Contraceptive Security Index 2003: Technical Manual

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DELIVER
DELIVER, a six-year worldwide technical assistance support contract, is funded by the U.S. Agency for International Development (USAID).

Implemented by John Snow, Inc. (JSI) (contract no. HRN-C-00-00-00010-00), and subcontractors (Manoff Group, Program for Appropriate Technology in Health [PATH], and Social Sectors Development Strategies, Inc.), DELIVER strengthens the supply chains of health and family planning programs in developing countries to ensure the availability of critical health products for customers. DELIVER also provides technical support to USAID's central contraceptive procurement and management, and analysis of USAID's central commodity management information system (NEWVERN).

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Acronyms

AIDS	acquired immune deficiency syndrome
CMS	Commercial Market Strategies
CPR	contraceptive prevalence rate
CS	contraceptive security
DHS	Demographic and Health Surveys
FP	family planning
FPE	Family Planning Effort
FPLM	Family Planning Logistics Management
GDP	gross domestic product
GNP	gross national product
HIV	human immunodeficiency virus
JSI	John Snow, Inc.
LMIS	logistics management information system
PATH	Program for Appropriate Technology in Health
PPP	purchasing power parity
PRB	Population Reference Bureau
RH	reproductive health
RHS	Reproductive Health Surveys
SLI	standard of living index
SPARHCS	Strategic Pathway to Reproductive Health Commodity Security
STI	sexually transmitted infection
UNAIDS	United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
USAID	U.S. Agency for International Development
WDI	World Development Indicators (World Bank)

Introduction

A primary goal of reproductive health and family planning programs is to ensure that people can choose, obtain, and use a wide range of high-quality, affordable contraceptive methods including condoms for STI/HIV prevention. Referred to as *contraceptive security*, achieving this goal requires sustainable strategies that will ensure and maintain access to and availability of supplies.

As demand for family planning continues to rise in developing countries and in countries in transition, compounded by significant population growth, it will be more challenging to achieve contraceptive security (CS). Financing for reproductive health (RH) and family planning (FP) programs has not kept pace with demand, and donor resources are more constrained than ever. These pressures have placed an increasing burden on national programs, with logistics and service delivery systems stretched to the limit. Not only has higher demand for supplies driven up funding requirements, but the fight against HIV/AIDS has also multiplied the need for additional resources and has increased competition for existing resources. Now, more than ever, it is critical that programs focus attention on long-term contraceptive security.

Programs cannot meet their clients' reproductive health and family planning needs without the reliable availability of quality contraceptive supplies and services. Attaining the poverty reduction and health goals adopted by many countries—primarily HIV reduction, and maternal and child health—will be slowed without improvements in contraceptive security. Ensuring that contraceptive supplies and services are available to clients requires a multi-sectoral approach. The public and private sectors must cooperate to ensure—

- a supportive policy environment,
- appropriate forecasting and procurement of commodities,
- efficient supply chains,
- well-trained providers,
- effective service delivery systems,
- a supportive social environment,
- and adequate financing.

To plan effective interventions to reach this goal, policymakers, program managers, and international donor agencies need to know if and how their programs are progressing toward contraceptive security.

This manual and the accompanying wall chart present a tool that was developed to measure a country's level of contraceptive security and how to monitor CS over time. To measure the level of contraceptive security in countries, the tool uses a set of indicators that cover the primary CS components. The indicators can be used separately to monitor progress in each component. They can also be aggregated to establish a composite index, which can be used to compare countries at a point in time or to monitor progress, over time, within a country.

The CS Index can be used for priority setting, planning, and advocacy at the national and international levels to support policies and other interventions that promote contraceptive security. The index can help

country governments, donors, and lenders improve resource allocation by giving them a way to track where countries are on a continuum of CS. With repeated measures over time, the index is intended to provide a measure of progress toward the goal of contraceptive security.

This technical manual describes, in detail, the methodology for calculating the CS Index. Readers can use it to make future measures of the index, update scores for countries in the 2003 series, and add new countries.

