HANDBOOK

Handbook for Research on the Family Planning Market

Volume 1: **Using Data to Inform a Total Market Approach to Family Planning**

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Evidence

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TABLES

ABBREVIATIONS

API	amenities and possessions index
CLMIS	computerized logistics management information system
CPR	contraceptive prevalence rate
CWI	comparative wealth index
CYP	couple years of protection
DCDM	De Chazal Du Mée
DHS	Demographic and Health Survey
FP	family planning
IRB	institutional review board
IUD	intrauterine device
IWI	international wealth index
LAM	lactational amenorrhea method
LQAS	lot quality assurance sampling
MICS	multiple indicator cluster surveys
NGO	nongovernmental organization
OC	oral contraceptives
PSI	Population Services International
RHSC	Reproductive Health Supplies Coalition
SFH	Society for Family Health
TMA	total market approach
TMASCT	total market approach stewardship capacity tool
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UoN	universe of need
USAID	United States Agency for International Development

1. INTRODUCTION

From a public health perspective, the ultimate objective of the total market approach (TMA) for family planning is to achieve increased use of family planning products and services by means of a fully rational and efficiently segmented market, in which key target groups have access to a full range of family planning products and services (USAID, s.d.). In high contraceptive prevalence settings, TMA can also be used to reduce dependence on public funding. TMA requires a coordinated approach in family planning suppliers and donors from the three sectors – the public, nongovernmental organization (NGO), and commercial sectors – work together in a manner that uses their comparative advantage to grow the total market (MEASURE Evaluation & Addis Continental Institute of Public Health, 2014; Pollard, 2007). Because coordination between the sectors is an important element of TMA, it is more likely to succeed when there is an entity that takes responsibility for stewarding this coordination. Ideally, the government recognizes that TMA has the potential to solve important problems pertaining to the family planning market and stewards the coordination between the sectors (Brady, Wedeen, Hutchings, & Jerry, 2016).

Brady et al. (2016) identified four major phases that are typically involved in the development of a national TMA plan:

- Landscape assessment
- Indepth analysis of the family planning market
- Development of a TMA plan for family planning
- Implementation and monitoring

Initially, a TMA landscaping exercise should be conducted to assess the levels of interest on the part of the government, donors, and key stakeholders from the other sectors to pursue TMA programming. The steps involved in such a landscape assessment are described in detail in Brady et al. (2016). Assuming there is sufficient interest, an in-depth analysis of the family planning market is warranted. This document reviews the issues involved in in-depth analyses of the family planning market that can be used to inform the development of a TMA.

Ideally, the government and its partners will make TMA decisions that are based on a thorough analysis of data about various aspects of the family planning market, which may include consumer use and preferences, their willingness and ability to pay for products and services, as well as data about trends in the family planning market itself. This in-depth analysis should build on the desk review of the literature and the stakeholder analysis that was conducted during the TMA landscaping exercise. In theory, the in-depth analysis of the family planning market could start during the TMA landscaping process. However, an in-depth market analysis typically requires obtaining additional data and/or conducting new data analyses, which can be time-consuming and costly. Given the time and resources required, it is advisable to complete the landscaping exercise to ensure that the main stakeholders are willing to move forward and pursue the implementation of TMA before investing resources in an in-depth analysis of the market.

MARKET SEGMENTATION ANALYSIS FOR FAMILY PLANNING

Market segmentation analysis refers to the process of analyzing quantitative and qualitative data to divide the universe of users and potential users of a product or service into more homogeneous sub-groups that can be reached through distinct service delivery and marketing strategies. Market segmentation analysis originated in the commercial sector. In the 1950s commercial companies started using segmentation analyses to identify those segments of the population that are most likely to purchase their products and services and to gather information needed to tailor the products and services to those specific groups (Chapman, Collumbien, & Karlyn, 2006; Fripp, 2012; Smith, 1956; Yankelovich & Meer, 2006). To identify and prioritize potential customers, companies assess the size of the market in which they can compete, how rapidly the market is growing, and which segments of the market are most appealing to increase revenue. Users and potential users are then split into sub-groups (market segments) that have similar characteristics or product needs. The segmentation can be based on socio-demographic and economic characteristics, psychographics (interests, attitudes, and opinions), and lifestyles. Information about each segment (e.g., their willingness to pay a higher price, their preference for specific distribution channels, and their preference for specific product or service characteristics) is then used to more effectively reach that group. Knowledge about segments that are potentially interested using in the product or services informs decisions about new markets that should be pursued. Market segmentation analysis may also be able to identify whether the supply of free and/or partially subsidized supplies are undermining market development.

In the family planning and reproductive health arena, market segmentation is also widely recognized and used as an invaluable tool to obtain a better knowledge about existing clients and potential future clients, and to enable more effective targeting of public resources to low-income population segments (R. Berg, 2000; Fahnestock, 2008; Market Development Approaches Working Group, 2009; MEASURE Evaluation & Addis Continental Institute of Public Health, 2014). For example, the USAID-funded DELIVER project conducted extensive market segmentation studies in several countries (e.g., Chawla, Sarley, Scribner, Berg, & Balal, 2003; Karim, Sarley, & Hudgins, 2007; Task Order 1 USAID DELIVER Project, 2010). These studies typically provide information on:

- the socio-demographic and economic characteristics of different market segments (e.g. different wealth levels),
- the types of sources where products and services have been obtained (public sector, nongovernmental organization (NGO), commercial),
- trends and differentials in contraceptive prevalence, method mix, reasons for non-use of family planning, unmet need and total demand for family planning, intention to use family planning in the future, and fertility rates. In some cases, they also provide estimates of the total number of users of family planning products and services.

Ideally, the government and its partners will make TMA decisions that are based on a thorough analysis of data about various aspects of the family planning market, which may include consumer use and preferences, their willingness and ability to pay for products and services, as well as on data about trends in the family planning market itself.

USING DATA TO INFORM A TMA PLAN

In an efficiently segmented market, free and subsidized products and services will be used almost exclusively by those unable to obtain commercial products. To achieve this, it is important that the specific role of each sector (public, nongovernmental organization, and commercial) has been defined with the objective of maximizing equity

and efficiency. It is essential that TMA strategies are evidence-based, which requires up-to-date data on the market size and growth and on the relevant market segments (MEASURE Evaluation & Addis Continental Institute of Public Health, 2014; USAID Contraceptive Security Team, s.d.).

An in-depth analysis of the family planning market for a TMA requires estimating the market size and its growth potential, identifying the segments that are being served/underserved by family planning providers, as well as verifying that free and subsidized products and services are being used by those who are unable to obtain commercial products, either because they cannot afford them or because they do not have access to sources that provide commercial products. This information can then be used to help inform the pricing and marketing strategy for family planning products and services, to expand access among underserved groups, and to design targeting strategies that avoid overlapping efforts and/or competition between the public, nongovernmental organization (NGO) and commercial sectors. The main research topics to be addressed to inform a total market approach should provide information about key characteristics of the market, such as market size, market equity, market accessibility, and market sustainability. Research should also examine health impact and market equity (Barnes, Vail, & Crosby, 2012; Population Services International, 2012b). Specific research topics may include the following:

Market size and growth: What is the size of the market and how much growth potential is there? TMA is more likely to succeed when the market is sufficiently large to create a potential for profit for the commercial sector (Barnes et al., 2012). To estimate the size of the market, one can examine data on contraceptive sales, the contraceptive prevalence rate and number of users, the contraceptive method mix, the total need for family planning (universe of need), the unmet need for family planning, and how have these changed over time. Insights about future market potential can be obtained from examining the unmet need for family planning products and services, and data about the prevalence of non-users who report that they intend to use family planning in the future.

- Market accessibility: Is the family planning market becoming more accessible? Data about knowledge of different sources that provide family planning, the number of family planning outlets, willingness to pay for contraceptive commodities and services, and the frequency of contraceptive commodity stockouts provide valuable information about trends and differentials in the accessibility of family planning.
- Market sustainability: Is the market gradually becoming less dependent on subsidies? What is the market share of the public, nongovernmental organization, and commercial sectors? Information on the market share of the public, nongovernmental organization, and commercial sectors can be estimated from sales data, survey data on use of specific brands, and on the type of source where users obtain family planning products.
- Health impact: To what extent is the market currently meeting the need for family planning, and is the market's ability to meet this need increasing? Trends in the unmet need for family planning can shed light on the health impact of the market.
- Market equity: Which population segments are disadvantaged in terms of access to family planning, method choice, ability to pay for family planning, and use of family planning? Is the market reaching an increased share of these at-risk populations? From which sources do different population sub-groups obtain family planning products and services? Which segments of the population would be unable to obtain unsubsidized family planning products and services? Disaggregating data by socioeconomic status, rural/urban residence, geographic location, and other factors can show to what extent the poor and other vulnerable groups are benefiting from the market trends.

Market analyses can also provide information about the efficiency of the current market segmentation across the public, nongovernmental organization and commercial sectors. For example, the analysis can reveal whether there are any groups for whom the availability of free and subsidized products and services is interfering with the development of commercial markets (e.g., well-to-do consumers who are using free or subsidized products). If so, the data can help clarify which population subgroups should be targeted by subsidized family planning products and services to 1) increase access to family planning among vulnerable groups, and 2) reduce competition between the three sectors (public, nongovernmental, and commercial).

One of the main challenges associated with research to inform, as well as evaluate, a total market approach is that the data required to do an in-depth market analysis are not always available. The available data are often incomplete or outdated, and not all of the available data are reliable. In addition, some data may be difficult if not impossible to obtain because they are not in the public domain (Barnes et al., 2012). As a result, there has been a lack of consistency in indicators used in TMA market research analyses. Furthermore, because TMA is a relatively new approach, there has been a lack of clear and consistent guidance on how to perform the data analyses of the family planning market potential that are needed to prepare for a TMA. This document builds on earlier documentation on the TMA process (e.g., Barnes et al., 2012; MEASURE Evaluation & Addis Continental Institute of Public Health, 2014), by providing more in-depth information about the data collection and analyses needed for TMA.

ABOUT THIS DOCUMENT

USAID envisions that by 2020 all the priority countries they support will have "the capacities to design, implement, and sustain high-performing family planning programs that include all three sectors for information, product and service delivery in a rational, efficient, and equitable way" (USAID, s.d.). This document will contribute to that goal by enhancing the in-country capacity to conduct market analyses to inform the design of TMA program. The specific aims are to advise TMA planners about the data that should be collected to inform the TMA plan, to promote the standardization of indicators, to provide general guidance for basic data analyses. The document covers the following content:

- Overview of recommended key indicators for market research for family planning TMA.
- Detailed explanations of the data requirements and calculation for each of the key indicators.
- Key data sources that provide the information needed to calculate the indicators. This section covers secondary data sources (such as the Demographic and Health Surveys, sales statistics, etc.), as well as primary data that may need to be collected or commissioned (e.g., willingness to pay data).
- Analysis of patterns and trends in key TMA indicators. This section puts special emphasis on the disaggregation of results to assess market equity and to illustrate the situation of the poor and other vulnerable populations.
- Assessing the capacity of the government to steward the TMA process.
- Approaches for disseminating the findings from TMA market research to different groups of stakeholders, such as researchers and evaluators, TMA practitioners, and policy-makers.

Since this document focuses on data analyses to inform TMA planning, it is likely to be most useful to local researchers who will be responsible for collecting and analyzing the data that will be used to inform a subsequent TMA plan, and for communicating the findings of the analysis to various TMA stakeholders. The secondary audience consists of the various stakeholders, including program implementers, policy-makers, government officials, donors, and other researchers.

Highly technical content that most likely is only of interest to researchers has been included in boxes (e.g., there is a box that explains how to calculate the International Wealth Index). Various tools to facilitate data collection and analysis (such as model questionnaires, research protocols and consents form templates for Institutional Review Board submissions, software code for calculating various wealth indicators, etc.) have been included in appendix in a separate volume. These tools can be adapted as needed.

2. OVERVIEW OF KEY TMA INDICATORS

An increasing number of TMA documents report on indicators that are being used to inform the development of TMA plans and to monitor their progress. However, the specific indicators that have been used tend to vary across documents. Only a few documents have made explicit recommendations for TMA indicators to be tracked (Barnes et al., 2012; Gardiner, Schwanenflugel, & Grace, 2006; Pallin & Meekers, 2014; Population Services International, 2012a), and as yet there is no compendium that standardizes the measurement of TMA indicators. The Market Development Approaches Working Group of the Reproductive Health Supplies Coalition (Barnes et al., 2012) identified four broad characteristics of the market that should be tracked:

- Market size
- Market accessibility
- Market sustainability
- Market equity

Table 1 shows a selection of recommended key indicators for each of these four broad categories. Countries that are engaging in TMA planning should aim to track and analyze as many of these key indicators as feasible, given the available resources. To minimize the measurement burden, priority has been given to indicators that can be measured with existing standardized surveys. Whenever possible, we listed standardized indicators that have already been recommended in indicator compendia for monitoring progress in family planning and reproductive health programs (Family Planning 2020; MEASURE Evaluation, 2015; World Health Organization, 2015a). Since many of the recommended indicators can be calculated using existing data, it is important to conduct a rapid mapping of all existing data sources to determine which data are missing (the steps involved in data source mapping are outlined in Appendix). For indicators that are likely to require primary data collection, priority was given to indicators that can be obtained at a reasonable frequency and cost. Details about the data needs and measurement of specific indicators are described in detail later in the report (see section "Data Requirements and Measurement Issues for Key TMA Indicators).

Four broad characteristics of the family planning market should be tracked: market size, market accessibility, market sustainability, and market equity. Countries that are engaging in TMA planning should aim to track and analyze as many of the recommended key indicators as feasible, given the available resources.

Tools for determining data needs

Tool 1: Data source mapping

MARKET SIZE

The total market size for family planning refers to both the volume of family planning products or services as well as the number of consumers in the market (Barnes et al., 2012). A good understanding of market size is essential for making decisions about the types and volume of family planning products that are needed. It is

also necessary for understanding the extent to which the current system meets the demand for family planning (Pallin, Meekers, Longfield, & Lupu, 2013; Pallin, Meekers, Lupu, & Longfield, 2013b, 2013d; Population Services International, 2012a). Table 1 shows several key indicators that reflect the total market size.

- Universe of need for family planning

The universe of need for family planning refers to the total number of products and services that need to be distributed to meet the total need for family planning. Universe of need is calculated separately for each method, factoring in current demand for family planning, unmet need, and method preference (Population Services International, 2013).

- Market volume

Market volume refers to the number of products and services currently on the market. Market volume can be compared to universe of need to identify opportunities for market growth.

- Use of family planning products and services

The level of use of specific family planning products and services can be a good indicator of both method preference and demand. The contraceptive method mix (or the percentage distribution of contraceptive users by method) is a standard indicator that serves as a proxy for the variety of methods that the population has access to. The finding that some methods are strongly favored may indicate either user preferences, user perceptions about what is considered affordable or accessible, or provider biases toward such methods (MEASURE Evaluation, 2015). The contraceptive prevalence rate (CPR) is the standard family planning indicator for measuring the level of use, which is a proxy for the total number of users (Family Planning 2020; MEASURE Evaluation, 2015; World Health Organization, 2015a). When disaggregated, the CPR can reveal areas of potential market growth and profit.

- The unmet need for family planning

The unmet need for family planning serves as a proxy for the growth potential of the market, while distinguishing between the unmet need for spacing and limiting the number of children sheds light on relative importance of reversible and permanent methods.

MARKET ACCESSIBILITY

Access to family planning products and services can depend on several factors, including knowledge of a source, geographic and financial access, as well as the extent to which products and services are provided without interruptions.

- Knowledge of a family planning source

Increasing product use and expanding the market requires that all potential future users have the ability to access family planning products and services. Knowledge of a family planning source is a prerequisite for access.

- Access to family planning products and services

Information about whether current users use mostly public or private supply sources also sheds light on access. For example, public sector facilities may offer mostly short-term methods, while private sector facilities may offer both short-term and long-term methods. Because the supply sources are likely to vary by method, it is helpful to examine current supply sources separately for each type of method. Several additional indicators can be calculated

that provide more information about the reasons why potential users lack access. Some potential users may lack geographic access or while others do not have financial access. It would be informative to know to what extent geographic and financial access affect the use of specific family planning method (e.g., to know whether injectable use is hampered more by geographic access or by financial access). Unfortunately, calculating such indicators for individual family planning methods is usually not feasible, as many people have not thought about access to each specific family planning method. However, national surveys have successfully collected data on the reasons why people are not using family planning. The percentage of non-users who report that they are not using family planning because of the cost of the method is a good proxy for financial access, while the percentage who report that they are not using because they have a lack of access or the source is too far is a good proxy for geographic access. Standardized questionnaires such as the DHS often also enquire how long it would take respondents to get to a family planning source. The percentage of respondents who report living within a fixed time limit (e.g., within two hours) from a family planning source is another indicator of geographic access. Having limited geographic access to family planning can also increase the financial burden.

Although rarely included in standardized questionnaires such as the DHS and MICS surveys, data on willingness to pay also provide helpful insights about financial access. Ideally, such questions would be included in the model questionnaires of future standardized surveys. Meanwhile, it is important to include willingness to pay questions in ad hoc surveys that are being planned. It is worth noting that although women may have both geographic and financial access to family planning, this does not necessarily imply that they have access to the method that they prefer. Hence, it may be helpful to calculate the percentage of non-users who report that they are not using family planning because their preferred method is not available. It is noted that there may be other impediments that prevent people from using their preferred method, even if the method were available and affordable (Castle & Askew, 2015).

- Product stockouts and gaps in family planning services

Access to family planning can also be hampered by product stockouts or gaps in services (e.g. due to a lack of trained personnel) at retail outlets, clinics, or other places where people access family planning. Such problems can be measured by simple indicators such as the percentage of delivery points that reported a stockout of each specific family planning product in the past month, and the percentage of providers who reported gaps in the availability of specific family planning services. Data on stockouts of family planning products and gaps in service availability (e.g., condoms, OCs, etc.) can be gathered from a survey of retail outlets and service providers.

MARKET SUSTAINABILITY

Because TMA seeks to transform the market into a self-sustaining entity, indicators of market sustainability are important for any TMA analysis. Three groups of indicators are particularly relevant:

- Market value

Market value is an important indicator because it reflects willingness to pay for family planning products, and may stimulate commercial interest. Market value is measured as the total value of all products or services sold or distributed to consumers, which is calculated using the average consumer price and product volume. Because the aim is to assess the commercial potential, free products and services do not contribute to market value. (Population Services International, 2012a).[1]

1 In theory it is possible to estimate the value of products and services that are provided free of charge. However, such estimates would not be a useful indicator of the market potential, given that it is unknown how many users would be willing to pay for products or how much they would be willling to pay. Moreover, doing so would create an consistency in calculation because value of social marketing products is also calculated using their retail price, rather than their actual value.

- Market share held by the market leader

The extent to which the market is dominated by one brand or player can be assessed by a variety of indicators, including the number of unsubsidized brands available on the market and the market share of the market leader. These measures can indicate whether there is healthy market competition.

- Market subsidies

The level of subsidization of family planning products is important to gauge sustainability. The market share of unsubsidized (commercial) brands and the level of use of unsubsidized brands provides information on the subsidy level for specific products and services. To understand the level of subsidization of family planning products (e.g., oral contraceptives, condoms), household surveys such as the DHS can be used to calculate the percentage of users who report using an unsubsidized brand. Such surveys also allow calculation of the percentage of users who use fully subsidized contraceptives, which are typically unbranded, as well as the percentage of users who use a partially subsidized (socially marketed) brand. For users of family planning services, such as IUD insertion, household surveys often ask about the type of source where the service was performed. This information can be used to calculate the percentage of service users (e.g. IUD users), who reported using a public sector and non-public sector source. However, data on the source where the service was performed does not permit distinguishing between commercial family planning services and socially marketed services.

