

MEDICAID EXPANSION AND CHILD MALTREATMENT

by

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DEDICATION

To my parents, Randall and Stephanie Holom, who have always supported me, and to my partner, Lauren, who I could not have done this without.

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ABSTRACT

With the recent major changes to the Medicaid program through the Affordable Care Act (ACA) and through individual states' expansions to Medicaid, more effort has been applied to understanding the effects of the Medicaid program beyond health. The prevalence of child maltreatment among families of low-income and poor health motivates the question of how expansions to Medicaid may affect child maltreatment. This study contributes to the literature by examining the contemporaneous effects of changes to Medicaid on child maltreatment. I find that increased Medicaid eligibility reduces the incidence of both reported and substantiated child neglect and child sex abuse.

INTRODUCTION

Child maltreatment, a term which includes child neglect, physical abuse, and sex abuse, is a major social and public health problem in the United States. According to the Department of Health and Human Services (DHHS), there were an estimated 676,000 victims of child maltreatment in 2016, including nearly 1,700 children who died as a result of maltreatment (DHHS, 2016). Evidence suggests that child maltreatment has long-term consequences. Adults who experienced maltreatment during childhood are more likely to engage in criminal behavior, have poor behavioral and mental health, and have worse education and employment outcomes compared to children from similar backgrounds who were not maltreated (Currie and Widom, 2010; Currie and Tekin, 2010; Fang and Corso, 2007; Gilbert et al., 2009; Mersky and Topitzes, 2010). The high incidence and substantial costs of child maltreatment on victims and society warrants a better understanding of how government policies affect the incidence of child maltreatment.

Economists have long studied the relationship between child maltreatment and federal anti-poverty policies, such as the Earned Income Tax Credit (EITC), Assistance for Families with Dependent Children (AFDC), and Temporary Assistance for Needy Families (TANF) (Paxson and Waldfogel, 2002; Slack et al., 2004 Slack et al., 2007; Berger et al., 2017). It is well-documented that lower socioeconomic status children are at increased risk of child maltreatment and that mental illness and substance-use disorders are more common among parents who maltreat their children (Berger, 2005; Berger et al., 2017; Paxson and Waldfogel 1999, 2002, 2003; Slack et al., 2007; Walsh et al., 2002,

2003). Studies in the literature have also demonstrated relationships between more generous public assistance programs and reduced incidence of maltreatment (Berger et al., 2017; Klevens et al., 2017; Slack et al., 2007). However, there is no research to date that investigates the potential linkage between child maltreatment and one of the United States' largest anti-poverty programs, the Medicaid program, which provides health insurance to low-income families and individuals. Because Medicaid may impact access to mental health services, substance-use disorder treatment, and may reduce material hardship associated with the high cost of health care, Medicaid has the potential to impact the incidence of child maltreatment.

The recent debate over the major healthcare reform that occurred with the Affordable Care Act (ACA) in 2010 has spurred greater interest in understanding the effects of the Medicaid program on health and other outcomes. Studies have shown that Medicaid expansions to adults improve their self-reported mental and physical health, and financial well-being (Baicker et al., 2013; Finkelstein et al., 2012; Sommers et al., 2015). Studies in the economics literature have also demonstrated that Medicaid may reduce crime through the path of increasing substance-use disorder treatment (Wen et al., 2014; Vogler, 2017). This study contributes to the literature on Medicaid's broader effects by analyzing the effect of Medicaid expansion on child maltreatment rates.

I use two measures of Medicaid expansion to assess its effect on child maltreatment. First, I perform a difference-in-differences analysis that compares outcomes in states that did and did not expand Medicaid coverage as part of the broader adoption of the ACA. Second, I use a measure of the simulated percent of parents eligible

for Medicaid in a given state and year in order to isolate the impact of policy changes from other characteristics that affect Medicaid eligibility.

The results indicate that increases in Medicaid eligibility are related to decreases in the incidence of child neglect and child sex abuse. Examining the effect of ACA Medicaid expansion on child neglect, the results indicate that Medicaid expansion generates a reduction in the rate of reports of child neglect and child sex abuse, but no change in rates of substantiated child neglect or child sex abuse.¹ The results suggest that adopting Medicaid expansion through the ACA results in a reduction in reported child neglect of between 8 and 12 percent and a reduction in reported child sex abuse of 10 percent.

The estimates that utilize the measure of the simulated percent of parents eligible (SPE) for Medicaid suggest that increases in the SPE reduce rates of substantiated and reported child neglect and child sex abuse. Given the average annual increase in the percent of parents eligible for Medicaid over the sample period of 1.6 percent, an equivalent increase in the SPE generates a 0.8 to 1.4 percent reduction in rates of substantiated child neglect and a 1.5 percent reduction in rates of reported child neglect. The estimates also indicate that the same change in the SPE generates approximately a 1 percent decrease in substantiated and reported child sex abuse.

¹ Reported child maltreatment includes all reports of child maltreatment regardless of whether the state child protection agency has enough evidence to conclude the child is a victim. Substantiated child maltreatment includes only reports in which there is enough evidence to conclude the child is a victim.

ECONOMIC LITERATURE ON CHILD MALTREATMENT

This section reviews economic studies that examine the impacts of anti-poverty policy and other economic factors on child maltreatment. The effects of changes to the EITC benefits, welfare benefits and eligibility, and other economic factors on child maltreatment may be related to Medicaid because studies suggest that Medicaid reduces poverty and improves financial well-being among low-income populations (Finkelstein et al., 2010; Sommers and Oellerich, 2013)

Studies that assess AFDC and TANF suggest that increases in welfare availability and generosity reduce child maltreatment. Because Medicaid is aimed at similar populations, it is reasonable to hypothesize that it may have similar effects.

Malcolm (2012) examines the effects of changes to state welfare spending and finds that increases in spending are related to decreases in child abuse and child fatalities. Paxson and Waldfogel (2002, 2003) find that reductions in state welfare benefit levels increase the number of children in foster care and out-of-home care. In addition, they find that lifetime limits on welfare benefits and stricter sanctions, which reduce assistance if recipients fail to meet welfare requirements, are related to increases in substantiated child maltreatment. Slack et al. (2007) find that stricter sanctions increase the rates of child maltreatment investigation, but do not affect substantiated cases of neglect or abuse. Fein and Lee (2003) find that welfare reforms that reduce welfare eligibility through work requirements and time limits increase child neglect.

Several studies have examined the effect of exogenous shocks to income that occur via the EITC program on child maltreatment (Berger et al., 2017; Klevens et al.,

2017; Paxson and Waldfogel, 2002, 2003). Berger et al. (2017) use variation in the generosity of state EITC as an instrument to determine the causal relationship between income and child maltreatment. They find that increases in income are associated with reductions in child neglect and placement of children into foster care.

Klevens et al. (2017) use a difference-in-differences strategy that links variation in state EITC generosity and data on hospitalizations for infant head trauma, and find that increases in EITC generosity lead to reductions in admissions for abusive pediatric head trauma. However, previous studies by Paxson and Waldfogel (2002, 2003) find no significant relationship between state EITC policies and child maltreatment.

Studies that examine potential linkages between economic conditions and child maltreatment find mixed results. Some studies find only a weak link between higher rates of unemployment and child maltreatment (Bitler and Zavodny, 2004; Paxson and Waldfogel, 2002, 2003). Using an instrument variables approach, Brown and Cao (2017) find a positive and economically significant effect of increased unemployment on child maltreatment.

Lindo et al. (2013) suggest that aggregate measures of economic conditions conceal opposite signed effects because male and female unemployment affects child maltreatment in different ways. Studies that consider the effects of male and female unemployment separately find that male unemployment increases rates of child physical abuse and female unemployment decreases rates of child physical abuse (Lindo et al., 2013; Lindo et al., 2018). Further, they find that the effect of unemployment on child neglect is smaller in places where social safety nets are more generous.

In sum, the literature that examines the effect of changes to welfare policy on child maltreatment suggests that increased welfare benefits and eligibility for social safety-net programs reduce the incidence of child maltreatment. Because Medicaid may reduce financial stress for similar populations who receive the benefits of welfare programs, this literature suggests that Medicaid may also reduce child maltreatment. In addition, studies that find that increased income through the EITC reduces child maltreatment may imply that Medicaid, which reduces out-of-pocket expenditures on health care, may reduce child maltreatment through this mechanism.

ECONOMIC THEORY ON FAMILY VIOLENCE

Economic theories regarding intimate partner violence (IPV) may be related to child maltreatment because IPV and child maltreatment are often co-occurring (Knickerbocker et al., 2007).

Changes to Medicaid have interesting implications when considering the predictions of theoretical models of IPV. Theoretical models of IPV suggest that external support systems (e.g. family support, emergency shelters, and public insurance) can change the bargaining positions of partners by changing the utility they would receive by leaving the marriage, which is called their reservation utility (Farmer and Teifenthaler, 1996, 1997; Tauchen, et al., 1991). An external support system increases the reservation utility of the abuse victim because it improves his/her bargaining position by increasing the credibility of their threat to leave the marriage.

Women are more commonly the victims of IPV, and they are also more often dependent on their partner's health insurance plan (The KFF, 2016). Increased access to Medicaid may increase a woman's reservation utility by reducing her dependency on her partner's health insurance. Indeed, the DHHS has noted this as a potential impact of the ACA, since ACA expansions have the potential to "[help] survivors who feel trapped in an abusive relationship due to economic dependency, which can include health insurance through their partner (DHHS, 2014)."

Berger (2005) notes that the economic models of IPV may be completely compatible with cases of child abuse, in which only one partner is the abuser and the non-abusing partner's utility function accounts for the child's utility to a greater extent than

the abusing partner's utility function. If the mother weighs the child's utility more than her husband does, the theoretical predictions of economic models of IPV suggest that incidence of child maltreatment would decrease with Medicaid expansions by reducing the mother's reliance on her partner's health insurance, and thus also increasing her bargaining power to reduce violence in the household by increasing the credibility of her threat to leave.

THE MEDICAID PROGRAM: 1965-2010

The Medicaid program was established in 1965 with the goal of providing health insurance coverage to low-income families and individuals. A joint state/federal program, Medicaid is structured to achieve this goal by providing federal funding and guidelines regarding eligibility, reimbursement rates, and services that must be covered, while also allowing states the latitude to innovate with respect to how the program is implemented. States can expand Medicaid eligibility beyond minimum requirements, and they have the ability to determine care delivery and provider payments. The Medicaid program continues to be optional for states, though all states currently participate.

The changes to the Medicaid program over its history can be broadly characterized as expanding eligibility to a greater proportion of the population, while increasing availability and services covered.

Initially, eligibility for Medicaid was tied to eligibility for state and federal welfare programs. Between 1975 and 1980, four out of five people who were eligible for Medicaid qualified because their family received cash assistance from the Aid to Families with Dependent Children (AFDC) or Supplemental Security Income (SSI) programs (Burwell and Rymer, 1987).

During the 1980s, Medicaid eligibility was extended to families on the basis of income relative to the federal poverty line (FPL), even though their family structure may have precluded their eligibility for AFDC. These changes primarily benefitted pregnant women and young children. In 1984, states were required to cover children under age six if their family qualified for AFDC (Buchmueller et al., 2015). Two years later, states

were allowed to extend coverage to pregnant women and children in families with incomes below 100 percent of the FPL, regardless of whether they met the AFDC eligibility requirements (Buchmueller et al., 2015). The income limit was increased again in 1987, allowing states to cover pregnant women and children with incomes up 185 percent of the FPL (Buchmueller et al., 2015). By 1988, states were required to cover pregnant women and children with incomes below 100 percent of the FPL, and to extend coverage two-parent unemployed families that met AFDC eligibility requirements (Buchmueller et al., 2015).

The link between AFDC and Medicaid was severed with the passage of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996 (Buchmueller et al., 2015). This change is particularly noteworthy because it replaced the AFDC program with Temporary Assistance for Needy Families (TANF), and changed the rules for Medicaid eligibility (Bitler and Zavodny, 2014). Importantly, eligibility for TANF no longer resulted in automatic eligibility for Medicaid. Instead, eligibility for each program was determined separately. States were required to cover families that met the 1996 AFDC eligibility standards, but were also allowed to cover families with higher incomes (Buchmueller et al., 2015).

Between 1996 and the early 2000s, provision of Medicaid continued to change with legislation that expanded states' flexibility to reform their Medicaid programs (Buchmueller et al., 2015). In 1996, public health insurance for children was expanded via the creation of the State Child Health Insurance Program (SCHIP), which established coverage for children in families with incomes below 200 percent of the FPL who were

not eligible for Medicaid (Buchmueller et al., 2015). Eligibility for SCHIP remained at 200 percent of the FPL through the Child Health Insurance Reauthorization ACT of 2007. In 2009, the upper income limit was expanded to 300 percent of the FPL, allowing states to receive more funding for extending coverage to children in families with higher incomes (Buchmueller et al., 2015).

