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Association between state Medicaid expansion through the Affordable Care Act and self-reported pre-conception health care among low-income mothers (2012-2015)

By

Raiza Rufo Amiling

Master of Public Health

Global Epidemiology

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Michael Kramer, PhD

Committee Chair

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Raiza Rufo Amiling

B.A., University of California, Berkeley, 2013

Thesis Committee Chair: Michael Kramer, PhD

An abstract of

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Abstract

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By Raiza Rufo Amiling

Background

The Affordable Care Act (ACA) was passed in 2010 and expanded Medicaid to all those with household incomes 138 percent below the federal poverty level. A ruling by the U.S. Supreme Court gave states the option of expanding the program, resulting in a coverage gap of uninsured low-income individuals that do not meet traditional Medicaid requirements and do not qualify for tax credits to buy insurance in marketplaces. For low-income women of reproductive age, this poses a challenge in accessing and utilizing pre-conception health care, services to improve health and decrease risk factors that may affect future pregnancies. This study seeks to understand the impact of expansion on the utilization of pre-conception health services by low-income women.

Methods

The difference-in-difference framework was utilized to analyze data from the Pregnancy Risk Assessment Monitoring System from 2012-2015. 26 sites were analyzed, utilizing questions about pre-conception care, income, and insurance. Prevalence of pre-conception care for pre-expansion versus post-expansion periods and non-expansion versus expansion sites were calculated. Variables in the adjusted model included year, maternal age, maternal race/ethnicity, maternal education, and income.

Results

Non-expansion sites had an increase of 1.1 percent (SE: 1.18) in pre-conception care visits, while expansion sites had a 1.7 percent (SE: 0.90) increase. While there was a smaller increase in pre-conception care visits among non-expansion sites versus expansion sites, it was not statistically significant (DD estimate: -0.01, p-value: 0.54). Non-expansion sites had a decrease of 3.3 percent (SE: 1.45) in uninsurance and a 0.7 percent (SE: 1.55) increase in Medicaid enrollment, while expansion sites had a 10.6 percent (SE: 0.96) decrease in uninsurance and an 11.3 percent (SE: 1.13) increase in Medicaid enrollment.

Conclusion

Although not statistically significant, this study showed there was an increase in pre-conception care visits among non-expansion and expansion sites, with a smaller increase among non-expansion sites.

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Chapter 1

Background

Federal legislation

Health coverage to low-income groups was established in the United States through Medicaid, via Title XIX of the Social Security Act, part of the Social Security Amendments of 1965, signed by President Lyndon B. Johnson. (1) Medicaid is a federal-state partnership: states, the District of Columbia, and territories provide health coverage to certain federally recognized groups and the federal government matches these expenses based on the federal medical assistance percentage (FMAP). This percentage changes each year according to the average personal income for each state compared to the national average, and cannot be lower than 50 percent for high-income states or higher than 83 percent for low-income states. (2) Medicaid initially targeted people who were receiving public assistance, mainly those of low-income, those of low-income with dependent children, and people with disabilities and has expanded over the years to cover other groups, including pregnant women and postpartum women, as well as gradually increasing the income limit. (3) While Medicaid programs are required to provide family planning services, the specific family planning services provided are decided by individual states. (4)

Access to preventive health services and family planning were promoted in other ways. In 1970, President Richard Nixon signed the Public Service Act, which established the Title X Family Planning Program, and it remains the only federal grant program dedicated to family planning. The program primarily targets low-income people and provides various women's health services, including contraceptive counseling and

services, pregnancy testing, and cervical and breast cancer screenings. (5, 6) States also began to utilize Section 1115 of the Social Security Act, which allows states to develop programs for Medicaid populations, to be approved by the Centers for Medicare & Medicaid Services (CMS). These demonstrations, or waivers, are initially approved for five years, and then states can apply for extensions for an additional three to five years. (7) States use these waivers to extend family planning services to different populations, including those who were no longer eligible for maternity coverage, that is women who are no longer in the postpartum period (60 days after delivery).

The Affordable Care Act

In March 2010, President Barack Obama signed the Patient Protection and Affordable Care Act, later amended by the Health Care and Education Reconciliation Act and collectively known as the Affordable Care Act (ACA), which established various rights and protections concerning health coverage and expanded the Medicaid program. (8) The law required states to expand Medicaid coverage to all those with household incomes roughly 138 percent[1] below the federal poverty level (FPL). (9, 10) This expanded eligibility to non-elderly adults, and was estimated to cover 17 million uninsured low-income Americans by 2022. (11) To assist with expansion, states would receive federal funding to cover 100 percent of costs of newly-eligible Medicaid enrollees, which would gradually lower to 90 percent by 2020. (2) The ACA also allowed states to expand their family planning programs through a State Plan Amendment, permanently changing their Medicaid program and no longer needing to apply for extensions of the Section 1115

[1] The ACA states those with household incomes below 133% of the FPL are eligible for Medicaid. However, the law includes a five percent disregard about this limit, effectively making the eligibility level 138% of the FPL. (10)

waiver. (4)

In 2012, the United States Supreme Court ruled on the constitutionality of the ACA, which included the expansion of Medicaid, in the case *National Federation of Independent Business (NFIB) v. Sebelius*. The decision stated that the Medicaid expansion clause was unconstitutionally coercive and that the power of the Secretary of Health and Human Services needed to be constrained when it came to enforcing Medicaid expansion – the Secretary could not withhold federal funding for Medicaid if a state chose not to expand the program. If a state did not expand Medicaid ('non-expansion states'), they would only forfeit funding that would have assisted with Medicaid expansion, not funding to support already existing Medicaid programs. With this decision, states were then given the choice to expand Medicaid ('expansion states') or keep the program at its current eligibility levels. (11) This expansion went into effect on January 1, 2014. (12)

A coverage gap was created in states that did not expand Medicaid: individuals with low incomes that do not meet traditional Medicaid requirements, while also having incomes too low to qualify for tax credits to buy private insurance in the newly established Health Insurance Marketplace – credits are provided to those with incomes between 100 percent and 400 percent of the federal poverty line. (9) In 2016, the Kaiser Family Foundation issued a report showing that roughly half of the adults in this gap are women, and that 45 percent of people in this gap are between the ages of 19 to 34 and 38 percent are between the ages of 35 to 45. (13)

Pre-conception health and health care

Pre-conception health is defined as the health of individuals during the years a person

can have a child, their reproductive years. (14) For women of reproductive age, women ages 15 to 49 years, (15) pre-conception health care promotes services and interventions to improve health status and decrease any risk factors that may affect pregnancies in the future. (16) This is both primary and secondary prevention – the former, programs that focus on preventing diseases or injuries before they occur, such as family planning and immunizations; the latter, programs that focus on reducing the effect of diseases or injuries that have occurred, such as regular exams and screenings. (17) Roughly half of pregnancies in the United States are unintended – that is, the pregnancy was unwanted or mistimed. (18) Research shows that for some interventions, such as folic acid supplementation and limiting or eliminating exposure to drugs and alcohol, the impact is greatest when implemented prior to conception or early in pregnancy, before women even know they are pregnant or begin going to prenatal care. (19) Also, another study showed that receiving pre-conception care was associated with early entry into prenatal care (entering during the first trimester). (20) To address this, the Centers for Disease Control and Prevention (CDC) recommends women visit a primary care physician at least once a year (21) to discuss any medical conditions, vaccinations, and behaviors to achieve and maintain a healthy lifestyle, regardless if a woman is planning to get pregnant or not.