MARKET EQUITY

Improving market equity in family planning access and use is a core part of TMA. Market equity typically refers to differences in access and use by socio-economic status. Understanding market equity requires disaggregating market indicators by socioeconomic status. Most commonly, socioeconomic status is measured through a range of proxy indicators, such as wealth quintiles, rural-urban residence, etc. Hence, equity can be examined for all population-based indicators described above. For example, equity in use of family planning methods can be examined by disaggregating the contraceptive prevalence rate by various stratification variables, such as wealth level or rural/urban residence. Because analyzing market equity is done by disaggregating basic market indicators, there is no need to calculate any new indicators of market equity.[2] The disaggregation of the market indicator by wealth level (or other factors) is the equivalent of creating a separate indicator for each wealth level. By comparing the results for different socioeconomic segments (e.g. wealth levels or rural/urban residence), it is possible to assess whether access to family planning methods is equitable, and to identify subgroups where family planning services should be targeted.

Disaggregation of market indicators can also be used to assess to what extent vulnerable groups of interest (e.g. youth) differ from other population groups in terms of access to and use of family planning.

2 Occasionally, differences in family planning access by wealth quintile are summarized in a single indicator. For example, Drake, Vail, and Stewart (2014) report the percentage difference in the modern contraceptive prevalence rate between the highest and lowest wealth quintile. Similarly, the difference could be summarized using the ratio of the highest wealth quintile over the lowest quintile.

TABLE 1: SUMMARY OF KEY TMA INDICATORS FOR FAMILY PLANNING

Topic	Indicators	Data Source
Market Size Indicators		
Universe of need for family planning	The total number of each type of family planning products and services needed to meet the demand for family planning	Various
Market volume	Total number of each type of family planning products or services sold, distributed, or provided across all sectors	Program data, service statistics
Use of family planning products and services	Percentage of sexually active women currently using each type of family planning method	Population-based survey
	Percentage of sexually active women who currently use any method of contraception (Contraceptive prevalence rate)	Population-based survey
	Percentage distribution of contraceptive users by family planning method (Contraceptive method mix)	Population-based survey
Unmet need for family planning	Percentage of sexually active women with an unmet need for family planning	Population-based survey
	Percentage of sexually active women with an unmet need for birth spacing	Population-based survey
	Percentage of sexually active women with an unmet need for family limitation	Population-based survey
Market Accessibility Indicators		
Knowledge of source	Percentage of women of reproductive age who know at least one family planning source	Population-based survey
Access	Percentage of current users who last obtained their method from a public sector source	Population-based survey
	Percentage of current users who last obtained their method from a private provider	Population-based survey
	Percentage of non-users who report lack of access as the reason for not using family planning	Population-based survey
	Percentage of non-users who report cost as the reason for not using family planning	Population-based survey
	Percentage of users who would be willing to pay US $x.x for their current method	Population-based survey
	Percentage of women of reproductive age who report living within two hours of the closest family planning source	Population-based survey
	Percentage of non-users who report unavailability of their preferred family planning method as the reason for not using family planning	Population-based survey

Source: Partially adapted from Barnes et al. (2012); Gardiner et al. (2006); Pallin and Meekers (2014); Population Services International (2012a).

Topic	Indicators	Data Source
Product stockouts/gaps in family planning services	Percentage of delivery points that report a stockout of each family planning method in the past month	Retail audit/survey
	Percentage of providers reporting gaps in availability of each family planning service in the past month	Retail audit/survey
Market Sustainability Indicators		
Market value	Total value of all family planning products and services sold	Program data, service statistics
Market leader's market share	Percentage of total products or services sold, distributed, or provided by the market leader	Program data, service statistics
Market subsidies	Total number of unsubsidized brands available on the market for each family planning product	Retail audit/survey, key informants
	Percentage of the total market volume accounted for by unsubsidized brands for each family planning product	Program data, service statistics
	Percentage of family planning product users who report using an unsubsidized brand	Population-based survey
	Percentage of family planning service users who report using a public sector source	Population-based survey
Market Equity Indicators		
Use of FP products/ services by wealth level and other indicators of socio-economic status	Percentage of population in each wealth level who use a family planning method	Population-based survey
	Percentage of rural residents and percentage of urban residents who use a family planning method	Population-based survey

Source: Partially adapted from Barnes et al. (2012); Gardiner et al. (2006); Pallin and Meekers (2014); Population Services International (2012a).

Note: Market equity is studied by disaggregating market indicators by socioeconomic status. All population-based indicators in Table 1 can be disaggregated by wealth level and other indicators of socioeconomic status or vulnerability. The examples shown here are illustrative.

3. DATA REQUIREMENTS AND MEASUREMENT ISSUES FOR KEY TMA INDICATORS

As discussed in the previous section, a thorough analysis of the family planning market will require information on a wide range of indicators. This section provides more detail about the data requirements for each of the recommended indicators and addresses specific data issues and limitations that need to be taken into account. Further details about the actual calculation of the indicators are provided in the Appendix.

Tools for indicator measurement

Tool 15: Indicator reference sheets

MARKET SIZE

- Universe of need for family planning

The universe of need (UoN) for family planning is an indicator that attempts to estimate the total number of family planning products that would be needed in a calendar year to prevent all unplanned pregnancies, which requires estimating the number of women of reproductive age "at risk" for an unplanned pregnancy (Population Services International, 2011, 2013). UoN for a given method is calculated using population estimates of the number of women aged 15-49, the percentage of women currently using a family planning method or who have an unmet need for family planning, modern method mix, and a conversion factor indicating the number of product units that are needed to provide a couple with one year of protection from unplanned pregnancy (Bertrand, Magnani, & Rutenberg, 1994; Population Services International, 2013). The resulting UoN figure reflects the maximum number of family planning products or services needed in a given year.

UoN for family planning can be used to estimate the size of the potential market for products or services. UoN calculations can be compared to market volume calculations to assess the extent to which the market is meeting current needs. Intuitively, this makes UoN a very appealing indicator. Since UoN estimates are often compared with market volume, it is essential that both measures are calculated using the same conversion factors.

It is noted that condoms are a special case because they can also be used for the prevention of HIV and other sexually transmitted infections. Thus, the number of condoms needed to prevent unplanned pregnancies is only part of the potential total market for condoms. Estimating the total UoN for condoms for HIV prevention requires a separate complex calculation that includes estimates for coital frequency, the percentage of sex workers and their clients, the percentage of men who have sex with men, and the average number of sexual partners. In many countries, the UoN for condoms for HIV is much higher than UoN for condoms for family planning (Pallin, Meekers, et al., 2013b; Pallin, Meekers, Lupu, & Longfield, 2013c; Pallin, Meekers, et al., 2013d). Because it is unknown how many people use condoms for dual protection (both family planning and HIV prevention), it is difficult to estimate the total UoN. The total UoN for condoms for both family planning and HIV prevention is likely somewhere between the UoN for family planning only and the sum of the UoN for family planning and HIV prevention.

The UoN indicator has a number of important limitations. For example, meeting the UoN does not necessarily imply that everyone who needs a family planning product or service has access to it or is using it. For this reason, increased distribution may not be the appropriate response to an unmet UoN. Determining an appropriate response requires that the specific reasons for the unmet need are identified and addressed.

The UoN is also sensitive to changes in the demand for specific family planning methods. Because the demand or preference for a specific family planning method may change quickly, the UoN for a specific product may decrease or increase rapidly. It is noted that the calculation of UoN involves a large number of sub-indicators, including some that are based on population-based surveys. Because population-based surveys are typically not conducted annually, it is not uncommon for one or more of those indicators used in the UoN calculation to be fairly old. Consequently, UoN calculations may not reflect the current situation. In addition, there have been some concerns about the validity of CYP (couple years of protection) conversion factors and the assumptions on which they are based, particularly for long-term methods (Bertrand et al., 1994; MEASURE Evaluation, 2015). For example, it is assumed that sterilization provides 13 years of couple protection (i.e. 0.08 sterilizations are needed to provide one couple year of protection). However, this number depends on the age at sterilization, which varies by region.

- Market volume

Market volume is defined as the total number of a product or service distributed or sold in a given year. Market volume is an indicator of market size and can be used to assess the potential of the market (see for example Brown, Brady, LeMay, & Options Consultancy Services, 2013; Pallin, Meekers, et al., 2013b, 2013c, 2013d; Population Services International, 2010). Disaggregation of market volume by region, when possible, can help to identify potential opportunities for market growth. When market volume is analyzed over time, it can provide a picture of market growth. It can also be compared to the universe of need to assess the extent to which the current market meets the current demand. Market volume is also an important indicator because it is needed to calculate other indicators, such as market value.

Calculating the total market volume for a specific family planning product requires obtaining data for that product from each of the three distribution sectors: the public sector, the nongovernmental organization (NGO) sector, and commercial sector. For each sector, the total volume sold or distributed is needed. This implies that the total must include the number of products distributed free of cost, the number sold for profit, and the number sold at a subsidized cost or at cost recovery levels. The total market volume equals the sum of these volumes.

The governments of most countries report annual data on the number of family planning products distributed. In many countries, the government (or public sector) distributes free family planning products to the general population (see for example, Hanson, Kumaranayake, & Thomas, 2001; TMI Madagascar, 2010; Vail, 2012). However, a growing number of countries are trying to target public subsidies to those population segments who have little or no ability to pay, which may involve some clients being asked to contribute a share of the cost (USAID Contraceptive Security Team, s.d.). In such cases it is important that the government data used include the number of products distributed for free and – if applicable – any the government sold to consumers.

Distribution and sales data from large social marketing organizations and other health-focused nongovernmental organizations are often relatively easy to obtain. However, it important that these break out the number of products or services that were distributed at no cost and the number of products or services that were sold. Although many social marketing organizations focus on selling subsidized products, they may also hand out free samples. In some cases social marketing organizations assist the government with the distribution of free public sector products. In such case, there is a risk that the number of products distributed

for free may be reported by the public sector as well as by the social marketing program, which may lead to double-counting. Distribution and sales data from small nongovernmental organizations are typically much harder to obtain, but should also be included.

Sales data from for-profit companies can theoretically be obtained from the company itself, or from a market research service like Nielsen or IMS when available (Barnes et al., 2012). When these data are not available, it may be necessary to estimate commercial sales volumes based on key informant interviews and any previous market data that may have been collected. It may also be possible to get rough estimates of commercial dates based on import data, although such data will need to be adjusted for products that are still in the pipeline (i.e., that are in regional distribution centers, warehouses, etc.). For an example of a rigorous market quantification exercise, see Task Order 4 USAID DELIVER Project (2015).

There are many limitations and challenges that arise when calculating market volume. Data from commercial companies are often difficult to access. Even when commercial data are available from market research services, they can be costly to obtain and will not include the informal market (Barnes et al., 2012; Market Development Approaches Working Group, 2009). Estimates of for-profit sales are typically based on the best guesses of market experts, which may not be very accurate, especially if the market is undergoing rapid change. Data that are available are of varying qualities and may be collected infrequently. Furthermore, products or services distributed for free by small private companies or foundations may be easy to overlook, particularly if they occur as a one-time donation. Finally, market volume calculations can be extremely time-consuming. The main reason for this is that the data needed to calculate market volume come from a wide variety of sources that often report them in different formats. For example, one organization may report data by calendar year while another reports by fiscal year. Similarly, some organizations may report volume in single units while others report the number of packages (e.g. 3-packs of condoms). Converting all the data to comparable units and time period can be very time consuming, and will often require obtaining additional information from the organizations that provided the data. When reliable sales data are not available, it may be advisable to triangulate such data with market volume estimates based on data from retail audit surveys.

- Contraceptive prevalence rate

Understanding levels of use of family planning products and services is essential for assessing market size and potential market growth. The contraceptive prevalence rate (CPR), the percentage of sexually active women who use each specific method of family planning (e.g., who use the IUD), and the method mix are three important indicators of product use.

The contraceptive prevalence rate (CPR) refers to the percentage of sexually active women of reproductive age using any type of contraceptive method. CPR is a widely reported family planning indicator (Family Planning 2020, 2015; Gardiner et al., 2006; MEASURE Evaluation, 2015; Performance Monitoring and Accountability 2020, 2015; Population Services International, 2012a; World Health Organization, 2015a). Occasionally, a variant of the CPR that is restricted to modern methods only is reported (mCPR) (Family Planning 2020, 2015; Performance Monitoring and Accountability 2020, 2015). However, for TMA purposes it is important to also examine use of traditional methods, as these users represent potential future consumers of modern methods.

While CPR is often used as an indicator of health impact or as an outcome indicator for family planning programs (Gardiner et al., 2006; MEASURE Evaluation, 2015), it can also serve as a proxy for market size as it reflects the number of consumers of FP products and services (Barnes et al., 2012). The number of current consumers is an essential piece of information for estimating potential market growth and potential profit. Further disaggregation of CPR by age, region, urban/rural residence, and other demographic characteristics can

further enhance one's understanding of current consumers and can help identify opportunities for growing the market. CPR is also used in the calculation of other indicators, such as the universe of need for family planning (Pallin, Meekers, et al., 2013d; Population Services International, 2013).

Although CPR is frequently calculated only for women who are married or in union (MEASURE Evaluation, 2015), we recommend calculating this indicator for all sexually active women ages 15-49, and to subsequently disaggregate it by marital status. Calculating the CPR only for women who are married or in union would exclude sexually active unmarried women, and would therefore exclude many current or potential users. The CPR can be calculated easily using data from population-based surveys, which commonly ask sexually active respondents if they are using a family planning method.

The CPR is vulnerable to the same limitations as all population-based survey data, including incomplete data and poor data quality, among others. As a proxy for market size, the CPR focuses only on the current market, as it does not consideration the unmet need for family planning, which may account for many potential future consumers.

- Use of specific family planning methods

In addition to measuring CPR, it is important to measure the percentage of sexually active women currently using each family planning method. Current use can be used to subsequently estimate a total number of users for each family planning product (see section on "Estimating the number of family planning users from survey data"). This is useful because it allows triangulation of data from population-based surveys, service statistics, and product import data, which may identify gaps between the number of products imported or distributed and the number of products actually used. The user-prevalence of specific methods can also be used to track changes in the use of a particular family planning product over time. Estimates of the percentage of women who use various family planning product and services, in conjunction with data on unmet need are often used to estimate the demand for specific products and services (Pallin, Meekers, Longfield, et al., 2013; Pallin, Meekers, et al., 2013b, 2013c, 2013d; Population Services International, 2012a; Westoff, 2006).

- Contraceptive method mix

Method mix, defined as the percentage distribution of contraceptive users by method (MacKenzie et al., 2013; MEASURE Evaluation, 2015) is an important indicator of the number of family planning options that are available. A broad method mix may mean that more women are able to use their preferred contraceptive method, since there is access to a wider range of methods. Thus, method mix may be an indicator of user preferences (MEASURE Evaluation, 2015; Scoggins, Aziz, & Miller, 2014). Alternately, it may reflect provider preferences for a certain product (MacKenzie et al., 2013; MEASURE Evaluation, 2015). For example, local providers may find it easier and more cost-effective to offer one method instead of another. On a population level, method mix may also signal social bias regarding gender responsibility in family planning (MEASURE Evaluation, 2015), or a bias towards certain methods due to religious or cultural beliefs (MacKenzie et al., 2013). The length of time various products or services have been available, governmental or regulatory barriers, and donor influences, may also affect method mix. Method mix is necessary for calculating the universe of need for each family planning product or service. It is also used by governments and family planning programs to make decisions about commodities in order to plan for the future (Scoggins et al., 2014; Seiber, Bertrand, & Sullivan, 2007).

Method mix can change rapidly, for example due to the introduction of a new method, the presence of a new program or donor, or endorsements from political or religious leaders (MEASURE Evaluation, 2015; Seiber et al., 2007). Because method mix is calculated using population-based survey data -- that may have been collected several years earlier -- calculations may not always reflect the current situation. Additionally, data about the method mix by itself do not yield any insights about the reasons why certain methods are being used more than

others. More investigation is needed to determine the drivers of method mix in a country at any given time. This might include qualitative research with users and providers as well as in-depth analysis of service statistics. Contraceptive history data can also provide more information on method discontinuation and switching and on the reasons for these. However, the analyses of contraceptive history data are complex and typically require very advanced computer programming skills.

- Unmet need for family planning

For TMA planning purposes, it is important to have an estimate of the total unmet need, rather than just the unmet need among women who are married or in union. Therefore, it is recommended that unmet need is calculated for all sexually active women, rather than only for women who are married or in union as is sometimes proposed. Including unmarried sexually active women will result in a more accurate estimate of the total unmet need.

Unmet need is a crucial component of the total potential demand for family planning. To assess the total potential demand for family planning products or services, it is important to calculate not only current method use, but also the unmet need for family planning. High unmet need may therefore signal that there is potential for market growth, in the form of potential future consumers of family planning products. Unmet need may also point to a variety of problems, such as poor access to family planning, an inability to pay for family planning services, and distribution problems. Hence, further analysis may be needed to identify the reasons behind unmet need.

Unmet need is broadly defined as the percentage of women of reproductive age who are sexually active and who do not wish to become pregnant but are not using any form of contraception (ICF International, 2015b; World Health Organization, 2015b). It is important to note that the calculation does not distinguish between modern and traditional methods of contraception.[1] The total unmet need includes women who have an unmet need for spacing births and women who have an unmet need for limiting births. The calculation also needs to take into account that some women may be infecund, pregnant, or postpartum amenorrheic. Consequently, the calculation of unmet need has been very complex, using more than 15 separate survey questions (ICF International, 2015b; MEASURE Evaluation, 2015). Because not all surveys include all these questions, unmet need has not been calculated consistently across major surveys programs such as the DHS, MICS, and CDC Reproductive Health Surveys. Questionnaire changes have also led to changes in the calculation of unmet need over time. For example, the fact that some surveys included a contraceptive calendar while others did not also led to differences in the calculation. As a result, even within the DHS survey program the calculation of unmet need has not been consistent across survey waves (Bradley et al., 2012). Therefore, data on levels of unmet need have not been comparable across countries or over time. However, in 2012 DHS developed a revised definition of unmet need that can be used to compare estimates of unmet need across countries and to track changes over time. The revised definition ensures that unmet need can be calculated in the same way for all DHS and MICS surveys (Bradley et al., 2012).

To ensure consistency and enable examination of changes in unmet need over time, it is recommended to calculate unmet need using the guidelines outlined by DHS for the revised definition of unmet need for family planning (Bradley et al., 2012; ICF International, 2015b). For TMA planning purposes, it is important to have an estimate of the total unmet need, rather than just the unmet need among women who are married or in union.

1 Whether a woman is using any form of contraception is usually determined based on the question "Are you currently doing something or using any method to delay or avoid getting pregnant" (Bradley, Croft, Fishel, & Westoff, 2012).

Therefore, it is recommended that unmet need is calculated for all women, rather than only for women who are married or in union as is sometimes proposed (ICF International, 2015b; MEASURE Evaluation, 2015). Including unmarried women will result in a more accurate estimate of the total unmet need.

- Unmet need for birth spacing and for family limitation

It can also be helpful to do separate calculations for the unmet need for spacing births and the unmet need for limiting births. Unmet need for spacing is most common among younger married women and those with few children while unmet need for limiting is more common among older women who have already achieved their desired family size (Bradley et al., 2012). The distinction between unmet need for spacing and limiting is important because it may indicate a need for specific types of family planning products or services. Longer-term methods may be more appropriate for women with a need for limiting, while short-term methods may suffice for women attempting to space childbearing. Understanding the need for spacing and limiting childbearing may help to target segments of the population more effectively.

