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Analyzing Family Planning Needs in Nigeria: Lessons for Repositioning Family Planning in Sub-Saharan Africa

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EXECUTIVE SUMMARY

Family planning use has lagged in sub-Saharan Africa relative to other parts of the developing world. In response, the United States Agency for International Development (USAID) has adopted a "Repositioning Family Planning" initiative to mobilize commitment to family planning in Africa. The USAID | Health Policy Initiative, Task Order 1 has a set of tools, methods, and approaches that can support repositioning initiatives. One of the tools is the FamPlan Model, which can make projections related to fertility rates and contraceptive use by method and also help to assess related costs.[1] To illustrate the useful features of FamPlan and explore policy options for Nigeria, the Health Policy Initiative analyzed Nigeria's prospects in achieving its population policy goals.

Using data from three national Demographic and Health Surveys (DHS), the Health Policy Initiative collaborated with Nigeria's National Population Council and Federal Ministry of Health to develop assumptions regarding factors likely to affect future fertility trends, including marriage, contraceptive use, and breastfeeding. The FamPlan Model was used to illustrate the effects of changes in the pace and magnitude of contraceptive use on population size and rate of growth and more specifically to determine the levels of contraceptive use needed to reach the targets set in Nigeria's 2004 *National Policy on Population for Sustainable Development*. This policy called for a reduction in the total fertility rate of 0.6 children per woman every five years and an increase in the proportion of married women ages 15–49 using modern contraceptive methods by at least two percentage points per year. The analysis found that these targets are ambitious relative to the pace and magnitude of changes in fertility and contraceptive use since 1990.

To reach the targets set in the 2004 policy, Nigeria would have to raise the contraceptive prevalence rate by two percentage points a year—from 14.6 percent of married women ages 15–49 using any method of contraception in 2008 to 68.6 percent in 2035—nearly a five-fold increase over 30 years. If Nigeria were to achieve its policy target, the total fertility rate would decline from 5.7 children per woman in 2008 to 2.7 children per woman in 2035. Nigeria's population would increase from 140 million people in 2006 to 274 million in 2035 and would still be growing by 1.5 percent annually. Alternatively, if Nigeria increased contraceptive prevalence by only one percentage point annually, contraceptive prevalence would grow from 14.6 percent of married women ages 15–49 in 2008 to 41.6 percent in 2035. Fertility would decline from 5.7 children per woman in 2008 to 4.9 children per woman in 2035. These numbers translate into a population of 325 million people in 2035, growing at 2.8 percent annually—doubling over 25 years.

The FamPlan Model can be used to analyze the feasibility of and set realistic goals, assess progress toward and evaluate alternative methods of achieving goals, and plan for service expansion required to meet goals. The FamPlan Model can also be used to estimate long-term contraceptive commodity requirements based on contraceptive prevalence and the number of reproductive-age women, as well as to estimate contraceptive commodity costs. Policymakers and program managers can change the data inputs to see the effects of various assumptions or alternative scenarios.

This report describes the FamPlan Model application in Nigeria. However, the report also includes data from recent national DHS for 37 sub-Saharan Africa countries. The data can be used to do FamPlan Model applications in these countries. The model and manual can be downloaded at http://www.healthpolicyinitiative.com/index.cfm?id=software&get=Spectrum. The manual is available in English, French, and Spanish.

[1] FamPlan is part of the Spectrum suite of reproductive health policy models that encompasses modeling tools related to population projections, HIV/AIDS trends, adolescent needs, funding allocations, cost-benefit analysis, and related topics.

ABBREVIATIONS

AIDS	acquired immune deficiency syndrome
CAR	Central African Republic
CPR	contraceptive prevalence rate
DHS	Demographic and Health Survey
FamPlan	Family Planning (software model)
FMOH	Federal Ministry of Health (Nigeria)
HIV	human immunodeficiency virus
ICPD	International Conference on Population and Development
IRD	Institute of Research for Development
NDHS	Nigeria Demographic and Health Survey
NPC	National Population Council
TFR	total fertility rate
UN	United Nations
USAID	United States Agency for International Development

BACKGROUND

This report describes work done under the USAID | Health Policy Initiative, Task Order 1, to apply upgraded computer modeling software to analyze family planning and demographic trends in Nigeria in relation to Millennium Development Goals and poverty alleviation goals. This analysis was designed to contribute to the goal of repositioning family planning and improving contraceptive security in Nigeria. It can also be used as an example of ways that the software model can be applied to other countries in sub-Saharan Africa to gauge progress toward stated goals.

The Spectrum suite of reproductive health policy models encompasses modeling tools related to population projections, HIV/AIDS trends, adolescent needs, funding allocations, cost-benefit analysis, and related topics. One of the Spectrum models, created as the family planning model (termed FamPlan), was used previously by the USAID-funded POLICY Project in numerous desktop studies and country applications. Some of these concerned contraceptive security initiatives and projections of commodity requirements.

The FamPlan application in Nigeria originated in August 2006 through discussions between Health Policy Initiative staff and members of the Department of Community Development and Population Affairs in the National Population Commission (NPC), as well as with the Federal Ministry of Health (FMOH) and interested donor representatives. These stakeholders were interested in supply chain management in the short term as well as commodity requirements in the longer term. Both interests were pursued in subsequent discussions and training sessions.

The project trained local specialists to use two models: one on supply chain management using the PIPELINE software developed by the John Snow Inc./DELIVER Project and one using the FamPlan Model to project future commodity requirements. By using both models, the trainers were able to emphasize the importance of choosing the proper kind of model for the problem to be addressed. The FamPlan Model also helped stakeholders to develop a strategic vision for policy implementation.

Subsequently, the NPC, FMOH, and other Nigerian stakeholders prepared a strategic plan to implement the new *National Policy on Population for Sustainable Development*, which had been adopted in 2004. The Board of the National Population Commission reviewed and approved the strategic plan.

Fertility and Family Planning Trends in Africa

For more than two decades, demographers have debated whether sub-Saharan Africa would follow the declines in fertility observed in Asia and Latin America over several decades. This debate is encapsulated in a seminal article by John and Pat Caldwell published in 1987. In the face of a reproductive revolution taking place throughout much of the developing world, the Caldwells postulated that sub-Saharan Africa's fertility decline would, in large part, follow a different course because of its unique economic, social, and religious-cultural environment. They stated that fertility declines in sub-Saharan Africa would differ in two ways from earlier declines on other continents: (1) they would start later and (2) once started, the declines would proceed at a slower pace.

The Caldwells' article appeared at a time when many sub-Saharan African countries were formulating national population policies and family planning components. Several countries went on to revise their policies following the International Conference on Population and Development (ICPD) in 1994, making the family planning focus somewhat more diffuse, in favor of a broader set of objectives. Subsequently, the Caldwells' predictions seem to have been upheld as increases in family planning use (and consequent fertility declines) have been markedly slow in many African settings. Today, the total fertility rate (TFR) in sub-Saharan Africa is 5.1 births per woman, compared with 2.4 in Asia, and 2.4 in Latin America and

the Caribbean (UN Population Division, 2009a). Similarly, only about 15 percent of married women ages 15–49 in sub-Saharan Africa are using modern contraception, compared with 62 percent in Asia and 65 percent in Latin America (UN Population Division, 2008).

Beyond the unique social and economic environment postulated by the Caldwells, observers have suggested other factors that may contribute to low family planning use in sub-Saharan Africa (see Garenne, 2008; Gebreselassie, 2007; Khan et al., 2007; Macro International/DHS, 1994; and National Research Council, 1993). Foremost among these, the devastating HIV epidemic has overtaxed weak public health systems. Donors have shifted resources, including personnel, away from family planning. Some observers have asserted that the broad reproductive health agendas pushed by donors after the 1994 ICPD caused some loss of momentum in family planning programs. Finally, in some settings, conflict and/or political turmoil have led to instability, economic disruption, and dislocations. All such factors work against the conditions usually needed for long-term fertility transition.

Population Policy in Nigeria

Nigeria is the most populous state in sub-Saharan Africa, with the 2006 Census counting 140 million people (NPC, 1991). In recent decades, fertility has declined only slightly, from a TFR of 6.3 births per woman in 1981–82, to 6.0 in 1990 and 5.7 in both 2003 and 2008, according to findings of the Demographic and Health Surveys (DHS) (NPC and ORC Macro, 2004; and NCP and ICF Macro, 2009).[2] Similarly, contraceptive use has increased slightly: in 1990, 3.5 percent of currently married women ages 15–49 were using a modern contraceptive method, compared with 8.2 percent in 2003 and 9.7 percent in 2008 (Federal Office of Statistics and IRD/Macro International, 1992; NPC and ORC Macro, 2004; NCP and ICF Macro, 2009). Including traditional methods, the increase was from 6.0 percent married women ages 15–49 using contraception in 1990 to 12.6 percent in 2003 and 14.6 percent in 2008.

From the survey data, it is clear that the increase in contraception use has largely taken place in the southern part of the country. Northern Nigeria has some of the lowest levels of modern contraceptive use in the entire world. In Northern Nigeria, only about three percent of married women of reproductive age use modern contraception.