While public health insurance for children was changing in a substantial way, some states also had the ability to experiment by extending coverage to parents and childless adults. This was accomplished through the use of Section 1115 research and demonstration waivers of the Social Security Act, which allowed the Secretary of Health and Human Services to waive provisions of Medicaid to allow states to increase eligibility and change the way they administered care (Artiga, 2013).

Between 1994 and 2001, nine states received approval for section 1115 waivers to expand limited or full benefits to childless adults (Artiga, 2013). For example, in 1994 the Oregon Reform Demonstration extended coverage to all individuals and families with incomes below 100 percent of the FPL (Holahan et al., 1995). Similarly, the Florida Health Security Program made all individuals with incomes below 250 percent of the FPL eligible for subsidized private insurance (Holahan et al., 1995).

In the early 2000s, states continued to experiment with increased coverage. The Health Insurance Flexibility and Accountability (HIFA) waiver initiative set forth by the Bush administration allowed more rapid approval of Section 1115 waivers, increasing states' ability to expand eligibility for Medicaid (Coughlin et al., 2006). Some states, including Arizona, Idaho, Maine, Michigan, New Mexico, and Oregon, expanded at least

limited coverage to childless adults (Coughlin et al., 2006). In addition, states such as Arizona, California, Idaho, Illinois, New Jersey, New Mexico, and Oregon expanded coverage to a greater number of low-income parents (Coughlin et al., 2006). These expansions varied substantially across states. For example, Arizona expanded Medicaid to childless adults with incomes up to 100 percent of FPL and to parents of children covered by Medicaid or SCHIP with incomes up to 200 percent of FPL, while Idaho covered parents, non-disabled childless adults, and pregnant women with incomes at 133-185 percent of FPL (Atherly et al., 2012).

Though eligibility had been extended beyond the minimums in these states, many states continued to provide only the minimum coverage to parents of dependent children, and limited, if any, coverage to low-income childless adults. Medicaid eligibility was increased substantially for parents and non-disabled childless adults via the Affordable Care Act. Medicaid expansion under the ACA, and other changes to health insurance provision, are discussed in more depth in the section below.

THE AFFORDABLE CARE ACT

In 2010, two pieces of healthcare legislation were passed that changed the provision of Medicaid: The Health Care and Education Reconciliation Act and the Patient Protection and Affordable Care Act, known together as the “Affordable Care Act” ACA or “Obamacare” (Buchmueller et al., 2015). One of the specific goals of this legislation included extending Medicaid eligibility to childless adults nationwide for the first time, as well as increasing the minimum income eligibility limits for all individuals to 133 percent of the FPL plus a 5 percent income disregard (Buchmueller et al., 2015). Though the intent was to make Medicaid expansion mandatory for all states, a 2012 Supreme Court decision made it a state option (Buchmueller et al., 2015).

The changes to income eligibility limits for Medicaid that occurred under the ACA are one of the primary interests of this study. However, the ACA also included provisions that effected both expansion and non-expansion states. One such provision mandated employers to provide health insurance and that established state-based American Health Benefit Exchanges through which individuals with incomes between 133-400 percent of the FPL could purchase subsidized health insurance plans (The KFF, 2013). The ACA also required health insurance plans to include “essential health benefits” such as outpatient services, emergency services, hospitalization, maternity and newborn care, mental health and substance use disorder treatment services, prescription drugs, rehabilitative services, laboratory services, preventative and wellness services, chronic disease management, and pediatric services (Spatz and Kolber, 2017). In addition, the ACA standardized the definition of income that is used determine Medicaid

eligibility and eligibility for subsidized health insurance (The KFF, 2018a). These changes are also important to keep in mind when considering the effects of the ACA on insurance provision in places that did and did not expand Medicaid.

As of 2018, 36 states and Washington D.C. have adopted Medicaid expansion under the ACA while 14 states have maintained their pre-ACA Medicaid program (The KFF, 2019). While most states that expanded Medicaid implemented their expansions in 2014, five states, (Idaho, Maine, Virginia, Nebraska, and Utah) have yet to implement their Medicaid expansions. States were also allowed to expand Medicaid to childless adults as early as April 1, 2010 (The KFF, 2012). For the purposes of this study, these states are considered to have expanded Medicaid as of January of 2014, because this is the date of implementation provided by the Kaiser Family Foundation (The KFF, 2019). States that expanded Medicaid early include California, Connecticut, Minnesota, New Jersey, Washington, and Washington D.C. (The KFF, 2012).

Expansion states received federal funding to cover 100 percent of the additional costs associated with providing coverage for newly eligible individuals from 2014 to 2016 (The KFF, 2013). Federal funding was reduced in the following years, and will continue to be reduced incrementally until 2020, at which point federal funding will cover 90 percent of the costs of newly eligible individuals (The KFF, 2013).

Among expansion states, changes to the income eligibility limits for non-disabled childless adults have varied in magnitude. For example, many states did not provide Medicaid coverage to non-disabled childless adults before the ACA, and thus had an increase in their eligibility to include those with incomes below 138 percent of the FPL

(The KFF, 2018c). This is a substantial change when compared to changes to eligibility limits in states such as New York or Hawaii, which increased their Medicaid income eligibility limits from 100 percent of the FPL to 138 percent of the FPL (The KFF, 2018c).

The more relevant changes for the purposes of this study are the changes that impacted parents' eligibility for Medicaid, because parents are the perpetrators of child maltreatment in 90 percent of cases (DHHS, 2016). The changes to income eligibility limits for parents are available through the Kaiser Family Foundation, which provides the income eligibility limits as a percent of the FPL for family of three (The KFF, 2018d).

All states provided Medicaid coverage to parents prior to the ACA, but for some expansion states the change pre-ACA to post-ACA was greater in magnitude. For example, Arkansas expanded parents' income eligibility limits for Medicaid from 19 percent of the FPL to 138 percent of the FPL (The KFF, 2018d). This change is large when compared to that of Delaware, which already had high income eligibility limits for parents, increasing from 120 percent of FPL to 138 percent of FPL (The KFF, 2018d). Some expansion states that had relatively higher parent income eligibility limits pre-ACA, reduced parent income eligibility limits post-ACA (The KFF, 2018d). These states include Minnesota, New York, New Jersey, Rhode Island, and Vermont, with reductions in parent income eligibility limits ranging from 12 percentage points to 62 percentage points (The KFF, 2018d). As of this study, it is unclear why some states reduced eligibility limits for parents, but potentially states reduce eligibility limits for parents to

make way for the newly-eligible non-disabled childless adults they are required to cover under the ACA's Medicaid coverage requirements.

STUDIES ON THE EFFECTS OF MEDICAID EXPANSION

Coverage, Access, and Utilization

The literature on Medicaid expansion exhibits a general consensus regarding the effects of the policy on increasing insurance coverage, access to health care, and utilization of health services for low-income individuals.

Frean et al. (2017) find that Medicaid expansion during the ACA increased coverage by between two and five percentage points in expansion states. Further, the study attributes nearly 30 percent of the ACA's impact on coverage to the "woodwork effect" a term used to describe the enrollment of previously eligible individuals (Frean et al., 2017). Other studies find similar estimates of increases in Medicaid coverage through the ACA's Medicaid expansion (Courtemanche et. al., 2017; Simon et al. 2017; Wherry and Miller, 2016).

Several studies aim to determine whether access to health insurance translates into increased use of health services. Among children, expansions in Medicaid eligibility have been shown to increase the probability of seeing a doctor in the past two weeks, having at least one doctor visit in the past year, and of having a usual place of care, in addition to increasing outpatient visits (Bronchetti, 2014; Card and Shore-Sheppard, 2004; Currie and Gruber, 1996a; DeLeire et al., 2013). Among adults, expansions in Medicaid eligibility are associated with increases in the probability of hospital admission and decreases in delaying care due to cost (Finkelstein et al., 2012; Sommers et al., 2015). With the Medicaid expansion under the ACA, low-income adults in expansion states

were more likely to report having a personal doctor, with the effects strongest among childless adults (Simon et al., 2017). These studies suggest that health insurance coverage does indeed increase access to care.

Utilization of preventative care in particular has shown persistent increases with Medicaid expansions. In a study of Oregon's health insurance experiment (OHIE), researchers found an increase in the use of preventive care and screening services, including increases in mammograms and cholesterol screenings (Finkelstein et al., 2012). Other studies find increases in utilization of preventative care among children and women (Busch and Duchovny, 2005; Currie et al., 2008; De La Mata, 2012). Utilization of preventative care has also been found to increase with the ACA Medicaid expansion (Barbaresco et al., 2015; Simon et al., 2017). Further, the ACA Medicaid expansion has been found to increase HIV testing, use of preventative services, and dental visits among childless adults (Simon et al., 2017).

Effects on Health

If Medicaid expansion improves health insurance coverage, increases health care access, and utilization of health services, it is likely to also have a beneficial effect on health. However, adverse selection may bias estimates of the effect of health insurance coverage on health. A population that gains access to health insurance through increases in Medicaid eligibility may be more likely to apply for such insurance if they are currently in poor health. If negative health outcomes and take-up of Medicaid are

endogenous, then estimates of the effect of Medicaid expansions on access will underestimate the effects on health effects.

Researchers that have studied the effect of Medicaid on health outcomes use different strategies to address endogeneity, while looking at the effects in different contexts and on a variety of groups. Broadly speaking, this literature has shown either zero or positive effects on health.

Studies on the ACA expansion find mixed results on health outcomes. Wherry and Miller (2016) find no effect on either self-assessed health or on mental health outcomes. Simon et al. (2017) find improvements to self-assessed health among childless adults. Positive results associated with the ACA Medicaid expansion include improvements to general health, and decreases in number of unhealthy days in the past 30 days for both physical and mental health (Simon et al., 2017).

Studies that examine the ACA Medicaid expansion and other health behaviors find a reduction in smoking, but do not detect any changes to heavy drinking, binge drinking, exercise, or obesity (Simon et al., 2017). Barbaresco et al. (2015) examine the effect of the ACA's provision that extended coverage under their parents' health plans to adults up to age 26 and finds improvements to self-reported health, but no evidence of changes to more severe health problems and no significant effect on risky health behaviors such as smoking or alcoholic drinks per month. However, they do find an increase in binge drinking, or the number of drinks consumed in one sitting (Barbaresco et al., 2015).

Researchers use a number of objective outcomes to proxy for health, such as mortality, fertility, birth weight, obesity, and self-reported mental and physical health. One of the more direct and objective of these health measures is mortality. Studies that examine mortality find that expansions to public health insurance decrease mortality (Currie and Grogger, 2002; Currie and Gruber, 1996a; Currie and Gruber, 1996b; Goodman-Bacon, 2017; Sommers et al., 2012). However, studies also find no significant effect of Medicaid expansion on mortality (Finkelstein et al. 2012; Boudreaux et al., 2018).

Studies that analyze the effects Medicaid expansion on children and pregnant women suggest that an increase in Medicaid generates a decrease in child and infant mortality (Currie and Gruber, 1996a; Currie and Gruber, 1996b). Increases in Medicaid eligibility have also been found to decrease mortality among childless adults (Sommers et al., 2012).

A number of studies that examine the effects of Medicaid on mortality find that decreases in mortality are greater among non-white groups, with decreases in mortality greater for non-white childless adults, black children, and black infants (Currie and Grogger, 2002; Sommers et. al., 2012; Wherry and Meyer, 2016). Because studies of Medicaid expansions indicate that the beneficial effects on health differ by race, the effects on child maltreatment rates may also differ by race.

Some studies find long-term health benefits to be prevalent among individuals who gained access to health insurance as a child. Thompson (2017) finds long-term health benefits when considering expansions in Medicaid and CHIP that benefitted

children. In particular, he finds decreases in the probabilities of having a health limitation, a chronic health condition, asthma, and poor self-rated health. Likewise, Currie et al. (2008) find that while there is no contemporaneous change to the self-reported health status of children, children who gained coverage at ages 2-4 have significantly better self-reported health at ages 9-17. Similar effects on health have been found for adults who received access to coverage through Medicaid expansions when they were children (Boudreaux et al., 2016; Wherry and Miller, 2015). These effects include decreases in hospitalization rates as an adult, lower rates of obesity, and better self-reported health (Boudreaux et al., 2016; Wherry and Miller, 2015). However, De La Mata (2012) finds no effect of increases in eligibility during childhood on teen health and also finds no lagged effects. Because health is a stock and beneficial health effects may take time to occur, it is possible that Medicaid has little contemporaneous effect on health and thus may have impacts on child maltreatment in the long-run.

Studies that use the Oregon health insurance experiment (OHIE) as a source of variation find significant changes to self-reported physical and mental health in the few years after the expansion (Baicker et al., 2013; Finkelstein et al., 2012). Some of these improvements include decreased diagnoses of depression, improvements to self-reported mental health and physical health, and increased overall happiness. Likewise, improvements in self-reported physical and mental health were also found with the Massachusetts health reform (Van Der Wees et al., 2013). These studies indicate that contemporaneous improvements in self-reported physical and mental health may be one pathway through which child maltreatment rates are reduced.