Inter-conception health, a part of pre-conception health, is the period after a woman gives birth and before she gets pregnant again, including the post-partum period. (22) Similarly, inter-conception health care is a part of pre-conception health care, specifically focusing on health services between pregnancies. (23) Providers, as well as patients, do not know if or when another pregnancy will occur; thus, any time after a woman gives

birth is a potential inter-conception period. Since women who have just given birth are currently accessing health care, this time period is an opportunity for providers to address any health issues or risk factors a mother has, particularly for those who would typically have limited or no access to care. For example, experiencing a preterm birth previously is a strong predictor for experiencing another preterm birth, among women who have given birth. (24) Additionally, providers can address contraceptive use to assist women in planning for the future, including pregnancy spacing. A recent study found that the use of a most or moderately effective contraceptive method postpartum was highest among women ages 18 to 24 at 65 percent, and lowest among women ages 35 to 44 at 51 percent. (25) By discussing risks and plans with women, providers can help mothers determine if and when they want to get pregnant again, and if so, have an intended, optimally-spaced pregnancy. (23)

There are multiple determinants that impact risk factors and care during the pre-conception period as well as during pregnancy. Denny et al. assessed five pre-conception risk factors among women of reproductive age by race and ethnicity: at-risk drinking (consuming more than seven drinks per week or four or more drinks on one occasion in the past month), smoking, obesity, diabetes, and frequent mental distress (reporting 14 or more days of not good mental health), and obesity was the most commonly reported. American Indian and Alaska Native women had the highest prevalence of women with two or more risk factors, women with less than a high school education, and women who were unable to work. (26) One study has shown that women who are unmarried, black, or with less education or income are more likely to have an unintended birth (18) and another found obesity to be a risk factor for preterm delivery in Caucasian women. (27)

Women with low income and reduced overall health status the month before getting pregnant was found to be associated with an increased risk for preterm labor. (19) By emphasizing the importance of pre-conception health, providers can work with women to address these factors and lower the risk of impacting a woman's pregnancy.

Pre-conception care and Medicaid

Low-income mothers are at risk for 'churning', the pattern of going from insured to uninsured or vice-versa, particularly for those that were only eligible for Medicaid during their pregnancy. Although Medicaid provides coverage through the 60-day postpartum period, women may become uninsured after this, thus unable to continue accessing resources during an inter-conception period. (28) Simon and Handler assessed welfare reform and insurance coverage of women during various points relative to giving birth, and results showed welfare reform having the strongest impact for women insured by Medicaid in the months after pregnancy. (29) Other studies have shown that access to Medicaid pre-pregnancy is associated with favorable mother's health outcomes. Stulberg et al. found that among Medicaid-enrolled mothers, both pre-pregnancy care and prenatal care were associated with a lower risk of pregnancy complications. (30) Rosenberg et al. found that women with Medicaid coverage prior to pregnancy was associated with entry into prenatal care within the first trimester. (31)

Prior to full implementation and to gather baseline data to assess the impact of the ACA, multiple researchers examined the state of health insurance in the U.S. Using 2000 to 2009 data of the Integrated Health Interview Series, Kozhimannil et al. found that 25 percent of women ages 18 to 49 that were not pregnant were uninsured at some time during the past year, with 19 percent responding currently uninsured. (32) D'Angelo et al.

used 2009 data of the Pregnancy Risk Assessment Monitoring System, and 23 percent of women reported having no insurance in the month before pregnancy, while 17 percent reported having Medicaid coverage before pregnancy. (28) The Commonwealth Fund assessed seven states' Medicaid agencies approaches to women's health, showing that prior to the passage of the ACA, at least 15 percent of women ages 19 to 64 were uninsured and a range of 8 percent to 13 percent were covered by Medicaid. Results demonstrated that roughly an additional 10 percent more women would be eligible if the state chose to expand Medicaid in 2014. (33)

After the Supreme Court decision and full implementation, researchers began to assess the impact of Medicaid expansion. Jones and Sonfield assessed the type of health insurance coverage among women of reproductive age before and after the ACA was implemented, conducting surveys in 2012 and 2015. The percentage of uninsured among low-income women (those at or below 138 percent of the FPL) in expansion states decreased by 60 percent while the percentage of Medicaid coverage increased by 55 percent – non-expansion states experienced no significant increase in coverage among low-income women. Also in expansion states, the percentage of uninsured women overall declined from 17 percent to 7 percent (p: 0.000), while in non-expansion states, the percentage of uninsured women was only marginally significant, 22 percent to 18 percent (p: 0.052). (34) Using National Health Interview Surveys from 2010 to 2014, Wherry and Miller found that when compared to non-expansion states, Medicaid coverage in expansion states increased by 11 percent. (35) Wehby and Lyu also assessed the impact using data from 2011 to 2015 of the American Community Survey finding that in expansion states, Medicaid coverage increased by 10 percent from 2011 to 2015 (18.1

percent to 28.1 percent), while in non-expansion states, there was a small increase in Medicaid coverage of 2 percent. The impact of expansion was greatest among those ages 19 to 26 and 27 to 35, and among Hispanics. (36) Angier et al. used electronic health data from 22 states from 2013 to 2015 to assess the disparities in primary care visits under the ACA. Visit rates of uninsured patients decreased among all racial and ethnic groups, and in expansion states, Hispanic patients had the largest increase in Medicaid-insured visit rates. (37)

While these studies highlight the impact of expansion on Medicaid enrollment or primary care visits, the effect on pre-conception health has not been assessed. Given the health insurance changes and recommendations for women of reproductive age, particularly for low-income women, it is important to understand the impact of expansion on women accessing health services prior to getting pregnant.

Chapter 2: Manuscript

Abstract

Background

The Affordable Care Act (ACA) was passed in 2010 and expanded Medicaid to all those with household incomes 138 percent below the federal poverty level. A ruling by the U.S. Supreme Court gave states the option of expanding the program, resulting in a coverage gap of uninsured low-income individuals that do not meet traditional Medicaid requirements and do not qualify for tax credits to buy insurance in marketplaces. For low-income women of reproductive age, this poses a challenge in accessing and utilizing pre-conception health care, services to improve health and decrease risk factors that may affect future pregnancies. This study seeks to understand the impact of expansion on the utilization of pre-conception health services by low-income women.

Methods

The difference-in-difference framework was utilized to analyze data from the Pregnancy Risk Assessment Monitoring System from 2012-2015. 26 sites were analyzed, utilizing questions about pre-conception care, income, and insurance. Prevalence of pre-conception care for pre-expansion versus post-expansion periods and non-expansion versus expansion sites were calculated. Variables in the adjusted model included year, maternal age, maternal race/ethnicity, maternal education, and income.