Nigeria first adopted a population policy in 1988, titled the *National Policy on Population for Development, Unity, Progress and Self-Reliance.* An increased understanding of both national population dynamics—especially high fertility and rapid population growth—and a lackluster development effort underlay the policy. The stated goals of the 1988 policy were to (1) improve standards of living and quality of life; (2) promote health and welfare, especially that of mothers and children; (3) achieve lower population growth rates . . . that are compatible with the attainment of social and economic goals; and (4) achieve a more even distribution of population between urban and rural areas (Federal Republic of Nigeria, 1988, p. 12). The policy stated that "family planning services shall be made available to all persons voluntarily wishing to use them." (p. 14). Key targets included a goal to "reduce the number of children a woman is likely to have during her lifetime, now over 6, to 4 per woman by year 2000 and reduce the present rate of population growth from about 3.3 percent per year to 2.5 percent by 1995 and 2.0 percent by the year 2000" (p. 14).[3]

As evidenced by the 2003 and 2008 Nigeria Demographic and Health Survey (NDHS), Nigeria did not make much progress toward achieving these goals during the 15–49 years following adoption of the

[2] The 1999 survey reported a TFR of 4.7, but that is considered an underestimate.

[3] The phrasing of the targets proved to be unfortunate. A common interpretation was that the policy was to limit Nigerian family size to no more than four children.

policy. A 1998 review of the population policy by the FMOH and the United Nations Population Fund concluded that "the reasons . . . for the policy targets not being met include weak programming, inadequate resources, weak institutional framework, and a lack of strategic planning" (Federal MOH (Nigeria) and UNFPA, 1998). The repressive military regime governing the country between 1993 and 1998 was one factor leading to poor implementation of the necessary programs. Furthermore, the cultural and social constraints limiting the use of family planning, especially in northern Nigeria, remained powerful.

Following Nigeria's return to civilian rule in 1998, several factors stimulated the formulation of a new population policy. These included the 1991 National Population Census, the 1994 ICPD with its broadened agenda, the emergence of the HIV epidemic, continued concern about the impact of rapid population growth on poverty and food security, and increased awareness of the population-environment-development nexus.

Subsequently, in 2001, the Federal Government of Nigeria began a long, participatory process of formulating, drafting, debating, and revising a new population policy. The government formally released the *National Policy on Population for Sustainable Development* in early 2004. The policy is a post-ICPD document with a broader agenda than the earlier document and is intended to support the long-term sustainable development of the country. It addresses the nexus of population, social and economic development, and environment relationships, as well as related issues of poverty, literacy, gender equity, and other basic needs. The policy also has a deeper understanding of the demographic transition and clearer targets than the post-ICPD policies in some other countries. For example, two of the targets are to "achieve a reduction in the total fertility rate of 0.6 children [per woman] every five years" and to "increase the modern contraceptive prevalence rate by at least 2 percentage points per year" (Federal Government of Nigeria, 2004, p. 23). A two percent annual rise far exceeds the past record. If Nigeria did achieve these targets, it would represent a complete transition to low fertility over a 30–35 year period.

Box 1. Fertility-related Targets and Quotas

Policymakers, population and health specialists, women's rights advocates, and others have extensively debated the use of fertility targets in implementing family planning programs. The controversy was especially intense in the meetings and public discourse leading up to the 1994 ICPD.

Fertility targets can be used in two ways:

- *As indicators for planning, monitoring, and evaluating national and/or regional programs*. Targets can help policymakers and planners understand what family planning programs need to achieve to reach specific goals and gauge the progress that programs have made over time.
- *As quotas for service providers*. When national or regional targets (such as a decrease in TFR or an increase in contraceptive use) are translated into targets for each facility and even individual service providers, problems arise. For example, if a health facility is expected to perform a specific number of female sterilization procedures in a defined time period, service providers might pressure women to adopt this method in order to reach their quota. Use of such targets could easily lead to abuse and human rights violations.

The discussions at the time of the ICPD led to much confusion between the use of fertility targets in program planning and assessment and as the basis of quotas for service providers. Nevertheless, the distinction is made clearly in the Tiahrt Amendment, which guides USAID family planning assistance. This amendment states that "service providers or referral agents . . . shall not implement or be subject to quotas, or other numerical targets of total number of births, number of family planning acceptors, or acceptors of a particular family planning method." However, the amendment further states that this restriction "shall not be construed to include the use of quantitative estimates or indicators for budgeting and planning purposes." The Nigeria policy itself supports the proper use of targets: "Targets are useful tools to monitor and evaluate implementation of the National Policy on Population for Sustainable Development over time" (Federal Government of Nigeria, 2004, p. 23).

NIGERIA FAMPLAN APPLICATION

The FamPlan application in Nigeria was implemented in collaboration with the National Population Commission. This section of the report describes how the model was applied in Nigeria and provides data to facilitate application of the FamPlan Model in 37 sub-Saharan African countries.

The FamPlan Model offers the user a choice of five goals. In each one it employs information on fertility rates and contraceptive use by method and offers the option of assessing costs. The five goals are to (1) reduce unmet need for family planning; (2) achieve the level of desired fertility; (3) attain a specified total fertility rate; (4) attain a specified contraceptive prevalence rate (CPR); and (5) achieve the maximum possible results within a specific budget. FamPlan calculates indicators showing the number of family planning users, commodities required, unplanned pregnancies and births, and numbers of abortions—all based on the data entered into the model, the assumptions made, and the desired outcomes.

FamPlan can be used both as a projection model to facilitate strategic planning and as a tool for considering the resources needed to implement a family planning policy. In addition to strategic planning, the projections of FamPlan can be used to develop a vision of how family planning can evolve over time to achieve a policy goal. This vision can then inform programmatic decisions. FamPlan is based on a series of assumptions that can readily be altered through "what if" alternatives. For example, the projections made for Nigeria show what happens to fertility levels if contraceptive prevalence increases by two percentage points per year versus one percentage point per year.

FamPlan can also be used to address commodity requirements, but as noted, it is best used for long-term requirements, not for the month-by-month needs in the supply lines. It is not primarily a supply chain management tool.

The FamPlan Model is based on the "proximate determinants" of fertility, which include contraceptive use, abortion, percentage of women married, infertility after a birth (postpartum insusceptibility), and others (Bongaarts, 1978; Bongaarts et al., 1984; Bongaarts and Stover, 1986; Stover, 1998). In the African setting, all of these are important, although it is difficult to know the extent of abortion. Table 1 gives the latest information from the series of national DHS for 37 countries,[4] and Table 2 gives information on unmet need for family planning. This information is useful when the FamPlan goal of addressing unmet need is chosen.

Table 1. Selected proximate determinants of fertility, recent DHS

Country and survey date	Total fertility rate	Contraceptive prevalence rate		Percent women ages 15–49 married/in union	Postpartum insusceptibility (months)
		Any method	Any modern method		
Benin 2006	5.7	17.0	6.1	75.3	14.4
Botswana 1988	4.9	33.0	31.7	39.1	13.8
Burkina Faso 2003	5.9	13.8	8.8	77.4	19.9
Burundi 1987	6.9	8.7	1.2	67.2	18.3

[4] The information on multiple DHS in this report is drawn primarily from the StatCompiler tool developed by Macro International and available at: http://www.statcompiler.com. This source also contains all previous or earlier DHS, in addition to the most recent surveys in Tables 1 and 2.

Cameroon 2004	5.0	26.0	12.5	67.2	13.7
CAR 1994/95	5.1	14.8	3.2	69.4	16.4
Chad 2004	6.3	2.8	1.6	76.6	14.9
Comoros 1996	4.6	21.0	11.4	53.6	8.2
Congo (Brazzaville) 2005	4.8	44.3	12.7	56.4	11.8
Congo D.R. 2007	6.3	20.6	5.8	66.2	12.1
Côte d'Ivoire 1998/99	5.2	15.0	7.3	61.3	18.9
Eritrea 2002	4.8	8.0	7.3	65.5	14.6
Ethiopia 2005	5.4	14.7	13.9	64.5	16.7
Gabon 2000	4.2	32.7	11.8	54.1	11.7
Ghana 2003	4.4	25.2	18.7	62.3	13.8
Guinea 2005	5.7	9.1	5.7	79.1	21.7
Kenya 2003	4.9	39.3	31.5	60.1	11.8
Lesotho 2004	3.5	37.3	35.2	52.3	15.1
Liberia 2007	5.2	11.4	10.3	64.0	13.7
Madagascar 2003/2004	5.2	27.1	18.3	64.7	11.1
Malawi 2004	6.0	32.5	28.1	71.1	12.9
Mali 2006	6.6	8.2	6.9	84.8	11.7
Mauritania 2000/01	4.5	8.0	5.1	58.8	10.7
Mozambique 2003	5.5	25.5	20.8	70.3	18.0
Namibia 2006/2007	3.6	55.1	53.4	35.2	13.1
Niger 2006	7.0	11.2	5.0	86.1	15.9
Nigeria 2008	**5.7**	**14.6**	**9.7**	**69.1**	**13.8**
Rwanda 2005	6.1	17.4	10.3	48.7	15.3
Senegal 2005	5.3	11.8	10.3	67.6	12.6
South Africa 1998	2.9	56.3	55.1	43.2	12.2
Sudan 1990	4.7	8.7	5.5	55.5	12.6
Swaziland 2006/2007	3.9	50.6	47.7	41.4	10.7
Tanzania 2004	5.7	26.4	20.0	67.3	13.0
Togo 1998	5.2	23.5	7.0	67.9	17.8
Uganda 2006	6.7	23.7	17.9	62.6	11.7
Zambia 2007	6.2	40.8	32.7	61.6	12.5
Zimbabwe 2005/06	3.8	60.2	58.4	57.7	15.6
MEANS	**5.2**	**24.2**	**17.5**	**62.9**	**14.2**
25th percentile	**4.7**	**11.8**	**6.9**	**56.4**	**12.1**
75th percentile	**5.9**	**32.7**	**20.8**	**69.4**	**15.6**

