

the Survey Statistician

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INTERNATIONAL ASSOCIATION
OF SURVEY STATISTICIANS



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The Survey Statistician No. 88, July 2023

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Enquiries for membership in the Association or change of address for current members should be found at the section **Promoting good survey theory and practice around the world** on p.11 of this issue or addressed to: isimembership@cbs.nl

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Letter from the Editors

Dear readers,

Congratulations to you on these hot July days (which may be cold in some parts of the world), just before the 64th ISI World Statistics Congress and in the 50th year of existence of the International Association of the Survey Statisticians!

This issue of *The Survey Statisticians* is especially thick. It contains a lot of old and new information. Each article evoked much of emotions of the editor in preparation of the materials and it is expected that each of you will find something interesting written especially for you.

According to a tradition, the issue starts from the *Letter from the President* by Monica Pratesi. She writes about citizen science and citizen generated data, one of the hot topics nowadays for survey statisticians, and not only for them. As the outgoing president of the executive committee of IASS, she looks forward to monitoring the “changing reality by developing new ways to do surveys”. Scientific Secretary Maria Giovanna Ranalli in her last report enumerates main scientific activities of IASS during the second half of the year: IASS sponsored conference in June organized by the Survey Sampling Group of the Italian Statistical Society, webinar series, selection of the Cochran-Hansen prize winners and overview of the IASS participation in the ISI World Statistics Congress in Ottawa. Giovanna stresses the fruitful experience acquired by her participating in the international statistical activities and conferences.

The usual News section is replaced by the special section devoted to the 50-year jubilee of IASS. To this effect, the special section not only contains articles that directly relate to the IASS 50th anniversary, but it also contains articles that celebrate the important and interesting developments that took place in survey statistics in various themes and places. In all, 24 survey statisticians provided inputs by sharing their statistical, historical and some special knowledge with you.

What should the experts be asked? Nowadays with the wide possibilities to spread the knowledge, questions to the experts and new and emerging methods have become closer to each other. This happened because most of the questions are likely to be about new methods, their clarification and possible application. This is confirmed by the article of Sixia Chen and David Haziza on the doubly robust procedure for missing data and the article by Changbao Wu on calibration techniques for doubly robust estimation.

University teachers and practitioners should find useful the article by Thomas Lumley on the enhancement of the R *survey* package over the last 15 years and the review by Camelia Goga of Sharon Lohr’s third edition of the book *Sampling: Design and Analysis*, an author who is also produced SAS and R software companion books for sampling design and analysis. The books include many exercises and examples with real data, illustrating the methodological elements.

The issue continues with country reports written by survey statisticians from 14 different countries.

We would like to thank the section editors for their creative work: Giovanna Ranalli, Ton de Waal, Alina Matei, Peter Wright and technical editor Maciej Beręsewicz.

Please inform the editors of the TSS of the news in the world of survey statistics, ask the questions which should be answered, propose topics for the articles or submit your own papers.

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Letter from the President

Dear IASS Members,

Our first 50 years have led to an IASS aware of the potential of surveys, scattered within a worldwide network of representatives and with more and more members.

We are ready to look at the future, at innovation in times where technology and sustainability issues path the way to a world of measures characterised by a reality which is often 'oversized', due to climate shocks, pandemics, conflicts.

The demand for timely, more detailed, less burdensome and costly statistics, with wider coverage, is increasing. In our digital era, data are everywhere: new sources, such as mobile phones, social media interactions, electronic commercial transactions, sensor networks, smart meters, GPS tracking devices, or satellite images, produce new information at an incredible speed. Digital technologies offer new opportunities for data collection, processing, storage.

Big data, smart statistics, digital administrative data and citizens are inseparable: from smartphones, meters, fridges and cars to internet platforms, the data of most digital technologies is citizen data, that is the data of the citizens and on citizens.

Survey participation must be conquered, as contact patterns and response rates change (Calogero et al, 2022). Citizen generated data, web scraping and Citizen Science are opportunities to be taken onboard in survey design and call for the development of new data quality profiles and new properties for estimators.

The term "citizen science" means a form of open collaboration in which individuals or organizations participate voluntarily in the scientific process in various ways, including also collecting and analyzing data; and interpreting the results of data. Also known as "public participation in scientific research" the overarching motivation for Citizen Science is to bring together public participation and knowledge production. It includes the generation of scientific data, engages volunteers over a large area and addresses a politically relevant issue (Ruppert et al 2018).

Beside citizen science also the reuse of data generated by citizens on themselves (in processes like using services, making telephone calls or when they populate administrative archives during their lives as students, workers, retired persons etc.) is a challenge. It can reduce the respondent burden to produce statistics and Official Statistics. We refer to this approach as "Citizens as users and co-producers", both in terms of big data/digital traces and administrative data, especially focusing on the latter for Official statistics production purposes (Pratesi, 2022).

Citizen generated data, web scraping and Citizen Science are opportunities to be taken onboard in survey design and call for the development of new data quality profiles and new properties for estimators.

For survey statisticians this echoes a wider issue: exploiting non-traditional data sources to produce new statistical information. This is especially relevant for SDGs, given the global perspective of the Agenda 2030 (Fraisl et al 2020).

How do survey methodologists react and have reacted? By integrating sources and surveys, revolutionizing censuses, using new administrative sources and Big data to obtain increasingly timely, granular and detailed information. Examples are the statistical production process from the Italian Permanent Population and Households Census, and the integration process of utility data

files (e.g., electricity, gas) in the future design of different activities, like for instance the Household Energy Consumption Survey (Bernardini et al, 2022).

