

# **Title: Using Bayesian Modelling Approaches to Assess Progress Towards Reaching Targets for Family Planning.**

**Author: Niamh Cahill**

## **Abstract:**

Knowledge about past and future trends in contraceptive use (modern and traditional) and the unmet need for family planning is the key to assessing progress towards meeting family planning targets and achieving goals. The family planning estimation model (FPEM) takes survey observations of contraceptive prevalence and unmet need as input and produces estimates and projections of these indicators over time. For every country in the world, FPEM models contraceptive prevalence under the assumption that levels of contraceptive use will begin with a gradual increase, then the increase will subsequently become more rapid before it finally begins to slow down when high levels of prevalence are reached. The parameters that control the trends are estimated with a Bayesian hierarchical model, such that estimates are based on the data available in the country of interest, and also the sub-regional, regional, and global experience. Distortions are added to capture how rates of change in the observed data (i.e., faster/slower rates of change in contraceptive prevalence) deviate from the rates of change indicated by the expected trend. Projections are informed by recent changes that have occurred in contraceptive prevalence (i.e., the difference between the two most recent observations) as well as past experience. Estimates of unmet need for contraception are obtained by modeling the relationship between contraceptive use and unmet need. Similar to the model for contraceptive use, a hierarchical approach is used to estimate parameters. However for unmet need, time dependent distortions are added to capture country-specific changes in the level of the indicator.

Estimates and projections from FPEM are used for making assessments about the progress being made in the focus countries of the Family Planning 2020 (FP2020) initiative. The goal of FP2020 is to increase female users of modern methods of contraception by 120 million between 2012 and 2020 in the world's poorest countries. My recent results indicate that between 2012 and 2017 the number of married or in-union women who use modern methods of contraception increased by 28.8 million (5.74- 52.4) contributing approximately 3/4 to the total additional users over the same period. The FPEM estimates and projections can also be used for assessing progress towards meeting targets for other family planning indicators such as demand satisfied for contraception. This indicator features in the Sustainable development goals for 2030 with a proposed target of 75%. My preliminary results show that, based on the married or in-union women population, 13 of the countries in the FP2020 initiative have a 0% chance of reaching the levels of modern contraceptive use required to achieve this target by 2030.