Effects on Other Outcomes

Studies on Medicaid expansions and reductions in Medicaid eligibility have found a variety of effects on outcomes ranging from employment to educational attainment. These outcomes may also have important implications for child maltreatment, considering the relationships between poor health, unemployment, low education and child maltreatment. This section explores the relationship between Medicaid and outcomes that may be relevant to child maltreatment.

One commonly studied aspect of public insurance is whether it affects employment outcomes. A few studies have suggested that expansions to Medicaid decrease employment (Dague et al., 2017; Garthwaite et al., 2014). Such findings would support the labor-lock argument that in the absence of public insurance individuals are more likely to seek employment to obtain the benefits of employer health insurance. However, these studies look at individual state changes that may not reflect how Medicaid expansion in other states affects employment.

When looking at the ACA's Medicaid expansion, the literature does not indicate a significant change to labor force outcomes (Kaestner et al., 2015; Leung and Mas, 2018; Heim et al., 2018; Garrett et al., 2017; Duggan et al., 2017). Studies using the aforementioned Oregon health insurance experiment also find no effect on employment (Baicker et al., 2014; Finkelstein et al., 2013). Duggan et al. (2017) find that, while there is no significant effect of the Medicaid expansions under the ACA on aggregate labor market outcomes, regions that have higher exchange enrollment, or enrollment in subsidized health insurance plans through the health insurance Exchange, experience

decreases in employment, which are offset by increases in areas where pre-ACA potential for Medicaid enrollment is high. Pinkovskiy (2015) finds that counties with larger pre-ACA uninsured rates experience greater increases in employment than counties with smaller pre-ACA uninsured rates. When considering young people who benefitted from the provision that required parents' health insurance plans to extend coverage to their children up to the age of 26, Heim et al. (2018) finds that they are more likely to take lower paying jobs, jobs that do not provide benefits, or enroll as full-time students or graduate students, suggesting a reduction in reliance on employment for health benefits. These studies suggest that the effects of Medicaid expansion on employment may differ by state and by characteristics of the population.

A common critique of the ACA concerns the effect of the provision mandating employers to provide health insurance for full-time employees. The suggested effect of this provision is a shift to more part-time employment due to increases in the cost of full time employees. Studies find no significant relationship between the ACA's Medicaid expansions and part-time employment (Kaestner et al., 2015; Leung and Mas, 2018; Moriya et al., 2016).

Considering health insurance is a tool to protect against the uncertainty of healthcare costs, insurance likely improves financial security and stability by reducing the costs of health care. One study estimates the magnitude of reductions to out-of-pocket spending in 2010 to be between \$376 and \$871 per beneficiary and further suggests that Medicaid kept between 2.6 to 3.4 million people out of poverty (Sommers and Oellerich, 2013). Finkelstein et al. (2012) find a comparable reduction in out-of-pocket spending.

Other improvements to financial security include decreases in the probability of borrowing money or skipping payments on other bills, and decreases in the probability of having unpaid bills sent to collections (Finkelstein et al., 2012). Gross and Notowidigdo (2011) find a reduction in personal bankruptcy, while Finkelstein et al. (2012) find no effect on bankruptcies. Boudreaux et al. (2016) finds long-term economic benefits in adulthood to individuals covered by Medicaid in childhood.

Because the Medicaid program targets low-income individuals, it is reasonable to suggest that participation in other programs, such as Temporary Assistance for Needy Families (TANF), Supplemental Nutrition Assistance Program (SNAP), Supplemental Security Income (SSI) and Social Security Disability Income (SSDI), may be affected depending on the complementarity of such programs. Baicker et al. (2014) find no significant effects of Medicaid expansions on TANF, SSI, or SSDI, but do find statistically and economically significant increases in the probability of receiving SNAP and individual SNAP benefits. Ham and Shore-Sheppard (2005) find no effect on welfare participation during earlier expansions. Other studies find decreases in SSI participation and disability income applications (Burns and Dague, 2017; Maestas et al., 2014).

Other notable relationships in the literature include effects on education, crime, traffic fatalities, and family formation. On the topic of education, the literature finds that public insurance expansions improve educational outcomes for children in the short-term and long-term, including increased math and reading scores as well as higher rates of high school and college graduation rates (Cohodes et al., 2016; Gangopadhyaya, 2016; Miller and Wherry, 2017). In addition, public insurance expansions increase the

likelihood of a woman being a single mother (Decker, 2000). When considering specific provisions of substance abuse parity and HIFA waivers, studies find reductions in traffic fatalities and crime (Popovici et al., 2017; Wen et al., 2014). Vogler (2017) also finds that Medicaid expansions are related to decreases in annual crime of 3.0 percent.

In sum, it is important to consider the effects of Medicaid on other outcomes that may be related to child maltreatment. The improved financial outcomes and increases in the use of SNAP related to Medicaid expansion have the potential to reduce child maltreatment by increasing income. Given the conflicted findings on the effect of Medicaid expansion on employment outcomes, it unclear how Medicaid may impact child maltreatment through changes to employment. Studies that examine the effect of Medicaid expansion on educational attainment suggest that Medicaid has broader benefits for children beyond health effects, which may occur through the channel of improved health or through improvements in financial outcomes for families. Studies that find Medicaid expansion generates reductions in crime may also indicate how Medicaid may impact child maltreatment.

DATA

The primary analysis in this paper uses a panel data set of child maltreatment rates by state, year, quarter, and child age group. Child maltreatment rates are constructed using data submitted to the National Child Abuse and Neglect Data System (NCANDS) from 2010 to 2016. The NCANDS is a voluntary and federally-sponsored data collection effort that seeks to improve research on child maltreatment and to track the amount and type of maltreatment occurring. I use data from the Kaiser Family Foundation and the Integrated Public Use Microdata Series (IPUMS) to construct Medicaid eligibility variables and data from the Census Bureau to construct a state-by-year panel of control variables. This section describes the construction of these variables.

Child Maltreatment Variables

Due to differences in how states define maltreatment categories, participating states receive guidance from NCANDS on how to code and submit data to improve data consistency of measurement of maltreatment across states. These efforts to improve data consistency are ongoing, and the data system has become more complete over time. I use data submitted from 2010 onward, for all states, except Oregon. Oregon begins reporting in 2012 and is included in the panel from 2012 onward.

The NCANDS data contains detailed information on child maltreatment referrals that were investigated by the state agencies responsible for providing child protection. In most states, this agency is called Child Protective Services (CPS). For simplicity, I here forward refer to all state agencies responsible for child protection as CPS.

Referrals come to the state's CPS through mandatory reporters (e.g. doctors, law enforcement, medical professionals, and teachers) and non-mandatory reporters (e.g. neighbors and family members). The NCANDS contains only screened-in referrals to child services. The term "screened-in" means that there was enough information to locate the child and that the allegation was serious enough that it met the state statutory guidelines requiring that a caseworker make contact with the family.

Each observation of the data in the NCANDS provides information on one child as part of one report. If multiple children are part of the same report, they are assigned the same report ID, but are included as separate observations. A child can appear as multiple observations in the data if they are part of different reports, in which case they are assigned the same child ID so long as the child is in the same state. In aggregating the counts of child maltreatment, I include all child-report observations, meaning a child can be included multiple times in the count if they were the subject of multiple reports.

Observations can include up to four types of maltreatment per report. I focus on the three types of maltreatment that have more consistent definitions across states: neglect, physical abuse, and sex abuse. Neglect is defined as deprivation of necessities, such as food or clothing, but can also include educational neglect, abandonment, and substance abuse exposure. Physical abuse and sex abuse include physical acts of abuse and threats of abuse. In addition, sex abuse can involve sex trafficking and production of child pornography. I exclude other types of maltreatment, because they are either undefined or because only certain states recognize them as forms of maltreatment (e.g. psychological or emotional maltreatment).

Each type of maltreatment is assigned a unique disposition for whether that type of maltreatment was substantiated² or unsubstantiated. A type of maltreatment is substantiated when there is enough evidence to meet the state requirements that maltreatment has occurred or that the child is at risk of maltreatment.³

One issue with constructing a panel by state, year, and quarter with the NCANDS data is that some reports of child maltreatment can be withheld until a later submission year if the case has not yet received a disposition. Most reports in a given year receive a report disposition in the same submission year or in the following submission year with only a small group of reports not receiving dispositions until two years after they were initially reported. I use only the years and quarters from 2010 to 2015, and exclude all cases that occur in 2016, because the maltreatment rates for 2016 will not be accurate until data from the 2017 submission year can be included. In addition, Pennsylvania and New Jersey do not submit data for the final quarter of 2015, and are excluded for only the final quarter.

The analysis in this paper uses substantiated maltreatment and reported maltreatment rates and counts as outcomes. These are calculated for maltreatment in general, which includes all subcategories, and by the subcategories of neglect, physical abuse, and sex abuse.

² “Indicated” is a disposition used only in states with a three-tiered disposition hierarchy. Following the suggested procedure from the NCANDS User Guide, I define substantiated maltreatment, or maltreatment in which the child was determined to be a victim, as maltreatment that received either an indicated or substantiated disposition.

³ If multiple child observations are linked with the same report ID and a single type of maltreatment is substantiated for one of the children, observations for each child will indicate that type of maltreatment as substantiated.

Maltreatment reports include all reported maltreatment regardless of the final disposition of the report. Substantiated maltreatment includes only those reports that received a final disposition of substantiated. I construct maltreatment rates by aggregating the number of reports by state, year, quarter, and child age group, for age groups 0-5, 6-10, and 11-17 inclusive. Maltreatment rates are constructed at the age group level in order to determine whether there are heterogeneous effects of Medicaid expansion on child maltreatment rates by age group. These rates are per 10,000 child population using the total population of the corresponding age group from the Survey Epidemiology and End Results Program (SEER) population data.

The primary analysis uses rates and counts that are not segmented by race, perpetrator type, or referral source. However in some analyses, I further segment rates to include analysis by whether at least one parent was a perpetrator in the maltreatment, by race and ethnicity of the child, and by the initial referral source. I use segmented rates to determine which age groups, races, and ethnicities may experience larger effects. In addition, I segment the analysis by parent-perpetrator to determine if the effect of Medicaid expansion on child maltreatment is driven by parent-perpetrators.

I do not focus on race- or ethnicity-specific effects for a majority of the analysis because many states fail to report race of the child consistently. For example, Maine, Pennsylvania, Tennessee, and Washington D.C. do not report race and ethnicity in over 70 percent of observations. I therefore construct specific rates by race and ethnicity excluding states that fail to report race, and use this panel to discern whether the effects

of Medicaid expansion on child maltreatment are concentrated among a particular race group.

Finally, I create child maltreatment rates by type of referral source. If Medicaid expansion increases contact between families at risk of child maltreatment and mandatory reporters, it is possible that detection of child maltreatment may increase even if the incidence of child maltreatment is not changing. In order to address this issue, I construct child maltreatment rates for referral sources that are more likely to have increased contact with families due to Medicaid, such as social services, medical, and mental health professionals. I compare these to rates of child maltreatment in which the referral source should not experience increased contact with families for reasons relating to Medicaid expansion. These sources include legal and law enforcement personnel and school personnel.

Medicaid Expansion Variables

I measure policy changes in Medicaid using two key variables. The first is an indicator for states that implemented Medicaid expansions associated with the ACA. The indicator takes on the value one when a state has implemented Medicaid expansion. For states that implemented Medicaid expansion midway through a quarter, the indicator is set to one in the following quarter.

The second measure of changes in Medicaid eligibility computes the percent of parents that are eligible for Medicaid in each state and year of the sample. Eligibility under this measure can vary both as a result of policy changes and due to changes in

demographic and economic conditions (such as a recession) that make more families eligible for Medicaid. In order to isolate policy changes, I follow the method used by Currie and Gruber (1996b) by constructing a measure of simulated eligibility. This measure compares characteristics of a random national sample of parents against income thresholds for Medicaid eligibility across state and time. Because the national sample does not vary in demographic and economic conditions that are potentially correlated with Medicaid eligibility, the simulated eligibility measure isolates the impact of policy changes.

State-level Covariates

I create a panel of state-by-year controls using data from the Census Bureau's American Community Survey tables. I include descriptive statistics of the control variables in Table 3 for comparison of expansion and non-expansion states. I include the following controls in some regressions: median family income in 2016 dollars, percent of the population age 0 to 18 living below the FPL, percent of the population divorced, average family size, the unemployment rate for males, the unemployment rate for females, percent of the population with less than a high school education, percent of the population with a bachelor's degree or higher, population per square mile, proportion of the population female, proportion of the population black, proportion of the hispanic, proportion of the population age 0-17, proportion of the population age 18-64.