Table 2. Unmet need and demand for contraception, recent DHS

Country and survey date	Unmet need—space	Unmet need—limit	Unmet need—total	Demand—space	Demand—limit	Demand—total	Percent of demand satisfied
Benin 2006	17.6	12.3	29.9	27.8	19.1	46.9	36.3
Botswana 1988	na	na	na	na	na	na	na
Burkina Faso 2003	21.8	7.0	28.8	31.7	10.9	42.6	32.3
Burundi 1987	na	na	na	na	na	na	na
Cameroon 2004	14.2	6.0	20.2	31.9	14.3	46.2	56.2
CAR 1994/95	11.6	4.6	16.2	23.5	7.5	31.0	47.7
Chad 2004	18.4	2.3	20.7	20.6	2.9	23.5	11.8
Comoros 1996	21.8	12.9	34.6	33.6	22.0	55.6	37.7
Congo (Brazzaville) 2005	13.0	3.2	16.2	48.2	12.3	60.4	73.3
Congo D.R. 2007	19.4	5.0	24.4	32.8	12.2	45.0	45.9
Côte d'Ivoire 1998/99	20.0	7.6	27.7	30.1	12.6	42.7	35.2
Eritrea 2002	21.0	6.0	27.0	26.1	9.0	35.1	22.9
Ethiopia 2005	20.1	13.8	33.8	26.9	21.8	48.7	30.6
Gabon 2000	19.9	8.0	28.0	44.0	16.8	60.7	53.9
Ghana 2003	21.7	12.3	34.0	35.5	23.7	59.2	42.5
Guinea 2005	13.1	8.1	21.2	19.1	11.3	30.3	30.0
Kenya 2003	14.4	10.1	24.5	30.2	35.7	65.8	62.8
Lesotho 2004	11.0	20.0	31.0	24.8	43.5	68.3	54.6
Liberia 2007	24.6	11.0	35.6	31.3	15.7	47.0	24.3
Madagascar 2003/2004	11.3	12.3	23.6	23.6	27.2	50.8	53.4
Malawi 2004	17.2	10.4	27.6	33.8	27.9	61.7	55.2
Mali 2006	21.4	9.8	31.2	26.9	12.5	39.5	20.9
Mauritania 2000/01	22.9	8.6	31.6	28.1	11.5	39.5	20.2
Mozambique 2003	10.8	7.5	18.4	26.9	17.0	43.9	58.1
Namibia 2006/2007	9.1	11.5	20.6	26.6	49.0	75.6	72.8
Niger 2006	13.3	2.5	15.8	23.0	4.1	27.1	41.5
Nigeria 2008	**15.0**	**5.2**	**20.2**	**23.8**	**11.0**	**34.8**	**41.9**
Rwanda 2005	24.5	13.4	37.9	31.9	23.3	55.3	31.4
Senegal 2005	24.2	7.3	31.6	31.5	11.9	43.4	27.2
South Africa 1998	4.7	10.3	15.0	19.1	52.1	71.2	79.0
Sudan 1990	na	na	na	na	na	na	Na
Swaziland 2006/2007	7.4	16.7	24.0	20.1	54.6	74.7	67.8

Tanzania 2004	15.1	6.7	21.8	31.7	17.8	49.5	55.9
Togo 1998	21.4	10.9	32.3	36.0	19.8	55.8	42.1
Uganda 2006	24.5	16.1	40.6	35.5	28.8	64.2	36.9
Zambia 2007	17.1	9.4	26.5	41.9	25.3	67.2	60.6
Zimbabwe 2005/06	7.7	5.1	12.8	39.3	34.4	73.7	82.6
MEANS	**16.7**	**9.2**	**25.9**	**29.8**	**21.1**	**50.9**	**45.5**
25th percentile	**11.8**	**6.0**	**20.6**	**24.8**	**11.9**	**42.6**	**31.4**
75th percentile	**21.4**	**12.3**	**31.6**	**33.6**	**27.2**	**61.7**	**56.2**

Nigeria's situation is best appreciated within the larger context of 37 other sub-Saharan African countries, as shown in Tables 1 and 2. Compared with the other countries, Nigeria's fertility rate is high, and its contraceptive use is low. Across its many disparate sub-cultures, the overall percent of women ages 15–49 married or in union is high—well above that of the regional average for Africa. Nigerian women also breastfeed longer than the average; both breastfeeding and the high percent of women married are consistent with a more traditional, less modernized society than in the region as a whole.

The less modernized character of Nigeria is sharply reflected in the persistence of a high ideal family size of 6.7 children, compared with the average of 5.3 for the region. Most births are reported as wanted; therefore, unmet need for family planning to defer or avoid births is relatively low. In Table 2, Nigeria falls well below the mean and even at or below the 25th percentile, on nearly every measure, compared with the other countries.

All of the figures in Tables 1 and 2 serve as measures, or potential measures, to be used in FamPlan applications for other countries.

How rapidly might changes occur in Nigeria? One gauge is the annual pace of change for fertility and contraception between the past surveys. Table 3 shows the results for inter-survey periods from 1990 to 2008. For contraceptive use, the total CPR changed by about a half point a year from 1990 to 2003 and to 2008 (a pace of about 5 points in one decade). However, the pace of change for the modern CPR was less at only about a third of a point per year or only 3.5 points in a decade. Since then, for the last five years, the picture is worse (last row of Table 3).

The total CPR rose faster than the modern CPR because traditional method use also rose. The reliance on traditional methods reflects a felt need to avoid pregnancy by the methods longest known. It also suggests the loss of an opportunity by the public program to put modern methods close at hand throughout the country and to educate the population about them.

(The 1999 NDHS suggested rapid, rather surprising improvements in fertility and contraceptive use from 1990 that were not borne out in 2003 nor in 2008, so the 1999 survey is little used in DHS publications or in these comparisons, especially since the 2003 and 2008 surveys are in close agreement with each other.)

A reversal of the slow changes in the past would require vigorous steps by national and state authorities. The national targets to reduce the TFR by an average of 0.6 births in five years and to raise the modern CPR by two percentage points per year are both ambitious given the past record. The implications of the latter become clear in the projections below, which show sharp increases in contraceptive users who will require constantly resupply and in numbers of commodities needed. Finally, note that the comparison

uses a pace of one or two percentage points per year in the total CPR, not just the modern CPR[5] since the TFR decline desired is tied to total use.

Table 3. Annual pace of change for Nigeria

	TFR	CPR	Modern CPR
1990–2003	(0.02)	0.51	0.36
1990–2008	(0.02)	0.48	0.34
2003–2008	(0.00)	0.40	0.30

Table 4. Annual pace of change for 24 sub-Saharan African countries with multiple DHS, for various years from 1986 through 2007

	TFR	CPR	Modern CPR
Median pace per year	0.05	0.78	0.65
Mean pace per year	0.05	0.68	0.82

Across 24 sub-Saharan African countries, the average annual decline in the TFR has been small, amounting to only 0.25 percentage points in five years. In comparison, the Nigeria goal of a decline of 0.6 percentage points in five years is very ambitious. Regarding the CPR, the average increase in the 24 countries has exceeded that in Nigeria, amounting to about 7–8 percent over 10 years.

(The FamPlan Model uses the CPR as the input for contraceptive increases over time but also specifies a change in the share of each method, "the method mix," and thus permits a shift toward modern methods and away from traditional methods. Similar information can be produced by reference to past surveys in any country of interest, as one way of obtaining a fix on probable future changes.)

FamPlan Assumptions

A detailed examination of FamPlan requires a study of the manual, *FamPlan, Version 4: A Computer Program for Projecting Family Planning Requirements*, compiled by John Stover, Laura Heaton, and John Ross (2006). The FamPlan manual is available in English, French, and Spanish at: http://www.healthpolicyinitiative.com/index.cfm?id=software&get=Spectrum. The FamPlan manual explains the methods used in the model and gives the equations that drive the calculations. An abbreviated explanation follows.

