Do Public Family Planning Expenditures Affect the Abortion Rate?

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By

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ABSTRACT

Abortion is a polarizing issue among both the American public and our politicians. Despite heated debate, a 2009 survey showed a majority of people agree that we should reduce the abortion rate. Although federal law restricts federal funding of abortion such that it can be used only in cases of rape, incest, or life endangerment of the woman, some policymakers contend that public support for family planning services allows family planning providers to shift private funding toward abortion coverage. Several studies have examined the effect of Medicaid family planning expansion waivers on contraception use, the birth rate, and the abortion rate. Using two panel data sets and Ordinary Least Squares regression with state and year fixed effects, this paper builds on previous analyses by offering an examination of the relationship between the abortion rate and the dollar amount of public family planning expenditures. The findings of this analysis suggest that increases in public family planning spending reduce the abortion rate, although likely to only a modest extent. Policymakers would be well advised to consider the implications of social science analyses before cutting family planning spending as the debate surrounding public funding of family planning clinics undoubtedly continues.
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INTRODUCTION

Abortion is a polarizing issue for American voters and politicians. Two surveys conducted by the Pew Research Center in 2009 show an almost even split among Americans in attitudes toward abortion.\(^1\) Opinions on abortion vary largely according to political party affiliation. However, most supporters and opponents of abortion agree that the number of abortions should be reduced.\(^2\)

Reducing the rate of unplanned pregnancy would likely have a direct impact on the abortion rate. About half of pregnancies occurring to American women are unintended, and about 40% of unintended pregnancies are aborted. The share of intended pregnancies that are aborted is much lower (The Guttmacher Institute, 2011, and Thomas, 2012a). There is evidence to suggest that access to family planning services (especially the birth control pill) reduces unplanned pregnancies as well as the abortion rate (Kearney and Levine, 2009, and Ananat and Hungerman, 2007). According to a 2007 survey conducted for Planned Parenthood, there is considerable public support for reducing unintended pregnancies by increasing access to contraception and sex education (Planned Parenthood, 2008).\(^3\)

Although Democrats and Republicans agree that it is important to reduce the number of abortions performed in the United States, this issue has left Congress in gridlock in recent years. The passage of the Affordable Care Act in 2010 hinged on the support of pro-life Democrats in the House of Representatives (Hornick, 2010). In the spring of 2011, budget negotiations reached an impasse over public funding for family planning, with conservatives arguing that,

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\(^{1}\) These surveys were administered in 2009 and questioned more than 5,500 adults. Forty-seven percent of respondents stated that they support legal abortion, while 44% were opposed (Pew Research Center, 2009).

\(^{2}\) Specifically, 65% of Americans think the number of abortions should be reduced, while 26% do not think we need to reduce abortion incidence (Pew Research Center, 2009).

\(^{3}\) Sixty-seven percent of those surveyed supported reducing unintended pregnancies through access to contraception and sex education (Planned Parenthood, 2008).
although paying for abortions with public money is almost exclusively prohibited, increased public funding frees up private money that can then be put toward abortion costs (Kane, Rucker, and Fahrenthold, 2011).

Previous studies have examined the relationship between access to the pill or Medicaid family planning eligibility expansions and the abortion rate, yet, to my knowledge, a study has not yet been conducted that looks directly at the relationship between the dollar amount of public family planning spending and the abortion rate. This study uses two sets of data to conduct an empirical assessment of the argument that increased family planning spending increases the abortion rate.4

Increased family planning spending may reduce the abortion rate by reducing the incidence of unintended pregnancy. However, when unintended pregnancies occur, increased family planning spending may also increase the abortion rate by allowing family planning service providers to shift private money toward abortion costs. This analysis aims to measure the net effect of these two dynamics. The research question this paper attempts to answer is: Although taxpayer dollars can only be used on abortion in limited circumstances, does the amount of public money spent on family planning services affect the incidence of abortion?

4 In both datasets, abortion rate data is taken from the Guttmacher Institute. In the first data set, federal Medicaid family planning spending per capita is used as the measure of public family planning expenditures, with data gathered from the Centers for Medicare and Medicaid Services. In the second data set, a measure of public family planning expenditures per capita from all public sources is used as the key independent variable. These data are gathered from Guttmacher reports, as is discussed in a later section.
BACKGROUND

Public family planning money comes from multiple sources, including Medicaid, Title X, federal block grants, and state appropriations. These programs provide vital services for low-income women (Frost, Frohwirth, and Purcell, 2004). When the Medicaid program was authorized in 1965, states could decide whether or not to cover family planning. However, with increased awareness of the harmful outcomes associated with unintended pregnancy, Congress passed amendments requiring all state Medicaid programs to cover family planning services in 1972. These amendments also instituted an enhanced federal-state matching rate of 90% for family planning services, compared to a rate of 50% to 76% for other services, incentivizing states to cover a wide range of family planning services (The Henry J. Kaiser Family Foundation and the Guttmacher Institute, 2007). Federal Medicaid funding for family planning services grew significantly from 1994 ($332 million) to 2001 ($770 million) (Kearney and Levine, 2009).

Eligibility requirements for family planning services vary by state. Since 1994, 28 states have received waivers from the federal government allowing them to expand eligibility for Medicaid family planning. Twenty-two states increased their income eligibility thresholds to cover women whose incomes were previously too high to receive family planning services under Medicaid. Four states extended the duration of benefits for postpartum women, and two states offered family planning services to women who lost participation in Medicaid under any circumstance (The Guttmacher Institute, 2011). One study finds that a dollar spent on family

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5 The three federal block grants through which states can provide family planning services are the Maternal and Child Health block grant (MCH), the Social Services Block Grant (SSBG), and Temporary Assistance for Needy Families (TANF) (Sonfield, Alrich, and Gold, 2008).

6 However, states have the authority to define what qualifies as “family planning services,” and therefore coverage varies widely across states (The Henry J. Kaiser Family Foundation and the Guttmacher Institute, 2007).

7 States are reimbursed for the cost of providing Medicaid services according to a state’s “matching rate.” The matching rate is the percentage of the cost for which states will receive reimbursement. States with lower per capita incomes have higher matching rates for non-family planning Medicaid services than wealthier states, but all states have the same 90% matching rate for family planning services (The Henry J. Kaiser Family Foundation and the Guttmacher Institute, 2007).
planning services saves three Medicaid dollars for pregnancy and post-natal care, and there is evidence to suggest that waivers in particular are cost-effective (Sills, 2007).

In addition to Medicaid, Title X of the Public Health Service Act is a major provider of public family planning dollars and is the only federal program dedicated exclusively to family planning (Gold, 2001). Six in 10 family planning clinics in the US receive Title X funding (Planned Parenthood, 2008). Title X differs from the Medicaid family planning program in that it does not have eligibility requirements, serving all women and charging fees based on an individual’s ability to pay. It is therefore an important program for uninsured and poor women who earn too much to qualify for Medicaid (Gold, 2001). In 2006, Title X accounted for 11.7% ($215,297,000) of public family planning expenditures for client services, and Medicaid (both federal and state spending) accounted for 70.6% ($1,304,006,000) (Sonfield, Alrich, and Gold, 2008). The distribution of public family planning expenditures by source is shown in Figure 1:

**Figure 1: Public Expenditures on Family Planning Client Services, FY 2006**

![Pie chart showing the distribution of public family planning expenditures by source.]

