainly as a purposive panel among managers (seen as "expert witnesses"), ISCO and then ISAE has been developing its Business and Consumer Tendency Survey (BCS) sample on manufacturing for Italy over the years in order to better match the methodological developments of sampling theory [3 and 6]. The survey aims to investigate the confidence of the economic operators by asking entrepreneurs and managers about current trends and expectations for the near future, regarding both their own business and the general situation of the economy. Information collected is of a qualitative type, and is made available within a tight deadline: data collected in the first half of the month are processed and disseminated within the end of the same month. These occurrences imply several operational constraints. The availability, since 1999, of the business frame ASIA (Statistical Active Firms Archive) provided by ISTAT [5 and 7], gave substantial support in improving the quality of the survey. The survey took immediately advantage of this register. The main areas where these advantages showed themselves are synthetically the following.
ASIA as sampling frame. With ASIA drawbacks from former registers like under-coverage problems arising when some units are mistakenly excluded from the list or

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multiplicity problems occurring when a target unit is included k times in the frame are now avoided. However, a remarkable time lag persists: ASIA is disseminated around one year and six months after the information is collected. *Strata setting relying on administrative sources*. The nearly complete information offered by ASIA is an optimal pre-condition for selecting units for the strata. The strata bounds definition, however, usually relies on administrative settings (classifications of economic activities, areas, etc.) and it is likely affected by between-strata heterogeneity (in terms of population size and stratum variance). The availability of ASIA allowed the application of the Neyman allocation to strata using the real variances, as opposed to variances estimated from the survey itself (as it was customary in previous attempts). *ASIA as a tool for supporting classification changes*. On March 2009 The European Commission set a deadline to have all the BCS classified according to the Nace Rev.2 classification. This requirement implied, among other things, the revision of the domains (strata) of the survey [4]. To this purpose, the Asia archive played a determinant role by offering in 2007 a double classification of firms according both to the old Nace rev.1 (Ateco 2002) and Nace Rev.2 (Ateco 2007) allowing both the careful reconstruction of the time series of the results and the revision of the sample strata. *ASIA as a tool for validating the sample allocation*. The evaluation of the sampling allocation performance needs simulation. According to Chiodini et al. [2] and Martini [8] the formal representations are verified by adapting the simulation approach to the context of sampling from finite populations. The availability of the ASIA archive allowed the setting of a new simulation method: the Sequential Selection-Allocation (SSA) constructing a new labeled list with population units re-labeled within the stratum according to their selection order, after performing a Sampling WithOut Replacement (SWOR) of size equal to the stratum size. This process is repeated *n* times. From this new labeled population, all the allocation algorithms can be performed and their efficiency evaluated at the same time [1 and 2].

References

1. Chiodini, P.M., Manzi, G., Martelli, B.M, Verrecchia, F.: The ISAE Manufacturing Survey Sample: Validating the Nace Rev.2 Sectorial Allocation, paper presented at 30th CIRET Conference, New York, October, 13-16 (2010b)
2. Chiodini, P.M., Lima, R., Manzi, G., Martelli B.M, Verrecchia, F.: Criticalities in Applying the Neyman's Optimality in Business Surveys: a Comparison of Selected Allocation Methods. In: Wywiał, J. & Gamrot, W. (Eds.) Survey Sampling Methods in Economic and Social Research, pp. 42-77. Katowice University of Economics Publishing Office, Poland (2010c)
3. European Commission: The Joint Harmonised EU Programme of Business and Consumer Surveys. In: European Economy, Special Report No. 5, Bruxelles (2006)
4. Eurostat (Taskforce on the implementation of NACE Rev.2): Handbook on methodological aspects related to sampling designs and weights estimations, Version 1.0. (2006)
5. ISTAT: Struttura e dimensione delle imprese Archivio Statistico delle Imprese Attive (Asia), Anno 2008, Rome (2010)
6. Malgarini, M., Margani, P., Martelli, B.M.: New design of the ISAE Manufacturing Survey. In: JBCMA, vol.2, No.1, pp. 125-142. OECD, Paris (2005)
7. Martini, M.: Necessità e possibilità di un registro statistico delle imprese. In Italia, in: Martini, M. & Biffignandi, S. (Eds.) Il registro statistico europeo delle imprese. Franco Angeli, Milan (1995)
8. Martini, M.: La Statistica. In: Studi in Ricordo di Martini, pp. 1-10. Giuffrè, Milan (2004)

The measurement of the provision of infrastructures in healthcare

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Key words: composite index, ranking, infrastructure endowment, health

1   Introduction

In 2010 Italian National Institute of Statistics released the volume "Provision of Infrastructures and Services in Healthcare. Years 2004-2005" in which a first application of techniques for summarizing individual indicators is presented (Istat, 2009). The book shows a review of indicators concerning the provision of healthcare infrastructures and reports the results of the calculation of a new composite index based on the *Method of Penalties by Coefficient of Variation* (Mazziotta and Pareto, 2007). The proposed index, denoted as MPcv, is computed at regional level, for five healthcare areas: primary healthcare, non-hospital clinical and diagnostic healthcare, territorial healthcare, public healthcare and accredited private hospital healthcare. The aim of this work is to describe the main theoretical and methodological aspects related to the MPcv calculation. As an example of application, we consider a set of indicators of endowment of advanced medical equipment and present a comparison between some commonly employed methods and MPcv.

2   The aggregation method

The *Method of Penalties by Coefficient of Variation* is a tool for summarizing a set of

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indicators that are considered 'non-substitutable' (they have all the same importance and a compensation among them is not allowed). It is designed in order to satisfy the following properties: (i) normalization of the indicators by a specific criterion that deletes both the unit of measurement and the variability effect; (ii) synthesis independent from an 'ideal unit', since a set of 'optimal values' is arbitrary, non-univocal and can vary with time; (iii) simplicity of computation; (iv) easy interpretation. The first step in the construction of MPcv consists in transforming the individual indicators in standardized variables with a mean of 100 and standard deviation of 10: the values obtained will fall approximately in the range (70; 130) . In such context, a penalty coefficient can be introduced that is a function, for each territorial unit, of the indicators' variability in relation to the mean value ('horizontal variability'): this variability can be measured by the coefficient of variation. The composite index is obtained by subtracting from the mean of the standardized values a quantity (the penalty) that is directly proportional to the 'horizontal variability'. The purpose is to favour the units that, mean being equal, have a greater balance among the values of the indicators. The method provides a measure which is "robust" and less 'sensitive' to inclusion or exclusion of individual indicators (Mazziotta C. *et al.*, 2010).

3 Application and results

In order to test the action of the penalty, a comparison of MPcv with some traditional methods is presented, where six indicators of endowment of advanced medical equipment are selected (the data refer to the year 2005). The aggregation functions used are the Arithmetic Mean (AM), the Geometric Mean (GM) and the Median (ME). The GM yields the most similar ranking with respect to MPcv (mean absolute difference of rank of 0.7) because of the multiplicative nature of this formula. However, the GM can be used only for sets of positive values that are interpreted according to their product and not their sum. The most different method is the ME, i.e., the middle value of the variable in the ranking (mean absolute difference of rank of 2.8). Finally, comparing AM and MPcv, the rank of each region changes, on average, by little more than one position (mean absolute difference of rank is 1.3). The divergence between the AM and MPcv lies in the penalty function, since MPcv is an 'adjusted' mean on the basis of the "horizontal variability" of standardized indicators.

References

1. Istat: La dotazione di infrastrutture e servizi nella sanità. Anni 2004-2005. Istat Informazioni, 8 (2009)
2. Mazziotta, C., Mazziotta, M., Pareto, A., Vidoli, F.: La sintesi di indicatori territoriali di dotazione infrastrutturale: metodi di costruzione e procedure di ponderazione a confronto. Rivista di Economia e Statistica del Territorio, 1 (2010)
3. Mazziotta, M., Pareto, A.: Un indicatore sintetico di dotazione infrastrutturale: il metodo delle penalità per coefficiente di variazione. In: Lo sviluppo regionale nell'Unione Europea – Obiettivi, strategie, politiche. Atti della XXVIII Conferenza Italiana di Scienze Regionali. AISRe, Bolzano (2007)

Session 6

Information for labour market policies

Chair: Luigi Fabbris

A measurement of workers' geographical mobility

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Key words: geographical mobility, labour market, occupational attraction, territorial analysis.

The Italian Labour Force Survey represents an extraordinary informative patrimony, the analysis of which may provide an important instrument to support the policy maker's activity. In this paper, we propose a model to detect geographical mobility of workers, with the aim to point out those disequilibria, among Italian regions, in terms of inflow and outflow of labour. Exploring this dimension of labour market is a significant opportunity to define an analysis framework, through which it is possible to valorise the information about the workers' "*residence*". This represents a useful example to consider dynamically this data source, in order to explicit the regions' ability to attract workers coming from other territories. This perspective may allow to redefine labour market geography, going behind the classical and traditional dualism North – South. At the same time, we are able to answer questions like:

    a.   Where do those employees, that do not operate in their residence place, work?

    b.   And where do those employees, that work in a specific territory, come from?

In order to obtain this purpose, we defined two indicators. They allow to gather, locally, the complementary dimensions of workers for residence and habitual job place.

The first indicator, that we label "*territorial mobility*", represents a transposition to the labour market of the mobility studies, that the Italian National Institute of Statistics (*Istat*) generally conducts on the graduates' mobility.

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In our case, it is defined, *for each region "i",* as follows:

$$(territoria\ l\_mobility\ )_i = \frac{(I_i + O_i)}{P_i} \times 100$$

where I_i is the number of workers that reside in the region *"i"* but work out of the region *"i"*; O_i is the number of workers that work in the region *"i"* but reside out of the region *"i"* and P_i is, finally, the number of workers that reside and work in the region *"i"*. Hence, the indicator relates the number of workers' entries and exits to the number of workers who remain in the same territory both for working and living. The first evidence shows how the historical and classical differentiation between North and South is not valid any more. As a matter of fact, it is possible to observe a deeply diversified situation. The left side of figure 1, for example, reports the regional distribution of this indicator. Molise (15,7), Basilicata (13,9), Valle d'Aosta (10,6) and Umbria (8,6) present the highest values, and the region's dimension is clearly a key element in the interpretation of this result. On the other hand, regions like Sardegna (1,4), Sicilia (2,7) and Trentino Alto Adige (3,3) close the ranking. The condition of being an island seems to be a possible explanation for the low values registered for the first two regions.

Jointly, we define a second indicator to establish if the main contribution to the mobility is given by workers' inflow or outflow. To this aim, we defined an indicator of *"occupational attraction",* computed, for *each region "i"*, as follows:

$$(occupational\_attraction)_i = \frac{(I_i - O_i)}{P_i} \times 100$$

where the three components are the same defined above.

A positive value of the indicator means that there is a prevalence of entries with respect to the number of exits, while a negative value testifies the presence of an opposite phenomenon. In this case, the empirical evidence confirms the traditional distinction North – South. This is the proof of a more suffering occupational context in the Southern part of the country, which induces southerners to move in order to find better conditions.We can observe some exceptions though , for example, Umbria (-3,5) and Veneto (-0,8) show a context more similar to the South than to the areas they belong to.

References

1.   Istat (2009), Orientarsi con la statistica. Università e lavoro 2009.
2.   Moretti S. e C. Porello (2010), La mobilità del lavoro in Italia: nuove evidenze sulle dinamiche migratorie, Questioni di economia e finanza, Banca d'Italia.
3.   Staff di Statistica Studi e Ricerche sul Mercato del Lavoro di Italia Lavoro S.p.A.(2010), La mobilità territoriale dei lavoratori, *Il Monitor*, n. 22.
4.   Viesti G. (2005), La mobilità geografica per lavoro dei laureati italiani, in: Lavorare dopo la laurea. Caratteristiche e percorsi occupazionali, Almalaurea.

Longitudinal data for the analysis of labour market flows

Barbara Boschetto, Antonio Rinaldo Discenza, Francesca Fiori, Carlo Lucarelli, Simona Rosati

Key words: longitudinal data, record linkage, imputation, weighting.

1 Longitudinal data of the LFS

This paper focuses on labour market transitions between the three main categories of the labour status (employment, unemployment and inactivity) and between job features. A longitudinal point of view allows assessing transition and persistence probabilities for "employment" and "unemployment" according to their characteristics.

Longitudinal microdata files from the Labour Force Survey (LFS) have been produced. Four official longitudinal twelve months microdata files, from 2004Q1 to 2008Q1, have been realized delivering transition matrices containing estimates of gross flows. Before the end of 2011 three other microdata files, from 2008Q1 to 2011Q1, will be delivered.