As noted, FamPlan was created on the basis of the "proximate determinants model" of fertility (Stover et al., 2006; Stover, 1998). The rationale is that fertility would be at its maximum if no one used contraception or abortion, marriage was early and universal, and there was no primary infertility. In addition, breastfeeding would be negligible so that after a birth women would quickly experience the next conception. The model reverses all these, taking account of the fertility-reducing effect of each factor, and ending with the actual fertility rate that prevails. Therefore, inputs are needed for each factor: the percentage using contraception by method (since methods differ in their failure rates and discontinuation rates), the use of abortion, the percent of women aged 15-49 in union, the degree of primary infertility, and the duration of postpartum insusceptibility to conception. Once this structure is set up, inputs are entered for future dates to create the projections. One can specify, for example, a target for the fertility

[5] The total CPR usually rises at a slower pace than the modern CPR does, as modern methods tend partly to replace traditional methods. In fact, the projections assume a considerable shift in the mix from traditional to modern methods, and the overall rise in contraceptive prevalence is driven mainly by the rise in modern methods.

rate to see what increase in contraception would be required to produce it. Alternatively, one can specify the increase in contraceptive use and see how much fertility decline would result. Such manipulations are possible to explore any of the five goals listed above.

Options also exist for assumptions regarding basic demographic variables, such as mortality rates, the age structure, and the percent urban. These are entered through the DemProj module, which is required before FamPlan can be used. In addition, for countries with high HIV prevalence, it is desirable to use the AIDS module; all of these are contained in the Spectrum software system that contains DemProj and FamPlan.

Illustration of Input Decisions

This section explains how input decisions were made in the case of Nigeria and what sources of information can be used for other countries. For certain inputs below, Table 1 shows the latest survey findings; earlier surveys to capture time trends are easily available in the "StatCompiler" tool on the Macro International website.

Contraceptive use

National surveys are the best source of information on contraceptive use. If there are multiple surveys, the past trend may serve as a guide for the projection. Alternatively, the national target for use can be entered to see what fertility decline will result and whether it agrees with the national goal. It is necessary to enter the prevalence, effectiveness, and continuation rate of each method, as the fertility impact depends on each of these. In many countries, the injectable and the pill are dominant and can be projected to increase substantially; this increase was assumed in the Nigeria projections. Traditional methods are also important, including deliberate postpartum abstinence, but over time they may decline as modern methods replace them; in that case, the net result is less increase in total contraceptive use than in modern method use. For Nigeria, previous national surveys were used to set the baseline method mix and prevalence level for the percent of women using contraception. Future trends were explored to compare the fertility effect of increasing the CPR by either one or two percentage points per year. For example, an increase of one percentage point per year would raise the CPR in Nigeria from 14.6 percent in 2008 to 24.6 percent over 10 years.

Abortion use

Because surveys are subject to serious undercounting of abortions, they are usually nearly useless for this input. One estimate for Nigeria was 25 abortions per 1,000 women ages 15–49 in 1996 (Henshaw et al., 1998). Another source using data for two towns showed that 58 percent of unwanted pregnancies were aborted. Such unsatisfactory information is the case for most countries. As a national average, abortion is thought to be relatively uncommon given its illegality and the large rural populations where the desired family size is still large. In Nigeria, the total abortion rate was set low and constant at only 0.1 (one lifetime abortion per 10 women).

Percent of women ages 15–49 in union

As with numerous other inputs, the national surveys are the best data source, and if there are multiple surveys, a trend may be evident. The NDHS (1990, 2003, and 2008) found that 71 percent, 68 percent, and 69 percent of women ages 15–49 were in union. The figure for most years into the future was set at 70 percent.

Primary infertility

In any population, a small percentage, approximately 2–3 percent, of women never give birth during their lifetime even though they have been in union for many years. Where diseases are prevalent, especially sexually transmitted infections, the percentage of women who never give birth can be elevated. HIV/AIDS has decreased the fertility of women in numerous countries—perhaps by 20–23 percent

(Carpenter et al., 1997). For Nigeria, the percent of women with primary infertility was set at 2.5 percent from 2003 onward.

Postpartum insusceptibility to conception

Breastfeeding is known to suppress ovulation, especially if it is nearly exclusive, with little supplementary food, and breastfeeding is especially common in sub-Saharan Africa. It overlaps some with deliberate postpartum abstinence, and so this input is usually set higher in sub-Saharan Africa than in other regions. National surveys are again the best data source (see Table 1). In Nigeria, the input for postpartum insusceptibility was set at 13.8 months based on the 2008 survey, and a continuous future decline to about 8 months by 2035 was assumed, based partly on the decline from 19.2 months in 1990 to 15.1 in 2003 and 13.8 in 2008.

Commodity costs

FamPlan allows for estimates of the costs of contraceptive supplies. For example, the cost per condom can be specified, and it can be given separately for the public and private sectors. Separate cost inputs are required for each method. Usually the cost figure wanted is what the donor or government must pay, since FamPlan focuses on national planning. Also, one must decide whether to include transportation costs or duties paid.[6] The analysis for Nigeria did not touch on costs.

Inputs for Different Goals

Most of the materials below assume that the goal of the projection is to attain a certain path for an increase in contraceptive prevalence over the period up to 2035. A comparison is carried forward to examine the results if contraceptive prevalence rises at two percentage points versus one percentage point per year. A common alternative is to set a goal of a specific fertility decline and see what increase in contraceptive use or method mix is required to attain it. However, other goals are optional as indicated above, and the goal to reduce unmet need for contraception is sometimes used. Table 2 is therefore included to provide relevant survey information.

Unmet need is lower in Nigeria than in other African countries: only 20 percent of Nigerian women indicate an unmet need for family planning, compared with the regional mean for sub-Saharan Africa of 26 percent. That puts Nigeria just at the 25th percentile (see Table 2). Similarly, total demand for family planning (percent of women using a method plus percent with unmet need) is only 35 percent, compared with 51 percent for the region, which again places Nigeria below the 25th percentile of 43 percent.

This pattern occurs because traditional values are still strong in Nigeria, so that most women (87%) say that their recent birth was wanted and was wanted at the time when it occurred. That is far above the regional mean of 67 percent. On another measure, the wanted total fertility rate equals 93 percent of the total fertility rate. The difference of only 7 percent is well below the regional average of 16 percent.

Selected Outputs

This section provides selected results from the Nigeria FamPlan analysis. In addition, relevant data for the 10 next largest African countries and for sub-Saharan Africa as a whole are included to provide a perspective on the broader regional context. These data use the 2008 United Nations (UN) projections for fertility and population growth (UN Population Division, 2009b). For contraceptive results, the analysis uses different projection methods that are based on past national surveys and on relationships of contraceptive projections to the UN projections of total fertility rates (Ross et al., 2005).

[6] Some surveys collect partial information on what respondents have paid for contraceptive supplies.

Nigeria accounts for 18 percent of the population of sub-Saharan Africa, while the 10 next largest countries make up about half (48%) of the region's population. Thus, Nigeria plus the 10 next largest countries constitute two-thirds (66%) of the region's population and so give a fair overall picture—both for important countries and for the larger context.

The Nigerian 2004 *National Policy on Population for Sustainable Development* adopts broad targets, including a reduction in the TFR of at least 0.6 children per woman every five years and an increase in the modern CPR by at least two percentage points per year. By so doing, Nigeria would achieve a transition from high to low fertility over a 30–35 year period. The following section by no means exhausts the outputs from the Nigeria application, nor does it give a full accounting of all of the potential uses of FamPlan for strategic planning. It also reflects certain key assumptions: the relative importance of traditional methods declines over time; the period of postpartum infecundability declines with the development of the country; and the total abortion rate is and remains low.

To explore alternative future paths, the analysis focused on the contraceptive prevalence target. What happens if contraceptive prevalence rises by two percentage points per year—the policy goal—from 2008 to 2035? In that case, the contraceptive prevalence rate would increase from 14.6 percent in the 2008 survey to 68.6 percent in 2035. The total fertility rate (births per woman) would decline from 5.7 births per woman in the 2008 survey to 2.7 in 2035. Nigeria's population would be 274 million in 2035, still growing by more than 1 percent per year.

But what happens if contraceptive prevalence rises by only one percentage point per year between 2008 and 2035? (This level is still considerably higher than Nigeria's past record.) In that case, in 2035, the contraceptive prevalence rate would be 41.6 percent; the total fertility rate would be 4.9 births per woman; and the population would be 325 million people and would be growing by 2.8 percent annually—a doubling time of 25 years. Figure 1 illustrates the rise in the contraceptive prevalence rate under both scenarios, and Figure 3 illustrates the change in the population growth rate under both scenarios. Figures 2 and 4 illustrate the effects on the TFR and the total population size, respectively. To fill out the picture for the other 10 African countries, Tables 5 and 6 cover the CPR, TFR, population growth rates, and population sizes.

The two Nigeria projections produce greatly different results, because one has contraceptive use rising twice as fast as the other. By 2035 contraceptive prevalence is 27 points higher in the two percentage-point projection, and both its TFR and growth rate are nearly half that of the one-point projection. Its population size is only 16 percent less because people age 30 and older were already born at the outset in 2008.

All of these differences develop gradually over the years; by 2015, six years from now, they are smaller. However, the CPR difference then is still seven percentage points (29% versus 22% in Figure 1), and prospects do not seem favorable that even the 22 percent mark will be reached.