- Medicaid: $241,149,000 (13.1%)
- Title X: $38,188,000 (2.1%)
- MCH block grant: $47,652,000 (2.6%)
- SSBG/TANF: $215,297,000 (11.7%)
- State appropriations: $1,304,006,000 (70.6%)

Data taken from *Public Funding for Family Planning, Sterilization, and Abortion Services, FY 1980-2006* (Sonfield, Alrich, and Gold, 2008)

There are stringent rules governing the use of federal money for abortion procedures.
With the passage of Roe v. Wade in 1973, Medicaid provided unrestricted coverage of abortion. In 1977, the Hyde Amendment was implemented. This provision restricts federal funding for abortion. The Hyde Amendment initially allowed federal funding to cover abortion in cases of rape, incest, life endangerment, and physical harm. From 1977 to 1980, there was increasing disagreement regarding the proper application of the Hyde Amendment (Levine, Trainor, and Zimmerman, 1995). In 1979, this provision was reinterpreted to exclude federal funding of situations involving physical injury to the woman, and in 1980, rape and incest coverage was also dropped (National Abortion Federation, 2006). Rape and incest exceptions were restored in 1993. Currently, the Hyde Amendment allows federal funding to be used for abortion in cases of rape, incest, or life endangerment (National Abortion Federation, 2006). In 1981, the Supreme Court also gave states the right to restrict Medicaid funding for abortion, and 27 did so instantly (Levine, Trainor, and Zimmerman, 1995).

The federal government helped pay for 191 of the 177,000 abortions covered by public funding in Fiscal Year 2006 (state funding covered the rest completely). Federal funding accounted for less than 1% of the $89 million of federal and state spending on abortion procedures in FY 2006 (Sonfield, Alrich, and Gold, 2008). Coverage of abortion using state funding varies across states. Seventeen states choose to cover abortion under Medicaid using state funding (still excluding the use of federal funds) (Kearney and Levine, 2009).
CONCEPTUAL FRAMEWORK AND HYPOTHESIS

This paper examines the relationship between public spending on family planning services and state abortion rates. Figures 2 and 3 below illustrate the individual and macro-level characteristics that affect the abortion rate. Figure 2 shows the factors affecting the occurrence of unintended pregnancies. The individual level characteristics associated with unintended pregnancy include race, age, education level, income, and marital status. An individual’s access to affordable contraception and proper use of contraception are also correlated with the rate of unplanned pregnancy. In addition, there are macro-level characteristics associated with unplanned pregnancy, including culture, abortion cost, and the availability of family planning services.

Figure 2: Factors Affecting Unintended Pregnancy

Turning to Figure 3, once a woman becomes pregnant unintentionally, she must make the decision to carry the baby to term or to have an abortion. Many of the individual level characteristics associated with unintended pregnancy also determine a woman’s decision to have an abortion. For example, African American women are more likely to choose to have an abortion. For example, African American women are more likely to choose to have an abortion.

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8 All factual claims asserted in this section are substantiated and expanded upon in the “Literature Review” section.
abortion than are women of other races, and married women are less likely to have abortions than are single or unmarried women. In addition to those factors, a woman’s access to abortion, her ability to afford an abortion, and the number of children she already has influence her decision to choose an abortion. Concurrent macro-level characteristics are associated with a state’s abortion rate. These factors include the gender ratio, marriage rate, population size, affluence, attitudes, racial makeup, state abortion coverage laws, and, conceivably, public spending on family planning services. For example, since abortion rates are higher among low-income women, a high poverty rate at the state level would likely be correlated with a state’s abortion rate. Additionally, states with more liberal statutes regarding abortion may have higher abortion rates because women in those states may have increased access to more affordable abortion procedures.

If public family planning money affects the incidence of abortion, as some policymakers maintain, it may do so in two ways. First, increased public family planning spending may reduce the incidence of unplanned pregnancy and thereby reduce the incidence of abortion. Second, by increasing the amount of public money available for non-abortion services, private money previously used for non-abortion services may be shifted toward paying for abortions, increasing the abortion rate. This analysis tests for the net of these two effects.
Figure 3: Factors Contributing to Abortion Incidence Among Women Who Experience Unintended Pregnancy

Unintended Pregnancy

Individual Characteristics
- Socioeconomic Status
- Race
- Attitudes
- Marital Status
- Education

Macro Characteristics
- Family Planning Spending
- Abortion Laws
- Attitudes
- Culture

Abortion Decision

Yes

No

Miscarriage

Live Birth
LITERATURE REVIEW

Descriptive papers offer valuable insight into the factors associated with abortion. Finer and Henshaw (2006) provide descriptive statistics on pregnancies, births, and abortions using the National Survey of Family Growth. They find that unintended pregnancies are most common among women ages 18-19 and 20-24. They also find that abortion rates are higher for unmarried women than for married women and that, among women 20 and older, high school dropouts are less likely than women with higher levels of education to have an abortion. Hispanic and black women have higher rates of abortion than white women. Jones and Kooistra (2011) provided questionnaires to abortion providers, asking questions about the number of abortions performed, gestational limits for abortion, and whether abortion pills were offered. Their results suggest that, since many women who use abortion services are low income, the cost of an abortion may be a barrier.

There is a small body of literature examining the impact of state Medicaid family planning policies on sexual behavior and fertility. Lindrooth and McCullough (2007) use a difference-in-differences approach to compare birth rates in states that did and did not expand coverage through Medicaid family planning waivers. Using specifications controlling for national, regional, and state time trends, the authors find that income-based family planning expansions resulted in a statistically significant reduction in average annual birth rates. Specifically, they find that income-based expansions reduced the birth rate by 1.95 births per 1,000 women of childbearing age, on average. Kearney and Levine (2009) also use difference-in-difference techniques to evaluate the effect of Medicaid expansion waivers on the birth rate, abortion rate, sexual activity, and use of contraception. Similar to Lindrooth and McCullough, the authors find that increases in income eligibility thresholds have been effective in reducing
births. The authors find that income-based expansions reduced the number of births by 2% for non-teens and by about 4% for teens, with the results suggesting this reduction in births is associated with increased contraceptive use. The authors’ point estimates regarding the abortion rate are too imprecise to allow them to draw a firm conclusion as to the effect that these expansions had on the incidence of abortion.

Abortion coverage under Medicaid varies by state. A paper by Levine, Trainor, and Zimmerman (1995) uses two different methods to determine the effect of Medicaid abortion funding restrictions on abortions, births, and pregnancies. In the first analysis, the authors use difference-in-differences to determine the effect of funding restrictions on their outcomes of interest. They find evidence of a negative relationship between these funding restrictions and the abortion rate. Additionally, they determine that the restrictions reduced the birth and pregnancy rates by a significant amount. In the second analysis, the authors use Ordinary Least Squares regression with state and year fixed effects and include an indicator variable for Medicaid abortion funding restrictions. They find evidence to suggest that imposing funding restrictions on abortion reduced the abortion rate by about 5.5% over the time period studied. On the whole, this literature suggests that state abortion laws are associated with the abortion rate.

A number of studies examine the relationship between access to oral contraception and abortion. Ananat and Hungeman (2007) use state-year data from the 1970, 1980, and 1990 Censuses and regression models including state, census year, and women’s age dummies. The authors conclude that expansions in access to the pill increased the likelihood a mother was married, had a college education, and was employed full time. They also find a negative relationship between access to the pill and the abortion rate. Guldi (2008) finds that both access to the pill and access to abortion are associated with a decrease in whites’ birth rates. She further

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9 Please see the “Background” section for a discussion of these restrictions.
finds that the magnitude of the association is larger for abortion than the pill and that there is no statistically significant association between access to the pill and abortion among nonwhites.

