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DEMOGRAPHIC EVIDENCE FROM FAMILY PLANNING SERVICE STATISTICS¹

Michelle Weinberger and Robert Magnani*

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* Track20 Project, Avenir Health.

Demographic evidence from family planning service statistics

Think piece prepared for the Expert Group Meeting on the Demographic Evidence Base for post-2015

*Michelle Weinberger and Robert Magnani
Track20 Project, Avenir Health*

Service statistics, defined here as data routinely recorded in connection with family planning (FP) programme service delivery, were largely the sole source of data for tracking FP programme performance prior to 1970 or so. Although varying from country-to-country and programme-to-programme, the “core” of FP service statistics systems generally consists of numbers of:

- FP service visits (sometimes classified by method);
- New FP acceptors (by method);
- Continuing users (resupply visits);
- Current users (new + continuing – dropouts).

Reports on numbers of contraceptive commodities distributed to clients are also common, although such data are often compiled and reported through logistics management information systems (LMIS) versus through FP service statistics systems or health management information systems (HMIS). Historically, family planning service statistics have been collected through paper-based service registers. These registers track client visits (not individual clients) and often services provided, and are usually aggregated by hand at the facility level (for example, total numbers for each category), then reported up for further aggregation.

Among the strengths of FP service statistics are:

- They are collected in conjunction with service delivery, and thus entail no additional data collection costs,
- They are compiled at the level of individual patients (although computerized medical record systems are needed to fully take advantage of this strength),
- They provide high geographic detail, and
- They are available as often as on a monthly basis depending upon reporting requirements and data extraction capabilities.

However, these are more than offset by a number of weaknesses, including:

- They are prone to error (under-reporting, duplicate reporting, deliberate “padding” to reach targets),
- Some key concepts/indicators are difficult (or impossible) to measure well from service statistics (e.g., number of current users—difficult to track discontinuers or method changers at other service delivery points (SDPs), and
- They often entail vague concepts (e.g., “new acceptors”).

Box 1. Track20 Rapid Assessments reveal challenges at country level

As part of Avenir Health's Track20 project, funded by the Bill and Melinda Gates Foundation, a series of rapid assessments have been carried out in countries to provide a baseline overview of the current reporting infrastructure and data flow for family planning data. Some illustrative results are shown below.

In Kenya, a number of challenges were noted including “incomplete reports (miscalculations; lack of expertise in completing the reports/forms); low reporting rates (between 35-40 per cent for the districts but reporting rates at the facilities is even lower); delays due to the huge expectations on reporting for all the services being provided and too many reporting tools”.

In Indonesia, reporting rates are high for public and private clinics (95 per cent or so), but only 80-90 per cent among private midwives and around 70 per cent for private physicians registered with the National Population and Family Planning Board (BKKBN) to receive government contraceptive commodities. However, a recent assessment reveals widespread recording and reporting errors, and operating results reported by the Ministry of Health and the BKKBN are inconsistent.

As a result of these weaknesses, key indicators calculated from FP service statistics (e.g., contraceptive prevalence rate, number of contraceptive users) in most countries tend to be inaccurate, and highly so in some countries. Recognition of this has, since the introduction of the World Fertility Surveys (WFS) in the early 1970s, led to increasingly greater reliance on survey data to track key FP indicators and measure the impact of national FP programmes. The WFS programme was followed by the Contraceptive Prevalence Surveys (CPS) in the early 1980s, and subsequently by the Demographic and Health Surveys (DHS) and the Multiple Indicator Cluster Surveys (MICS). The international FP community has come to rely on large-scale surveys to such an extent that FP service statistics systems in many countries receive relatively little attention and tend not to be relied upon or invested in. Instead, many countries (and international donors) often opt to wait several years for the next DHS or MICS to come along in order to assess FP programme progress.