MARKET ACCESSIBILITY

- Knowledge of a source for family planning products or services

Increased use of family planning products requires knowledge of a family planning source. Thus, knowledge of a family planning source is an important indicator of accessibility. Knowledge of a family planning source is calculated as the percentage of women of reproductive age who know at least one source of family planning products or services (Bertrand et al., 1994). Data permitting, the same indicator can be calculated for men.[2] Current DHS surveys do not ask what that family planning source is. Consequently, it is not possible to investigate knowledge of specific supply channels (such as informal suppliers).

It is noted that some sources suggest using a more refined indicator, defined as the percentage of women who know of at least one source of *modern* contraceptive services and/or supplies (MEASURE Evaluation, 2015). Although restricting the indicator to modern methods makes it more precise, doing so is not recommended for two main reasons. The first reason is that the calculation would require a more complex set of survey questions, which would increase the length of the questionnaire. The second reason is that it would make the indicator inconsistent with the information collected in the DHS surveys, thereby making it impossible to either use the DHS or to make comparisons with the DHS data.

Lack of knowledge of a family planning source may indicate a need for communication, education and marketing efforts around family planning. Disaggregation by region, urban/rural status, and age can provide insight on where marketing efforts should be targeted. Levels of knowledge may also supplement other information about access. For example, comparison of this indicator to the percentage of women living more than two hours from a family planning source may be helpful for determining where to focus resources. Additionally, this indicator may provide additional insight if lack of access is reported as a major reason for non-use of family planning products or services.

Some survey questionnaires also ask respondents to name all the types of sources of family planning sources that they know. If such information is available, then it is possible to calculate two additional sub-indicators: knowledge of a public sector family planning source and knowledge of a private sector family planning source.

2 While the male questionnaires of older DHS surveys did not include a question about knowledge of a family planning source, the question has been included in the model questionnaire for the Phase 7 surveys that are being implemented from 2013 to 2018 (ICF International Inc, 2015a).

Analyzing the difference between these two sub-indicators may help to identify where additional marketing is needed. Differences in knowledge of public and private sector sources of family planning products may also help to explain differences in the use of public or private products, and signal where both private sector and public sector organizations should focus marketing and distribution efforts. In the DHS surveys, a question about knowledge of specific types of family planning sources was standard in the women's questionnaires for surveys implemented between 2003 and 2013, but it has been omitted from more recent surveys.

There are several limitations to measuring knowledge of a family planning source. First, it does not measure knowledge of a source for one's preferred method. Therefore, high levels of knowledge of a family planning source may cloak a significant lack of knowledge about where to access the family planning methods that are most relevant to potential users. Second, knowledge of any family planning source does not indicate comfort, familiarity, or affordability of the known source. More information is needed to assess women's ability to successfully access family planning products or services at the known source. Finally, this indicator is vulnerable to all typical limitations of population-based survey data.

- Access to FP methods

Data on the reasons why women who do not wish to get pregnant are not using contraceptives can provide valuable insights about problems with geographic or financial access. For women who are not using a contraceptive method, population-based surveys should ask women to provide all the reasons for non-use. Two potential reasons for non-use, lack of access and high product costs, are important indicators of market accessibility.

A high percentage of non-use due to lack of access may signal problems with distribution (high product stockouts can be another indication that there may be problems with distribution; see infra). The percentage of women living more than two hours away from a family planning source is often used as an indicator of geographic access to family planning sources (MEASURE Evaluation, 2015). Analysis of these indicators can help provide both public stakeholders and private companies with the necessary information for making decisions about product distribution and targeting.

Access to affordable family planning products and services is essential for improved product use. Those who cannot afford to pay typically need access to free products. If cost is a common reason for non-use, this may signal a need for improved targeting of public sector products. Conversely, if the results identify regions or population sub-groups among whom cost is not a common reason for non-use, then it may be worthwhile to verify whether family planning products are priced appropriately. Specifically, it would suggest that it may be possible to increase the price of socially marketed products.

Indicators of the reasons for non-use of family planning have several limitations. It is important to recognize that several different factors may simultaneously influence non-use of family planning (Sedgh & Hussain, 2014). Therefore, surveys must ask women to report all the reasons for non-use, as is done in the DHS surveys (ICF International Inc, 2012b, 2015b; MEASURE DHS, 2008b). Calculating the percentage of non-users who report access as the reason for non-use and the percentage who report cost as the reason will clarify whether geographic or financial access is the bigger obstacle. However, identifying how common it is for women to simultaneously face multiple barriers to use will require additional calculations. In addition, further analysis is needed to better understand factors contributing to lack of geographic or financial access. Disaggregation by region, urban/rural location, and wealth status may serve as a helpful starting point for pinpointing gaps in access. However, data on the reasons for non-use or time to get to a family planning sources are insufficient to fully understand the precise nature of problems with the distribution of distribution of public sector and subsidized products or to determine appropriate pricing strategies.

- Product stockouts/gaps in family planning services

The prospects for increased product use and market growth rely on the accessibility of family planning products and services. Product stockouts or gaps in family planning services are good indicators of problems with market accessibility. For TMA, product stockouts can be measured as the percentage of product delivery points that report experiencing a stockout of a specific family planning product in a given time period (Bertrand & Escudero, 2002; Douglas-Durham, Blanchard, & Higgins, 2015; MEASURE Evaluation, 2015). Although a time period of three to six months for this indicator is sometimes recommended (Barnes et al., 2012; Reproductive Health Supplies Coalition, 2015), we suggest calculating the number of stockouts or service gaps in the past month. Limiting the reference period to one month will reduce recall error in case the data are obtained through a retail survey and will be less time-consuming in case the data are obtained by verifying stock records.

Data on product stockouts can be obtained from retail surveys. For methods that require a clinical service in addition to a product (e.g. IUD insertion), method availability can be affected not only by a stockout but also by gaps in the service itself (e.g. the unavailability of a qualified clinician to perform the IUD insertion). Hence, it can be helpful to measure the percentage of family planning service delivery points that reported a gap in family planning services in a given time period, which will require data from a survey of family planning service providers. These indicators are useful for assessing the extent to which problems with product stock or service delivery may limitc access to family planning. It is recommended that the indicators be disaggregated by region when possible, to identify geographical areas that experience a high percentage of stockouts. Further analyses on the cause of stockouts or gaps in service delivery may also be warranted.

There are several issues surrounding the calculation of product stockouts and service gaps. First, clinics and other family planning outlets may not regularly collect information on stockouts or service gaps. Verifying stock records can also be time-consuming, which can substantially increase the cost of implementing retail audits or surveys. Obtaining information on stockouts by means of a survey question will be more cost-effective, but is likely to be less accurate. Moreover, when the indicator relies on recall by informants, it is subject to common recall errors. Limiting the indicators to a shorter time frame, such as a month, will help minimize such errors. Conducting surveys of retailers and service delivery points requires a sampling frame. In most countries such sampling frames do not exist, which can make data collection more expensive and time consuming. Stockouts and gaps in service delivery can have a variety of causes, including problems with delivery systems, an increase in demand, product recalls, production issues, or a variety of other things (Barnes et al., 2012). Therefore, additional information about the causes of stockouts or service gaps may be needed.

MARKET SUSTAINABILITY

- Market value of family planning products and services

Market value refers to the total US dollar amount of the product or service sold in the last year, measured for each family planning product or service. Market value can serve as an indicator of market growth and a willingness to pay for family planning products and services. Because a high market value may encourage commercial interest in the market, it is also an important indicator of market sustainability. Market value is calculated by multiplying the market volume for each method, the measurement of which is described above, by the average retail price of each product or service.

Using more detailed market volume and price data will result in more accurate market value calculations. Ideally, market volume data for family planning products should be given by brand, brand extension, and where applicable, the number of products in each package (e.g. 3-packs of Lovers Plus Studded condoms). For family planning methods that include service delivery, such as injectables, IUDs, or sterilization, data should be separated

into the cost of the product or device, and the cost of the clinical service. Where detailed market volume data are not available, import or shipping data may be used as a proxy, although these data will not reflect the number of products or services that were actually distributed to users and will likely result in an overestimation of market volume (Clinton Health Access Initiative, 2015).

The average price for each brand, brand extension, and clinic service can be obtained using retail audits or distribution surveys. Whenever feasible, average prices at the time of the audit or survey should be calculated for each brand extension and package size, which will result in the most accurate estimation. If brand-specific pricing data cannot be obtained, the average price of each specific family planning product (e.g., the average price of a cycle of oral contraceptives) can be used to give a rough estimate of market value. Tools like the UNFPA Contraceptive Price Indicator provide average prices of family planning products procured through the principal donor-funded procurement platforms, but do not include testing, insurance or shipping costs, nor commercial mark-ups (United Nations Fund for Population Activities, 2014). Because product prices often differ significantly by country, brand, brand extension, and market (Pallin, Meekers, Longfield, et al., 2013; Pallin, Meekers, Lupu, & Longfield, 2013a; Pallin, Meekers, et al., 2013b, 2013c, 2013d; Pallin, Meekers, Lupu, & Longfield, 2013e), we recommend conducting retail surveys. For clinical services, average prices can be gathered using a facility survey.

Market value calculations have many limitations. First, market volume data by brand, brand extension, and package size may not be available. This is particularly a concern for commercial products, which often have the most variation in brands and brand extensions. Because prices vary by brand and brand extension, using estimates of the average price for specific family planning products to calculate market value may lead to inaccurate estimates. Second, prices of clinical services may be difficult to collect, and may differ widely by clinic and region. Finally, because distribution or sales data for each region are rarely available, market value is typically calculated for an entire country. Therefore, it may be difficult to identify specific areas where market value may indicate potential for growth.

- Market leader's market share

The market leader, or the entity that accounts for the greatest percentage of the market volume, can provide important insights about the market. This is especially true when a single source of supply dominates the market. Ideally, one source of supply should not account for more than 30-40% of the total market volume (Barnes et al., 2012). However, in many countries the government and social marketing programs may account for more than 90% of the total market. Heavy reliance on a single supply source has the potential to cause many problems. First, if the market is dominated by a supply source that is dependent on government or donor subsidies, an end in funding could result in a widespread decline in access to the family planning product. Additionally, quality problems or other supply side issues could have a large impact on product availability, potentially leaving many current and future users without access. Finally, market dominance inhibits commercial sector participation, which is crucial to long-term sustainability.

The market leader's market share is calculated using market volume data, which should be available by supply source. When calculating, it is important to consider that the same supplier may distribute multiple brands and brand extensions. In cases where the market leader is found to account for more than 30-40% of the market and is distributing subsidized products, implementation should focus on shifting those who are able to pay to commercial products.

- Market subsidies

Currently, many countries rely heavily on government or donor subsidies for family planning products and services. TMA seeks to strengthen market sustainability through increased involvement of the commercial sector, increased market growth, and targeted allocation of free or subsidized products to those who cannot afford to

pay. The extent to which the market is reliant on subsidies is often difficult to measure due to the limitations associated with measuring the full cost of a product or service, which includes not only the cost of production, but also the cost of marketing, distribution, clinic operations, and other costs. However, there are a number of relatively simple indicators that can help provide a picture of the extent of market subsidies, including:

- The number of unsubsidized brands available on the market
- The market share of unsubsidized brands
- The use of unsubsidized family planning products and services

The number of unsubsidized brands available on the market refers to both the number of current brands and brand extensions available to consumers. Brand extensions are a key component of this measure, as an increase in brand extensions indicates growth of existing unsubsidized brands. It is important that only unsubsidized brands are counted, since subsidized brands do not indicate market sustainability (Barnes et al., 2012). The calculation of the number of unsubsidized brands should include commercial brands sold for profit as well as brands sold by nongovernmental organizations at full cost recovery (Barnes et al., 2012; Pallin, Meekers, Longfield, et al., 2013; Pallin, Meekers, et al., 2013c, 2013d). Brands sold at partial subsidy should not be included. For family planning methods that are consistently branded, calculating the number of unsubsidized brands on the market is straightforward. However, for other methods – particularly those involving clinical services – the number of unsubsidized brands may not be a relevant measure.

Market share of unsubsidized brands: The number of unsubsidized brands can be used to calculate the percentage of unsubsidized brands on the market. A market dominated by subsidized brands may discourage market growth and sustainability by inhibiting participation of the commercial sector. An increase in the number or percentage of unsubsidized brands over time may reflect the commercial sector's burgeoning role in the market. It may also be an indicator of the consumers' willingness to pay for family planning products.

Use of unsubsidized family planning products and services: Another way to look at subsidy levels is to examine the percentage of family planning users who rely on unsubsidized family planning products or services. The DHS surveys ask oral contraceptive users and condom users to specify the brand name of the pill or condoms they are using. Because unsubsidized public sector products are typically unbranded, this makes it possible to calculate the percentage of users who use an unsubsidized brand (it is also possible to calculate the percentage who use a partially subsidized brand, such as those distributed by social marketing organizations). The DHS surveys do not collect brand information for other family planning products, but this could be collected in ad hoc surveys.

Users of family planning services (such as sterilization, IUD insertion, etc.) are typically asked to identify the type of source where they received the service. Hence, it is possible to calculate the percentage of users of each family planning service who used a public sector source. However, normally it is not possible to distinguish between users of commercial sources and partially subsidized (social marketing) sources.

MARKET EQUITY

As discussed previously, market equity is studied simply by disaggregating market indicators by socioeconomic status, for example by wealth level, rural/urban residence, or geographic location. This does not require the calculation of any new indicators of market equity, but in practice the disaggregation is the equivalent of calculating a separate indicator for each subgroup. For illustrative purposes, Table 1 has shown the percentage of sexually active women in each wealth level who use a family planning method (i.e., the contraceptive prevalence rate). Trecise calculation of the CPR and other recommended indicators is described in the indicator reference sheets in the Appendix.

4. DATA SOURCES

As illustrated in the previous sections, developing an evidence-based total market approach requires data from a variety of sources, such as population-based surveys, retail audits, service statistics and/or computerized logistics management information system (CLMIS), and qualitative research, such as key informant interviews. Nationally representative population-based surveys can provide detailed information about access to family planning products and services, use of such products and services, and equity in use. Although it is not often done, such surveys can also provide information on willingness to pay and about use of specific brands of family planning products. For example, a few of the DHS surveys have collected data on willingness to pay for oral contraceptives, IUD, IUD insertion, and injectables (El-Zanaty, Sayed, Zaky, & Way, 1993; El-Zanaty & Way, 2001, 2006; National Council for Population and Development (Kenya), Kenya Central Bureau of Statistics, & Macro International., 1999; National Statistics Office (NSO), Department of Health (DOH) [Philippines], & Macro International Inc, 1999; National Statistics Office (NSO) [Philippines] & ORC Macro, 2004), and recent DHS surveys all ask women about the condom and pill brands they are using (ICF International Inc, 2012b, 2015b). Data on brand use can in turn be used to estimate market share and market subsidies. Program and service statistics provide information about the volume of family planning products on the market, the value of the family planning market, market share, and subsidies. If available, an operational CLMIS can also provide information on stocks of family planning products available in the system, rate of consumption of family planning products, and losses and adjustments of various family planning commodities (DELIVER, 2006).

Retail or distribution surveys can provide data on the different types of family planning products on the market, the number of brands, the number of unsubsidized brands, and on the prevalence of stockouts in various types of outlets (Andreasen, 1988; Richter & Meekers, 2000). The data that are being gathered to develop a TMA also serve as a baseline that can be used to help measure improvements over time.

Before embarking on expensive primary data collection, it is recommended to first engage in a data source mapping exercise. Data source mapping is a simple low-cost exercise to catalogue useful existing secondary data, and to identify which specific data are not available and might warrant primary data collection.

Some of data that are needed to develop a TMA plan may already exist (secondary data), while other data may not exist (or may not be accessible) and will need to be collected (primary data). Before embarking on expensive primary data collection, it is recommended to first engage in a data source mapping exercise (World Health Organization, 2013). Data source mapping is a simple low-cost exercise that can be used to catalogue any existing secondary data that can be used, and to identify what specific information they contain (see Appendix). Data source mapping will also identify which specific data are not available (or not accessible) and must be obtained through primary data collection. This information can then be used to determine whether it is warranted to invest in primary data collection. The desk study conducted as part of the landscaping exercise will likely have identified the main secondary data sources that are available, such as Demographic and Health Surveys or Multiple Indicator Cluster Surveys. Although the published survey reports usually contain useful information about family planning, much more detailed information can often be obtained by mining the raw data.

Tools for determining data needs

Tool 1: Data source mapping

SECONDARY DATA SOURCES

In most developing countries there will be existing survey data that contain useful information about family planning. The two largest survey programs are the USAID-funded Demographic and Health Surveys (DHS) and the UNICEF Multiple Indicator Cluster Surveys (MICS), both of which collect health data from a nationally representative sample of women and men to inform policies and programs, and for use in monitoring and evaluation. The DHS survey program started in 1984. To date, over 300 DHS surveys have been conducted in over 90 countries [http://www.dhsprogram.com/]. The UNICEF Multiple Indicator Cluster Surveys (MICS) have been implemented in over 100 countries since their inception in 1995 [http://mics.unicef.org/about]. Both DHS and MICS surveys are typically implemented at regular intervals (3-5 years). However, as countries develop and achieve middle income status external donors may stop funding these surveys and the country governments are not necessarily willing or able to fund future surveys.

In addition to the DHS and MICS surveys, some countries may be able to use data from the Performance Monitoring and Accountability 2020 (PMA2020) surveys (see http://pma2020.org), which were originally designed for progress reportng for Family Planning 2020 (FP2020, see www.familyplanning2020.org). PMA2020 surveys are designed to collect annual data from a nationally representative sample of households to calculate key family planning indicators, including the contraceptive prevalence rate, unmet need for family planning, etc. Ten countries participate in PMA2020. Requests for public access to the datasets are considered on a case-by-case basis, subject to a written request and approval by the PMA2020 coordinating center. One important drawback is that the PMA2020 surveys are typically not designed to be representative of all regions. In some cases, important discrepancies have been observed between data from PMA2020 surveys and those of other national surveys (Mekonnen, 2015).

Many of the large NGOs that implement family planning programs also conduct (or commission) nationally representative surveys to inform and evaluate their programs. Such surveys often contain valuable information about the family planning market. However, the raw data of these NGO surveys are typically not in the public domain, so it can be difficult to obtain access to them.[1] The donors who provided the funding for such surveys can play an important role in ensuring public access to such data. Nevertheless, because the content and quality of such surveys varies greatly, their usefulness will need to be assessed on a case-by-case basis. Therefore, we limit our discussion to the DHS and MICS surveys.[2]

Both the DHS and MICS survey programs are designed to provide comparable data on key health indicators, including family planning. The questionnaires used for individual countries are based on standardized model questionnaires that are used with only minor adaptations or additions. This implies that the family planning

1 In line with the tendency toward cooperation among the different market sectors, organizations such as Population Services International (PSI) are striving to make their data available. To request access to PSI data, see: http://www.psi.org/research/ethics-data-use-and-authorship/data-use-and-authorship/. The Bill and Melinda Gates Foundation also requires that data collected using BMGF funds are made publicly accessible (http://www.gatesfoundation.org/How-We-Work/General-Information/Information-Sharing-Approach).