The LFS has a rotating sample design, where households are interviewed four times over a fifteen-month period, following a 2-2-2 rotation scheme. Therefore 50% of households are interviewed again after three and twelve months, while 25% of them after nine and fifteen months. According to this scheme the records related to the same individuals, interviewed in different time periods, can be linked in order to obtain 12month and 3month longitudinal data.

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2   Q1 stands for "first quarter"

Using these longitudinal data, transition matrices containing estimates of gross flows can be produced, provided that:

1. LFS is not a panel survey, which means that individuals who move out of the selected households, or household which move out of the municipality, are not re-interviewed;
2. household non-response may occur at subsequent waves due to non-contact, refusal, etc.;
3. longitudinal estimates can refer only to a specific longitudinal reference population defined as the population which is resident in the same municipality for the period of twelve months (or three months), thus net of deaths and internal or international migration;
4. weights have to account for the longitudinal population, for the total non-response (usually not at random) and have to ensure consistency with the official LFS quarterly estimates.

Looking at the consistency between stock and flow estimates (Figure 1) it is known that annual or quarterly net changes are the final result of a high number of gross flows of different nature and different magnitude (death, migration, labour status transitions).

Figure 1: Matrix of flows (Figures in thousands)

LABOUR STATUS AT 2008 Q1		LABOUR STATUS AT 2009 Q1				Deaths	People leaving the municipality	Population at 2008 Q1
		Employed	Unemployed	Inactive	Total			
	Employed	20 412	532	1 379	**22 323**	51	796	**23 170**
	Unemployed	475	538	632	**1 645**	2	114	**1 761**
	Inactive	1 030	696	23 228	**24 953**	525	391	**25 870**
	Total	**21 917**	**1 766**	**25 238**	**48 921**	**578**	**1 302**	**50 801**

	Employed	Unemployed	Inactive	Total
Children aged 15			577	**577**
People entering in the municipality	1 049	216	433	**1 699**
Population at 2009 Q1	**22 966**	**1 982**	**26 248**	**51 197**

2 Methodological Issues

The following methodological issues are involved into the procedure:
- Record linkage of individuals for the four waves (or less in case of non response). Two records related to the same individual, interviewed in different quarters are linked by an individual key.
- Imputation of longitudinal item non-response follows mainly a deterministic method. The entire work history for each individual, from the first wave to the fourth one, was considered in order to define the general rules of imputation.
- Estimation of the longitudinal reference.
- Weighting procedure and treatment of non-response. Final weights for twelve month longitudinal data have been computed using a multi-step procedure.

Inflows and outflows in the Italian labour market

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Key words: administrative data, work inflows and outflows, transition matrix.

1 Compulsory communications data ("comunicazioni obbligatorie") and labour market flows

The "comunicazioni obbligatorie" (henceforth CO) data contain important and so far under-investigated information on employment dynamics in Italy. They record all activations, transformations and terminations of employment relationships for any worker and firm in the area since the beginning of 2008, in an employer-employee linked structure [1,2,3]. In this work, we exploit one provisional version of the CO dataset with a CO subset with about 1:91 representativeness ratio[3].

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3   We provide estimates based on all the communications referring to the workers born on 15th of March, June, September and December, from March 2008 to June 2010.

4   We do not observe the temporary contracts started before 2008 which have terminated over the period, which have not been affected by extensions or modifications.

2 Inflows and outflows

The ongoing debate about reducing unemployment in Europe has been focused on the flexibility of labour markets: a central question is whether there is sufficient labour market dynamics. CO data provide useful up-to-date measures of the inflows and (partial[4]) outflows in the Italian labour market. We build a monthly longitudinal dataset, containing the information on presence/absence for each contract in each month along with some individual and job characteristics. The logit analisys based on these data is summarised in Table 1, where in column *out* we estimate the probability of contract termination (*in*) and activation (*out*). The main determinants of *out* and *in* are the type of contract, the gender of the individual (women experience a higher probability of termination), her/his age (older people show a lower probability of termination and a higher probability of activation) the citizenship (contracts signed by Italians show a higher probability of termination and a lower probability of activation). Education has the same impact as age.

Table 1: Logit estimates of jobs outflows (*out*) and inflows (*in*), β coefficients

Independent variables	out	in
Age	-0.010***	0.003***
Female	0.043***	-0.008
Edu: secondary	-0.048***	0.021***
Edu: tertiary	-0.172***	0.034***
Italian	0.052***	-0.075***
Working time: part-time	0.059***	0.010
Contract: temporary	1.256***	-0.272***
Contract: apprentship	0.241***	-0.157***
Contract: parasubordinate	1.277***	-0.369***
Contract: internships	1.948***	-0.344***

Note: reference categories are males, with primary education, with no italian citizenship, working full-time, with permanent employment; controls for: quarters, regions, occupations, sectors.

References

1. Anastasia B., Disarò M., Gambuzza M., Rasera M., Comunicazioni obbligatorie e analisi congiunturale del mercato del lavoro: evoluzione, problemi metodologici, risultati, I Tartufi n.35, Ottobre 2010, Veneto Lavoro (2010)
2. Anastasia B., Disarò M., Emireni G., Gambuzza M., Rasera M., Guida all'uso delle Comunicazioni Obbligatorie nel monitoraggio del mercato del lavoro, I Tartufi n.36, Dicembre 2010, Veneto Lavoro (2010)
3. Strano G., Lang T., Rossi B, Sorci V, Il sistema delle comunicazioni obbligatorie: uno strumento per l'analisi del mercato del lavoro, Ministero del Lavoro e delle Politiche Sociali (2010)
4. Hamburger, C.: Quasimonotonicity, regularity and duality for nonlinear systems of partial differential equations. Ann. Mat. Pura. Appl. \textbf{169}, 321--354 (1995)

Considering the program evaluation as a data mining process: the case of the active labour policies in Bologna region

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Key words: active labour policies, selection bias, data mining process.

The paper illustrates the analysis process of data from the Workfare Action Program of the "Centri per l'impiego (CPI)" in Bologna. The CPIs aim is to assist in the employability of disadvantaged workers within the context of worsening labour market conditions. Understanding the effects of these government's efforts is important but hindered by the observation that a selection bias may exist. As shown in Barnow (1987), in his review of the U.S. Comprehensive Employment and Training Act programs from 1970s, the answers about program effectiveness depend on the measures and method used. We apply the data driven three-step process adopted in Peck et al. (2010) which follows the lines of D'Attoma & Camillo (2011) to reduce such selection bias, thereby facilitating estimation of unbiased treatment effects. The first step involves measuring imbalance via the GI measure and then testing the extent to which there is imbalance in data via the multivariate imbalance test. If data result unbalanced they proceed to the second step which involves executing a Cluster Analysis (CA) whose primary concept consists in getting finer partitions because it enhances the plausibility of obtaining balanced groups, thereby minimizing selection bias. Next, they assess the balance within step 2's resulting clusters and computing local treatment effects within balanced groups. The use of such an approach represents a strong message addressed to evaluators: it is possible to evaluate policies with a completely model-free procedure that enables policy makers to better understand- without the

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confluence of selection bias- the influence of their policies on various subgroups. The main strength of such an approach is that it is also enclosed in an automatic procedure (Camillo & D'Attoma, 2010) that evaluators can use to assess the effectiveness of programs. The procedure makes program evaluation easy, and as such, allows to constantly monitor the effect of CPI policies. The constant monitoring reverses the concept of evaluation, that must be considered not only as a one-time action, but as a process. The data come from the Province of Bologna's Sistema Informativo Emilia Romagna (SILER) database. The aim is to monitor the effects of CPI policies implemented to improve the employability of the disadvantaged segments of the population. We measured the effect of such policies on the duration of all the fixed-term employments. Assessing the causal link between the intervention and the employment outcomes requires the effects of the CPI's actions to be disentangled from the influences of the population's characteristics. With this as context, we begin implementing the three-step analysis by computing the GI measure and performing its test, that demonstrated the presence of imbalance in data. As a second step we use CA to generate homogeneous groups of job start-ups. We retained the 30-cluster solution because it provides balance within a suitable number of clusters compared to larger cluster solution. Finally, we test the balance within each group and measure the effect of CPI affiliation on the lenght of fixed-term employment. Two survival curves (one for CPI affiliates and one for not affiliated) were estimated within each balanced group by the nonparametric Kaplan-Meier method. For brevity, we consider one cluster as illustrative example. The CPI's program works to extend the duration of fixed-term employment. For this subgroup, both Wilcoxon (chi-square=2.95;0=0.09) and long-rank (chi-square=0.91;p=0.34) tests let us conclude that the disadvantaged status of the weaker segments of the workforce is compensated by the intervention, as they found a fixed-term job with the same duration than their comparison counterparts, after accounting for bias. In sum, the Bolognese CPI improved disadvantaged workers' employment outcomes in 39% of cases. Although these services are not sufficient to help all disadvantaged workers, we can say with confidence that the program works well as is usual for active labour policies (Card et al., 2010).

References

1. Barnow B.S. (1987) The impact of CETA programs on earnings: A review of the literature, in: Journal of Human Resources, 22(2), 157-193.
2. Camillo F. & D'Attoma I. (2010) A SASrMacro for measuring and testing global balance of categorical covariates, in: amsacta.cib.unibo.it/2874.
3. Card D., Kluve, J. &Weber A. I.(2010) Active Labour Market Policy Evaluation: a Meta Analysis, National Bureau of Economic Research, Working Paper 16173.
4. D'Attoma I. & Camillo F. (2011) A multivariate strategy to measure and test global imbalance in observational studies, in: Expert Systems with Applications, 38, 3451-3460.
5. Peck L.R., Camillo F. & D'Attoma I. (2010) A promising new approach to eliminating selection bias, in: The Canadian Journal of Program Evaluation, 124(2), 31-56.

Labour force survey as an instrument to define tailored policies: the case of foreigners

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Key words: labour market, foreigners, multiple correspondence analysis, cluster analysis.

The analysis of data from institutional informative sources may represent an important device of knowledge, through which it can be supported the definition of more timely tailored political interventions. The aim of this paper is to contribute to the planning of more accurate active and passive policies, using official data, in order to provide important instruments of knowledge acquisition to policy makers. We use data of the Italian Labour Force Survey to classify the resident foreigners, on the basis of their characteristics related to the participation to social life and labour market. Starting from 25.125 questionnaires, referred to the entire foreign population resident on the national territory, we selected eighteen variables, able to describe both their social and working status. Through these variables, we classified the population according to a *tandem analysis*, based on a *Multiple Correspondence Analysis* (*MCA; Benzecrì, 1973*) followed by a *Hierarchical Clustering Analysis* (*HAC; Gordon, 1999*). Finally, taking into account the criticism to MCA expressed by Camiz and Gomes (in press), we applied Greenacre's (1988) *Joint Correspondence Analysis* (*JCA*) and compared the outcomes obtained by the two methods. This analysis was applied to the whole data set and to two separate groups of variables, representing the social status and the labour conditions respectively, the other group acting as supplemental. In the overall *MCA*

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four axes were identified, that may be labelled as: *1) "inclusion in or exclusion from the labour market"; 2) "socio-occupational fragility"; 3) "private and public services for employment"; 4) "occupability".* The *HAC* (Gordon, *1999*), carried out to classify the foreigners, was based on the Euclidean distance among the individuals in the space spanned by the interpreted factors issued by *MCA,* through the minimum variance clustering method (*Ward, 1963*). To select the cutpoint of the dendrogram, we applied Calinski and Harabász (*1974*) method, which was shown to be the best by Milligan and Cooper (*1985*). In our case, we identified six groups, that represent homogeneous types with respect to the direct and indirect relations with the labour market. They may be labelled as: 1) *"foreigners with risk of discomfort"*; 2) *"foreign youth in transition"*; 3) *"job reintegration"*; 4) *"independent occupation with high expertise"*; 5) *"dependent worker with low professional profile"*; 6) *"individuals without family burden"*.

The alternative approach

The tandem analysis has been criticized by Arabie and Hubert (1994), because there is no proof that natural existing clusters may be identified by the first MCA factors. Nevertheless, Lebart et al. (1995) suggest its use as a way to characterize groups of units on the basis of the selected factors, in this way helping in understanding the factorial data structure. We shall adopt this explanatory point of view. The clustering on factors may be done on either standardized or non-standardized coordinates. In this latter case, the first factors tend to separate units more than in the former, because the factors' inertia depends on the association structure of the data table. Thus, it is interesting to attempt a clustering on the coordinates standardized to 1, so that the importance of the factors is equalized. For what concerns the MCA itself, Camiz and Gomes (in press) showed that the high bias introduced by the diagonal sub matrices is only partially reduced by re-evaluating the factors' inertia according to Benzécri (1979) and Greenacre (2007), as this latter suggests. In any case, when clustering with factors standardized to 1, the re-evaluation has no effect. To cope with MCA problems, we run JCA (Greenacre, 1988), obtaining a configuration of levels that will be compared to the one issued from MCA. Unfortunately, no way to compute units coordinates exists for JCA so far.

