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Title: Estimating public and private contraceptive method supply shares at national and subnational administration levels, using Bayesian hierarchical models

Abstract:

Contraceptive method supply shares reflect the contributions of the public and private sectors to the distribution of a given method each year. Quantifying these public/private sector supply shares of contraceptive methods within countries is vital for effective and sustainable family planning delivery. They are useful to Family Planning officials as they show where contraceptive users have obtained their most recent supplies. Unfortunately, due to the cost, many low- and middle-income countries (LMIC) are not in a position to carry out the national-scale surveys necessary to collect this data regularly. Therefore, they evaluate the contraceptive supply market using out-of-date data.

Using out-of-date supply share estimates for family planning monitoring has significant knock-on effects. They may lead to inaccurate conclusions on the stability of the contraceptive supply market and not reflect the current trends within the contraceptive supply markets. In addition, the estimation of other family planning indicators that depend on method supply shares will also be inaccurate and distorted. To date, neither Bayesian nor frequentist methods have been used to estimate this important family planning indicator.

In this talk, I propose a methodology using Bayesian hierarchical penalised spline models for estimating modern contraceptive method supply shares, at national and subnational administration levels, for LMICs participating in the global Family Planning 2030 initiative. I describe a series of Bayesian models that evaluate method supply shares using both large multi-country data sets and computationally efficient single-country data sets. Lastly, using case study countries, I evaluate the impact of using national-level annual contraceptive method supply shares with uncertainty to calculate another key family planning indicator, estimated modern use