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Editorial

Worthy information for challenging times

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1. Worthy information for challenging times

The title of the 2022 IAOS Conference in Krakow (22–26 April), *Worthy information for challenging times'* was chosen months in advance of the Conference and refers to the reflections on the role and position of Official Statistics in the new data ecosystem. The COVID-19 pandemic made clear that such a reflection was urgently needed. My editorial for the March 2022 issue of the journal (Vol 38/1), drafted on the 20th of February, had an optimistic title '*The end of the pandemic, new opportunities to meet*'. The optimistic tone referred to the outlook on a disappearing or at least lessening impact of the COVID-19 pandemic, the hope for an in-person IAOS Conference, and a certain return to life as before the pandemic. And, indeed, the IAOS Conference has been held in person, COVID-19 is still around but is more and more considered an innocent flue.

However, Europe and the world suddenly, starting on the 24th of February, are undergoing another far-reaching challenge with the war in Ukraine and its impact on society, shedding also shadows over the Conference. Despite this sudden situation, thanks to the flexibility of the official statistics community and the perseverance of the Polish organizers, the 18th IAOS Conference has become a success. The combination of the IAOS Conference with the 3rd Congress of Polish Statistics (also commemorating the 110th anniversary of the Polish Statistical Association), gave the Conference extra allure.

The Conference agenda was adequately organized to address the current challenges via special sessions, most prominent in the opening session and some key sessions, the Ukraine war and the position of Ukrainian official statisticians, the impact of COVID-19 on Official Statistics, and a to address the reflection on the new role in the data ecosystem, a special IAOS meeting on the Fundamental Principles, Population Censuses and Misuse of Statistics.

The international community of official statisticians expressed strong sympathy for Ukraine and Ukraine statistics and welcomed the support from the international community, not in the least from the Polish Statistical Office. It is expected that in this and other journals more space will be devoted to Ukraine, Ukraine statisticians and the impact of the war. The impact of COVID-19 on Official Statistics has been prominent on the research agenda and has since June 2020 been visible from the many submissions on this topic to this journal already. In some 25 open-access manuscripts many statistical characteristics of the pandemic and its impact on the production and dissemination of Official Statistics have been published. In this issue, there are another five manuscripts on this topic.

The topic of the special IAOS meeting '*Fundamental Principles, Population Censuses and Misuse of Statistics*' is an issue that has already for some time been very prominent in the discussions among official statisticians as also witnessed by the number of manuscripts that were published on this theme in this journal. The digitized world, the many new actors, new data sources and production methods, and the changed attitude of society toward statistics, trust and misuse of statistics have made the official statistics community feel that Official Statistics have been challenged and have to reflect on their position in the fast-evolving data ecosystem, and that based on actions resulting from these reflec-

tions, the community has to act on growing into their new role. This feeling was largely shared by the IAOS General Assembly, agreeing with the installment of a Reflection Group (*The Krakow group*) that is tasked to develop scenarios and advance proposals on how the IAOS can make a key contribution toward fostering integrity and trust in an evolving data ecosystem that truly works for the public good. The first manuscript by Martine Durand and Robert Jan Suesser '*A fast-evolving landscape for Official Statistics: how to respond to the challenges*'; sketches the background and outline of the work of the Krakow reflection group.

The in-person IAOS Conference in Krakow offered further a great opportunity to meet in person, after a period of two years, colleagues as well as to solicit orally a variety of manuscripts for submission to the Journal. I am proud to announce that in the forthcoming issues some 15 manuscripts are expected based on presentations from this conference. This issue Vol 38 (2) with as theme '*Manuscripts from the The Hague ISI World Statistics Conference*' contains some 17 contributions that were presented at the 2021 ISI WSC and two that are based on presentations given at the hybrid *UN World Data Forum* held in Bern also in 2021. Although, as these numbers show, there has not been a problem with soliciting manuscripts from the virtual or hybrid conferences, in-person meetings are without any doubt far more interesting and motivating and allow for a substantial amount of extra interaction and exchange of creative ideas.

