Contraceptive Needs and Services, 2010: Methodological Appendix

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Also available:

Contraceptive Needs and Services, 2010: National and State Report
(www.guttmacher.org/pubs/win/contraceptive-needs-2010.pdf)

Contraceptive Needs and Services, 2010: County Tables
(www.guttmacher.org/pubs/win/index.html)

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This report describes the detailed methodology used to collect, tabulate and estimate:

1. the number of U.S. **women in need** of contraceptive services and supplies in 2010 according to age, poverty status, race and ethnicity;

2. the number of U.S. **women receiving public-sector contraceptive care** in 2010 according to the type of publicly supported provider visited; and

3. the **impact of publicly supported contraceptive care** in 2010 in terms of:
   - unintended pregnancies, unplanned births and abortions that are prevented; and
   - public cost savings that accrue from preventing unintended pregnancies, many of which would otherwise result in Medicaid-funded births.

1. Women in Need

Updated 2010 estimates of the number of women in need of contraceptive services and supplies, as well as those in need of publicly supported contraceptive care, have been made for all U.S. states and counties, according to women's age, poverty status, race and ethnicity. These tabulations are based on 2010 population data from the U.S. Census Bureau; poverty and marital status data from the 2008–2010 American Community Survey (ACS); and characteristics of women from the 2006–2010 National Survey of Family Growth (NSFG).

Estimates of the number of women who need publicly supported contraceptive services and supplies are shown by age (younger than 18, aged 18–19, aged 20–29 and aged 30–44) and by poverty status (family income of <100%, 100–137%, 138–199% and 200–249% of the federal poverty level). These disaggregated poverty status numbers allow estimates of the need for publicly supported services to be calculated for poverty levels different from the ones used here. The poverty categories used in this analysis are slightly different than those used in prior years and align with the poverty categories that will be used for determining eligibility for public and private health insurance options under the Affordable Care Act (ACA).

The proportion of women in various population subgroups who were sexually active, fecund, and neither intentionally pregnant nor trying to become pregnant was calculated from a special analysis of the 2006–2010 NSFG, a nationally representative cross-sectional survey of 12,279 women aged 15–44 conducted by the U.S. National Center for Health Statistics.

The estimated proportions of women in need are then applied to county-level estimates of the number of women in each of the various population subgroups. However, simply applying the national proportion of women aged 13–44 who are in need to the population of a specific state or county will be inaccurate if the local population differs from the national population in characteristics associated with contraceptive need, such as age, marital status, income, race and ethnicity. Therefore, the estimates presented here take into account differences in levels of need across key demographic subgroups, as well as the characteristics of the population of each state and county.

KEY DEFINITIONS FOR WOMEN IN NEED

Women in Need of Contraceptive Services and Supplies
As in earlier estimates[3–11] women are defined as in need of contraceptive services and supplies during a given year if they are aged 13–44 and meet the following criteria:

- they are sexually active; that is, they have ever had sexual intercourse;
- they are fecund, meaning that neither they nor their partners have been contraceptively sterilized, and they do not believe that they are infecund for any other reason; and
- during at least part of the year, they are neither intentionally pregnant nor trying to become pregnant.

Because the objective here is to estimate the current annual need for contraceptive services and supplies, the estimates differ from other estimates of women at risk of unintended pregnancy by excluding women relying on contraceptive sterilization to prevent pregnancy. In addition, these estimates consider a woman's contraceptive and pregnancy status over a full year, rather than considering only her status at the time of the survey, to reflect the annual number of women who might seek contraceptive services.

Women in Need of Publicly Supported Services
Some women who need contraceptive services and supplies have difficulty obtaining care because they cannot afford private-sector prices or because they have special needs, such as a requirement for confidentiality. As in past estimates, women are defined as in need of publicly supported contraceptive care if they meet the criteria for needing contraceptive services and supplies, plus at least one of the following:

- they are aged 20 or older and their family income is below 250% of the federal poverty level, or
- they are younger than 20, regardless of family income level.

County Population Estimates

Two hundred population subgroups for each county were used in the estimation procedure—defined by age (13–14, 15–17, 18–19, 20–29 and 30–44), marital status (married and living with spouse vs. all other categories), race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, and other or multiple races) and family income as a percentage of the federal poverty standard (<100%, 100–137%, 138–199%, 200–249% and ≥250%). In addition, geographic subgroups were defined by the county's metropolitan status (central city, metropolitan area outside of a central city and nonmetropolitan) and census region (Northeast, Midwest, South and West).

To estimate the population of reproductive-aged women in each subgroup in each county, we started with published 2010 Census Bureau reports of the number of women in each county by age, race and ethnicity.[12] We did not adjust the population data for the census undercount.

We then divided the age, race and ethnicity groups according to women's marital status and poverty status groupings using data from the 2008–2010 ACS. The three-year data set was used instead of the 2010 one-year data set to ensure large enough sizes in each of the 200 cells to create reliable proportions.

However, because the ACS uses geographical units called PUMAs (Public Use Microdata Areas)* instead of counties, we employed a number of steps to convert the PUMAs to counties,

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*Public Use Microdata Areas (PUMAs) are statistical geographic areas defined for the tabulation and dissemination of

including use of University of Missouri crosswalk data listing the associations between specific counties and PUMAs.[13] Once converted, county-level proportions of women according to each marital and poverty status were created and applied to the actual county-level numbers of women by age, race and ethnicity reported in the census data.

- Four percent of PUMAs were directly analogous to one county, and 30% of PUMAs represented parts of a large county and could therefore be combined to represent the entire county. In these cases, the county-level proportions of women by marital and poverty status calculated from the county-aggregated ACS data were directly applied to the census county population data.
- Two-thirds of PUMAs contained two or more small counties. In these cases, "county-level" proportions of women in each marital and poverty status were calculated for a combination of all the small counties that comprised that PUMA, and those proportions were applied to the census population data for each county in that PUMA.
- In a small number of instances, there were women in the census in an age, racial or ethnic subgroup within a county for whom no analogous PUMA data were available in the ACS sample (e.g., there are some non-Hispanic Black women aged 15–17 living in a small county in North Dakota, but there were no corresponding non-Hispanic Black women aged 15–17 sampled in the corresponding PUMA in the ACS. Therefore, we could not calculate the county-level proportion of these women in each marital and poverty status subgroup). In these instances, we calculated state-level marital and poverty status proportions for the age, race or ethnicity group and applied it to the census county population data.