References

1. Benzécri, J.P. *et al.* (1982). *L'Analyse des Données*, 2 tomes, Paris, Dunod.
2. Camiz, S. and G.C. Gomes (in press). Joint Correspondence Analysis vs. Multiple Correspondence Analysis: a Solution to an Undetected Problem. Submitted to *Cladag 2010 – Book of proceedings.* Springer.
3. Greenacre, M.J. (1988). Correspondence analysis of multivariate categorical data by weighted least squares. *Biometrika*, 75, 457-467.
4. Greenacre, M.J. (2007). *Correspondence Analysis in Practice*, Second Edition (Chapman & Hall/CRC Interdisciplinary Statistics).

Session 7

Organization and social responsibility

Chair: Giorgio Alleva

Statistics as a public good: the quality of statistics as a citizens' right

Paolo Tabarro

Key words: statistics quality, knowledge increase, independence.

1 Introduction

In the last years, the strategic role of Statistics led to a national and international rich production as the European (and the national) Statistics Code with the aim to guarantee data quality (impartiality and completeness) and the autonomy of the statistical institutes and organizations from the policy makers. Nevertheless, even if many important steps about the autonomy (especially in term of functions) and the quality of the data production (by means of the certification of data quality) were made, an improvement of the organizational autonomy has to be achieved; in particular, the transition from the production of information (on which the official statistics are based) to the increase of the knowledge is expected .From this point of view, the users - and the process by which they change data into knowledge -, weight much more.

2 The organization of the official statistics: the European context

The autonomy and independence of official statistics get stronger in the last years in national and European contexts. In particular, the *European Statistics Code of Practice*, in the recommendation of the European Commission (the 25th may 2005), gives rules on the statistical organizations of the Community and for the Member States. The first principle of the Code establishes the independence of the statistical authorities from

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political and administrative organizations and from private actors. Nevertheless, the recent regulation CE n. 223/2009, that established the main rules on the European statistical system, did not affect the independence of Eurostat and juridical status of the national statistical institutes. Actually Eurostat is one of the directions of the European Commission and the national statistical institutes are supervised; their balances are determined by the governments and parliaments, as in the case of Istat. A new design of the European and national statistical systems - nearer to the configuration of the central banks - can be the solution to these problems, giving power to issue regulations – as for the SEBC – and independence to Eurostat and to the national statistical institutes. We can find examples of this kind of status already established in Europe and in Italy.

3   The Italian context : towards a new national statistical system

The production system of the national statistics is regulated by decree n. 322/1989 that is still good in the opinion of the administrators. The design of the national statistical system, as a network of public powers, anticipated the institutional developments, as the reform of Title V of the Constitution. Recently, the Italian Code of the Official Statistics gave more strength to the supervision of data quality and to the accordance of Sistan to the Italian and European standards. The role of Istat has been redesigned by decree n. 166/2010; in particular, Istat supervises Public Administration in collecting data and information management. Nevertheless new juridical actions should give more weight to the current and weak role of coordination for Istat, especially for the technical and scientific aspects. Furthermore, these actions should make the actors - producing statistics - more homogeneous.

4   Statistics as a public good: the quality of statistics as a citizens' right

Data production is not the main problem of the official statistics; official statistics should not only produce data but also increase the knowledge of the entire community. To do that and to make the information believable, an institutional framework for the independence of statistical institutes from the policy makers is needed, in addition to the undoubted technical authority of Istat. This independence is not a split from the policy, the society and its information needs. In this case, the independence would not have influence. The independence consists in a relationship with the "value" that an organization has to safeguard, relationship that produces autonomy for that organization working for that "value". In the case of "statistics", the "value" is given by citizens' or enterprises' right to have statistics of good quality; that means, the right of the community to have information by which aware decisions can be taken.

Quality improvement of the administrative sources based official statistics: e-learning training tools for the road accidents and demographic surveys

Antonella Bianchino, Giordana Baldassarre, Stefania Taralli, Sabrina Angiona, Silvia Buzzone, Sabrina Prati

Key words: e-learning, training tools, administrative source, quality of data collection.

1 The project

The decentralization of production processes based on administrative sources, requires the involvement of multiple institutions for data collection. A strong monitoring and a continuous technical and methodological support is relevant to ensure the quality of statistical data.

"Training" plays a key role in a decentralized data collection process; to this purpose the presented project proposes a training package based on a combination of traditional technical and methodological support and e-learning tools, using new communication web technologies.

The goal is to define a working tool to support all data production processes, shared across all nodes in the network.

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The e-learning method, based on the dissemination of training tools by means of a web platform, seems appropriate to manage the complex and distributed organisational model described. Istat is experimenting a new web-tool based model for road accidents and demographic surveys. The advantages provided by *e-learning blended* tools allow to reach all organisms involved in the data collection process. This method is suitable to share and to spread *best practices* too.

2 The road accidents and demographic surveys

The survey on road accidents resulting in deaths or injuries [1,2], carried out by Istat, is an exhaustive and monthly based data collection. The survey collects all road accidents involving at least one vehicle, circulating on the national road network, resulting in deaths or injuries and documented by a Police authority. A flexible data flow model has been adopted by Istat, through the subscription of special agreements with regions and provinces, to improve the timeliness and quality of data collected.
People of Italian citizenship and non-Italians usually living in Italy are enrolled in municipal registry offices for the resident population ("Anagrafi") [1]. Vital statistics are also collected for live births, foetal deaths, deaths and marriages in municipal registry offices for the present population, those actually living in Italy as official residents or not, ("stato civile"). The population registers are the main data-source for the production of the statistics on population in Italy, for: balances (data on total population and foreign population), stocks, individual data and flows.

3 The Dokeos platform

To realise the project, the *Dokeos platform* has been used [3]. Dokeos is an open-source software for the arrangement of web-courses. It allows the interaction among users, the sharing of tools and documents stored in a repository and the planning of a community forum. The services and products accessible on demand, in a modular and flexible way are: *teaching aids for trainers to manage the classroom* (downloadable), *modules for self-learning*, *instruction manual for data collection*, *documents.* By means the Dokeos platform for the e-learning, an exchange of information, a better cooperation among organisations and a continuous data improving is expected.

References

1.   De Praetere T., Lobelle C.: Dokeos e-learning project management Guide (2010)
         http://www.dokeos.com/doc/DokeosElearningProjectManagementGuide.pdf

National statistics and professional competence

Luigi Pieri

Key words: environmental statistics, social responsibility, public policy, innovation.

1. New trends in national statistics

National statistics are essential for the dissemination of a shared knowledge in a democratic society. Furthermore they provide an indispensable tool for institutional decision-makers. An important evolution in the national statistics producing process is represented by the exploitation of the "data mines" gathered by the public and private sectors for operational and managerial purposes. The use of administrative archives in producing national statistics is strongly urged by the low cost and the swiftness of data collecting process thanks also to the rapid development of ICT. This way to proceed requires archives being established and organized according to statistical criteria to guarantee a reliable information. The quality of data is a crucial point of the process of acquisition, treatment and diffusion of the information. As far as the producers of "official" statistics are concerned, we can see that domestic and international statistical agencies are very careful in their rulings. The recent adoption of the Italian Official Statistics Code is an important step to retain trust in domestic official statistics. At present the quality control of the statistics produced by companies as well as agencies is an outstanding problem. Several bodies deal with themes of interest and importance for social life. Ruling qualitative standards is indispensable. Nevertheless, the capacity to ensure the respect of the rules is still an ongoing problem.: "..in the twenty years of Sistan's existence ten directives have been adopted, that have sometimes not been applied without any penalty for the companies that failed to follow them" (Giovannini, 2010). An important contribution may come from a wider and deeper diffusion of statistical culture. The organizational and technological changes in the process of national statistics production requires a large investment in training and education concerning the "official statisticians", and all the people involved in the production of

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statistical information: from the collection of microdata, to the organization of the archives and the production of statistics. It is time to start a process of spreading the culture of statistics in order to turn "statisticians from producers of information to generators of knowledge"(Giovannini,2010).

2. Competence and professional accreditation

Producing and sharing knowledge has to be performed by people provided with appropriate professional qualification. If technical skills appears to be an obvious requirement, an ethical behaviour appears equally necessary. The role of ethical behaviour in producing national statistics is essential to guarantee the correctness of the information that will be provided to make political and economic decisions and to avoid actions that are damaging for communities and minorities (Seltzer, 2005). The "statistical referent" introduced by Sistan has had the positive effect of inducing the bodies belonging to National Statistical System to appoint a responsible for statistical information. It has to be pointed out, however, that such an important role has been filled by people not always in possession of the required competence. This, apparently, is the result of a lack of awareness of the importance of statistical information. The progressive improvement that has been recorded in statistical culture over the last few years in the public administration and in the world of productive activity allows us to trace the general lines of a professional training program for the statisticians engaged in national statistics production. The interest in evaluating the professional competences of the statistician comes out from the debate that has taken place and the initiatives that have been taken throughout the world for a number of years. The demand for statisticians whose competence is "certified" is widespread as in the production of official statistics as in the industrial sector (Hutchinson,2010). The prevalent idea is promoting an accreditation program , on voluntary basis, managed by a community of "peers". Initiatives of this sort have already been carried out in several countries, (Australia, Great Britain and the USA) by the local statistical associations.

References

1. Giovannini E.: Statistica 2.0 The next level- Tenth National Statistics Conference - Rome 2010
2. Hutchinson K.: Accreditation of Professional Statisticians: Current perspective and Challenges- Paper PD07 www.phuse.eu, 2010
3. Seltzer W. U.S. Federal Statistics and Statistical Ethics: The Role of the American Statistical Association's Ethical Guidelines for Statistical Practice, Washington Statistical Society Meeting, 5th feb 2001

The social responsibility of environmental statistics as a tool for the innovation of public policies

Stefano Tersigni, Fabrizio Monteleone, Simona Ramberti

Key words: environmental statistics, social responsibility, public policy, innovation.

The availability of high quality environmental statistics at community and national level is a critical point in public planning and assessment policies. An increasing attention to environmental issues is fast becoming an inevitable step towards an economic model able to sustain changes produced by the new global equilibrium. The need to develop better statistics related to environment at European level is essentially identified in the past "Lisbon strategy", in the indications of the sixth Programme for Environmental Action (VI EAP, 2002-2012), in the renewed strategy for sustainable development and in the primary initiatives of "Europe 2020", which aims for an industrial policy based on a greener and more competitive economy with more efficient resource management. Environmental data and indicators, therefore, play a basic role in understanding and raising the awareness level of decision-makers, thus ensuring the transparency of political action. The main pressures to collect and share environmental data derive from the obligations imposed by international and community laws and by the national legislation. There are specific community regulations, in fact, that establish data collection criteria and standardized methodologies for the environmental field so as to generate comparable data, concretely useful for environmental management policies.

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The aim of this work is to reflect on the state-of-the-art in public environmental statistics as well as to identify coming innovations and developments.

In response to the growing importance of this area, the Italian National Institute of statistics (Istat) is involved in producing and processing environment related data. In particular, special attention will be given to three significant surveys that Istat performs on a regular basis:

Urban water survey –Istat has conducted surveys on water statistics since 1951 with the aim of describing the state of urban water services and water resources. The survey chronology (1951, 1963, 1975, 1987, 1993, 1999, 2005) allowed to develop an informative basis whose progressive updating depends on new water country/EU directives and increasing information demand from institutional and private stakeholders. In detail, this survey collects information on abstracted water, water supply systems, sewerage systems and wastewater treatment plants. It has benefited of financial contributions from Ministry for Economic Development with the aim to monitor "Service objectives" in the Southern regions, an award-based mechanism linked to target levels achieved in essential services for citizens;

Urban Environmental Indicators – Istat has yearly collected since 2000 urban environmental data referring to the 111 provincial capitals. The issues and variables involved are the most representative of environmental problems in the urban context: water, air, energy, waste, noise, transport and urban greenery.

The urban environmental indicators originated from this survey assure useful data that could be able to satisfy several information needs and to support the public decision-making and policy analysis. Besides, considering the high concentration of population in the provincial capitals, the "city" here monitored constitutes a prestigious location for understanding the interaction between man and environment.;

Meteo-climatic and hydrologic survey – the aim of this project is to implement a geographic data-warehouse with meteorological and hydrological daily values measured since 1951 from the gauging stations of both national and regional services.