This study builds on previous empirical papers in several ways. Prior studies have evaluated the impact of Medicaid family planning expansions by comparing differences between waiver and non-waiver states. Rather than comparing waiver and non-waiver states, I use a more fine-grained measure (federal Medicaid family planning spending per capita and public family planning spending from multiple sources per capita) to assess the relationship between spending on family planning services and abortion. Furthermore, the primary outcome of interest when studying the impact of waivers has been the birth rate. This paper focuses on the effect of spending on the abortion rate. Finally, I am not aware of any empirical analyses that respond specifically to the argument that family planning subsidies allow clinics to direct more private money to abortion. Evaluating this argument empirically contributes to the literature by informing the debate on a consequential issue in American politics.
DATA AND METHODOLOGY

Two sets of panel data are used for the regression analyses in this study. The key independent variable measuring public spending on family planning services in the first analysis, as mentioned previously, is federal Medicaid family planning expenditures per capita. The data in the first analysis include observations from all 50 states for the following 10 years: 1991, 1992, 1995, 1999, 2000, 2004, 2005, 2007, and 2008. Using only federal spending allows for a larger sample size than in the second analysis. The second analysis uses a data set in which the family planning spending variable accounts for all sources of public family planning expenditures (Medicaid, Title X, MCH block grant, the family planning components of SSBG and TANF, other federal sources, and state appropriations). This data set includes observations for the 50 states for the years 1980, 1987, and 1992. Data for both analyses are restricted to the years for which abortion rate data from the Guttmacher Institute are available, since Guttmacher abortion data are generally considered more accurate than abortion data from other sources.\(^{10}\) Guttmacher does not collect abortion data every year. Data on the amount of public family planning expenditures from all funding sources are also collected only intermittently, resulting in the small sample size in the second analysis.

The abortion rate by state of occurrence is the dependent variable in both analyses. Data on the abortion rate for both analyses are available by state by year from Guttmacher’s online Data Center. Federal Medicaid family planning expenditures data for 1999-2008 are taken from the Centers for Medicare & Medicaid Services’ Medicaid Statistical Information System State

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\(^{10}\) The Guttmacher Institute administers surveys to abortion providers to determine the number of abortions performed. These data are considered to offer more precise counts than abortion data collected by the Centers for Disease Control and Prevention (Kearney and Levine, 2009).
Summary Datamart.\textsuperscript{11} These dollar amounts are adjusted for inflation using factors contained in Appendix I. Public family planning spending data for the second analysis for 1980 and 1987 are taken from Guttmacher’s Occasional Report No. 38, “Public Funding for Family Planning, Sterilization and Abortion Services, FY 1980-2006” (Sonfield, Alrich, and Gold, 2008), and for 1992, public family planning spending data are from Guttmacher’s report, “Public Funding for Contraceptive, Sterilization and Abortion Services, Fiscal Year 1992” (Daley and Gold, 1993). The dollar amounts are adjusted for inflation using the method described in Appendix I.

Both analyses include the following state-level controls: marriage rate, unemployment rate, percentage of the population that is female, poverty rate, median household income, average income from welfare, public high school graduation rate, number of black women, and the number of women of childbearing age (ages 15-44). Please see Table 1 for variable definitions and data sources.

Ordinary Least Squares regression is used in both analyses in conjunction with state and year fixed effects. State fixed effects allow me to control for unobserved characteristics unique to a state that do not vary over time. Year fixed effects let me control for unobserved characteristics that change over time but are common to all states in a given year. Use of state and year fixed effects reduces the extent of omitted variable bias in my coefficients of interest. Additional state-level variables that control for time-varying state characteristics plausibly correlated with both family planning spending and the incidence of abortion are included in the models. The inclusion of these state-level controls further reduces bias in the coefficients of interest. Kearney and Levine (2009) include such demographic controls, although they calculate

\textsuperscript{11} The MSIS State Summary Datamart can be found at http://msis.cms.hhs.gov/. I am grateful to Laura Wherry for sharing federal Medicaid family planning spending data for 1991-1996.
these measures for women only. In all analyses presented in this paper, the models are weighted by the average number of women of childbearing age (ages 15-44) in each state.

The fixed effects regression model used in these analyses is as follows:

\[
\text{abortionrate}_{it} = \beta_0 + \beta_{1}\text{famplanpercapita}_{it} + \beta_{2}\text{marriagerate}_{it} + \beta_{3}\text{unemploymentrate}_{it} \\
+ \beta_{4}\text{percentfemale}_{it} + \beta_{5}\text{povertyrate}_{it} + \beta_{6}\text{medianhhincome}_{it} + \beta_{7}\text{welfareinc}_{it} \\
+ \beta_{8}\text{hsgradrate}_{it} + \beta_{9}\text{black}_{it} + \alpha_i + \gamma_t + u_{it}
\]

The alpha term represents state fixed effects, the equivalent of a dummy variable for each state. Gamma represents time fixed effects, which, similarly, is the equivalent of a dummy variable for each year of data contained in the analysis. The last term in the model represents the error term.

The sample size in my first analysis is 475 observations. Of the initial 510 observations, the 10 District of Columbia state-year observations are dropped because DC’s abortion rate is significantly higher than that of other states.\(^{12}\) Thirteen state-year observations are dropped because these states reported either missing or zero family planning expenditures for certain years, which is almost certainly inaccurate.\(^{13}\) Six observations are dropped because they do not contain information on the number of black women, five are dropped because of missing marriage rate data, and one is dropped because it is missing unemployment rate data. The second analysis contains 147 observations. Of the initial 153 observations (three years multiplied by 51 states), the three District of Columbia observations are dropped because DC is an outlier, and three observations are dropped because they do not contain information on the number of black women.

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\(^{12}\) The regressions in both analyses are run with and without DC observations as a sensitivity test, and the results are similar.