Estimating Need for Contraceptive Services and Supplies

For each of the 200 age, racial, ethnic, poverty and marital status subgroups, we estimated the proportion of women who had ever had intercourse and were fecund; and the proportion of sexually active, fecund women who during some portion of the year were neither pregnant nor trying to get pregnant. In some cases, separate estimates were also made according to which region women lived in and whether it was a metropolitan, suburban or rural area.

  Because of the large number of population subgroups, a stable, separate estimate for each was not possible using cross-tabulations, even with a survey as large as the NSFG. Where feasible, we therefore used log-linear analysis, a statistical procedure by which significant relationships can be distinguished from the ones that are relatively unimportant, to predict the likelihood that the women in a subgroup were sexually active, fecund and neither pregnant nor trying to become pregnant.[14] The log-linear procedure fits a model to the data using the most important relationships among the variables and estimates the relevant proportions for each subgroup.

  Because women's risk of unintended pregnancy varies according to their age and marital status, we performed separate log-linear analyses for unmarried teenagers, unmarried adults and married adults. When log-linear analysis was not appropriate, we estimated proportions from similar subgroups, or used other information (described below).

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various census bureau data sets (including the decennial census Public Use Microdata Sample (PUMS) data, the ACS PUMS data and ACS period estimates). They nest within states or equivalent entities and must be geographically contiguous. They each comprise about 100,000 residents, so some are exactly analogous to counties, some comprise more than one small county, and some represent parts of a large county (which may be divided into several PUMAs).

• ***Sexually active and fecund.*** In this analysis, we are estimating women's potential risk of unintended pregnancy over an entire year and therefore considered women to be sexually active if they had ever had sex. Women were considered to be infecund (unable to become pregnant) if they said they were sterile because of an operation or for any other reason, if their husband or cohabiting partner was sterile or if they were subfecund (they said it was difficult for them to become pregnant). Generally, most infecundity is due to women's use of contraceptive sterilization. A report of subfecundity, however, may not mean that it is impossible for a woman to become pregnant. Indeed, 47% of women who said it was difficult for them to become pregnant were using a reversible contraceptive. Therefore, subfecund women were considered to be in need of contraceptive services and supplies if they were using a contraceptive method.

All women younger than 15 were considered to be fecund. For these women, we used information on age at first intercourse in the 2006–2010 NSFG to estimate the proportions sexually active women according to race and poverty status. For women aged 13–14, our estimates ranged from 4% for nonblack teenagers with family incomes over 250% of the federal poverty level to 10% for black teenagers from families with incomes under 137% of the federal poverty level.

All married women aged 15–19 were considered to be sexually active and fecund.

For unmarried women aged 15–19, we estimated the proportions of those who were sexually active and fecund using log-linear analysis. The model indicated that the proportions were highest for older teenagers (those aged 18–19), blacks, and teenagers who live in rural areas or in the Midwest. Depending on race and location, the proportion of unmarried women aged 15–17 who were sexually active and fecund varied between 25% and 53% and among unmarried women aged 18–19, the proportions varied from 58% to 82%.

A separate log-linear analysis was used to estimate the proportion of unmarried adult women aged 20–44 who were sexually active and fecund. Among unmarried women aged 20–29, proportions ranged from 67% to 84% depending on poverty status, region and location. The proportions of unmarried women aged 30–44 who were sexually active and fecund ranged from 36% to 73%. (The proportions of older women are lower because of their use of sterilization.)

All adult married women were assumed to be sexually active. We used a separate log-linear analysis to estimate the proportions of adult married women who were fecund. Proportions varied by age, race and ethnicity, poverty status and region of the country. Among younger married women (aged 20–29), the proportions of those who were fecund varied from 70% to 95%; and, among older married women (aged 30–44), they varied from 39% to 76%.

• ***Pregnant or trying to become pregnant.*** Overall, 15% of fecund married adult women, 12% of fecund married teenagers, 5% of fecund, sexually active unmarried adult women and 2% of fecund, sexually active unmarried teenagers were intentionally pregnant or seeking pregnancy. The number of married teenagers was too small to conduct a separate log-linear analysis; instead, all groups were assigned the average proportion of 88% not currently pregnant or trying to become pregnant.

Separate analyses were conducted to estimate subgroup proportions for married and unmarried adults and for unmarried teenagers. According to log-linear analysis, the proportion of married adult women who were not currently pregnant or trying to become pregnant varied between 80% and 91%, while the proportions among unmarried adult women varied between

91% and 99%; unmarried women in families at 200% of poverty or above were the least likely to be pregnant or trying to become pregnant. Among unmarried teenagers, the proportions who were not currently pregnant or trying to become pregnant varied between 94% and 100%. Black unmarried teenagers living in rural areas were most likely to be currently pregnant or trying to become pregnant.

Although the time that women are infertile because of pregnancy and the immediate postpartum period lasts less than 12 months, some women spend a number of months trying to get pregnant and are therefore not at risk of unintended pregnancy. For women who spend a number of months trying to get pregnant, the period during which they are not in need of contraceptive services and supplies can span the entire year.

To convert the point-in-time proportions from the NSFG log-linear analysis to the proportion who were pregnant or seeking pregnancy for an entire calendar year, we used Dryfoos's estimates of the number of months required for each live birth, which take into account pregnancy loss and the time needed to conceive: 17.3 months for women aged 15–19, 16.3 for those aged 20–29 and 21.7 for those aged 30–44.[3] Women categorized as pregnant or trying to conceive for an entire calendar year are those who began to seek pregnancy before the beginning of the year, so that their period of being or trying to be pregnant encompassed the entire 12 months. For women aged 15–19, this would include those who started trying during the 5.3 months before the year began; the proportion who were pregnant or trying for the entire year would be 5.3 divided by 17.3, for a correction factor of .306. Accordingly, the proportion of teenagers who were pregnant or trying to be at a point in time was multiplied by .306 and the results were subtracted from 1.0 to get the proportion of women who, at some time during the year, were neither pregnant nor trying to conceive. The correction factor for women aged 20–29 was .264 and .447 for women aged 30–44.