EMPIRICAL METHODS

I use a difference-in-differences approach to estimate the impact of two measures of Medicaid expansion on child maltreatment rates.

$$(1) \text{ CHILD MAL}_{sgyq} = \alpha_0 + \beta_1(\text{ACA EXPAND})_{syq} + X_{sy} \\ + \delta_{sq} + \delta_y + \delta_g + \phi_{syq} + e_{sgyq}$$

In estimating equation (1), ACA EXPAND is an indicator variable for whether state s has implemented Medicaid expansion through the ACA in year y and quarter q . The variable CHILD MAL varies by state s , age group g , quarter q and year y . I use both rates and counts of child maltreatment, which are presented in Tables 4 and 5 respectively. I construct maltreatment rates and counts by age group and include age group fixed effects δ_g in equation (1) to remove time-invariant differences in maltreatment rates specific to each age group. I also use age group-specific child maltreatment rates to test for heterogeneous effects of Medicaid policy changes on child maltreatment. The coefficient of interest, β_1 , measures the average difference in maltreatment rates or counts in the post-period between states that implemented Medicaid expansion with the ACA and those that did not. I estimate this equation controlling for state-by-year covariates described in Table 3. I include state-by-quarter fixed effects δ_{sq} to control for unobservable state-specific seasonal characteristics that affect child

maltreatment rates. I include year fixed effects δ_y to control for aggregate trends in child maltreatment rates. In some specifications, I include state-by-year/quarter time trends $\emptyset_{syq}$ to control for state-specific time-trends in child maltreatment rates.

$$(2) \text{ CHILD MAL RATE}_{sgyq} = \alpha_0 + \beta_1(\text{MEDICAID})_{sy} + X_{sy} \\ + \delta_{sq} + \delta_y + \delta_g + \emptyset_{syq} + e_{sgyq}$$

In equation (2), the variable MEDICAID is the simulated percent eligible (SPE), which is the percent of a random national sample of parents who would be eligible for Medicaid coverage, which varies by state s and year y . The coefficient of interest, β_1 , can be interpreted as the effect of a 1 percentage-point change in the SPE on the quarterly child maltreatment rate or count. I estimate this equation including the same covariates and fixed effects as described in the first specification. In addition, for some specifications I include state-by-year/quarter linear time trends $\emptyset_{syq}$ to control for state-specific time-trends in child maltreatment rates.

For both specifications, I use robust standard errors to obtain unbiased standard errors under heteroskedasticity (Wooldridge, 2013). Regressions that use child maltreatment counts as the outcome variable are not weighted by population, and include child population as a control variable, whereas regressions that use child maltreatment rates are weighted by state population to correct of heteroskedasticity related to population (Solon et al., 2013). In addition, I cluster standard errors at the state level, the level of policy implementation, to account for correlation of standard errors within states.

DESCRIPTIVE STATISTICS

Child Maltreatment Variables

This section describes state-level child maltreatment rates by ACA expansion status. Examining the descriptive statistics of child maltreatment rates, it is difficult to determine any clear relationship between the ACA expansion and child maltreatment. However, it is worth noting the differences and similarities between levels of child maltreatment and the changes that occur over time.

Table 1 presents descriptive statistics for child maltreatment variables by expansion status and by pre-treatment and post-treatment periods. There are level differences in substantiated maltreatment rates when comparing the means between expansion states and non-expansion states. Expansion states have higher average rates of substantiated and reported maltreatment, neglect, and physical abuse, and have lower rates of child sex abuse. Between the pre- and post- periods, expansion states and non-expansion states both experience increases in substantiated and reported child maltreatment, neglect and physical abuse rates, but experience decreases in child sex abuse rates.

Figure 1 in Appendix B presents a map of average quarterly substantiated maltreatment rates in years 2010 and 2015 by state. I denote states that implement Medicaid expansion during the time period with an asterisk. States are shaded by quartiles of the child maltreatment rate over the year.

The maps presented in Figure 1 do not indicate any clear relationship between changes to substantiated child maltreatment rates and expansion status over the time period. States that move from a lower quartile to a higher quartile between 2010 and 2015 include expansion states New Mexico, North Dakota, Minnesota, Pennsylvania, Iowa, Illinois, and West Virginia, and non-expansion states such as Georgia, Louisiana, Maine, Mississippi, Montana, Oklahoma, South Carolina, and Utah. Only a few states move to a lower quartile over this time period, including expansion states such as Connecticut and Washington D.C., and non-expansion states such as Florida and Nebraska. Figures 2, 3, and 4 present maps by type of maltreatment, but there is no relationship between changes to particular types of maltreatment and expansion status.

Figures 5 through 8 present the average substantiated maltreatment rates by expansion status to analyze the trends between groups. Figure 5 presents a graph of the average of the quarterly rates of substantiated child maltreatment by year and expansion status. Expansion states experience a decrease in substantiated child maltreatment rates from 2010 to 2011 and experience a steady increase in the child maltreatment rate from 2011 to 2013. The change in substantiated child maltreatment rates from 2013 to 2014 shows that substantiated child maltreatment actually increased in the first year in which most states implemented Medicaid expansion. However, comparing the rate in 2014 to 2015 there is a decrease in the substantiated child maltreatment rate in the second year of Medicaid expansion.

Figure 6 presents a graph of the average of the quarterly rates of substantiated child neglect rate by year and expansion status. Expansion states experience a decrease in

substantiated neglect rates from 2010 to 2011 and an increase in the rates thereafter. Non-expansion states experience little change in rates of substantiated child neglect from 2010 to 2012, but experience a steady increase thereafter. There is little change in the rate of substantiated neglect among expansion states in the treatment period of 2014 and 2015.

Figure 7 presents a graph of the average of the quarterly rates of substantiated child physical abuse rate by year and expansion status. There is a sharp increase in the substantiated child physical abuse rates for non-expansion states from 2010 to 2012.⁴ There is a subsequent decrease for non-expansion states from 2012 to 2013 and then an increase in 2014 and 2015. The trend for expansion states is a relatively steady increase in before Medicaid expansion in 2014. From 2014 to 2015, the rate increases sharply for expansion states, but the increase is only slightly larger for expansion states compared to non-expansion states.

Substantiated child sex abuse is presented in Figure 8. Expansion states experience an increase in the rate of substantiated child sex abuse from 2010 to 2012, after which the rate does not change until it decreases in from 2013 to 2015. The decrease in substantiated child sex abuse is largest in between the first and second year of Medicaid expansion. Non-expansion states experience a decrease from 2012 to 2014, with the largest decrease occurring between 2013 and 2014. However, the substantiated child sex abuse rate does not change as much from 2014 to 2015. Comparing the maltreatment rates from 2014 to 2015, for both groups the decrease is larger for expansion states.

⁴ When graphing substantiated child physical abuse rates by state, this increase is driven by increases in the child physical abuse rate in Oklahoma.

Medicaid Variables

This section presents descriptive statistics of the Medicaid policy variables of used in this study. In addition, the section discusses differences between policy outcomes of Medicaid coverage and percent uninsured between expansion and non-expansion states to determine how health insurance coverage is changing over time between the groups.

Panel A of Table 2 presents the Medicaid policy variables used in this study. As expected, there are substantial differences between expansion and non-expansion states in the parent income eligibility limits (IEL) for Medicaid. In the pre-period, the mean IEL for parents in expansion states is approximately 109 percent of the FPL compared to approximately 55 percent for parents in non-expansion states. The difference in the IEL between expansion and non-expansion states increases after 2014 with the mean for expansion states at approximately 139 percent of the FPL compared to 41 percent for non-expansion states.

The differences in the IEL translate to differences in the simulated percent of parents eligible (SPE) between expansion and non-expansion states. Before the ACA, expansion states have an average SPE of approximately 15 percent, compared to 6 percent for non-expansion states. After the ACA, the average SPE for expansion states increases to 20 percent, while the SPE for non-expansion states decreases to 4.6 percent.

Figure 9 in Appendix C provides a map to illustrate the first measure of Medicaid expansion, the ACA indicator. While most expansion states implement expansion in January 2014. States that expand later than January of 2014 include Michigan, New Hampshire, Pennsylvania, Indiana, and Alaska.

Figure 10 in Appendix C provides maps for comparison of the parent income eligibility limits (IEL) for Medicaid. I include maps for the first and last years to compare how the IEL in each state changes over the time period. The shading used in these maps is based on quartiles of the IEL measure over the entire time period. This figure shows that twenty expansion states move to a higher quartile of IEL from 2010 to 2015. Expansion and non-expansion states also move to lower quartiles of IEL over the time period, including five non-expansion states and one expansion state.

Figure 11 in Appendix C provides another way of visualizing the changes to parent IEL over this time period. This figure shows that at least some states change their IEL by 10 percentage-points for in each year from 2011 to 2015. Most of the changes to the IEL occur in 2014, but some states reduce IEL for parents in 2014, perhaps to make way for the newly eligible non-disabled childless adults that they are required to cover to receive federal funding. Importantly, this figure shows that there is both variation in the timing of the changes to the IEL as well as variation in the magnitude and direction of changes. States both decrease and increase the IEL for parents by greater than 10 percentage points prior to and during implementation of the ACA in 2014. This is important because the estimation strategy in this paper exploits variation in the timing of changes in the IEL as well as variation in the magnitude of changes in the IEL.

Figure 12 in Appendix C provides a map to illustrate the second measure of Medicaid expansion, the simulated percent eligible (SPE). Fourteen states, including three non-expansion states, move to a higher quartile of SPE by 2015 compared to their quartile in 2010. In addition, nine states including six expansion states and three non-

expansion states move to a lower quartile of SPE in 2015 compared to their quartile in 2010. By comparison to the map of the IEL, states with exactly the same IEL should have exactly the same SPE. However, differences between SPEs reflect differences in the percent of the population that fall within the range of incomes affected by the change in IEL, and thus the SPE more directly measures the percent of the population affected by changes in the IEL.

Figure 13 presents the SPE compared by expansion status over time. This figure shows that prior to the ACA implementation in 2014, there is approximately a 7 percentage point difference on average between the SPE in expansion states and non-expansion states. This difference increases with the implementation of the ACA in 2014. For expansion states, the average SPE increases by about 5 percentage points from 2013 to 2014. By comparison, non-expansion states experience a decrease in the average SPE in 2014 and thereafter. Though the Kaiser Family Foundation does not provide any intuition as to why non-expansion states decrease the IEL for parents from 2013 to 2014, which results in a decrease in SPE, they do note that similar decreases that occur in the IEL for pregnant women from 2013 to 2014 are due to the implementation of the Modified Adjusted Gross Income discussed in a previous section, which changes the definition of income and income disregards for all states (The KFF, 2018b).

Figure 14 shows the change in the SPE by race and ethnicity over time. There are level differences in the SPE between race and ethnic groups over time, but the trends are similar. From 2013 to 2014, increases in SPE appear to be slightly larger for blacks and hispanics, which suggests that they may receive more of the benefits of expansions to

Medicaid when compared to their white counter-parts. This indicates that if Medicaid expansions are expected to decrease child maltreatment, the effects may be larger for blacks and hispanics than for whites.

Panel B of Table 2 presents variables that change with Medicaid policy changes such as Medicaid coverage, Medicaid coverage by sex, and percent uninsured. These outcomes are important because the identification strategy of this paper relies on expansions to Medicaid eligibility, which are assumed to result in increased Medicaid coverage. In addition, examining how the percent of the population uninsured is changing in expansion and non-expansion states provides insight as to how other forms of health insurance may be reducing the rate of uninsured in expansion and non-expansion states.

Not surprisingly, Panel B of Table 2 shows that proportions of the population covered by Medicaid are higher in expansion states compared to non-expansion states. The proportion of the female population covered by Medicaid is uniformly larger for across states and time. This may be a result of mandatory Medicaid coverage for pregnant women, which is provided by all states, higher income eligibility limits for parents with younger kids, which are more often women, and/or potentially a result of women having lower incomes than men on average.

Panel B of Table 2 also presents percent of the population uninsured segmented by race and ethnicity. Between expansion and non-expansion states, it is apparent that in expansion states the percent uninsured is lower for all groups by race and ethnicity. Notably, blacks and hispanics, which have the highest percent uninsured in expansion states, still have a lower percent uninsured when compared to whites in non-expansion

states. Whites have the lowest percent uninsured in both expansion and non-expansion states followed by blacks and hispanics.

Unsurprisingly, Figure 15 shows that there are level differences between expansion and non-expansion states in the percent of the adult population covered by Medicaid. As expected, the proportion of the population with Medicaid coverage increases more substantially for expansion states than non-expansion states from 2010 to 2015. Expansion states experience increases in Medicaid coverage from 2010 and 2011 and again from 2012 to 2015, with the percent of the population with Medicaid coverage increasing from approximately 11 percent to 13 percent. It is possible that increases in Medicaid coverage in years prior to 2014 are partially a result of early expansion states expanding Medicaid eligibility to non-disabled childless adults as early as 2010, though the IEL for parents is also changing in states during this time period. By comparison, Figure 15 shows that non-expansion states experience an increase in the proportion of the population covered by Medicaid, but the increase is modest compared to the increase in expansion states.

