Plenary Meeting

10th Meeting of the Inter-agency and Expert Group on Sustainable Development Goal Indicators (IAEG-SDGs)

Small Area Estimation in support of more disaggregation

21-24 October 2019

Addis Ababa, Ethiopia

Requirement: Need for more Granular Information

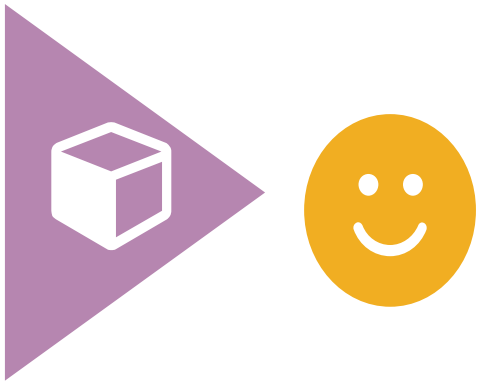
Vulnerable Groups

Need to provide estimates for certain population characteristics

Small geographies

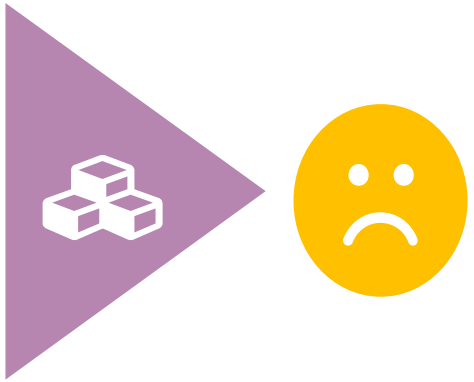
Need to provide estimates for non-overlapping domains (cities)

Problem



Direct estimates

Survey estimates are generally reliable when the sample size is large.



Small sample size

Reliable estimates are not possible when the sample size is too small

What is Small Area Estimation?

A statistical modelling technique which can be used in cases where survey estimates are not usually precise enough to be published (when sample sizes are too small to be released).

What small area estimation does is take other auxiliary data (administrative or big data) to supplement the small amount of survey data for a given group (or geographic area) to obtain an estimate.

Generally, small area estimates are significantly more reliable that standard estimates for populations with a small sample size.

What is needed for Small Area Estimation?

Auxiliary information: Information coming from an external source independent of the survey such as admin data, big data, Census, ...

Auxiliary information **must** be associated with the characteristics to be estimated.

Auxiliary data must be independent of the survey

Using SAE

- SAE requires making assumptions
  - Should be a calculated risk
    - To mitigate risks, check and validate model assumptions

- Most frequent model used (at Statistics Canada) is the Fay-Herriot model (there are other models)

- Small area estimates are a weighted average of a **direct estimate** and a **model-based synthetic estimate**

Application of SAE

- Tonga has used Small-area estimation for multidimensional poverty using a hybrid hierarchical Bayesian estimator at an island, constituency and block level in Tonga using the HIES and the Census https://rdcu.be/bJm7X.

- Statistics Canada has chosen three SDG indicators and is currently examining if SAE will work for these indicators to provide more granular information (StatCan has used SAE in outside of SDGs).

- Are other countries using SAE for SDGs?

IMPORTANT!!

- While generally Small Area Estimation works overall, there is no guarantee that it will work well for a particular area of interest!!
- Important to test for applicability