Final Step to Generate Numbers of Women in Need

To derive our final estimates of women in need of contraceptive services and supplies, we applied the estimated proportion of women in need of contraceptive services and supplies for each age, racial, ethnic, marital status and poverty subgroup to the number of women per county in each subgroup. In addition, depending on which variables were most important in the log-linear model, some of the proportions of women in need varied according to the region of the country and whether the county was classified as a center city, a metropolitan area outside of a central city or a nonmetropolitan county.

As with all estimates, a certain amount of error in our figures is unavoidable. Although the population numbers on which the estimates are based should be generally accurate, minority groups in some areas were undercounted, as mentioned above. In addition, the estimated proportions of women who are fecund, sexually active, and not pregnant or trying to become pregnant are based on national and regional data that may be somewhat high or low for a particular county.

2. Women Receiving Public-Sector Contraceptive Services

A total of 8.9 million women are estimated to have received public-sector contraceptive services in the United States in 2010. The majority, 6.7 million, received contraceptive services from publicly subsidized clinics; some 2.2 million are estimated to have received Medicaid-funded contraceptive services from private physicians.

Data on women receiving services at clinics come from Guttmacher's 2010 Census of Publicly Funded Planning Clinics Providing Contraceptive Services. The methodology and definitions used to enumerate the numbers of women served at clinics are similar to those used in previous surveys[15–18] and include the collection of service data for 2010 for all agencies and clinics that provided publicly funded family planning services in the 50 states and the District of Columbia. The full methodology for the 2010 census is described below.

To estimate the number of women receiving Medicaid-funded contraceptive services from private physicians at the national level, we used data from the 2006–2010 NSFG.

KEY DEFINITIONS FOR WOMEN SERVED

Agency
An agency is the facility that has operating responsibility (i.e., provides most of the staff, space and supplies) for contraceptive clinic services. It may be a hospital, health department (city, county, district, regional or state), Planned Parenthood affiliate, community action agency, neighborhood health center, women's health center, free clinic or family planning council. It may operate one or many clinics.

Publicly funded clinic
A clinic is a site where contraceptive counseling, education and services are provided. This includes sites providing comprehensive medical contraceptive services, i.e., sites where women can receive a medical examination related to the provision of a method for postponing or preventing conception; this examination is performed by a physician, a nurse-midwife, a registered nurse or other authorized personnel. Also included are sites that provide counseling and education and dispense nonmedical methods of contraception without performing a medical examination, as long as an individual chart is created for at least some contraceptive clients. Finally, to be classified as publicly funded, the site must provide services to at least some clients using public or private subsidies. Thus, clinics must receive Title X funds or any other federal, state or local funds or private donations and must provide family planning care to at least some of their clients for free or at a reduced fee. Individual sites are referred to as clinics in this report; in other Guttmacher publications, these same sites are sometimes referred to as centers.

Contraceptive client
A contraceptive client is a woman who has made at least one initial or return visit for contraceptive services during the 12-month reporting period. This includes all clients who have received a medical examination related to provision of a method for postponing or preventing conception. In addition, this includes all contraceptive clients for whom a chart is maintained, including those who made supply revisits during the 12-month period, but did not have a medical examination; clients who received counseling and method prescription and deferred the initial medical examination (i.e., new oral contraceptive clients); and women who chose the rhythm method or natural family planning. This definition does not include clients who received only abortion services, only pregnancy tests, only infertility services or clients who received only counseling and were then referred to another provider for method prescription or provision.

2010 Census of Publicly Funded Clinics Providing Contraceptive Services

• *Data collection.* We identified all publicly funded agencies and clinic sites that provided contraceptive services in 2010, and collected data for each clinic, specifically the total number of female contraceptive clients served in 2010, the number of those clients who were younger than 20 and whether the clinic received Title X funds. To identify agencies and clinics fitting our definition, we began with the universe identified in the 2006 census of publicly funded clinics.[18] We updated addresses and added names of potential agencies and clinics from the following sources: a directory of Title X–funded clinics provided to us by the Office of Population Affairs, U.S. Department of Health and Human Services (DHHS);[19] the online directory of Planned Parenthood centers from Planned Parenthood Federation of America, Inc.;[20] and the "Find a Health Center" online directory of community or migrant health centers and federally recognized "look-alike" health centers from the DHHS Health Resources and Services Administration.[21] This directory included all facilities regardless of type of service offered, so we used it to confirm that each community and migrant health center in our universe of providers was listed. During the data collection process, we completed a more thorough investigation of all community and migrant health centers (also referred to as federally qualified health centers) using a directory from the HRSA Data Warehouse[22] to identify clinics that provided publicly subsidized family planning services and included those that did in the final universe of providers (additional details below).

Data requests were e-mailed in the fall of 2011 to the 79 Title X grantees that administer or oversee Title X facilities and to the eight non–Title X state family planning administrators in the 50 contiguous United States and the District of Columbia. (We also requested data from Title X grantees and state family planning administrators overseeing clinics in the U.S territories. Data for these sites are not included in this report.) Respondents were provided with an updated list of all agencies and clinics in their state or territory — with facilities under their jurisdiction listed together and all other sites listed separately — and were asked to further update the names, addresses and operating status of listed agencies and clinics reporting to them, add any agencies or clinics not on the list and, if applicable, indicate a date when any listed agencies or clinics had closed.

For each clinic, respondents were also asked to provide the total number of female contraceptive clients and the number of such clients younger than 20 served in 2010. If respondents could provide only agency (rather than clinic) totals, we asked them to estimate the distribution of clients across clinics. In addition, we asked the grantees to indicate whether each clinic received Title X funding in 2010.

To assist the grantees and administrators with our data request, we provided them with study definitions of client, agency and clinic, and asked them to describe the characteristics of any reported clients not meeting our exact definition. We informed them that we would be sending a similar data request directly to other grantees and independent agencies.