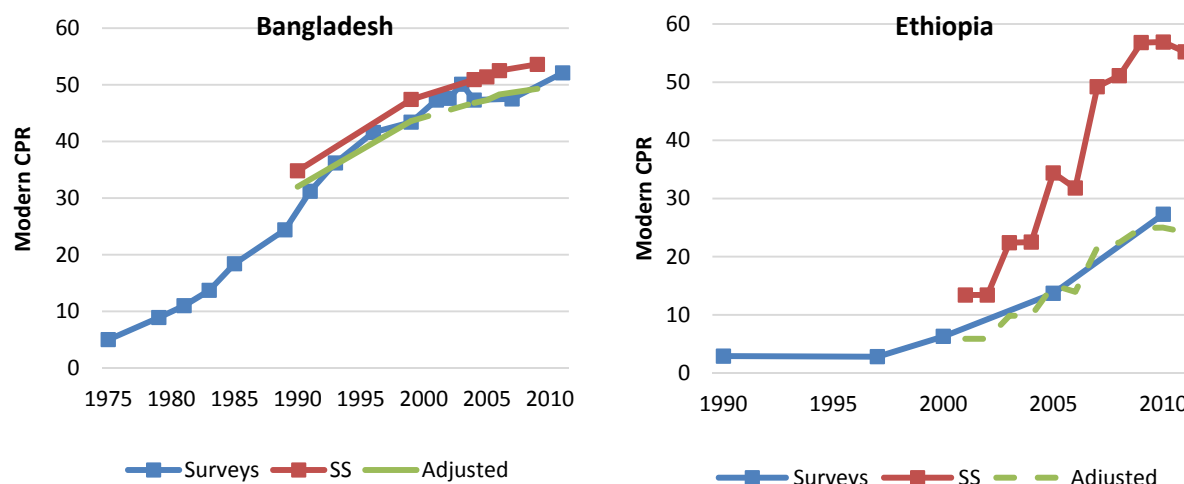
The mandate for more frequent (e.g., annual) tracking of FP programme performance in connection with the FP2020 initiative, coupled with technological advances in electronic data collection, has resulted in renewed attention to service statistics as a potentially key source of data covering the period between large-scale national surveys. With funding from the Bill and Melinda Gates Foundation (BMGF), the Track20 Project (Avenir Health) has embarked on a five-year effort to try to revitalize the use of FP service statistics as a source of data for tracking FP programme performance. In view of the frustrations experienced in connection with FP service statistics systems over the past half century or so, it is a legitimate question as to why the BMGF and Track20 are revisiting the use of FP service statistics. There are several answers to this question.

One answer is that (a) they are the most plausible and affordable source of data for providing frequent measurements subsequent to and leading up to the next large-scale survey and (b) even if the data are flawed, they may still be useful if the flaws/biases are understood and can be compensated for. For example, estimates of mCPR calculated from contraceptive commodities data may overstate or understate mCPR calculated from survey data, but if the bias is more or less constant over time, the service statistics-based estimates provide a valid measure of trend over time that can be meaningfully used to project annual estimates for short intervals (e.g., 1-4 years) since the last DHS or MICS.

The two graphs below illustrate this principle, showing estimates of mCPR calculated from survey data (blue data points and trend line) and service statistics (red data points and trend line) from Bangladesh and Ethiopia. The “adjusted” trend line (in green) is produced by calculating the ratio between the mCPR estimated from survey data versus that from service statistics in years in which both types of data are available and applying that ratio to estimates from service statistics in subsequent years. The utility of the approach is judged by how closely the green trend line tracks the red trend line

calculated from successive DHS surveys and, ultimately, how well it predicts subsequent survey estimates.

Figures 1 and 2. Illustrative example comparing mCPR from surveys to estimates from service statistics



The basic principle is also relevant in more sophisticated applications. For example, the Family Planning Estimation Tool (FPET), developed under the Track20 Project, adapts the United Nations Population Division’s model for projecting contraceptive prevalence to allow for service statistics to inform country estimates of contraceptive prevalence in years in which survey data are unavailable.¹ The Family Planning Estimation Tool is a Bayesian, hierarchical statistical model that fits curves to historical data on key FP indicators. The model fits a logistic growth curve to determine the long-term trend and adds a times series model with autocorrelation to capture the deviations around the long-term trend. The long term trend is characterized by an asymptote (where the trend levels off), a parameter for pace (the rate of increase) and a timing parameter that are dependent on both national survey data and regional patterns.

The FPET model is fit to survey data on contraceptive use for all methods and then a second trend splits total contraceptive use into modern and traditional methods. The model also fits trends in unmet need and total demand for family planning. The model not only determines the most likely trend through the data, but also estimates the uncertainty range around the trend so that each estimate contains a median estimate as well as a 95 per cent confidence range or limit. The figures below illustrate how service statistics can both enable evidence-based projections into the near-term future and improve the statistical fit of the model to the observed data. Note that the inclusion of service statistics (right graph) narrows the confidence intervals for mCPR estimates after the last DHS survey.

