

# Communicating Uncertainty

A way forward in monitoring progress



**From its inception in 2012, FP2020 has been committed to leading a transformation in the monitoring and evaluation of family planning. FP2020's measurement framework was designed to produce high-quality annual data to inform decision making, with Core Indicators that are comparable across countries. Over the past eight years, FP2020 and its measurement partners have worked to harmonize and align reporting, improve indicators and methodologies, and enhance the infrastructure and capacity to generate and use robust data. In this FP2020 Measurement Learning Series, we explore the successes, challenges, and lessons of FP2020's measurement agenda, and discuss the implications for the FP2030 partnership.**

## MONITORING ANNUAL PROGRESS ON KEY FAMILY PLANNING INDICATORS

To monitor progress on their family planning goals and commitments, countries in the FP2020 partnership annually produce and report estimates for FP2020's 18 Core Indicators, which measure various dimensions of family planning usage and access.<sup>1</sup> One of the challenges countries regularly confront in working with data is related to understanding uncertainty in estimates. While other public health fields (including HIV/AIDS<sup>2</sup> and maternal health<sup>3</sup>) have moved toward reporting and illustrating uncertainty ranges, the practice has not been as common in family planning.

Many family planning data sources publish uncertainty ranges around their estimates. Greater understanding of these uncertainty



**What is FP2030?** Family Planning 2030 (FP2030) (formerly FP2020) is a global partnership to empower women and girls by investing in rights-based family planning. Founded at the London Family Planning Summit in 2012, the platform FP2030 has built is resilient, inclusive, and effective.



**What is Track20?** The Track20 Project, implemented by Avenir Health, monitors progress towards achieving the goals of FP2020. Track20 works directly with governments in participating FP2020 countries to build internal capacity in data collection, analysis, and use to monitor progress annually in family planning and support data-based family planning strategies and plans.

<sup>1</sup> [http://www.track20.org/pages/data\\_analysis/core\\_indicators/overview.php](http://www.track20.org/pages/data_analysis/core_indicators/overview.php)

<sup>2</sup> [https://www.unaids.org/en/dataanalysis/knowyourresponse/HIVdata\\_estimates](https://www.unaids.org/en/dataanalysis/knowyourresponse/HIVdata_estimates)

<sup>3</sup> <https://www.who.int/reproductivehealth/publications/maternal-mortality-2000-2017/en/>

ranges will allow countries to better assess the precision of their data, understand changes in key family planning indicators, and evaluate whether country-level efforts (policies and programs) are resulting in progress toward their goals. Furthermore, incorporating and reporting uncertainty ranges for our own estimates will improve data transparency and lend more credibility to our methods, which have improved since the inception of FP2020. Reporting uncertainty is a step forward for the family planning field as we transition to the FP2030 partnership.

## UNCERTAINTY IN FAMILY PLANNING INDICATORS

Some level of uncertainty exists in all survey-based and modeled estimates. Because we cannot observe data for every single person in a country, we can never know the exact or true value for health indicators. As a result, all estimates have a measure of uncertainty built in, which is usually expressed as an uncertainty interval/range (or as upper and lower bounds) around a point estimate. For modeled estimates (Core Indicators 2-4) the uncertainty interval is defined as a range of values within which there is a 95% probability that the true value lies.

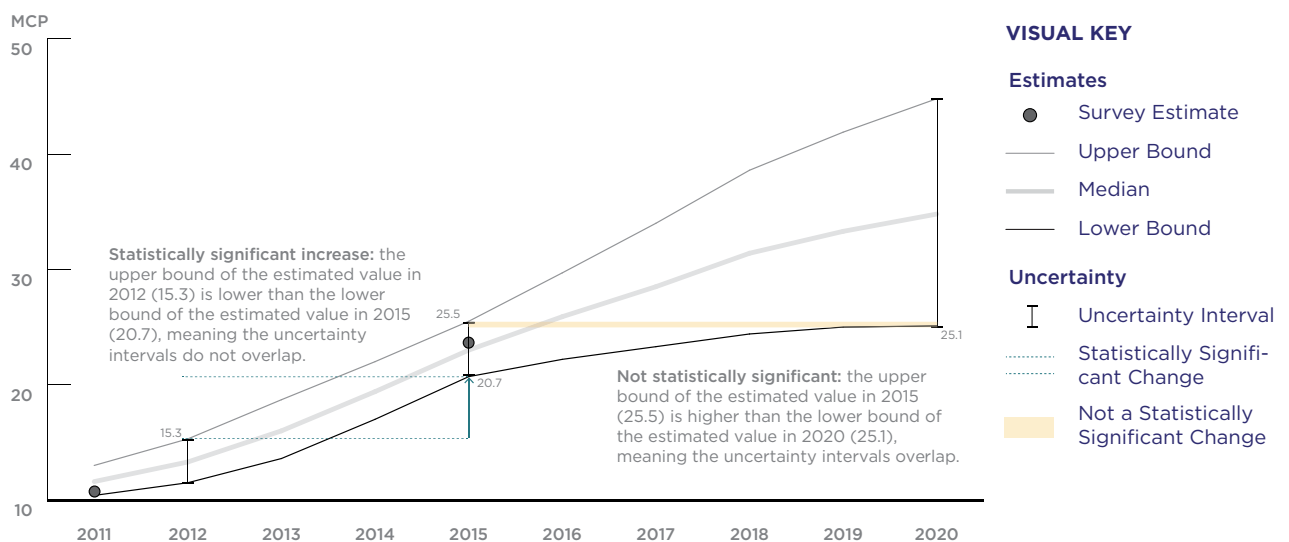
The narrower the uncertainty interval, the more precise the estimate. For example, if a country's estimate for married women modern contraceptive prevalence (MCP)<sup>4</sup> is 12.5% with an uncertainty interval of 11.1%-14.1%, the narrowness of the interval suggests it is a precise estimate.