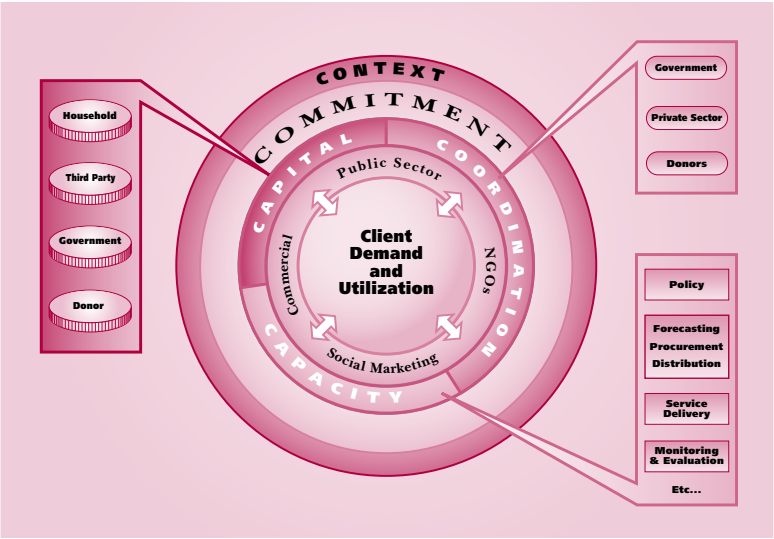
Background

The CS Index builds on the recent work of other public health organizations. Staff at the Program for Appropriate Technology in Health (PATH) authored *Contraceptive Security: Toward a Framework for a Global Assessment* (Finkle, Hutchings, and Vail 2001), which was presented at a 2001 international conference for reproductive health commodity security.[1] This paper laid the groundwork for the development of a methodology to measure and monitor contraceptive security.

In a separate effort, more than twenty organizations collaborated in the development of the Strategic Pathway to Reproductive Health Commodity Security (SPARHCS), a tool that is used to assess and plan for reproductive health commodity security. The framework at the core of SPARHCS was used as a guide in developing the CS Index. It defines the program and the program environment components that are needed to achieve RH commodity security, whether for contraceptives or other RH commodities (see figure 1).

Both efforts have drawn much needed attention to the issues around contraceptive security, and have generated interest in refining a methodology to measure CS. The CS Index considers additional indicators, organizes them around a conceptual framework that is vetted by a wide range of family planning experts; and, for cross-country comparisons and in-country analysis, enables additional countries to be scored in the index.

Figure 1. Reproductive Health Commodity Security Framework



1. Held in Istanbul in May 2001. "Meeting the Reproductive Health Challenge: Securing Contraceptives and Condoms for HIV/AIDS Prevention" was organized by the Interim Working Group on Reproductive Health Supplies (IWG). This was a collaborative effort by John Snow, Inc., Population Action International, the Program for Appropriate Technology in Health, and the Wallace Global Fund to address the looming crisis represented by the shortfall in contraceptives around the world.

Methodology

The work noted above was a starting point for a working group that met to conceptualize the CS Index. The group consisted of CS experts from USAID, John Snow, Inc./DELIVER, Futures Group International/POLICY, and Commercial Market Strategies (CMS). The CS Index was designed to minimize data collection costs (using only secondary data), and to maximize data reliability, validity, and replicability. Seventeen indicators were chosen to meet these criteria. They address a mix of inputs and outputs, and programmatic and macro-level issues. Together, they paint a picture of CS and promote a cross-sectoral approach to addressing CS. Although some indicators are highly correlated, each represents an important aspect of CS. During development, the working group experimented with different indicators and weighting schemes, and recognized that they all had limitations. In the end, 17 indicators are arrayed across the five CS components described below; the components are aggregated to create the index.

I. Definitions

Component I: Supply Chain

Each of the five indicators of logistics management represents a key function in the supply chain for contraceptive supplies. An effective supply chain ensures the continuous supply of sufficient quantities of high-quality contraceptives needed to achieve contraceptive security. More effective management of supplies is associated with better prospects for contraceptive security.

The first four indicators are obtained from John Snow, Inc.'s (JSI) Family Planning Logistics Management (FPLM) project's Composite Indicators for Contraceptive Logistics Management database (JSI/FPLM 1999 or more recent updates[2]). Staff from FPLM and Ministry of Health counterparts scored these indicators for public sector logistics systems through a participatory focus group discussion held in each country.

Storage and distribution

Assesses storage capacity and conditions, standards for maintaining product quality, inventory control, stockouts, tracking system losses, and distribution and transportation systems.

LMIS (logistics management information systems)

Assesses reporting systems, the validation of data, and information management and its use in decision making.

Forecasting

Assesses how forecasts of consumption are prepared, updated, validated, and incorporated into cost analysis and budgetary planning.