\(^{13}\) A Medicaid expert at CMS explained that the MSIS Datamart receives information directly from the states and does not return to states to examine anomalies in the data (Erin Mann, e-mail message to author, November 8, 2011). In an alternative specification, state-year observations with zero dollars of family planning spending, or those with missing family planning spending data, are replaced with the average amount of family planning spending in that particular state for the years for which data on the variable does exist. The results of this specification are similar to the ones in which these observations are removed from the analysis.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abortion Rate</td>
<td>The dependent variable in both analyses is the abortion rate. This is a continuous variable measuring the number of abortions per 1,000 women ages 15-44, by state of occurrence.</td>
</tr>
<tr>
<td>Federal Medicaid Family Planning Spending Per Capita</td>
<td>The key independent variable in the first analysis is federal Medicaid family planning spending per capita. It measures the total Medicaid medical vendor payments for family planning services measured in thousands of dollars, divided by a state’s population in each year. Dollar amounts are adjusted to real 2008 dollars using the Medical Care Consumer Price Index.</td>
</tr>
<tr>
<td>Public Family Planning Spending Per Capita</td>
<td>The key independent variable in the second analysis measures all sources of public family planning spending: Medicaid, Title X, MCH block grant, the family planning components of SSBG and TANF, other federal sources, and state appropriations. Dollar amounts are adjusted to real 2008 dollars using the Medical Care Consumer Price Index.</td>
</tr>
<tr>
<td>State-level Controls</td>
<td></td>
</tr>
<tr>
<td>Marriage Rate</td>
<td>This is a continuous variable measuring the number of marriages per 1,000 people in a state, by state of occurrence. Marriage rate data by state by year are available in the “Annual Summary of Births, Marriages, Divorces, and Deaths: United States” editions of the Vital Statistics Reports from the Centers for Disease Control and Prevention. Marriage rates for 1996 were not available because of a suspension in data collection. Marriage rates for 1996 in this model are an average of 1995 and 1999 marriage rates, the years preceding and following 1996 in this sample.</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>This is a continuous variable measuring the percent of a state's labor force that is employed. These data are taken from the Bureau of Labor Statistics’ online database.</td>
</tr>
<tr>
<td>Percent Female</td>
<td>This is a continuous variable measuring the percent of a state's population that is female. These data are gathered from the National Priorities Project’s Federal Priorities Database.</td>
</tr>
<tr>
<td>Poverty Rate</td>
<td>This is a continuous variable measuring the percent of a state's population living below the poverty line. These data are gathered from the National Priorities Project’s Federal Priorities Database.</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>This is a continuous variable measuring a state's median household income in thousands of dollars. These data are taken from the Current Population Survey extracts from the University of Minnesota’s CPS-IPUMS project (<a href="http://cps.ipums.org/cps/">http://cps.ipums.org/cps/</a>). Dollar amounts are adjusted to real 2008 dollars using the Consumer Price Index - All Urban Consumers (CPI-U) adjustment factors contained in CPS-IPUMS.</td>
</tr>
</tbody>
</table>
### Table 1 Continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public High School Graduation Rate</td>
<td>This is a continuous variable measuring the percent of a state's cohort entering public high school in a given year that completes high school four years after entering. This measure is commonly referred to as the average freshman graduation rate (Chapman, 2010). These data are taken from the National Center for Higher Education Management Systems’ Information Center for Higher Education Policymaking and Analysis.</td>
</tr>
<tr>
<td>Number of Black Women</td>
<td>This is a continuous variable measuring the number of black women in a state in thousands of women. These data are taken from the Current Population Survey extracts from the University of Minnesota’s CPS-IPUMS project.</td>
</tr>
<tr>
<td>Number of Women of Childbearing Age</td>
<td>This is a continuous variable measuring the number of women of childbearing age (ages 15-44) in a state in thousands of women. These data are taken from the Current Population Survey extracts from the University of Minnesota’s CPS-IPUMS project.</td>
</tr>
<tr>
<td>Welfare Income</td>
<td>This variable measures the average amount of welfare income received among residents who reported any welfare income. These data are taken from the Current Population Survey extracts from the University of Minnesota’s CPS-IPUMS project. They are adjusted to real dollars using the CPI-U.</td>
</tr>
</tbody>
</table>
DESCRIPTIVE FINDINGS

Tables 2 and 3 provide descriptive statistics for the variables used in my analyses, and tables 4 and 5 show a correlation matrix with the variables in the samples. As shown in Table 2, the average abortion rate in the sample with federal Medicaid family planning spending per capita as the independent variable of interest is 16.96 abortions per 1,000 women ages 15-44. The minimum abortion rate is 0.70 (Wyoming in 2005) and the maximum is 46.00 (Hawaii in 1991 and 1992). The average federal Medicaid family planning spending per capita value is $3.25/person. The minimum is $0.02/person (Arizona in 1999 and Hawaii in 1996) and the maximum is $56.61/person (South Carolina in 2004).

Table 3 gives descriptive statistics for the smaller sample in which all sources of public family planning spending are accounted for in the public family planning spending per capita variable. The average abortion rate in this sample is 22.19 abortions per 1,000 women ages 15-44, with a minimum of 4.40 (Wyoming in 1992) and a maximum of 46.60 (Nevada in 1980). The average amount of public family planning spending per capita in this sample is $5.18/person. The minimum is $0.60/person (Alaska in 1992) and the maximum is $38.85/person (California in 1992). The average abortion rate in this sample is higher than in the first sample, as is the average amount of public family planning spending per capita. This is to be expected because the family planning spending variable in this sample accounts for more sources of family planning spending than does the family planning spending variable in the first sample.

Table 4 shows a correlation matrix of the variables contained in the sample with federal Medicaid family planning spending per capita as the independent variable of interest. The

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14 Before the District of Columbia was removed from the sample, the maximum abortion rate was 133.1 (DC in 1991), almost three times the maximum in the analysis sample.
correlation between federal Medicaid family planning spending per capita and the abortion rate is negative, weak, and statistically significant. Table 5 presents a correlation matrix of the variables contained in the sample with all public family planning spending per capita as the independent variable of interest. In this sample, the correlation between public family planning spending per capita and the abortion rate is positive, but it is very weak and is not statistically significant. As these relationships are only correlational, the regression analyses presented in the next section provide a more precise estimate of the relationship between public family planning spending and the abortion rate.
Table 2
Descriptive Statistics, Federal Medicaid Family Planning Spending

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abortion Rate</td>
<td>16.96</td>
<td>0.70</td>
<td>46.00</td>
<td>8.65</td>
</tr>
<tr>
<td><strong>Federal Medicaid Family Planning Spending Per Capita</strong></td>
<td>3.25</td>
<td>0.02</td>
<td>56.61</td>
<td>5.65</td>
</tr>
<tr>
<td>Marriage Rate</td>
<td>9.03</td>
<td>4.00</td>
<td>82.30</td>
<td>6.57</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>5.09</td>
<td>2.30</td>
<td>11.3</td>
<td>1.47</td>
</tr>
<tr>
<td>Percent Female</td>
<td>50.84</td>
<td>47.36</td>
<td>52.12</td>
<td>0.80</td>
</tr>
<tr>
<td>Poverty Rate</td>
<td>12.57</td>
<td>4.50</td>
<td>25.5</td>
<td>3.53</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>40.55</td>
<td>19.48</td>
<td>67.58</td>
<td>9.72</td>
</tr>
<tr>
<td>Public High School Graduation Rate</td>
<td>71.95</td>
<td>47.56</td>
<td>91.30</td>
<td>8.92</td>
</tr>
<tr>
<td>Number of Black Women</td>
<td>372.15</td>
<td>0.25</td>
<td>1834.43</td>
<td>445.72</td>
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<tr>
<td>Number of Women of Childbearing Age</td>
<td>1220.65</td>
<td>105.65</td>
<td>7594.16</td>
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<tr>
<td>Welfare Income</td>
<td>3740.69</td>
<td>811.49</td>
<td>9822.76</td>
<td>1445.05</td>
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n=475

Table 3
Descriptive Statistics, All Public Family Planning Spending

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<tr>
<th>Variable</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>Std Dev</th>
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</thead>
<tbody>
<tr>
<td>Abortion Rate</td>
<td>22.19</td>
<td>4.40</td>
<td>46.60</td>
<td>9.45</td>
</tr>
<tr>
<td><strong>Public Family Planning Spending Per Capita</strong></td>
<td>5.18</td>
<td>0.60</td>
<td>38.85</td>
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</tr>
<tr>
<td>Marriage Rate</td>
<td>12.04</td>
<td>6.7</td>
<td>143.00</td>
<td>15.47</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>6.61</td>
<td>2.30</td>
<td>12.1</td>
<td>1.79</td>
</tr>
<tr>
<td>Percent Female</td>
<td>51.07</td>
<td>47.00</td>
<td>52.49</td>
<td>0.95</td>
</tr>
<tr>
<td>Poverty Rate</td>
<td>13.45</td>
<td>4.80</td>
<td>25.10</td>
<td>4.28</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>53.70</td>
<td>34.11</td>
<td>73.46</td>
<td>8.46</td>
</tr>
<tr>
<td>Public High School Graduation Rate</td>
<td>0.74</td>
<td>0.54</td>
<td>0.96</td>
<td>0.08</td>
</tr>
<tr>
<td>Number of Black Women</td>
<td>305.97</td>
<td>0.19</td>
<td>1538.84</td>
<td>362.52</td>
</tr>
<tr>
<td>Number of Women of Childbearing Age</td>
<td>1131.31</td>
<td>108.82</td>
<td>7176.51</td>
<td>1217.94</td>
</tr>
<tr>
<td>Welfare Income</td>
<td>4945.71</td>
<td>1881.61</td>
<td>9638.47</td>
<td>1683.41</td>
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</table>

