

# **DGINs Conference 2015: Indicators for Decision Making and Monitoring**

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***Monitoring sustainable development strategies and integrated approach for policy making***

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## **1. Introduction**

It is widely acknowledged that the growing complexity of modern societies increasingly needs multidimensional information to support decision making of policy makers as well as of other social and political actors. In order to respond to a multidimensional demand, we need to strengthen at its best a multi-source production system. The changes needed are so deep that the label “data revolution” is often used to point at it.

In this context, the production of official figures from the integration among two or more different sources represents a substantial challenge for most NSIs not only in terms of fine tuning methodological tools. Indeed, it is equally important to carefully consider a bunch of other issues that ranges from the reengineering of statistical production processes to the designing of new IT and organisational set ups. In the background, the evolution of demand of statistics designs the paths to follow.

In this paper I will present the experience that the Italian National Institute of Statistics (Istat) is carrying out in terms of building a statistical system able to face the challenges of measuring well-being and sustainable development and to support policy making. More specifically, I will focus on four different recent experiences that represent as many examples of integrated statistics and indicators responding to different user needs. At the same time, I will try to highlight some crucial aspects that should be dealt with such as the importance of cooperation with other social parties both at national and international level, the need for data integration from different sources, the necessity to reap the advantages of new technologies; the importance of legal settings. Main advantages and critical points will be briefly highlighted as well.

## 2. Istat's experience in measuring Well-being

The Italian most relevant experience in the field of measure of sustainability definitely refers to the measurement of national well-being. In 2013 Istat, together with *the Italian National Council for Economics and Labour* published the first "Report on Equitable and Sustainable Wellbeing" (BES from the Italian acronym) identifying and analysing the fundamental dimensions of wellbeing and progress in Italy and its regions. The study of well-being, typically macro phenomenon of multidimensional nature, is an open line of research in the institute, both in theoretical and methodological terms, and for its application and interpretation. The third edition of the report is planned for October 2015 and the advancement on this issue will be presented.

In order to achieve this result and to enlarge the discussion, we formed a *Steering Committee* with representatives of social partners and organised civil society and a *Scientific Commission* with nearly 80 thematic experts from inside and outside the Statistical Institute. The proposed framework for the analysis stems from the dialogue among the Steering Committee, and the Scientific Commission, with the support of the opinions expressed by citizens. Over the years citizens at large were asked for suggestions and observations through the inclusion of specific questions in the national social survey, the use of an online survey and a blog and during hundreds of regional meetings.

The dialogue between the "politicians" of the Steering Committee, and the "experts" of the Scientific Commission, was sometimes difficult but definitively fruitful, leading on the one hand to improve the statistical information, on the other hand to the selection of feasible indicators.

The BES report is based on the analysis of 12 dimensions of wellbeing in Italy, using 134 indicators. Reading them together enables us to understand where our country is heading, identify critical points, possibilities, and positive dynamics.

This research activity on the BES is still ongoing. We are refining and simplifying the set of indicators of each domain, and provide a synthesis and a clear interpretation. BES is a useful tool for programming and monitoring policies. The critical point is the effective use in the decision process by national and regional governments: to offer a multidimensional product theoretically useful is not enough. Recently, a bill that proposes that the framework of BES enters systematically in the planning and evaluation of policies was presented by a group of parliamentarians from different parties.

I believe Istat's experience can be very valuable on the measurement of multidimensional well-being. This occurred within the European context in Eurostat's working groups, in the *Sponsorship group on Measuring Progress* or coordinating the *e-Frame project*.

With respect to the global discussion on the SDGs, we have been involved since the beginning to the *Friends of the Chair Group*; in addition, at national level we took part to the national roundtable for the definition of the Italian position within the *Open Working Group*. Thus, we had

the chance to be part of many discussions which led us to focus on the major challenges the statistical community has to face and on the strategies to overcome them.

The process towards the definition of the sustainable development goals is on its way.

Measurability represents an important feature of the definition of goals, indicators and targets. The multidimensionality of the concept of well-being and the will to cover complex phenomena set an unprecedented challenge to the world of statistics. Improving statistical capacity and strengthening international cooperation in this field will then represent a key element for reaching a satisfactory set of goals and for the success of the initiative.

The success will very much depend on the role that the statistical community will have throughout the process in order to: make sure the targets are feasible and measurable; set up a process of modernization of statistical production at country level; and strengthen international technical cooperation in order to face the huge request of data coming from the new goals.

*“Goals and targets that cannot be measured cannot be monitored”*. It is fundamental that statisticians be involved in the discussion over the choice of goals, indicators and targets, in order to suggest effective and feasible solutions according to the different national statistical systems, guaranteeing quality standards as well.