2. In 2000, the DELIVER project, which followed the FPLM project, replaced the Composite Indicators with an updated Logistics System Assessment Tool (LSAT). The scoring methodology and indicators remain very similar. Details are available at www.jsi.deliver.com.

Procurement
Assesses how forecasts are used to determine short-term procurement plans and the degree to which correct amounts of contraceptives are obtained in an appropriate time frame.

The fifth supply-related indicator is drawn from the results of Futures Group's (Futures) Family Planning Effort (FPE) survey (Ross and Stover May 2000 or more recent updates). The FPE is conducted periodically by administering a questionnaire to expert respondents in countries around the world.

Contraceptive policy
In some circumstances, locally manufactured contraceptives can provide an affordable and sustainable option for clients. In many countries, it will be more effective to have policies and regulations that facilitate open markets and the importation of competitively priced, quality products. This indicator measures the extent to which import laws and legal regulations facilitate the importation of contraceptive supplies, or the extent to which contraceptives are manufactured within the country.

Component II: Finance
To ensure contraceptive security, it is critical to have sustainable and adequate financing for the procurement of contraceptives; service delivery and other program components from international donors and lenders; and national or local governments, households, and third parties. Without a commitment for financing, program quality and access will suffer and CS will not be sustainable. Data are not widely or readily available to obtain an adequate country-level picture of contraceptive financing by donors/lenders, third parties (e.g., insurers, employers), or the private sector. Three indicators are used to capture the prospects for government and household financing of family planning services and contraceptives in a country. The World Bank's *World Development Indicators* (WDI) are the source for these indicators.[3]

Government health expenditures as a percentage of total government spending
The commitment of a national government to public health, specifically to reproductive health and family planning, is critical for CS. The poorest segments of a population depend on free or subsidized health services, often provided by the government for essential preventive and curative health services. This indicator measures political commitment to public health spending as a proxy for government commitment to family planning programs. Greater commitment to health spending means more potential resources for family planning programs as part of the overall government health programs. This indicator is derived from two indicators in the WDI: public expenditures on health as a percentage of the gross domestic product (GDP) divided by total government expenditures as a percentage of GDP:

(Gov Exp on Health/GDP) ÷ (Total Gov Exp/GDP) = (Gov Exp on Health/Total Gov Exp)

Per capita gross national product (GNP)
A greater ability to pay for contraceptives at the household level is associated with better prospects for contraceptive security. This indicator represents the average consumer's potential ability to pay for family planning services and contraceptives expressed in purchasing power parity (PPP), which corrects for differences in market prices of goods in each country to allow for a better comparison across countries. To get a comparable series of fixed price data (and for future calculations of this index), the World Bank rescales these values to a single reference year, currently set at 1995.

3. World Development Indicators website: www.worldbank.org/data/onlinedbs/onlinedbases.htm

Poverty level

Per capita income measures the average consumer's ability to pay, but there are always inequalities in the distribution of income. High poverty rates can threaten CS if provisions are not made to ensure access to services and commodities for the poor. Higher poverty rates can indicate a greater reliance of the population on the public sector, adding stress to already overburdened systems. Because higher poverty rates are associated with lower household incomes and poorer access to health care, higher poverty rates are also associated with poorer prospects for contraceptive security. This indicator is expressed as the percentage of the national population living below the nationally defined poverty line.

Component III: Health and Social Environment

The health and social environment component, composed of three indicators, is included because it is recognized that other factors in the broader health and social environment can affect prospects for contraceptive security, at both the country and individual levels.

Governance

A healthier political environment improves prospects for contraceptive security. An accountable, stable, effective, and transparent government is more likely to be committed to the health and well-being of its population, and more likely to use its resources appropriately for the public good. International donors are also more likely to provide financial and material support to this kind of government. The private sector is more likely to invest in creating new or expanding existing markets for contraceptives. This indicator is a composite measure of governance, and is composed of the sum of six dimensions, each worth 30 points: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption. It is derived from the World Bank's *Governance Matters* index (Kaufman, Kraay, and Zoido-Lobaton January 2002 or more recent updates).