2 It is noted that secondary data are not limited to survey data. For a number of countries there are secondary data on the number of family planning products that have been sold or distributed. One such example are the contraceptive social marketing statistics that are being published annually by DKT (http://www.dktinternational.org/publications-resources/contraceptive-social-marketing-statistics/). The various sources of secondary data have been discussed in Brady et al. (2016).

questions that are included in the standardized model questionnaire will always be collected. However, to reflect changing information needs and priorities the questionnaires are updated from time to time. Therefore the specific type of family planning data that are being collected may vary over time, which may affect analyses of trends in the family planning market. The DHS core questionnaires are updated every five years. MICS surveys were initially also conducted at 5-year intervals, but since 2009 they are being conducted every three years. DHS surveys implemented between 2003 and 2008 are based on the DHS Phase 5 model questionnaires, those implemented between 2008 and 2013 on the Phase 6 model questionnaires, and those implemented between 2013 and 2018 on the Phase 7 model questionnaires (ICF International Inc, 2012b, 2015a, 2015b; MEASURE DHS, 2008a, 2008b). MICS surveys conducted between 2005 and 2007 are based on the MICS-3 model questionnaires, those implemented between 2009 and 2012 are based on the MICS-4 model questionnaire, and those carried out between 2012 and 2015 are based on the MICS-5 model questionnaire (UNICEF, 2005a, 2005b, 2005c, 2012a, 2012b, 2013a, 2013b). The relevant content of the model questionnaires for the last three waves of the DHS and MICS surveys (which cover surveys conducted during the periods from 2003-18 and 2005-15, respectively) is summarized below.

Table 2 shows the relevant family planning questions that have been included in the model women's questionnaires. It is important to recognize that individual countries may have opted to add additional family planning questions. Therefore, it is essential to always conduct a detailed review of the questionnaires for all available surveys. For both the DHS and MICS surveys, the actual survey questionnaire used in each country is included in an appendix of the survey report.

As a general rule, the family planning information in MICS surveys tends to focus on current method use and on unmet need, while the DHS surveys tend to collect information about a much wider range of family planning topics. All DHS surveys collect information about women's knowledge of specific family planning methods and services. Specifically, women are asked if they have heard of female sterilization, male sterilization, the IUD, injectables, implants, the pill, condom, female condom, emergency contraception, the rhythm method, withdrawal, or any other methods. Currently, countries that have programs that promote the Standard Days Methods and/or the Lactational Amernorrhea Method (LAM) also specifically ask about knowledge of those methods. All DHS surveys also ask women whether they know a source where they can obtain a method of family planning. Surveys implemented between 2003 and 2013 asked women to specify where that place is. Answer options include public sector sources (e.g., government hospital, government health center, family planning clinic, mobile clinic, fieldworker, other public sector), private medical sector sources (private hospital/clinic, pharmacy, private doctor, mobile clinic, fieldworker, other private medical sector), and other sources (shops, church, friends/relatives, and other). The question on knowledge of specific family planning sources has been dropped from the 2013-18 DHS model questionnaire. However, all DHS surveys asks family planning users to specify the source where they obtained the last obtained their current method, using the same answer codes as for knowledge of family planning sources. The latter information can be used as a rough proxy for the market share of the public sector and private sector. However, the answer codes are not detailed enough to accurately distinguish the NGO sector (including social marketing organizations) from the commercial sector. Since this is a major limitation, TMA donors and program implementers should lobby for a more detailed classification in future surveys.

Information about current use of family planning is collected in all DHS and MICS surveys. Women who report that they are doing something to delay or avoid pregnancy are asked to specify which method they are using (female sterilization, male sterilization, the IUD, injectables, implants, the pill, condom, female condom, emergency contraception, standard days method, lactational amenorrhea method, rhythm method, withdrawal, other modern methods, or other traditional methods). This information can be used to calculate the contraceptive prevalence rate as well as the current method mix. In addition to this information about current use of family planning the DHS surveys also collect information about ever use of family planning. However,

surveys conducted from 2008 onward do not ask about all the different family planning methods women have tried in their lifetime. Nevertheless, the contraceptive history collect information about different methods used during the three years prior to the survey.

Since 2003, DHS surveys have asked women who reported that they did not wish to get pregnant but who were not using family planning about all the reasons why they were not using a method (multiple responses are allowed). Specific answer codes that are relevant for TMA planning include not knowing a method, not knowing a source, lack of access, cost, lack of availability of their preferred method, or unavailability of any methods. It is important to note that eliminating the stated reasons for non-use do not guarantee that the respondent will become a user, as other impediments to contraceptive use may emerge. The DHS surveys also asked non-users about their intentions to use family planning in the future, which can provide helpful insights about the extent to which the family planning market can be expected to grow. For women who indicated they intended to use a contraceptive method in the future, the DHS-5 questionnaires also asked which method they would prefer to use. Unfortunately, this question has not been included in the DHS-6 and DHS-7 model questionnaires.

The DHS surveys ask women who report that they currently use either oral contraceptives or condoms to delay or avoid pregnancy to specify the brand they are using (women who do not know the brand are asked to show the package to the interviewer). Assuming the coding for the brand names is sufficiently detailed (the coding will vary from country to country), this information can be used to estimate the relative market share of public sector, nongovernmental organization (NGO), and commercial brands of condoms and oral contraceptives, which can then be triangulated with sales and distribution data.

The DHS model questionnaires also include a contraceptive history. Women are asked to specify all contraceptive methods they used during the last three years, and to specify when they started and ended use of the method. This information can be used to calculate the contraceptive method mix, as well as discontinuation and method switching. The contraceptive history also asks women about the reasons why they stopped using the method. The answer categories include lack of access and the cost of the method. The latter can be a crude proxy for willingness/ability to pay. However, the DHS model questionnaires do not explicitly ask about willingness to pay. Nevertheless, a few countries have voluntarily included willingness to pay questions for specific products and services, such as IUDs, IUD insertion services, oral contraceptives, or injectables.[3] A few surveys have asked about willingness to pay for the women's current method.[4]

For women who report being sterilized, the DHS surveys ask in what facility the sterilization took place. As before, the answer codes enable us to calculate the market share of public sector facilities versus private sector facilities. Women were also asked to report the month and year when the sterilization was performed, which makes it possible to calculate at what age women are getting sterilized.

All DHS and MICS surveys include several questions that can be used to calculate the percentage of women who have a met or unmet need for family planning. Likewise, all DHS surveys ask women about their current fertility intentions. This information can be used to calculate the percentage of women who want to postpone childbearing and the percentage who want to stop childbearing, which can give insights into the future demand for family planning.

3 The 1992 Egypt DHS asked about willingness to pay for an IUD, for the IUD insertion, and for oral contraceptives. The 2000 and 2005 Egypt DHS asked about willingness to pay for an IUD, oral contraceptives, and injectables. The 1998 Kenya DHS asked about willingness to pay for contraceptive pills, as did the 1998 Philippines DHS.

4 See the 1998 and 2003 Philippines DHS.

TABLE 2: KEY FAMILY PLANNING QUESTIONS INCLUDED IN RECENT DHS/MICS SURVEYS (WOMEN'S QUESTIONNAIRES)

	DHS-7 2013-18	DHS-6 2008-13	DHS-5 2003-08	MICS-5 2013-15	MICS-4 2009-12	MICS-3 2005-07
Knowledge of FP methods						
• Have you ever heard of (method)?	√	√	√			
FP sources						
• Source where you last obtained (current method)	√	√	√			
• Do you know a place where you can obtain a method of family planning?	√	√	√			
• Where is that?		√	√			
Current use of FP						
• Are you or your partner currently doing something or using any method to delay or avoid getting pregnant?	√					
• Are you currently doing something or using any method to delay or avoid getting pregnant?		√	√	√	√	√
• Which method are you using?	√	√	√	√	√	√
Ever use of FP						
• Have you ever used (method)?			√			
• Have you ever used or tried in any way to delay or avoid getting pregnant?	√	√	√			
Reasons for non-use of FP						
• [For women who do not wish to get pregnant, but are not using a method:] Can you tell me why you are not using a method? [multiple responses]	√	√	√			
Intention to use FP in the future						
• Do you think you will use a contraceptive method to delay or avoid pregnancy at any time in the future?	√	√	√			
• Which contraceptive method would you prefer to use?			√			

Source: ICF International Inc (2012b, 2015b); MEASURE DHS (2008b); UNICEF (2005a, 2005b, 2005c, 2012b, 2013b) Notes: Types of sources include public sector sources (e.g., government hospital, government health center, family planning clinic, mobile clinic, fieldworker, other public sector), private medical sector sources (private hospital/clinic, pharmacy, private doctor, mobile clinic, fieldworker, other private medical sector), and other sources (shops, church, friends/relatives, and other). Reasons for discontinuation include: infrequent sex/husband away, became pregnant while using, wanted to become pregnant, husband/partner disapproved, wanted a more effective method, side effects/health concerns, lack of access/too far, costs too much, inconvenient to use, up to God/fatalistic, difficult to get pregnant/menopausal, marital dissolution/separation, other. Only one response is allowed. † Alternate questions; ‡ questions in optional module.

	DHS-7 2013-18	DHS-6 2008-13	DHS-5 2003-08	MICS-5 2013-15	MICS-4 2009-12	MICS-3 2005-07
• What is the main reason that you think you will not use a contraceptive method at any time in the future?			√			
Brands, volume, cost						
• What is the brand name of the pills you are using?	√	√	†			
• What is the brand name of the condoms you are using?	√	√	†			
• How many (pill cycles/condoms) did you get the last time?			√			
• The last time you obtained (current method) how much did you pay in total, including the cost of any consultation you may have had?			√			
Method mix and discontinuation						
• Since what month and year have you been using (current method) without stopping?	√	√	√			
• Methods used in the last three years	√	√	√			
• Starting date for methods used in the last 3 years	√	√	√			
• End date for methods used in the last 3 years	√	√	√			
• Why did you stop using (method)?	√	√	√			
• Source when you first started using (current method)	√	√	√			
Sterilization						
• In what facility did the sterilization take place?	√	√	√			
• In what month and year was the sterilization performed?	√	√	√			
• How much did you (your husband/partner) pay in total for the sterilization, including any consultation you (he) may have had?			√			

Source: ICF International Inc (2012b, 2015b); MEASURE DHS (2008b); UNICEF (2005a, 2005b, 2005c, 2012b, 2013b) Notes: Types of sources include public sector sources (e.g., government hospital, government health center, family planning clinic, mobile clinic, fieldworker, other public sector), private medical sector sources (private hospital/clinic, pharmacy, private doctor, mobile clinic, fieldworker, other private medical sector), and other sources (shops, church, friends/relatives, and other). Reasons for discontinuation include: infrequent sex/husband away, became pregnant while using, wanted to become pregnant, husband/partner disapproved, wanted a more effective method, side effects/health concerns, lack of access/too far, costs too much, inconvenient to use, up to God/fatalistic, difficult to get pregnant/menopausal, marital dissolution/separation, other. Only one response is allowed. † Alternate questions; ‡ questions in optional module.

	DHS-7 2013-18	DHS-6 2008-13	DHS-5 2003-08	MICS-5 2013-15	MICS-4 2009-12	MICS-3 2005-07
Unmet need for family planning						
• [For currently pregnant women:] When you got pregnant, did you want to get pregnant at that time?	√	√	†	√	√	
• Did you want to have a baby later on or did you not want any (any more) children?	√	√	†	√	√	
• [For currently pregnant women:] At the time you become pregnant did you want to become pregnant then, did you want to wait until later, or did you not want to have any more children?						‡
• [For women who had a live birth in the past 2 years] At the time you become pregnant with (name), did you want to become pregnant then, did you want to wait until later, or did you want no (more) children at all?						√
• [For births in the last 2/5 years:] When you got pregnant with (name), did you want to get pregnant at that time?	√	√	†	√	√	
• Did you want to have a baby later on, or did you not want any children?	√	√	†	√	√	
• How much longer did you want to wait?	√	√	√	√	√	
• Would you like to have a/another child, or would you prefer not to have any (more) children?	√	√	√	√	√	‡
• How long would you like to wait from now before the birth of a/another child?	√	√	√	√	√	‡

Source: ICF International Inc (2012b, 2015b); MEASURE DHS (2008b); UNICEF (2005a, 2005b, 2005c, 2012b, 2013b) Notes: Types of sources include public sector sources (e.g., government hospital, government health center, family planning clinic, mobile clinic, fieldworker, other public sector), private medical sector sources (private hospital/clinic, pharmacy, private doctor, mobile clinic, fieldworker, other private medical sector), and other sources (shops, church, friends/relatives, and other). Reasons for discontinuation include: infrequent sex/husband away, became pregnant while using, wanted to become pregnant, husband/partner disapproved, wanted a more effective method, side effects/health concerns, lack of access/too far, costs too much, inconvenient to use, up to God/fatalistic, difficult to get pregnant/menopausal, marital dissolution/separation, other. Only one response is allowed. † Alternate questions; ‡ questions in optional module.

TABLE 3: KEY FAMILY PLANNING QUESTIONS IN RECENT DHS/MICS SURVEYS (MEN'S QUESTIONNAIRES)

	DHS-7 2013-18	DHS-6 2008-13	DHS-5 2003-08	MICS-5 2013-15	MICS-4 2009-12	MICS-3 2005-07
Knowledge of FP methods						
• Have you ever heard of (method)?	√	√	√			-
FP sources						
• Do you know of a place where a person can get condoms?	√	√	√			-
• Where is that? (type of source)		√	√			-
• Do you know of a place where a person can get female condoms?		√	√			-
• Where is that (type of source)		√	√			-
• Do you know of a place where you can obtain a method of family planning?	√	√				-
Current use of FP						
• The last time you had sex did you or your partner use any method to avoid or prevent a pregnancy?	√	√	√			-
• What method did you or your partner use?	√	√	√			-
Ever use of FP methods						
• Have you ever used (method)?			√			-
Current condom use						
• The last time you had sexual intercourse with [your last sexual partner], was a condom used?	√	√	√			-
• What is the brand of the condom used [the last time you had sex]?	√	√				-
• May I see the package of condoms you were using at that time? (record brand name)			√			-
• Do you know the brand name of the condom used at that time? (record brand name)			√			-
• How many condoms did you get the last time?			√			-
• The last time you obtained condoms, how much did you pay in total, including the cost of the condom(s) and any consultation you may have had?			√			-
• From where did you obtain the condom the last time? (type of source)	√	√	√			-

Source: ICF International Inc (2012b, 2015a); MEASURE DHS (2008a, 2008b); UNICEF (2012a, 2013a). Notes: MICS-3 surveys did not interview men. Types of sources include public sector sources (e.g., government hospital, government health center, family planning clinic, mobile clinic, fieldworker, other public sector), private medical sector sources (private hospital/clinic, pharmacy, private doctor, mobile clinic, fieldworker, other private medical sector), and other sources (shops, church, friends/relatives, and other).

Since most information about family planning can be collected through interviews with women, the male model questionnaires typically include few family planning questions (see Table 3). MICS surveys did not collect any information about family planning from men, but the DHS surveys do include a limited number of family planning questions.

The DHS men's questionnaires all collect information about men's knowledge about specific family planning methods. The current DHS model questionnaire asks men whether they know a source for family planning, but the model questionnaire does not ask about the type of source. All DHS questionnaires ask men whether they or their partner used any method to avoid or prevent a pregnancy the last time they had sex, and if so, to specify which method they used. This information can be used to calculate the contraceptive prevalence rate for males and to calculate the method mix. This information can then be triangulated with information obtained from women. Men are also asked whether they would like to have another child, and if so, how long they would like to wait before the birth of that child. As was the case for women, this information can be used to calculate the percentage of men who want to postpone childbearing and the percentage who want to stop childbearing.

Since condoms are a male method, the male questionnaires tend to collect fairly detailed information about condom use. Men are asked if they know a source for condoms. Earlier surveys asked men to specify the type of source, but since 2013 this question is no longer included in the model questionnaire. From 2008 onward, the DHS surveys ask men whether a condom was used in the last time they had sex with their most recent sexual partner. Men who report a condom was used are asked about the specific condom brand that was used (men who do not know the brand name are asked to show the package to the interviewer). This information about use of specific condom brands can provide insights about the market share of the public, nongovernmental organization (NGO), and commercial sectors. Men are also asked to specify the type of source where they obtained the condom the last time, which can provide additional market share information.[5]

COLLECTING PRIMARY DATA

In most cases, secondary data alone will not be sufficient to inform a TMA plan, either because the data are dated, or because important information is missing. Once it has been determined which additional data are needed, plans to collect primary data can be initiated. Primary data collection is likely to involve a combination of service statistics, survey data, retail/distribution audits or surveys, and qualitative studies such as key informant interviews.

Survey data

Survey data can be collected by commissioning a new ad-hoc population-based survey, by piggy-backing onto another scheduled survey, or by participating in an omnibus survey. If resources permit the best option would be to commission a population-based survey that collects the necessary TMA information. Ad hoc population-based surveys are expensive, but much of the cost stems from the need to have a representative sample, and the associated travel expenses. The length of the questionnaire typically has relatively little influence on the total survey cost. Therefore, it is strongly recommended that any ad hoc surveys that are being commissioned collect all the needed TMA data, rather than only the TMA data that could not be obtained from secondary data sources. This will ensure that all survey-based indicators are current and that they are calculated on the basis of the same group of respondents (which increases their comparability). It also has the added advantage that some of the data can be triangulated with secondary data sources.

5 The source is coded using the standard categories of public sector (government hospital, government health center, family planning clinic, mobile clinic, fieldworker, or other public sector), private medical sector (private hospital/clinic, pharmacy, private doctor, mobile clinic, fieldworker, other private medical sector), or other source (shop, church, friend/relative, or other) (ICF International Inc, 2015a).

Another option for obtaining survey data is to piggy-back and add a limited number of questions onto a survey that has already been scheduled. In some cases, it may be possible to add a few questions to an upcoming survey by a large NGO that implements country-specific family planning programs, or even to a Demographic and Health Survey (Berg & Meekers, 2005). When feasible, piggy-backing onto another survey tends to be cost-effective. But the disadvantages of trying to piggy-back onto another survey are many. First and foremost, because population-based surveys tend to be conducted infrequently, there are relatively few piggy-backing opportunities, and even when there is an opportunity, the timing of the scheduled survey may not be right. Because questionnaire development is a lengthy process (they must be translated into local languages, back-translated, and field tested), any negotiations to add questions to the questionnaires will likely need to take place at least one year before the implementation of the survey. Requests to add questions to a scheduled survey — whether a DHS or NGO survey — are likely to meet resistance for a number of reasons. Often the questionnaires are already very long, so there may be concerns that adding questions will make the interviews excessively long, which could have a negative effect on the quality of the data and/or might increase non-response rates. Adding questions will also alter the numbering of the questions and may affect the skip patterns, which is tedious to correct. Therefore, it must be recognized that while there is precedent for adding two or three questions to a DHS or NGO questionnaire, efforts to add a larger number questions have a low likelihood of success.

A third option for obtaining survey data is to participate in a so-called omnibus survey (Berg & Meekers, 2005). Omnibus surveys are syndicated marketing surveys that collect data on a wide range of topics. Typically, such surveys are implemented by a marketing research company. Many – but not all – companies are listed in the ESOMAR Directory of Research (see https://directory.esomar.org/countries.php). Most countries have at least one experienced marketing research company. In addition, there are a few large marketing research companies that operate in multiple countries. For example, TNS conducts omnibus surveys in 80 countries through affiliates such as TNS-RMS in West and Central Africa (http://www.tnsglobal.com/directory/service/omnibus-international). DCDM Research operates in over 20 countries in Eastern, Central, and Southern Africa (www.dcdmresearch.com). For omnibus surveys, the implementing market research organization typically draws the sample and collects limited information about the background characteristics of the respondents. Interested parties (commercial companies, NGOs, etc.) can then purchase additional questions, usually at a fixed cost per question. Organizations that purchase questions will only receive data for the questions they purchased themselves, in addition to the background information collected by the implementing organization.