What remains to be done? We need to continue along this path, monitoring this changing reality by developing new ways to do surveys. We need experiments with the use of new sources and the application of innovative methods in producing and analysing survey data. Experiments conducted with a multidisciplinary approach as advanced data collection technology nowadays has often made inferences from diverse data sources easily accessible.

Intensified use of Big Data by survey methodologists is a challenge also in NSIs: this requires a new approach to statistical production process, assigning a crucial role to the integration of traditional and new sources, with a special focus on digital technologies. All this requires a paradigm shift in methodology, from traditional sample survey-based estimates to a system applicable to a multi-source environment using design-based, model-based and model-assisted approaches to inference.

IASS is now on social media and participates in the debate on a variety of old and new issues with its IASS Webinars on the frontiers of survey methodology.

My birthday wishes are to celebrate the history of the association and look to its future, full of opportunities as outlined by the excellent next President and the new Executive Committee.

Don't worry: surveys are here to stay!!!

With my best wishes,

Monica Pratesi

IASS President

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Report from the Scientific Secretary

I am writing these lines on the way back from the IASS sponsored conference ITACOSM2023, organized by the Survey Sampling Group of the Italian Statistical Society and held at the University of Calabria in Italy between June 7 and 9. Almost 100 registered participants from many countries have gathered and discussed over 60 presentations on the theme “New Challenges for sample surveys: innovation through tradition”. Many IASS members were among the delegates and our president, Monica Pratesi, addressed the audience at the opening ceremony. I think that the paper of the **New and emerging methods** section of this issue of The Survey Statistician is an example of “innovation through tradition”: I am very grateful to Prof. Changbao Wu (University of Waterloo, Canada) for having accepted my invitation to write a paper on **Calibration Techniques for Model-based Prediction and Doubly Robust Estimation** in which he presents an overview of calibration techniques for model-assisted estimation for probability survey samples and their extensions for model-based prediction and doubly robust estimation to missing data problems, causal inference, and analysis of non-probability samples.

When you will read these lines, the **ISI World Statistics Congress in Ottawa** will be approaching: we have kept working in the past six months to organize the several appointments important for IASS. First, our **General Assembly**, scheduled for Wednesday, 19th July 2023 at 12:10-13:50 pm (EDT) in hybrid format. Other than a long list of IASS sponsored invited sessions (the link to the whole program can be found here <https://www.isi2023.org/conferences/15/programme/>), there are three early morning Special Invited Paper Sessions (SIPS) sponsored by the IASS of particular interest: the SIPS **Waksberg Award** with a presentation by the 2023 Waksberg Award Winner, Prof. **Ray Chambers**, on Wednesday 19th July 2023 08:30-09:40, the SIPS **IASS President’s Invited Speaker**, Prof. **Fulvia Mecatti**, Tuesday 18th July 2023 08:30-09:40, and the SIPS **Cochran-Hansen Prize** with presentations by our two Cochran-Hansen prize winners: **Alejandra Arias-Salazar (Costa Rica)** and **Ziqing Dong (China)**, Thursday 20th July 2023 08:30-09:40. There were many good candidates for the prize, and the committee chaired by the IASS VP Nikos Tzavidis had the honor and the burden to decide the winners in February. Alejandra Arias-Salazar has won with a paper on “Small Area Estimates of Poverty Incidence in Costa Rica under a Structure Preserving Estimation (SPREE) Approach”, and to Ziqing Dong with a paper on “Linearization and Variance Estimation of the Bonferroni Inequality Index”.

The organization of the monthly **Webinar series** has continued, and we are particularly thankful to Andrea Diniz da Silva for her engagement. We have now reached Webinar number 30 and we are happy to have made it a monthly appointment that has attracted an audience of up to **five hundred registered participants**. Please, visit the webinar section of our website <http://isi-iass.org/home/webinars/> for slides, that of ISI <https://www.isi-web.org/courses-webinars-workshops> for upcoming and recorded webinars. Those held in the first six months of 2023 have covered the use of state-space models for unemployment estimates, data integration for the production of official agricultural statistics, new sources of data, such as big data and sensor data in surveys and official statistics, classification trees for nonresponse in complex surveys.

During these past months, our social media activity has increased thanks to Annamaria Bianchi, our social media manager, who has continued to post about webinars, conferences, books, articles, prizes, the newsletter release and its contents, and the recruitment drive. The number of followers to the pages are increasing and in particular, we now have more than **one thousand LinkedIn followers**.

We have also worked for the future of IASS and worked for the **election of the Executive Committee 2023-2025**. We are grateful to the **Nominating Committee** chaired by our past president, Denise Britz do Nascimento Silva and including Sanjay Chaudhuri (Asia), Carolina Franco (North America), Enrico Fabrizi (Europe), James Chipperfield (Australia), and Ralf Munnich (Ex officio, Chair of Nominating Committee 2021-2023). The outcome of the elections will be communicated at the IASS General Assembly. As my duty as Scientific Secretary of IASS is coming to an end, please let me take this opportunity to express my gratitude for the fruitful experience working for IASS in the past two years. I am glad that my duties end exactly on this special edition for the IASS 50th birthday! The tradition of sampling statistics and estimation in Italy is well grounded and I have had the luck of conducting my research in a large team (almost a family) of Italian survey statisticians ever since I was a PhD student. Nonetheless, I have to say that being a member of IASS, participating to IASS sponsored sessions at World Statistics Congresses and to IASS supported conferences over the years has brought my experience and my web of scientific relations to an international level and this has greatly enhanced it. I am therefore very grateful for all the years spent together and looking forward for those to come!

Maria Giovanna Ranalli

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IASS Scientific Secretary