If we want to assess “statistically significant” versus “non-statistically significant” change, we can compare uncertainty ranges for two years of interest.<sup>5</sup> A statistically significant change means that the change in an estimate (whether an increase or decrease) is likely real and not due to random chance. For example, to determine whether the increase in married women MCP in a country between 2012 and 2020 is statistically significant, we can examine the uncertainty ranges around the point estimates in 2012 and 2020 to see if they overlap. If the uncertainty ranges do not overlap, then the change is likely real—or statistically significant.

## UNCERTAINTY AND STATISTICAL SIGNIFICANCE



The graphic below shows modern contraceptive prevalence (MCP) estimates for married women in a country from 2011 to 2020. There was a statistically significant increase in MCP from 2012 to 2015. Although MCP increased from 2015 to 2020, the change was not statistically significant.



4 Although it is not a Core Indicator, married women MCP is calculated using the same methodology as is used for Core Indicators 2-4.

5. Comparing uncertainty intervals to see if they overlap is a more conservative approach than using hypothesis testing to assess significance.

## WHAT INFLUENCES UNCERTAINTY?

Uncertainty can never be completely eliminated, but it can be reduced. The FP2020 Core Indicators are calculated using both surveys and modeled estimates, each of which is subject to a variety of factors.

TYPE OF ESTIMATE	FACTORS INFLUENCING UNCERTAINTY	IMPLICATIONS
Survey-based	<ul style="list-style-type: none"> <li>Sampling errors</li> <li>Non-sampling errors</li> </ul>	Uncertainty is reduced as: <ul style="list-style-type: none"> <li>Sample size increases</li> <li>Diversity in population sampled increases</li> </ul>
Modeled	<ul style="list-style-type: none"> <li>Number, timing, type of data points</li> <li>Inclusion of service statistics from health management information system (HMIS)</li> <li>Uncertainty in surveys (sampling and non-sampling errors)</li> </ul>	Uncertainty is reduced when there are: <ul style="list-style-type: none"> <li>More surveys (or data points)</li> <li>Recent surveys</li> <li>Surveys with smaller sampling and non-sampling errors</li> <li>Service statistics included (varies based on quality of different types and number of years of data included)</li> </ul>

## LOOKING AHEAD: COMMUNICATING UNCERTAINTY IN FAMILY PLANNING MEASUREMENT

Beginning in 2020, the Performance Monitoring & Evidence (PME) Working Group urged FP2020 to communicate uncertainty in an effort to lay the groundwork to include its reporting in the next partnership. In response, FP2020 and Track20 are working to publish uncertainty ranges for as many indicators as possible in the 2019–2020 Progress Report. [To view uncertainty ranges for a select number of indicators from the 2020 Progress Report, click here.](#) This initial release of uncertainty ranges is meant to build understanding and familiarity among FP2020 partners in anticipation of the FP2030 measurement framework, which will include uncertainty ranges for many indicators. For the next measurement framework, the PME Working Group will recommend continued improvements in the communication of uncertainty, including:

- Showing uncertainty ranges for all indicators when available;
- Continuing to work with Track20 Monitoring and Evaluation Officers/technical leads in countries to socialize the definition and interpretation of uncertainty ranges; and
- Increasing the understanding of uncertainty in indicators among the FP2030 Transition Oversight Group, Regional Hubs, etc., along with an understanding of how uncertainty impacts the measurement of progress.

By publishing and socializing uncertainty ranges as part of its measurement framework, the FP2030 partnership will enable greater visibility into the estimates used to monitor global and country progress toward family planning goals.