Women's education

Women's educational attainment is one of the best predictors of contraceptive use. Women who are educated beyond primary school are more likely to use a contraceptive method. In addition, in countries where women have good status, educated women are more likely to advocate for family planning programs. This indicator is expressed as the percentage of females enrolled in secondary school defined as the ratio of the number of students enrolled in secondary school to the population in the applicable age group (gross enrollment ratio). Secondary school enrollment rates can be obtained from the Population Reference Bureau's *Women of the World* publication (Population Reference Bureau 2002 or more recent updates) and other sources (e.g., Roudi-Fahimi and Moghadam October 2003 is the source of data for Jordan in the 2003 index).

Adult HIV prevalence

It is increasingly recognized that a higher burden of HIV in a population can erode prospects for contraceptive security. HIV/AIDS contributes to higher levels of poverty and the pandemic has put new, competing demands on health financing. This indicator is expressed as the percentage of adults, age 15–49, who are infected with the HIV virus. HIV prevalence among adults of reproductive age (15–49) is used as the indicator for the CS Index, because this population is most likely to use contraceptives and obtain services from FP programs, making it the most relevant population for contraceptive security. It is also the most widely available data. Adult HIV prevalence rates can be obtained from the UNAIDS Report on the Global HIV/AIDS Epidemic (UNAIDS July 2002 or more recent updates).

Component IV: Access

The three access indicators measure aspects of availability and access to modern methods of contraception—the degree to which clients can choose and obtain their method of choice. Family planning and reproductive health programs should strive to offer a variety of methods to meet the needs of all clients.

Access to modern family planning methods

Ready and easy access by clients to a wide range of contraceptive methods is associated with better prospects for contraceptive security. When family planning services are widely available and used, it is very difficult to reverse the progress in access and availability of these services and supplies. This indicator measures the percentage of a country's population that has ready and easy access to male and female sterilization, pills, injectables, condoms, spermicides, and IUDs. For the CS Index, the mean access score for these contraceptive methods is used. It is also taken from Futures' Family Planning Effort survey (Ross and Stover May 2000 or more recent updates).

Public sector targeting

Public sector family planning programs that offer heavily subsidized (and sometimes free) services and commodities are designed to meet the needs of the poor and near-poor segments of a population. This public sector funding is limited in virtually every country. The degree to which the poorest people benefit from these subsidized services, while wealthier clients who can afford to pay for services and commodities have and use other options, reflects upon the long-term CS in a country.

This indicator measures the proportion of a country's contraceptives distributed through public sector channels that go to poor and near poor family planning clients. "Poor and near poor" is defined as clients who are in the lowest 40 percent of the population as defined by an asset-based standard of living index (SLI) developed by ORC Macro and the World Bank.[4] A ratio of the percentage of users of public sector contraceptives from the bottom two quintiles to the top two quintiles is calculated. Data from the most recently available Demographic and Health Surveys (DHS) and Reproductive Health Surveys (RHS) are used both to compute the SLI and the distribution of public sector FP users across SLI categories.[5]

Spread of access to modern family planning methods

Access to a wide range of family planning methods represents a choice for clients. Access to a range of methods can also mean that if one method becomes unavailable, other methods are available to clients in the interim. This concept of choice is the key to contraceptive security, regardless of what methods clients choose (reflected in Component V). This indicator is related to the access indicator above and uses the access scores for individual methods. It measures whether clients have *ready and easy access* to a broad range of at least three contraceptive methods by taking the access score for the highest-scored method, minus the score for the third-highest, divided by the sum of access scores for all methods:

(score for highest scored method – score for third highest) ÷ (sum of all access scores)

This data is also taken from Futures' Family Planning Effort survey (Ross and Stover May 2000 or more recent updates).

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4. For a detailed description of the methodology for constructing the wealth index, see Filmer and Pritchett 1999.

5. Both the DHS, managed by the MEASURE/DHS+ project at ORC Macro (www.measuredhs.com), and the RHS, managed by the Centers for Disease Control and Prevention, Department of Reproductive Health (www.cdc.gov/reproductivehealth/global.htm), are carried out with USAID funding.

Component V: Utilization

This component, composed of three indicators, measures clients' behaviors in terms of contraceptive use within the country program context.

Method mix

While the access indicators (see Component IV) measure the extent to which consumers have ready and easy access to methods, this indicator measures the degree to which consumers' use a range of methods. The broader the range of methods used, the better the prospects for contraceptive security, because it demonstrates that women have a choice and they are choosing from a range of methods. This indicator was measured as the difference in prevalence rates between the most prevalent modern method in a country and the third-most prevalent method, divided by the total modern method prevalence.