The data-warehouse will allow to estimate, through a GIS-based scheme, the main climate variables at high spatial resolution and to calculate a set of indicators regarding the interaction of climate with socio-economic, biological, agronomic, pedological and hydrological themes. These surveys not only represent an essential source of information about territorial resource reserves and management, they also delve into individual and collective behaviours that often have catastrophic effects on the ecosystem.

References

1. Statistiche in breve "Censimento delle risorse idriche a uso civile" http://www.istat.it/salastampa/comunicati/non_calendario/20091210_00/
2. Stefano Tersigni, Marilena A. Ciarallo, Renato Torelli, Luca Salvati - http://www.eurac.edu/it/research/institutes/alpineenvironment/Projects/SITE/Documents/SITE2009_atti_vol1.pdf
3. Statistiche in breve "Indicatori ambientali urbani" http://www.istat.it/salastampa/comunicati/in_calendario/indamb/20100728_00/
4. Stefano Tersigni, Simona Ramberti, Luca Salvati - "La banca dati agro-meteo-climatica ed idrologica dell'Istat - aggiornamento al 2009" http://www.agrometeorologia.it/documenti/Aiam2009/73Tersigni_Aiam_09.pdf

The basic training of the public statistical surveyors

Giulia De Candia

Key words: training, statistical surveyors, official statistics, activity-based learning.

Statistical surveyors engaged in sample surveys and censuses carried out by Italian National Statistical Institute in the whole country, play an important role both as regards the collected information quality and the direct relationship with the interviewees. In this second case, surveyors became Istat interface with the community, and then, if they demonstrate professionalism and competence, contribute to a good perception of public statistics. Several studies demonstrate that a comprehensive and standardized training of the surveyors has a positive effect on the survey outcome quality (among others Billiet and Loosveldt, 1988).

The training programme we propose specifies the objectives according to the "knowledge, skill, attitude" model, where "knowledge" represents the information to be acquired, "skill" the abilities to be developed and "attitude" the behaviors to be integrated (Battistelli et al., 2002). So the training of the public statistical surveyors should aim to:

- provide basic knowledge on the normative and institutional framework and about survey contents (knowledge);
- provide the ability to conduct a household or business interview in the manner and with provided tools (skill);
- develop the ability to interact appropriately and effectively with interviewees and develop the awareness to work in the collective interest (attitude).

To achieve these objectives two stages of learning can be identified: the first one is to prepare for the surveyor role and the second to provide specialized content and computer skills, peculiar to each survey. In this contribute we focus on the first one and suggest some content and methods to be implemented in the surveyor role session.

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Topics likely to be addressed, would cover the following:
- institutional context: Istat and Sistan;
- fundamental principles of official statistics and Italian code of official statistics;
- survey and interview techniques;
- communication techniques during the interview (procedures on the doorstep and for interview, how to handle respondents who refuse to participate in the survey);
- surveyor role and confidentiality.

Familiarizing with the institutional context and principles and knowing the survey process, surveyors may understand why their role in the survey is so important and how the interviewing fits in with the other phases of the survey. Moreover such information may be helpful to surveyors in answering respondent questions (Fowler F.J., 2002). Indeed the major element of this training programme is its public perspective, well-founded on official statistics values. Quoting employer branding strategy (Lizzani et al., 2008), these values can be considered the "brand" of public bodies that produce official statistics, attracting recruits, assuring that current employees are engaged in the ideals and culture of the employer, promoting among stakeholders the value of statistics as a public good.

For reasons of efficiency and economy, various training methods have to be integrated. Traditional classroom training, needed to provide basic theoretical knowledge and assure that participants get involved, is most effective if it includes several opportunities for the trainees to participate in practice interviews and role-playing exercises. Trainees may also benefit from on the job training, where surveyors are accompanied by their supervisors for a few interviews, to ensure that they understand their tasks and perform them correctly. The success of training depends to a large extent on the adequacy of follow-up supervision.

New technologies allow to support classroom training with multi-media tools such as a portal for learning, to be used for e-learning, sharing good practices, distributing teaching aids, documentations, streaming videos of lectures and seminars and other materials from the course. Advantages rising from e-learning consist in the possibility to tailor self-paced learning paths in hypertext, to facilitate tutor/trainee interaction through networked communication technologies and to monitor learning progress, both by tracking the trainee path and through frequent opportunities for self-assessment.

Once role training has been performed and certified, the continuous training may be provided through refreshment sessions, during which training can be adapted to discuss real job situations and how they should be handled.

The effectiveness of this training programme is related to the competencies of the trainers, in terms of professional and teaching abilities. Because of their pluriennial experience, an important role may be played by Istat regional offices staff.

References

1. Battistelli A., Majer V., Odoardi C: Sapere fare essere. Franco Angeli, Milano, . (2002).
2. Billiet, J., Loosveldt G.: Improvement of the quality of responses to factual survey questions by interviewer training. Public Opinion Quarterly, Vol. 52, pp190-211, (1988).
3. Fowler, F.J.: Survey Research Methods, Sage, Newbury Park, (2002).
4. Lizzani G., Mussino G., Bonaiuto M.: Employer Branding tra ricerca e applicazione, Franco Angeli, Milano, (2008).

Official statistics, complexity and organization

Ilaria Girau

Key words: statistic, organization, complexity, governance, leadership, coaching.

From the second half of the XX century on, countries, both economically developed and not, have gradually entered in the information society. In 1981 Toffler [8] described this transition as the economic and social third wave. Each wave is characterized by a distinctive set of variables that impact on the entire society [4]: structures, cultures, actors and physical environment in which these actors move force the society to change in an integrated adaptation context. In this context defined *complex system* [6], the problem that Governments face is: how to manage complexity? [1] In our western country society, we can highlight the following factors:

● the local governments increased demand for independent decision-making and management (devolution); ● the general increasing demands for transnational and world government intervention in all its forms (globalization); ● the public activities expansion (from 5-10% of the national product in the early XX century to 50-60% in the early XXI century) and the huge proliferation of social purposes public agencies which are different from each other as to geographical and territorial jurisdiction, mission and unclear, contradictory, conflicting and often competitive tasks.

According to this setting, the *governance* (here synonymous with governability) becomes the problem of a myriad of public and private institutions with social purposes coordination; the public administrations need to be better mediators, co-coordinators, policy-makers and regulators, in concert with other centers of power, including international and sub-national levels of government, the media, industry and non-profit groups. The EC, in the White Paper on Governance (2001), identifies 5 important principles to guide the PA action towards good governance: openness, participation, accountability, effectiveness and coherence. So we need to reinvent the governing way,

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in terms of: ●structures reorganization; ● development the organizations and social contexts common capacity reading; ● leadership evolution. We need *structures reorganization* because the traditional public administrations no longer seem to be able to play their role of government; from models of government based on a traditional architecture of public or administrative law, on hierarchy, on command and on mere procedures obedience, it becomes more appropriate to shift to social-oriented processes of self-organization and coordination between different sectors. OECD in *PUMA Policy Brief n° 9/2001* calls for Governments to improve the reforms effectiveness by developing organizations that can constantly adapt to changes, instead of going through continuous reforms, developing specific instruments or responses to individual problems, also because there is no "one-size-fits-all" solution across time or space. Statistics competencies are very important for the public manager *to read organizations and social contexts*; he must be able to set up government actions, implementing measures for monitoring and evaluating its action (analyzing performance indicators, assessing the impact of individual policies, evaluate processes, that is, the mechanisms by which actions generate impacts) for the purpose of their possible redefinition [2]. In terms of *leadership evolution*, in complex and turbulent organizational environments, specific behaviors and planned rules seem no longer adequate to the new requirements; there is a need to "navigate on sight" [5]. In this contest three specific dimensions are emerging as essential to the public administration leaders' function: ● influence the people working in organizations behaviours, values and visions, involving employees in the choices and challenges of the administration; ● strongly support the change process taking on related problems, fielding their own authority and charisma; ● be the fulcrum of change processes, getting personally involved [3]. In this context we talk about the evolution of the leadership concept making its way to the coaching concept as a style of management focused on *support actions* rather than *prescriptive actions* and complicated command and control procedures [7]. Given the challenges and opportunities related to globalization, new technologies, demographic changes, rising citizens expectations, public administrations are struggling to become leaders of their change: they can't just wait for the fell from above reforms, but should be able to provide effective and timely responses, activating and equipping on its own. Istat and the official statisticians are expected to meet the new complexity challenges, starting to change themselves: reorganizing the structures, training leaders/coaches, producing *friendly* statistics and offering statistical tutoring to public administration managers.

References

1.   Archibugi F. (2003) Complessità e governabilità politica da Lettera Internazionale n.75
2.   Azzone G., Barbieri, Cocchi *at all* (2006) 8ª Conferenza nazionale di statistica. Roma.
3.   Bonaretti M. at all (2003) Persone al lavoro: Politiche e pratiche per il benessere organizzativo PPAA Rapporti Cantieri Dip. funz. pubblica, Rubettino Rm
4.   Butera F. (3ª ed. 1988) *L'orologio e l'organismo*, F.Angeli, Milano.
5.   Cocozza A. (2002) I luoghi del dirigere. Leadership ed evoluzione del modello organizzativo nelle PPAA;In Indagine riforme amm.ve e ruolo del dirigente - SSPA Cap1
6.   Scifo G. (2006) *Sette anni di Complessità.* Liuc Papers n.188 - Economia aziendale 24
7.   Stone F. M. (1999) Coaching, Counseling & Mentoring: How to Choose & Use the Right Tool to Boost Employee Performance, AMACOM.
8.   Toffler A. (1970) *The Third Wave* Pam Books, London.

Session 8

Technological innovation

Chair: Vittoria Buratta

RELAIS, a powerful instrument to support public statistic

Nicoletta Cibella, Tiziana Tuoto

Key words: open-source software for record linkage, probabilistic record linkage, data integration.

1 The problem of record linkage

In a context of increasing demand of statistical information with stricter budgetary constraints and the effort to limit the response burden, bringing together for statistical purpose huge amount of data coming from both statistical survey and administrative data is a largely widespread phenomenon. Record linkage techniques are a multidisciplinary set of methods and practices with the main purpose of accurately recognize the same real world entity at individual micro level, even when differently stored in sources of various type. The complexity of whole record linkage project resides on several aspects.

There are different purposes to perform a record linkage project that has recently revealed a powerful support to decisions in large commercial organizations and government institutions. In official statistics data integration procedures are becoming extremely important and this is a strong incentive to the investigation of new methodologies and instruments to deal with record linkage projects. In this paper we propose the RELAIS (Record Linkage At Istat) system which basic idea is to face the record linkage complexity by decomposing the whole problem in its constituting phases and to dynamically adopt the most appropriate technique for each step, in order to define the most suitable strategy depending on application and data specific requirements (Cibella et al. 2008). RELAIS is configured as an open source project, a winning choice for sharing techniques and software. The methodological core of RELAIS is based on the well-known Fellegi-Sunter theory (1969), allowing its usage

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by both researchers (who may easily enrich it) and non-experts (who have it embedded in the software).

2   The RELAIS main features

The belief that there is no a unique solution to record linkage problem led us to design and implement the RELAIS system. The inspiring idea of the RELAIS software, now available the 2.1 version, is to allow combining the most convenient techniques for each phase in which the whole process can be decomposed and also to provide a library of patterns that could support the definition of the most appropriate workflow, taking into account the specific features of the data and the requirements of the current application. In addition, RELAIS aims at joining specifically the statistical and computational essences of the linkage issue. Moreover, in order to re-use the several solutions already available in the scientific community and to gain the several experiences in different fields, we started to develop the RELAIS project as an open source project in order to provide, in the shortest possible time, a generalized toolkit for dynamically building record linkage workflows. In line with the open source philosophy, RELAIS has been implemented by using two languages based on different paradigms: Java, an object-oriented language useful for manipulating data, and R, a functional language calculation-oriented. From the version 2.0 ongoing RELAIS has been implemented using a relational database architecture (based on mySql environment) optimizing the performances with respect to the management of huge amount of data through the whole record linkage project (input, intermediate phase and output). Thanks to the modular approach and to the open source choice, adding new techniques to the pool already available is really easy. The RELAIS project aims also to provide record linkage techniques accessible to not-expert users with a GUI (Graphical User Interface) that, on one hand, permits to build record linkage workflows with a good flexibility; on the other hand, it checks the execution order among the different provided techniques whereas precedence rules must be controlled. The idea of decomposing the record linkage process in its phases is the core of the RELAIS toolkit and makes the whole process easier to manage; depending on specific applications and features of the data it can be suitable to iterate and/or omit some phases, as well as it could be better to choose some techniques rather than others; in the current version, RELAIS provides some of the most widespread methods and techniques for the record linkage phases and both the deterministic and the probabilistic approach.