Figure 16 shows percent of the population uninsured in expansion and non-expansion states. Percent uninsured is decreasing substantially in both expansion and non-expansion states, suggesting that even though Medicaid coverage is increasing more rapidly in expansion states, non-expansion states are reducing the percent of the population uninsured, potentially through Exchange health insurance plans, insurance through the employer mandate, or private insurance. The increase in access to health insurance coverage in non-expansion states is important to note, because it shows that

both expansion states and non-expansion states are reducing the percent of the population uninsured at about the same rate. This suggests that perhaps the treatment effect of ACA expansion may not be as large as expected if improvements in health coverage are occurring among low-income populations. If the subsidized health insurance plans available through the Exchange increase coverage in non-expansion states, and do not require eligible families to pay high premiums, it is possible that individuals are able to gain coverage regardless of the expansion status of the state. On the other hand, health insurance plans available through the Exchange may still require a monthly premium depending on the level of subsidy available to the individual. Thus, there is likely still an effect of receiving coverage through Medicaid as opposed to receiving coverage through plans available through the Exchange.

RESULTS

The results presented in this section indicate that Medicaid expansion is related to reductions in substantiated and reported child maltreatment rates. In particular, Medicaid expansion is related to reductions in child neglect rates and child sex abuse rates, but not child physical abuse rates. The inclusion of state-by-year/quarter linear time trends reduces the coefficient sizes in many specifications, as well as the statistical significance of the results. The exception to this is the relationship between simulated percent eligible (SPE) and child sex abuse, which remains significant with the inclusion of linear time trends. There are also differences in the magnitude and statistical significance of the effects of Medicaid expansion on child maltreatment when segmenting analysis by the child's age group, race or ethnicity, which suggest that younger children and black children experience the largest reductions in child maltreatment. An event study analysis presented and discussed in a later section indicates that one should be cautious when applying a causal interpretation to estimated effects of SPE on child sex abuse rates, as there is potentially an endogenous relationship between the two.

Baseline Estimates

Table 4 presents the baseline estimates of the effect of ACA expansion on child maltreatment. Panel A of the table presents the effect on the quarterly maltreatment rate for substantiated maltreatment in columns (1)-(3) and reported maltreatment in columns

(4)-(6).⁵ Panels B, C, and D present the results in the same manner as Panel A, but for the three subcategories of child maltreatment: neglect, physical abuse, and sex abuse. Columns (1) and (4) report the estimates for regressions that utilize state-by-quarter fixed effects, year fixed effects, and age group fixed effects, while columns (2) and (5) present results with the same fixed effects and add the covariates presented in Table 3. Column (3) and (6) present results of regressions that include the same fixed effects and covariates, but also include state-by-year/quarter linear time trends.

The results presented in Table 4 suggest a negative effect of ACA Medicaid expansion on reported child maltreatment, with the effect largely being driven by decreases in child neglect. The results in Panel B columns (5) and (6) indicate that ACA expansion is related to an average decrease in reported child neglect rates of between 7 and 10 per 10,000 child population. These estimates suggest that ACA expansion generates an 8 to 12 percent decrease in the rate of reported child neglect per quarter. In addition, the estimate presented in Panel D column (6) suggests a marginally statistically significant effect of Medicaid expansion on reported child sex abuse. The coefficient suggests that implementing Medicaid expansion under the ACA is associated with a 10 percent reduction in reported child sex abuse per quarter.

Table 5 presents the effects of Medicaid expansion under the ACA on counts of child maltreatment. As with the estimated effects on child maltreatment rates, Medicaid expansion under the ACA reduces reported child maltreatment primarily through the pathway of decreases in reported child neglect. The coefficients in columns (4) through

⁵ I also estimated the effect of Medicaid expansion on proportion of reported maltreatment that was substantiated, but excluded these results because they were either statistically or economically insignificant.

(6) of Panel B suggest that implementing Medicaid expansion under the ACA results in a decrease in reported child neglect of between 346 and 510 fewer children per quarter. The annual effect would be approximately 1,400-2,000 fewer child neglect reports in the average state.

Table 6 presents the baseline estimates using the second measure of Medicaid expansion, simulated percent eligible (SPE).⁶ The estimates in Panel B indicate that increases in the SPE reduce substantiated and reported child neglect rates and child sex abuse rates. Given the average change in SPE over the time period of 1.6 percent, Panel B columns (2) and (3) imply a decrease of between 0.8 and 1.4 percent in the substantiated child neglect rate. The same size of a change in SPE interpreted using the coefficients for the reported child neglect rate in column (5) suggests the effect is a decrease in the reported child neglect rate of 1.5 percent. However, the effect on reported child neglect is not robust to the inclusion of linear time trends.

Table 6 Panel D presents the effect of a change in the SPE on child sex abuse. In column (3), the estimated effects on substantiated child sex abuse decrease in magnitude with the inclusion of linear time trends, compared to column (2), but remain statistically significant. Given the average change in SPE over the time period of 1.6 percentage-points, the estimate implies that the substantiated sex abuse rate decreases by between 0.5 and 0.8 percent. Column (5) suggests there is a marginally statistically significant effect on reported child sex abuse, but the effect diminishes with the inclusion of linear time trends in column (6).

⁶ The estimated effects using the measure of SPE are similar in size and statistical significance to those found using the parent Income Eligibility Limits.

Comparing the results that use child maltreatment counts as the outcome variable in Table 7 to those using child maltreatment rates in Table 6, the results in Table 7 suggest similar effects of the SPE on substantiated child neglect and sex abuse. Estimates in Panel B column (2) and (3) suggest that a 1 percentage-point in the SPE results in approximately 7 to 12 fewer cases of substantiated child neglect in a quarter. These results are less statistically significant in comparison to the results that use the child maltreatment rate as the outcome variable. In Table 7 Panel D, the effects on substantiated child sex abuse counts are not robust to the inclusion of linear time trends. The estimates in columns (1) and (2) of Panel D suggest that a 1 percentage-point increase in the SPE results in 1 fewer case of substantiated child sex abuse per quarter.

Parent-Perpetrated Child Maltreatment

The results presented in Tables (4) through (7) include all child maltreatment regardless of the relationship of the perpetrator. However, the two measures of Medicaid expansion used in this study may have different effects on different perpetrators of child maltreatment. While changes to the SPE are specific to parent eligibility for Medicaid and thus should only affect parent-perpetrated child maltreatment, Medicaid expansion under the ACA may affect parent and non-parent-perpetrated child maltreatment, because it extends coverage to both groups. Table (5) through (8) examine whether these measures have different effects when considering only parent-perpetrated child maltreatment.

Comparing the effects of Medicaid expansion under the ACA between Tables (4) and (8) there is little difference in the estimated effects on reported child neglect and sex abuse when I subset the data by parent-perpetrator.

Similarly, comparing the effect of changes to the SPE on child maltreatment between Tables (6) and (9), there is little difference between the coefficient estimates on substantiated child neglect and substantiated child sex abuse. However, there is a difference in the statistical significance of the effect on overall maltreatment. In Table (6) Panel A, the estimated effect of a change in the SPE on substantiated maltreatment in columns (2) and (3) are not statistically significant, whereas in Table (9) Panel A the measures that include only parent-perpetrated child maltreatment are statistically significant.

Results by Child Age Group

The impacts of Medicaid on child maltreatment may differ by child age group because younger children experience higher rates of maltreatment, and because Medicaid expansion may have different impacts on parents related to the age group of their children (DHHS, 2016). In particular, the percent of children living in households with incomes below the poverty line decreases for children in higher age groups (NCCP, 2017). This suggests that there may be a higher percent of parents with children in lower age groups that would receive the benefits of Medicaid expansions compared to parents with children in higher age group. If this is the case, changes to the SPE should have larger effects on child maltreatment rates among lower age groups.

Table 10, 11, and 12 present the results for maltreatment rates for children ages 0 to 5, 6 to 10, and 11 to 17, respectively. Comparing Panel B columns (2) and (5) across the tables, the estimates suggest that substantiated and reported child neglect rates decrease with an increase in the SPE. Note, however, that these results are again sensitive to the inclusion of linear time trends in columns (3) and (6).

The effect of the SPE on substantiated and reported maltreatment are largest and most significant in Table 10 for children ages 0 to 5, and decrease in magnitude among children in higher age groups, suggesting that indeed the effects are largest among parents with younger children.

The estimated effects on substantiated and reported child sex abuse are largely the same among all age groups. However, the estimated effect on substantiated child sex abuse among children ages 6 to 10 is the only effect that is robust to the inclusion of linear time trends.

These results suggest that indeed the effect of changes to the SPE on child neglect are larger for younger age groups. However, the effects of changes to the SPE on child sex abuse do not differ substantially by age group.

Results by Child Race and Ethnicity

The effect of Medicaid expansion on child maltreatment rates may differ by race and ethnicity if a greater percent of parents within these groups are impacted by changes to Medicaid income eligibility limits. Figure 14 suggests that the SPE for Medicaid increases more for blacks and hispanics than for whites, indicating that a greater percent

of black and hispanic parents would be newly eligible for Medicaid during time period. In addition, because maltreatment rates are higher for blacks and hispanics on average compared to whites, there may be heterogeneous effects of changes to the SPE on child maltreatment rates (DHHS, 2016).

Tables 13, 14, and 15 present the results for white, black, and hispanic child maltreatment rates respectively. Comparing the estimated effects on total child maltreatment in Panel A between the groups, the magnitude of the estimates is largest for blacks and similar in magnitude among whites and hispanics. The results in Panel A column (2) of each table, indicate that an increase in the SPE leads to a statistically significant reduction in the substantiated child maltreatment rate, however the effects size and level of statistical significance decreases with the inclusion of linear time trends in column (3) for all groups.

In Panel B column (2) of the tables, the estimates indicate that an increase in the SPE is related to a statistically significant reduction in substantiated child neglect rates for black and white children, but not for hispanic children. For all groups, Panel B column (5) indicates an increase in the SPE reduces the reported child neglect rates, though the effects are again sensitive to linear time trends.

The effects on child sex abuse are slightly different by race and ethnicity. In Table 13 Panel D columns (3) , increases in the SPE result in reductions in substantiated child sex abuse among white children. There are no statistically significant effects on substantiated child sex abuse for black or hispanic children. However, in estimates in

column (3) for black and hispanic children indicate that an increase in the SPE is related to reductions in the reported child sex abuse rates.

Results by Referral Source

It is possible that increases in Medicaid coverage increase referrals of child maltreatment by health and social service professionals due to increased contact with families. In this case, changes to reported child maltreatment rates may reflect increases in detection of child maltreatment and not increases in the occurrence of child maltreatment. In Table 16, I test whether there are differences in child maltreatment rates associated with changes in Medicaid eligibility. In columns (1), (2), and (3) below the heading “Medical/Social Service”, I report the effect of changes in the SPE on reported child maltreatment rates in which the initial referral to CPS originates from a medical, mental health, or social service professional. In columns (4), (5), and (6) below the heading “Legal/School”, I present the estimated effect of the SPE on reported child maltreatment rates in which the referral originates from law enforcement, legal personnel, or school personnel, which are less likely to experience changes in reporting related to increases in eligibility for Medicaid other than through decreases in maltreatment.

In Table 15, columns (1) through (3) show that there is no significant effect of a change in the SPE on reported child maltreatment rates in which the referral originated from a medical, mental health, or social services professional. Similarly, estimates presented in the columns (4) through (6) indicate that there is no significant effect of a change in the SPE on reports in which the initial referral originates from sources that

should not experience a change in contact with families related to expansion in Medicaid. These results indicate that there is no evidence of changes to the reported child maltreatment rates by referral sources that may be related to expansions in Medicaid eligibility.

Weighted and Unweighted Estimates

The analysis presented in this paper, with the exception of the analysis that uses counts of child maltreatment, uses Weighted Least Squares, weighting by population. I use WLS in the analysis because I am interested in obtaining precise estimates of the effects of a change in the SPE on particular types of child maltreatment (Solon et al., 2013). Table 15 presents a comparison of the estimates obtained using WLS in columns (1) through (3) to estimates obtained using OLS in columns (4) through (6). A comparison of the standard errors in Panels B, C, and D, shows that in these cases the weighted estimates are more precise when compared to the unweighted estimates. Panel A, on the other hand, indicates that estimates of the effect of a change in the SPE on aggregate child maltreatment rates are less precise than unweighted results. However, despite the less precise estimates for overall child maltreatment, I use WLS because estimates by type of maltreatment are more precise.

Effects Across Time

Tables 18 through 21 present the effects of including lags and leads for Medicaid expansion variables. Tables 18 and 19 test whether there are lag or lead effects of the

ACA Medicaid expansion on reported neglect and sex abuse rates, respectively, which were the types of child maltreatment for which estimates were statistically significant with the inclusion of linear time trends. Because the last year that is currently available in the dataset is 2015, and the ACA Medicaid expansion occurs in 2014, I can only include a one year lag and lead for this variable. Tables 19 and 20, which present the lag and lead effects of changes to the SPE on child maltreatment rates, include two years of leads because this variable includes changes in the SPE that occur in each year.