All nonrespondents were sent a reminder e-mail and, later, were contacted by phone to ensure as high a response rate as possible. We received data from 76 of the 79 Title X grantees. The remaining three entities were no longer a grantee at the time of data collection and had no data to provide or did not respond. Four of the eight non–Title X state family planning administrators provided data for the agencies and clinics under their jurisdiction. The remaining state family planning administrators did not or could not provide these data. Altogether, Title X grantees and

state family planning administrators provided client data for 4,611 family planning clinics, which represent 55% of all publicly subsidized clinics and 61% of all sites for which we obtained data.

When reviewing and finalizing grantee and state family planning administrator responses, we followed up by e-mail, telephone or fax on all discrepancies, comments, and missing or incomplete data.

We also sent a data request to the Bureau of Primary Health Care, Health Resources and Services Administration (HRSA) branch of the DHHS to obtain data for all federally qualified health center (FQHC) service sites. After obtaining approval for our project, HRSA provided us with a list of 1,056 FQHCs with at least one clinic that provided contraceptive care to 10 or more clients in 2010 (in the 50 U.S. states and the District of Columbia) as well as the total number of contraceptive clients served by each of these FQHC agencies. Data on the number of clients served at individual clinics within the FQHC were not available, nor were data on the numbers of clients younger than 20.

We used multiple methods to assign the agency-level client data to clinics. First, we obtained the most recent list of all FQHC service sites from the HRSA Data Warehouse[22] and identified all of the facilities administered by the FQHCs that were open since 2010 for which we had client data. For FQHCs with only one clinic, we assigned the total agency contraceptive client count to that one clinic. For FQHCs with two clinics, we distributed contraceptive client counts evenly across those clinics after confirming that both sites provided family planning services in 2010. We classified a facility as providing family planning services if they were identified in both our universe of clinics providing contraceptive services and in HRSA's list of FQHC sites. Clinics that were identified on only one list were further investigated by telephone and web, and only those clinics that were open during 2010 and provided family planning services were retained in our universe and assigned client numbers from the agency totals.

FQHCs with three or more clinics were sent a short survey listing their clinics and including the aggregate number of contraceptive clients reported by HRSA for the entire FQHC. Agency administrative staff for the FQHC were asked to provide an approximate percentage distribution of those clients across the clinics that provided contraceptive services. We also requested information about any missing or closed clinics. A total of 720 FQHCs received a mailing, which yielded 86 useable responses with information for 392 sites after following up by e-mail or telephone to reconcile discrepancies and incomplete data.

As in the past, we requested client data from the Indian Health Service (IHS). However, we were unable to obtain data from the IHS this time.

To obtain data for the remaining sites providing publicly subsidized family planning services (including those that did not receive Title X funds), we separately surveyed nearly 600 additional agencies, including those unlikely to report client numbers to either a Title X grantee or a state family planning administrator—all hospitals and other (nonaffiliated) agencies listed in the database, Planned Parenthood affiliates that were not Title X grantees, and a small number of other clinics for which the grantees could not provide data, including agencies for which we had previously received data from the IHS. The instructions and data requests sent to the individual agencies were basically the same as those sent to the grantees and administrators. Specific instructions were given to hospitals to exclude data for physicians' private practices on their premises, and to agencies to indicate whether client data were estimated. All nonrespondents, except for agencies administered by the IHS, which are typically in very rural and hard-to-reach

areas, were contacted by telephone, and additional requests were mailed or faxed to potential respondents identified in telephone follow-up.

After one mailing and extensive telephone follow-up, 123 agencies reported useable data for 530 family planning clinics. Of agencies that received the initial individual mailing, many either did not provide publicly funded family planning services or we received data for those clinics from the Title X grantee or state family planning administrator after the initial individual mailing. All agencies for which no data were received from any source were contacted by telephone to confirm that they and all their clinic sites provide publicly subsidized family planning services.

Finally, for 10 clinics we used data from Planned Parenthood Federation of America.

• *Data review and adjustments.* All data received were reviewed, cleaned, entered and verified. Some agencies were unable to provide exact numbers of contraceptive clients served. We followed up with all sites for which data were not given or were combined with data for other sites, or for which dates of operation were not clear.

Some respondents were unable to provide data in the requested format, even after follow-up. In the cases where we obtained total agency data from HRSA for either an FQHC with two sites or an FQHC with three or more sites that failed to provide clinic-level information, we distributed the total evenly across that agency's active sites (95%) or used the client distribution from the previous clinic census (5%). Before distributing the counts, we confirmed that each site provided family planning services in 2010 by comparing our list of clinics to HRSA's list of clinics (see above), and discrepancies were reconciled by telephone or were investigated on the web. In total, we distributed counts in this way for 1,621 clinics or 51% of all FQHC sites.

For the remaining clinics where the number of clients was reported as one agency total (3% of clinic sites), again, we distributed the total evenly across that agency's sites or used the client distribution from the previous clinic census. The majority of these clinics were located in the same county as the other clinics under that agency. Data for fewer than 1% of clinics were applicable to a reporting period other than calendar year 2010, usually a fiscal year that included part of 2010; we used the data provided, assuming that the number of clients served during the 2010 calendar year would have been similar to the number served during a partly overlapping 12-month fiscal year.

• *Estimating missing data.* We identified a total of 2,872 agencies and 8,409 clinics that provided publicly subsidized family planning services in 2010. The number of female contraceptive clients was reported for 90% (7,539) of all family planning clinics—2010 data for 4,585 clinics was reported by Title X grantees, for 26 clinics by non–Title X state family planning administrators, for 2,398 clinics by HRSA in agency aggregates and distributed among clinics as described above, and for 530 clinics by individual agencies or other reporting entities themselves. After confirming that the remaining 10% of clinics (870) had provided family planning services in 2010, we used two methods to estimate how many clients they had served. First, when available, we used agency-provided data from the 2006 enumeration of clients for 7% of clinics (611). For the remaining 3% of clinics (259), no earlier data were available, so we imputed estimates using the average number of clients served by other clinics in the same region and of the same Title X funding status, metropolitan status and provider type. Among all 870 sites for which client numbers were estimated, most were either hospitals (331) or clinics funded through the IHS and free clinics (361).