References

1. Cibella N., Fortini M., Scannapieco M., Tosco L., Tuoto T. (2008), Theory and practice of developing a record linkage software, in: *Proc. of the Combination of surveys and administrative data Workshop of the Essnet Integration of survey and administrative data*, Vienna, Austria.
2. Fellegi I.P., Sunter A.B. (1969), A Theory for Record Linkage, *Journal of the American Statistical Association*, 64, 1183-1210.

The role of XBRL for the statistical data capturing

Leopoldo Nascia, Alessandro Zeli

Key words: electronic data capturing, telereporting.

New information and communication technologies offer the opportunity for simplified data collection in order to avoid a double burden on businesses and improve quality of statistical information. Among the new developments aimed to export statistical data automatically from companies' accounts into electronic questionnaires, XBRL (eXtend Business Reporting Language) standard is one of the most important technologies for diffusion and efficiency.

Special attention has been paid to the possibilities of a wider use for statistical purposes of XBRL[1,2], which is an open standard for electronic communication of business and financial data. It is used for tagging and exchanging financial information in a number of countries by different institutions. XBRL can enable common reporting streams for administrative and statistical data.

In Italy a financial reporting taxonomy has already been published and adopted. Istat created in particular an ad hoc working groups devoted to the development of a XBRL Statistical Taxonomy in which all the necessities related to Structural Business Statistics and Short Term Business Statistics Regulation were discussed [3]. The aim of the WG is to make the stakeholders of the projects meet with the official data collector (Istat). The participants to the WG are the enterprises' syndicate, the Official General Accepted Accounting Principles Authority, the professional order of financial accountants, the software vendors.

The aim of the project is to simplify the data collection process. Now the filling in questionnaire procedure implies that an enterprise data manager handles the questionnaire sections to different enterprise departments. There are manual data

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search and imputation . The data manager has to collect data, manage call-backs and data check.

This procedure implies errors due to data recording and processing, cost due to departments coordination and so on. So we have increasing costs and a decreasing in quality standards.

An XBRL data capturing procedure assures automatic data elaboration and check and an automatic "instance" sending. So we can carry out an automatic data capture from different IT system without any enterprise department involving. Data collection is carried out with lesser costs and high quality.

It has been decided to plan a gradual approach in order to take into account two main aspects:

- the size enterprise linked to this aspect, the number of required questionnaires,
- the presence of an advanced management system,
- the easy XBRL adaptability for the required account variables.

On these basis it has been detected the target for the first block of XBRL taxonomies: the larger enterprises (namely with 100 persons employed and over) and 5 Istat surveys.

XBRL organises data in according to a taxonomy implemented by a National Jurisdiction, so XBRL can detect the basic accounting data stored in the enterprises management system following taxonomy requests.

XBRL can capture data at "high" level, hence at the aggregate level (financial report for instance) or at "low" level as required by statistical questionnaires (detailed item non included in the minimum required by financial report).

Low level data capturing implies the standardisation and the "translation" (i.e. transformation), by means taxonomies, of the items currently present inside the enterprises management system, into statistical variables.

References

1. Allen J., Junker C. How far can IT standards and tools help to reduce response burden? (2008). Available epp.eurostat.ec.europa.eu/a.eu
2. Allen J., Junker C., Sindoni G. Overview of XBRL Pilot Project (2008) http://circa.europa.eu/irc/dsis/accstat/info/data/en/XBRLpilot_Project_overview_v2.pdf
3. Nascia L., Zeli A. Il ruolo della piattaforma tecnologica XBRL nella raccolta di dati per la statistica ufficiale presented at Convegno XBRL ABI/Roma 22nd January 2008

The "General government data bank", how IT will support policy

Ottavio Ricchi, Giuseppe Bianchi

Key words: database, public finance governance, transparency, e-government.

Laws 42/2009 and 196/2009 stand as a decisive innovation in the governance of public finance in Italy. The key changes will affect the areas of intergovernmental financial transactions, planning of public finance objectives, accounting and budget presentation standards. The General Government Data Bank (GGDB or BDAP in Italian) was instituted by Law 196 (article 13) and has been conceived as an information system to support the reform process. The aim of this paper is to illustrate the analytical approach adopted in designing the system. The analysis and design work concerns the identification and representation of institutional processes through an appropriate formalization (Data Flow Diagrams), that represents the Databank organization of information. This effort entails identifying the actors therein involved, the information flows (possibly bidirectional) and the role that information plays in each process. The above formalization contains all the requirements that the databank has to comply with (i.e. functional requirements). The definition of information is the base step to refine the system design and it leads to the identification of the actual data that will be acquired and elaborated by the new information system. This latter aspect is omitted from the paper. The high-level process to be supported coincide with the three main reform areas set out by laws 196 and 42. The Database was instituted "For the purpose of effective control and monitoring of public finances…" (L 196/2009), article 13. A further major aim is to "… acquire the information necessary to the implementation and the stability of fiscal federalism… " as a dedicated section of the Database (as of Law 42/2009, Article 5(2)(g)) will comprise service cost, coverage and quality indicators to be used to determine standard costs and social services requirements,

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service objectives as well as to evaluate the achievement of service objectives. Finally, it is instituted a special section containing all the information concerning the central administration needed to enforce the Analysis and evaluation of expenditure process with the aim of concurring to a more efficient and effective utilization of public resources. The main processes identification is only the first step in defining the database functionalities. The ongoing analysis is aimed at dividing each macro process into more and more detailed processes through a careful reading of the law and thanks to the close cooperation with the institutions involved. The goals are to single out "elementary and self-contained" processes and, as a second methodological aspect, to describe and map all their features and functionalities and define the sets of data (data stores) required to support them. The thorough identification of the actors involved in these processes and the detailed understanding of the information flows can be gained through the analysis of the legislative decrees enforcing the laws 196 and 42 which laid down the general framework of the mentioned reforms. The correct and clear design of the information mapping is essential and it underpins the crucial role assigned to the Databank when its institution was conceived. The mission assigned to it by the law maker can be drawn by the text accompanying the bill (Senate Act 1397) which stated that: "this database will be updated in real time by means of data transmission based exclusively on a dedicated information system and accessible to all government bodies, so that it should become a widespread vehicle of knowledge and transparency on public finance variables through which enhance the benchmarking among administrations and local entities with similar characteristics". The BDAP is therefore a tool for sharing information and enforcing coordination among various interrelated aspects of the public finance governance process: the rationalization of data flows within the public sector (including the reduction of the response burden on reporting public sector entities); the systematization and integration of information – relying on the promulgation of the decree laws that will set out requirements for the harmonization of the accounting systems and budget formats of general government bodies –; the undertaking of budgetary financial planning and execution controls; the efficiency analysis and cost benchmarking within the public administration. Giving relevance to the diffusion of information within different government entities is an aspect of primary importance that deserves to be remarked. This outcome is, in facts, consistent with the general tendency to increase autonomy and decision-making capabilities of executive bodies (both at central governments and local authorities levels) in exchange for greater transparency and accountability. Consequently, this process imposes on them, and on the administration that operates in their behalf, an obligation to share all the required information they own with the control bodies and in general with all public sector stakeholders. On this regard, Law 196/2009 states that for purposes of parliamentary control over the public finances the Chamber of Deputies and the Senate shall have access, to the databases of the general government bodies and to all other relevant sources of information managed by public bodies. At a local level the trend to increase transparency determines the need to enforce the comparability of budget accounts of regions, provinces and municipalities, the benchmarking of the quality of services and of the costs incurred in providing them.

In conclusion, the BDAP stands out as a tool for the implementation of key processes of the public administration and its institution will foster the development of other means of knowledge concerning the public administration.

From tables to data warehouse: what changes need to govern in order to achieve a sustainable project

Stefania Bergamasco

Key words: data warehouse, publication, sustainability, change management.

In the last decade the data dissemination has passed from the spread on paper to spread on the web first using dissemination systems and then data warehouse environments. As the social responsibility of public statistics consists mainly in making available data, intent of this paper is to illustrate which aspects should be managed releasing a data warehouse system. "*The risk to get an unsatisfactory result in the projects of date warehousing is particularly high […]. In the contemporary business culture, in fact, it is diffused the belief that attributes to the date warehouse the role of panacea to cure overall the organization problems and the business system deficiencies* [3]. Really a wide part of the responsibility of the result reverts on the rising quality of the data, on the ability to reorganize the productive trials and on the ability to change the business culture [3]. According to these sentences "*instead of embedding outdated processes in silicon and software, we should obliterate them and start over. We should "reengineer" our businesses* [2]. In other words, the necessary changes with respect to each system axe - technology, organization, contents – should be evaluated and managed.

From the <u>technological point of view</u>, to create a data warehouse also means that all the sectors of production have to use the same technology and have to link their systems to the new environment. So, if it is important to take into consideration the general IT problems regarding the increase of data amount and user accesses (architecture hardware - network - restore or backup or databases management policies), it is more

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relevant to create a work environment in which the IT function can manage generalized and reusable software solution. But *reusable software requires a context organization characterized by some fundamental aspects: flexibility from production facilities to calibrate the needs; ability to define functions which may require that other or different areas of lower production have the need to use; high management ability of complex ITC project* [1]. In this sense the creation of a data warehouse environment means to work to the rise of this organizational context model.

In a different way, in terms of content: to create a data warehouse environment means to allow the users to find their data easily and to give them the possibility to merge the data and to integrate them [3]. So having a good navigation tool without integrated data means only to change the instrument without providing a real additional service. Therefore it is necessary: to define the standard in terms of classifications and coding of variables, coding of the modes, data representation; to define common rules and tools for the government of classifications; to define methods and tools for data validation; to define methods and tools to support the production sectors in the design data - no more tables but easily accessible data cubes; to define the strategies in order to obtain n- possible hierarchies of analysis and navigation among the data without duplication.

At the end, on the organization point of view, the deploy of a data warehouse means two main changes: the increase of the internal workload because of data integration and elaboration activities with respect of the common standards; the constitution of a net in which each sector of production works linked to the others and the central sector can govern the processes. Both these aspects could create bottlenecks. Regarding the first matter, the statisticians use to increase the number of tables to increase the number of disseminated data. In term of data warehousing this solution could mean to increase the number of cubes and consequently the number of complex elaboration processes. In such a way the workload will increase indefinitely. It is possible to contain the workload if a process of re-design is managed so that more data are disseminated also if the number of elaboration and dissemination process are the same. Regarding the second change it is important to find the correct balance between the independence of each sectors of production and, at the same time, the central role. In this sense it is essentials the reengineering of the cube data design, the integration, the loading and validation processes. It is also important to decouple the production phase of data dissemination from the packaging phase of the output in order to streamline the first against an increase in the abundance of the latter.

In conclusion, a data warehouse could generate such a disorganization that it will be impossible to maintain the data quality level and the timeliness. Our responsibility is to control the internal workload growth facing all questions previously discussed. Only in this way it is possible create a service which can be sustainable in the long run.

References

1. CNIPA, "Riusabilità del software e delle applicazioni nella pubblica amministrazione – Rapporto del gruppo di lavoro" – giugno 2004
2. Hammer, M. "Reengineer work: don't automate, obliterate", *Harvard Business Review,* July / August 1990, pp 104-112
3. Golfarelli M., Rizzi S., Data warehouse - Teoria e pratica della progettazione, McGraw-Hill (2002)

Product and process innovation to update the census maps 2010-2011

Fabio Lipizzi

Key words: paper map, digital map, census

Census maps are the support on which data is collected during the censuses. Census2010 is the mapping project for 2010-2011 censuses round.

Process and product innovations have been implemented, significantly improving the quality of geographic data both in terms of accuracy and timeliness of the results. Some innovations have followed the mandate of the Digital Administration Code (art. 42, law decree 82/05), so that the traditional paper maps - referred to 8,049 Italian municipalities - have been replaced by maps and models complying with the mandate on the digital " dematerialization " of paperwork.

The shipment of these maps was replaced by uploading digital files (pdf files) to a WEB site that enables the exchange of documentation with the municipalities.

The municipalities made changes to the proposal realised by Istat, drawing their views on the digital maps and documentation has been acquired by Istat. At the same stage control of spatial data was performed, reducing the possibility of introducing errors while defining enumeration area boundaries. Compared to the past, this has greatly simplified the production.

For the first time, Istat has generated a new version of digital maps prior to the survey, anticipating one of the phases of production that - in the past - was carried out after the census survey.