(prevalence for most prevalent method – prevalence for third highest)
÷
(total modern method prevalence)

A higher value indicates a higher concentration of use on a limited number of methods, which is interpreted as not being conducive to contraceptive security. This indicator is derived from the most recently available DHS or RHS data set for each country.

Unmet need

This is indicative of barriers to accessing and using family planning. The higher the percentage of women with unmet need for contraception, the poorer the prospects for contraceptive security because unmet need represents clients who express a need to use family planning but cannot or do not. This indicator measures the percentage of currently married women of reproductive age who express a desire to space or limit their next pregnancy, or who would have preferred to avoid or delay their current pregnancy, but are not using a contraceptive method. This indicator is derived from the most recently available DHS or RHS data set for each country.

Contraceptive prevalence rate (CPR)

This indicator is the most obvious outcome of contraceptive security—women actually using contraception. Higher contraceptive use is indicative of better access and availability of contraceptives for the population. Increased contraceptive use will also encourage the improved availability in both the public and private sectors through political pressures and market forces. This indicator measures the percentage of married women of reproductive age currently using a modern method of family planning. This data is available from the Population Reference Bureau's World Population Data Sheet (Population Reference Bureau 2003 or more recent updates).

II. Technical Issues

Missing Values

As noted earlier, data for all indicators was collected from the most recently available sources; no primary data collection was conducted. As is inevitable with secondary data, information was occasionally missing for some indicator and country combinations. This section summarizes the frequency of missing data in the 2003 CS Index and the method used to fill those missing values.

Unless indicated otherwise, missing values were filled using a multivariate linear regression. Each indicator was imputed for missing values by using the rest of the indicators as the predictors in the regression model:

$$Y = m1X1 + m2X2 + ... + m16X16 + b$$

Where Y is the indicator with missing values and X1 to X16 are the other 16 indicators.

Supply chain indicators

- Where a value for one of the four *logistics* indicators is missing, it is missing for all other logistics indicators as well. Among the 57 countries scored for this index, logistics indicator information is missing for 11 countries: Cambodia, Gabon, Guinea, Jamaica, Kazakhstan, Kyrgyz Republic, Mauritania, Namibia, South Africa, Turkmenistan, and Uzbekistan.
- The *contraceptive policy* values for two countries are missing: Azerbaijan and Eritrea. The FPE survey has not been conducted recently in these countries.

Finance indicators

- The indicator on *government health expenditures as a percentage of total government spending* is derived from two variables in the WDI: government expenditures on health as a percentage of the GDP divided by total government expenditures as a percentage of GDP. Where one of these variables is missing, the entire indicator value needs to be filled. Eighteen countries are missing at least one of the two variables: Benin, Cambodia, Ecuador, Eritrea, Gabon, Guatemala, Guyana, Honduras, Malawi, Mali, Mauritania, Mozambique, Nepal, Rwanda, Tanzania, Togo, Turkmenistan, and Uzbekistan.
- Information on per capita GNP is available for all countries included in the CS Index 2003; there are no missing values.
- A value for the indicator on poverty level is missing for eight countries: Côte d'Ivoire, Gabon, Haiti, Mexico, Namibia, South Africa, Turkey, and Turkmenistan in this CS Index series.

Health and social environment indicators

- As noted earlier, the *governance* indicator is composed of the sum of six dimensions using data collected in 2000/2001. Among the 57 countries represented in this CS Index, there are only four values missing in this 57-by-6 matrix.
  - Benin: The value for the *control of corruption* dimension is missing. This is filled using the 1997/1998 value for Benin.
  - Eritrea: Values for *government effectiveness* and *regulatory quality* are missing for this country. These are filled with the average value for all sub-Saharan Africa countries for each dimension.
  - Rwanda: The value for the *government effectiveness* dimension is missing. This is filled with the average value for all sub-Saharan Africa countries for this dimension.
- Only the value for Turkmenistan is missing for the *women's education* indicator.
- Four countries in the series have a missing value for *adult HIV prevalence*: Gabon, Guinea, Mauritania, and Paraguay.

Access indicators

- The *access to modern family planning methods* values are missing for two countries where the FPE survey has not recently been conducted: Azerbaijan and Eritrea.
- The indicator for *public sector targeting* is missing for three countries where an acceptably recent DHS data set is not available: Azerbaijan, Guyana, and Mexico.