Overall, 6% of all female contraceptive clients enumerated were served at the 10% of sites for which client data were either estimated with 2006 data (4%) or imputed (2%). For teenagers, the total proportion estimated was 10%. This proportion is higher than that for all women because there were more clinics without data for teenagers—HRSA, for example, provided the total number of clients for an agency, but could not specify how many clients were younger than 20. Other clinics were also unable to provide counts for teenagers. For these sites, we used the ratio of teenage clients to all clients in 2006 and applied that to the total client count in 2010 for that clinic (4%). If these data were not available, then we used estimated 2006 data (3%) or the average percentage of clients who were teenagers at similar sites to estimate the number of teenage clients served (3%).

• *Final estimate.* After taking into account all adjustments, we estimate that a total of 6,706,280 women received services from publicly funded family planning clinics in the 50 states and District of Columbia; of these, 1,457,330 were younger than 20.

• *Limitations.* Although we used rigorous methods to obtain accurate information on publicly funded clinics and the number of contraceptive clients served, several limitations may affect our interpretation of these data. First, we believe this to be a near-complete count of providers fitting our definition; nevertheless, given the rapid changes occurring in health care provision generally, we may have inadvertently omitted a small number of qualified sites. Second, some agencies—generally hospital outpatient departments—provided us with estimates of contraceptive clients served in 2010 because they did not have documented service figures. Finally, for 10% of clinics, we used either prior data or numbers for similar clinics to estimate the number of clients served. Each of these limitations may have introduced error into the final counts of providers and contraceptive clients. Although the potential level of error resulting from these factors is unlikely to influence the national or state-level estimates of contraceptive clients, it may have greater implications for county estimates.

Women Receiving Medicaid-Funded Contraceptive Services from Private Physicians

To estimate the number of women receiving Medicaid-funded contraceptive services from private physicians, we used information on payment and source of care for contraceptive services reported by respondents to the 2006–2010 NSFG.[23] Among the 24.7 million women who reported receiving at least one contraceptive service in the prior 12 months, 69%, or 17 million women, reported receiving that care from a private doctor. Among these women, 13%, or 2.2 million, reported that their contraceptive visit had been paid for by Medicaid.

3. Impact of Publicly Supported Contraceptive Care

We estimated the numbers of unintended pregnancies, births and abortions that were averted by the provision of publicly supported contraceptive care in 2010, as well as the public cost savings from prevention of these unintended pregnancies, applying methodology similar to that used in previous estimates.[24–26] The methodology used to estimate the impact of publicly supported contraceptive care follows these broad steps:

- Examine the actual contraceptive method mix for a national sample of recipients of public-sector family planning care;
- Estimate a likely hypothetical contraceptive method mix for these same women in the *absence* of public services;
- Calculate the number of unintended pregnancies that both groups of women would experience over a one-year period given the actual method use of current users and the likely hypothetical use of the same women without access to publicly funded services;
- Compute the number of pregnancies prevented per 1,000 public-sector family planning clients by subtracting the number of unintended pregnancies expected given actual method use from the number expected in the absence of services and dividing by the number of women in the sample receiving public-sector family planning care;
- Apply this ratio to current national (and where available, state) data on the numbers of women receiving publicly funded contraceptive services to estimate the numbers of unintended pregnancies that were prevented by public-sector investment in family planning, and distribute the number of unintended pregnancies prevented across possible outcomes (births, induced abortions, and miscarriages); and
- Estimate the public-sector medical costs that would be incurred if the unintended births had not been prevented, and compare these costs with family planning program costs at the national and state levels to yield final estimates of cost savings.

Each of these steps is discussed in detail below. Although we have followed the same basic methodology developed in prior studies, a number of refinements, driven by differences in available data and decisions about construction of the hypothetical method mix, have been implemented here.

Data Sources

We used data from the 2006–2010 NSFG to examine the actual contraceptive behavior of women who had obtained family planning care from a publicly supported provider in the prior 12 months, as well as the hypothetical contraceptive behavior of women without access to publicly supported services. When weighted, the data represent the 62 million U.S. women aged 15–44. The overall response rate for women in 2006–2010 was 77%.[27] A number of additional data sources were used at different points in the analysis. These include:

- 2010 Census of Publicly Funded Planning Clinics Providing Contraceptive Services (see pages 7–11)
- 2010 Family Planning Annual Report (FPAR)[28]
- Special tabulations of 2008 data on unintended pregnancies by outcome[29]

- Data on Medicaid prenatal, delivery, postpartum and infant care costs available from:
  - Family planning waiver applications and evaluations[30]
  - 2010 Guttmacher public funding survey data[31]

Estimating Actual and Likely Method Mix Scenarios

• **Actual method mix of publicly funded contraceptive users.** Using the 2006–2010 NSFG, we identified the 1,569 respondents (representing 6.7 million women) who had received public-sector family planning care in the past year and who were using reversible methods at the time of the interview or who had received a tubal ligation in the prior 12 months. These included women who had either made a contraceptive visit to a publicly funded clinic (75%) or a Medicaid-reimbursed contraceptive visit to a private physician (25%). We classified these women according to their current contraceptive method—oral contraceptives, hormonal patch or ring (51%), injectable (13%), IUD (10%), implant (2%), tubal sterilization in past year (8%), condoms (13%), or withdrawal (4%) (Table A1).

  We then divided these women into 72 population subgroups based on each combination of age (15–19, 20–24, 25–29, 30 and older), marital status (currently married, currently cohabiting, unmarried), income (below 100%, 100–199% or 200% or greater of the federal poverty level) and race (black, nonblack), and obtained the distribution of current contraceptive method use for each population subgroup.

• **Hypothetical method mix in the absence of subsidized care.** Because we could not conduct an experiment and withhold services from low-income women to determine how their contraceptive behavior would change, we used information on similar women in the 2006–2010 NSFG to approximate women's likely contraceptive behavior in the absence of publicly funded services.