The project Census2010 was designed and built entirely by Istat staff. The innovations, briefly described above, have generated significant financial savings compared to the past and greater timeliness of census results already obtained with the agreement and cooperation of the municipalities.

In this way, each municipality has – before population census is run - a pre-final version of digital maps containing: administrative boundaries (Regions, Provinces,

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Communes), inhabitated localities boundaries ("centri abitati" and "nuclei abitati"), manufacturing localities boundaries and general enumeration areas boundaries.

Figure 1: An example of the digital map (pdf) sent to municipalities
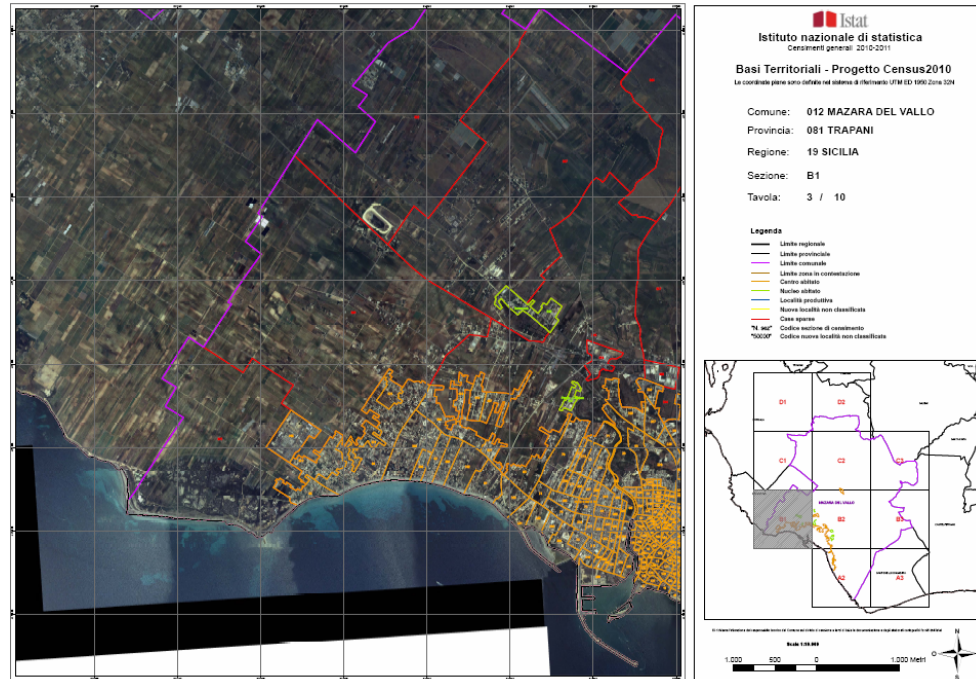
References

1. Crescenzi F., Gargano O., Lipizzi F. Basi territoriali. In Dossier: I censimenti generali degli anni 2000-2001. Giornale del Sistan, 8-13, anno 5, n. 14 (2000).
2. Di Pede F., Lipizzi F. Strumenti territoriali per i censimenti del 2010 - Giornale del Sistan, 10-11, anno 14, n. 41, Roma (2009).
3. Istat. Anagrafe della popolazione, Metodi e norme. Serie B –,29 edizione Istat, Roma (1992).
4. Lipizzi F. Le basi territoriali per i censimenti e le variazioni territoriali tra passato e presente. In: Storia e misura. Indicatori sociali ed economici nel mezzogiorno d'Italia (secoli XVIII-XX), 139-142,198-212, Franco Angeli editore (2007).
5. UNITED NATIONS, Handbook On Geographic Databases And Census Mapping, (Draft version) New York (2008) Available via DIALOG. http://unstats.un.org/unsd/demographic/meetings/egm/CensusMapping_Handbook_EGM08/docs/Handbook_draft.pdf Cited April 2008.

SiGeoS Basilicata

Antonella Bianchino, Salvatore Cariello, Anna Maria Grippo, Francesco Schiuma

Key words: statistics, inter-operability, information systems.

1. The project

SiGeoS Basilicata (Sistema Geografico Statistico della Basilicata) is a technological platform based on the inter-operability of sophisticated information sectors which are capable of integrating geography and statistics.

The project , arising from an agreement stipulated between the Basilicata region and the regional branch of ISTAT, is called "Initiative for the development of statistical information in Basilicata" and aims at the extension of ways of collecting, sharing and interpreting statistical data through more efficient means of diffusion and communication, and thus also at strengthening consolidated statistical practices.

The basis of the SiGeos project is online social interaction within the frame work of "collective intelligence" as posed by Pierre Levy.

The project does not only seek to offer policy makers, citizens, businesses, and institutions a new method of data collection, sharing and transformation but also the opportunity of contributing to the development of new analytical scenarios for territorial phenomena.

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Figure 1: SiGeoS Page

The new SiGeoS approach to the collection, management, diffusion and distribution of territorial data, implemented in the Regional Spatial Data Infrastructure, has three different communicative dimensions:

- between information systems based on inter-operability, permitting constant automatic updating of content;
- between information systems and users by means of the web;
- the third and most important dimension is human interaction developed through the creation of communities whereby users can contribute to the information growth of the system as a whole.

Sigeos presents itself as the virtual point of integration of geographical and statistical data, in the full awareness of the importance of contextualized information for both territorial governance and individual needs.

The system offers tools of statistical analysis applied to geographical data, with web applications ,   management tools and utilities, thus providing an extremely user-friendly graphic inter-face , with a simple easy to use menu and icons.

2. The technological platform

The project was developed entirely with Open-Source software [1] and so did not involve any license acquisition. It is a Cross-Browser and multi-platform project , which can be accessed through different types of browser (Opera, Internet Explorer, Firefox, Chrome) and different operative systems (Unix/Linux-Windows-Machintosh) without any functional loss. It also does not require any extra plug-in or add-on specific installations and can also be seen with various mobile devices such as pda-ipad-iphone. The project was developed entirely with "java script", through the interaction of different libraries [2]: la library Extjs was used for page layout , Openlayers for map vision and Highcharts [3] for the graphs. The wms (Web Map Service) of the Geoportale site of the Regione Basilicata was used for the publication of the overlayer map.

References

1. http://www.markosweb.com/www/sencha.com/
2. http://www.openlayers.org/
3. http://www.highcharts.com/

Session 9

Transparency, traceability and quality

Chair: Vincenzo Lo Moro

The general government sector and the law on public accounting and finance.

Daniela Collesi

Key words: public finance aggregates, general government sector, transparency.

The law on public accounting and finance - law 196, 31 December 2009 - made a clear choice in order to adopt some of the peculiar concepts of the public statistical information, such as the transparency; this issue is recalled in the case of projections of public finance aggregates, for which ad hoc methodological notes annexed to the main planning documents are foreseen to set out the criteria for making the estimations. This is true for both the public finance decision, which sets out the public finance targets, and the Stability law, with the description of the contents of the public finance package and their effects on the public finance balances.

In order to strengthen the traceability and the transparency of the public financial planning, management and reporting, the general government institutional sector -as defined according to the specific statistical Community regulations- has been adopted as the reference sector. The aim of the law has been to make endogenous the general government sector itself to the economic and budget planning. The balancing items and main aggregates of the general government sector are the references in the context of the Maastricht Treaty, whose multilateral fiscal surveillance is based on the Excessive deficit procedure. In the near future amendments of the law are foreseen in connection with the introduction of the European semester, one of the tools of the European Union renewed governance.

The choice to match the supranational reference framework of public finance with the national level objectives apparently seems to attribute an administrative feature to a series of rules designed for statistical purposes, but this does not imply that the statistical principles and rules are less severe than those applied in the administrative

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field. In any case, it could be observed that the coincidence of the two areas, which the law seeks to achieve, might be, paradoxically, more disruptive for the administrative sphere than for the statistical one. For this latter sphere, actually, the economic criteria related to the activity of government and that of public control are the principal guidelines.

References

1. Ragioneria generale dello Stato, La riforma della contabilità e della finanza pubblica - Novità, riflessioni e prospettive, Strumenti e metodi, Roma, (2010)
2. EUROSTAT, Manual on Government Deficit and Debt – Implementation of ESA95, Lussemburgo, (2010)
3. EUROSTAT, Sistema europeo dei conti 1995 (SEC95), L-2920, Lussemburgo, (1996)

The transition from the state budget to the European system of national accounts

Emilia Scafuri

Key words: state budget, central administration, European system of accounts.

The new European management system of national fiscal policies has been designed in order to be more efficient than the hitherto implemented fiscal coordination system.
However, it needs more reliable statistics, based on sound methodological grounds.
As the Commission reinforced the "preventive arm" of the Pact, it also recognized that "…the credibility of budgetary surveillance crucially hinges upon reliable budgetary statistics" (see Council Regulation on the quality of Statistics (EU) No 679/2010 of 26 July 2010, amending Regulation (EC) No 479/2009).
In Italy, the new budget and accounting Law (Law n. 196/2009) introduced procedures and methodological tools aimed at increasing the transparency and reliability of government projections. It foresees that the Stability Law has to be supplemented by a technical note containing all the information needed to allow the transition from the State Budget to the European System of Accounts. (see: Ministero dell'Economia e delle finanze, "Nota tecnico-illustrativa al Disegno di legge di Stabilità" Roma 15 ottobre 2010).
The methodologies used for the passage are thoroughly explained in this paper.
In particular, the analysis of 2011 State Budget's revenues and expenditures is carried out to ascertain the correct treatment according to ESA95 system.
As a first step, State Budget's revenues and expenditures are reclassified into ESA95 categories.
The reclassification implies the allocation of main State Budget's Funds, that are broken down into several categories on the basis of most reliable assumptions about

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their nature and their likely use in future (they are reclassified as intermediate consumption, investment, etc.).

In the second step some adjustments are carried out in order to change the transactions' basis of recording.

In particular, taking into account that ESA95 is an accrual-based system while the State budget is a commitment and payment system, (transactions are recorded on a commitment and on a cash basis), time-lag adjustments are needed.

It is important to point out that, as regard to some specific transactions (taxes and social contributions, interests, etc.) the amounts recorded in the State budget may substantially differ from the amounts recorded in ESA95.

These differences are shown in a table and are fully explained, thus contributing to increase the transparency of the budget.

For example, differences in taxes are explained completely by the two different ways of recording. Taxes in the State budget includes rolls and tax refunds while in ESA95 taxes are recorded net. (ESA taxes shall not include amounts unlikely to be collected).

Finally, the treatment of particular government transactions introduced by the 2011 Stability Law is discussed thoroughly..

As regard for example, the treatment of the sale of radio spectra licenses, the application of the treatment decided at European level ten years ago may appear more controversial at present, in the light of the principles stated in the forthcoming edition of European System of Accounts, which however will be applied not earlier than 2014.

References

1. Council Regulation (EC) No 3605/93 of 22 November 1993 on the application of the Protocol on the excessive deficit procedure annexed to the Treaty establishing the European Community
2. Ministero dell'Economia e delle finanze, "Nota tecnico-illustrativa al Disegno di legge di Stabilità" Roma 15 ottobre (2010)

An application of the Generic Statistical Business Process Model to the survey "Capacity of collective tourist accommodation"

Maria Teresa Santoro, Simona Staffieri

Key words: GSBPM, survey on capacity of collective tourist accommodation.

1 The survey on capacity of collective tourist accommodation

The survey covers the supply of collective tourist accommodation establishments in Italy, detailing information on the annual available capacity. The survey is currently undertaken by ISTAT as a yearly census carried out within the guidelines of the European Union Council Directive 95/57/CE of 23/11/95 and according to the protocols set by ISTAT. The EU Directive requires member states of the EU to submit a regular set of specific tourism statistics. The aim: to set up a system of tourism statistics which are:

- reliable i.e based on sound methodologies and 'quality' requirements;
- harmonised i.e based on a specific list of items to be covered, each with an agreed definition and with certain classifications;
- comparable i.e. able to be compared among EU countries;

The rationale is:

- to improve knowledge of the volume and characteristics of tourism and tourists within the EU;
- to support the development of tourism policies;
- to meet the needs of users both in the private and public sector.

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2 The model

The Generic Statistical Business Process Model (GSBPM) is proposed to be valid for all activities undertaken by producers of official statistics, at both the national and international level, which result in data outputs. It is designed to be independent from the data source, so it can be used for the explanation and quality assessment of processes based on surveys, censuses, administrative records, and other non-statistical or mixed sources. It is not intended to be a strict framework in which all steps must be followed in a rigid order, but rather a model that identifies the phases in the statistical business process, and the interdependencies between them.