In Table 18, the center row, labeled ACA (t), presents the effect of regressing the reported child neglect rate in the current year on the ACA expansion indicator. The row labeled ACA (t-1) presents the lagged effect of ACA expansion in the previous period on the current period's reported child neglect rate. The third row, ACA (t+1), presents the effect of ACA expansion in the next period on the current period's reported child neglect rate. Each column represents a separate regression with the third column including both lead and lag effects.

Column 1 presents the initial coefficient estimate including no leads or lags. In column (2), the estimate of the effect of ACA expansion in period t is increased slightly by the inclusion of the policy lead, however the effect is largely unchanged. The coefficient on the policy lead, while negative, is not significant, indicating that there are not statistically significant effects of changes that occur in the next period on the child neglect rate in this period. Column (3), which includes both the lag and lead, indicates that the effect of ACA expansion in the current period is unchanged when accounting for

the effects across time. This suggests that the effect of ACA expansion on reported child neglect rates occur as a result of Medicaid expansion in the current period.

Table 19 suggests that the same is true of the effect of ACA expansion on reported child sex abuse rates. The estimate does not change significantly when accounting for the lagged and lead policy changes in column (3), suggesting that the effect of ACA expansion on reported child sex abuse occur as a result of Medicaid expansion in the current period.

Table 20 presents results that show the effect of including lagged and lead changes to SPE on substantiated child neglect rates in the current period. The rows SPE (t-2) and SPE (t-1) present the lagged effects of changes to the SPE two years and one year ago, respectively, on the substantiated child neglect rate in the current period. Conversely, the rows SPE (t+2) and SPE (t+1) present the effects of changes to the SPE two years and one year in the future, respectively, on the substantiated child neglect rate in the current period.

The inclusion of lead effects in column (2) causes the estimated effect of a change in the SPE on substantiated child neglect rates in the current period to lose statistical significance. In column (3), the inclusion of the full set of lag and lead effects results in the estimated effect of changes to the SPE (t) to lose statistical significance as well. While the direction of the coefficient estimate for SPE (t) is still negative, the results suggest that one should be cautious when applying a causal interpretation to the coefficient SPE (t) in column (1).

Table 21 tests the effect of including lagged and lead SPE on substantiated child sex abuse. In column (2), the lead SPE ($t+1$) indicates that changes in SPE in the following year have a statistically significant effect on substantiated child sex abuse rates in the current period. This effect diminishes slightly in column (3) with the inclusion of lagged SPE, however this result suggests that there is an endogenous relationship between substantiated child sex abuse and changes to the SPE.

COMPARISON WITH OTHER RESEARCH

Comparing the estimated effects of Medicaid expansion on child neglect and child sex abuse rates with other results in the economics literature, the effects are within the range of effects found when considering other anti-poverty policy changes. It is difficult to draw any direct comparison between the measures used in this study and those used in studies that examine the effects of different anti-poverty programs, such as the EITC. In addition, such studies use other data sets, which may not be comparable to the NCANDS data. However, because these studies present the only assessment of impacts of anti-poverty policies on child maltreatment, they are the only relevant comparison currently available.

The largest effects in terms of magnitude presented in this paper are the effects of ACA Medicaid expansion on reported child neglect and child sex abuse rates. The effects in Table 3 column (4) suggest that ACA Medicaid expansion generates an 8 percent reduction in reported child neglect rates and a 10 percent reduction in child sex abuse rates. However, the estimated effects of changes to the SPE on substantiated and reported child neglect are by comparison, relatively modest. The average change in SPE over the time period of 1.6 percentage-points implies a decrease in substantiated child neglect rates of 0.8 and 1.4 percent and a decrease in substantiated child sex abuse of 0.5 to 0.8 percent. By comparison, Berger et al. (2017) analyzes the effects of the EITC program on child maltreatment and finds that \$1000 in additional income is related to a decrease of 3 to 4 percent in child neglect rates.

The effects of Medicaid expansions on crime also provide a relevant comparison. Studies on the short-run effects of the ACA Medicaid expansion find that Medicaid expansion reduces annual crime by approximately 3 percent (Vogler, 2017). In addition, studies that examine the relationship between increases in substance use disorder treatment related to Medicaid expansions, find that a 10 percent increase in the SUD treatment rate that resulted from Medicaid expansion, resulted in a 4 to 9 percent reduction in aggravated assault (Wen et al., 2014). By comparison, the results presented in this study are modest reductions.

CONCLUSION

This paper estimates the effect of Medicaid expansion on child maltreatment. The results suggest that Medicaid expansion under the ACA reduces reported child neglect and child sex abuse, while increases in the percent of parents eligible for Medicaid reduce substantiated and reported child neglect and child sex abuse. I find no effects of Medicaid expansion on child physical abuse. In addition, the effects are larger for younger child age groups and for black children.

As the public debate over the government's role in the provision of health insurance continues, studies that inform policy-makers about the potential broader effects of the Medicaid program play an important role in determining the costs and benefits of expanding public health insurance. This study contributes to the literature by providing a better understanding of the effects of one of the United States' largest public health insurance programs on child maltreatment. In particular, this study suggests that Medicaid expansion reduces the incidence of child maltreatment and thus the costs associated with child maltreatment.

To get an idea of the magnitude of the reduction in costs associated with child maltreatment, I include a back-of-the-envelope calculation that estimates the reduction in costs associated with reduced incidence of child maltreatment over the span of a year. The coefficients in Table 7 Panel B and D columns (2) and (3) suggests that the average increase in the SPE during the time period of 1.6 percent would result in 45 to 75 fewer child maltreatment victims per year. A back-of-the-envelope calculation using the estimated lifetime costs per nonfatal child maltreatment victim as determined by Fang et

al. (2012) suggests the corresponding savings in the lifetime costs of would be between approximately \$11 and \$18 million in 2018 dollars. This is a conservative estimate considering it only accounts for the effect on the non-fatal substantiated cases of child maltreatment.

In sum, this study has implications for policy-makers in their assessment of the potential benefits of providing health insurance to low-income parents and adults. Future research may improve upon this study by examining the role of public health insurance provision for children in detecting and preventing child maltreatment. In addition, it may be important to consider the effects of Medicaid expansion on other child welfare-related outcomes such as foster care placement. Lastly, studies on Medicaid provision and child maltreatment may be improved by identifying better comparison states for analysis through propensity score matching.

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APPENDICES

APPENDIX A

TABLES

Table 1 - Descriptive Statistics - Child Maltreatment Rates

	Expansion				Non-Expansion			
	Pre		Post		Pre		Post	
	Mean	St Dev	Mean	St Dev	Mean	St Dev	Mean	St Dev
Substantiated Maltreatment Per 10K Child Population	26.47	17.22	29.56	19.12	21.14	13.33	21.90	13.11
Substantiated Neglect Per 10K Child Population	20.60	16.67	23.02	18.73	13.65	9.94	14.88	10.77
Substantiated Physical Abuse Per 10K Child Population	4.05	3.57	4.21	4.12	4.00	3.30	4.14	4.04
Substantiated Sexual Abuse Per 10K Child Population	2.02	1.64	1.87	1.59	2.04	1.30	1.94	1.28
Reported Child Maltreatment Per 10K Child Population	118.23	66.29	121.60	56.14	116.45	55.79	127.31	52.06
Reported Child Neglect Per 10K Child Population	89.57	61.90	91.73	54.88	75.25	48.54	84.75	47.82
Reported Child Physical Abuse Per 10K Child Population	30.52	17.56	31.37	20.94	26.40	14.84	27.50	14.56
Reported Child Sex Abuse Per 10K Child Population	9.14	5.31	8.31	4.34	10.07	5.69	9.95	5.90
N	1479		651		1008		504	

Note: This table reports summary statistics of substantiated and reported child maltreatment rates based NCANDS data (2010-2016). Summary statistics are weighted by population.

Table 2 - Descriptive Statistics - Medicaid Variables

	Expansion				Non-Expansion			
	Pre		Post		Pre		Post	
	Mean	St Dev	Mean	St Dev	Mean	St Dev	Mean	St Dev
<i>Panel A: Medicaid Policy Variables</i>								
Indicator For Whether State Implemented Medicaid Expansion	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Parent Income Eligibility Limits (% of the Federal Poverty Line)	109.04	53.07	138.97	19.08	55.41	43.04	41.47	24.99
Simulated Proportion of Parents Eligible - Based on FPL of Household	14.50	8.87	20.36	3.27	6.31	6.85	4.64	3.43
<i>Panel B: Policy Outcomes</i>								
Percent of Population with Medicaid Coverage	11.22	2.67	13.42	2.88	8.55	2.09	9.29	2.15
Percent of Male Population with Medicaid Coverage	9.13	2.54	11.25	2.82	6.83	1.71	7.54	1.81
Percent of Female Population with Medicaid Coverage	13.23	2.82	15.53	2.97	10.18	2.49	10.95	2.50
Percent White Population Uninsured	11.68	3.61	10.49	3.35	15.75	4.19	14.73	3.93
Percent Black Population Uninsured	15.31	2.68	13.36	2.53	20.02	3.36	18.38	2.96
Percent Hispanic Population Uninsured	13.50	3.74	17.51	6.22	17.84	4.08	24.39	8.83
N	1479		651		1008		504	

Note: This table reports summary statistics of substantiated and reported child maltreatment rates based NCANDS data (2010-2016). Summary statistics are weighted by population.

	Expansion		Non-Expansion		Z-Score	P-Value
	Mean	St Dev	Mean	St Dev		
Median Family Income \$10000 Real \$2016	7.24	0.93	6.26	0.60	0.60	***
Percent of Population Age 0-18 Living Below the FPL	20.03	3.75	22.95	3.85	-0.31	***
Percent of Population Divorced	10.36	1.47	11.36	1.07	-0.23	***
Average Family Size	3.23	0.18	3.20	0.15	0.08	
Male Unemployment Rate	8.81	1.50	8.03	1.72	0.29	***
Female Unemployment Rate	7.92	1.49	7.74	1.66	0.09	
Percent of Population with Less than High School	13.68	3.32	15.00	3.15	-0.16	***
Percent of Population with a Bachelor's Degree or Higher	30.13	4.77	26.62	3.06	0.44	***
Child Population Per 10,000	150.76	126.21	124.11	88.60	0.03	
Population Per Square Mile	342.07	655.83	156.89	102.47	0.27	***
Proportion of Population Female	0.51	0.01	0.51	0.00	0.04	
Proportion of Population White	0.64	0.16	0.63	0.13	-0.15	***
Proportion of Population Black	0.10	0.06	0.17	0.09	-0.24	***
Proportion of Population Hispanic	0.18	0.13	0.16	0.13	0.23	***
Proportion of Population Age 0-17	0.23	0.01	0.24	0.02	-0.46	***
Proportion of Population Age 18-64	0.63	0.01	0.62	0.01	0.50	***
N	2130		1512			

* p<0.10 ** p<0.05 *** p<0.01

Note: This table reports population characteristics based on data from the Census Bureau ACS tables (2010-2015). Population data is based on SEER Cancer Research Data. Summary statistics are weighted by population.

Table 4: ACA Indicator and Child Maltreatment Rates

<i>Panel A: Child Maltreatment - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
ACA Indicator	1.390 (2.255)	0.077 (1.674)	2.792 (2.049)	-9.358 (6.364)	-8.186*** (3.498)	-3.712 (3.906)
Mean	25.004	25.004	25.004	119.63	119.63	119.63
N	3642	3642	3642	3642	3642	3642
<i>Panel B: Child Neglect - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
ACA Indicator	0.444 (1.767)	-0.038 (1.449)	0.894 (1.650)	-8.807 (5.767)	-10.303*** (3.752)	-7.088** (3.446)
Mean	18.423	18.423	18.423	85.509	85.509	85.509
N	3642	3642	3642	3642	3642	3642
<i>Panel C: Child Physical Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
ACA Indicator	-0.110 (0.365)	0.129 (0.325)	-0.037 (0.262)	-0.621 (2.315)	0.811 (2.263)	-1.236 (1.944)
Mean	4.079	4.079	4.079	29.172	29.172	29.172
N	3642	3642	3642	3642	3642	3642
<i>Panel D: Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
ACA Indicator	0.028 (0.066)	0.036 (0.079)	-0.041 (0.053)	-0.389 (0.429)	-0.386 (0.455)	-0.909* (0.541)
Mean	1.987	1.987	1.987	9.345	9.345	9.345
N	3642	3642	3642	3642	3642	3642
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Note: This table reports WLS estimates of the effect of ACA expansion on child maltreatment rates, substantiated and reported, based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Rates are calculated by age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 5: ACA Indicator and Child Maltreatment Counts

