# Technical Brief: Family Planning Estimation Tool (FPET)

Why do we need FPET?

Estimates for mCPR and unmet need are usually taken from population-based surveys, such as the DHS. However, most countries do not conduct such surveys annually (with some exceptions, including countries with PMA2020), and thus it is difficult to produce annual estimates of these indicators. In addition, routine family planning service statistics and/or data on contraceptive commodities distributed are collected and reported on an annual basis in most countries, but such data have significant weaknesses and limitations for providing "stand-alone" estimates of the core FP2020 indicators.

The Family Planning Estimation Tool (FPET) was designed to produce annual estimates of these core indicators by using statistical modelling that incorporates survey data and service statistics. The model was adapted from a model used by the United Nations Population Division[1] for estimating family planning trends for all countries. The adaptation was prepared by Jin Rou New and Leontine Alkema of the National University of Singapore.

How does FPET work?

FPET is a Bayesian, hierarchical model that fits curves to historical data. The model fits a logistic growth curve to CPR data for all methods to determine the long term trend in contraceptive use and adds a time-series model with autocorrelation to capture country-specific deviations around the long term trend. The long term trend is characterized by an asymptote (where the trend levels off), as well as the pace and timing of the increase. These three parameters are estimated from national data and informed by regional patterns. A second model splits total contraceptive use into modern and traditional methods. A

third model fits trends in unmet need. Related outcomes such as total demand for family planning are calculated based on the different model fits. FPET not only determines the most likely trends in family planning outcomes, but also estimates an uncertainty range around the trends so that each estimate contains a median estimate as well as a 95% confidence range, as shown in the figure to the right for mCPR. When fitting models, FPET distinguishes between different types of data (e.g., DHS verses other national surveys), and automatically assigns greater weight to sources of data with lower estimated error variance (in the model, DHS is estimated to have the lowest error variance). FPET can be used at: http://fpet.track20.org
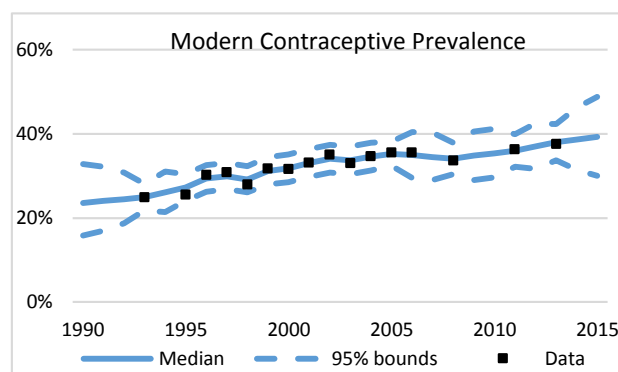
Using service statistics

FPET has been adapted to also incorporate FP service statistics. Although the level of mCPR estimated from service statistics data may not be correct with regard to *level*, service statistics may be used to measure the trend in mCPR over a 3-5 year period since the last DHS, and thus improve the accuracy of the most recent mCPR estimates.

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[1] Alkema L, Kantorova V, Menozzi C, Biddlecom A. National, regional, and global rates and trends in contraceptive prevalence and unmet need for family planning between 1990 and 2015: a systematic and comprehensive analysis *The Lancet* 2013 May 11;381(9878): 1642-52 doi: 10.1016/So140-9736(12)62204-1.