In this paper the authors propose an application of the GSBPM to the Survey Capacity of Collective Tourist Accommodation considering four levels:

- the statistical business process;
- the nine phases of the statistical business process (Specify Needs, Design, Build, Collect, Process, Analyse, Disseminate, Archive, Evaluate);
- Some sub-processes within each phase;
- a description of those sub-processes.

According to process modelling theory, each sub-process presents a number of identified attributes (Input; Output; Purpose; Owner; Guides, Enablers, Feedback loops or mechanisms).

The first phase " Specify the needs" is triggered when a need is identified. There is a national (policy makers and stakeholders) and international demand for data on tourism capacity (mainly with reference to the European Directive). The phase " Design" describes the development and design activities defining the statistical variables and the classifications used. Variables of interest are those related to the capacity of tourism establishments.

The geographical breakdown of the data collection together with the final national data dissemination is the municipality. "Build and collect" phase: data are provided by the local bodies in charge of tourism, that complete an electronic questionnaire with internal checks (the Mod.ISTAT CTT/4). What is captured is the gross capacity. During the "Process" phase, once the form is completed, a control procedure allows to verify the accuracy of the data and the consistency of changes in the crucial variables over time. During the "Analyse" phase draft outputs are prepared and outputs are validated. The last phase is Dissemination: an automatic system produces tables, explanatory text for Istat website and for Eurostat database.

References

1. Eurostat: Community Methodology on Tourism Statistics - Rev. 1, European Commission (2002)
2. Hamilton, A.: Applying the gsbpm within an nsi: experiences and examples from Australia, (METIS) (2010)
3. UNECE: Generic Statistical Business Process Model, Joint UNECE/Eurostat/OECD Work Session on Statistical Metadata (METIS) (2009)
4. UNWTO: International recommendations for tourism statistics, Madrid (2008)

Implementation of quarterly turnover indicators for accommodation and food and beverage service activities

Fabio Bacchini, Diego Chianella, Valeria Quondamstefano

Key words: quarterly turnover indicators, services, record-linkage.

The European Regulation (No. 1165/98) on short-term statistics requires the calculation of quarterly turnover indexes for a wide range of activities in the service sector. Istat produces only a part of these indicators.

In the first months of 2011 new surveys were undertaken in order to complete wholesale and retail trade and repair of motor vehicles and motorcycles, land transport, supporting and auxiliary transport activities, accommodation and food & beverage service activities. For the launch of new surveys an intensive activity has been developed involving specific stakeholders. This strategy has produced significant improvements on the knowledge of industries characteristics.

With regard to accommodation and food & beverage services, this work has the aim to document the activities carried out with specific stakeholders in order to reach a shared information platform that can satisfy both Sts regulation and industry's information needs. The goal is therefore to increase the existing information as well as its usefulness. The first part of the work relates to the traditional industry analysis obtained using data from Business register (Asia, owned by Istat) and from Structural business statistics.

Then, an initial determination of sample size has been made using different assumptions for domains stratification and estimation.

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These analysis have been discussed both with representatives of institutional stakeholders: Federalberghi for hotels and Fipe for restaurants.

Starting from the preliminary analysis of the new sector, letters to the enterprises, forms and instruction are now available. As planned before we will expect to send the letter to the selected enterprises by March. The new website for the data collection is already on line and has been tested with the enterprises belonging to the old sectors. The customization for hotels is going to make it possible to split the turnover into accommodation and food & beverages activities.

Interaction with the stakeholders has also allowed to evaluate the quality of the Asia register, through the record-linkage with the register of Unions members. In particular the match between Asia 2008 and the Federalberghi register shows the high percentage of 3 stars hotels. The Units in Fipe and Federalberghi registers show a greater tendency to support associations of firms in the Center-North of the country.

Moreover collaboration with Federalberghi and Fipe has developed in these months along the following lines:

- Domain estimation: European Regulation requires the turnover index for the whole section I, in accordance with the stakeholders we have decided to return indices for the groups: 55.1, (55 - 55.1), 56.1, 56.2, 56.3;
- Awareness campaign of the firms: through the participation to the conference of the governing bodies of Federalberghi held in Trento on February; through advertising on stakeholders's websites;

With the European Regulation it is expected that Istat should compile only accommodation and food & beverage division's quarterly index while, to satisfy national information needs, a deeper articulation is required. Relating to food & beverage service activities it's necessary to specify the traditional catering (restaurants and bars) separately from the provision of prepared meals. For activities of accommodation, beyond the need to identify the evolution of the hospitality industry, two other indicators should come out: one for the business of food & beverages and another one for overnight stay.

Working plan provides preliminary results for all the new sectors at the beginning of June. At the same time the information collected on the split of the total turnover for accommodation could be shared with Federalberghi.

Once the data will be produced for their respective domains of interest, it should be possible to evaluate the distribution of turnover by geographical area.

References

1. Bacchini, F.: Indici trimestrali fatturato servizi: proposte di attività per il 2010. Rome (2010).
2. Bacchini, F., Quondamstefano, V.: Indici trimestrali fatturato servizi: approfondimento Federalberghi. Rome (2010).
3. Eurostat: STS regulation n. 1165/98. (1998).
4. Federalberghi: Sesto rapporto sul sistema alberghiero in Italia. Rome (2010).
5. Fipe: Indagine congiunturale sulla ristorazione commerciale III trimestre 2010. Rome (2010).

A proposal for the connection between planning and quality systems: the statistical processes map system

Simona Pace and Concetta Pellegrini

Key words: process traceability, data quality, planning system.

In the Italian National Statistical Institute (Istat), the quality system and the planning systems have been developed for different purposes and with different technologies, connected ex ante only by the sharing of basic information on statistical processes. In order to respond to specific internal and external needs, an ex post activity of integration and re-use of information between systems has been carried out.

In this paper is described a proposal to implement a meta-system in order to connect quality and planning systems in Istat. The proposal follows the activities connected with the implementation of the statistical process map system, called MaPros.

MaPros is the result of a request coming from Istat top management. The system supports the planning operations and is aimed at evaluating and assessing priorities in the statistical production depending on the interconnections between processes, as well as legal and financial constraints. It explores all statistical processes in a full integrate way, highlighting the links with the others existing processes and taking into account temporal and institutional constraints.

The implementation of MaPros is based on maximizing the level of integration among existing systems and minimizing the respondent's burden on the production structures. MaPros is not a new informative system because it collects and combines information already available from statistical and administrative archives and returns information in addition to those provided by individual systems. From this point of view, MaPros

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represents a connecting system, with its own characteristics: the first component consists of systems characterized by a planning objective (National Statistical Programme - PSN and the Planning system - PAA); the second one is composed of quality and documentation systems.

MaPros provides new information on the interconnections between statistical production processes and it represents a "place" where information collected from the different systems can be standardized and integrated.

One of the key elements in the implementation of MaPros has been the analysis of the information collected in the different systems in order to compare and evaluate the opportunity for harmonization and to explain and manage the differences. From the contents point of view, the adopted definitions and the thesaura assure the coherence between the systems. In addition, it has been adopted an integrated technological infrastructure: all quality and planning systems use, in fact, an Oracle relational database, and this facilitates the integration of the data among them.

This experience has lead to the proposal to implement a well connected meta-system including the quality system (SIDI), the planning systems (PEC, PSN) and the statistical process map system (MaPros).

The integrated management of the different systems can guarantee coherence of information, efficiency and above all reduced burden for the survey managers.

The main problems are the complexity of each system in terms of number of information managed; secondly, their constraints in supporting different needs and purposes. Another problem is related to the management of the validity period of every single information.

A short-term objective should be the development of higher degree of integration among quality and planning systems, allowing the reuse of information.

In a long-term perspective a centralised environment should be implemented containing all the shared data according to common thesaura and classification variables. The access should be opened to the different systems to assure an updated and univocal codification of information on processes.

References

1. Commission of the European Communities: Communication from the Commission to the European Parliament and the Council in the production method of EU statistics: a vision for the next decade, COM 404/2009 (2009).
2. Ferruzzi C.: Organisation support for improvements quality and economic of Statistics Production in the National Statistical Institutes (NSI), Proceedings of the 45th Scientific Meeting of the Italian Statistical Society, Padua (2010).
3. Lo Moro V.: New vision and traceability of European Official Statistics: consequences for Quality Managerial, Tools, Proceedings of the 45th Scientific Meeting of the Italian Statistical Society, Padua (2010).
4. Pace S., Carbini R., Pellegrini C, Cara M.: Connecting quality and planning systems in the Italian National Statistical, Proceedings of the 45th Scientific Meeting of the Italian Statistical Society, Padua (2010).

Session 10

Dissemination of official statistics

Chair: Claudio Quintano

Information and public action in Italy. Challenges and opportunities from a stronger commitment to open data

Paola Casavola, Aline Pennisi

Key words: open government, administrative data, open data, transparency, internet**.**

The Internet is one of the most striking features affecting today's societal organization with respect to the past. Among many other aspects, it allows a quicker and cheaper way to distribute information and data. In many countries it has also prompted a greater, more detailed and complete request of 'data' on what public administrations do and know. This demand is generally connected to the notion that people have the right to scrutinize and participate in government activity. In the first case, reference is made to the need for more transparency and accountability and, in the second case, to the opportunity of redefining the relationship between citizens and government and making public action more effective and efficient.

Whether and how a wider disclosure and dissemination of data on administrative activities and on information owned by administrative bodies might affect the quality of public action is not straightforward. Nonetheless, most people would agree that the new standard of public transparency is measured by the amount, significance and re-usability of data released on the web.

Indeed, the growing interest for these themes has spurred a debate over making government data ever more "open". Open Government Data is raw information collected or produced by public administrations that is shared with the public digitally, over the Internet, in a way that promotes analysis and reuse. Supposedly, this data should be released in a machine-processable format and with no patent licensing restrictions, so that the public can sort, search, and transform the information to meet

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their needs. In recent times, the US and UK governments have made important pronouncements on the principles for transparency in government and on the value of making public data widely accessible for practical applications in and out of civic life [1,3].

The Italian General Government sector is certainly not among the world champions in releasing Open Data. There are several reasons why this is the case, among which features a not complete understanding of costs and benefits among the various parties involved both on the side of potential suppliers (public bodies) and on the side of explicit or potential users [2]. We argue that in the case of Italy a much stronger commitment in Open Data could benefit the government sector itself, through an enhancement of its own capacity even before interested groups may learn how to use data in order to improve their judgment and voice on the quality of public action. Too long public administrations have built data processing systems to meet their automation needs rather than to benefit from the possibilities offered by information technology to handle and analyze great amounts of data for the improvement of policies or service provision. Data is rarely shared between different agencies and departments and information is rarely stored with a view of its reuse.

In order to support this radical change within the public administration, it is crucial to develop a wider understanding within and outside the government sector on the meaning, implications and the expectations that can be realistically placed, for and in a greater commitment to Open Data.

After discussing these points and offering some insights, we conclude that a key role in supporting the start and continuation of a fruitful debate can be played by those bodies that have already cumulated experience and credibility in building statistics. Support is necessary to shape a new mind set in tracking and classifying data and providing the necessary meta-data. This requires some efforts that are however likely to be counterbalanced and rewarded by the potential increase in quality, quantity and timing of availability of administrative data that can be used also in the process of producing statistics.

References

1. Lathrop D., Ruma L.: Open Government. Collaboration, Transparency, and Participation in Practice, O'Reilly Media (2010)
2. Pennisi, A.:Aprire i dati del bilancio dello Stato: prospettive e implicazioni per Open data e PA, Fammi sapere: un convegno sugli open data - Senigallia, 20 novembre 2010
3. Robinson, D.G., Yu, H., Zeller, W.P., Felten, E.W.: Government Data and the Invisible Hand, Yale Journal of Law & Technology, 11, 160. (2009)

Tools and guidelines for enhancing the statistical system at local level: proposed Sicilian experiences

Anna Pia Maria Mirto, Giuseppe Nobile

Key words: web statistical report, metadata, repository, e-learning.

1 Premise

Within the framework of the Agreement drawn up in 2008, between ISTAT – Regional Office for Sicily and the Statistical Office of the Sicilian Region, several initiatives have been launched with the aim of gathering and disseminating statistical data and indicators according to a three-dimensional space/time/sector matrix, to contribute to the enhancement of information supply at the sub-regional level. There were two specific end-products: a statistical repository for all the Sicilian municipalities and a web statistical report for local administrations.

2 The Communal Repository (CR)

The statistical repository for municipalities in Sicily is accompanied by a descriptive analysis in two parts: "the social and economic context" and "the financial management of the municipalities". Both sections offer a reading of indicators by demographic class and by province, which take into account the considerable fragmentation of the territory and allow comparisons to be made within homogeneous groups. Half the 390

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municipalities on the island do not, in fact, exceed 5,000 inhabitants, covering a scant, overall 9.5% of the population. On the other hand, over a quarter of Sicilians live in the 4 largest municipalities.

