



The Contributions of Italian Statisticians to the Development of Survey Statistics

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Abstract

In this short article I present, through flashes, a historical synthesis of the contribution of Italians to the development of survey statistics, from the starting stage up to the most recent years. The synthesis refers to both the practical and theoretical developments of the survey statistics, without claiming to be neither detailed nor complete.

Keywords: survey statistics, official and academic survey statisticians, Italy.

1 I start from the Middle Ages and the Grand Duchy of Tuscany to 1920

The first documented censuses show that in 1552 Cosimo I de' Medici organized the first population census of the then Florentine duchy. During the Grand Duchy of Tuscany various scientific societies of a general nature were also established, which included statistical studies. However, they were relatively short-lived due to their prohibition by the sub-sequent governments on the ground that the results of their research were subversive.

From the beginning of the 1800s and during the Italian Risorgimento, statistical knowledge and statistical activity developed a lot. Many scientists (philosophers, sociologists, economists, statisticians, demographers, and so on) devoted themselves to the establishment and management of statistical offices and subsequently participated very actively in the international congresses of statistics and demography.

In 1807 the Kingdom of Italy was one of the first European states to create a Statistical Office under the direction of the great statistician and philosopher Melchiorre Gioia. Then in 1826 a statistical society called the "Tuscan Society of Statistical Geography of Natural History" was established in the Grand Duchy of Tuscany. Both the Office and the Society were short-lived, for the reasons already mentioned above. Subsequently, starting from 1832, within a few years Statistical Offices (or similar) were created in the various states of Italy (Sicily, Subalpine Kingdom, Sardinia, Tuscany, Naples and the Papal State).

Finally, in 1861, when the Kingdom of Italy was formed as a unit, the Division of General Statistics was born (of which the first director was Pietro Maestri) who, assisted by a Superior Council of

Statistics (first president Cesare Correnti), which lasted until 1926 when the Central Institute of Statistics (Istat) was established.

It should be noted that in this period the statistical function had a close link with the government which is summarized in the formula "knowing to administer" or perhaps more precisely "knowing to govern".

Two annotations concerning this period seem important to me: the birth of the Civil State and the behavior and vision of the statisticians of the Risorgimento.

Civil Status office, as we still understand it currently today, was introduced in Tuscany during the period of French domination starting from 1808. Its birth was one of the great changes that marked the transition from the ancient regime to the contemporary age: with this institution indeed, civil institutions occupied land that had traditionally belonged to the Church.

For the statisticians of the Risorgimento, statistics were a fundamental tool of "civilization" which also served to evoke the "body" of that nation which they wanted to be the basis of a future independent State. Statistical knowledge, the collection and dissemination of statistics in the public sphere also constituted an indispensable tool for the transparent functioning of a power legitimized by popular consensus: the "discipline for democracy", in fact. In expressing these ideas some of them, in particular Maestri and Correnti, shared an almost utopian vision of statistics.

With regard to the participation and contribution of Italian statisticians to international congresses and international statistical bodies, let me remind you that the international congresses of statisticians began in 1853 in Brussels with the participation of around 150 scholars, 11 of whom were Italian. It was not until Florence was the capital of the kingdom of Italy that a congress of European statisticians (the sixth in the series) could be held there, attended by 632 Italian and 85 foreign statisticians. The contribution of the Italians has always been relevant, it is enough to refer to the performances of Maestri and Correnti and to the methodological contributions of Angelo Messedaglia.

As is well known, in 1885, during the celebration of the jubilee of the Statistical Society of London, the proposal was made to found the International Institute of Statistics (ISI). Luigi Bodio, who was head of the Italian statistical services which he had led to being among the best in Europe, assumed a leading role in the establishment of the ISI and in its development.

Bodio supported the proposal, but past experience led him to ask that the association should be free and independent of government decisions and that it should include the most eminent European and American statisticians, regardless of their nationality. Due to his well-known qualities as a scholar and his organizational skills, Bodio was elected general secretary of the ISI and remained in office for 20 years. In 1909 he was elected President of the Institute by acclamation and was re-elected in the two successive elections, remaining in office until 1920, when he died. It is proof of the prestige Bodio enjoyed, but also of the level at which Italian statistics was assumed. In 1885, 13 Italians out of 106 nominations were nominated as members of the ISI. And in the elections of 1886, 23 Italians were elected out of the 154 elected. Furthermore, most of the first volumes of the ISI Bulletins were written in Italian.