### **3. Strengthening timeliness and wider sources use through Big Data**

From the perspective of National Statistical Institutes (NSIs), the increased availability of digital information represents both an opportunity to seize and a challenge to face. Indeed, information gathered on the world wide web, digital footprints from mobile communications or sensor based information can be usefully employed in combination with administrative and survey data – and even substitute them – to improve the timeliness, robustness and spatial granularity of official statistics and to produce new indicators, while reducing production costs and the burden on respondents. On the other hand, these same sources are equally accessible to third parties, thus challenging the role of NSIs in statistical production.

To address these challenges and exploit these new opportunities, in 2013 Istat set up a technical Commission aimed at orienting investments on the use of web analytics and Big Data sources in statistical production. The Commission, which also includes representatives from Academia and the Business sector, reviewed the state of the art in the use of digital footprints by other NSIs and launched three pilot projects: *Persons and Places based on Mobile Phone Data* (starting from phone - tracking - data, the aim is to obtain an origin/destination matrix of daily mobility for purpose of work and study at the municipality level, and commuting flows for other reasons); *Labour Market Estimation based on Google Trends* (testing the use of Google Trends for nowcasting purposes in the Labour Force domain); *ICT Usage by enterprises based on Internet as a Data Source* (evaluating the possibility of adopting Web scraping and text mining techniques for estimates on the use of ICT by enterprises and public institutions). Other experiences, such as the use of scanner data for the compilation of Consumer Price Statistics, are also underway.

One of the most important advantages in the use of new sources relates to timeliness, a factor that looks more and more decisive for the response to institutional demand by NSIs. The use of the Google Trend Index (GTI) for nowcasting purposes is the most forward-looking project. The aim is to exploit the predictive capability of web search data, referred to a real-time daily and weekly index of the volume of queries that users enter into Google, to improve the quality of estimates of short-term (monthly or quarterly) socio-economic indicators Istat currently produces. The prediction of the monthly unemployed rates computed on the basis of models with Google Trend Index information outperform those obtained on the basis of the benchmarking models. Although these results need to be extended to other short-term indicators, they show that these methods can be already used to validate and improve the results obtained through more traditional techniques. Istat is also evaluating the predictive power of GT at local-area level. The use of Google Trend data can be used as external auxiliary information for the production of small area estimates of parameters of interest of large scale surveys on households and enterprises, improving the completeness of information provided.

Indeed, more accurate and timely indicators can support policy makers in the monitoring of actions that they take in the economic field and increase citizen's awareness on the real conditions of the economy.

In the long run, the use of Big Data could change the way statistics are produced and reduce their cost. Their use could prompt the inversion of some phases of the statistical process - such as design and data collection, due to the fact that "traditional" design phase is not anymore present for Big Data - or imply the collapse of the phases of data process and analysis - in fact, the same methods can be used for both phases.

A number of key issues are important for the success of the use of Big Data: major challenges are associated with the harmonisation of definitions, the difficulty to associate web based information to a defined population and the incomplete coverage of data collected, since these are usually far from probabilistic samples and can refer to a subset of the reference population. For instance, the Italian LFS survey - has highlighted strong elements of heterogeneity in the use of Internet within the Italian population.

Other important challenges come from the need of setting-up a solid legal and privacy framework, the implementation of innovative data processing applications, the use of new skills and methodologies. Finally, it is essential that the global statistical community use its collective bargaining power to obtain access to rich data sets that are often owned by global companies.

#### **4. Enhanced dissemination formats for short term economic trends**

In recent years, due to the slow economic recovery, the demand for high quality and timely statistical information on recent economic developments has strongly increased.

At the end of 2014, Istat launched a strategic project to further improve its offer of statistical information on short-term economic developments. The project aims at presenting thematic

trends in an integrated fashion, at making information more easily accessible to the public; it is also meant to be the starting point for an extensive review of the Institute's dissemination strategies. The backbone of the enhanced communication on short term economic indicators and other project outputs has been identified in a dedicated section of the Institute website. This called for the collaboration of analysts, ICT specialists and communication experts from different departments within the Institute and has been released already in July 2015. Here charts, press releases and time series on the main economic indicators are presented and updated in real time as new data become available. The main page of the section offers a snapshot view on 15 key indicators, and data (including EU trends), methodologies, thematic bulletins, economic projections and visualization tools are all at just one click distance. Moreover a comparative look at the economic projections released by Istat, the Italian Government and by the most important international organizations (IFM, European Commission, Oecd) is available. A link to graphs gives the opportunity to compare recent trends in the economy for many countries. Projections for the whole economy are given for the next three years.

The already existing "Monthly Outlook Report" has also been reviewed in order to offer a thorough reading of short-term economic developments, together with in depth analysis on specific areas. Current work within the project focuses on the review of press releases on individual survey results, which will gradually complement the information from other sources.

A pilot release of a focus on trends in employment has already been published, where the Italian labour market is analysed by considering labour supply and demand indicators jointly, and by linking administrative and survey data. By the end of the year it is scheduled a new integrated quarterly press release on labour market, which will include also national accounts data and will be able to interpret labour market dynamics within the overall economic and social framework. This release will substitute the existing separate releases that respectively deal with the demand and supply side. The time alignment of the two production lines on labour market, and the joint analysis of information, are among the key actions of this relevant innovation.