- For the *spread of access to modern family planning methods*, which is also calculated using the data from the FPE survey, values are missing for two countries where the FPE survey has not been conducted recently: Azerbaijan and Eritrea.

Utilization indicators

- Values for the *method mix* indicator are missing for two countries in this CS Index series: Guyana and Mexico.
- Only the value for Guyana is missing for the *unmet need* indicator among the countries included in the CS Index 2003.
- There are no values missing for the *contraceptive prevalence* rate indicator.

Scales and Conversions

Most of the indicators included in the index use a scale with a minimum score and a maximum score. However, in two cases, the scales are open-ended and a maximum score needed to be set (per capita GNP and public sector targeting). In a few other cases, the maximum score is not realistically attainable (government health expenditure, adult HIV prevalence, unmet need); therefore, the scales are truncated to provide a more realistic maximum score.

Next, to calculate the composite index, the raw indicator scales, which vary across the 17 indicators in the index, are standardized to a 10-point scale so that the ranges are comparable. In general, a higher value (on the 10-point scale) is associated with better contraceptive security. However, this is not the case for poverty level, adult HIV prevalence, spread of access to FP methods, method mix, and unmet need, where higher scores are associated with poorer contraceptive security. Therefore, the scores for these indicators are inverted so that a higher score is associated with better contraceptive security. Scales and conversion methods are described by indicator.

Supply chain indicators

Storage and distribution: Raw values for this indicator, with a possible range from 0 to 60, are multiplied by 10/60 to convert them to a 10-point scale.

LMIS: Raw values for this indicator, with a possible range from 0 to 24, are multiplied by 10/24 to convert them to a 10-point scale.

Forecasting: Raw values for this indicator, with a possible range from 0 to 16, are multiplied by 10/16 to convert them to a 10-point scale.

Procurement: Raw values for this indicator, with a possible range from 0 to 16, are multiplied by 10/16 to convert them to a 10-point scale.

Contraceptive policy: Raw values for this indicator, with a possible range from 0 to 4, are multiplied by 10/4 to convert them to a 10-point scale.

Finance indicators

Government health expenditures as a percentage of total government spending: Raw values for this indicator have a possible range from 0 to 100 percent. However, it is unreasonable and unlikely that the value for this indicator would ever reach this theoretical maximum. The highest value observed in the 2003 series was 28 percent. Therefore, a maximum of 30 percent is set and the raw values are multiplied by 10/30 to convert them to a 10-point scale. For future measurements of the index, the maximum can be reset according to observed values.

Per capita GNP: Theoretically, there is no upper limit to the possible range of values for this indicator. The highest value observed among the countries in the 2003 series is U.S.$10,910. However, it is assumed that as additional countries are added to this series, raw values above this observed maximum might occur. A maximum of U.S.$20,000 is set; and raw values for this indicator are, therefore, multiplied by 10/20,000 to convert them to a 10-point scale. The maximum can be reset according to future observed increases in per capita GNP.

Poverty level: Raw values for this indicator, which have a possible range from 0 to 100 percent, are multiplied by 10/100 to convert them to a 10-point scale. Because a higher poverty rate is associated with lower contraceptive security, the raw values are then subtracted from 10 to obtain a non-poverty rate to calculate the composite index scores. (A higher non-poverty rate is associated with higher contraceptive security.)

Health and social environment indicators

Governance: The possible range of raw values for this indicator is –15 to +15. This is first converted to a 0 to 30 point scale by adding 15 points to each raw value. Each converted value is then multiplied by 10/30 to convert it to a 10-point scale.

Women's education: Raw values for this indicator, with a possible range from 0 to 100 percent, are multiplied by 10/100 to convert them to a 10-point scale.

Adult HIV prevalence: Although the possible range of values for this indicator is 0 to 100 percent, it is unlikely that HIV infection would ever reach 100 percent in a country. The highest observed value in the 2003 series is 33.7 percent. A more plausible maximum value can be set at 50 percent to accommodate future increases in prevalence. This indicator is then multiplied by 10/50 to convert it to a 10-point scale. In addition, because a higher adult HIV prevalence rate is associated with lower contraceptive security, the values are inverted by subtracting them from 10 so that a higher value (indicating a higher proportion of HIV-negative adults) is associated with higher contraceptive security.

Access indicators

Access to modern family planning methods: Raw values for this indicator, with a possible range from 0 to 4, are multiplied by 10/4 to convert them to a 10-point scale.