Results

Non-expansion sites had an increase of 1.1 percent (SE: 1.18) in pre-conception care visits, while expansion sites had a 1.7 percent (SE: 0.90) increase. While there was a smaller increase in pre-conception care visits among non-expansion sites versus

expansion sites, it was not statistically significant (DD estimate: -0.01, p-value: 0.54). Non-expansion sites had a decrease of 3.3 percent (SE: 1.45) in uninsurance and a 0.7 percent (SE: 1.55) increase in Medicaid enrollment, while expansion sites had a 10.6 percent (SE: 0.96) decrease in uninsurance and an 11.3 percent (SE: 1.13) increase in Medicaid enrollment.

Conclusion

Although not statistically significant, this study showed there was an increase in pre-conception care visits among non-expansion and expansion sites, with a smaller increase among non-expansion sites.

Introduction

Medicaid provides health coverage to federally recognized groups, including people with low-income and pregnant mothers. It is a federal-state partnership in which states, the District of Columbia, and territories provide coverage and the federal government matches expenses based on the federal medical assistance percentage (FMAP). (2) In 2010, the Affordable Care Act (ACA) was passed, which established rights and protections for health coverage and expanded Medicaid to all those with household incomes 138 percent below the federal poverty level (FPL), effectively providing health coverage to low-income non-elderly adults. (8-10) However, in *National Federation of Independent Business v. Sebelius*, the U.S. Supreme Court ruled that the Medicaid expansion clause was unconstitutionally coercive – the Secretary of Health and Human Services could withhold funding that would be used to assist in Medicaid expansion, but could not withhold funding that would be used to support already existing Medicaid programs. (11) This created a coverage gap in non-expansion states, or states that did not

expand Medicaid: individuals with incomes that do not meet traditional Medicaid requirements while also having incomes too low to qualify for tax credits to buy insurance in the health insurance marketplaces. (9)

Pre-conception health care encourages health services during the time a person can have children. (14) For women of reproductive age, women ages 15 to 49 years, (15) this includes accessing health services and identifying any risk factors that may affect a future pregnancy. (16) An important part of pre-conception health care is inter-conception care, addressing the period after a woman gives birth and before she gets pregnant again, (22) since providers have an opportunity to address any health issues or risk factors a mother has, especially among populations that typically have limited access to care. Interventions such as folic acid supplementation and limiting or eliminating exposure to drugs and alcohol have been shown to be most impactful when implemented prior to conception or early in pregnancy. (19) For women that have just given birth, discussing contraceptive methods can help mothers plan for future intended pregnancies that are optimally-spaced, or prevent having future pregnancies. (23) The Centers for Disease Control and Prevention (CDC) recommends that women visit a primary care physician at least once a year (21) to address any potential health problems and maintain a healthy lifestyle.

Access to Medicaid is important to women's health. One study found that Medicaid coverage prior to pregnancy is associated with a lower risk of complications (30) and another found it to be associated with entry into prenatal care within the first trimester. (31) Prior to full implementation of the ACA, the percent of uninsured women of reproductive age was between 23 percent to 25 percent. (28, 32) After implementation, expansion states have shown decreases in the percent of uninsured, low-income women,

with corresponding increases in Medicaid enrollment. (34-37) As more low-income women of reproductive age enroll in Medicaid, it is important to determine if health services are being utilized, particularly for pre-conception and inter-conception care. This study seeks to understand the impact of Medicaid expansion on the utilization of pre-conception health services by low-income women.

Methods

Data source

Pregnancy Risk Assessment Monitoring System (PRAMS) is a population-based pregnancy and birth surveillance system administered by the CDC Division of Reproductive Health through cooperative agreements with state health departments that assesses maternal behaviors and experiences before pregnancy, during pregnancy, and postpartum. (28) Women who recently had a live birth are first contacted by mail and sent the questionnaire. Two other questionnaire packets are sent if the mother does not respond, followed by telephone calls. Questionnaires are sent 2 to 4 months after delivery. Each participating site samples between 1,300 and 3,400 women each year from the state's birth certificate file. Every month, sites draw a stratified systematic sample of 100 to 250 mothers, and most sites oversample higher risk populations to ensure adequate data are available. The analysis weight is calculated using sampling fractions that are applied to different strata, nonresponse weights, and noncoverage weights. (38)

Data from 2012, 2013, 2014, and 2015 from Phase 7 of PRAMS was used. Sites that met a response rate of 60 percent were available for 2012 and 2013, and sites that met a response rate of 55 percent were available for 2015. To properly analyze the complex survey design of PRAMS, data was analyzed using SAS-callable SUDAAN 11.0.1.

Sample

The outcome variable for this analysis, visiting a health care worker (HCW) during the 12 months before getting pregnant, assesses the year prior to delivery; therefore 2015 rather than 2014 data was selected to assess post-ACA expansion. 2014 data was excluded since the responses would assess both pre-ACA and post-ACA expansion (e.g., mothers that delivered in January 2014 would answer about visiting a HCW in early 2013, while mothers that delivered in December 2014 may refer to a time period in early 2014). 2012 and 2013 data were selected to assess pre-ACA expansion. A total of 41 sites participated in PRAMS in 2015, 41 in 2013, and 38 in 2012. From this, 34 sites were available for release from 2015, 31 were available from 2013, and 29 were available from 2012. 29 sites had data available from either 2012 or 2013 and 2015.

Expansion sites were determined by status of Medicaid expansion on January 1, 2014. (39) Of the 29 sites, four expanded Medicaid using Section 1115 waivers, rather than expanding Medicaid via the ACA (Arkansas (40), Iowa, Michigan, and New Hampshire) and five expanded Medicaid after this date (Alaska, Maine, Michigan, New Hampshire, and Pennsylvania). Using Section 1115 waivers expanded health coverage to the same population as the ACA's Medicaid expansion did, but with specific differences in the programs. In Arkansas, Medicaid funds are used to purchase private health insurance plans in the health exchange for newly eligible adults below 138 percent FPL, (41) therefore Arkansas is included in the sample as an expansion site, as the waiver took into effect on January 1, 2014. Iowa also used Medicaid funds to purchase private health insurance plans through the health exchange but for those who are in the Medicaid coverage gap, and this went into place on January 1, 2014. However, in October 2014,

the waiver was adjusted to make enrollment in the health exchange voluntary, thus people could either chose insurance from the marketplace or they were enrolled in the state's Medicaid program. Although they still had access to care, this change may have led to confusion about eligibility for health insurance, therefore Iowa is excluded from the analysis. (42) In Michigan, Medicaid was expanded to those with incomes 138 percent and below FPL, similar to expansion through the ACA, but those with incomes 100 to 138 percent FPL have different stipulations regarding premiums and cost sharing than those at or below 100 percent FPL. Michigan is excluded from analysis as the waiver went into effect on April 1, 2014. (43) Similar to Arkansas and Iowa, New Hampshire expanded Medicaid by using Medicaid funds to cover health exchange insurance plans for those with incomes below 138 percent FPL. Since New Hampshire's waiver went into effect on August 15, 2014, it is also excluded from the analysis. (44) Alaska and Pennsylvania expanded in 2015, thus are included in the sample as non-expansion sites. Maine voted to expand Medicaid in 2017 and is also included in the sample as a non-expansion site.