To enhance the tools for short-term analysts and policy makers, a business cycle tracker for the Italian economy and a new composite leading indicator for the individuation of turning points will be released in the coming months.

## **5. Methodological support to the design of new voting districts**

The need for highly detailed and multidimensional databases at the local level has clearly emerged in the occasion of the recent approval of a new electoral law for the Chamber of Deputies that implied the design of new voting districts (100) covering the whole country's territory (May 6, 2015).

According to the existing legal framework, the Government entrusted a Commission of experts chaired by the Istat President the task of proposing the new districts according to some general principles outlined in the law. The work of the Commission has been supported by a group of Istat

researchers, and the Institute has also made available the Commission databases, statistical processing and cartographic representations necessary to accomplish the work of the Commission.

The Commission established, first, a classification of the principles and criteria for the definition of the districts distinguishing between those that should be made mandatory in every case and those who, instead, should be followed as a guiding rule. The former concerned mainly the number of eligible districts for each region, the range of population size of the districts, the territorial coherence and the respect of linguistic minorities. The latter, ranked in order to outline a sequential decision path, regarded: respect of administrative boundaries (mainly of provinces and municipalities), or in alternative of previous district boundaries; assessment of uniformity of socio-economic and historical-cultural characteristics of the districts. This has been a systematic reference for the identification of the best solution.

In other words, a complete and integrated picture of Italian territories was needed and a wide number of indicators has been computed in order to fulfil the selection criteria established by the law.

Two example may help understand the complexity of the work required. First, to conduct the study of territorial coherence, the Commission has decided to refer (among others) to a specific measure of relative proximity (<http://www.jstor.org/stable/10.1086/661511>), as deemed appropriate to the case of a country like Italy characterized by extremely complex topography. In particular, the index of compactness was calculated as the average time spent by each of its residents, to reach the town hall of the other towns of the district to which he/she belongs, starting from the town hall in their community. This assessment was made possible thanks to the availability of detailed and integrated information on distances and travel times.

As to the assessment of socio-economic characteristics, the Commission has decided to use a set of indicators representing different aspects. The selected indicators consider demographic aspects, gender differences, the presence of foreign population, rates of education, characteristics of the production structure. Other indicators have been added in order to assess historical and cultural uniformity such as the degree of “attachment”, or rather its absence, present in the reference population, which is reflected in the share of residents born in areas sufficiently distant to be seen as “different” and, in particular, in outside the region. The work was completed by checking the robustness of the results to changes in the number of indicators, measures of homogeneity and their aggregating function at voting district level. All the indicators were calculated at levels of territorial detail necessary for the Commission's work, even below the municipality level, having been collected by Istat at the last General Census of population and housing of 2011.

it is interesting to note that this experience relates to the answer to a specific request by the political level, established by a law that recognizes a key role for the Institute. The challenge lies in the capability to respond in due time by the policy makers (not by the producers) and in the ability to explain the methodological choices made on a subject so important and delicate in the debate among the parties with a non-technical language: the work was carried out and presented to the

Government in just three weeks and presented by the President of Istat in two parliamentary hearings.

## **6. Conclusions**

Last year in the 100<sup>th</sup> Directors General of the National Statistical Institutes (DGINS) Conference in Riga, through the example of business statistics the paper presented by Italy stressed how the integration between already existing primary or secondary data sources represents a very promising opportunity for development of official statistics' ability to assess the competitiveness and evaluate the potential growth of the EU economic system. In that occasion the focus was mainly on the adoption of a sound methodological approach, although reminding the necessity of a proper reorganisation of statistical production lines in order to successfully meet the quality standards and the financial and resources constraints that nowadays characterise the production of official statistics.

This paper put forward the importance of a more comprehensive vision that on the one hand stresses the need to establish an intimate link between user needs and indicator productions, on the other hand pays attention to a wide range of issues that need to be dealt with when realizing an effectively integrated statistical production and to provide an integrated approach for policy making.

Definitely, countries, and NSIs in particular, need to move away from a fragmented and silo approach and step towards an integrated system. This has to be primarily done by redesigning the production processes at the country level, but it must be supported by a global strategy on integrated statistics. Modernisation is the right answer, through the sharing of experiences and participation of NSIs to joint projects between.

In 2015, Istat launched its modernisation programme, which will lead from a stovepipe model (now prevailing) towards an integrated production system based on centralized data collection, a system of statistical registers and common infrastructures and services.

The new organizational model aims at reaching the following three objectives: allow the production of statistics to quickly adjust to the changing environment and new technologies; overcome the current model in silos with a more flexible and efficient structure; renew the governance mechanism.

Istat has an active role in the current debate on the future of official statistics, and will keep on fulfilling its responsibility for setting up a global favourable environment to make the so-called "data revolution" real.

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