  This methodology diverges slightly from prior versions of this analysis, though it is derived from the information gained from the prior analysis published in 2008[24] using the 2002 NSFG. At that time, we created four possible scenarios, examined the contraceptive use behavior of 2002 NSFG respondents who fit the criteria of each scenario and calculated the impact in terms of unintended pregnancies averted for each scenario. We then reported an average number of averted unintended pregnancies, which was obtained by averaging the results of all four scenarios. The average of the four scenarios, 242 unintended pregnancies averted per 1,000 family planning clients, was in fact the same number of averted pregnancies for the one scenario that we felt was most realistic in simulating women's behavior if they had no access to public services. In this scenario, we found that publicly funded users' method mix would shift to that of similar women who were not currently using subsidized services, but would be likely to need them in the future. We measured this potential change in method use by looking at the method mix of women who were in need of publicly supported services (sexually active and not currently pregnant or trying to get pregnant; and under 250% of the federal poverty level or younger than 20) but who did not receive any contraceptive services in the past year, including women who may have visited a private provider and paid for the visit out of pocket. For the current analysis, we have exclusively relied on this one scenario to approximate the method mix for women in the absence of public services, rather than creating four scenarios and using the average. This shift is consistent with the methodology used in the two reports subsequent to the

2006 analysis,[32,33] and was necessary in those cases because of the very specific simulations that were conducted for those reports. It is also preferable to the prior methodology because it allows for specific method mix comparisons among women with and without access to services; and local impact assessments created by varying the method mix of program users.

   Specifically, this hypothetical scenario is based on our examination of the contraceptive use behavior of 6.3 million similar women (1,406 respondents who were at risk for unintended pregnancy and either younger than 20 or aged 20–44 and under 250% of poverty) who made no family planning visit in the prior 12 months or who visited a private doctor and paid for that visit themselves (excluding all women whose visits were paid for by private health insurance). For these women, we looked at the method mix according to each age, marital status, racial and poverty status subgroup and applied the method mix for each subgroup to the corresponding number of women currently using publicly supported family planning services. The resulting hypothetical method mix is as follows: oral contraceptives, hormonal patch or ring (8%), injectable (2%), IUD (4%), implant (1%), condoms (37%), spermicides (1%), natural family planning (3%), withdrawal (13%) and no method (31%) (Table A1). As in prior studies estimating unintended pregnancies averted, an additional comparison was made looking at the numbers of unintended pregnancies that would occur among current users of publicly funded services if, instead of using one of the methods in the hypothetical method mix, they used no method.

Calculating Unintended Pregnancies Prevented

For both the current use scenario and hypothetical use scenario, we estimated the expected number of unintended pregnancies by multiplying the proportion of women using each method (within each demographic subgroup) by the appropriate one-year method-specific failure rate (i.e., the probability that a woman using a particular method will become unintentionally pregnant during a 12-month period). The number of unintended pregnancies calculated for each subgroup were then summed across all subgroups and methods, and adjusted for consistency with actual unintended pregnancy rates (see below), resulting in a total number of expected unintended pregnancies for each method mix situation.

• *Contraceptive failure rates*. Method failure rates were obtained from multiple sources,[34–36] and are the same as those used in our 2008 analysis[24] (Table A1); whenever possible, subgroup-specific failure rates were used. For oral contraceptives and condoms, we used subgroup-specific rates for each combination of age (15–19, 20–24, 25–29, 30 or older) and income level (less than 200% of the federal poverty level, 200% or more). For withdrawal, we used failure rates calculated for four subgroups (younger than 25 and 25 or older according to income—below 200% of poverty and 200% and above). For the injectable, implant, spermicides, IUD and female sterilization, we applied the overall failure rate for all women to all subgroups. We estimated that the probability of pregnancy for a woman not using a method would vary from 80% to 95% depending on the woman's age.[37]

• *Failure rate adjustment.* Application of one-year failure rates to the distribution of women using specific methods at a particular point in time will not accurately predict the actual number of unintended pregnancies that occur over a one-year period for a number of reasons. Some women may not have used the method for the entire 12 months; others may have used the method for much longer, resulting in lower failure rates. As was done in prior analyses,[24-26] we

therefore calculated an adjustment factor by comparing the actual number of unintended pregnancies that occurred among contraceptive users in the U.S. in 2008 with the number obtained by applying failure rates to method users. To estimate how many of the total unintended pregnancies in 2008[38] were among contraceptive users, we analyzed women's reports of contraceptive use prior to births and miscarriages in the 2006–2010 NSFG and women's reports of contraceptive use prior to pregnancies ending in abortion in Guttmacher's 2008 abortion patient survey.[39]

   We estimate that 46% of all unintended pregnancies—1.56 million in 2008—occurred among women using a contraceptive method. However, if we apply the one-year method- and subgroup-specific failure rates described above to the total population of 25.5 million current method users (according to subgroup and method used), we would expect 2.67 million unintended pregnancies. The difference between these two estimates is likely due to a number of factors, including women not using specific methods or being at risk over the entire year, as well as variation between one-year failure rates and the failure rate for women who have used the method for several years. To compensate, an overall adjustment factor was calculated as the ratio of actual to expected unintended pregnancies (0.582). To improve the accuracy of our estimates, separate adjustment factors were calculated for women above (0.471) and below 200% of poverty (0.657) by separating both the actual and the expected unintended pregnancies into two groups according to women's poverty status, and applying these adjustment factors to the unintended pregnancies expected among each method- and subgroup-specific population. Because we assume that current users who switch to no method will remain sexually active and fecund, no adjustment was made to the calculation of unintended pregnancies expected among women using no method.

• **_Unintended pregnancies prevented_**. Based on all of the above methods, we estimated the total number of unintended pregnancies that would be expected among the sample of 6.7 million women reporting use of publicly supported contraceptive care in the 2006–2010 NSFG under the current method use scenario and the hypothetical method use scenario. We then divided those unintended pregnancy totals by the number of women (and multiplied by 1,000) to get the number of unintended pregnancies expected per 1,000 contraceptive clients under each scenario: 62 unintended pregnancies per 1,000 women expected given the contraceptive method mix of current users versus 350 unintended pregnancies expected per 1,000 women given the hypothetical method mix for these same women in the absence of publicly supported services. Subtracting the former from the latter results in the number of unintended pregnancies that are prevented per 1,000 users of publicly funded family planning care—288.