2 The period from 1920 to the end of World War II

It was also characterized in Italy by important events in the field of the survey statistics, both from a methodological and institutional point of view. On the occasion of the ISI meetings, but not only, a dispute began between the conduct of only censuses versus the use of sampling to which Italian statisticians also contributed. As Leslie Kish wrote in the paper presented in 1995 at a meeting arranged by the Italian Statistical Society (SIS), "Neyman's 1934 paper marks a turning point for survey sampling...It was based on a 1929 paper of Gini and Galvani. In which the authors compared the results of the 1921 population census with the results of the same surveys carried out using a representative statistical sample of those surveyed. The results did not coincide and, perhaps, also

for this reason Istat, of which Gini was president, shelved the use of the sampling technique in the public statistics surveys.

At the beginning of the period, the Statistical Service was considered no more and no less than any bureaucratic body. The Fascist government had an interest in reorganizing the service conceived as a government service for the government and not a public service for the citizens, with a centralized arrangement. Therefore, in 1926 the government created the Central Institute of Statistics of the Kingdom of Italy, appointing Corrado Gini as president. In this way, and with a subsequent law of 1929, the main problems of the public production of statistics were resolved for the time, making available much statistical information necessary to carry out research in many fields of application (mainly demographic, economic and social) allowing many researchers whose results were also presented at international conferences, which confirmed the thesis of the originality and autonomy of Italian statistics.

3 Representative statistical sample

In 1944 Istat undertook, at the request and guidance of the Allied Commission, studies to carry out surveys using a representative statistical sample, to the satisfaction of its most representative statisticians including Benedetto Barberi, Lanfranco Maroi and Francesco Brambilla. From 1947 Istat intensified the study of the sampling technique and in 1948 established the "working group for sample surveys" within the Center for Research and Econometric Applications. Sample technique that was extended to many investigations in multiple fields of application. Many eminent statisticians collaborated with Istat, confirming the typical fruitful interaction in Italy between official statisticians and Academia. Among these we deem it appropriate to mention Marcello Boldrini who was also president of the ISI from 1959 to 1963.

In the following decades, the use of representative sample surveys developed more and more, and, in particular between the 1980s and 1990s, Istat made important advances in the field of surveys on families and individuals, launching "multipurpose" surveys. Progress in survey statistics has been continuous including the integrated system of registers and surveys; and in the use of Big data and citizen generated data and citizen science to produce official statistics.

4 In 1973 the IASS was founded and Italian official statisticians and academics also participated in its foundation

I remember that in the first years of life of the IASS over 100 Italians became members and a country representative was appointed. It was certainly an opportunity to organize the groups of Italians who intended to actively participate in the scientific meetings of the ISI and the IASS by proposing topics for the invited sessions and presenting papers. But also by carrying forward some important initiatives that I recall.

Under the impetus of survey statisticians, the Italian Statistical Society founded the SIS coordinating group on "Survey sampling methodology", to contribute to the promotion and coordination of applied and methodological research on survey sampling.

The Survey Sampling Group decided to organize ITACOSM (Italian Conference on Survey Methodology) which is a bi-annual international conference, whose aim is promoting the scientific discussion on the developments of theory and application of survey sampling methodologies in the fields of economics, social and demographic sciences, of official statistics and in the studies on biological and environmental phenomena. The first edition of ITACOSM was held in Siena in 2009 and then the venue moved to Pisa in 2011, Milan in 2013, Rome in 2015, Bologna in 2017, Florence in 2019, Perugia in 2022, and Cosenza in 2023. In the first edition in Siena, the delegates were all Italians, apart from the 4 keynote speakers (Proff. Yves Tillé, Carl-Erik Sarndal, Yves Berger, and Tim Gregoire). In the last edition in Perugia, half of the 108 registered participants were not Italians. IASS has sponsored ITACOSM since the very beginning and the President or a member of the EC has always participated.

5 Concluding Remarks

Since the early 1800s, Italian statisticians have contributed a great deal to the development of survey statistics.

The latest developments concerned, as in many other countries, the use of Big data and citizen generated data and citizen science to produce official statistics. Istat will also develop these topics in the near future as stated during the webinar organized online on May 3, 2023, on "Big Data and new data sources to measure reality: A comparison on Trusted Smart Statistics". The introductory speech was carried out by Monica Pratesi, President of the IASS, and the webinar was followed by many Italian survey statisticians.

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