Steps to produce small area estimates

The production of small area estimates is based on various steps. These are often summarized in flow charts that can support the production process (see e.g., ESSnetSAE 2012 and Asian Development Bank 2020). In these guidelines, the framework illustrated in the figure below basically follows the work of Tzavidis et al. (2018).

The input components - user needs, data availability and existing SAE methods - determine the first specification of an estimation approach. The user needs comprise the choice of the indicator and the disaggregation dimension. For example, the user need could be to estimate poverty incidence for municipalities. One general idea in small area estimation is the combination of different data sources. This means that the survey data is e.g., complemented by census or other additional data. The data requirements can then roughly be classified in area-level and unit-level data (i.e. if the data is available per domain or per each unit in each domain) and the SAE methods in area-level and unit-level models. When an initial model is specified, it needs to be analyzed and possibly adapted since the first model specification may not fulfill the model assumptions. Finally, the estimates need to be evaluated and benchmarked, in case coherence with a higher domain level is needed. If the evaluation is positive, final estimates are obtained, otherwise the process starts again with the model specification. The final estimates will be used to feed back to user needs. This framework is slightly modified from the original version of Tzavidis et al. (2018) while the last step, i.e., from final estimates to user needs, is added.

Details about each of the key steps are covered in subsections, accompanied by examples of three SDG indicators:

- 1.1.1/1.2.1 Proportion of the population living below the international/national poverty line
- 7.1.1 Proportion of population with access to electricity
- 8.5.2 Unemployment rate

Framework for the production of small area estimates

- User needs
- Data availability
- SAE methods
- Specification
- Analysis and Adaptation
- Evaluation & Benchmarking
- Satisfactory estimates?
- Yes
- No
- Final estimates
- Propose new specification

From start to finish: Poverty estimation in Mexican municipalities

Tzavidis et al. (2018) describe all steps using an example case for Mexican municipalities:

- User needs:
  - Indicator: Proportion of poor
  - Disaggregation level: Municipalities
- Data availability: unit-level survey and census
- SAE method: Unit-level models