   Note that the hypothetical scenario still assumes that most women will make some attempt to prevent unintended pregnancies in the absence of publicly funded services. For comparison, the "gross" number of unintended pregnancies that would be prevented if all current users switched to no method in the absence of public-sector care is estimated to be 828 unintended pregnancies averted per 1,000 method users. As in the past, we have included this extreme scenario simply for comparison.

Table A1. Distributions of women according to contraceptive method used among women who received contraceptive care from a publicly funded provider in the prior year compared with similar women (eligible and in need of publicly supported care) who did not receive any publicly supported care in the past year,* 2006–2010 NSFG and the 2002 NSFG; method failure rates and expected unintended pregnancies for each scenario.

Method	Failure rate**	NSFG 2006–2010		NSFG 2002	
		Current method use among women using public services	Expected method use among women unable to access public services*	Current method use among women using public services	Expected method use among women unable to access public services*
Pill, Patch and Ring	9	51%	8%	42%	17%
Injectable	7	13%	2%	22%	2%
IUD	1	10%	4%	4%	2%
Implant	1	2%	1%	0%	1%
Tubal ligation in past year	1	8%	0%	7%	0%
Condom	17	13%	37%	17%	40%
Withdrawal/other	18	4%	13%	6%	7%
Spermicide/sponge	29	0%	1%	1%	1%
Natural family planning/ periodic abstinence	25	0%	3%	1%	2%
No method	89	–	31%	–	26%
Total	–	100%	100%	100%	100%
Expected unintended pregnancies per 1,000 contraceptive users		62	350	67	309
Unintended pregnancies averted per 1,000 contraceptive method users			288		242

* To estimate expected method use among women unable to access public services, we used the current method use distribution of similar women (eligible and in need of publicly funded contraceptive services) who did not receive any publicly funded care in the past year (they either received no service or received a private service that they paid for out of pocket)

** Adjusted failure rates are used to estimate unintended pregnancies, see methodology.

Estimating Pregnancies Averted Among Family Planning Clinic Clients

To estimate the overall impact of publicly funded family planning services in 2010, we applied the ratio of pregnancies averted per 1,000 method users (288) to data on numbers of clients served by publicly funded clinics in 2010 and to data on numbers of Medicaid recipients receiving contraceptive services from private doctors.

The methodology for collecting 2010 clinic data on numbers of contraceptive clients served was reported earlier (see pages 7–11). In addition, for this analysis, we adjusted the total numbers of clients served to account for the fact that some clients of publicly funded family planning clinics do not obtain or use a reversible contraceptive method. In 2010, some 13% of clients at Title X clinics were classified as not using a contraceptive method, either because they were currently pregnant, trying to get pregnant or for some other reason.[28] Some may have received contraceptive counseling, but did not adopt a method; others may have made a visit, but did not adopt a method because they were not actually at risk of unintended pregnancy. Based on

similarities in the characteristics of women receiving care from Title X–funded and non-Title X–funded public clinics, we assumed that 13% of non-Title X clinic clients were not using a method. We therefore estimated method users to be 87% of the national and state totals of family planning clients.

To estimate the number of women receiving Medicaid-funded contraceptive services from private physicians, we used information on payment and source of care for contraceptive services reported by respondents to the 2006–2010 NSFG.[40] Among the 24.7 million women who reported receiving one or more contraceptive service in the prior 12 months, 69%, or 17 million women, reported receiving that care from a private doctor. Among these women, 13%, or 2.2 million, reported that their contraceptive visit had been paid for by Medicaid. As we did for women served by clinics, we assumed that 13% of clients served by private doctors would not obtain or use a contraceptive method. The information on women served by private doctors paid for by Medicaid is available at the national level only; no state estimates have been made.

Finally, we multiplied the number of publicly supported contraceptive method users, nationally (for both clinic and private doctor clients) and in each state (for clinic clients), by the ratio of unintended pregnancies prevented per user to estimate the total number of unintended pregnancies prevented in 2010. We classified these averted unintended pregnancies according to the outcomes that would have resulted (birth, abortion or miscarriage) using subgroup-specific estimates of the distribution of unintended pregnancies according to outcome (for all women, for teenagers and for poor women). Overall, in 2008, 50% of unintended pregnancies resulted in an unintended birth, 34% in an elective abortion and 16% in miscarriage.[29] For teenagers, the distribution of unintended pregnancies by outcome was slightly different: 53% births and 30% abortions; as was the distribution of unintended pregnancies among poor women (under 100% of poverty): 51% births and 36% abortions.

In addition to estimating the number of unintended events that were prevented by public-sector family planning investments, we also compared the number of averted events to the actual number of unintended pregnancies, births and abortions that occurred in 2008 to estimate the percentage increase in unintended events would have occurred in the absence of public-sector family planning investments.

Calculating Savings

We calculated public-sector savings by comparing the public-sector costs of providing contraceptive services with the public-sector maternity and infant care costs that would have been incurred had these unintended births not been prevented. We did not estimate public-sector savings that would result from averted abortions (or miscarriages). Because few abortions are covered by Medicaid and their costs are relatively low compared with the costs of a birth, the savings from averted abortions would be negligible relative to the savings from averted births. We also did not attempt to account for mistimed births, which would have occurred eventually. Even if some unintended births are accepted and even welcomed, they still incur public-sector costs that otherwise would have been avoided in the short-term. Moreover, many mistimed births end up being "extra" births because the women who have them go on to have multiple unintended pregnancies and births—44% of women aged 15–44 who have had an unintended pregnancy have had multiple unintended pregnancies, and 36% of those who

have had a birth resulting from an unintended pregnancy have had two or more such births.[41] Finally, even if a mistimed birth now replaces a later planned birth, delaying it may still avert all of the public costs of the birth, since the woman may become more financially secure and will not need or be eligible for Medicaid maternity care at the time she is ready to have a planned birth.

• *Family planning program costs.* To estimate the average annual cost per family planning client served at Title X clinics, we used 2010 Title X program data on clients served and program revenues (including revenues from all sources, as well as revenues from only public sources). At the national level: $1.285 million in total revenues ÷ 4.8 million clients = $269/client in total costs; and $1.145 million in public revenues ÷ 4.8 million clients = $239/client in public costs. Average family planning program costs were also estimated for each state (Table A2). For both Title X–funded clinics and non-Title X–funded clinics, we assumed that the same per-client public cost would be applicable for all family planning clients.