This issue of the Statistical Journal of the IAOS contains 31 contributions covering seven themes. The background manuscript for the Krakow Refection group by Martine Durand and Jan Robert Suesser (*A fast-evolving landscape for Official Statistics: how to respond to the challenges*) is the first theme. The second theme contains five manuscripts on the impact of COVID-19 on Official Statistics. Then four themes follow based on contributions from the ISI WSC: '*The Governance of Official Statistics: The Funding*' with three contributions; four contributions, and an introduction on '*Statistical and Data Literacy in Policy-Making*'; seven contributions and an introduction on '*Standards, guidelines and recommendations*' and three manuscripts on '*Nowcasting*'. Finally under the theme '*Data sources and methodology*', four rather varied manuscripts are positioned.

The issue ends with the closing article by Ivo Havinga on the fifth discussion on the Future of Economic Statistics', and announcing the 12th discussion '*The positive and negative sides of 'standardization in official statistics*'. This discussion is triggered by the manuscripts on the theme of Standards, guidelines and recommendations. Finally, the issue is closed by reminding the audience of the still open other discussions on the SJIAOS discussion platform www.officialstatistics.com.

2. The manuscripts in this issue in more detail

2.1. The Krakow reflection group

The background manuscript for the Krakow Refection group by Martine Durand and Jan Robert Suesser (*A fast-evolving landscape for Official Statistics: how to respond to the challenges*) opens this issue. The authors, summarize, inspired by discussions during the last couple of years, the large agenda for Official Statistics if these are indeed willing to continue to play a key role in the evolving data ecosystem. The authors summarize the challenges, strengths and weaknesses of Official Statistics and make a pledge for building partnerships, take leadership and act as data stewards to (re-) gain their importance.

2.2. Covid impact and Innovation during the COVID-19 crisis

The second theme in this issue contains five manuscripts on the impact of COVID-19 on Official Statistics. The first '*COVID-19 Open the Borders – Aotearoa (New Zealand)*' authored by Kathryn McClintock, Christine Brears, Katarina Hodge Raukawa and Lauri Hakiwa, describes the experiences with reporting and monitoring in the Aotearoa region in New Zealand, aiming using these data to improve the health and wellbeing of Māori in a COVID-19 environment. This manuscript is an extension of a series of manuscripts on indigenous peoples from the March 2019 special issue[1] and manuscripts in the March 2021 issue.[2]

In the second article in this section '*Assessment of the spread of COVID-19 in seven countries using a seasonal adjustment method*' Tetsuma Arita, in the context of the early identification of the trends in the number of newly confirmed COVID-19 cases, shows that X-13ARIMA-SEATS (X-13), one of the seasonal adjustment methods, can be well applied to the analysis of

[1] Statistical Journal of the IAOS, Vol 35 (1); Measuring Indigenous Identification.

[2] Statistical Journal of the IAOS, Vol 37 (1).

the changes in the number of newly confirmed COVID-19 cases. Based on examples of seven countries: Germany, Indonesia, Iran, Russia, the United Kingdom, the United States, and Japan, this study successfully extracts trend components, calendar-induced components (weekly periodicity and fluctuations due to moving holidays), and irregular components from the time series. Arita concludes that the method in this study can facilitate a more rapid and accurate assessment and strategic responses to the spread of COVID-19 compared to a 7-day moving average and a rolling 7-day total.

Emiliano Valente, Martina Roiati, and Francesco Pugliese in '*Forecasting the number of intensive care beds occupied by COVID-19 patients through the use of Recurrent Neural Networks, mobility habits and epidemic spread data*', argue that producing fully automated COVID spread forecasting via Deep Learning algorithms, using Long Short Term Memory (LSTM) neural networks and Bidirectional LSTM neural network models and new model regularization achievements lead to better prediction of Intensive Care beds (ICUs) burden due to COVID-19 and may optimize the public spending and beds occupancy, in the future.