Therefore, 26 sites were included in the sample and are listed in Table 1. Among these 26 sites, mothers that responded "Yes" or "No" to the question "Before you got pregnant with your new baby, did a doctor, nurse, or other health care worker talk to you about how to improve your health before pregnancy?" were included in the sample. Low-income status was determined using poverty guidelines issued by the Department of Health and Human Services. (45) The PRAMS questionnaire includes a question "During the 12 months before your new baby was born, what was your yearly total household income before taxes?" and "During the 12 months before your new baby was born, how

many people, including yourself, depended on this income?" Mothers that answered an income range that was 138 percent below the poverty guidelines for the number of dependents they reported were determined to be low income.

A restricted analysis utilized the PRAMS question "During the month before you got pregnant with your new baby, what kind of health insurance did you have? Check ALL that apply." Three answer categories were developed: Medicaid (only, with another insurance), other insurance, and no insurance. Low-income mothers that answered Medicaid only or Medicaid and another insurance were included in the restricted sample. This allows for comparison of low-income mothers that were enrolled in Medicaid in non-expansion versus expansion sites, between the pre-expansion and post-expansion period.

Variables

The treatment variable (EXP) is derived from the status of Medicaid expansion of the state a mother lived (39). The outcome variable measuring pre-conception care is derived from the mother's answer to the question "Before you got pregnant with your new baby, did a doctor, nurse, or other health care worker talk to you about how to improve your health before pregnancy?" The time period dummy variable (POST) is derived from the year the mother completed the survey. Demographic variables are listed in Table 2 to evaluate the exchangeability of the non-expansion and expansion sites including maternal age (less than 20, 20-24, 25-29, 30-34, 35-39, older than 39), maternal race/ethnicity (Non-Hispanic White, Non-Hispanic Black, Hispanic, Non-Hispanic Other), maternal education (less than high school, high school, more than high school), marital status

(married, other), parity (nulliparous, parous), income[2] ($0 to $18,000, $18,001 to $30,000, $30,001 to $50,000, $50,001 or more) and self-reported insurance during the month before getting pregnant (Medicaid (only, with another insurance), other insurance, no insurance),

and.

Difference-in-differences method

The difference-in-differences (DD) framework was chosen to estimate the difference in the proportion of mothers that visited a HCW in the 12 months before getting pregnant between non-expansion and expansion sites. The DD model assumes there are parallel trends in the outcome variable – if the ACA was not passed, the proportion of women visiting a HCW in the 12 months before getting pregnant, would have progressed in the same way between the treatment and control groups, expansion and non-expansion sites. Under this assumption, any difference between the two can therefore be attributed to the ACA's Medicaid expansion. To validate this method, trends of the outcome variable prior to the intervention, years 2012, 2013, and 2014, were examined to ensure trends are not differential. (46, 47) Additionally, a sensitivity analysis was conducted using a subset of the sample. Prior to the implementation of the ACA's Medicaid expansion, several states had already expanded Medicaid coverage to different groups. The sensitivity analysis sample excludes these sites, and this is noted with a subscript in Table 1. (47)

The regression model for the effect of expansion on the outcome is a function of the treatment variable (EXP), a dummy variable for the time period (POST), and the interaction between the two terms (EXP*POST), along with maternal characteristics. The

[2] 40 income ranges were available, these 4 income ranges were chosen as best encompassing of the ranges and best illustrative for this study.

treatment variable (EXP) indicates whether the mother lived in a site that expanded Medicaid, the dummy variable for time period (POST) indicates if the time period the outcome variable refers to is pre-expansion or post-expansion.[3] The variable YEAR takes into account year fixed effects and state fixed effects are accounted through a nested variable in SUDAAN (not shown in model). (36) The outcome variable (Y_{ist}) indicates if a mother *i*, in state *s*, visited a HCW in the year *t*, before getting pregnant. Maternal age (M_AGE), maternal race/ethnicity (M_RACETH), mother's education level (M_EDU) and mother's household income (INCOME) are included to control for differences between the groups, as they are associated with the outcome variable.

$$Y_{ist} = \alpha + \beta_1 EXP_s + \beta_2 POST_t + \gamma_1 YEAR_t + \gamma_2 M\_AGE_i + \gamma_3 M\_RACETH_i + \gamma_4 M\_EDU_i + \gamma_5 INCOME_i + \delta_1 * EXP_s * POST_t + \varepsilon_{ist}$$

$$i = individual\ mother, s = state, t = year$$

Since the outcome variable is dichotomous, logistic regression was used for analysis. To assess the DD effect estimate, the predicted marginal prevalence for each combination of the interaction term was computed. Then the contrasts between the pre-expansion and post-expansion periods for each group was computed, and then finally the DD effect estimate, or the test for additive interaction. (48) The predicted marginal approach was chosen rather than conditional marginal approach to allow the values of the other covariates to differ for each observation rather than assigning an average value. (49)

Results

Descriptive Summaries

[3] The outcome variable, visiting a health care worker in the year before getting pregnant, assess the year prior to the year the data was collected, therefore 2014 will be considered a pre-expansion year. Responses from 2015 will indicate that the mother had access to Medicaid after full implementation.

Among the 26 sites in the eligible years, a total of 91,935 mothers responded to the pre-conception care question on the PRAMS survey, then the sample was restricted to low-income mothers resulting in a sample of 33,720 mothers. The prevalence of low-income mothers visiting a HCW in the 12 months before getting pregnant for each site is listed in Table 1. Pre-expansion, the prevalence for non-expansion sites ranged from 11.5 percent (Wyoming) to 20.1 percent (Wisconsin), a spread of 8.6 percentage points, while expansion sites ranged from 10.6 percent (West Virginia) to 29.8 percent (Hawaii), spreading over 19.2 percentage points. Post-expansion, non-expansion sites ranged from 10.4 percent (Maine) to 21.0 percent (Pennsylvania), a spread of 10.4 percentage points, while expansion sites ranged from 14.1 percent (Ohio) to 27.9 percent (Massachusetts), spreading over 13.8 percentage points.

Socio-demographic information of the sample is listed in Table 2. For both non-expansion and expansion sites, over half of low-income mothers were between ages 20 to 29, in both the pre-expansion period and post-expansion period. The largest group of low-income mothers among maternal race/ethnicity is non-Hispanic white for both groups and both time periods. The second largest maternal race/ethnicity group for non-expansion sites is non-Hispanic black for both time periods, while for expansion sites, the largest group is Hispanic for both time periods. Most low-income mothers in the sample have a high school education, are not married, have given birth before, and reported having an income between $0 to $18,000 and these proportions are comparable across groups and time periods. For both non-expansion and expansion sites and both time periods, the highest percentage of low-income mothers reported having Medicaid as their insurance the month before getting pregnant, and this increased from pre-expansion to

post-expansion.