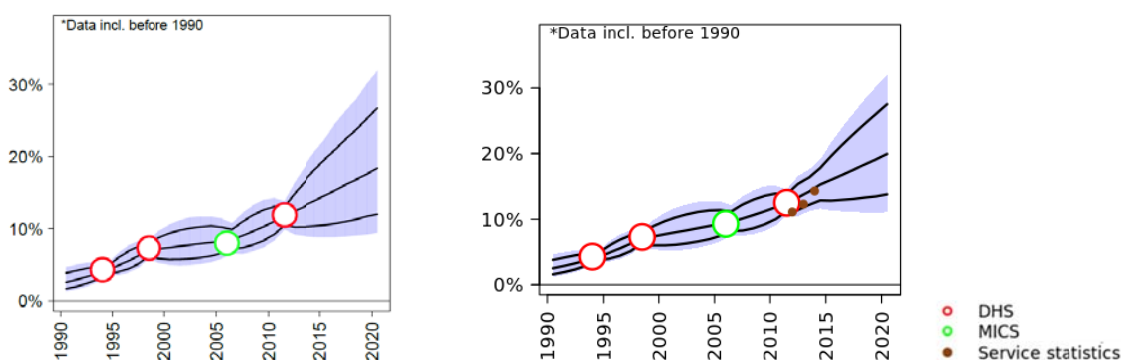
Another consideration when looking at family planning service statistics is capturing data from the private sector. In many countries, the private sector plays a significant role in the provision of FP services and commodities; in some cases this data is reports into the Government system, however, the coverage of this reporting is often low and variable. Several types of analyses can contribute to this more in-depth understanding and the appropriate adjustment of public sector data. For example, a recent analysis² of

¹ Alkema, L. and others. “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* vol. 11, No. 381 (9878) May 2013: 1642-52 doi: 10.1016/S0140-9736(12)62204-1.

² Analysis being conducted by Track20, analysis is still underway but will be made publically available once report is complete.

service statistics and commodity sales data pooled from large private sector providers shows that in many countries, contraceptive prevalence estimates from private sector provider data matches closely to the share of mCPR from the private sector recorded by DHS surveys. Similar to public sector data, the quality and robustness varies country by country.

Figures 3 and 4. FPET modelled mCPR for Côte d'Ivoire, with and without service statistics



Aside from techniques that can adjust for poor quality data, another reason for revisiting FP service statistics is that advances in information technology (IT) offer the potential to fundamentally change the way that service statistics are recorded, processed and reported versus what has proven to be possible when such data are processed manually or with less powerful tools and systems. By entering data into computerized databases as close to the point of service delivery as possible (including in client record systems at SDPs and among community health/FP workers using mobile devices), multiple stages of consolidation as data pass from SDPs to the national level are avoided, as opportunities to “pad” the data in order to reach targets. Currently available IT systems and software also offer opportunities to significantly increase the speed at which data are moved through information systems and to provide rapid feedback in formats that are understandable by persons with limited data interpretation skills. The DHIS2 system (District Health Information System, <https://www.dhis2.org/>), in particular, is currently being rolled out in many countries in order to digitize government HMIS systems. However, in some cases Family Planning indicators are not being prioritized in these rollouts, and therefore, FP service statistics have yet to realize the full benefits of this electronic data collection system.

In broader perspective, while there are large up-front costs to investing in upgraded family planning service statistics systems in countries, the benefits are wide, and, will last for many years into the future. Family planning is not the only health program area in which there is ongoing discussion as to the need to supplement infrequent, large-scale surveys with more frequently-collected data. In the international HIV and AIDS community, for example, there is an ongoing dialogue as to the need to reduce reliance on periodic, large-scale bio-behavioral surveys in lieu of greater reliance on surveillance and routine program data.

Having more robust service statistics is not only useful for improving national level estimates of key FP indicators, but also for monitoring and improving programs at the sub-national level. Having accurate and up to date information at a district, or even lower geography can lead to vast improvements in forecasting commodity needs, planning for the correct placement of staff, and monitoring for any unexpected changes or discrepancies in service delivery. This is indeed an important benefit as many countries seek to decentralize their systems of government.

While many limitations still exist in terms of using family planning service statistics for both on-the-ground programme monitoring and to inform national modelled estimates, progress is being made. Further investments to improve in-country data collection systems are needed to ensure that accurate and robust data is available. In addition, there is a need to continue to evolve modelling work to better leverage service statistics from both the public and private sectors. This work is going through Avenir Health's Track20 project. As this area of work grows, the hope is that there will be an increasing demand for further investments in service statistics. As the usefulness of this data is seen at the country level, there will be increased demand for data, and, for increased accuracy to ensure decisions are being made on robust information. While population based surveys will likely continue to play an important role in monitoring FP programmes, the prominence of routine data is likely to continue to increase in the coming years.