The other 10 countries listed in Table 5 vary substantially in both levels and pace of change. By 2020 (the last year available in this alternative set of projections), they attain CPR levels from 10 percent to 55 percent, with South Africa an exception at 64 percent. The projections for the entire sub-Saharan African region show a rise of 10 percentage points in CPR from 2005 to 2020, or 0.67 percentage points a year—well below the one percentage point per year used in the Nigeria projections.

Continuing for the regional projection in Table 6, the TFR decline over 15 years is from 5.41 births per woman to 4.20, or an average of 0.08 births per woman annually—a relatively slow pace. The region's annual population growth rate remains high, declining modestly from 2.49 percent to 2.17 percent. Consequently, its population size grows by nearly 40 percent in the 16 years between 2009 and 2025.

In general, these projections make for an extremely challenging set of tasks for national policy leaders and program planners, and the Nigerian case is one of the most formidable.

Figure 1. Rise in Nigeria's contraceptive prevalence rate under two scenarios

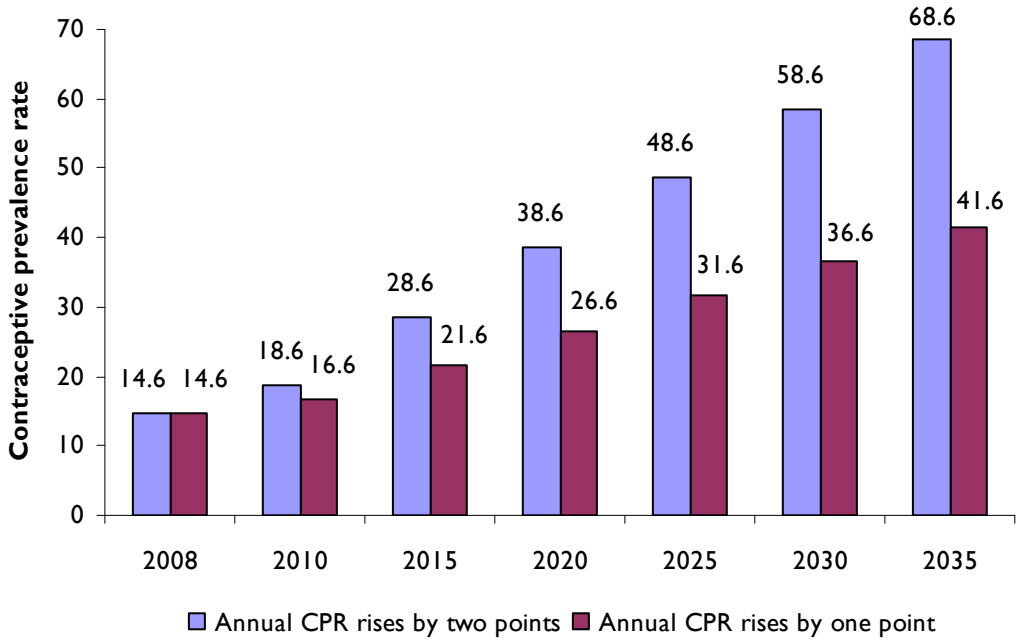


Table 5. CPR projections for 10 large African countries

	2005	2010	2015	2020
Congo, D.R.	7.0	7.7	9.8	12.8
Côte d'Ivoire	19.2	22.9	26.1	28.6
Ethiopia	8.9	10.9	12.9	15.0
Ghana	25.7	29.2	31.9	33.9
Kenya	38.3	41.4	47.6	54.1
Madagascar	31.6	39.0	47.0	55.3
Mozambique	6.7	7.9	9.2	10.5
South Africa	58.8	60.7	62.4	63.8
Tanzania	32.1	38.1	43.5	48.0
Uganda	17.6	20.0	27.5	38.2
Sub-Saharan Africa	**22.6**	**25.5**	**29.1**	**32.9**

Table 6. Projected TFRs, population growth rates, and population sizes for 10 large African countries and region

Total fertility rates, selected time periods						
	2000–2005	**2005–2010**	**2010–2015**	**2015–2020**	**2020–2025**	**2045–2050**
Congo D.R.	6.70	6.07	5.52	4.94	4.35	2.44
Côte d'Ivoire	5.05	4.65	4.19	3.72	3.32	2.30
Ethiopia	5.87	5.38	4.80	4.21	3.69	2.19
Ghana	4.54	4.31	4.00	3.65	3.36	2.48
Kenya	5.00	4.96	4.54	4.04	3.59	2.39
Madagascar	5.28	4.78	4.26	3.79	3.38	2.32
Mozambique	5.52	5.11	4.61	4.10	3.64	2.41
South Africa	2.80	2.55	2.42	2.30	2.19	1.85
Tanzania	5.66	5.58	5.30	4.80	4.28	2.62
Uganda	6.70	6.38	5.91	5.38	4.80	2.62
Sub-Saharan Africa	**5.41**	**5.08**	**4.66**	**4.20**	**3.77**	**2.46**
Annual population growth rates (percentage)						
	2000–2005	**2005–2010**	**2010–2015**	**2015–2020**	**2020–2025**	**2045–2050**
Congo D.R.	3.01	2.76	2.65	2.48	2.26	1.26
Côte d'Ivoire	2.15	2.28	2.31	2.15	1.97	1.22
Ethiopia	2.61	2.59	2.49	2.30	2.08	1.12
Ghana	2.31	2.09	2.03	1.87	1.73	1.12
Kenya	2.61	2.64	2.56	2.28	2.02	1.27
Madagascar	2.85	2.69	2.52	2.34	2.15	1.27
Mozambique	2.65	2.33	2.07	1.90	1.77	1.14
South Africa	1.38	0.98	0.47	0.38	0.41	0.12
Tanzania	2.67	2.88	2.92	2.69	2.46	1.60
Uganda	3.22	3.27	3.23	3.08	2.85	1.70
Sub-Saharan Africa	**2.49**	**2.44**	**2.33**	**2.17**	**1.98**	**1.25**
Population (thousands), selected dates						
	1950	**2009**	**2015**	**2025**	**2050**	
Congo D.R.	12,184	66,020	77,419	98,123	147,512	
Côte d'Ivoire	2,505	21,075	24,210	29,738	43,373	
Ethiopia	18,434	82,825	96,237	119,822	173,811	
Ghana	4,981	23,837	26,925	32,233	45,213	
Kenya	6,077	39,802	46,433	57,573	85,410	

Madagascar	4,084	19,625	22,853	28,595	42,693	
Mozambique	6,442	22,894	25,957	31,190	44,148	
South Africa	13,683	50,110	51,684	53,766	56,802	
Tanzania	7,650	43,739	52,109	67,394	109,450	
Uganda	5,158	32,710	39,710	53,406	91,271	
Sub-Saharan Africa	**183,478**	**849,517**	**970,173**	**1,193,752**	**1,753,272**	

Figure 2. Decline in Nigeria's total fertility rate under two scenarios for annual increases in contraceptive prevalence

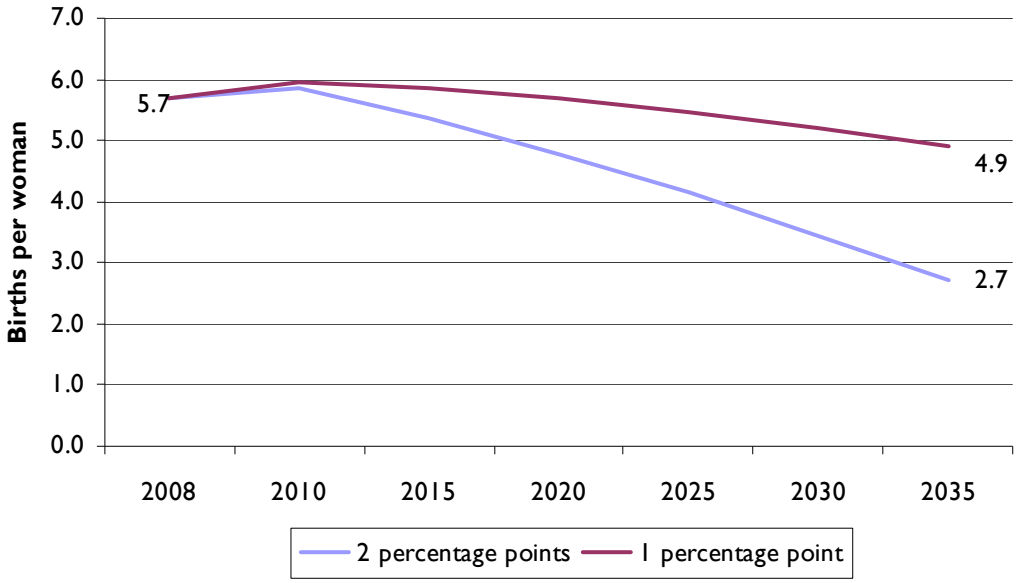


Figure 3. Annual population growth rate in Nigeria under two scenarios for annual increases in contraceptive prevalence