Descriptive Trends

Figure 1 shows the percentage of low-income mothers reporting visiting a HCW in the 12 months before getting pregnant for the years 2012, 2013, 2014, and 2015. Data from New York State in 2012, Ohio in 2013 and Arkansas, Colorado, and Oregon in 2014 were missing and not included in the calculations. Despite a difference between non-expansion and expansion sites in 2013, this difference was less than 5 percent, and since the proportions for 2012 and 2014 are similar, there is no strong evidence that the parallel trends assumption was not met, thus the DD model can be used. (46)

Analysis of the Sample

During the pre-expansion period, 16.7 percent of low-income mothers in non-expansion sites reported visiting a HCW in the 12 months before getting pregnant, while 19.2 percent of mothers reported this in expansion sites. During the post-expansion period, this increased by 1.1 percentage points (standard error: 1.18) to 17.8 percent in non-expansion sites and increased by 1.7 percentage points (standard error: 0.90) to 20.9 percent in expansion sites. Multivariable analysis was conducted for the sample (Table 3). The difference in the predicted marginal prevalence of pre-conception care between the two time periods in non-expansion sites is 0.01 (p-value: 0.27) and the difference in expansion sites is 0.02 (p-value: 0.02). The difference between these two, the DD estimate, is -0.01 (p-value: 0.54).

Sensitivity Analysis

A sensitivity analysis was conducted to assess whether the results of the sample were sensitive to sites that already partially expanded their Medicaid programs. (Table 4) The

sample for this analysis excluded sites with full or partial expansions to their Medicaid programs prior to January 1, 2014 (noted in Table 1) resulting in a sample of 22,745 low-income mothers from 17 sites. Low-income mothers in non-expansion sites reported visiting a HCW in the 12 months before getting pregnant at 16.3 percent in the pre-expansion period, and 18.0 percent in the post-expansion period (an increase in 1.8 percentage points, standard error: 1.32). In expansion sites, 18.2 percent of low-income mothers reported this in the pre-expansion period and 19.1 percent in the post-expansion period (an increase in 0.9 percentage points, standard error: 1.1). Multivariable analysis was also conducted for this sensitivity analysis sample. The difference in the predicted marginal prevalence of pre-conception care between the two time periods in non-expansion sites is 0.02 (p-value: 0.13) and is also 0.02 (p-value: 0.20) in expansion sites. The difference between these two, the DD estimate, is 0.01 (p-value: 0.74).

Analysis of the Restricted Sample

A restricted analysis was conducted of low-income mothers that reported having Medicaid or Medicaid and another insurance during the month before getting pregnant, resulting in a sample of 16,092 mothers from 26 sites (Table 5). In non-expansion sites, 23.4 percent of low-income mothers enrolled in Medicaid reported visiting a HCW in the 12 months before getting pregnant in the pre-expansion period, and this increased to 24.2 percent in the post-expansion period (an increase of 0.8 percentage points, standard error: 2.12). In expansion sites, 23.2 percent of low-income mothers enrolled in Medicaid reported this in the pre-expansion period, and in the post-expansion period this increased slightly to 23.3 percent (an increase of 0.2 percentage points, standard error: 1.32). Multivariable analysis was also conducted for this subset of the sample. The difference in

the predicted marginal prevalence of pre-conception care between the time periods in non-expansion sites is 0.01 (p-value: 0.72) and the difference in expansion sites is also 0.01 (p-value: 0.39). The difference between these two, the DD estimate, is -0.00 (p-value: 0.86).

Discussion

Both the analysis of the full sample and sensitivity analysis showed similar results – there was an increase in low-income mothers accessing pre-conception care after Medicaid expansion. Although the sensitivity analysis showed a more pronounced increase among non-expansion sites and a less pronounced increase among expansion sites, this shows the impact of any type of Medicaid expansion on pre-conception care. This aligns with previously mentioned literature – that Medicaid reform is associated with a positive impact on the health of and access to care for pregnant women and mothers. (29-31) Neither of the multivariable analyses found a statistically significant DD estimate, however the effect of the post-expansion versus pre-expansion period on pre-conception care in expansion sites in the analysis of the full sample was statistically significant, which reflects the expected impact of Medicaid expansion – in sites that expanded Medicaid, there was an impact on the utilization of pre-conception care.

Assessing the impact of Medicaid policy changes is challenging. Jarlenski et al. looked at the effect of a pre-ACA Medicaid policy change that targeted low-income women. They found one policy to be associated with a decrease in smoking cessation (presumptive eligibility, which allowed pregnant women to receive care while their Medicaid application was being processed), but it was not associated with adverse birth outcomes, and the other policy (the “unborn child” option, allowing pregnant women

who could not provide documentation of citizenship or residency to access care) was not found to be associated with any outcomes. (50) This may be due to the fact that the policies had been implemented for varying years across each state (from 3 to 7 years), and each state had a choice in which policies to implement. Additionally, data from 6 different years, 2004 to 2010, were used in the analysis. Since policies and data available varied between states and years, it would be difficult to assess the true impact of this policy change on their target population.

There are some recent studies that have found seemingly conflicting results regarding Medicaid expansion. Nasseh and Vujicic compared pre-ACA use of dental care to post-ACA use, and while they found moderate increases in use in expansion states with adult dental benefits (between 2 and 6 percent), most were not statistically significant. (51) These findings may be due to the time period between implementation of Medicaid expansion and the time of data collection. Nasseh and Vujicic used data collected for three different time periods post-expansion, however these time periods were all within the first year of implementation and included the open enrollment period beginning in October 2013. Similarly, this study used data collected in 2015, which assessed mothers' health care visits and insurance status of the year prior, the first year of Medicaid expansion. Another study, on the other hand, used data from the first 3 quarters of 2013 for pre-ACA information and data from December 2014, March 2015, and September 2015 for post-ACA information. They looked at the impact of expansion on adults with disabilities and employment and found that compared to non-expansion states, adults with disabilities were statistically significantly more likely to be employed. (52) As more time passes since implementation of the ACA's Medicaid expansion, researchers will be

able to more accurately determine the impact of the policy change.

The restricted analysis allows for comparison of a population of newly eligible and enrolled mothers with previously eligible and enrolled mothers, to a population of just previously eligible and enrolled mothers. The utilization of pre-conception care between these groups was similar to the full sample and the sensitivity analysis sample – there was an increase in mothers that visited a HCW in the year before getting pregnant in non-expansion sites and expansion sites. Compared to the other analyses, this was the smallest increase observed in both groups. This may be due to one of the expansion sites increasing coverage through Section 1115 waivers, rather than the ACA, thus these mothers would enroll in a private plan rather than Medicaid. These proportions are similar across time periods and expansion groups and show that less than a quarter of low-income, Medicaid enrolled mothers are utilizing pre-conception care. These proportions are even lower in the full sample and the sensitivity analysis sample, highlighting the need for increased efforts in targeting low-income women of reproductive age to understand the importance of pre-conception health services.