The advantages of omnibus surveys are that they are often conducted at very short intervals (sometimes every two months), which makes them ideal for assessing trends in the family planning market, that they tend to have large sample sizes, and that they are inexpensive. Their main disadvantages include that the sample may not be nationally representative, that they may not use rigorous sampling methods, and that there may be only limited supervision of the interviewers and other quality control measures. Because omnibus surveys are used mostly by commercial companies, their samples tend to focus on those areas that have a substantial cash market. Consequently, the samples for omnibus surveys may exclude sparsely populated areas and/or smaller rural localities. Some omnibus surveys use the same target sample size for each geographic area, irrespective of the population size of the area, which implies that areas with a large population are under-sampled, relative to areas with smaller populations, resulting in a sample that is not representative of the total population. These factors limit the extent to which the results can be generalized, as well as the extent to which they can be compared with other data sources, such as DHS surveys. In many cases, it will be possible to address at least some of the weaknesses of omnibus surveys. For example, having detailed information about the sampling procedures may make it possible to weight the data to correct for the oversampling of some areas. Likewise, it may be possible

to increase quality control. For example, the Society for Family Health (SFH) in Nigeria strengthened quality control of the RMS Nigerbus surveys by using their own research staff to assist with the interviewer training and to supervise them in the field. Before participating in an omnibus survey it is advised to carefully review the sampling plan and procedures, as well as the quality control mechanism they have in place.

Since collecting survey data involves human subjects, approval by an Institutional Review Board (IRB) will invariably be required at both the institutional level and at the country level. Brady et al. (2016) describe what is typically involved in an IRB review for a TMA landscaping exercise. Additional details about the IRB process for survey research (and templates for research protocols, consent forms, etc.) are included in Appendix. However, because IRB regulations and procedures vary somewhat from organization to organization, it is strongly advised that any organization that plans to either collect or analyze survey data verify the details about the IRB regulations at their own organization. As a general rule, data collection is prohibited until the IRB has either formally given approval, or has provided a formal written declaration that the study is exempt.

Tools for primary data collection

Tool 11: Obtaining institutional review board approval for a study

Tool 12: Sampling strategies

Tool 13: Model TMA household survey questionnaire

Tool 14: Model TMA retail audit/survey questionnaire

Program data and service statistics

Program data and service statistics are typically routinely collected through management information systems (MIS) of the implementing organizations, which implies that data can be obtained fast and at a low cost. In most cases the data that are being routinely collected by the public sector, non-profit private sector, and commercial sector suffice to provide information about market volume, market value, market share, and subsidies. Unfortunately, even though the data may exist, they are not necessarily shared across sectors. Data on the commercial sector are particularly difficult to get because they are often considered proprietary. Another important problem is that data collection has not been standardized across these sectors. For example, sometimes sales volumes are reported by calendar year while in other cases it is reported by fiscal year. Another problem is that the actual measurement may differ. For example, the public sector may track the number of product units that they imported or produced, social marketing program may report the number of units they sold to distributors (i.e. sales to the trade, rather than retail sales), and the commercial sector may track the number of units sold to consumers (retail sales). Because not all the commodities that were imported or sold to distributers will reach the consumers, the information may not yield very reliable estimates of the total size of the market. Because TMA analysis requires the pooling of data from the three sectors, it is important that each sector measures and reports such data in the same manner. In other words, there is a need to standardize data collection for key indicators. Several health fields have been able to move toward the standardization of key indicators by developing indicator handbooks that provide a definition of the indicators, as well as details about the precise measurement of each indicator, including the unit of measurement, frequency of reporting, data source, data requirements (Bertrand & Escudero, 2002; STOP TB Partnership, 2004; U.S. Government's Global Hunger and Food Security Initiative, 2013). The indicator reference sheets provided in the Appendix serve that same function.

Another problem with program data and service statistics is that it is rare for all these data to be publicly available. In the long term, it would be beneficial to establish a data repository that gathers data from all three sectors. In the short to medium term, data sharing across sectors should be encouraged by illustrating that evidence-based TMA plans will benefit all three sectors. Using a participatory approach to analyze data, share opinions, and inform decisions may be a good way to show representatives from all sectors the benefits of sharing data (Task Order 4 USAID DELIVER Project, 2014).

Retail audit and distribution surveys

Although sales data can provide information about the market share of each of the three sectors, additional information can be obtained through a survey of retail outlets. Such surveys can take the form of either retail audits or product distribution surveys (Andreasen, 1988; Richter & Meekers, 2000). The main objectives of retail audits are to track retail sales and – to the extent possible – to explain sales trends. By contrast, the main focus of product distribution survey is to measure current availability of different products and brands (market penetration) and to identify potential problems with product distribution. Nevertheless, the two methods have many similarities. Both methods collect information from a random sample of retail outlets to obtain data on retail sales, product inventory, stockouts, and retail prices for different brands. As such, they are valuable tools for measuring trends in market share of different brands and in total market volume, which can help show whether increased use or subsidized and free products is growing the total market or more merely reflecting that consumers are switching from commercial products to fully or partially subsidized products. Retail audits and distribution surveys can both provide data on the distribution coverage of different brands, and on the use point-of-sale promotional materials. One of the key differences between retail audits and distribution surveys consists of their approach to measuring retail sales and inventories.

Because many retailers do not keep accurate records of their sales, or any records for that matter, retail audits estimate retail sales by tracking changes in retail inventories and collecting information on products purchased by the retailers (Andreasen, 1988). This is typically done through either weekly or daily inventory audits. For a weekly audit, the relevant family planning products are inventoried at the beginning and end of a 7-day period, and the retailer is asked to keep written records of any purchases he/she makes during that week. For a daily audit, products are inventoried at the beginning and end of a 24 hour period, and the retailer is asked to verbally report on purchases that he or she made during this same period. Because weekly audits require accurate record keeping, the weekly approach is likely to be more appropriate for educated retailers, such as pharmacists, while the daily method may be more appropriate for retailers who have little or no education. Ideally, a pretest will be conducted to determine which method works best in a given context. One of the strengths of the retail audit approach is that it is likely that retailers are able to fairly accurately recall their purchases over a 24-hour or 7-day day period; the drawback is that each sampled retail outlet must be visited and inventoried twice.

Product distribution surveys obtain data through a short face-to-face interview with retailers at a sample of retail outlets (Richter & Meekers, 2000). The questionnaire typically solicits information about a wide range of topics, including the retailer's awareness of different brands and of advertisements for different brands. Unlike retail audits, retailers are asked to estimate weekly sales of each brand or to provide sales records. The questionnaire typically also enquires about the different brands that are sold at the outlet, whether they are in stock, the quantity that is in stock, and the retail price. Interviewer observations are used to record which promotional materials for the different brands are displayed at the outlet. Because distribution surveys require only a single visit to each selected retail outlet, they are less disruptive to the retailers and more cost-effective. However, the drawback is that the estimate of retail sales is likely to be less accurate than those obtained from regular before-after retail audits.

To be able to generalize the results from either retail audits or distribution surveys, they must be based on a representative sample of retail outlets. In most cases, this will require using a stratified sample based on an up-to-date sampling frame, which can be expensive. The sample size must be sufficiently large to allow estimates at the desired level. Obtaining estimates of retail sales, distribution coverage etc. for specific regions will require a larger sample size, which further increases the cost. Although conducting a retail audit or distribution survey can entail a significant cost, it may be possible to share these costs across organizations, since data on retail sales and market trends would be valuable to organizations in the public, nongovernmental organization (NGO), as well as commercial sector (Andreasen, 1988). This is particularly the case in the context of the development of a TMA plan.

QUESTIONNAIRES FOR PRIMARY DATA COLLECTION

As discussed in the previous sections, much of the data that are needed to inform a TMA plan can be obtained from surveys, be it either household surveys or a form of retail surveys. In most cases, surveys are implemented using structured interviews that are administered by trained interviewers. Structured interviews normally use a standard questionnaire, which ensures that all respondents are asked the exact same questions (i.e., using the exact same wording), and in the same sequence (Fisher & Foreit, 2002; Fisher, Laing, Stoeckel, & Townsend, 1998). While secondary data sources such as the DHS surveys or retail surveys conducted by NGOs can provide much of the information needed to develop a TMA plan, they may not include data to calculate all the recommended indicators. For example, neither of the model questionnaires for the DHS nor the MICS surveys collect information on willingness to pay for family planning products or services. Moreover, unless existing secondary surveys were conducted very recently, the information from such surveys may be too dated to provide an accurate picture of the current family planning market. Hence it may be necessary to conduct ad hoc household and/or retail surveys to collect recent data for all the indicators that are needed.

Given that ad hoc surveys are costly, it is important to ensure that the data collected to design the TMA plan can be used as a baseline to subsequently measure the impact of the TMA strategy on use of family planning. In addition to making sure that the sample size is sufficiently large to allow multivariate analyses, it is essential that the questionnaires collect information on other factors that could potentially affect the outcome, such as fertility preferences, exposure to family planning messages, etc. Although it may appear that having a much longer questionnaire would significantly increase the cost of a surveys, this is not the case. The total cost of a survey depends largely on the sample size, travel costs, and the time required for locating the selected survey respondents, which are fixed costs that are unrelated to the length of the questionnaire. Of course, having an excessively long questionnaire can lead to a lengthy interview, which may increase the number of refusals and incomplete questionnaires; it may also have a negative effect on the quality of the data. Therefore, it is important to check the interview durations as part of the questionnaire pretesting.

The quality of any ad hoc survey is highly dependent on the quality of the sampling and the survey instrument. The survey instruments should include the question(s) that are needed to calculate all the indicators that are likely to be analyzed for the development of the TMA plan. It is very important that ad hoc surveys collect information to measure all recommended TMA indicators, rather than only those that are not available in secondary data sources. Doing so will ensure that all indicators refer to the same time period and to the exact same study population. In addition to the TMA indicators, information will need to be collected on background characteristics that may be needed to segment the market.

It is recommended that ad hoc household surveys for TMA planning and impact evaluations cover the following topic areas, keeping in mind that each topic area typically requires multiple questions:

- Background characteristics (demographics, education, wealth status, place of residence)

- Knowledge of family planning methods/services
- Access to family planning
- Use of family planning
- Unmet need for family planning
- Use of specific brands (including unbranded public sector products)
- Reasons for non-use of family planning
- Willingness to pay for family planning
- Intention to use family planning in the future

Ideally, retail audits or surveys would collect information on the following topics:

- Outlet characteristics (type of outlet, location)
- Types of family planning products available
- Brands of each type of family planning product available (including unbranded public sector products)
- Retail prices
- Stockouts for each family planning method

If resources permit, household survey questionnaires may include a contraceptive history, which will enable examining method discontinuation and switching, and which can also collect information on the reasons for contraceptive discontinuation. Household surveys can also be used to collect data on exposure to family planning messages and brand advertising, while retail surveys can collect data on point-of-purchase promotional materials etc.

Because the data analysis required for TMA planning will also examine trends in the family planning market, it is essential that the information collected in ad hoc surveys is comparable with that from secondary data sources. To ensure comparability, it is important that the questions in the survey instrument are phrased in the exact same way as in those secondary data sources.

Model TMA household and retail outlet survey questionnaires have been included in Appendix. To ensure comparability with secondary data sources, the suggested questions are based on the DHS and MICS model questionnaires. For topic areas that that were not included in either of those surveys, the questions were based on other existing ad hoc household surveys. The retail outlet questionnaire has been based predominantly on retail audits and distribution surveys previously used by Population Services International.

5. ANALYZING PATTERNS AND TRENDS IN KEY TMA INDICATORS

Implementing TMA typically involves modifying existing programs to work together more effectively, rather than creating new programs from scratch. To achieve this, it is essential that information about what is known about the family planning market is shared across the three supply sectors (Barnes, Armand, Callahan, & Revuz, 2015; Barnes et al., 2012; Pallin & Meekers, 2014). The key TMA indicators previously described will provide important information about the current status of the market. However, data on these indicators must be analyzed and presented in a manner that highlights how coordination between the sectors can be improved. Most analyses will involve:

- Describing the profile of different types of family planning users, including users of different family planning products or services;
- Estimating the current demand for family planning, and assessing how this demand varies across subgroups and supply sectors;
- Assessing trends in the family planning market and highlighting the opportunities and potential for the market to grow.

All data analyses will require two types of data: 1) market data that are pertinent to TMA (i.e., the TMA indicators described earlier) and 2) stratification variables that measure various dimensions of inequality in access to and use of family planning (e.g., wealth, education, rural/urban residence) as well as differences in need (e.g., fertility levels, fertility preferences, etc.). These stratification variables may be used to develop a profile of the consumers from each sector, and to identify inequities in access to and use of family planning. The stratification variables are also important for clearly identifying important family planning consumer segments, so that the different supply sectors can tailor their distribution, pricing and promotional strategies to those consumer segments where they have the largest comparative advantage.

IDENTIFYING KEY VARIABLES FOR STRATIFICATION AND MARKET SEGMENTATION

Identifying distinct consumer segments that can potentially be targeted with marketing different strategies is done through the process of market segmentation. Market segmentation was originally developed in commercial marketing, but has frequently been used in public health applications, especially in social marketing. Simply put, the objective of market segmentation is to divide a large and heterogeneous market into smaller heterogeneous markets (Fahnestock, 2008; Market Development Approaches Working Group, 2009). Dividing the market is done by identifying appropriate bases of segmentation (Chapman et al., 2006). Potential segmentation bases typically consist of number of different socioeconomic, cultural, and behavioral factors, as well as consumer preferences. For a segmentation base to be considered appropriate, it must be possible to identify and reach the segment; the segment must be actionable (i.e., an intervention can be designed to affect the segment) and potentially responsive to the intervention. The segment also needs to be substantial in size and fairly stable over the course of the strategy (Chapman et al., 2006; Frank, Masy, & Wind, 1972; Market Development Approaches Working Group, 2009). It is noted that the selection of appropriate segmentation bases may vary depending on the family planning method, the target audience, and other factors (Fahnestock, 2008).

Traditionally, segmentation analyses have placed considerable emphasis on the ability and willingness to pay for products and services. However, such emphasis could potentially result in recommendations that do not reflect consumer preferences and that suppliers cannot deliver at good value for money (Chapman et

al., 2006). Hence, it may be helpful to consider a wider range of segmentation bases. Other commonly used segmentation bases include age, sex, marital status, parity, education, socioeconomic status, and type of place of residence (Briscombe, 2011; Chakraborty, Firestone, & Bellows, 2013; Fry, Firestone, & Chakraborty, 2014; Market Development Approaches Working Group, 2009; WHO, 2014; World Health Organization, 2013). Such segmentation bases are used based on the assumption that consumer preferences differ along these variables. Psychological and attitudinal variables, such as attitudes toward family planning, perceptions about the safety, side effects, and effectiveness of various family planning methods, fertility preferences, etc. can also be important segmentation bases. Similarly, behavioral variables such as past and current use of family planning methods, intention to use family planning in the future, sources of supply of family planning methods (i.e., public, nongovernmental organization (NGO), or commercial sector) can be helpful segmentation variables (Chapman et al., 2006; Market Development Approaches Working Group, 2009; MEASURE Evaluation & Addis Continental Institute of Public Health, 2014).

It has been recommended that analyses to facilitate the development of a TMA plan aim to include five bases of segmentation: vulnerability, behaviors, equity-based indicators, source of supply preferences, and determinants of behaviors, including willingness to pay (Chapman, 2008; Chapman et al., 2006). The specific variables that will be examined and the complexity of any segmentation strategy will vary from case to case, depending on the specific study objectives as well as the amount of funding available to collect additional data (Market Development Approaches Working Group, 2009). Although collecting primary data will typically allow the most rigorous analysis of the family planning market, often a lot can be learned from secondary data (Fahnestock, 2008). At a minimum, a standard DHS survey will typically allow examination of variables such as age, level of education, rural/urban residence, wealth status, marital status, parity, fertility preference, and current and past contraceptive use. A DHS will also have information on the source of supply for current users, classified into public sector, private medical sector, and other sources. The calculation and interpretation of most of these variables is fairly straightforward, except for wealth status. Wealth status needs to be measured using a composite indicator, which based on a series of questions about household possessions and amenities. Several different wealth indicators, all of which require a relatively complex calculation, have been used in the literature. The most commonly used ones are discussed at length in the next section.

MEASURING WEALTH

Because generating equity in access to and use of family planning is a key objective of any TMA plan, it is essential that analyses of individual-level data are disaggregated by wealth status whenever that is feasible. Although household income may seem like an ideal indicator of wealth, in developing countries it is very difficult to measure for a number of reasons (Rutstein & Johnson, 2004, pp. 2-3). For example, people may not know their exact annual income, income levels may vary on a daily, weekly, or seasonal basis, and household members may not share their income with other household members and may not disclose it. Therefore, measuring household income would require lengthy interviews with all household members who could potentially earn income, which is not feasible. However, if we think of household wealth as an unobserved variable, then we can look for variables that are associated with a household's relative economic status.

The questionnaires of standardized population-based health surveys, such as the DHS and MICS, surveys include a number of questions that enquire about amenities and possessions that are available in the respondents' household. Similar questions can be included in ad-hoc surveys that may need to be conducted. The standard questions are of the format "Does any member of your household own… a watch, bicycle, motorcycle or scooter, an animal-drawn cart, a car or truck, a boat with motor?" and "Does your household have… electricity, a radio, a television, a mobile telephone, a non-mobile telephone, a refrigerator?" (ICF International Inc, 2012b). Respondents are also asked about the main source of drinking water, type of toilet facility, etc. Interviewer

observations are used to collect information about the main type of material the building's walls, roof and floor are constructed of. The specific types of amenities and possessions asked about may vary slightly from country to country; they may also vary slightly across survey waves (for example, older surveys did not collect information about mobile phones). These series of questions about amenities and possessions provide the information needed to develop composite indicators that reflect household wealth. Over the years, countless composite indicators of household socioeconomic status or wealth have been developed. Conceptually, wealth indicators can be classified in two broad categories: those that measure absolute wealth levels and those that measure relative wealth levels.

Measures that seek to capture absolute wealth levels aim to distinguish between the haves and have-nots. Using data on the available amenities and possessions, survey respondents are classified into three or four groups ranging from those who have little or nothing, to those who have most everything. Thus, in a poor country such as the Central African Republic, a large fraction of the population may fall into the group of "have nots". A much wealthier country, such as South Africa, is likely to have a much smaller percentage of "have nots". In many respects, measures of absolute wealth are very suitable for TMA analyses because they are good at identifying respondents who cannot afford family planning (and who should be targeted by the public sector) and at identifying respondents who have the ability to pay the full cost of family planning products.

The Amenities and Possessions Index

A good example of a measure of absolute wealth is the Amenities and Possessions Index (API), developed by Kishor & Neitzel (1996).[1] The API is based on the survey respondent's access to four consumer durables (radio, television, refrigerator, and a card) and to basic amenities such as drinking and non-drinking water, electricity, and a toilet facility. These specific amenities and possessions were selected because they represent collective goods that are likely to be shared by all household members. The API classifies respondents into one of four levels of household living standards:

- High: Respondents who live in a household that has at all four consumer durables (radio, television, refrigerator, and a car), bottled water or water piped into the residence/property for both drinking and non-drinking purposes, an own flush toilet (not shared), and electricity;
- Medium-high: Respondents in households that have any kind of drinking or non-drinking water other than surface water, any kind of flush or pit toilet latrine, or "other" toilet facility, that may or may not have electricity, and at least two of the four consumer durables;
- Medium: This is the residual group, consisting of respondents who do not fit into any of the other three groups. As such, respondents in this group may have access to any kind of drinking or non-drinking water, any kind of toilet facility, may or may not have electricity, and any combination of the four consumer durables;
- Low: Respondents in households that only have surface water for drinking and non-drinking purposes, no toilet facility, no electricity, and none of the four consumer variables (Kishor & Neitzel, 1996).