In the next two manuscripts, a variety of innovative experiences during the COVID-19 crisis are described. Baldacci, Braaksma, Gálvez, Giannakouris, Gonzáles Olmos, Rivière, Scannapieco, Vermeer and Vertanen in '*Innovation during the COVID-19 crisis: Why it was more critical for official statistics than ever?*' show for six European countries how the crisis accelerated innovation in statistical production, steered complex processes of change towards the use of new data sources and privately-held data for official statistics, enhanced the adoption of new statistical methods, and consequently stimulated the production of experimental statistics and dashboards. They argue that, In particular, within the context of the new opportunities for the production of official statistics, a high priority was maintained for the importance of privacy preservation, data security and the development of adequate data quality frameworks. The manuscript is based on presentations from a session, held during the UN World Data Forum in Bern in Spring 2021, dedicated to the experiences and innovations due to COVID-19 in the European Statistical System

Complementing the manuscript above, Lisa Mirel, Dean Resnick, Jonathan Aram, and Christine Cox in '*A methodological assessment of privacy-preserving record linkage using survey and administrative data*' show how the National Center for Health Statistics (NCHS) in the USA links data from surveys to administrative data sources and thereby uses a privacy-preserving record linkage (PPRL) method to overcome the barrier of privacy concerns. The results from this study are encouraging for the first steps for a statistical agency in the implementation of PPRL approaches, however, the authors argue that future research is still needed.

2.3. Governance of official statistics: The funding

One of the invited paper sessions at the 2021 The Hague ISI WSC was dedicated to the financing of official statistics. Three seasoned official statisticians discussed the relations between the funding of statistical offices and challenges as well as opportunities via various means of interference. In '*How to fund official statistics production to support statistical principles and ethics*' Andreas V. Georgiou proposes a model of funding whereby a multiannual statistics office budget is to be adopted by the legislature, with an implementation that lags by more years than in an electoral cycle and setting up a trust fund fed by predetermined transfers from the government and by a prespecified share of a tax. From the trust fund created by these budgets, an annual lump sum would be made available to the office by a law-provided committee of representatives of users. This budget would be spent under a set of specific conditions given by national law, including safeguarding good financial management, efficiency and accountability in the use of resources.

Based on his experiences Hallgrimur Snorrason in his contribution to the discussion '*Funding of Official Statistics*' argues that in developing countries where funding is often linked to specific surveys or projects that are carried out by the NSOs at some specific intervals, e.g. every other year, every third year etc. and funded by international organizations, the statistical work plan should distinguish between the regular basic operations of the NSO that should be funded by the government and the various surveys funded by development partners. Such a practice would encourage governments to provide the official statistics with regular funding thereby enhancing the professional independence and responsibility of the NSO.

In '*Financing official statistics: Some reflections*' John Pullinger states that cuts in the budget, controls on how its budget is spent or the creation of user pays approaches to funding, frustrates the ability of the statistical system of a country to fulfill its duty of providing to citizens trustworthy, high quality and relevant statistics about the state of the nation. To avoid this, strong sig-

nals on what is needed are required from those that the statistical systems are serving, about whether what they are providing fits indeed what is needed.

2.4. Statistical and data literacy in policy-making

This section is based on an Invited Paper Session at the 2021 The Hague ISI WSC, organized by Gaby Umbach. In the guest editorial/introduction to the section '*Statistical and Data Literacy in Policy-Making*', she frames the articles by underlining the relevance of the use of statistics and data in politics and highlighting their impact on policy-making and identifying key meanings of statistical and data literacy in policy-making. Gaby Umbach also presents the four individual contributions to the section, prepared by Walter Radermacher (*Statistical Literacy Promoting a Data Culture*), Giulio Sabbati (*Statistical and Data Literacy for Policy-making: How to provide independent, objective and authoritative data and information for policy-making*), Milo Schield (*Statistical Literacy: Seven Questions for Policy Makers*) and Katharina Schueller (*Data and AI Literacy for Everyone*).