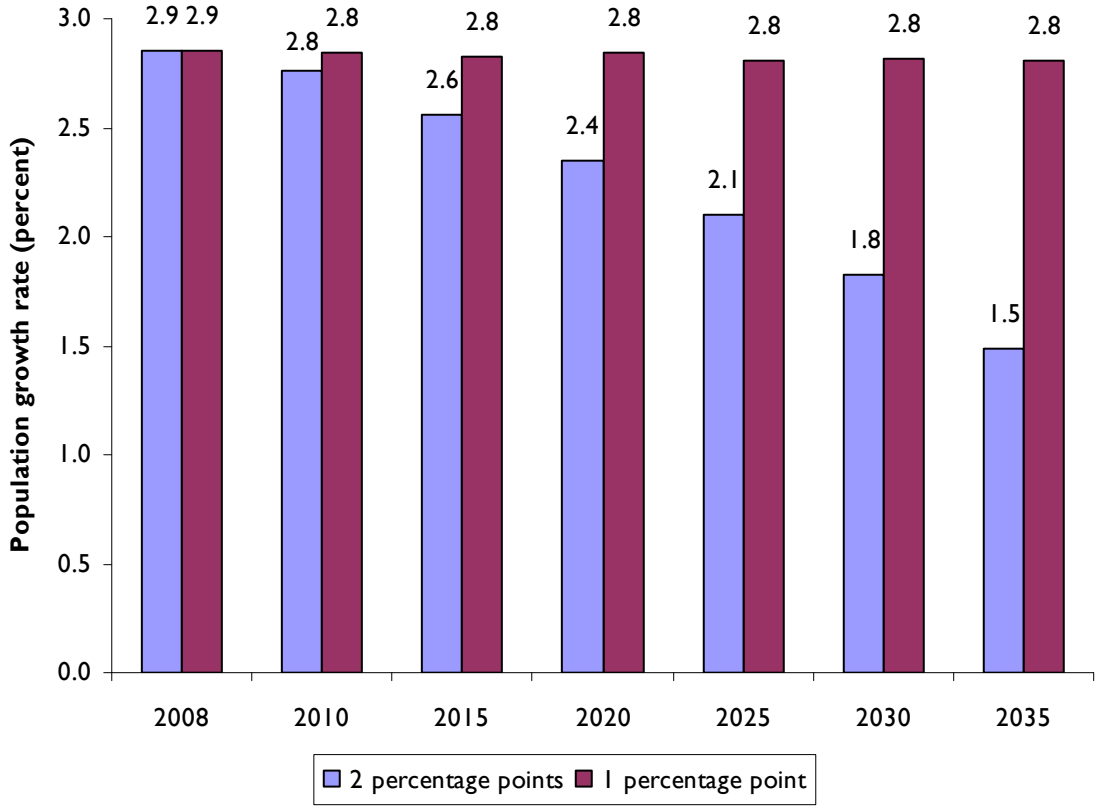
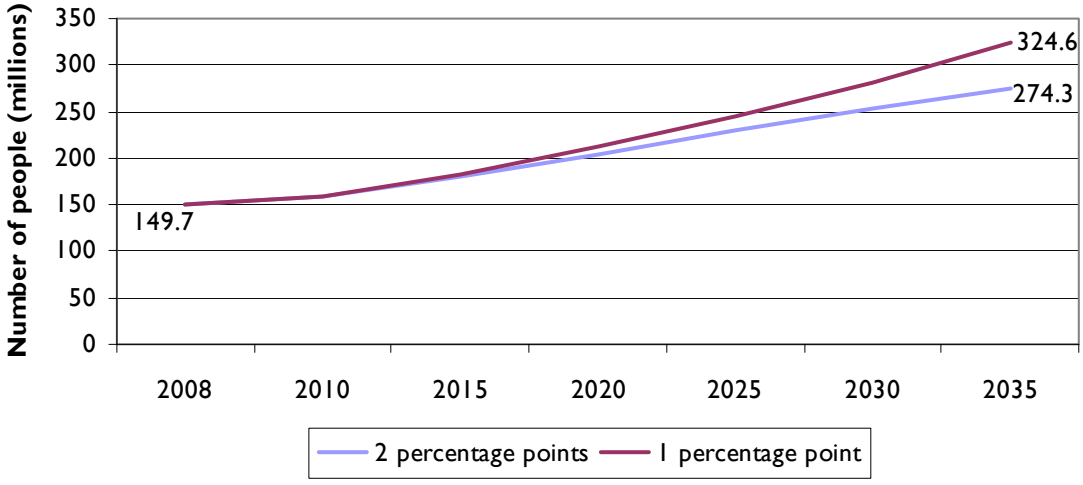


Figure 4. Growth of Nigeria's population under two scenarios for annual increases in contraceptive prevalence



Additional Outputs

It is also strategically useful to consider some of the other FamPlan Model outputs, particularly those dealing with the numbers of women, contraceptive users, and commodities. For that, key assumptions are needed about the contraceptive method mix in the future. Demographic and Health Surveys are helpful, as they show the current trend and ask nonusers about their preferred method choices in the future. That information was examined for Nigeria and also for other countries in which contraceptive prevalence had risen to higher levels. Considering such information together with the clear popularity of the injectable and the pill, the projections for method mix assumed large increases for these methods. Other modern methods, especially voluntary sterilization and the intrauterine device, see little use in sub-Saharan African countries, and non-users do not favor them in their preferred future choices.

Using the projection in which contraceptive prevalence in Nigeria is assumed to increase by two percentage points per annum, the results are intimidating. The number of women ages 15–49 would increase from about 34 million in 2008 to 73 million in 2035 (see Figure 5). The total number of contraceptive users would increase more than ten-fold—from 3.5 million in 2008 to 12.9 million in 2020 and 35.1 million in 2035 (see Figure 6). The number of injectable users would rise from 600,000 in 2008 to 5.0 million in 2020 and 13.5 million in 2035 (see Figure 7), while the number of pill users would rise from 400,000 in 2008 to 4.0 million in 2020 and 11.0 million in 2035 (see Figure 8).

These numbers are far smaller, and more realistic, for the one percentage-point projection in Figures 6–8. In this scenario, total contraceptive users grow to 22 million, injectable users to 8.5 million, and pill users to 6.9 million. Although the numbers are smaller, they nevertheless grow at a rapid pace, due to the double push of population growth and the method mix assumption of a rapid uptake of those two methods. Consequently, a rapid expansion of supply capacity is required.

For the other 10 African countries, Tables 7 and 8 provide comparable information. Again, there is great diversity across the continent in levels and change rates. As a whole, the region gains 196 million women ages 15–49 between 2005 and 2035, over a doubling, with all that implies for the additional burdens on all public services. After Nigeria, the most growth is in Ethiopia and the Democratic Republic of the Congo. South Africa starts at a similar level in 2005 but grows more slowly.

Figure 5. Growth in number of Nigerian women ages 15-49 under two scenarios for annual increases in contraceptive prevalence

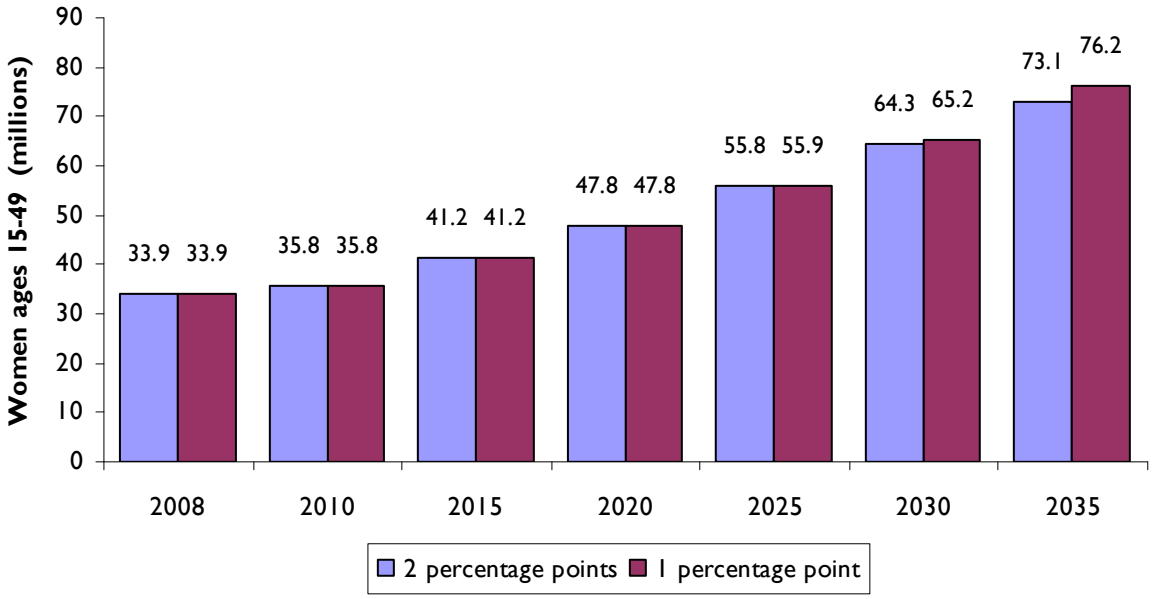


Figure 6. Number of Nigerian contraceptive users under two scenarios for annual increases in contraceptive prevalence