1 Another example is the Family Affluence Scale (FAS) that has been used by WHO in surveys of school-age children. The scale is considered a so-called material deprivation index and is comprised of the following items: Does your family own a car, van or truck? Do you have a bedroom for yourself? During the past 12 months, how many times did you travel away on holiday with your family? How many computers does your family own? Based on the respondent's answers, a composite score ranging from 0-9 is calculated. Respondents scoring 0-2 are classified as "low", 3-5 as "medium", and 6-9 as "high affluence" (Boyce, Torhsheim, Currie, & Zambon, 2006; Currie, Elton, Todd, & Platt, 1997).

BOX 1: CALCULATING THE DHS WEALTH INDEX

The precise procedures for calculating the DHS Wealth Index have changed over time. Early versions of the index used a single national index (Rutstein & Johnson, 2004). One of the weaknesses of that version of the index was that many of the included assets and amenities were most common in urban areas (Foreit, Karra, & Pandit-Rajani, 2010; Rutstein, 2008). In an effort to make the index less weighted toward urban areas subsequent versions incorporated additional information on farm animals and agricultural land areas and produced separate indexes for rural and urban areas, which were then combined into a single index. For a detailed description of the changes in the calculation of the index, see ICF International (2015a). The current calculation of the DHS Wealth Index involves the following steps (Rutstein, 2015):

- A very large number (as many as possible) of indicator variables are selected that reflect household assets and access to utilities and services. Typical variables obtained from the household questionnaire include household possessions and services such as ownership of a TV, radio, watch, different types of vehicles, the size of agricultural land owned, the type and number of animals owned, ownership of bank account, the type of windows, and whether the household has electricity. The household's source of drinking water, type of toilet facility, sharing of toilet facilities, material that the principal floor, wall, and roof are constructed of, and the type of cooking fuel are also included. In addition, three variables are selected from the individual interviews, including whether the household has one or more domestic servants, whether any household member works their own land or that of their family, and whether any household member owns a dwelling unit. Because the index focuses on economic status, it is important not to include level of education, occupation (other than domestic servant), and rural/urban residence in the calculation of the index.

- Three principal components analyses (PCA) are conducted to assign weights to each indicator variable. These analyses will generate a common wealth score, an urban wealth score, and a rural wealth score.[1] The PCA analysis to generate the common wealth score should be run using only those indicators variables for which it is believe that their relationship with economic status will be the same in both rural and urban areas. The PCA to create the urban wealth score is restricted to urban households and will only include indicator variables that are relevant for urban areas. The PCA to generate the rural wealth score is conducted for rural areas, including only indicators variables relevant for rural areas. For each analysis, the principal components procedure converts the indicator variables into one or more components that summarize the household's position on the indicator variables. For each component, the analyses generate a factor score that is a weighted linear combination of the original indicator variables. Only the factor scores for the component that explains the largest part of the variation in the data are used. For the rural and urban PCA analyses, these factor scores represent the rural and urban wealth scores. Creating the combined wealth score for the entire sample requires an additional step.

- To estimate a combined wealth score for the entire sample, the urban and rural wealth factor scores are regressed on the common wealth factor scores. For urban areas, this involves running a regression with the common wealth factor score as the dependent variable and the urban score as the independent variable. For rural areas, a similar regression analysis is conducted with the rural score as the independent variable. The results of the two regression analyses are used to obtain the final combined wealth score for the data set. Specifically, for each area the predicted wealth score is

1 In their review of five different procedures to assign weights to the indicator variables, Howe, Hargreaves, & Huttly (2008) concluded that even though principal component analysis has limitations, other methods do as well. They recommended PCA as a suitable methodology for assigning weights.

estimated by using the relevant urban or rural factor scores, constants, and coefficients obtained from the two regressions. The predicted wealth score is obtained using the following formulas:

$$\text{Wealth\_score}_{urb} = \text{constant}_{urb} + \text{coefficient}_{urb} * \text{factorscore}_{urb}$$

$$\text{Wealth\_score}_{rur} = \text{constant}_{rur} + \text{coefficient}_{rur} * \text{factorscore}_{rur}$$

The predicted wealth scores for each area are then combined into a single variable to create the combined wealth score at the national level.

- Next, wealth quintiles for the rural, urban and national level are calculated. To do this, the wealth scores of each area must be weighted by the number of household members in that area. For the combined score quintiles all cases are used, while for rural and urban areas only the households in the relevant region are used. For each of the three wealth scores, the population of household members is ranked based on their wealth score and then divided into five equal parts that each represent 20% of the household population, the so-called wealth quintiles. The RANK command in SPSS can be used to generate the quintile variables and will automatically add them to the data.
- In subsequent analyses, each household member receives the wealth index score of its household (that is, all members of a given household have the same wealth index score).

Both the DHS and MICS surveys typically include the necessary data to calculate the API.[2] The calculation is relatively easy with a statistical software program.

In their study of DHS surveys in 25 countries, Kishor & Neitzel (1996) were able to calculate the API for all but two of the countries. As expected, in most countries the majority of respondents were classified as having a medium household living standard; in most countries in sub-Saharan Africa that was the case for over two thirds of respondents. Several countries in North Africa, Latin America, and the Caribbean, had substantial proportions of respondents classified as medium-high. The percentage of respondents who have absolutely nothing (low) was below 10% in most countries, the notable exceptions being Madagascar (33%) and Zambia (11%). Similarly, only a few countries had over 10% of the population classified as having a high household living standard (Turkey, 11%; Bolivia, 13%, and Peru 11%). The API index is very effective for showing wealth differences between countries. However, because respondents tend to be concentrated in the "medium" and "medium-high" wealth categories, the number of respondents in the "high" and "low" categories may be too small to analyze, which may be problematic. This may be one of the reasons why many studies focus on relative wealth.

The DHS Wealth Index

Measures of relative wealth typically rank all survey respondents according to a national percentile distribution of household economic status, and then classify them into groups. For example, a measure may classify respondents into wealth quintiles, and label the 20% of respondents who have the lowest score on the wealth index as "poorest", the next 20% as "poor", etc. This type of measure can be useful for assessing the reach of public health programs among the poorest and wealthiest groups of people.

2 Questions about socio-economic status are typically included in the household questionnaire, rather than in the individual questionnaires for men and women.

During the past ten years, the DHS Wealth Index has become one of the most widely used indicators of relative wealth (Briscombe, 2011; Rutstein & Johnson, 2004). The DHS Wealth Index is a composite indicator based a combination of household ownership of a series of assets and access to various amenities and services. A statistical procedure (principal component analysis) is used to assign weights to the different assets, amenities, and services, and to generate a summary wealth score for each household (Filmer & Pritchett, 1999, 2001; Rutstein & Johnson, 2004). Households are then ranked based on their wealth score and subsequently grouped into quintiles, where the 20% of the lowest scores comprise the first (poorest) quintile, and so forth. All DHS and MICS surveys conducted in the last 15-20 years have collected the information that is needed to calculate the DHS Wealth Index. Moreover, the DHS Wealth Index has already been calculated and included in the datasets of all recent DHS and MICS surveys. For ad hoc nationally representative surveys that do not include the DHS Wealth Index, it can be calculated provided that the surveys collected the required asset information and information on the number of de jure household members (Rutstein, 2008, 2015; Rutstein & Johnson, 2004). The basic steps involved in the calculation of the DHS Wealth Index are described in Box 1. Examples of the exact SPSS commands that were used to calculate the DHS Wealth Index for various DHS surveys can be downloaded from: http://dhsprogram.com/topics/wealth-index/Wealth-Index-Construction.cfm.[3]

The DHS Wealth Index, like other indices of relative wealth, is not comparable across countries or across diffferent survey waves. Respondents in the poorest wealth quintile in one survey may be better or worse off than respondents in the same wealth quintile in a different survey. Therefor, it is recommended that analyses of trends in family planning indicators for specific wealth groups use the International Wealth Index, rather than wealth quintiles.

Despite the popularity of the DHS Wealth Index, it is important to note that it has a number of important weaknesses that users need to be aware off. One of the disadvantages of measures of relative wealth is that they do not provide any information about the size of different wealth groups. By definition, one out of five respondents are classified as "poorest", one out of five as "poor", etc. Thus, it is not possible to use the DHS wealth quintiles as a proxy for tracking progress toward the UN Millennium Development Goal to halve the proportion of people whose income is less than one dollar a day. If the economic situation of a country's population were to either improve or deteriorate, this would not be observed in the DHS Wealth Index.[4]

Perhaps more importantly, the DHS Wealth Index, like other indices of relative wealth, is not comparable across countries or across different survey years (Rutstein & Staveteig, 2013; Smits & Steendijk, 2013, 2015). For each survey a separate wealth index is calculated that is based on the distribution of household assets and amenities in that particular country, at that particular time. Hence, the wealth index identifies the "poorest" by comparing each individual ranks compared to others in the same population. As noted by Rutstein and Staveteig (2013), in a very poor country a household that is classified in the highest wealth quintile is not necessarily well-off in absolute terms. With an indicator of relative wealth, the average wealth level of a specific wealth quintile (e.g., the poorest 20%), will differ across countries and across survey years (Rutstein & Staveteig, 2013; Smits & Steendijk, 2013). For example, respondents who are classified as being in the poorest wealth quintile in one survey may be better or worse off than respondents in the same wealth quintile in a different survey (Foreit & Schreiner, 2011, p. 11).Therefore, it is not possible to draw comparisons of wealth groups across countries or over time with

3 Recently, there have been efforts to develop simplified versions of the DHS Wealth Index that require fewer survey questions. However, as yet there is no single agreed upon simplified methodology (Chakraborty et al., 2016; Ergo et al., 2016; Pullum, 2016).

4 Rutstein and Johnson (2004, p. 6) remark that if the percentage of the population that lives below the absolute poverty line is known, it would be possible to use that percentage as the cutoff point for wealth index (rather than quintile cutoff points). This would make it possible to use the wealth index to analyze differences in absolute poverty. Examining trends in absolute poverty would require that the percentage living below the poverty line is known for each survey year.

measures of relative wealth. Since developing a TMA plan typically involves examining trends in key indicators, examining trends of indicators for groups that are in the same wealth quintile should be avoided. For an illustrative example of how using wealth quintiles in trend analyses can produce misleading results is shown later in this section (see Box 3).

The International Wealth Index

Recently, there have been efforts to develop wealth indices that are comparable across countries and over time, most notably the International Wealth Index and the DHS Comparative Wealth Index (Global Data Lab, 2015; Rutstein & Staveteig, 2013, 2014; Smits & Steendijk, 2013, 2015). The International Wealth Index (IWI) is an asset-based index that measures the level of material well-being of a household's based on ownership of durable goods, access to basic services, and the characteristics of the housing unit. The index is based on a principal components analysis of asset information from 165 surveys in 97 countries. The IWI uses the same criteria for rating households irrespective of the country or survey year, which makes it suitable for comparisons across countries and over time. The IWI scale ranges from 0 to 100, where zero implies that the household has none of the durable goods and the lowest quality housing and services, and 100 implies that the household has all of the durables and the best quality housing and services. Therefore, in very wealthy countries the majority of households are expected to be concentrated at the upper end of the scale, while in very poor countries they will be concentrated at the lower end. The Global Data Lab has calculated the IWI for many DHS and MICS surveys, and data files are available that have been specifically designed to easily add the IWI to existing DHS and MICS datasets (to obtain these datasets, see http://ddw.ruhosting.nl/iwi/using.php). Using the data sets provided by the Global Data Lab will save time because combining their datasets with those from an existing DHS or MICS survey will be much faster than performing the IWI calculations. Moreover, it will reduce the risk of error and will ensure that values of the IWI used will be identical to those of others who used the same DHS/MICS dataset. Instructions for adding and IWI data file to an existing DHS file are described in the Appendix.

Nevertheless, there may be instances where the Global Data Lab does not have IWI datasets for all the surveys that are used to develop a TMA plan. For example, IWI values may not yet be available for very recent DHS and MICS surveys, or for any ad hoc surveys conducted by NGOs or other organizations. Provided that the surveys in question contain data on the required asset variables, it will be possible for researchers to calculate the IWI using statistical software such as SPSS or STATA. The basic procedures involved in the calculation of the IWI are described in Box 2 (the exact values to be used in the calculation are available in Appendix). The Global Data Lab also provides an SPSS macro that can be adapted to calculate the IWI, which has also been reproduced in Appendix. [5]

One of the advantages of the IWI is that it is relatively easily reproduced for any survey – and any household – that has data on the 12 required asset variables (Rutstein & Staveteig, 2013). The limited number of asset variables needed implies that it is easy to incorporate in the questionnaires of ad hoc surveys that may need to be conducted to develop TMA plans or to assess the impact of TMA approaches. A potential downside of the fact that only limited information is needed to calculate the IWI is that other information about other household assets that is typically collected in DHS and MICS surveys is ignored, and it is possible that some of the ignored assets may be salient to inequality.

5 The SPSS syntax provided in Appendix assumes that information on all twelve required assets is available. It cannot be used for households that have missing information for one or more of those assets. For households that have missing information for no more than three assets, it is still possible to get a relatively good approximation of the IWI using an adapted formula. However, the calculations are lengthy because separate formulas are needed depending on which assets are missing. The required SPSS syntax is too long to reproduce in Appendix, but it can be obtained from the Global Data Lab (http://ddw.ruhosting.nl/iwi/downloads.php).

BOX 2: CALCULATING THE INTERNATIONAL WEALTH INDEX

The calculation of the IWI involves three major steps: the measurement of the indicators, weighting of the indicators, and re-scaling (Global Data Lab, 2015; Smits & Steendijk, 2013, pp. 6-11; 2015, pp. 70-75). In the first step, consumer durables are measured using dichotomous (yes/no) variables. A household receives a score of '1' if one of the household members owns the durable; zero otherwise. The durables goods included in the index are ownership of a TV, refrigerator, phone, bicycle, car, a cheap utensil and an expensive utensil. Measurement of cheap and expensive utensils may vary slightly across surveys. Therefore, cheap utensils refer to any cheap item (less than 50 US dollars) available in the data; expensive utensils refer to the possession of expensive items (over 300 US dollars), such as washers, dryers, air conditioning units, etc. Households that have electricity also receive a score of '1'.

Next, the number of sleeping rooms, and the quality of the water supply, floor material, and toilet facility are measured using 3-category variables. Households with zero or one sleeping rooms are given a score of '1', those with two sleeping rooms a score of '2', and those with three or more sleeping rooms as score of '3'. Households that get water from an unprotected well, borehole, spring, surface water, etc. receive a score of one (low quality); those that use a public tap, protected well, tanker truck, etc. receive a score of two (medium quality), and those that use bottled water of water piped into dwelling receive a score of 3 (high quality). For the quality of the toilet facility, households that use a pit latrine, hanging toilet or no toilet facility receive a score of '1' (low quality); those that use public toilets, improved pit latrines, etc. receive a score of '2', and those that have any kind of private flush toilet receive a score of '3'. For floor quality, households that have no floor, earthen, dung floors, etc. receive a score of '1'; those that have cement, concrete, raw wood floors etc. receive a score of '2', and those that have finished floors with parquet, carpet, tiles, ceramic etc. receive a score of '3'.

As is the case for the DHS Wealth Index, the calculation of the IWI requires that each indicator variable be weighted. However, in the case of the IWI the relative weight of the assets has been pre-determined using a principal component analysis conducted on 165 survey datasets, collected in 97 countries over a 15 year time span. To allow for the fact that countries have very different population sizes, the analysis was weighted by the square root of the population size. The component that explained the largest proportion of the variance was used for the indicator weights. The results were re-scaled to ensure that the final scale would have a 0-100 range. To achieve this, a 'raw' wealth score was calculated that equaled the sum of each indicator variable multiplied by the asset weight. Next, the minimum possible value of the raw wealth score and the maximum possible value were determined. To put the minimum value of the final scale at '0', the opposite of the minimum raw score was added to each household score (which also increased the maximum score). To put the maximum of the final scale at 100, the household scores were divided by the new maximum score, and multiplied by 100. The calculations result in a series of re-scaled asset weights that are used in the calculation of the IWI for all survey datasets.

The IWI is calculated as a constant (25.004) plus the sum of the product of the indicator variables multiplied by the re-scaled assets weights using the following formula:

$$IWI = 25.004 + \sum ß'_n \cdot x_n$$

Where $ß'_n$ stands for the re-scaled asset weights and x_n for the value of the indicator variables. The exact values to be used in the formula, and SPSS syntax that can be adapted to perform the calculations is provided in Appendix. The final IWI score is rounded to one decimal place.

The Comparative Wealth Index

At present, an experimental methodology called the Comparative Wealth Index (CWI) is being developed that also aims to enable comparisons of wealth levels across countries and over time (Rutstein & Staveteig, 2013, 2014). The CWI makes country-specific DHS Wealth Indexes comparable to each other by using a baseline survey and by linking ("anchoring") several items that are available in the datasets for most DHS and MICS surveys. The CWI classifies each household into one of the five wealth quintiles of the baseline survey (Vietnam 2002). In other words, households that are classified in the poorest quintile in one survey will always have an economic status that is comparable to those in the poorest quintile in the 2002 Vietnam survey. However, while the baseline survey has exactly 20% of the household population in each wealth category, for other surveys the distribution across the five wealth categories will be different. The steps involved in the calculation of the CWI are described in Appendix.

The experimental CWI has already been calculated for 172 DHS surveys conducted in 69 countries during the period from 1990 to 2012. Although the CWI values have not yet been included in the datasets, in theory they can be calculated using a very simple transformation of the country-specific DHS Wealth Index. Because the methodology is experimental, the parameters needed to convert the DHS Wealth Index into the CWI are publicly available for only a few DHS surveys (see Appendix). The parameters for the remaining countries have not yet been published, but might be available from the DHS Program (http://www.dhsprogram.com/Who-We-Are/Contact-Us.cfm). To the best of our knowledge, the CWI has not yet been calculated for any of the MICS surveys. It is also important to note that the Comparative Wealth Index is the early stages of development, and efforts to further improve the index may lead to changes in the way it is calculated. This could potentially involve calculating separate CWI values for rural and urban areas that could then be combined in a composite CWI, similar to the DHS Wealth Index. Until the methodology for the CWI has been further refined and tested, the International Wealth Index (IWI) is likely to be a better choice for equity analyses to inform a TMA plan.

Tools for measuring wealth levels

Tool 2: SPSS syntax to calculate the DHS Wealth Index

Tool 3: Instructions for adding an International Wealth Index dataset to an existing DHS dataset

Tool 4: Coefficients for calculating the International Wealth Index (IWI)

Tool 5: SPSS syntax to calculate the International Wealth Index (IWI)

Tool 6: Calculating the Comparative Wealth Index (CWI)

Tool 7: Parameters to convert the DHS Wealth Index to the Comparative Wealth Index

ANALYTICAL APPROACH FOR TMA MARKET ANALYSES

The specific data analyses that can be performed to inform a TMA plan will depend on the available data. A number of indicators can typically only be calculated at the national level. For example, it is rare for sales/distribution data from all three sectors to be available at the regional level. Consequently, it is not possible to examine regional differences in market volume or in the market share of unsubsidized brands. For such indicators, the analysis is usually limited to a simple bar chart that shows trends in the indicators. Only in rare

BOX 3: COMPARISON OF RESULTS FROM THE INTERNATIONAL WEALTH INDEX AND DHS WEALTH QUINTILES

Because the DHS wealth index is an indicator of relative wealth, it is designed to compare wealth levels only within a specific survey. Comparing health indicators for a specific wealth quintile (say the poorest 20%) across survey years can give misleading results because the absolute wealth levels of respondents in that quintile can change over time (the same problem occurs when making comparisons across countries). Examining trends in health indicators for specific wealth groups should be done using a wealth indicator that is comparable across survey years, such as the International Wealth Index. The problem is illustrated in the table below, which shows trends in the percentage of sexually active women in Nigeria who currently use modern contraceptives.