The data from the full sample show an increase in the proportion of low-income mothers reporting Medicaid as a type of health insurance in the month before getting pregnant. In non-expansion sites, there was a 0.7 percent increase in mothers reporting Medicaid as their insurer (standard error: 1.55), from 40.0 percent in the pre-expansion period to 40.6 percent in the post-expansion period, while in expansion sites, 56.3 percent of mothers reported this in 2015, an 11.3 percent increase (standard error: 1.13) from 45 percent in the pre-expansion period. The change in the proportion of women reporting no health insurance between the two groups showed an expected, opposite pattern: in non-

expansion sites, there was a 3.3 percent decrease (standard error: 1.45) in uninsurance, from 33.1 percent in in the pre-expansion period to 29.8 percent in the post-expansion period, and in expansion sites, there was a 10.6 percent decrease (standard error: 0.96) from 31.4 percent in the pre-expansion period to 21.0 percent in the post-expansion period. This is similar to other recent studies. McMorrow et al. found that in non-expansion states, uninsurance rates of low-income parents decreased by around 11 percent, while in expansion states, this decreased by 13 percent, although neither were statistically significant. (53) Decker et al. and Sommers et al. both found that uninsurance rates among low-income adults declined in both groups, but there was a steeper decline in expansion states. (54, 55)

This study has some limitations. Since pre-conception care was self-reported there is a possibility of misclassification of the outcome as well as recall bias, as this was assessed a year after the potential visit occurred. Multiple factors can impact a woman's utilization of pre-conception health services and remembering whether she utilized these services can be impacted by additional factors, such as availability of appointments, reason for an appointment, or rapport with the health care worker. Income was also self-reported, and mothers were asked to select their income among a list of ranges, which was later categorized broadly as low income. Therefore, the restricted sample included mothers below 100 percent FPL, who would have been eligible for Medicaid regardless of the ACA, thus the estimates should be interpreted with caution. Additionally, the PRAMS questionnaire contained other questions concerning pre-conception health, therefore analysis incorporating additional questions may result in different estimates. Also, data were not available for all states, districts, and territories, thus these results are not

generalizable to the entire U.S. population.

Conclusion

This study finds small increases in the proportion of low-income mothers with a pre-conception care visit in both non-expansion and expansion sites, with a greater increase observed in expansion sites, although these differences are not statistically significant. It also shows a decrease in mothers reporting no health insurance, and an increase in mothers reporting Medicaid as their insurance, with expansion sites showing greater differences between the pre-expansion and post-expansion period. This is similar to other literature concerning the impact of the ACA's Medicaid expansion and the utilization of health services and rates of uninsurance. These findings highlight the need for continued efforts in educating women of reproductive age of the importance of accessing pre-conception health services, especially Medicaid-enrolled and Medicaid-eligible populations, to ensure they are in optimal health and prepared to deliver a healthy baby.

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Table 1. Summary of Medicaid Expansions and Sample (39) (n=26)					
	Date of Expansion	**Prevalence of a Visiting a HCW (2012, 2013)**		**Prevalence of visiting a HCW (2015)**	
		N	**% (SE)**	**N**	**% (SE)**
Non-expansion sites (n=10)					
Alaska	9/1/2015	562	19.6 (2.0)	340	13.9 (2.0)
Maine[4]	Voted to expand Medicaid in 2017	612	16.2 (1.8)	251	10.4 (2.3)
Missouri	Did not expand	846	16.9 (1.5)	434	16.3 (2.1)
Nebraska	Did not expand	1,093	17.9 (1.4)	531	17.5 (2.1)
Oklahoma	Did not expand	1,478	14.5 (1.7)	833	19.6 (2.4)
Pennsylvania	1/1/2015	509	17.4 (2.0)	301	21.0 (2.9)
Tennessee	Did note expand	721	14.6 (1.7)	462	15.9 (2.4)
Utah	Did not expand	1,082	18.1 (1.5)	469	18.8 (2.3)
Wisconsin[4]	Did not expand, but covers up to 95% FPL	1,548	20.1 (1.8)	674	17.6 (2.2)
Wyoming	Did not expand	404	11.5 (2.0)	199	13.6 (3.0)
Expansion sites (n=16)					
Arkansas	1/1/2014	1,117	17.1 (2.0)	518	18.3 (2.4)
Colorado	1/1/2014	923	16.8 (1.8)	558	17.2 (2.3)
Delaware[4]	1/1/2014	822	18.8 (1.4)	348	19.6 (2.2)
Hawaii[4]	1/1/2014	743	29.8 (2.2)	416	26.3 (2.9)
Illinois	1/1/2014	791	19.8 (1.6)	510	21.7 (2.0)
Maryland	1/1/2014	631	21.5 (2.0)	353	23.1 (2.7)
Massachusetts[4]	1/1/2014	933	23.4 (1.8)	400	27.9 (2.7)
New Jersey	1/1/2014	582	17.1 (1.8)	312	22.5 (2.7)
New Mexico	1/1/2014	1,281	23.5 (1.3)	643	23.8 (1.7)
New York City[4]	1/1/2014	1,001	23.7 (1.7)	510	27.2 (2.1)
New York State[4]	1/1/2014	499	14.8 (2.6)	277	22.3 (3.3)
Ohio	1/1/2014	543	16.8 (1.9)	371	14.3 (2.4)
Oregon	1/1/2014	963	16.1 (1.7)	586	16.9 (2.2)
Vermont[4]	1/1/2014	548	14.9 (1.6)	252	19.1 (2.6)
Washington[4]	1/1/2014	716	17.9 (1.9)	425	18.8 (2.3)
West Virginia	1/1/2014	1,238	10.6 (1.2)	561	14.8 (2.1)

[4] Had partial expansions or full expansions prior to Medicaid expansion implementation, excluded in sensitivity analysis