n=147

19
Table 4
Correlation Matrix, Federal Medicaid Family Planning Spending

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<th></th>
<th>Abortion Rate</th>
<th>Family Planning Spending Per Capita</th>
<th>Marriage Rate</th>
<th>Unemployment Rate</th>
<th>Percent Female</th>
<th>Poverty Rate</th>
<th>Median HH Income</th>
<th>Welfare Income</th>
<th>HS Graduation Rate</th>
<th>Black Women</th>
<th>Childbearing Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abortion Rate</td>
<td>1.000</td>
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<td></td>
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</tr>
<tr>
<td>Family Planning Spending Per Capita</td>
<td>-0.1292*</td>
<td>1.000</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Marriage Rate</td>
<td>0.1063</td>
<td>-0.0428</td>
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</tr>
<tr>
<td>Unemployment Rate</td>
<td>0.1878**</td>
<td>0.1388*</td>
<td>-0.0289</td>
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</tr>
<tr>
<td>Percent Female</td>
<td>0.1663**</td>
<td>0.1160</td>
<td>-0.2905**</td>
<td>0.1661**</td>
<td>1.000</td>
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<td></td>
</tr>
<tr>
<td>Poverty Rate</td>
<td>-0.1440**</td>
<td>0.1766**</td>
<td>-0.0172</td>
<td>0.4741**</td>
<td>0.2460**</td>
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<tr>
<td>Median HH Income</td>
<td>0.1500**</td>
<td>-0.0824</td>
<td>-0.0254</td>
<td>-0.3535**</td>
<td>-0.3227**</td>
<td>-0.5583**</td>
<td>1.000</td>
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<tr>
<td>Welfare Income</td>
<td>0.4193**</td>
<td>-0.0080</td>
<td>0.0046</td>
<td>0.1615**</td>
<td>-0.0416</td>
<td>-0.2846**</td>
<td>-0.0224</td>
<td>1.000</td>
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<tr>
<td>HS Graduation Rate</td>
<td>-0.2184**</td>
<td>-0.2627**</td>
<td>-0.2015**</td>
<td>-0.2432**</td>
<td>-0.1077</td>
<td>-0.4108**</td>
<td>0.0794</td>
<td>0.1391*</td>
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<tr>
<td>Black Women</td>
<td>0.4464**</td>
<td>0.1147*</td>
<td>-0.1236*</td>
<td>0.1724**</td>
<td>0.3349**</td>
<td>0.2466**</td>
<td>0.0130</td>
<td>-0.0892</td>
<td>-0.4912**</td>
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<td>Childbearing Women</td>
<td>0.4566**</td>
<td>0.0361</td>
<td>-0.1330*</td>
<td>0.2206**</td>
<td>0.1183*</td>
<td>0.1489*</td>
<td>0.0576</td>
<td>0.1015</td>
<td>-0.2663**</td>
<td>0.7826**</td>
<td>1.000</td>
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</table>

*Indicates coefficient is significant at the p<.01 level.

**Indicates coefficient is significant at the p<.001 level.
Table 5  
Correlation Matrix, All Public Family Planning Spending

<table>
<thead>
<tr>
<th></th>
<th>Abortion Rate</th>
<th>Family Planning Spending Per Capita</th>
<th>Marriage Rate</th>
<th>Unemployment Rate</th>
<th>Percent Female</th>
<th>Poverty Rate</th>
<th>Median HH Income</th>
<th>Welfare Income</th>
<th>HS Graduation Rate</th>
<th>Black Women</th>
<th>Childbearing Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abortion Rate</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Planning Spending Per Capita</td>
<td>0.0879 1.000</td>
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<tr>
<td>Marriage Rate</td>
<td>0.3285** -0.0261</td>
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<td>Unemployment Rate</td>
<td>-0.1340 0.0499</td>
<td>-0.0278 1.000</td>
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<tr>
<td>Percent Female</td>
<td>-0.0356 0.0072</td>
<td>-0.3074** 0.0547 1.000</td>
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<td>Poverty Rate</td>
<td>-0.3563** 0.1348</td>
<td>-0.0687 0.4892** 0.2513* 1.000</td>
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</tr>
<tr>
<td>Median HH Income</td>
<td>0.4815** -0.1119</td>
<td>0.0416 -0.2287* -0.2864** -0.7907** 1.000</td>
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</tr>
<tr>
<td>Welfare Income</td>
<td>0.5110** 0.1124</td>
<td>-0.0946 -0.0847 -0.1675 -0.5511** 0.6722** 1.000</td>
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</tr>
<tr>
<td>HS Graduation Rate</td>
<td>-0.1615 -0.1628</td>
<td>-0.0085 -0.3167** -0.2298* -0.5001** 0.3026** 0.3110** 1.000</td>
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</tr>
<tr>
<td>Black Women</td>
<td>0.3282** 0.2435*</td>
<td>-0.1096 0.1858 0.3811** 0.2580* -0.0699 -0.0243 -0.5662** 1.000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childbearing Women</td>
<td>0.3967** 0.3950**</td>
<td>-0.1250 0.1149 0.2283* 0.0027 0.0767 0.2507** -0.3277* 0.7939** 1.000</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Indicates coefficient is significant at the p<.01 level.
**Indicates coefficient is significant at the p<.001 level.
REGRESSION RESULTS

Tables 6 and 7 present regression results for OLS and fixed effects regressions. In Table 6, the measure of public family planning expenditures is federal Medicaid family planning spending per capita, while Table 7 measures public family planning spending from multiple sources as discussed in the previous section. Regression 1 in Table 6 is a simple OLS regression of the abortion rate on federal Medicaid family planning spending per capita. Regression 2 in Table 6 adds several demographic control variables to the regression, and the third regression adds state and year fixed effects. Table 7 is organized in the same way.

The simple OLS regression results using federal Medicaid family planning spending data, presented in Table 6, show a negative but statistically insignificant relationship between federal Medicaid family planning spending per capita and the abortion rate. This is consistent with the results of most of the other regressions, although this estimate is undoubtedly inaccurate because there are many variables omitted from the model that are correlated with both federal Medicaid family planning spending and the abortion rate. In the second regression, in which a full set of control variables is included, a one dollar increase in federal Medicaid family planning spending per capita is associated with a decrease of 0.266 abortions per 1,000 women ages 15 to 44. This is statistically significant at conventional levels (p<0.001). Almost all of the demographic and economic controls in the model are statistically significant at conventional levels, and the model as a whole explains 70% of the variation in the abortion rate in this sample.

Although the coefficient on federal Medicaid family planning spending per capita in the second regression is statistically significant, it is small in magnitude. The average federal Medicaid family planning spending per capita value in this sample is $3.25/person. Therefore, a one dollar increase in federal Medicaid family planning spending per capita for the average state
is an increase of about one third. Since the average abortion rate in this sample is 16.96 abortions per 1,000 women ages 15 to 44, if an average state increases its spending by one third, a reduction of 0.266 corresponds to a reduction in the abortion rate of less than two percent.

When state and year fixed effects are added in the third regression in Table 6, the relationship between federal Medicaid family planning spending per capita and the abortion rate remains negative, but it is not statistically significant. It shows that a one dollar increase in federal Medicaid family planning spending per capita is associated with a 0.087 reduction in the number of abortions per 1,000 women ages 15 to 44. None of the controls in this model is statistically significant.

