

G37 – Research Fellows Meeting

Presenter's Abstract

20 November 2019

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Another Linked Double Header: Secondary SAE Using Linked Data Under Area Uncertainty & Area Level SAE Using Linked Data

Using linkage to create datasets for SAE is becoming popular. In some cases, this linkage is based on the SAE geography, in the sense that linkage is restricted to records from population units located in the same area. In general, however, and particularly in secondary SAE analysis, this is not the case, and linkage errors could lead to units from different areas being linked. The first half of the presentation focuses on the situation where a unit level approach for SAE is adopted. Both linear fixed effects and linear random effects approaches to SAE are considered, along with modifications suggested by an exchangeable linkage errors assumption. Simulation results suggest that SAE predictors that ignore linkage error but include random effects in their specification can compensate for linkage errors to a limited extent in this case. The second half of this presentation then switches attention to where only aggregate small area estimates are released based on linked unit level data subject to exchangeable linkage errors that cross areas. A new single equation maximum likelihood approach that can be used as an alternative to the standard Fay-Herriot (FH) methodology for area level SAE is developed, and shown to lead to estimators that are different to those defined under the FH approach. No empirical results are yet available for this MLE, however.