Generating synthetic baseline populations from register data

The paper presents a population synthesiser based on the method of Iterative Proportional Fitting (IPF) algorithm developed for the new Danish national transport model system. The synthesiser is designed for large population matrices and allows target variables to be represented in several target constraints. As a result, constraints for the IPF are cross-linked, which makes it difficult to ensure consistency of targets in a forecast perspective. The paper proposes a new solution strategy to ensure internal consistency of the population targets in order to guarantee proper convergence of the IPF algorithm. The solution strategy consists in establishing a harmonisation process for the population targets, which combined with a linear programming approach, is applied to generate a consistent target representation. The model approach is implemented and tested on Danish administrative register data. A test on historical census data shows that a 2006 population could be predicted by a 1994 population with an overall percentage deviation of 5–6% given that targets were known. It is also indicated that the deviation is approximately a linear function of the length of the forecast period.

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