A closer look at the state and year fixed effects dummies reveals that almost all of the variation in the abortion rate in this model can be explained by fixed state and time characteristics. Regressing the abortion rate on just the state and year fixed effects shows that the state and year dummies account for 94% of the variation in the abortion rate, leaving only 6% of the variation to be accounted for by federal Medicaid family planning spending per capita and the other controls in the model. In other words, there is such little variation in the independent variables within states over time that the fixed effects capture the large majority of the variation in the abortion rate.

Turning to the second set of analyses, the first regression presented in Table 7 (a simple OLS regression) shows a positive relationship between public family planning expenditures per capita and the abortion rate, an outcome inconsistent with previously reported results. However, the relationship is not statistically significant at conventional levels, and there are likely many variables omitted from the model whose omission is biasing this estimate. For example, if a state requires parental notification or consent before an abortion can be performed on a minor, that
state may have a lower abortion rate and may also spend less public money on family planning services. The exclusion of a parental notification variable may therefore exert a positive bias on the family planning coefficient in the first regression. In the second regression, which includes demographic and economic controls, the relationship between public family planning spending per capita and the abortion rate becomes negative, such that a one dollar increase in public family planning spending per capita is associated with a decrease of 0.405 abortions per 1,000 women ages 15 to 44. This relationship is statistically significant at conventional levels. The variables included in this regression account for 75% of the variation in the abortion rate.

The magnitude of this coefficient on public family planning spending is small. In this sample, since the average public family planning spending per capita value is $5.18/person, a $1 increase in public family planning spending per capita in the average state corresponds to an increase of 20%. The average abortion rate in this sample is 22.19 abortions per 1,000 women ages 15-44, so if an average state increased its public family planning spending per capita by one fifth, it would reduce the abortion rate by less than two percent.

In the third model in Table 7, state and year fixed effects are added to the regression. With the addition of fixed effects, the sign on the public family planning spending per capita coefficient remains negative and statistically significant. Specifically, a one dollar increase in public family planning expenditures per capita is associated with a reduction of 0.545 abortions per 1,000 women ages 15 to 44. This result is statistically significant at conventional levels (p<0.001), yet it is small in magnitude. An increase of public family planning spending of one fifth for an average state entails a decrease in the abortion rate of two and a half percent.

As in the analyses in the larger sample using federal Medicaid family planning spending per capita as the family planning spending measure, the state and year fixed effects dummies
account for a large majority of the variation in the abortion rate in the analysis presented in Table 7. The state and year fixed effects dummies account for 94% of the variation in the abortion rate in this sample (the same percentage of variation accounted for by fixed effects in the regression presented in Table 6). As before, this leaves very little variation to be explained by the independent variables in the model. With fixed effects explaining the large majority of the variation in both models, it is even more difficult to achieve statistically significant results for any additional variables. For this reason, it is particularly notable that the coefficient on public family planning spending is statistically significant in the fixed effects regression for the smaller sample.
Table 6
OLS and Fixed Effects Regression Results, Federal Medicaid Family Planning Spending

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Abortion Rate</th>
<th>(2) Abortion Rate</th>
<th>(3) Abortion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abortion Rate</td>
<td>0.019</td>
<td>-0.266**</td>
<td>-0.087</td>
</tr>
<tr>
<td>(0.104)</td>
<td>(0.038)</td>
<td>(0.057)</td>
<td></td>
</tr>
<tr>
<td>Federal Medicaid Family Planning</td>
<td></td>
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</tr>
<tr>
<td>Spending Per Capita</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Abortion Rate</td>
<td>-0.019</td>
<td>-0.266**</td>
<td>-0.087</td>
</tr>
<tr>
<td>(0.104)</td>
<td>(0.038)</td>
<td>(0.057)</td>
<td></td>
</tr>
<tr>
<td>Marriage Rate</td>
<td>0.308**</td>
<td>0.078</td>
<td></td>
</tr>
<tr>
<td>(0.036)</td>
<td>(0.126)</td>
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</tr>
<tr>
<td>Unemployment Rate</td>
<td>1.317**</td>
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<td></td>
</tr>
<tr>
<td>(0.261)</td>
<td>(0.223)</td>
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</tr>
<tr>
<td>Percent Female</td>
<td>0.078</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.525)</td>
<td>(2.501)</td>
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</tr>
<tr>
<td>Poverty Rate</td>
<td>-0.488**</td>
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</tr>
<tr>
<td>(0.131)</td>
<td>(0.104)</td>
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</tr>
<tr>
<td>HS Grad</td>
<td>-0.090</td>
<td>0.033</td>
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</tr>
<tr>
<td>(0.054)</td>
<td>(0.078)</td>
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</tr>
<tr>
<td>Black Women</td>
<td>0.010**</td>
<td>-0.005</td>
<td></td>
</tr>
<tr>
<td>(0.0008)</td>
<td>(0.002)</td>
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<td></td>
</tr>
<tr>
<td>Welfare Income</td>
<td>0.003**</td>
<td>0.0004</td>
<td></td>
</tr>
<tr>
<td>(0.0003)</td>
<td>(0.0002)</td>
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<td></td>
</tr>
<tr>
<td>Median Household Income</td>
<td>0.151**</td>
<td>0.072</td>
<td></td>
</tr>
<tr>
<td>(0.043)</td>
<td>(0.109)</td>
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</tr>
<tr>
<td>State and Year Fixed Effects</td>
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<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

\[
R^2 \quad 0.0001 \quad 0.698 \quad 0.966
\]

\[
Prob>F \quad 0.853 \quad 0.0001 \quad 0.0001
\]

\[
n \quad 475 \quad 475 \quad 475
\]

*Indicates coefficient is significant at the p<.01 level.

**Indicates coefficient is significant at the p<.001 level.
### Table 7
OLS and Fixed Effects Regression Results, All Public Family Planning Spending

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Family Planning Spending Per Capita</strong></td>
<td>0.113 (0.190)</td>
<td>-0.405** (0.111)</td>
<td>-0.545** (0.039)</td>
</tr>
<tr>
<td><strong>Marriage Rate</strong></td>
<td>0.257** (0.034)</td>
<td>0.050 (0.084)</td>
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</tr>
<tr>
<td><strong>Unemployment Rate</strong></td>
<td>-0.604 (0.320)</td>
<td>-0.120 (0.213)</td>
<td></td>
</tr>
<tr>
<td><strong>Percent Female</strong></td>
<td>-1.117 (0.812)</td>
<td>-1.486 (1.890)</td>
<td></td>
</tr>
<tr>
<td><strong>Poverty Rate</strong></td>
<td>-0.053 (0.253)</td>
<td>0.203 (0.215)</td>
<td></td>
</tr>
<tr>
<td><strong>HS Grad</strong></td>
<td>-29.891** (8.607)</td>
<td>12.662 (12.253)</td>
<td></td>
</tr>
<tr>
<td><strong>Black Women</strong></td>
<td>0.011** (0.002)</td>
<td>-0.002 (0.005)</td>
<td></td>
</tr>
<tr>
<td><strong>Welfare Income</strong></td>
<td>0.003** (0.0003)</td>
<td>0.0001 (0.0004)</td>
<td></td>
</tr>
<tr>
<td><strong>Median Household Income</strong></td>
<td>0.0002 (0.0001)</td>
<td>0.0006 (0.0001)</td>
<td></td>
</tr>
<tr>
<td><strong>State and Year Fixed Effects</strong></td>
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<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.006</td>
<td>0.751</td>
<td>0.973</td>
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<tr>
<td>$Prob&gt;F$</td>
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<td>0.0001</td>
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<tr>
<td>$n$</td>
<td>147</td>
<td>147</td>
<td>147</td>
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</table>

*Indicates coefficient is significant at the p<.01 level.