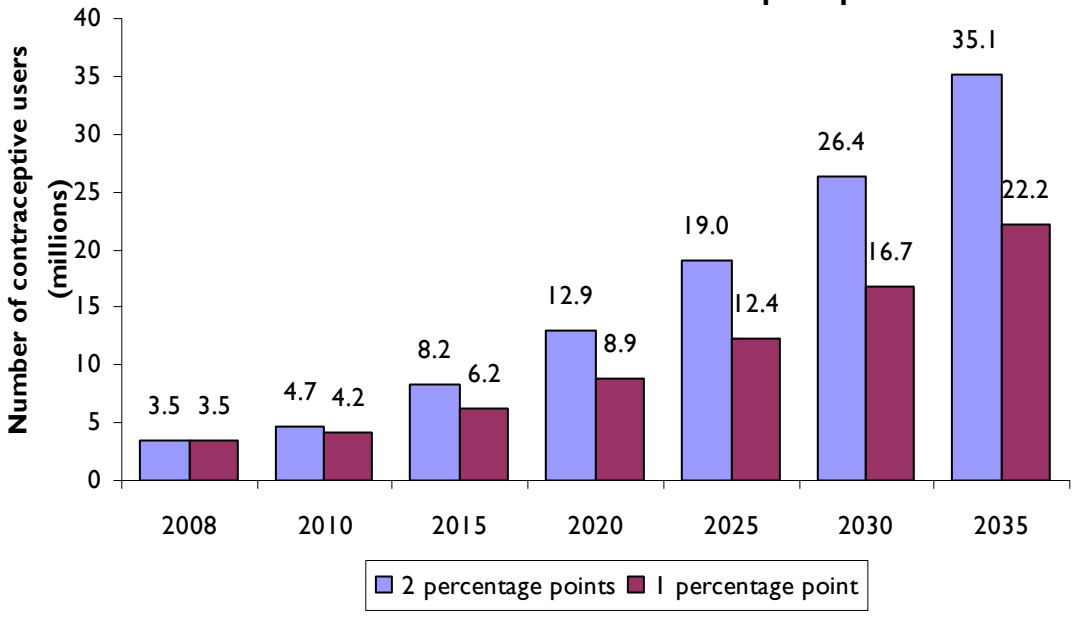


Figure 7. Number of Nigerian injectable users under two scenarios for annual increases in contraceptive prevalence

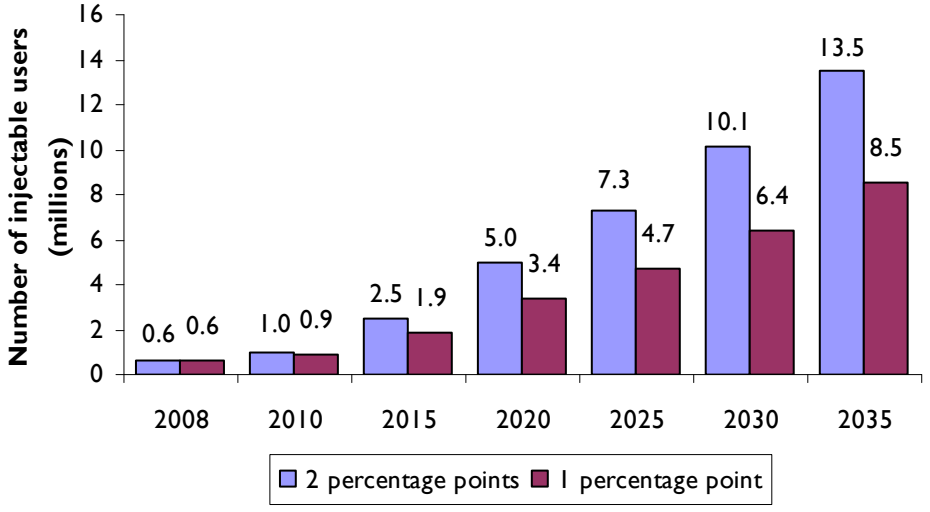


Figure 8. Number of Nigerian pill users under two scenarios for annual increases in contraceptive prevalence

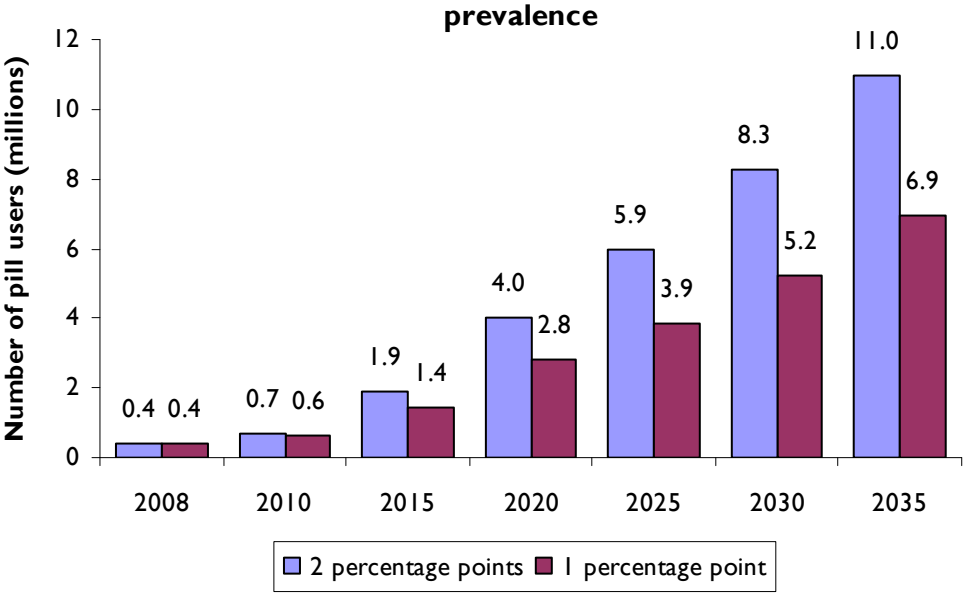


Table 7. Number of women of reproductive age (15–49) for 10 large countries and region (thousands)

	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Congo D.R.	12,970	15,345	18,109	21,263	24,581	28,135	31,766	35,229	38,337	40,992
Côte d'Ivoire	4,419	5,055	5,847	6,757	7,691	8,591	9,437	10,209	10,885	11,473
Ethiopia	16,985	19,955	23,277	26,820	30,709	34,730	38,646	42,143	45,034	47,423
Ghana	5,351	6,057	6,766	7,484	8,232	8,987	9,698	10,350	10,936	11,490
Kenya	8,712	9,802	11,136	12,808	14,756	16,648	18,334	19,852	21,423	22,970
Madagascar	4,090	4,811	5,638	6,503	7,383	8,275	9,214	10,048	10,760	11,350
Mozambique	5,032	5,576	6,204	7,011	7,870	8,778	9,680	10,529	11,322	12,014
South Africa	13,137	13,623	13,645	13,801	14,149	14,544	14,722	14,740	14,726	14,678
Tanzania	8,956	10,271	11,884	13,868	16,213	18,804	21,450	24,082	26,712	29,290
Uganda	6,100	7,345	8,884	10,696	12,778	15,112	17,606	20,143	22,607	24,949
Sub-Saharan Africa	**180,099**	**205,448**	**234,268**	**267,120**	**303,210**	**340,249**	**376,147**	**409,761**	**440,954**	**469,473**

Table 8. Number of contraceptive users: all methods, injectables, and pills (thousands)

	All methods			
Country	**2005**	**2010**	**2015**	**2020**
Congo, D.R.	604	769	1,139	1,757
Côte d'Ivoire	1,284	1,728	2,232	2,751
Ethiopia	1,825	2,559	3,472	4,563
Ghana	1,337	1,710	2,077	2,440
Kenya	2,555	3,088	4,034	5,309
Madagascar	750	1,038	1,440	1,940
Mozambique	373	483	623	784
South Africa	5,176	5,216	5,243	5,331
Tanzania	2,510	3,339	4,291	5,296
Uganda	1,175	1,614	2,719	4,647
Sub-Saharan Africa	**35,499**	**46,188**	**60,397**	**78,025**
	Injectables			
Country	**2005**	**2010**	**2015**	**2020**
Congo, D.R.	35	46	82	161
Côte d'Ivoire	117	139	162	186
Ethiopia	655	818	960	1,083
Ghana	201	245	281	314
Kenya	843	959	1,058	1,095
Madagascar	402	473	518	516
Mozambique	154	178	196	209

South Africa	1,769	1,380	1,021	734
Tanzania	592	660	691	699
Uganda	447	606	955	1,392
Sub-Saharan Africa	**7,986**	**9,036**	**10,212**	**11,381**
	Pills			
Country	**2005**	**2010**	**2015**	**2020**
Congo, D.R.	43	55	95	202
Côte d'Ivoire	350	512	700	886
Ethiopia	528	696	909	1,175
Ghana	271	375	477	574
Kenya	572	695	901	1,141
Madagascar	85	142	224	317
Mozambique	91	108	133	165
South Africa	982	983	971	964
Tanzania	562	763	973	1,169
Uganda	214	296	519	932
Sub-Saharan Africa	**7,724**	**10,288**	**13,803**	**18,025**

Commodity Requirements

Looking at Nigeria's commodity requirements over the planning period to 2015, the number of injections needed[7] would rise to 12.3 million in 2015 under the two percentage-point projection compared with 9.3 million under the one-point projection (see Figure 9). The number of pill cycles needed annually would increase to 28.6 million or to 21.6 million, respectively (see Figure 10). For both the injectable and the pill, the numbers more than double in the five years from 2010 to 2015.