2.5. Standards, guidelines and recommendations

The section on '*Standards, guidelines and recommendations*' covers seven contributions and an introduction. Six manuscripts are based on the presentations and papers from the Statistical Journal of the IAOS Special Invited Paper Session (SIPS) at the 2021 The Hague ISI WSC. The title of this special session was '*Effectiveness of the outreach of official statistics standards and guidelines, methodologies, and recommendations for developing statistical systems*'. The objective was to sketch the role and development, implementation, and monitoring of internationally harmonized standards in statistics as well as to illustrate the challenges in implementing and using such standards, guidelines and recommendations. The presentations covered the main characteristics of statistical standards, their implementation by the custodian organizations, and the capacity of national statistical systems to adapt to these standards. The manuscripts are authored by Ivo Havinga ('*Stylized facts of statistical standards of the Statistical Commission of the United Nations*'), Stephen MacFeely, Anu Peltola, Nour Barnat, David Cristallo, Ekatarina Chernova, and Onno Hoffmeister, ('*The role of international organizations in statistical standards-setting and outreach: An overview of the UNCTAD contribution*'), Valerie Bizier, Pietro Gennari and Dorian Kalamvrezos Navarro ('*Role of international, regional and country organizations in adapting to food and agriculture statistical standards and regional differences*') and Lisa Bersales ('*Standards in Social statistics: the capacity of national statistical systems to adapt to the international standards, problems, challenges*'). In the Introduction to the section further in this issue, the content of these and the other three manuscripts in this section are described in more detail. Hugues Kouadio in his role as discussant, argues in his contribution that the effectiveness of the outreach of official statistics standards and guidelines are essential to maximizing the effectiveness of statistical outputs and the efficiency of the production process, however, for the developing countries one should consider issues of capacity in implementation in line with the correct outreach and implementation of standards ('*Effectiveness of the outreach of official statistics standards and guidelines, methodologies and recommendations to developing statistical systems: a discussion*').

Based on the presentations and discussion during the sessions as well as earlier experiences with the work on standards and guidelines, Pieter Everaers reflects in the sixth manuscript in this section (*Standards as the backbone for official statistics, how well do they fit within national and international systems?*) on the positive and negative aspects of 'standardization' in official statistics. The manuscript also aims to launch a discussion with the international community of statisticians on the principles behind and the role of standards and specifically on the validity of cross-national comparisons considering the deficiencies in implementation and use of the internationally harmonized standards. This question is also the topic for the 12th discussion on the SJIAOS discussion platform (www.officialstatistics.com).

As an illustration of the work on the development of an international official statistical standard, the section is closed with the manuscript '*Delineation of cities, urban and rural*', by Lewis Dijkstra, Aleksandra Galic, and Teodora Brandmuller. The authors present the development of a harmonized definition of cities, towns and rural areas for international comparison called the Degree of Urbanisation. This new method based on a population grid allows for a harmonized comparison of urbanization across the globe.

2.6. Nowcasting

A further session from the 2021 The Hague ISI WSC was dedicated to Nowcasting methods and experiences. In the first manuscript from this session Daniel Hopp

('*Performance of LSTM Neural Networks in Nowcasting Global Trade during the COVID-19 Crisis*'), reports on the suitability of Long Short-Term Memory artificial neural networks (LSTM) for performing economic nowcasting for timely estimates of macroeconomic variables. in this paper, the LSTM's performance during the COVID-19 pandemic is compared and contrasted with that of the dynamic factor model (DFM), a commonly used methodology in the field. The results show that the LSTM obtained better performance in two-thirds of variable/quarter combinations, as well as displayed more gradual forecast evolutions with more consistent narratives and smaller revisions.