	2003		2008		2013		p value
	%	N	%	N	%	N	
Wealth quintiles							
Poorest 20%	4.6	1,311	2.7	6,810	1.0	6,157	.000
Poor	4.2	1,221	5.0	6,130	4.8	6,724	.539
Middle	7.6	1,237	9.9	5,582	12.0	6,699	.000
Rich	11.9	1,254	17.2	5,391	18.6	6,876	.000
Richest 20%	22.7	1,339	25.2	4,889	27.5	6,745	.000
International Wealth Index							
Very poor (0-19.9)	4.3	2,256	4.0	9.285	3.5	5,880	.162
Lower middle (20-39.9)	9.8	2,045	7.9	7,973	7.3	10,289	.001
Middle (40-59.9)	16.1	1,117	17.4	5,661	16.3	8.729	.175
Upper middle (60-79.9)	21.7	579	21.6	3,933	22.0	5,911	.865
Wealthy (80-100)	23.6	229	27.7	1,442	28.0	2,089	.341
Total	10.4	6,362	12.2	28,802	13.0	33,203	.000

Source: Calculations based on the 2003-13 Nigeria DHS (weighted percentages; unweighted N of cases)

The table shows that the overall percentage of women who use modern family planning increased significantly from 10.4% in 2003 to 12.2% in 2008, to 13.0% in 2013. The top panel of the table shows trends in use of modern family planning within each wealth quintile. The results suggest that among women from the poorest 20% of households, use of modern family planning decreased from 4.6% in 2003 to 1.0% in 2013. Significant increases in use of modern family planning are observed among women in the top three wealth quintiles. For example, among women from the wealthiest 20% of households, use of modern family planning increased from 22.7% in 2003 to 27.5% in 2013. This finding suggests – incorrectly – that the overall increase in use of modern family planning was the result of increased use among wealthier women.

Examination of trends in use of modern family planning within each level of the International Wealth Index, shown in the bottom panel of the table, shows that this interpretation is incorrect. Specifically, the results show that there was no significant change in use of modern family planning in any of the wealth groups, except for women in the lower middle group. In the latter group use of modern family planning decreased from 9.8% in 2003 to 7.3% in 2013.

As previously mentioned, discrepancies in results between the two wealth indicators are expected when levels of absolute wealth change over time. In the case of Nigeria, the observed increases in use of modern family planning among from women in the top three wealth quintiles do not imply that there was a change in contraceptive behavior among wealthier women. Rather the increases in modern contraceptive use are seen because these groups of women became wealthier over time.

To avoid potential misinterpretations of findings, it is recommended that analyses of trends in family planning indicators

for specific wealth groups always use the International Wealth Index, rather than wealth quintiles.

cases, there will be sufficient existing data to calculate all the TMA indicators listed in Table 1. However, usually a considerable amount of valuable and insightful information can be obtained from detailed analyses of existing secondary data, such as DHS or MICS surveys (Fahnestock, 2008).

One of the most basic types of analyses of the family planning market is done by providing a thorough description of the profile of family planning users. It is important to note that the profile of consumers is likely to vary from one contraceptive method to another. Also, there may be contraceptive methods that are not provided by all three sectors. For example, social marketing programs may focus on condoms and oral contraceptives, and may not distribute or market other family planning methods. This implies that in addition to developing a profile of family planning users, it is important to also examine the profile of the users of each specific method, provided that the data permit such detailed analyses. The data needed to develop profiles of family planning users typically come from household surveys. In many cases, household surveys will have a sufficiently large sample size to develop separate profiles for users of popular family planning methods, such as oral contraceptives and condoms. However, unless the sample size is very large, it may not be possible to develop consumer profiles for less popular methods such as the female condom.

Because the objective of TMA analysis is to help the three sectors work together more effectively, it is important to not only describe the total body of consumers, but to also examine the specific profiles of the consumers from each of the three sectors. By developing separate profiles, it will be possible to examine whether each sector is reaching their intended target group. For example, the public sector typically aims to reach consumers who are unable to afford socially marketed or commercial family planning products; this sector may also aim to reach specific vulnerable groups. Such analyses can also help identify whether the public sector is serving people who are well to do, thereby undercutting the commercial sector.

The standard DHS questionnaire asks women who are currently using a contraceptive method from which source they last obtained their family planning method. This information can be used to help identify which sector supplied the method. The answer codes for this question vary a little bit from country to country but typically distinguishes between public sector sources (government hospital, government health center, family planning clinic, mobile clinic, fieldworker, and other public sector), private medical sector sources (private hospital/ clinic, pharmacy, private doctor, mobile clinic, NGO, fieldworker, and other private medical sector source), and other sources (shops, churches, friends/relatives, and other). Hence, it is possible to identify women who obtain family planning products and services from the public sector sources and those who rely on the private sector. However, this information is insufficient to distinguish between those who use nongovernmental organization sources (including social marketing) and those who use commercial sources. Recent DHS surveys also ask users of oral contraceptives and condoms which brand they are using. Information on the brand that is used can help distinguish between users of socially marketed and commercial brands. However, it is important to note that there

may be inaccuracies in these data, in part because the questionnaires may not have answer options for all brands, and because respondents may not recall the brand name. Nevertheless, these data can help to at least provide a rough classification of users by supply sector.

Demand for family planning products can be estimated by examining the percentage of current product users. DHS data will enable estimating the total demand for modern family planning (irrespective of the method), as well as the demand for specific methods. Moreover, as was the case for consumer profiles, it is typically possible to obtain separate estimates of the demand for public sector and private sector products. Depending on the availability of data on use of specific brands of oral contraceptives and condoms, it may be possible to have separate estimates of the demand for each of the three supply sectors.

DHS surveys typically also include data on intention to use family planning in the future, which can help understand future demand. However, as shown in Table 2 the standard questionnaires for recent DHS surveys (from 2008 onward) no longer include a question that asks respondents which specific method they would prefer to use.[6] Hence, this can only be used to get a rough estimate of the potential growth of the total family planning market. More detailed information about the growth potential of the family planning market can often be obtained by examining trends in the demand for different family planning products. To examine trend in demand for family planning, it is necessary to merge data from different DHS waves. The procedures for merging datasets from successive surveys are described in Appendix.

Tools for analyses of market trends

Tool 9: Merging datasets from different survey waves

For women who are not currently using contraceptives and who indicated that they either do not want any more children or that they do not want another child soon, the DHS surveys also asked the reason for not using family planning, which can also provide insights about market opportunities. If a high percentage of non-users report that they are not using family planning because the cost is too high, then there will be few opportunities for the commercial market to expand. On the other hand, if a high percentage of non-users report that they are not using due to issues related to a lack of access (lack of access/too far/no methods available, preferred methods not available), then it is likely that the commercial sector can play a role in filling that void.

To get a thorough understanding of the market, it is essential to conduct detailed analyses for various dimensions of inequality in access to and use of family planning (e.g., wealth, education, rural/urban residence) as well as differences in need (e.g., fertility levels, fertility preferences, etc.). Although many reports show results by means of graphs or figures, it is strongly recommended to first summarize all results in the form of detailed tables.[7] In a final report, the most interesting results can be presented in graphical format, and the detailed tables can be included in appendix.

6 Note that although this question is no longer included in the model questionnaire, it is possible that some countries may have added it at their own volition.

7 Tables typically include more information than graphs, such as the denominators that the percentages are based on. It is important to examine the denominators to ensure that the sample size is sufficiently large to yield reliable estimates; unexpected differences in the denominator can also alert the researcher to calculation errors.

ESTIMATING THE NUMBER OF FAMILY PLANNING USERS FROM SURVEY DATA

Most analyses of survey data provide prevalence information. For example, survey data typically provide information on the prevalence of contraceptive use, the percentage of users who obtain family planning products from the three different supply sectors, etc. However, it may be beneficial to also have estimates of the actual number of users, such as – for example – the total number of family planning users, the number who use each specific method, the number of who obtain their method from the public, nongovernmental organization (NGO), and commercial sector, etc. In theory, the number of users of family planning methods that require a clinical procedure (e.g., IUD insertion, sterilization) could be tracked through client records. However, in practice this is difficult because of the large number of facilities that provide such services. Even if all facilities had records about the number of IUD users, sterilizations performed, etc., in absence of a health information system that centralizes client records it would be virtually impossible to obtain the total number of users in a country. For other family planning methods (e.g., the pill, condoms, etc.), records about the number of users of each of these methods simply do not exist.

However, it is possible to estimate the number of family planning users based on prevalence data obtained from sample surveys. Estimates of the number of family planning users can be obtained in a couple of different ways. One way to estimate the number of contraceptive users is to take survey estimates of the prevalence, and to then apply these prevalence rates to the relevant population size (i.e., the number of women of reproductive age). For example, Karim et al. (2007) obtain the total number of contraceptive users by method and source by applying the relevant survey prevalence rates to population estimates from the United National population projections, which they obtained through the DEMPROJ demographic projection software (Stover & Kirmeyer, 2008).

When the contraceptive prevalence data are obtained from a probability sample, use of a statistical computer program may enable us to get more accurate estimates of the total number of users by taking into account the probability of selection. This approach also has the advantage that it will enable estimating the number of contraceptive users for different subpopulations, for example by region. For health surveys that use a two-stage stratified random sampling procedure, such as the DHS and MICS surveys, obtaining accurate estimates of the total number of users will require computer programs that can handle stratified sampling, such as STATA's svy procedures (Stata Corporation., 2013).[8] The procedures for estimating the number of modern contraceptive users from survey data using STATA are outlined in Appendix. The same methodology can be used to estimate the total number women who are currently using specific methods, such as oral contraceptives, the IUD, etc. Provided that several waves of survey data are available, the methodology can be extended to estimate trends in the number of contraceptive users over time.

Tools for estimating the size of the family planning market

Tool 8: Using survey data to estimate the number of contraceptive users

8 The term svy refers to the series of STATA commands that are specifically designed for use with complex samples. It is also possible to estimate the number of contraceptive users with SPSS. However, the base module of IBM SPSS Statistics does not handle stratified sampling. The IBM SPSS Complex Samples module is sold separately as an add-on. The CSDESCRIPTIVES command in that module can estimate total population sizes based on complex samples.

6. ASSESSING THE CAPACITY FOR GOVERNMENT STEWARDSHIP OF THE TMA PROCESS

To increase the likelihood that a Total Market Approach will be successful, it is important to ensure that there is an entity that is both willing and able to lead the effort to leverage the comparative advantage of the three sectors that provide family planning services. Leading and coordinating a strategy between the different sectors is referred to as "stewardship" (Abt Associates, 2015a; Brady et al., 2016). Although various development organizations and individuals may serve as TMA "champions" who can play and important role in generating interest in TMA planning, it may be desirable for the government to take responsibility for moving the TMA process forward. Government stewardship with respect to a TMA is likely to involve responsibilities and capacity in three distinct areas:

- Policy and dialogue to engage all three family planning sectors
- Regulation of the quality of family planning and reproductive health supplies
- Data collection and analysis of TMA indicators

It is expected that the entity that takes on the stewardship function will provide vision and guidance for the TMA process, engage the three sectors of family planning providers to strive for common goals, and help coordinate multi-sectoral interaction to ensure that the desired family planning results are achieved. However, the extent to which a government is willing and able to assume an active stewardship role is likely to vary across countries. In the event that an entity other than the government takes on the stewardship function, the government will continue to be responsible for the regulation of the quality of famly planning and reproductive health supplies and services, as the government always has the responsibility to protect consumers against substandard products and services.

THE TOTAL MARKET APPROACH STEWARDSHIP CAPACITY TOOL (TMASCT)

To ensure that it is feasible to implement a total market approach, Abt Associates have developed a tool to assess the capacity of a government to steward the TMA process (Abt Associates, 2015a, 2015b, 2015c). The Total Market Approach Stewardship Capacity Tool (TMASCT) was designed to assess the stewardship capacity of a single government agency. If some of the stewardship responsibilities are performed by a separate agency (e.g., enforcement of product registration, quality standards, etc.), then the tool can be adapted accordingly. Although the tool is designed to assess the stewardship capacity of a government agency, it can be adapted to measure the stewardship capacity of a different entity (e.g., the local office of a multinational agency such as UNFPA).

The tool consists of 1) a questionnaire that measures capacity in key components of the three main stewardship responsibilities (policy and dialogue; regulation; data collection and analysis), 2) an Excel workbook that calculates indicator scores, and 3) a report template . The report template is included in Annex of Abt Associates (2015a). The questionnaire addresses various components of the three main areas of stewardship capacity. As shown in Table 4, the questionnaire assesses fifteen different components of the capacity to steward the TMA process, including six aspects of the policy and dialogue to engage the three family planning sectors, three aspects of regulation of the quality of family planning supplies, and six components of the capacity to collect and analyze TMA indicators. For the complete questionnaire, see Abt Associates (2015b).

TABLE 4: COMPONENTS OF STEWARDSHIP CAPACITY

Policy and Dialogue	Regulation	Data Collection and Analysis
Mandate	Regulation	Data collection
Sufficient funding sources	Sufficient funding sourcess	Data analysis
Recognized need	Legal framework	Data management
Dialogue		Data quality
Monitoring and Evaluation		Data dissemination
Human Resources		Data use

Source: Abt Associates (2015a, p. 2).

STEWARDSHIP CAPACITY INDICATORS AND MEASUREMENT

Each of the fifteen components of stewardship capacity is measured using at least one indicator. In total there are twelve indicators of policy and dialogue capacity, eight indicators of regulation capacity, and fourteen indicators of data collection and analysis capacity. Each indicator is based on specific measurement criteria that must be met, which are listed in the questionnaire. The indicators and measurement criteria for stewardship capacity in policy and dialogue are summarized in Table 5; those for capacity in regulation in Table 6, and those for capacity in data collection and analysis are listed in Table 7. The complete government stewardship capacity assessment questionnaire has been published by Abt Associates (2015b).[1] When the questionnaire is being completed, each criterion must be scored as either met or unmet. Specific aspects of stewardship capacity are considered to exist only when all the criteria for the relevant indicator have been met.

IMPLEMENTATION OF THE STEWARDSHIP CAPACITY ASSESSMENT

Implementation of the tool involves the following steps:

- The evaluator who is responsible for assessing the capacity of the government to steward a TMA for family planning first conducts a preliminary review of government agencies involved in family planning commodity supplies and identifies a single government agency that is best suited to steward a TMA for family planning (Abt Associates, 2015a).[2] The selected agency is referred to as the family planning agency.
- Next, the evaluator works with the leadership of the family planning agency to identify appropriate key informants and to schedule a meeting with them. During that meeting, the key informants are asked to complete the questionnaire. Only one questionnaire is used per country. The questionnaire collects information on the criteria needed to calculate scores each specific stewardship capacity indicator, and about data sources or documents that confirm that the criterion is met. For those criteria that are not met, qualitative information about specific obstacles is gathered which – if needed – can be used to inform subsequent capacity-development interventions.

1 Funding for the development of the stewardship capacity assessment tool was provided by an Innovation Grant from the Reproductive Health Supplies Coalition.

2 The tool is intended for use by an external evaluator, but if desired it can also be used for internal self-assessments.

- Upon completion of the questionnaire, the evaluator uses the Excel spreadsheet to calculate the scores for all the stewardship indicators.
- The evaluator uses the template to draft the stewardship assessment report.

It is important to note that the tool does not provide a specific cut-off score to indicate whether or not the government agency examined has the capacity to manage a TMA. Rather the tool examines the capacity of the entity to fulfill various fundamental tasks that are needed for a TMA. As such, the tool is best suited to help identify specific areas where capacity needs to be strengthened, if any.

TABLE 5: STEWARDSHIP CAPACITY INDICATORS - POLICY AND DIALOGUE

	Indicator/measurement criteria
1.1 Mandate	The government agency has formalized responsibility to lead or participate in a multi-sectoral dialogue to ensure access to family planning commodities • A policy or mechanism exists for the FP planning agency to initiate or convene a multi-sectoral dialogue (including the commercial sector and NGOs) about the family planning commodities market (Yes/No) • The FP planning agency currently leads a multi-sectoral dialogue (including the commercial sector and NGOs) about the family planning commodities market (Y/N) • There is currently a multi-sectoral commodity security committee • A multi-sectoral commodity security working group or committee, involving the agency, has met as scheduled for the last three cycles or at least once a year for the last three years (Y/N)
1.2 Sufficient funding sources	The FP Planning agency receives sufficient funding to manage a TMA • There is a line item in the government budget for FP planning agency activities in the last three funding cycles (Y/N) The FP Planning agency can request funding to manage a TMA • There is a formal mechanism for requesting more government funding by the FP planning agency (Y/N) • There is a mechanism for requesting donor funding by the FP planning agency (Y/N) The FP planning agency receives reliable and sufficient funding to operate for a TMA • The FP planning agency received funding equal to or greater than what was requested for the last three budget cycles to regulate the market (Y/N)
1.3 Recognized need	The FP planning agency perceives the need for a TMA • Manager of the FP planning agency is willing to lead a TMA or delegate leadership and assign existing resources within their agency to lead a TMA (Y/N)

Source: Adapted from Abt Associates (2015b).

	Indicator/measurement criteria
1.4 Dialogue	There is a formal mechanism for the agency to communicate with the private sector • There is a formal mechanism for the government agency to communicate with the private sector (Y/N) The government agency effectively communicates with other sectors • Feedback produced through the communication system with the private sector is documented and available for use (Y/N) The FP planning agency coordinates with the FP commodity regulatory agency • There is a formal mechanism or policy for the FP planning agency to coordinate with the FP commodity regulatory agency (Y/N) • Collaboration or communication between the FP planning agency and regulatory agency activities is documented, archived, and available for use (Y/N)
1.5 Monitoring and evaluation	The government agency conducts M&E on multi-sectoral activities • The government tracks and reports on indicators of its multi-sectoral family planning commodities activities (Y/N)
1.6 Human resources	The TMA agency is sufficiently staffed to undertake TMA functions • There is a funded, existing position of sufficient stature in the agency that can assume responsibility for leading TMA activities. Sufficient stature refers to a managerial position that is enabled to set priorities and successfully engage the other sectors (Y/N)

Source: Adapted from Abt Associates (2015b).

TABLE 6: STEWARDSHIP CAPACITY INDICATORS - REGULATION

	Indicator/measurement criteria
2.1 Regulate	An agency within the government regulates the quality of family planning commodities distributed in the country • There is a policy or formal responsibility assigned to an agency to regulate the quality of all family planning commodities distributed or sold in the country (Y/N) Laws exist to regulate the quality of FP commodities • Laws exist to regulate the quality of FP commodities (Y/N) There are procedures to license distributors and retail outlets • There are procedures to license distributors and retail outlets (Y/N) • There is a database of licensees (Y/N) • The database is updated regularly (the last three times, as scheduled) (Y/N) There are procedures to register FP commodities • Procedures to register FP commodities exist (Y/N) • There is a database for commodities (Y/N) • The database is updated regularly (the last three times, as scheduled or at least once a year for the last three years) (Y/N) The regulatory agency regularly conducts inspections • Inspections stipulate the agency is expected to check that commodities meet quality standards (Y/N) • Inspections stipulate the agency can stop commodities that do not meet standards from being sold (Y/N) • Inspections occur as needed (either on schedule or by other timeline such as random selection) (Y/N)
2.2 Sufficient funding sources	The commodity regulatory agency receives reliable funding to operate • There is a line item in the budget for the regulatory agency for the last three funding cycles (Y/N) • The FP commodity agency receives sufficient funding to operate for a TMA (Y/N) • The FP commodity regulatory agency received funding equal to or greater than what was requested for the last three budget cycles to regulate the market (Y/N)

Source: Adapted from Abt Associates (2015b).