<i>Panel A: Child Maltreatment - Quarterly Counts</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
ACA Indicator	32.412 (92.877)	6.647 (84.618)	115.388 (94.584)	-543.017* (280.813)	-504.355** (232.634)	-171.944 (208.728)
Mean	1167.836	1167.836	1167.836	5598.315	5598.315	5598.315
N	3642	3642	3642	3642	3642	3642
<i>Panel B: Child Neglect - Quarterly Counts</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
ACA Indicator	-1.860 (75.807)	1.701 (67.736)	37.837 (75.145)	-493.253* (261.158)	-510.195** (221.749)	-346.273* (183.566)
Mean	856.768	856.768	856.768	3988.131	3988.131	3988.131
N	3642	3642	3642	3642	3642	3642
<i>Panel C: Child Physical Abuse - Quarterly Counts</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
ACA Indicator	-9.646 (15.859)	5.334 (12.376)	1.681 (14.481)	-61.092 (100.477)	-18.106 (91.573)	-65.160 (111.516)
Mean	193.225	193.225	193.225	1378.737	1378.737	1378.737
N	3642	3642	3642	3642	3642	3642
<i>Panel D: Child Sex Abuse - Quarterly Counts</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
ACA Indicator	-1.115 (3.807)	0.850 (3.619)	-0.515 (2.630)	-31.932 (21.821)	-29.757 (22.114)	-40.402 (30.717)
Mean	98.383	98.383	98.383	454.29	454.29	454.29
N	3642	3642	3642	3642	3642	3642
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Note: This table reports OLS estimates of the effect of ACA expansion on child maltreatment counts, substantiated and reported, based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Counts are calculated by age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 6: Simulated Percent Eligible (SPE) and Child Maltreatment Rates

<i>Panel A: Child Maltreatment - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.156 (0.129)	-0.177 (0.116)	-0.028 (0.105)	-0.730 (0.577)	-0.886* (0.477)	-0.514 (0.480)
Mean	25.004	25.004	25.004	119.63	119.63	119.63
N	3642	3642	3642	3642	3642	3642
<i>Panel B: Child Neglect - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.136 (0.085)	-0.159** (0.077)	-0.091* (0.048)	-0.688 (0.432)	-0.829** (0.375)	-0.623 (0.402)
Mean	18.423	18.423	18.423	85.509	85.509	85.509
N	3642	3642	3642	3642	3642	3642
<i>Panel C: Child Physical Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.015 (0.024)	-0.022 (0.020)	-0.016 (0.016)	-0.092 (0.282)	-0.133 (0.218)	-0.168 (0.204)
Mean	4.079	4.079	4.079	29.172	29.172	29.172
N	3642	3642	3642	3642	3642	3642
<i>Panel D: Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.009* (0.005)	-0.011** (0.005)	-0.007** (0.003)	-0.069 (0.054)	-0.074* (0.037)	-0.017 (0.030)
Mean	1.987	1.987	1.987	9.345	9.345	9.345
N	3642	3642	3642	3642	3642	3642
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the simulated percent eligible for Medicaid on child maltreatment rates, substantiated and reported, based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Rates are calculated by age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 7: Simulated Percent Eligible (SPE) and Child Maltreatment Counts

<i>Panel A: Child Maltreatment - Quarterly Counts</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-12.863 (11.869)	-11.726 (10.270)	0.142 (8.824)	-49.580 (42.788)	-51.765 (32.513)	-39.123 (36.787)
Mean	2717.070	2717.070	2717.070	12612.486	12612.486	12612.486
N	3642	3642	3642	3642	3642	3642
<i>Panel B: Child Neglect - Quarterly Counts</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-10.864 (6.801)	-11.760* (5.973)	-6.637* (3.681)	-39.601 (32.822)	-44.888* (24.780)	-45.021 (30.116)
Mean	2091.857	2091.857	2091.857	9240.220	9240.220	9240.220
N	3642.000	3642.000	3642.000	3642.000	3642.000	3642.000
<i>Panel C: Child Physical Abuse - Quarterly Counts</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-1.665 (1.378)	-1.834 (1.128)	-1.087 (1.108)	-8.080 (17.984)	-9.903 (14.320)	-14.614 (15.221)
Mean	379.018	379.018	379.018	3226.680	3226.680	3226.680
N	3642	3642	3642	3642	3642	3642
<i>Panel D: Child Sex Abuse - Quarterly Counts</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-1.199* (0.641)	-0.950** (0.458)	-0.227 (0.290)	-5.419 (4.031)	-4.475* (2.498)	-1.121 (2.595)
Mean	194.277	194.277	194.277	1100.630	1100.630	1100.630
N	3642	3642	3642	3642	3642	3642
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports OLS estimates of the effect of the simulated percent eligible for Medicaid on child maltreatment counts, substantiated and reported, based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Counts are calculated by age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 8: ACA Indicator and Parent-Perpetrated Child Maltreatment Rates

<i>Panel A: Child Maltreatment - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
ACA Indicator	0.382 -2.063	-0.102 -1.522	0.838 -1.685	-10.366 -6.409	-8.486*** -3.434	-5.68 -3.904
Mean	24.648	24.648	24.648	119.274	119.274	119.274
N	3642	3642	3642	3642	3642	3642
<i>Panel B: Child Neglect - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
ACA Indicator	0.438 (1.767)	-0.032 (1.446)	0.888 (1.649)	-9.327 (5.816)	-10.350*** (3.724)	-7.765** (3.443)
Mean	18.42	18.42	18.42	85.318	85.318	85.318
N	3642	3642	3642	3642	3642	3642
<i>Panel C: Child Physical Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
ACA Indicator	-0.117 (0.364)	0.113 (0.323)	-0.057 (0.263)	-1.079 (2.325)	0.593 (2.287)	-2.377 (2.077)
Mean	4.077	4.077	4.077	29.029	29.029	29.029
N	3642	3642	3642	3642	3642	3642
<i>Panel D: Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
ACA Indicator	0.017 (0.067)	0.039 (0.080)	-0.072 (0.063)	-0.493 (0.440)	-0.395 (0.444)	-1.169** (0.501)
Mean	1.982	1.982	1.982	9.306	9.306	9.306
N	3642	3642	3642	3642	3642	3642
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of ACA expansion on parent-perpetrated child maltreatment rates, substantiated and reported, based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Rates are calculated by state, year/quarter, and age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 9: Simulated Percent Eligible (SPE) and Parent-Perpetrated Child Maltreatment Rates

<i>Panel A: Child Maltreatment - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.160 (0.098)	-0.201** (0.081)	-0.099* (0.051)	-0.734 (0.588)	-0.910* (0.477)	-0.585 (0.479)
Mean	24.648	24.648	24.648	119.274	119.274	119.274
N	3642	3642	3642	3642	3642	3642
<i>Panel B: Child Neglect - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.136 (0.085)	-0.159** (0.077)	-0.091* (0.048)	-0.647 (0.444)	-0.793** (0.377)	-0.616 (0.403)
Mean	18.420	18.420	18.420	85.318	85.318	85.318
N	3642	3642	3642	3642	3642	3642
<i>Panel C: Child Physical Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.016 (0.024)	-0.023 (0.020)	-0.017 (0.016)	-0.122 (0.282)	-0.175 (0.222)	-0.231 (0.211)
Mean	4.077	4.077	4.077	29.029	29.029	29.029
N	3642	3642	3642	3642	3642	3642
<i>Panel D: Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.011* (0.006)	-0.013** (0.006)	-0.010** (0.004)	-0.079 (0.054)	-0.087** (0.037)	-0.035 (0.031)
Mean	1.982	1.982	1.982	9.306	9.306	9.306
N	3642	3642	3642	3642	3642	3642
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the simulated percent eligible for Medicaid on parent-perpetrated child maltreatment rates, substantiated and reported, based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Rates are calculated by state, year/quarter, and age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 10: Simulated Percent Eligible (SPE) and Child Maltreatment Rates - Age 0-5

<i>Panel A: Child Maltreatment - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.217 (0.184)	-0.262* (0.155)	-0.055 (0.129)	-0.855 (0.734)	-1.093* (0.614)	-0.610 (0.652)
Mean	36.481	36.481	36.481	155.939	155.939	155.939
N	1214	1214	1214	1214	1214	1214
<i>Panel B: Child Neglect - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.225 (0.147)	-0.258*** (0.123)	-0.131 (0.084)	-0.884 (0.590)	-1.087*** (0.523)	-0.768 (0.578)
Mean	28.757	28.757	28.757	118.137	118.137	118.137
N	1214	1214	1214	1214	1214	1214
<i>Panel C: Child Physical Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	0.004 (0.043)	-0.013 (0.033)	-0.024 (0.027)	-0.073 (0.386)	-0.142 (0.304)	-0.218 (0.294)
Mean	5.514	5.514	5.514	33.421	33.421	33.421
N	1214	1214	1214	1214	1214	1214
<i>Panel D: Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.010* (0.005)	-0.011** (0.004)	-0.007 (0.004)	-0.077 (0.069)	-0.080* (0.044)	-0.019 (0.040)
Mean	1.299	1.299	1.299	9.282	9.282	9.282
N	1214	1214	1214	1214	1214	1214
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the simulated percent eligible for Medicaid on child maltreatment rates, substantiated and reported, for children ages 0-5 based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Fixed effects include state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 11: Simulated Percent Eligible (SPE) and Child Maltreatment Rates - Age 6-10

<i>Panel A: Child Maltreatment - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.168 (0.140)	-0.178 (0.123)	-0.034 (0.129)	-0.800 (0.662)	-0.942* (0.557)	-0.610 (0.579)
Mean	23.344	23.344	23.344	122.292	122.292	122.292
N	1214	1214	1214	1214	1214	1214
<i>Panel B: Child Neglect - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.121 (0.085)	-0.138* (0.069)	-0.086 (0.052)	-0.722 (0.474)	-0.846*** (0.420)	-0.698 (0.469)
Mean	16.763	16.763	16.763	85.454	85.454	85.454
N	1214	1214	1214	1214	1214	1214
<i>Panel C: Child Physical Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.027 (0.026)	-0.031 (0.022)	-0.019 (0.015)	-0.119 (0.324)	-0.157 (0.247)	-0.195 (0.240)
Mean	3.843	3.843	3.843	31.257	31.257	31.257
N	1214	1214	1214	1214	1214	1214
<i>Panel D: Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.007 (0.006)	-0.010* (0.005)	-0.009*** (0.004)	-0.068 (0.064)	-0.078* (0.043)	-0.015 (0.036)
Mean	2.097	2.097	2.097	9.872	9.872	9.872
N	1214	1214	1214	1214	1214	1214
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the simulated percent eligible for Medicaid on child maltreatment rates, substantiated and reported, for children ages 6-10 based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Fixed effects include state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 12: Simulated Percent Eligible (SPE) and Child Maltreatment Rates - Age 11-17

<i>Panel A: Child Maltreatment - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.082 (0.101)	-0.062 (0.089)	0.020 (0.090)	-0.537 (0.456)	-0.594 (0.376)	-0.323 (0.346)
Mean	15.188	15.188	15.188	80.658	80.658	80.658
N	1214	1214	1214	1214	1214	1214
<i>Panel B: Child Neglect - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.062 (0.047)	-0.065 (0.040)	-0.046 (0.028)	-0.458 (0.326)	-0.520* (0.274)	-0.391 (0.280)
Mean	9.748	9.748	9.748	52.937	52.937	52.937
N	1214	1214	1214	1214	1214	1214
<i>Panel C: Child Physical Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.022 (0.016)	-0.022 (0.013)	-0.011 (0.009)	-0.084 (0.197)	-0.107 (0.153)	-0.099 (0.128)
Mean	2.881	2.881	2.881	22.838	22.838	22.838
N	1214	1214	1214	1214	1214	1214
<i>Panel D: Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.010 (0.008)	-0.012* (0.007)	-0.005 (0.006)	-0.062 (0.042)	-0.063* (0.034)	-0.012 (0.024)
Mean	2.566	2.566	2.566	8.881	8.881	8.881
N	1214	1214	1214	1214	1214	1214
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the simulated percent eligible for Medicaid on child maltreatment rates, substantiated and reported, for children ages 11-17 based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Fixed effects include state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 13: Simulated Percent Eligible (SPE) and Child Maltreatment Rates - Child Race White

<i>Panel A: Child Maltreatment - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.228* (0.131)	-0.258** (0.111)	-0.180* (0.097)	-0.829 (0.872)	-1.026 (0.664)	-0.685 (0.685)
Mean	23.532	23.532	23.532	112.686	112.686	112.686
N	3357	3357	3357	3357	3357	3357
<i>Panel B: Child Neglect - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.181 (0.114)	-0.202* (0.100)	-0.121 (0.075)	-0.821 (0.664)	-1.003* (0.540)	-0.767 (0.570)
Mean	17.866	17.866	17.866	82.372	82.372	82.372
N	3357	3357	3357	3357	3357	3357
<i>Panel C: Child Physical Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.005 (0.033)	-0.016 (0.027)	-0.027 (0.026)	-0.095 (0.359)	-0.140 (0.264)	-0.201 (0.270)
Mean	3.559	3.559	3.559	25.555	25.555	25.555
N	3357	3357	3357	3357	3357	3357
<i>Panel D: Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.004 (0.006)	-0.007 (0.005)	-0.013*** (0.004)	-0.065 (0.067)	-0.072 (0.044)	-0.035 (0.041)
Mean	1.771	1.771	1.771	8.807	8.807	8.807
N	3357	3357	3357	3357	3357	3357
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the simulated percent eligible for Medicaid on white child maltreatment rates, substantiated and reported, based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Rates are calculated by age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 14: Simulated Percent Eligible (SPE) and Child Maltreatment Rates - Child Race Black