Rosa Ruggeri Cannata and Piotr Ronkowski in '*The Eurostat Business Cycle Clock and the pandemic: some considerations*' contribute with a reflection on the relevance of the Eurostat Business Cycle Clock (BCC) as an online tool showing the recent cyclical situation of the economy, and how the BCC cyclical indicators performed during the pandemic. The authors discuss the impact of the COVID-19 pandemic, first on the input variables and then on the BCC cyclical indicators. They state that based on the indications of the BCC, the Euro area exited a recessionary phase in August 2020 and that the risk of another slowdown or recession (at this stage) is very low.

Finally, Daniel Hopp, Anu Peltola and Emily Fu describe in '*Feasibility of nowcasting SDG indicators: a comprehensive survey*' the value-added of nowcasting to address the problem of long publication lags for many of the indicators used to measure progress toward the Sustainable Development Goals. The manuscript provides the results of a comprehensive nowcasting feasibility survey of all SDG indicators to assess their potential to be nowcasted. There exist 231 SDG indicators, but due to only examining Tier 1 indicators and the fact that many indicators have multiple sub-indicators, 362 indicators and sub-indicators was surveyed. Of those 362, 150 were found highly likely to be suitable candidates for nowcasting, 87 were found to be likely, and 125 were found to be unsuitable.

2.7. Data sources and methodology

The final section in this issue covers four rather different manuscripts, though the first one, like the above-described article by Hopp, Peltola and Fu, also focuses on the Sustainable Development Goals. Pietro Gennari, Piero Falorsi, Ayca Donmez, Clara Khalil and Stefano Di Candia, in '*Alternative methods for disaggregating SDG indicators using survey data*' present alternative sampling and estimation methods that can be applied to overcome the limitations of traditional sampling approaches. The paper describes for the design and the analysis stage alternative approaches, for example based on an indirect model-assisted estimation approach. These methods are supposed to eliminate costs deriving from redesigning data collection instruments and ensuring greater accuracy of the final disaggregated estimates.

In '*Multivariate Small Area Estimation of Undernutrition for Children Under Five Using Official Statistics*' Seyifemickael Yilemma, Yegnanew Shiferaw, Temesgen T, and Essey Muluneh explain how often for lower administrative layers relevant survey results have to be estimated based on small sample sizes. They argue that the direct survey estimates for non-planned domains in such situations lead to (too) large sampling variability. To overcome this they apply Multivariate Fay Herriot (MFH) modeling for incorporating the correlations among the target variables from neighboring areas for example taken from the 2016 Ethiopian Demographic and Health Survey (EDHS) and the 2007 population and housing census data. The results from their analysis provide valuable estimates for policymakers, planners, and legislative organs of the government. One of the novelties of this paper is estimating the non-sampled zones

Romina Filippini, Fabrizio De Fausti, Marco Di Zio, Simona Toti and Diego Zardetto in' their manuscript '*Multilayer perceptron models for the estimates of the "attained level of education" in the Italian Permanent Census*' present results of the prediction of the attained level of education (ALE) for every single (Italian) resident based on the integration of administrative data, 2011 census data and sample survey data. They argue that due to the more automated process, applying the Multilayer Perceptron Model (MLP) model provides estimates with the same level of accuracy as the ones obtained with the official procedure but with less cost in terms of human intervention.

Big data is seen as a new data source for official statistics especially given the increasing difficulty of getting acceptable response rates in sample surveys. However, big data also have its shortcomings. Siu-Ming Tam, Dennis Trewin and Lyndon Ang in the article '*Error analysis for Hybrid estimates of proportions using big data*' show how hybrid estimation using complementary survey data are a technique for overcoming the shortcomings of Big Data. The paper describes an Error Framework for the analysis of errors in big data and hybrid estimates. The paper also describes the circum-

stances under which hybrid estimates will provide more accurate estimates than big data in isolation or survey data.

I wish you pleasant readings of these interesting articles.