Public sector targeting: In a public sector family planning program perfectly targeted to the poor and the near poor (the lowest two SLI quintiles), 100 percent of public sector supplies could be distributed to poor and near poor consumers. The possible range of values for this ratio is 0 to infinity, although most countries in the 2003 index score around 1 or less (meaning that the public sector supplies are distributed either equally to the poor and the rich—a score of 1—or are more likely going to wealthier clients—a score of less than 1). The highest value observed is 2.3, so a more realistic maximum value is set at 10. Because raw values are already all within a 10-point scale, they did not need to be converted.

Spread of access to modern family planning methods: The range of possible scores for this ratio is 0 to 1. Raw values are multiplied by 10 to convert them to a 10-point scale. This indicator also has to be inverted, as a higher score indicates a greater concentration of users to one method—a situation not conducive to contraceptive security. Values are subtracted from 10, so that a higher value (indicating a broader spread of access to different methods) is associated with higher contraceptive security.

Utilization indicators

Method mix: The possible range of raw values for this indicator is 0 to 1.0, with a higher value being associated with poorer contraceptive security. Raw values are multiplied by 10 to convert them to a 10-point scale. These values are then subtracted from 10 so that a higher value is associated with higher contraceptive security.

Unmet need: Although the possible range of values for this indicator is 0 to 100 percent, it is highly improbable that unmet need could ever reach 100 percent. The highest observed value in the 2003 series is 39.8 percent. A more probable maximum value of 50 percent for unmet need in any country is selected; this indicator is multiplied by 10/50 to convert it to a 10-point scale. In addition, because a higher level of unmet need is associated with lower contraceptive security, the values are inverted by subtracting them from 10, so a higher value (indicating a lower level of unmet need) is associated with higher contraceptive security.

Contraceptive prevalence rate (CPR): Raw values for this indicator, with a possible range from 0 to 100 percent, are multiplied by 10/100 to convert them to a 10-point scale.

Weighting

All components included in the CS Index are equally important to achieving CS. Therefore, each component is given 20 percent of the total index score of 100. Table 1 shows the weighting scheme applied to the individual indicators and the five index component totals.

Index Calculation

Each of the five component scores are on a scale of 0 to 20. Each score is the sum of the products of the values of the component's indicators (each now on a 0 to 10 scale) times their respective weights. CS Index scores are on a scale of 0 to 100 and are the sum of the component scores.

Table 1. Weighting Scheme for CS Index Components and Indicators

Component/Indicator	Weight (%)
Supply Chain	Component Total: 20%
• Storage/distribution	4.0
• LMIS	4.0
• Forecasting	4.0
• Procurement	4.0
• Contraceptive policy	4.0
Finance	Component Total: 20%
• Government health expenditures	6.7
• Per capita GNP	6.7
• Poverty level	6.7
Health and Social Environment	Component Total: 20%
• Governance	6.7
• Women's education	6.7
• Adult HIV prevalence	6.7
Access	Component Total: 20%
• Access to modern FP methods	6.7
• Public sector targeting	6.7
• Spread of access to modern FP methods	6.7
Utilization	Component Total: 20%
• Method mix	6.7
• Unmet need	6.7
• CPR	6.7

Uses

The CS Index is a powerful tool for raising awareness about CS and the interrelationships between program components, different sectors, and program outcomes. The index can be useful for cross-country comparisons, and for comparing inputs, and program outputs. At the country level, it can identify broad areas of relative strengths and weaknesses to help stakeholders target their resources more effectively and appropriately. However, to move countries toward contraceptive security, an in-depth assessment is required at the country level to identify narrower issues that need to be addressed by a strategic plan.

The CS Index can be used to set priorities and to advocate for national and international support for promoting progress toward contraceptive security. It is also a useful guide for advocating among global donors and lenders to determine the countries most in need of assistance and to determine what kind of assistance they need. The results can be used to monitor progress toward the goal of contraceptive security, over time. By drawing attention to the importance of contraceptive security, this tool can help donors and governments focus on meeting the growing contraceptive needs into the future.

Finally, the CS Index should be updated periodically, as new data become available (ideally, every two to three years).

References

Filmer, D., and L. Pritchett. 1999. "The Effect of Household Wealth on Educational Attainment: Evidence from 35 Countries." *Population and Development Review* 25(1):85–120.