Table 2. Socio-Demographic Information and Prevalence of Visiting a HCW in the 12 Months Before Getting Pregnant (2012-2015)								
	Mothers responding before Medicaid expansion				Mothers responding one year after Medicaid expansion			
	Non-Expansion		Expansion		Non-Expansion		Expansion	
	N	% (SE)	N	% (SE)	N	% (SE)	N	% (SE)
PCC visit								
Yes	1,689	16.7 (0.7)	2,722	19.2 (0.5)	885	17.8 (1.0)	1,543	20.9 (0.7)
No	7,166	83.3 (0.7)	10,609	80.8 (0.5)	3,609	82.2 (1.0)	5,497	79.1 (0.7)
Maternal age								
< 20	1,218	14.2 (0.7)	1,718	10.4 (0.4)	495	11.0 (0.8)	649	9.2 (0.6)
20-24	3,087	35.8 (0.9)	4,254	32.2 (0.6)	1,463	35.4 (1.2)	2,103	30.0 (0.9)
25-29	2,326	27.5 (0.8)	3,566	28.7 (0.6)	1,252	27.0 (1.1)	2,000	29.0 (0.8)
30-34	1,440	14.6 (0.6)	2,403	18.0 (0.5)	845	17.8 (1.0)	1,381	18.8 (0.7)
35-39	622	6.5 (0.5)	1,089	8.6 (0.4)	351	7.2 (0.7)	742	10.1 (0.5)
> 39	161	1.3 (0.2)	300	2.1 (0.2)	88	1.6 (0.3)	165	3.0 (0.3)
Maternal race/ethnicity								
Non-Hispanic White	3,792	56.5 (0.9)	4,344	37.6 (0.6)	1,888	56.1 (1.2)	2,285	40.1 (0.9)
Non-Hispanic Black	1,932	18.1 (0.7)	2,541	18.8 (0.6)	945	18.0 (1.0)	1,291	17.5 (0.6)
Hispanic	1,555	16.4 (0.7)	3,841	32.7 (0.6)	799	15.4 (0.8)	2,092	31.4 (0.8)
Non-Hispanic Other	1,576	9.0 (0.5)	2,605	11.0 (0.4)	862	10.5 (0.7)	1,372	10.9 (0.5)
Maternal education								
< High school	456	5.2 (0.4)	780	7.3 (0.4)	222	4.0 (0.5)	407	6.2 (0.4)
High school	5,295	61.0 (0.9)	7,912	57.0 (0.7)	2,627	59.3 (1.2)	3,892	55.8 (0.9)
> High school	2,908	33.8 (0.9)	4,485	35.7 (0.7)	1,584	36.7 (1.2)	2,689	38.1 (0.9)

Marital status								
Married	3,122	33.5 (0.9)	4,752	37.7 (0.7)	1,640	34.0 (1.2)	2,632	37.6 (0.9)
Other	5,724	66.5 (0.9)	8,563	62.3 (0.7)	2,845	66.0 (1.2)	4,193	62.4 (0.9)
Parity								
Nulliparous	3,033	35.5 (0.9)	4,793	34.7 (0.7)	1,433	33.0 (1.2)	2,357	33.5 (0.9)
Parous	5,691	64.5 (0.9)	8,313	65.3 (0.7)	3,009	67.1 (1.2)	4,586	66.5 (0.9)
Income								
$0-$18,000	6,965	80.6 (0.7)	10,616	79.5 (0.6)	3,196	72.7 (1.1)	5,208	72.6 (0.8)
$18,001 to $30,000	1,572	16.4 (0.7)	2,338	17.7 (0.5)	1,075	22.7 (1.0)	1,586	24.0 (0.8)
$30,001 to $50,000	308	3.0 (0.3)	372	2.8 (0.2)	219	4.6 (0.5)	237	3.1 (0.3)
$50,001 or more	10	0.1 (0.1)	5	0.0 (0.0)	4	0.8 (0.1)	9	0.3 (0.1)
Insurance								
Medicaid (only, with another insurance)	3,789	40.0 (0.9)	6,205	45.0 (0.7)	1,939	40.6 (1.3)	4,159	56.3 (0.9)
Other insurance	2,237	26.9 (0.8)	3,195	23.6 (0.6)	1,249	29.6 (1.2)	1,551	22.9 (0.8)
None	2,787	33.1 (0.9)	3,885	31.4 (0.6)	1,283	29.8 (1.2)	1,315	21.0 (0.7)

Table 3. Difference-in-differences analysis of the ACA's Medicaid expansion and self-reported pre-conception health care among low-income mothers (PRAMS, 2012-2015)

Predicted Marginal Prevalence (PMP)

Variables	PMP (SE)	95% CI
Non-expansion sites, pre-expansion	0.17 (0.01)	0.16, 0.19
Non-expansion sites, post-expansion	0.19 (0.01)	0.17, 0.21
Expansion sites, pre-expansion	0.18 (0.01)	0.17, 0.19
Expansion sites, post-expansion	0.21 (0.01)	0.19, 0.22

Contrasted Predicted Marginal Prevalence

	Contrasted PMP (SE)	Test Statistic	P-value
Effect of post vs. pre in non-expansion sites	0.01 (0.01)	1.09	0.2741
Effect of post vs. pre in expansion sites	0.02 (0.01)	2.33	0.0195
Test for additive interaction: difference-in-difference estimate	-0.01 (0.02)	-0.61	0.5411

Table 4. Analysis of the ACA's Medicaid expansion and self-reported pre-conception health care among low-income mothers, excluding sites with expansions prior to January 1, 2014 (PRAMS, 2012-2015)

Descriptive Analysis

	Mothers responding before Medicaid expansion				**Mothers responding one year after Medicaid expansion**			
	Non-Expansion		Expansion		Non-Expansion		Expansion	
	N	% (SE)	N	% (SE)	N	% (SE)	N	% (SE)
PCC Visit								
Yes	1,195	16.3 (0.8)	1,507	18.2 (0.7)	679	18.0 (1.1)	908	19.1 (0.9)
No	5,500	83.7 (0.8)	6,562	81.8 (0.7)	2,890	82.0 (1.1)	3,504	80.9 (0.9)

Multivariable Analysis

Predicted Marginal Prevalence (PMP)

	PMP (SE)	95% CI
Non-expansion sites, pre-expansion	0.17 (0.01)	0.15, 0.18
Non-expansion sites, post-expansion	0.19 (0.01)	0.17, 0.21
Expansion sites, pre-expansion	0.17 (0.01)	0.16, 0.19
Expansion sites, post-expansion	0.19 (0.01)	0.17, 0.21

Contrasted Predicted Marginal Prevalence

	Contrasted PMP (SE)	Test Statistic	P-value

Effect of post vs. pre in non-expansion sites	0.02 (0.01)	1.52	0.1291
Effect of post vs. pre in expansion sites	0.02 (0.01)	0.01	0.1971
Test for additive interaction: difference-in-difference estimate	0.01 (0.02)	0.33	0.7435

Table 5. Analysis of the ACA's Medicaid expansion and self-reported pre-conception health care among low-income mothers enrolled in Medicaid (PRAMS, 2012-2015)

Descriptive Analysis

	Mothers responding before Medicaid expansion				**Mothers responding one year after Medicaid expansion**			
	Non-Expansion		Expansion		Non-Expansion		Expansion	
	N	% (SE)	N	% (SE)	N	% (SE)	N	% (SE)
PCC Visit								
Yes	944	23.4 (1.3)	1,620	23.2 (0.8)	519	24.2 (1.7)	1,039	23.3 (1.1)
No	2,845	76.6 (1.3)	4,585	76.9 (0.8)	1,420	75.8 (1.7)	3,120	76.7 (1.1)