The social and economic indicators cover subjects ranging from impact on the environment and school education to public health, business structure and labour market performance. With increasing demographic size there was a marked improvement in some indicators, especially with regard to economic activity.

The eight financial indicators, which were developed as a three-year average of annual figures provided by the Ministry of the Interior, allow for a focus on local public finance from the standpoint of each Administration, with reference to available resources. The analysis, in particular, was carried out by identifying the values of two indicators (financial autonomy and revenue processing speed) and their dispersion around the average regional value for the same demographic class. This dispersion is also represented in a graph and allows one to identify critical issues and excellence in each class.

3 The Web Statistical Report (WSR)

The prototype web statistical report is a compact product co-produced by the SISTAN network. More specifically, it has been implemented for about 80 of the 390 local administrations that have collaborated, through e-learning, to data gathering and the validation of indicators. Employing a bottom-up approach, statistical training courses in blended learning were launched for statistical representatives at the territorial level (in municipalities, Provinces and Regional departments).

Six main themes have been described (environment, population, health, culture, tourism and transportation, economics) through a set of about 100 Communal key indicators, compared using the provincial and demographic range as benchmarks.

One of the main by-products of the project is a handbook devoted to municipalities and local administrations describing the general guidelines for implementing the report by web, and building up the metadata and cartographic representations.

A second noteworthy feature is represented by the implementation of an evaluation system in accordance with CNIPA standard indicators, comparing, for the WSR, the level of difficulty, the rate of utility and the level of knowledge for various themes and provinces.

References

1. CNIPA, *Vademecum per la realizzazione di progetti formativi in modalità e-learning nelle pubbliche amministrazioni*, I Quaderni, April (2007).
2. Fattore M, Maggino F, Trapani M., *Presenting and communicating statistics, Principles, component and assessment*, Conferenza Nazionale di Statistica 15-16 dicembre, Roma (2010).
3. ISTAT – Regione Siciliana, Progetto di formazione per un Repertorio Statistico comunale, voll. 1-4 (2011), in press,
4. ISTAT (2010), *Noi Italia – 100 statistiche per capire il paese in cui viviamo*.
5. ISTAT (2001), *Linee guida per pubblicazioni statistiche dei comuni*.

Publicly available statistical data and licenses: a possible future?

Francesca Romana Fuxa Sadurny

Key words: "moral right of author" e "property law of author", open data and license

1 Foreword

"Publicly available statistical data" refers to that data which, after being validated by the institution which produced them, are available to the general public. This availability has, in Italy, to contend with copyright regulations and related to data producer rules.

While maintaining the difference between data dissemination and their communication, the d.lgs. 322/89, referring specifically to data processed by institutions belonging to National statistical system, establishes a series of rules aimed to regulate the access to data. Article 10 d.lgs. 322/89 states that:

- data processed from statistical surveys belonging to PSN belongs to general public and are provided to everyone who requests them for study and research purposes.

- Bodies which are part of Sistan regularly receive from Istat data processed by Sistan.

2 Copyright

The first issue to consider concerns whether copyright laws are enforceable, that is whether data, the result of statistical processing made by third parties and published in specialized contexts, are intellectual creations. The answer is definitely positive. In

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such cases, the rule provided for all works of authorship, is that both the attribution and the commercial use rights of the work are protected.

3 Open data

As you know net users have been asking since several years for easier access to information, making possible to exploit its potential.

MiaPa is a new social service which, harnessing the power of Mobnotes (a free application, completely made in Italy, based on geo-referencing users), makes available on a Smartphone or PC a real map of public services.

Recently Minister Brunetta showed MiaPa, an innovative social check-in service applied to PA; at the same time what may be defined as the first organic experiment of Open Data of an Italian state administration was launched.

4 Licesenses: Creative Commons

We are now going to discuss data use licenses discussing a licensing model used in recent times, Creative Commons

Please note that only commercial use rights of a work are transferable,. In this sense the copyright holder has all rights on the work. Users of the work only have the rights granted them by a fair use principle. Creative Commons Public Licenses (CCPL) have been created by the US based organization Creative Commons.

These licenses are flexible and can be bound to additional options: the copyright owner can, for instance, subordinate the reproduction of the work – and more generally all the rights granted by the chosen Creative Commons license – to the restriction that the work is not modified ("NoDerivatives" option) or that no commercial use of the work will be made ("NonCommercial" option); or, following "copyleft" principle, characteristic of Free Software, whenever a work is modified and redistributed, the "derived work" has to be redistributed under the same conditions of the original work ("ShareAlike" option). Creative Commons licenses do not place a work in the public domain, they only allow to limit restrictions imposed by copyright law, promoting both diffusion and creative reuse of the work. Anyone willing to use a work under the terms stated by the author can do that without getting in touch with him.

Geography as a working desk: a meeting place for data, statisticians and users

Rina Camporese

Key words: georeferencing microdata, data analysis.

The characterisation of statistical units and measurements in a geographical context – i.e georeferencing – enables the analysis of the relationships among unconnected data by the use of the territory as a merging key. Overlapped statistical layers on a geographical basis, in the style of Geographic Information Science [2], create new synergic information and enlightens the relations among different phenomena occurring in the same area [1]. GIS and Web can offer effective techniques to analyse and display statistical data on a geographical underlying layer. Moreover, image maps and navigation tools (zoom, pan, view angle, etc.) make the representation of statistics possible into daily life environment, enriching them with the context information about the places they belong to. Needless to say, strategies to protect data confidentiality are essential: some are easy to imagine (different views related to zoom levels, buffers of proper size to mask identities, ad hoc coordinates' transformations to prevent overlapping on common reference systems), others have to be invented. Three examples of the use of georeferenced micro-data are illustrated below, (a) to disseminate data, (b) to define reference areas, and (c) to integrate independent sources. The first case (a) is Eye On Earth: a geographic platform where the European Environment Agency shares institutional data and opens them up to the citizens' comments. Thanks to network technologies (cloud computing, mash-up, etc.), data from air and water monitoring stations, collected by institutional agencies, are displayed on a navigable map. Users can also geotag their own perception of air and water quality. Institutions and citizens gather around a table made covered by remote sensing images; the comparison between objective environmental measurements and people's subjective perceptions takes place on a natural representation of the

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environment. Data and documentation follow strict scientific criteria, but access to information is familiar to web and social networks users: this makes official agencies and citizens closer and provides data for an informed dialog among different stakeholders. Moreover, data displayed on a territorial representation facilitate communication and interaction with end-users. The above example regards punctual micro-data that can be published without violating anybody's privacy; with appropriate changes, the idea could be applied also to more sensitive data. A second example (b) is based on the idea that statistical units belong to an administrative area by convention: a merely formal link connects them to the institutions governing their area of pertinence. The administrative boundaries are invisible and materialize themselves only at the time of accessing services provided by agencies in their jurisdiction. On the contrary, individuals, and statistical units in general, cross many of these boundaries in everyday life and, furthermore, they locate themselves into administrative areas according to criteria of convenience, not always according to the *de facto* situation. Many statistics are, therefore, prisoners of administrative territorial fragmentation. Furthermore, Modifiable Areal Unit Problem [4] and Ecological Fallacy [3] affect data aggregated by area. Administrative boundaries should be bypassed, when they obscure the spatial distribution of phenomena. Actual technologies can deal with complex data, taking also into account their geographical location. The geocoding of micro-data may bypass the administrative boundaries and allow for greater freedom in defining areas of analysis, e.g. continuous urban areas crossing separate administrative units, proximity / distance from points of interest, etc. By using this kind of geographical perspective, spatial trends could be better highlighted. The third case (c) derives from the idea of georeferencing sampling units. The topological relationship among various entities on the same territory generates a synergy of information and enables the calculation of indicators that would otherwise have not been known. For example, if the micro-data of Istat sample surveys on daily life were geocoded according to the respondents' address, household habits in the management of waste and local government strategies for recycling could be connected at micro-data level. Environmental noise could be studied by comparing the household proximity to the sources of noise (e.g. congested roads, etc.) with the perception of noise in the area where respondents live. Besides, habits to consume tap water and the reasons for not drinking it could be connected with administrative pieces of information on available water resources and competent authority policies. Geographic details of individual responses would only be used during the analysis phase: results would be aggregated and respectful of the territorial disaggregation allowed by the sample strategy.

References

1. Goodchild, M.F., Janelle, D.G. (eds.): Spatially Integrated Social Science. Oxford University Press, New York (2004)
2. Longley P.A., Goodchild M.F., Maguire D.J., Rhind D.W.: Geographic Information Systems and Science, 3rd Edition, Wiley, New York, (2010)
3. Robinson, W.S.: Ecological Correlations and the Behaviour of Individuals. American Sociological Review, 15 (3), 351–357 (1950)
4. Unwin, D.J.: GIS, spatial analysis and spatial statistics. Progress in Human Geography, 20, 540-551 (1996)

New strategies in census training

Antonella Bianchino, Giulia De Candia, Stefania Taralli

Key words: census training, e-learning, activity-based learning, training effectiveness, training evaluation.

Training management aimed at the achievement of high skills for all survey staff is the main strategy for the prevention and reduction of non sampling error [3]. Training plays a very significant role in censuses due to the technical and organizational complexity of the field operations. Moreover census training is an elaborate procedure that involves a great number of operators, having different initial-skills, and requiring the attainment of high-quality performance standards in a short time and in a large scale territorial context.

In census training Istat has usually adopted a cascade classroom strategy, where each level in the staffing hierarchy trains the level immediately below it. When the cascade principle is utilized, it is necessary to ensure that the impact and the essence of the information transmitted to each layer in the hierarchy remains significant [4]. Istat has usually pursued this aim by setting standard training procedures, and providing official contents and tools for both teachers and trainees. Moreover, as a rule, many researchers and technicians have to participate as teachers in each step of the training to make sure that basic information is passed on to the extent required.

Considering the typical turnover of interviewers in census, basic training should be supplied throughout the data collection period. However, training usually takes place at the start of the field operations: no follow up is provided, except for some additional training targeted for single employees or for critical situations.

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Generally, a methodical evaluation of the training process is not carried out (especially regarding the self-training activities) and there is no real assessment of the skills acquired by trainees.

Most of the above-mentioned weakness can be overcome by extending traditional classroom training to include new opportunities such as e-learning [1, 2,].

In the course of the 6th Agriculture Census a working team in Istat planned, implemented and managed a training course centered on both face to face training and e-learning. The e-learning system was based on open-source software, the Dokeos platform.

To enhance the effectiveness of traditional training throughout the census period, the Dokeos-Agriculture platform supplied new and free-use products and services such as:

- self-paced learning paths in hypertext concerning all the technical, organizational and legal contents of the census training;
- a hyper-textual questionnaire, linked to definitions and classifications and to simultaneous helps and tips for completion;
- self assessment tests (regarding the same training contents of the learning paths);
- streaming videos of lectures and seminars;
- documentation repository;
- tutor/trainees interaction through networked communication technologies.

The platform also provided tools to monitor the activities of trainees, to assess their learning achievements and to follow the e-learning process:

- the course and the trainee register (reports by single-trainee and by course concerning learning paths fruition and tests results)
- the statistics (reports by single-trainee and by course concerning teaching materials fruition).

Throughout the census, e-trainees were also supported by tutors (at least one for each Istat regional office) charged with giving them technical and motivational support, particularly to those trainees with lower activity indicators.

All the survey staff could access Dokeos-Agriculture platform through the Agriculture Census Network Portal.

Despite the fact that mandated training for census did not include distance learning, a great number of operators used Dokeos-Agriculture. It can be considered an example of how it is possible to increase the training of survey staff (and statistics quality as a result) without increasing the overall costs of training (including time and people away from the workplace).

Considering the positive outcomes obtained, Istat decided to repeat and improve the same training strategy in the next population and housing census and to undertake new pilot projects to integrate face to face activities and e-learning services targeted to training the operators involved in both direct and indirect surveys.

References

1. CNIPA L'e-learning nelle pubbliche amministrazioni, I quaderni del CNIPA n.7/2004.
2. CNIPA Vademecum per la realizzazione di progetti formativi in modalità e-learning nelle pubbliche amministrazioni, I quaderni del CNIPA n.32/2007.
3. Fowler F.J., Survey Research Methods, Sage, Newbury Park, (2002).
4. Lipari D., Progettazione e valutazione nei processi formativi, Roma, Ed. Lavoro, (1995).