	Indicator/measurement criteria
2.3 Legal framework	Sanctions against non-compliance for FP Commodity-related regulations are enforced • Guidelines for investigation of regulation non-compliance are immediately available upon request (Y/N)

Source: Adapted from Abt Associates (2015b).

TABLE 7: STEWARDSHIP CAPACITY INDICATORS - DATA COLLECTION AND ANALYSIS

	Indicator/measurement criteria
3.1 Data collection	Family planning commodity distribution data are available from NGOs • Distribution data are available from NGOs distributing free family planning commodities, data from at least one NGO has been received at least once; data are available upon request for review (Y/N) • A report has been generated by the FP planning agency from NGO data in each of the last three scheduled reporting cycles (or at least once a year) (Y/N) Family planning commodity sales data are available from social marketing organizations (SMOs) • Sales data are available from social marketing organizations selling family planning commodities; data has been received from at least one SMO in the last year; data are available upon request (Y/N) • A report has been generated by the FP planning agency from sales data from aocial marketing organizations in each of the last three scheduled reporting cycles (or at least once a year) (Y/N) Family planning commodity sales data are available from the commercial sector • Sales data are available from commercial actors selling family planning commodities; data has been received at least once; data are available upon request (Y/N) • A report has been generated by the FP planning agency from commercial sector data in each of the last three scheduled reporting cycles (Y/N) Family planning commodity price data are available from SMOs • Prices of products sold by SMOs are known; data from at least one SMO have been received at least once; data are available upon request. This includes confirmation of "no cost" or free commodities • A report has been generated by the FP planning agency for price data from SMOs in each of the last three scheduled reporting cycles (or at least once a year) (Y/N) Family planning commodity price data are available from the commercial sector • Prices of products sold by commercial sector are known and have been collected from at least one commercial enterprise or association at least once; data are available upon request (Y/N) • A report has been generated by the FP planning agency for price data from the commercial sector in each of the last three scheduled reporting cycles (or at least once a year) (Y/N)

Source: Adapted from Abt Associates (2015b).

	Indicator/measurement criteria
3.1 Data collection (cont'd)	A study has been conducted in the last five years to estimate the total number of commercial sector and NGO suppliers • A survey or other reliable method has been used and documented to estimate the total number of suppliers of family planning commodities. The data source is immediately available upon request (Y/N) The government agency understands the FP commodity needs and usage • The government has access to population surveys such as the DHS or MICS surveys (Y/N) • Population survey data has been used to report on the government's commodity policy or activities in the last year (Y/N) The government agency collects data on customer satisfaction with family planning commodities • There is a functioning data collection system to collect customer satisfaction data for family planning commodities (Y/N) • Documentation generated by the system is available immediately upon request for follow-up action (Y/N)
3.2 Data analysis	Data are analyzed by a government agency • The FP planning agency conducts the data analysis of FP commodity data for reporting (data analysis is not done by a consultant or external agency) (Y/N)
3.3 Data management	Data from all sources are cleaned by the FP planning agency prior to analysis • The FP planning agency cleans data before use and reporting (Y/N)
3.4 Data quality	NGOs have guidelines to estimate and improve quality when necessary • Data quality guidelines for datasets supplied by NGO distributors are documented and are immediately available upon request (Y/N) • The public sector data has guidelines to estimate and improve quality • Data quality guidelines for datasets supplied by the public sector are documented and are immediately available upon request (Y/N)
3.5 Data dissemination	FP commodity data are disseminated • The FP planning agency disseminates FP commodity data to the public (citizens, partners, commercial enterprises) and government stakeholders at least once in the last 12 months (Y/N)
3.6 Data use	The government agency uses data collected from the public and private sector to improve access to family planning commodities • A report is routinely produced by a government agency (at least annually, for the last three years) that uses data collected from the public sector and the private sector for evidence-based decision-making (Y/N)

Source: Adapted from Abt Associates (2015b).

7. DISSEMINATION AND ADVOCACY APPROACHES

> "Even the greatest research breakthroughs mean very little unless they are successfully communicated to decision makers" (Porter & Prysor-Jones, 1997).

To increase the likelihood that the results of the in-depth analysis of the family planning market are used by all TMA stakeholders, it is important to develop a dissemination strategy that ensures that all stakeholders and other potential users of the study are provided with the information that is most relevant to their needs. Therefore, the potential users must be identified and both the content and the format that the information is disseminated in must be tailored to each specific audience. The potential users are likely to include people with very different expertise and needs, including researchers, policy makers, government officials, donors, as well as program implementers. A good dissemination strategy will typically involve multiple dissemination formats that are being used over a period of time to reach the largest audience possible (Fisher & Foreit, 2002; Porter & Prysor-Jones, 1997).

KNOWING YOUR AUDIENCE

Effective dissemination of the findings obtained through an in-depth analysis of the family planning market can be a challenge, requiring some understanding of who comprises the various groups of potential users and which key findings will be of most interest to each group. "Potential users" can be anyone in a position to make a decision or alter policies and activities in response to new information (Porter & Prysor-Jones, 1997). Likely, the users of key findings will include a variety of groups ranging from top policymakers, researchers, and government stakeholders to service providers, donors, program managers, and field workers. The findings resulting from an analysis of the family planning market could create potential benefits among multiple levels within a population. Producing specific information of interest to each group of potential users will increase the likelihood of desired involvement. However, all of the key findings that come from a total market approach analysis may not be relevant or of high interest to every user group. Stratifying the audience according to their various interests, needs, and knowledge level, will make it easier to highlight information that will be of value to their particular role within the family planning market, and to present it in a format that is suitable for each particular audience.

TAILORING THE MESSAGE TO YOUR AUDIENCE

Often the eventual users of research findings are not professional scientists. Formatting the technical results of the analysis into concepts and language that are understandable among differing knowledge levels of varying user groups becomes essential. Communicating research findings should entail more than making presentations based largely on a series of tables and figures. In many cases, it would be a much better communication strategy to turn the findings into compelling narratives that capture the most significant implications of the research (Porter & Prysor-Jones, 1997). As a general rule, it is important to ensure that the content of any dissemination materials is clear, concise, practical, and actionable for the target audience (MEASURE Evaluation, 2009; Population Reference Bureau, 2003).

Therefore, it is important to consider what is of most interest to each group, and how to best communicate the information they need:

Researchers and evaluators

Because researchers and evaluators often use research findings with the objective of advising future projects and interventions, they need to be confident that the research is sufficiently rigorous to support the conclusions and recommendations. Therefore, they need to be able to judge the scientific value of the study, assess the adequacy of the study design, and, if they want, repeat the study in other areas or with other subjects (Fisher & Foreit, 2002). This can be accomplished by means of technical research reports that provide details about the study design and methodology. Academic channels of communication typically also include articles published in peer-reviewed journals, as well as oral and poster presentations at professional conferences (MEASURE Evaluation, 2009).

Policy makers, government officials, and donors

Policy makers, government officials, and donors tend to be interested in accurate assessments of family planning sector performance, problems, potential solutions, and the likely impacts of policy shifts and direct interventions (Porter & Prysor-Jones, 1997). Since these stakeholders need to know what is and what it is not working, it is important to share both positive and negative findings (Adamchak et al., 2000). They also need to know whether there is evidence to support a scale-up of program activities for a larger geographic area or to reach more people (Fisher & Foreit, 2002). As such, it is important that these stakeholders are made aware of important data gaps, if any, and about the resources needed to collect the missing data. This group of stakeholders needs actionable recommendations that they can use for decision-making and/or to advocate for new policies. It is also important for them to see how the findings and recommendations support their larger policy objectives.

Most government sector officials and donors do not have the time or expertise to read lengthy technical research reports. The best formats to disseminate information to this group include policy briefs, brochures, and executive summaries that highlight actionable recommendations for decision-making (MEASURE Evaluation, 2009). It is also customary to invite policy makers, high ranking government officials, and donors to dissemination conferences.

Program implementers

Program implementers tend to be particularly interested in timely feedback to guide operational or planning decisions (Porter & Prysor-Jones, 1997). Upper level managers are often best served by an executive summary with the key findings and programmatic recommendations. However, lower level managers (e.g., district supervisors) are likely to find a detailed report with site-specific information more useful than an executive summary. Unfortunately, preparing detailed research reports is time-consuming. Scheduling regular meetings with program implementers can be helpful to ensure that information is communicated in a timely manner, and to tailor the analysis to their needs (MEASURE Evaluation, 2009). Audiovisual presentations with charts and graphs are usually very effective methods of disseminating information succinctly during the meetings (MEASURE Evaluation, 2009).

CHOOSING AN APPROPRIATE DISSEMINATION FORMAT

Written documents

As the needs of various stakeholders vary, it is often necessary to produce more than one written document. Most likely, there will be a need to produce a detailed technical research report, as well as some kind of summary of findings and recommendations.

- Technical research reports

It is essential that a final research report is produced that describes the in-depth analysis of the family planning market. Such a report should describe the study background, review the literature, describe the study methodology, findings, and recommendations (for a detailed outline of the content of a typical research report, see Box 4). Although few people will read the description of the study methodology, it is important that it is sufficiently detailed to fend off any concerns about the rigor of the study, and also to enable replication of the study at a later point in time. However, the research reports should be written in a style that is appropriate for the main target audience as well. Often the main target audience consists of program implementers who are neither trained nor interested in research methodology (Fisher & Foreit, 2002). Therefore, technical material on sampling and study design should be presented in a separate section, or even in the appendix of the report, to avoid cluttering the report and obscuring important findings.

Program implementers sometimes find it difficult to see how certain research findings are relevant for program planning. Pointing out the potential implications of the findings for program improvements can facilitate a clearer understanding for program planners. Although it is important that the research report makes specific evidence-based recommendations for program improvement, input from program implementers should be solicited about these recommendations before the production of the final research report (Fisher & Foreit, 2002).

Research reports are sometimes criticized for being unnecessarily complex, taking too long to prepare, and being outdated by the time they appear (Fisher & Foreit, 2002). The concern that research reports are too complex can be addressed by putting highly technical content about the study methodology in separate sections, using simple easy-to-understand graphics to present key findings, and avoiding technical jargon in the results and discussion sections. Concerns that producing the research report should not delay programmatic decisions can be addressed by releasing interim reports as soon as relevant findings become available. Including an Executive Summary of the main report that focuses on the main findings and the resulting recommendations for program improvement will help address the needs of program planners.

- Research briefs, organizational webpages, information services, and other dissemination formats

In addition to the executive summary that is included in technical research reports, many organizations also disseminate summaries of key study findings in the form of 2-4 page research briefs. While executive summaries normally consist of text only, research briefs often include graphs and/or pictures. Research briefs can be disseminated in paper format or made available for download on a website. In addition, key research findings can be disseminated to a larger audience by submitting them for inclusion on popular health and development information service websites, such as the Communication Initiative Network (www.comminit.com) or Eldis (www.eldig.org).

It is also fairly common to disseminate research findings in the form of a PowerPoint presentation. This is appealing because PowerPoint presentations with key study findings have often already been prepared for stakeholder presentations, conferences presentation, etc. However, such PowerPoint slides are typically not

BOX 4: EXAMPLE OF THE CONTENT OF A FINAL RESEARCH REPORT

- Title page (title of the report, authors, institutional affiliation, and date of publication)
- Preface (acknowledgements, source of funding)
- Abstract or Executive Summary
- Background (location of the study, special circumstances of the study)
- Literature review
- Study methodology (objectives, study design, data collection procedures, informed consent procedures, analytic procedures, limitations of the study)
- Findings
- Discussion of findings, lessons learned, and program implications
- Conclusion and recommendations
- References
- Appendices

Sources: Adamchak et al. (2000); Fisher and Foreit (2002).

designed to be used as a stand-alone tool. If the PowerPoint slides will be disseminated further, then it is important that detailed speaker notes are included so that the reader knows what the speaker said about each of the slides.

- Articles in peer-reviewed journals

Peer-reviewed articles not only have the potential to reach the larger community of family planning researchers and practitioners but also give the research added credibility (Bossert & Meekers, 2010; MEASURE Evaluation, 2009). Articles published in peer-reviewed journals are typically reviewed by three different reviewers. To help ensure the objectivity of the reviews, most journals use a double-blind review system. In a double-blind system the reviewers do not know who the author of the manuscript is and the author does not know who the reviewers are. Because of this rigorous review system, articles in peer-reviewed journals are considered the gold standard. For this reason, systematic reviews that assess which types of programs have proven to be effective typically focus predominantly on peer-reviewed articles (see for example, Mwaikambo, Speizer, Schurmann, Morgan, & Fikree, 2011; Williamson, Parkes, Wight, Petticrew, & Hart, 2009).

Presentations at professional conferences

Presentations at professional conference are an effective way of disseminating study findings to the larger community of family planning researchers and practitioners. Doing so provides an opportunity to interact with and get feedback from colleagues working on similar topics. While some conferences have a strong research

focus and are attended predominantly by researchers, others have a programmatic focus and are more suitable for program implementers. Large conferences typically accept submissions in the form of oral presentations and poster presentations.

- Oral presentations

Oral presentations are typically organized in sessions comprised of four 15 minutes presentations, followed by a question-and-answer session from the audience. At research conferences, oral presentation session may also have a formal discussant who discusses and critiques each of the four presentations in the session. Due to time and space constraints, conference organizers can only accept a limited number of oral presentations. As a result, oral presentations have a relatively low acceptance rate, making them more prestigious. PowerPoint slides prepared to guide the oral presentation can also be a valuable tool to disseminate key findings to a wider audience.

- Poster presentations

Poster sessions provide a different mechanism to sharing study findings at professional conferences. Each presenter is asked to prepare a large poster that explains the objectives of the study, and summarizes the key findings and recommendations. Poster sessions typically last about two hours, during which the conference participants can visit the posters and ask questions of the presenters. Although poster presentations are not viewed as prestigious, the two-hour time slot provides much more opportunity for sharing information and ideas with other researchers and practitioners working on similar topics. Electronic copies and letter-sized hard copies of the poster can also be used to further disseminate key study findings after the conference.

While presenting at professional conferences has the advantage of reaching a large number of professionals working in the same field, the disadvantage is that the information is not shared in a timely manner. Professional conferences are typically held only once a year (and sometimes even less frequently), and the deadline for submitting abstracts for proposed oral or poster presentations is normally at least 6-8 months prior to the conference. Hence, if the study is completed immediately after the submission deadline for a specific conference has passed, there could potentially be a one and a half year wait before the results can be presented at that same conference.

Face-to-face meetings

Holding frequent small meetings with key managers and other stakeholders throughout the research process is a good way to keep them informed about study developments and findings. Doing so may reinforce the stakeholders' support for the study, making subsequent use of results more likely. Frequent small meetings will also enable you to learn about questions and concerns the stakeholders may have, thereby creating an opportunity to address them prior to the final dissemination conference and formal release of the final study report (Fisher & Foreit, 2002).

If funding permits, it is generally a good idea to hold a larger dissemination conference or seminar for a wider audience of stakeholders at the end of the study. The dissemination conference/seminar can be used not only as a forum to disseminate important findings, but also as a means of involving program managers and other stakeholders in a discussion of the implications of the findings, and to build consensus about potential avenues for program improvements (Fisher & Foreit, 2002; Population Reference Bureau, 2003). Since TMA involves representatives from three different supply sectors, such consensus building is particularly important.

HOW TO INCREASE USE OF DATA AND FINDINGS

Analysis results may be used in a variety of ways by each market sector. For example, the public sector may use the findings to adjust the quantity of subsidized family planning products and services available or by reassessing distribution strategies to increase their target populations' access to free products, thereby reducing the misallocation of resources. The NGO sector (including social marketing organizations) may be able to better identify current gaps and the types of family planning needs that exist within these populations. TMA analysis results that commercial sector users may find useful include insights about the preferences of their target audience. The purpose of developing a comprehensive dissemination plan is to equip various audiences with a sufficient level of information and motivation, leading to some form of desired action. Ideally, audiences will incorporate the data and findings presented to create and implement improved programs, policies, and procedures addressing family planning access and delivery. The success of this is likely to depend on involvement from the government as stewards of the overall TMA restructuring process. Governments may need to reassess their role as the primary provider of contraceptives and instead refocus their efforts as coordinators of public, NGO, and commercial sector activities.

There are a number of steps that can be taken to increase the use of analysis results. Being aware of potential barriers that could prevent user groups from accepting or implementing recommendations based on the TMA analysis will allow researchers to better prepare for addressing these concerns and offer strategic solutions during the planning and dissemination processes. Common barriers to consider include a lack of access to information, difficulty connecting the relevance of research findings to specific user groups, time commitment and funding required (presentation of research findings, reading lengthy reports or publications, attending meetings, etc.), trusting that research findings and presenters of information are credible, and an inability to understand complex research methods (Fisher & Foreit, 2002).

As part of the landscaping assessment a list of decision makers from each of the three sectors (public, NGO, and commercial sectors) most likely to be interested in the family planning market will have been identified, and this group will have been fully informed about the TMA objectives (Brady et al., 2016). Because decision makers are the stakeholders for the in-depth analysis of the family planning market, it is important that they feel "ownership" of the study. Active involvement in all aspects of the study, including the development (and any subsequent revisions) of the objectives, the study implementation, and interpretation of results will help build this ownership. To encourage their involvement, it may be helpful to identify specific times when the key stakeholders can meet to review progress and participate in the major decisions related to it. The more actively involved they are, the more likely the stakeholders will be to use the study's results. As noted earlier, in their capacity as stewards of the TMA process, the government can play an important role coordinating the involvement of stakeholders from the different sectors.

Involving potential users from all three sectors in the study is likely to help identify specific barriers that could prevent stakeholders from taking action to implement the study's recommendations. Incorporating solutions to barriers that are pertinent to each sector (e.g., ensuring that survey instruments include questions that are particularly pertinent to the stakeholders' interests, that the analyses address research questions of interest to them, etc.) is likely to facilitate an increase in positive acceptance and utilization of data and findings.

Interim and final study reports should include a section on "Study Implications," clearly and succinctly indicating what the recommended actions are for each sector that arise from the study. At end-of-study dissemination meetings, sufficient time must be allotted for participants to be able to fully discuss the results from the study and the recommended actions. It is also advised to allot time for the meeting participants to do small group work to develop an action plan for using the results (Fisher & Foreit, 2002).

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APPENDIX. TOOLS AND RESOURCES

These tools are presented in Volume 2 of this handbook.

Tool 1:	Data source mapping
Tool 2:	SPSS syntax to calculate the DHS Wealth Index
Tool 3:	Instructions for adding an International Wealth Index dataset to an existing DHS dataset
Tool 4:	Coefficients for calculating the International Wealth Index (IWI)
Tool 5:	SPSS syntax to calculate the International Wealth Index (IWI)
Tool 6:	Calculating the Comparative Wealth Index (CWI)
Tool 7:	Parameters to convert the DHS Wealth Index to the Comparative Wealth Index
Tool 8:	Using survey data to estimate the number of contraceptive users
Tool 9:	Merging datasets from different survey waves
Tool 10:	Illustrative example of DHS data mining (Nigeria DHS)
Tool 11:	Obtaining Institution Review Board (IRB) approval for a study
Tool 12:	Sampling strategies
Tool 13:	Model TMA household survey questionnaire
Tool 14:	Model TMA retail audit/survey questionnaire
Tool 15:	TMA indicator reference sheets

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