**Indicates coefficient is significant at the p<.001 level.

**Robustness Checks**

Several sensitivity tests were performed to further examine the results of these analyses.

In the first test, observations in both sets of data were divided by whether their abortion rates are above or below the national median. In the larger data set using federal Medicaid family planning spending per capita as the family planning expenditure measure, the results were generally qualitatively similar to those in the main analysis. For observations with abortion rates
above the national median, a simple regression showed a positive association between federal Medicaid family planning spending per capita and the abortion rate, although the association was not statistically significant at conventional levels. This is in contrast with the results in the full sample, but when a full set of state-level controls were added, the association between the abortion rate and federal Medicaid family planning spending became negative, as it is in the full sample, but it was not highly statistically significant ($p=0.023$). As in the full sample, when state and year fixed effects were added, the relationship between the abortion rate and federal Medicaid family planning spending remained negative but was not statistically significant. For observations with abortion rates below the national median, the results followed the pattern observed in both the full sample and the “high abortion rate” subsample.

In the smaller sample, which uses all sources of public family planning spending as the family planning expenditure measure, the same sensitivity tests yielded generally similar results. For observations with abortion rates above the national median, the relationship between the abortion rate and public family planning spending was negative and statistically insignificant in the simple regression. When state controls were added, this relationship remained negative and became statistically significant, as it does in the full sample. With the addition of state and year fixed effects, the relationship between public family planning spending per capita and the abortion rate was negative and statistically significant, similar to the full sample. For observations with abortion rates lower than the national median, the simple regression showed a negative but statistically insignificant relationship between the abortion rate and public family planning spending. When state controls were added, this relationship remained negative and statistically insignificant. Finally, when state and year fixed effects were added, the relationship between the abortion rate and public family planning spending was positive but statistically
insignificant, differing from the results of the full sample and the “high abortion rate” sample. It should be noted that the sample sizes in these sensitivity analyses are quite small, calling into question the reliability of these results.

In a second set of sensitivity tests, weights were removed from the models in both datasets. When weights were removed from the simple regression in the data set with federal Medicaid family planning spending per capita as the family planning spending variable, the association between federal Medicaid family planning spending per capita and the abortion rate was negative, as it is in the main analysis, but it became statistically significant. When state controls were added, the relationship between federal Medicaid family planning spending per capita and the abortion rate was the same as in the main analysis (negative and statistically significant), and when fixed effects were added, the relationship was the same as it is in the main analysis (negative but not statistically significant). Similarly, in the data set using all sources of public family planning spending as the family planning variable, the association between public family planning spending per capita and the abortion rate was mostly comparable in the regressions with and without weights (negative and statistically significant), although the coefficient on public family planning spending per capita in the regression with state controls was not statistically significant when weights were removed.
DISCUSSION

This study was motivated by the argument that funding family planning clinics with public dollars increases the abortion rate. The regression results presented above, using both OLS and state and time fixed effects specifications and using measures of federal Medicaid family planning spending and all public family planning spending sources to measure family planning expenditures, provide no evidence of such an effect. To the contrary, the results of this study provide suggestive evidence that increased public family planning spending may reduce the abortion rate modestly. Of the six regressions presented here, five suggest a negative relationship between public family planning spending per capita and the abortion rate, with three of the results statistically significant at conventional levels. The only regression showing a positive association between public family planning expenditures and the abortion rate is an OLS regression without any control variables or fixed effects. The inclusion of control variables and state and time fixed effects changes the sign of the coefficient measuring the effect of public family planning spending on the abortion rate from positive to negative.

It is important to bear in mind that state and year fixed effects account for a large majority of the variation in the abortion rate in the fixed effects analyses. Since there was so little variation left to be explained by the remaining variables, it is especially interesting that the coefficient on the family planning spending variable in the analysis using all sources of public family planning spending was negative and highly statistically significant.

Although these results suggest that increased public family planning expenditures are negatively associated with the abortion rate, this analysis has several limitations. One would ideally like to examine the relationship between public family planning spending and the abortion rate over time using data separated by source of funding and type of service on which
funding is used for a larger number of years. Unfortunately, the data to precisely measure this relationship are too limited. The most accurate public family planning spending data are collected by the Guttmacher Institute, and Guttmacher divides family planning spending by source. These data are not collected annually, precluding a comprehensive analysis over time. For this reason, I was unable to measure spending for every year in the window of time encompassed by these analyses. Adding more years of data would offer more variation in family planning spending to be examined in future analyses. Data for consecutive years would also allow for lagged regression models to be estimated. In addition, the public family planning expenditure data collected by Guttmacher are not directly comparable across years because the expenditure surveys distributed to family planning clinics by Guttmacher change over time. Although the information collected is generally similar, this adds another element of imprecision to this study. A number of the limitations of this analysis are related to the difficulty of collecting and attaining comprehensive public family planning spending data. There are likely high costs involved in surveying family planning clinics and state governments, but the collection of accurate yearly family planning spending data would be one way to improve future studies of this topic.

Additionally, there are likely factors omitted from these models whose omission is exerting a bias on the public family planning expenditure coefficients. For example, a state’s political culture is likely to affect a state’s abortion rate and its public family planning expenditures, and political culture is likely to change at least slightly over time. The number of abortion providers in a state is also likely associated with abortion rates and public family planning expenditures, and also probably changes over time. The omission of these variables
may be exerting a positive bias on the public family planning coefficients included in the models presented in this paper.

Despite these limitations, this study produced results similar to those found in several analyses measuring relationships between similar measures of family planning spending and reproductive outcomes. Kearney and Levine (2009) evaluate the effect of Medicaid family planning waiver expansions on the birth rate, abortion rate, sexual activity, and contraception use, but the authors’ point estimates are too imprecise to offer firm evidence about the effect of expansions on the abortion rate. Ananat and Hungerman (2007) find a negative relationship between access to the birth control pill and the abortion rate. As expansions in public family planning spending conceivably increase access to the pill, this study’s results are arguably consistent with those of Ananat and Hungerman. Thomas (2012b) uses a simulation model of family formation to estimate the effect of three family planning policies on several reproductive outcomes and finds that a Medicaid family planning expansion would reduce unintended pregnancies by about 4%. Thomas also finds an expansion in Medicaid family planning services to be cost-effective, with each dollar spent on a Medicaid family planning expansion saving taxpayers $5.62 (Thomas, 2012b).

The Pew Research Center and Planned Parenthood surveys discussed in the first section of this paper show that, although Americans are split evenly in their attitudes toward abortion, a majority believe the number of abortions performed in the US should be reduced (Pew Research Center, 2009, and Planned Parenthood, 2008). Furthermore, a majority of Americans surveyed think the number of unintended pregnancies should be reduced by increasing access to contraceptive services and sex education (Planned Parenthood, 2008). The results presented here,
as well as results of prior studies, suggest increases in family planning spending may be one way to reduce the abortion rate.

This study demonstrates the importance of consulting rigorous quantitative analyses before advocating against the use of public money for family planning services. The two analyses presented in this study that contain state and time fixed effects (and suffering from the least amount of omitted variable bias among the regressions in this study) show that one additional dollar of federal Medicaid family planning spending per capita reduces the abortion rate by 0.087 abortions per 1,000 women 15-44, and that one additional dollar of public family planning spending per capita reduces the abortion rate by 0.545 abortions per 1,000 women 15-44, respectively. This latter result is highly statistically significant. As the political debate over public spending on family planning services continues, it is vital that public policy decisions be based on sound evidence.
APPENDIX I
INFLATION ADJUSTMENTS

I adjust family planning spending to 2008 dollars using the Medical Care Consumer Price Index. I chose to use the Medical Care CPI – All Urban Consumers, as opposed to the general CPI, because medical costs rise over time at a different (faster) rate than the basket of goods used to calculate the general CPI (Ford and Ginsburg, 2001, and Bureau of Labor Statistics, 2010).