Multivariable Analysis

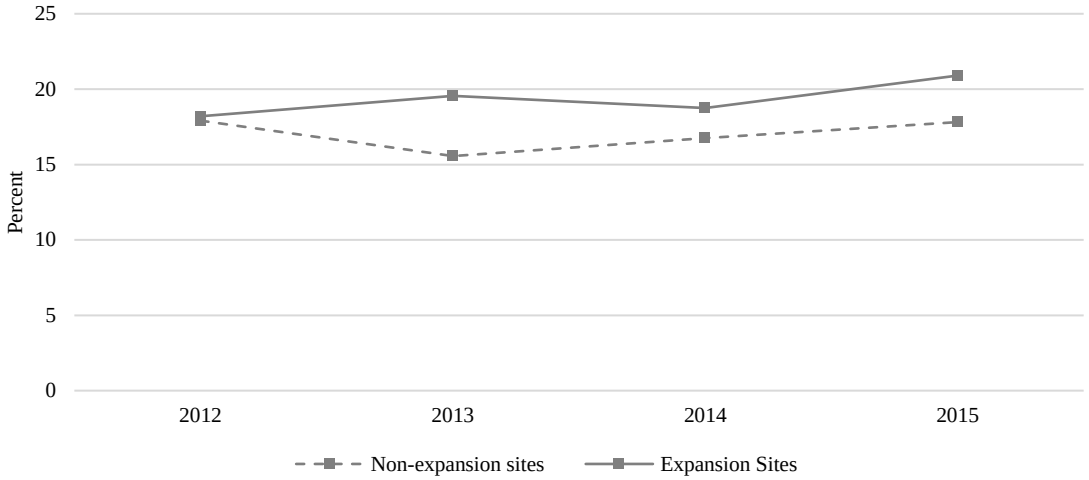
Predicted Marginal Prevalence (PMP)

	PMP (SE)	95% CI
Non-expansion sites, pre-expansion	0.25 (0.01)	0.23, 0.28
Non-expansion sites, post-expansion	0.22 (0.01)	0.20, 0.24
Expansion sites, pre-expansion	0.26 (0.02)	0.22, 0.30
Expansion sites, post-expansion	0.23 (0.01)	0.21, 0.25

Contrasted Predicted Marginal Prevalence

	Contrasted PMP (SE)	Test Statistic	P-value
Effect of post vs. pre in non-expansion sites	0.01 (0.02)	0.36	0.7199
Effect of post vs. pre in expansion sites	0.01 (0.01)	0.87	0.3850
Test for additive interaction: difference-in-difference estimate	-0.00 (0.03)	-0.18	0.8562

Figure 1. Prevalence of Women Visiting a HCW in the 12 Months Before Getting Pregnant (2012-2015) by Medicaid Expansion



Chapter 3: Summary

Extended Discussion

Other researchers have assessed the impact of the ACA's Medicaid expansion on utilizing care. Johnston et al., found that after the ACA's Medicaid expansion, women without dependent children were less likely to report not having a personal doctor (56) and Selden et al. found that among nonelderly adults with family incomes in the coverage gap, rates of having seen a primary care physician increased in both non-expansion and expansion states. (57) McMorrow et al. specifically looked at the impact of Medicaid expansion on parents. They assessed the impact of a 100 percentage point increase in the eligibility threshold of a state, since eligibility varied across states before the ACA's Medicaid expansion, and found some evidence that among states with the smallest expansions, there was increased use of care. (53) Similar to this study, these studies looked at populations that would be most affected by Medicaid expansion, and found similar results, that there is an increase in utilizing health services. These results also align with the findings of Xinxin et al., where they assessed visits to federally funded community health centers in non-expansion and expansion states, where Medicaid serves as their largest funding source. They found statistically significant differences in visits overall and in mental health visits, with expansion states having an increased amount. (58) As more time passes since Medicaid expansion implementation, we can more accurately assess the impact of the expansion on utilizing health services as well as the impact on health facilities.

Studies have begun to also assess access to care. Tipirneni et al. found that available appointments for new Medicaid patients in Michigan, an expansion state, increased by 6

percentage points, and among these appointments, a larger percentage were scheduled with non-physician providers (nurse practitioners or physician assistants). (59) Despite an increase in the number of people eligible for Medicaid, accessing care was not found to be an issue. A different study found that low-income parents in expansion states had significant decreases in severe psychological distress, (53) showing that access to care can have positive impacts on mental well-being. Selden et al. however, found that in expansion states, nonelderly adults with family incomes in the coverage gap reported delays in receiving care due to long wait times to schedule a visit or see the doctor, both of which were found to be marginally significantly different. (57) While various studies have shown the increase in utilizing health care in Medicaid expansion states, this evidence highlights the need to also assess the steps in between being eligible for health coverage and utilizing health services, such as accessing care.

Implications and Future Directions

One of the limitations of this study is that the outcome of utilizing pre-conception care visits is self-reported. Nguyen et al. found that although self-reported health and access to health care was similar between non-expansion states and expansion states, data also showed that in non-expansion states, uninsured low-income adults had a lower quality of diet, higher prevalence of binge drinking alcohol, higher BMI prevalence, and higher obesity prevalence, in comparison to low-income adults in expansion states. (60) Analyzing data from health facilities of visits with a primary care physician or standard indicators of health can decrease the chances of misclassification by not relying on self-report. Since this information is also collected by health insurance companies and agencies, they may serve as an alternative source, possibly tracking number of primary

care visits or hospital visits.

Another limitation of this study is the categorization of maternal race/ethnicity. This study had some differences in the proportion of mothers that identified as non-Hispanic White and Hispanic between non-expansion and expansion sites – as it is associated with the outcome variable, it was included in the regression model, however this also controlled for potential confounding. Prior to Medicaid expansion implementation, one study looked at childless, uninsured adults with low incomes, and the distribution of six racial and ethnic groups (African American, Asian, Latino, Native American, White, and Mixed) across non-expansion and expansion states. Researchers found that African Americans and Native Americans were more likely to live in non-expansion states, while Asians, Latinos, and mixed-race individuals were more likely to live in expansion states and postulated that Medicaid coverage will likely be different across racial and ethnic groups. (61) In California, an expansion state, focus groups of Asian Americans and Pacific Islanders and key informant interviews with health department or Medicaid plan employees revealed difficulties in enrolling and accessing care after obtaining insurance, particularly among those with limited English proficiency. (62) Many previously mentioned studies look specifically at low income populations, and this study showed the difference in estimates when analyzing low income populations in contrast to the population overall. Disaggregating categories will allow for more accurate estimates of each group, and future projects can be tailored to assist groups with disparities.

This study offers information on low-income mothers and women of reproductive age, pre-conception care, and insurance in the context of Medicaid expansion through the ACA. There is evidence of decreased uninsurance and increased enrollment in Medicaid,

as well as an increase in the utilization of pre-conception care among low-income mothers in both non-expansion and expansions sites. Expanding eligibility is only one step in ensuring individuals utilize health services – enrolling in health care, scheduling an appointment, and then going to that appointment are necessary actions. Further research is needed to highlight any disparities among groups at each of these steps, which will inform future programs of where increased efforts are needed to ensure women of reproductive age understand the importance of accessing pre-conception health services, their eligibility for health insurance, and are able to utilize these services.