Finkle, Clea T., Jane Hutchings, and Janet Vail. 2001. *Contraceptive Security: Toward a Framework for a Global Assessment*. Seattle: Program for Appropriate Technology in Health (PATH).

John Snow, Inc./Family Planning Logistics Management and the EVALUATION Project. April 1999. *Composite Indicators for Contraceptive Logistics Management*. Arlington, Va.: John Snow, Inc./Family Planning Logistics Management, for USAID.

Kaufman, Daniel, Aart Kraay, and Pablo Zoido-Lobaton. January 2002. *Governance Matters, II: Updated Indicators for 2001–02*. www.worldbank.org/wbi/governance/govdata2002/

Population Reference Bureau. 2002. *2002 Women of the World*. Washington, D.C.: Population Reference Bureau. www.prb.org.

Population Reference Bureau. 2003. *2003 World Population Data Sheet*. Washington, D.C.: Population Reference Bureau. www.prb.org.

Ross, John, and John Stover. May 2000. *Effort Indices for National Family Planning Programs, 1999 Cycle*. Washington, D.C.: Futures Group International for MEASURE/Evaluation.

Roudi-Fahimi, Farzaneh, and Valentine M. Moghadam. October 2003. "Empowering Women, Developing Society: Female Education in the Middle East and North Africa." Population Reference Bureau Policy Brief. Washington, D.C.: Population Reference Bureau.

UNAIDS. July 2002. *Report on the Global HIV/AIDS Epidemic 2002*. Geneva: UNAIDS.

Further Resources

Ashford, L. 2002. *Securing Future Supplies for Family Planning and HIV/AIDS Prevention*. Washington, D.C.: MEASURE Communication/Population Reference Bureau. (http://www.prb.org/pdf/SecFutureSupplies_Eng.pdf).

Family Planning Logistics Management (FPLM)/John Snow, Inc. 2000. *Programs That Deliver: Logistics' Contributions to Better Health in Developing Countries*. Arlington, Va.: FPLM/John Snow, Inc. (http://deliver.jsi.com/2002/Pubs/Pubs_Policy/Programs_That_Deliver/index.cfm).

Finkle, C. 2003. *Ensuring Contraceptive Supply Security*. Outlook Vol. 2, No. 3. Seattle: PATH. (http://www.path.org/files/eol20_3.pdf).

Hare, L., C. Hart, S. Scribner, C. Shepherd, and T. Pandit (ed.), and A. Bornbusch (ed.). 2004. *SPARHCS: Strategic Pathway to Reproductive Health Commodity Security. A Tool for Assessment, Planning, and Implementation*. Baltimore, Md.: Information and Knowledge for Optimal Health (INFO) Project/Center for Communications Programs, Johns Hopkins Bloomberg School of Public Health. (http://www.maqweb.org/sparhcs/index.shtml).

Sine, J., and S. Sharma. 2002. *Policy Aspects of Achieving Contraceptive Security.* Policy Issues in Planning and Finance No 1. Washington, D.C.: Policy Project/Futures Group International. (http://www.policyproject.com/pubs/policyissues/PI_Eng.pdf).

United Nations Population Fund (UNFPA). 2002. *Reproductive Health Essentials: Securing the Supply.* New York: UNFPA. (http://www.unfpa.org/upload/lib_pub_file/39_filename_securingsupply_eng.pdf).

U.S. Agency for International Development (USAID). 2004. *Contraceptive Security: Ready Lessons.* Baltimore, Md.: INFO Project/Center for Communication Programs, Johns Hopkins Bloomberg School of Public Health, for USAID. (www.dec.org, search under "contraceptive security").

Additional contraceptive security resources are available at the following web sites:

DELIVER Project: www.deliver.jsi.com

POLICY Project: www.policyproject.com

Commercial Market Strategies Project: www.cmsproject.com

Partners for Health Reform*plus* Project: www.phrplus.org

Population Action International: www.populationaction.org

The Supply Initiative: www.rhsupplies.org

USAID: www.usaid.gov

UNFPA: www.unfpa.org

The USAID Contraceptive Security Team works to advance and support planning and implementation for contraceptive security in countries. The team provides technical assistance to USAID Missions, their country partners, and other donors and international partners. The team can be contacted c/o Division Chief, Commodities Security and Logistics Division, Office of Population and Reproductive Health, Bureau for Global Health, U.S. Agency for International Development, 1300 Pennsylvania Ave., NW, Washington, D.C., 20523.

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