3. SJIAOS discussion platform

In August 2019 the Statistical Journal of the IAOS launched the online platform for discussion on topics of significant relevance for official statistics (www.officialstatistics.com) as part of the SJIAOS website. The discussion platform invites the interested readers to contribute to important discussions at a time of their choosing. With each release of an issue of the Statistical Journal, a new discussion topic is launched via a leading article or based on a section in the Journal Each discussion runs for about a year and is closed with a concluding commentary by the article author(s).

The Special Issue of the Statistical Journal of the IAOS, Volume 36/3, presented '*The future of economic and business statistics*'.[3] The twenty manuscripts in that Special Issue documented the challenges and pathways to enable a more responsive and agile system of economic statistics. The 5th discussion on the Journal's discussion platform launched in September 2020, complemented the Special Issue supporting the consultation on the plans and pathways. The closing article on the 5th discussion by Ivo Havinga presents the results of the consultation.

3.1. Launch of the 12th discussion: The positive and negative aspects of 'standardization' in official statistics

With the release of this issue of the Journal (Vol 38 (2) June 2022), the 12th discussion will be opened. This discussion is triggered by the section on '*Standards, guidelines and recommendations*'. The section contains six manuscripts that originally stem from the ISI WSC 2021 SJIAOS Special Invited Paper Session. Further to that, it contains a manuscript that describes the development and characteristics of a harmonized definition of cities, towns and rural areas for international comparison, called the Degree of Urbanisation.

The exact statements will come around mid-June online on the SJIAOS discussion platform (www.officialstatistics.com).

For more information about the statements and how to react see the introduction to the 'SJIAOS Discussion Platform at the end of this issue. Several other discussions are also still online on the SJIAOS Discussion Platform (www.officialstatistics.com).

4. Some words about the next issues

4.1. The next three issues: September 2022, Volume 38 (3), December 2022, Volume 38 (4), and March 2023, Volume 39 (1)

For the September 2022 issue (Vol 38 (3)) work is ongoing for a series of articles from members of the Committee for the Coordination of Statistical Activities (CCSA). This series of manuscripts by the representatives of International Statistical Organizations will cover a variety of themes relevant to these organizations. For December 2022 (Vol 38 (4)) a diversity of manuscripts is expected among them several based on papers from the Krakow 2022 IAOS Conference. The March 2023 issue is planned as a Special issue on the '*History of Official Statistics*'. The guest editorial team is in search of authors and relevant manuscripts, so, do not hesitate to inform me when you have a ready manuscript or an idea for a manuscript for this Special (pevssjiaos@gmail.com).

Of course there are always slots for other manuscripts; authors are kindly invited to submit their manuscripts to: https://www.iospress.nl/journal/statistical-journal-of-the-iaos/?tab=submission-of-manuscripts.

4.2. Developments in science publishing

Digitization has an impact on official statistics and its role in the data ecosystem but influences also developments in almost all other domains in society. Also for science publishing, it is an interesting and challenging time. The conference 'The Future of Science Publishing'[4] to commemorate the 35e anniversary of IOS Press contained a very timely session presenting the newest developments in Science Publishing. Striking are the huge effects of digitalization in storing scientific infor-

[3] https://officialstatistics.com/news-blog/future-economic-statistics.

[4] Amsterdam, 31 March 2022, Symposium Celebrating 35 Years of IOS Press. See: https://www.iospress.com/news/celebrating-35-years-of-ios-press.

mation and organizing and documenting publications. The strive for FAIR publishing (Findability, Accessibility, Interoperability and Reusability) related to the Open Data approach as we know it from official statistics, is becoming rather important for maintaining the credibility of researchers and research results. Also for the manuscripts in the journal based on empirical research and statistical data, this trend will have to be picked up by in future manuscripts clickable links the tables, graphs, etc to the underlying data sources and datasets. Similarly, the developments in managing the submission, review and revision of manuscripts, are gaining from the digitalization trend. The new manuscript tracking system (Editorial Manager) that recently also has been introduced by IOS Press for the Statistical Journal contains among others facilities for authenticity and duplication checks, as well as an automated system for finding reviewers that best fit the submitted manuscripts.

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