Estimates for the 10 next largest countries are in Table 9. The numbers reflect survey data on the proportion of women using each method in the recent past, together with the expected rise in overall contraceptive prevalence and expected changes in method mix. For the entire region, the injectable commodities required rise by 43 percent between 2005 and 2020, from about 32 million injections annually to 46 million annually. Also, pill cycles required more than double, from 116 million annually to 270 million.

[7] Based on the availability of two- and three-month injectables in Nigeria, the number of injections needed was based on five injections per couple-year of protection.

Figure 9. Number of injections needed annually in Nigeria, 2008 to 2015, under two scenarios for annual increases in contraceptive prevalence

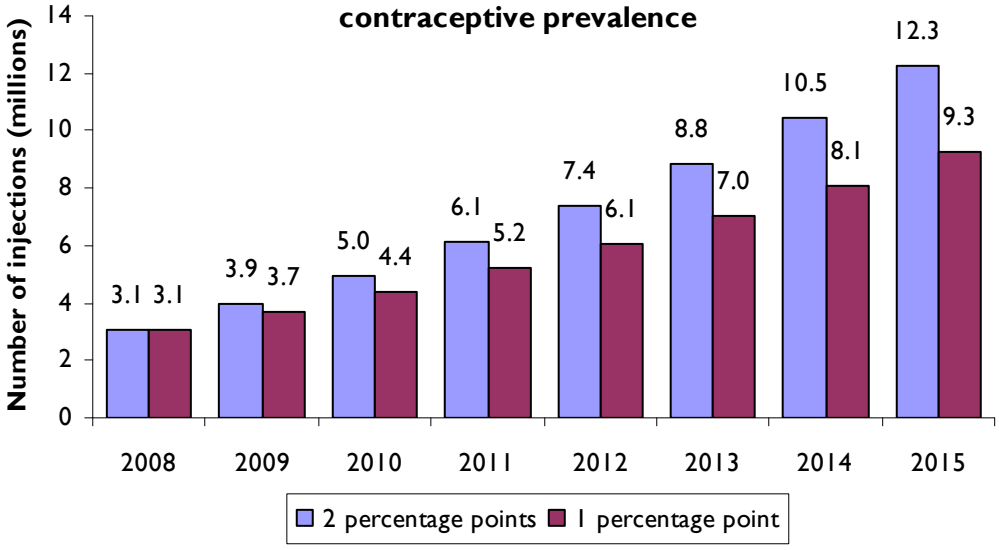


Figure 10. Number of pill cycles needed annually in Nigeria, 2008 to 2015, under two scenarios for annual increases in contraceptive prevalence

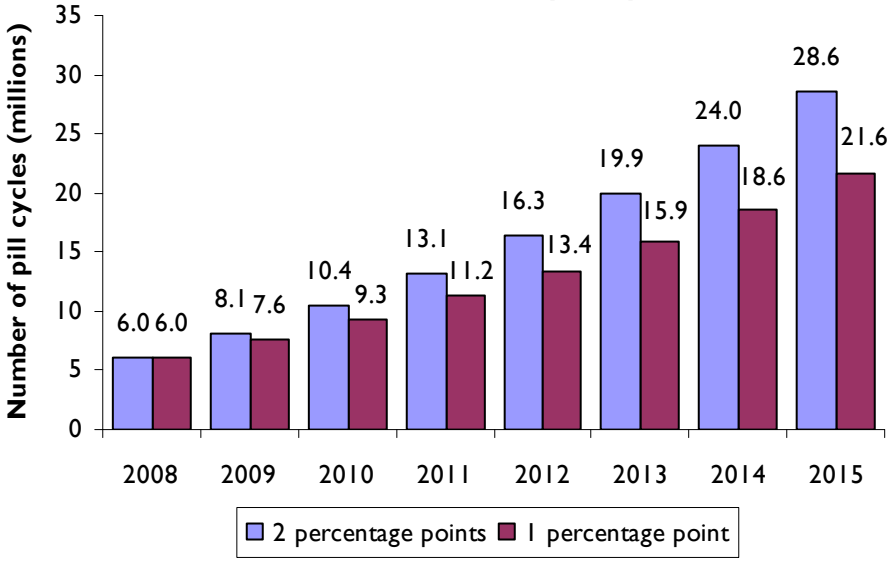


Table 9. Projected commodity needs for injectables and pills (thousands)

Country	2005	2010	2015	2020
	Injectables			
Congo, D.R.	138	185	329	643
Côte d'Ivoire	467	555	646	745
Ethiopia	2,619	3,273	3,839	4,333
Ghana	803	978	1,124	1,256
Kenya	3,372	3,834	4,231	4,380
Madagascar	1,608	1,890	2,072	2,066
Mozambique	617	710	783	837
South Africa	7,076	5,522	4,085	2,935
Tanzania	2,370	2,641	2,764	2,796
Uganda	1,789	2,425	3,821	5,567
Sub-Saharan Africa	**31,937**	**36,145**	**40,843**	**45,531**
	Pills			
Congo, D.R.	648	832	1,422	3,037
Côte d'Ivoire	5,257	7,685	10,494	13,289
Ethiopia	7,922	10,447	13,633	17,619
Ghana	4,066	5,620	7,148	8,607
Kenya	8,577	10,421	13,519	17,118
Madagascar	1,278	2,123	3,353	4,750
Mozambique	1,372	1,626	1,991	2,478
South Africa	14,737	14,740	14,558	14,467
Tanzania	8,435	11,452	14,599	17,538
Uganda	3,205	4,439	7,781	13,973
Sub-Saharan Africa	**115,856**	**154,340**	**207,011**	**270,355**

If Nigeria is to come even close to achieving the stated targets in the *National Policy on Population for Sustainable Development*, it will need to develop realistic strategies to achieve rapid and timely expansion of family planning services, particularly for injectables and oral contraceptives, as the public is most interested in these methods. Given the great variation in use in different parts of the country, alternative state strategies will be needed, which is consistent with the partial autonomy of state planning.

LESSONS LEARNED

The Nigeria application demonstrates that the FamPlan Model can be a powerful analytical tool to support repositioning family planning initiatives in Africa. Nonetheless, there are a few cautionary notes. As with any policy model, it is important to match the tool to the problem. As a projection model, FamPlan is designed to ask "what if" questions and to build scenarios based on different assumptions. As such, one of its valuable uses is to contribute to strategic planning for implementation of the national policy. It is not designed as a supply chain management tool, but given the current interest in contraceptive security issues, it is important that national counterparts understand the longer-term implications of the projections.

What is clear in Nigeria—and undoubtedly is true in other African countries—is that there is a lack of solid information on costing issues in the family planning sector. What do commodities and services cost, by method, separately in the public sector versus the private sector? Who is paying for what, and who is providing what? An understanding of costing issues is fundamental to good strategic planning—much more collation and generation of information are needed to support evidence-based decisionmaking.

In the future, the FamPlan Model can be used to help monitor progress toward achieving policy goals and also to reassess and recalibrate the targets as needed. Target setting can be an important strategic tool to mobilize effort, especially if the goal or target is "SMART"—Specific, Measurable, Achievable, Realistic, and Time-bound. This type of analysis may be useful in taking account of the 2008 NDHS findings.

The usefulness of the FamPlan Model will be proportionate to the level of commitment that host-country counterparts have to policy implementation. The FamPlan Model will be most useful in those African countries that possess a serious intent to expand access to and use of family planning services and to achieve fertility decline.

CONCLUSIONS

The passage of more than 20 years since the Caldwells' provocative article has unfortunately confirmed their primary thesis—that sub-Saharan Africa's path toward the demographic transition would differ from that of other regions and that its uptake of contraceptive methods would start later and increase slower. Fertility rates have come down somewhat, but they too have been tardy and weak. Consequently, the course of rapid population increase, high dependency ratios, and high mortality continues to be troubling. Another 20 years are needed to reach low growth rates even with augmented action programs.

An illustration of that reality is that even if contraceptive use were to increase by the midpoint between the two scenarios used in the Nigeria analysis (i.e., at 1.5 percentage points per year), it would require 34 years to reach 65 percent contraceptive prevalence, and even that leaves the birthrate well above replacement level and the population growth rate well above 1 percent per year.

Finally, political leaders, development specialists, and other experts are increasingly concerned about population growth as a factor that impedes efforts to raise living standards and improve the quality of life. There is a renewed sense that high fertility and high population growth rates in Africa (and elsewhere) seriously limit social and economic development. Even with a sustained commitment to achieving fertility decline, it is likely that the fertility transition in many African countries will take at least another generation. The FamPlan Model is one tool that can help policymakers and public health officials understand what is needed to achieve that transition and how to plan for it.

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