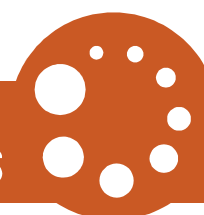




SAE_BESTA: Evaluation of the improvement potential of the precision within the job statistics

Summary

EXPERIMENTAL STATISTICS



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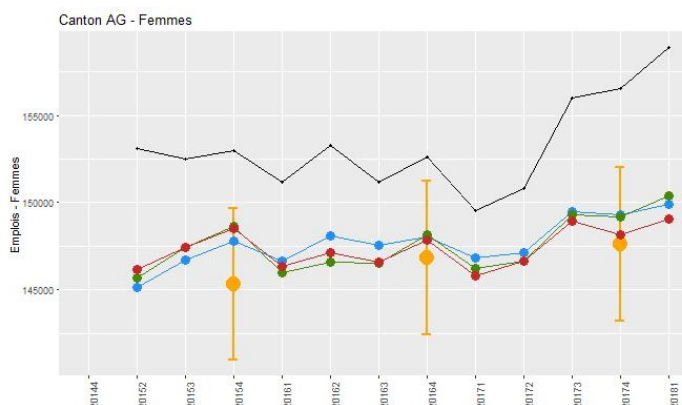
Pilot project SAE_BESTA: summary

30 June 2019

The objective of the project was to test the potential of small area estimation (SAE) methods for the production of job statistics at levels of detail not covered by the sampling plan (in particular for the cantons) without having to increase the sample size. As part of this project we tested several regression models to estimate the total employment level for publication variables – in this case by sex – using the quarterly survey data and those from the survey framework. The work covers the results from a period of 12 quarters (2015–2018). The results were validated using target values constituted from the sampling frame adapted to the values of the Structural Business Statistics (STATENT) from 2015 to 2017 with precision objectives similar to those expected at national level. The results show that when auxiliary data showing a strong correlation with the variable of interest are available – as is the case for job statistics – a simple model allows to improve considerably the accuracy of estimates and to consider publishing reasonable results published at cantonal level, including for the very small cantons. In fact, both the deviations from target values and the measures of variability are considerably reduced with the SAE models compared with the results of direct estimates. Furthermore, the SAE methods can be used to produce satisfactory cantonal results most of the time in line with the permitted quality criteria for major regions and economic sectors. The models are still at a preliminary stage. Additional work and validations need to be carried out before they can be deployed.

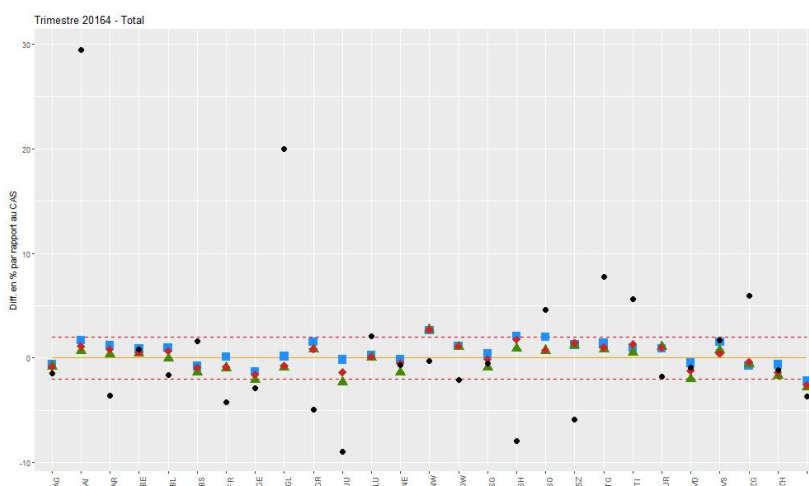
Example of women's employment in the canton of Aargau

The black curve represents the results of the direct estimate, while the yellow dots correspond to target values (with a deviation of $\pm 3\%$ (yellow bars). The results of the three SAE models are shown in blue, green and red. We see that these three models are equivalent and considerably reduce the deviation from the target values compared with the direct estimates that are off-target.



Summary of results for all cantons for total employment

The yellow line corresponds to the target value. The red dotted lines indicate a deviation of 2% compared with the target values. We note that the sometimes very significant deviations from direct estimates (black dots; up to 30% for the very small cantons) are markedly reduced and brought down to values that are very close to the target values using SAE estimates (blue, green and red dots).



Complementary analysis methods used:

- Small area estimation (lmer) and robust model (rlm with Huber-M) using extrapolation weights.