The Medical Care CPI adjustment factors for the years in the samples are as follows:

Table 8
Medical Care Consumer Price Index

<table>
<thead>
<tr>
<th>Year</th>
<th>Medical Care CPI Adjustment Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>74.9</td>
</tr>
<tr>
<td>1987</td>
<td>130.1</td>
</tr>
<tr>
<td>1991</td>
<td>177</td>
</tr>
<tr>
<td>1992</td>
<td>190.1</td>
</tr>
<tr>
<td>1995</td>
<td>220.5</td>
</tr>
<tr>
<td>1996</td>
<td>228.2</td>
</tr>
<tr>
<td>1999</td>
<td>250.6</td>
</tr>
<tr>
<td>2000</td>
<td>260.8</td>
</tr>
<tr>
<td>2004</td>
<td>310.1</td>
</tr>
<tr>
<td>2005</td>
<td>323.2</td>
</tr>
<tr>
<td>2007</td>
<td>351.054</td>
</tr>
<tr>
<td>2008</td>
<td>364.065</td>
</tr>
</tbody>
</table>

Source: Bureau of Labor Statistics: Databases, Tables & Calculators by Subject

A review of literature including adjustments of medical expenses for inflation reveals that it is preferable to use the Medical Care CPI over the general CPI. Sonfield, Alrich, and Gold (2008) use the Medical Care CPI to adjust their family planning spending data for inflation. The Centers for Disease Control and Prevention’s “Cost Analysis: Adjusting Costs” tutorial also recommends using the Medical Care CPI to adjust medical costs for inflation (Centers for Disease Control and Prevention, n.d.).
APPENDIX II
STATA CODE

Sample 1: Federal Medicaid Family Planning Spending

use Apr8MainAnalysis.dta

*Descriptive statistics*
sum abortionrate famplanspendpercapita marrate unemployment percentfemale povertyrate medhhinc hsgrad blackwomenthou newincwelfr pwcorr, sig

*Regressions*
*OLS Regressions*
reg abortionrate famplanspendpercapita [aweight=avechildbear], robust
reg abortionrate famplanspendpercapita marrate unemployment percentfemale povertyrate hsgrad medhhinc newincwelfr blackwomenthou [aweight=avechildbear], robust

*Add fixed effects*
xtset fipst year
xtreg abortionrate famplanspendpercapita marrate unemployment percentfemale povertyrate hsgrad medhhinc newincwelfr blackwomenthou i.year [aweight=avechildbear], i(fipst) fe vce (robust)

*See how much of variation is accounted for by fixed effects only*
reg abortionrate i.fipst i.year, r

*Re-run regression to get correct R-sq for fixed effects reg*
reg abortionrate famplanspendpercapita marrate unemployment percentfemale povertyrate hsgrad medhhinc newincwelfr blackwomenthou i.year i.fipst [aweight=avechildbear], vce (robust)

*Sensitivity tests*
*States above national abortion rate median*
sum abortionrate, detail
drop if abortionrate<15.6

reg abortionrate famplanspendpercapita [aweight=avechildbear], robust
reg abortionrate famplanspendpercapita marrate unemployment percentfemale povertyrate hsgrad medhhinc newincwelfr blackwomenthou [aweight=avechildbear], robust

xtset fipst year
xtreg abortionrate famplanspendpercapita marrate unemployment percentfemale povertyrate hsgrad medhhinc newincwelfr blackwomenthou i.year [aweight=avechildbear], i(fipst) fe vce (robust)
*States below national abortion rate median*

drop if abortionrate>15.6

reg abortionrate famplanspendpercapita [aweight=avechildbear], robust
reg abortionrate famplanspendpercapita marrate unemployment percentfemale povertyrate
hsgrad medhhinc newincwelfr blackwomenthou [aweight=avechildbear], robust

xtset fipst year
xtreg abortionrate famplanspendpercapita marrate unemployment percentfemale povertyrate
hsgrad medhhinc newincwelfr blackwomenthou i.year [aweight=avechildbear], i(fipst) fe vce (robust)

*Unweighted Regressions*
reg abortionrate famplanspendpercapita, robust
reg abortionrate famplanspendpercapita marrate unemployment percentfemale povertyrate
hsgrad medhhinc newincwelfr blackwomenthou, robust

xtset fipst year
xtreg abortionrate famplanspendpercapita marrate unemployment percentfemale povertyrate
hsgrad medhhinc newincwelfr blackwomenthou i.year, i(fipst) fe vce (robust)

**Sample 2: All Public Sources of Family Planning Spending**

use Apr8AuxAnalysis.dta

*Descriptive statistics*
sum abortionrate famplanpercapita marriagerate unemploymentrate percentfemale povertyrate
medhhinc hsgrad racethou newincwelfr
pwcorr, sig

*Regressions*
*OLS Regressions*
reg abortionrate famplanpercapita [aweight=avewchildbear], robust
reg abortionrate famplanpercapita marriagerate unemploymentrate percentfemale povertyrate
hsgrad medhhinc newincwelfr racethou [aweight=avewchildbear], robust

*Add fixed effects*
xtset statefip year
xtreg abortionrate famplanpercapita marriagerate unemploymentrate percentfemale povertyrate
hsgrad medhhinc newincwelfr racethou i.year [aweight=avewchildbear], i(statefip) fe vce (robust)

*See how much of variation is accounted for by fixed effects only*
reg abortionrate i.statefip i.year, r

*Re-run regression to get correct R-sq for fixed effects reg*
reg abortionrate famplanpercapita marriagerate unemploymentrate percentfemale povertyrate
hsgrad medhhinc newincwelfr racethou i.year i.statefip [aweight=avewchildbear], vce (robust)

*Sensitivity tests*
*States above national abortion rate median*
sum abortionrate, detail
drop if abortionrate<21.5

reg abortionrate famplanpercapita [aweight=avewchildbear], robust
reg abortionrate famplanpercapita marriagerate unemploymentrate percentfemale povertyrate
hsgrad medhhinc newincwelfr racethou [aweight=avewchildbear], robust

xtset statefip year
xtreg abortionrate famplanpercapita marriagerate unemploymentrate percentfemale povertyrate
hsgrad medhhinc newincwelfr racethou i.year [aweight=avewchildbear], i(statefip) fe vce (robust)

*States below national abortion rate median*
drop if abortionrate>21.5

reg abortionrate famplanpercapita [aweight=avewchildbear], robust
reg abortionrate famplanpercapita marriagerate unemploymentrate percentfemale povertyrate
hsgrad medhhinc newincwelfr racethou [aweight=avewchildbear], robust

xtset statefip year
xtreg abortionrate famplanpercapita marriagerate unemploymentrate percentfemale povertyrate
hsgrad medhhinc newincwelfr racethou i.year [aweight=avewchildbear], i(statefip) fe vce (robust)

*Unweighted Regressions*
reg abortionrate famplanpercapita, robust
reg abortionrate famplanpercapita marriagerate unemploymentrate percentfemale povertyrate
hsgrad medhhinc newincwelfr racethou, robust

xtset statefip year
xtreg abortionrate famplanpercapita marriagerate unemploymentrate percentfemale povertyrate
hsgrad medhhinc newincwelfr racethou i.year, i(statefip) fe vce (robust)
REFERENCES


