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Background document
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Items for discussion and decision: data and indicators for the 2030 Agenda for Sustainable Development

Toolkit on Using Small Area Estimation for SDGs

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Introduction

In committing to the realization of the 2030 Agenda for Sustainable Development, Member States recognized that the dignity of the individuals is fundamental and that the Agenda's Goals and targets should be met for all nations and people and for all segments of society. Ensuring that these commitments are translated into effective action requires a precise understanding of the target populations and progress made in addressing their particular priorities.

To properly measure this, statistics need to be presented for different population groups and geographical areas. The Global Sustainable Development Goal (SDG) indicator framework has included an overarching principle of data disaggregation: Sustainable Development Goal indicators should be disaggregated, where relevant, by income, sex, age, race, ethnicity, migratory status, disability and geographic location, or other characteristics, in accordance with the Fundamental Principles of Official Statistics.[1]

To address the need for disaggregated data, a work stream on data disaggregation has been formed under the Inter-Agency and Expert Group on Sustainable Development Indicators (IAEG-SDGs), to strengthen national capacities and to develop the necessary statistical standards and tools. Given the importance of household surveys in producing data for SDG indicators, especially for the pledge of leaving no one behind, a work stream on data disaggregation was also created under the Inter-Secretariat Working Group on Household Surveys (ISWGHS) to produce crosscutting guidelines related to data disaggregation. Such work was also mandated by the UN Statistical Commission in 2018 in its 49th session[2] and in 2021 in its 52nd session[3].

Small area estimation (SAE) techniques have been proved to be very useful in providing reliable disaggregated data for some SDG indicators, such as poverty estimation, food insecurity and undernutrition, health related indicators, unemployment rate, etc. Using SAE methods to improve SDG data availability for vulnerable population groups is one of the priority areas of work for the IAEG-SDGs and the ISWGHS. There have been great demands from countries on providing technical guidance and training in this area, as requested by the 52nd session of the UN Statistical Commission that "encouraged further work on data disaggregation and small area estimation with a view to providing additional comprehensive guidelines and tools for countries".

Under the guidance of IAEG-SDGs and ISWGHS, the United Nations Statistics Division, in collaboration with many experts from countries, regional and international agencies and academia, has developed *a Toolkit on Using Small Area Estimation for the SDGs*. The Toolkit has been developed to help countries in using SAE methods to improve data availability for vulnerable population groups; offering practical guidance and country case studies; providing guidance on the enabling environment for using SAE for official data production; giving suggestion on communicating SAE estimates to policymakers and general public; and providing a space for partners to document and disseminate their small area estimation methodologies.

[1] General Assembly Resolution A/RES/70/1
[2] https://unstats.un.org/unsd/statcom/49th-session/documents/Report-on-the-49th-session-E.pdf
[3] https://unstats.un.org/unsd/statcom/52nd-session/documents/2021-30-FinalReport-E.pdf

Format and content of the Toolkit

The Toolkit on Using Small Area Estimation for the SDGs is intended to be a living document available at a wiki-platform. The Toolkit will (a) continue incorporating new materials such as new methods, national examples and case studies as they become available; and (b) foster collaboration and exchange of experiences among partners at the national, regional and international level.

A detailed outline of the Toolkit is provided below. Users are encouraged to visit the wiki-platform to access all materials.

1 Why is SAE important for SDG data disaggregation
The chapter explains in which cases small area estimation maybe useful, including a brief background on the 2030 Agenda for Sustainable Development, the need for more disaggregated data and why SAE is a great tool to help achieve the leave no one behind agenda.

2 Practical guidance on producing SAE
The chapter provides guidance on key elements required for producing SAE, following a framework suggested by Tzadivis et al. (2018).[4] The framework covers steps for preparing for SAE such as specifying user needs (Section 2.1) and assessing data availability (Section 2.2); SAE approaches including the area-level and unit-level models (Section 2.3); selecting an appropriate SAE method following specification of user needs and input data availability (Section 2.4); building models and analysing model assumptions (Section 2.5); and evaluating and benchmarking once the estimates are produced (Section 2.6).

2.1. User needs
2.2. Data availability
2.3. SAE approaches
- Area-level models
- Unit-level models

2.4. Specification
2.5. Analysis and adaptation
2.6. Evaluation and Benchmarking

3 Communicating SAE estimates
The chapter provides guidance on how to communicate the SAE results and methods to different levels of users, including policymakers, general public and technical experts.

4 SAE by Sustainable Development Goals
The chapter provides case studies that use SAE for SDG indicators under relevant goals. The chapter also guides users on how to start a SAE experiment through a series of considerations.

5 From SAE experiment to production: the enabling environment

[4] Tzavidis, et al. (2018). From Start to Finish: a Framework for the Production of Small Area Official Statistics. J. R. Statistics. Soc. A (2018), 181, Part 4, pp. 927-979.

The chapter covers key practical aspects to consider for countries moving from SAE experiments to official production. It outlines challenges faced by countries in producing SAE regularly and discusses important aspects for a successful SAE programme within the country, ranging from establishing a link between SAE estimates to policymaking, to fostering research and collaboration, securing sufficient financial resources and building capacity on SAE. Discussions covered in this chapter are built upon lessons learnt at national level.

6 SAE practices

The chapter presents experiences of countries and regional and international agencies in the area of small area estimation.

- 6.1 Asian Development Bank
- 6.2 Australia
- 6.3 Chile
- 6.4 Colombia
- 6.5 FAO
- 6.6 Indonesia
- 6.7 Jamaica
- 6.8 Republic of Moldova
- 6.9 South Africa
- 6.10 US Census Bureau
- 6.11 Other practices

7 Software packages for SAE

The chapter provides a comprehensive overview of commonly used software packages in SAE, such as R, STATA and others.

8 Key readings on SAE

The Chapter provides a short list of key books and guidelines on SAE that users should start with before initiating the work on SAE.

9 International and national SAE projects

The Chapter provides a list of international and national research projects for the application of small area estimation in official statistics. The projects were carried out collaboratively by researchers, national and international statistical offices and governmental agencies.

10 Frequently asked questions

This part of the Toolkit collects frequently asked questions on SAE, technical or practical, and provides a space for users to exchange experience.

11 References

Next step

Following the production of the Toolkit, the United Nation Statistics Division will:

1. Continue to incorporate new materials into the wiki-platform. Countries and partner agencies are invited to become a partner in this effort;

2. Advertise the Toolkit to extend its impact, through social media campaign, webinars and various conferences;

3. Provide technical assistance to countries on using SAE for SDG monitoring through:
    a. Organizing trainings through a 10-week eLearning course on SAE, currently being produced by UN Statistics Division in collaboration with UN ECLAC Statistics Division and UNFPA.
    b. Fostering collaboration and experience exchange among countries and across different data communities: national statistical offices, line ministries and the academia.

4. Continue to explore the potential of using non-traditional data sources such as remote sensing and mobile phone data for SAE.