For each state, we multiplied the average per-client public cost by the total number of women estimated to have received family planning care from publicly funding clinics in 2010 to estimate the total cost of clinic-based public-sector family planning services. This is a slight change and a correction from what was done in previous iterations of this study, when the family planning program costs were estimated by multiplying the total number of clients served at clinics by the total (not public) cost per client. We feel that it is more accurate to base our estimates of the public cost of clinic-based family planning services on only those revenues that are attributed to public sources, and are excluding revenues from private insurance and patient fees in our current calculations for clinics. However, to calculate the cost of Medicaid revenues paid for clients served at private providers, we use the full average cost per client ($269) and multiply that by the number of Medicaid family planning clients served by private doctors, since private doctors rarely have other revenues that support care for Medicaid clients and because Medicaid law prohibits patient cost-sharing for contraceptive care.

The overall estimate of the public cost for the national family planning program in 2010 using this methodology, including both the costs for services for clients served by clinics ($1.64 billion) and by private doctors ($594 million), is $2.23 billion. This total differs slightly from an overall estimate of the 2010 family planning program cost published in 2012 ($2.37 billion) that was derived from different sources and methodology.[31] However, the fact that the two estimates are so similar is reassuring. For this study, we wanted to separate out the public costs for clinic services from those of Medicaid services provided by private doctors at the national level and estimate the public costs for clinic services at the state level. This level of detail was not possible using the public funding data from the other study.

• *Medicaid pregnancy and infant care costs.* To calculate savings from preventing unintended births, we first estimated the percentage of these births that would have occurred among Medicaid-eligible women (or among women eligible for related programs, including the Children's Health Insurance Program). This required comparing state-level contraceptive client income data with Medicaid maternity care eligibility levels (which vary by state) and making necessary adjustments because a pregnant woman is counted as two people when determining Medicaid eligibility. New national and state estimates of the percentage of Title X clients who would be eligible for Medicaid maternity care if they became pregnant were calculated using

2010 FPAR data on the distribution of clients by income level. We assumed that these estimates applied to all women receiving contraceptive services from publicly funded clinics. Nationally, 92% of unintended births averted among family planning clinic clients are estimated to be Medicaid-eligible (Table A2). For unintended births averted among Medicaid clients of private doctors, we assumed that all would be eligible for Medicaid-funded maternity care.

   Second, we tabulated the public-sector cost of each Medicaid-eligible birth. Included were the Medicaid expenditures for prenatal care, delivery, postpartum care and one year of medical care for the infant. We used a number of sources to make state-level estimates of the cost of a Medicaid-funded birth.

   Data on the cost of a Medicaid-funded birth were available for 35 states and the District of Columbia—data for 25 states came from their applications for and evaluations of Medicaid family planning expansions, and data[30] for 10 states and the District of Columbia came from responses to the public funding survey.[31] (Where necessary, we inflated cost data from earlier years to reflect 2010 dollars using the Consumer Price Index for medical care.[42]) From these data, we estimated the cost of a Medicaid-funded birth for the remaining states. First, we calculated an overall average cost per birth for these 36 jurisdictions. We then estimated the cost per birth for the remaining 15 states by adjusting this average for state-level differences in medical costs, using an index reflecting Medicaid physician fees.[43] The resulting national average cost per Medicaid birth in 2010 was $12,770 (Table A2).

Total Costs and Savings

We then multiplied the estimated number of Medicaid-eligible births averted by the cost per birth to obtain estimates of the total costs that would have been incurred for the averted births. Total costs from averted births were estimated at the state level for clinic services and at the national level for services provided by private doctors to Medicaid recipients. We calculated an overall national total for the public costs of averted births that included the gross savings due to public investment in contraceptive services provided by both clinics and private doctors.

   Finally, net savings were estimated by subtracting the family planning program costs from the gross savings produced by averted Medicaid births. The average public savings per public dollar spent was calculated by dividing the total gross savings by the total family planning program costs.

Table A2. National and state data on the per-client public costs for family planning care, percentage of contraceptive clients who would be eligible for Medicaid maternity care and the average cost of a Medicaid-funded birth,* 2010

State	Annual public family planning program cost per client (in dollars)	% of clients eligible for Medicaid maternity care	Average cost of a Medicaid-funded birth (in dollars)*
U.S. Total	239	92	12,770
Alabama	380	95	10,006
Alaska	512	94	23,825
Arizona	200	89	15,863
Arkansas	215	93	12,755
California	270	94	10,286
Colorado	404	97	9,406
Connecticut	159	94	16,736
Delaware	145	85	16,736
Dist. of Columbia	206	70	7,169
Florida	233	65	10,748
Georgia	146	99	10,837
Hawaii	219	93	18,080
Idaho	236	88	15,457
Illinois	231	98	11,152
Indiana	218	98	10,460
Iowa	277	100	13,894
Kansas	67	85	13,947
Kentucky	207	95	14,887
Louisiana	292	99	16,779
Maine	209	86	9,414
Maryland	162	94	14,760
Massachusetts	226	95	15,109
Michigan	231	95	9,853
Minnesota	305	100	10,594
Mississippi	156	99	7,090
Missouri	123	91	11,572
Montana	175	78	13,079
Nebraska	157	83	14,411
Nevada	160	83	6,759
New Hampshire	156	79	5,848
New Jersey	208	97	15,233
New Mexico	216	92	13,102
New York	352	94	15,442
North Carolina	383	93	13,299
North Dakota	138	68	12,338
Ohio	190	96	10,925
Oklahoma	300	98	10,176
Oregon	284	92	7,314
Pennsylvania	195	87	11,015
Rhode Island	106	100	14,955
South Carolina	153	99	13,930
South Dakota	196	82	13,830
Tennessee	106	100	7,657
Texas	231	97	11,574
Utah	93	82	12,552
Vermont	244	67	10,857
Virginia	106	93	16,946
Washington	335	92	15,886
West Virginia	118	99	13,017
Wisconsin	208	99	12,667
Wyoming	254	84	21,036

* Cost of a Medicaid-funded birth includes prenatal care, delivery, post-partum care and infant care for one year.

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