<i>Panel A: Child Maltreatment - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.514** (0.245)	-0.576** (0.216)	-0.378 (0.226)	-1.437 (1.507)	-1.807 (1.163)	-1.334 (1.231)
Mean	45.3	45.3	45.3	208.796	208.796	208.796
N	3357	3357	3357	3357	3357	3357
<i>Panel B: Child Neglect - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.357* (0.200)	-0.393** (0.190)	-0.237 (0.146)	-1.538 (1.173)	-1.823* (0.946)	-1.487 (1.034)
Mean	33.6	33.6	33.6	150.228	150.228	150.228
N	3357	3357	3357	3357	3357	3357
<i>Panel C: Child Physical Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.029 (0.071)	-0.054 (0.061)	-0.064 (0.063)	-0.183 (0.686)	-0.276 (0.509)	-0.399 (0.524)
Mean	8.195	8.195	8.195	54.602	54.602	54.602
N	3357	3357	3357	3357	3357	3357
<i>Panel D: Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.002 (0.010)	-0.007 (0.010)	0.001 (0.010)	-0.130 (0.109)	-0.140* (0.072)	-0.041 (0.062)
Mean	2.537	2.537	2.537	13.733	13.733	13.733
N	3357	3357	3357	3357	3357	3357
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the simulated percent eligible for Medicaid on black child maltreatment rates, substantiated and reported, based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Rates are calculated by state, year/quarter, and age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 15: Simulated Percent Eligible (SPE) and Child Maltreatment Rates - Child Ethnicity Hispanic

<i>Panel A: Child Maltreatment - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.164 (0.105)	-0.219** (0.094)	-0.214* (0.113)	-0.417 (0.471)	-0.705 (0.427)	-0.611 (0.476)
Mean	22.02	22.02	22.02	94.27	94.27	94.27
N	3357	3357	3357	3357	3357	3357
<i>Panel B: Child Neglect - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.066 (0.074)	-0.105 (0.082)	-0.118 (0.075)	-0.389 (0.351)	-0.631* (0.343)	-0.625 (0.388)
Mean	16.37	16.37	16.37	66.831	66.831	66.831
N	3357	3357	3357	3357	3357	3357
<i>Panel C: Child Physical Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.008 (0.026)	-0.016 (0.021)	-0.032 (0.021)	-0.050 (0.204)	-0.106 (0.165)	-0.216 (0.182)
Mean	3.313	3.313	3.313	24.026	24.026	24.026
N	3357	3357	3357	3357	3357	3357
<i>Panel D: Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Substantiated			Reported		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.008 (0.011)	-0.011 (0.008)	-0.011 (0.010)	-0.070 (0.045)	-0.077** (0.034)	-0.050 (0.031)
Mean	2.017	2.017	2.017	8.087	8.087	8.087
N	3357	3357	3357	3357	3357	3357
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the simulated percent eligible for Medicaid on hispanic child maltreatment rates, substantiated and reported, based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Rates are calculated by state, year/quarter, and age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 16: Simulated Percent Eligible (SPE) and Substantiated Child Maltreatment Rates - By Referral Source

<i>Panel A: Reported Child Maltreatment - Quarterly Rates per 10,000 Child Population</i>						
	Medical/Social Service			Legal/School		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.132 (0.239)	-0.150 (0.202)	-0.160 (0.201)	-0.160 (0.223)	-0.190 (0.196)	-0.096 (0.130)
Mean	26.604	26.604	26.604	39.63	39.63	39.63
N	3654	3654	3654	3654	3654	3654
<i>Panel B: Reported Child Neglect - Quarterly Rates per 10,000 Child Population</i>						
	Medical/Social Service			Legal/School		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.164 (0.188)	-0.183 (0.158)	-0.195 (0.167)	-0.127 (0.139)	-0.155 (0.127)	-0.130 (0.090)
Mean	18.198	18.198	18.198	25.169	25.169	25.169
N	3654	3654	3654	3654	3654	3654
<i>Panel C: Reported Child Physical Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Medical/Social Service			Legal/School		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.024 (0.100)	-0.035 (0.082)	-0.063 (0.090)	-0.058 (0.107)	-0.066 (0.081)	-0.063 (0.060)
Mean	6.792	6.792	6.792	11.565	11.565	11.565
N	3654	3654	3654	3654	3654	3654
<i>Panel D: Reported Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Medical/Social Service			Legal/School		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.025 (0.025)	-0.022 (0.018)	-0.011 (0.015)	-0.019 (0.017)	-0.018 (0.013)	0.000 (0.009)
Mean	2.843	2.843	2.843	3.08	3.08	3.08
N	3654	3654	3654	3654	3654	3654
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the simulated percent eligible for Medicaid on reported child maltreatment rates by referral source based on NCANDS data (2010-2016). Referral source Medical/Social includes reports referred by medical, mental health, or social services professionals. Legal/School includes referrals from law enforcement, legal council, and school personnel. Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Rates are calculated by state, year/quarter, and age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 17: Simulated Percent Eligible (SPE) and Substantiated Child Maltreatment Rates - Weighted and Unweighted

<i>Panel A: Substantiated Child Maltreatment - Quarterly Rates per 10,000 Child Population</i>						
	Weighted			Unweighted		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.156 (0.129)	-0.177 (0.116)	-0.028 (0.105)	-0.122 (0.093)	-0.121 (0.084)	-0.014 (0.088)
Mean	25.004	25.004	25.004	25.059	25.059	25.059
N	3642	3642	3642	3642	3642	3642
<i>Panel B: Substantiated Child Neglect - Quarterly Rates per 10,000 Child Population</i>						
	Weighted			Unweighted		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.136 (0.085)	-0.159** (0.077)	-0.091* (0.048)	-3.943 (2.427)	-0.052 (0.082)	-0.015 (0.072)
Mean	18.423	18.423	18.423	856.768	17.697	17.697
N	3642	3642	3642	3642	3642	3642
<i>Panel C: Substantiated Child Physical Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Weighted			Unweighted		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.015 (0.024)	-0.023 (0.020)	-0.016 (0.016)	-0.542 (0.631)	-0.002 (0.036)	0.003 (0.024)
Mean	4.079	4.079	4.079	193.225	4.482	4.482
N	3642	3642	3642	3642	3642	3642
<i>Panel D: Substantiated Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>						
	Weighted			Unweighted		
	(1)	(2)	(3)	(4)	(5)	(6)
SPE	-0.009* (0.005)	-0.011** (0.005)	-0.007** (0.003)	-0.194 (0.141)	-0.011** (0.005)	-0.005 (0.004)
Mean	1.987	1.987	1.987	98.383	2.121	2.121
N	3642	3642	3642	3642	3642	3642
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	Yes	No	Yes	Yes
Linear TT	No	No	Yes	No	No	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS and OLS estimates of the effect of the simulated percent eligible for Medicaid on substantiated child maltreatment rates based on NCANDS data (2010-2016). Maltreatment includes neglect, physical abuse, sex abuse, and other forms of maltreatment. Rates are calculated by state, year/quarter, and age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 18: ACA Indicator and Reported Child Neglect Rates Using Lags and Leads

<i>Reported Child Neglect - Quarterly Rates per 10,000 Child Population</i>			
	(1)	(2)	(3)
ACA (t-1)			0.012 (0.638)
ACA (t)	-0.909* (0.541)	-0.964* (0.567)	-0.963* (0.541)
ACA (t+1)		-0.498 (0.365)	-0.494 (0.394)
Mean	85.509	85.509	85.509
N	3642	3642	3642
Fixed Effects	Yes	Yes	Yes
Covariates	Yes	Yes	Yes
Linear TT	Yes	Yes	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the ACA expansion on reported child maltreatment rates based on NCANDS data (2010-2016). Rates are calculated by state, year/quarter, and age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 19: ACA Indicator and Reported Child Sex Abuse Rates Using Lags and Leads

<i>Reported Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>			
	(1)	(2)	(3)
ACA (t-1)			0.153 (0.646)
ACA (t)	-0.780* (0.430)	-0.823* (0.453)	-0.804* (0.413)
ACA (t+1)		-0.387 (0.337)	-0.346 (0.350)
Mean	9.345	9.345	9.345
N	3642	3642	3642
Fixed Effects	Yes	Yes	Yes
Covariates	Yes	Yes	Yes
Linear TT	Yes	Yes	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the ACA expansion for Medicaid on reported child maltreatment rates based on NCANDS data (2010-2016). Rates are calculated by state, year/quarter, and age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 20: Simulated Percent Eligible (SPE) and Substantiated Child Neglect Rates Using Lags and Leads

<i>Substantiated Child Neglect - Quarterly Rates per 10,000 Child Population</i>			
	(1)	(2)	(3)
SPE (t-2)			0.138 (0.124)
SPE (t-1)			-0.054 (0.084)
SPE (t)	-0.091* (0.048)	-0.069 (0.056)	-0.074 (0.056)
SPE (t+1)		0.003 (0.052)	-0.011 (0.050)
SPE (t+2)		0.048 (0.051)	0.020 (0.049)
Mean	18.423	18.423	18.423
N	3642	3642	3642
Fixed Effects	Yes	Yes	Yes
Covariates	Yes	Yes	Yes
Linear TT	Yes	Yes	Yes

* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the simulated percent eligible for Medicaid on substantiated child neglect rates based on NCANDS data (2010-2016). Rates are calculated by state, year/quarter, and age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

Table 21: Simulated Percent Eligible and Substantiated Child Sex Abuse Rates Using Lags and Leads

<i>Substantiated Child Sex Abuse - Quarterly Rates per 10,000 Child Population</i>			
	(1)	(2)	(3)
SPE (t-2)			0.016 (0.011)
SPE (t-1)			0.000 (0.004)
SPE (t)	-0.007** (0.003)	-0.006 (0.004)	-0.006 (0.004)
SPE (t+1)		-0.007** (0.004)	-0.007* (0.003)
SPE (t+2)		0.003 (0.004)	0.003 (0.005)
Mean	1.987	1.987	1.987
N	3642	3642	3642
Fixed Effects	Yes	Yes	Yes
Covariates	Yes	Yes	Yes
Linear TT	Yes	Yes	Yes

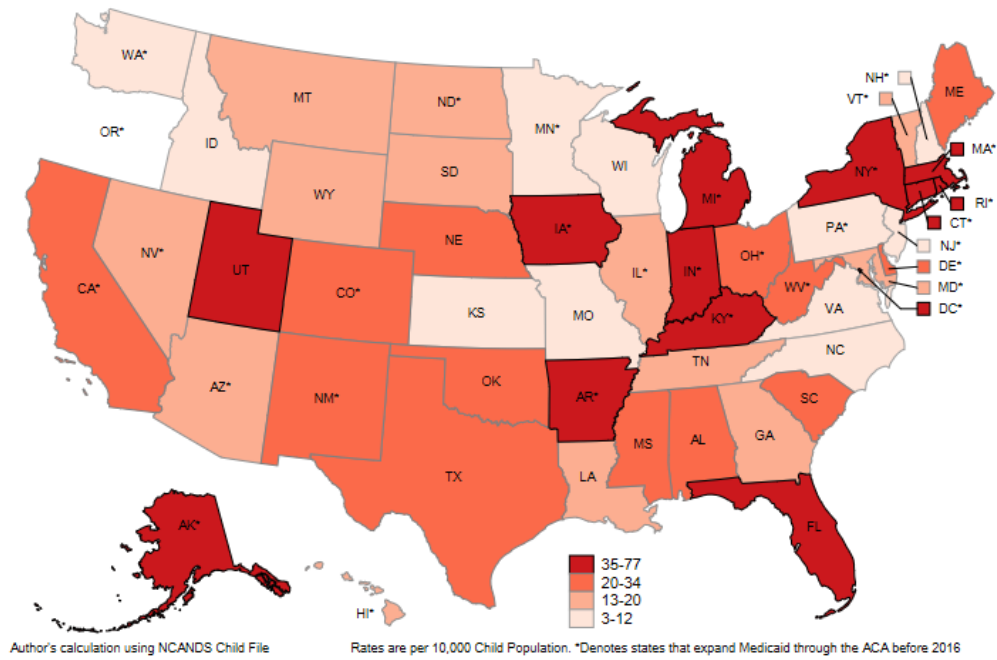
* p<0.10 ** p<0.05 *** p<0.01

Notes: This table reports WLS estimates of the effect of the simulated percent eligible for Medicaid on substantiated child sex abuse rates based on NCANDS data (2010-2016). Rates are calculated by state, year/quarter, and age group of the child (0-5, 6-10, 11-17). Fixed effects include age group, state, year, and state-by-quarter. Regressions are weighted by population of the state. Standard errors are clustered at the state level. The list of covariates included in these regressions can be found in Table 3.

APPENDIX B

CHILD MALTREATMENT FIGURES

2010 Child Maltreatment Average of the Quarterly Rates



2015 Child Maltreatment Average of the Quarterly Rates

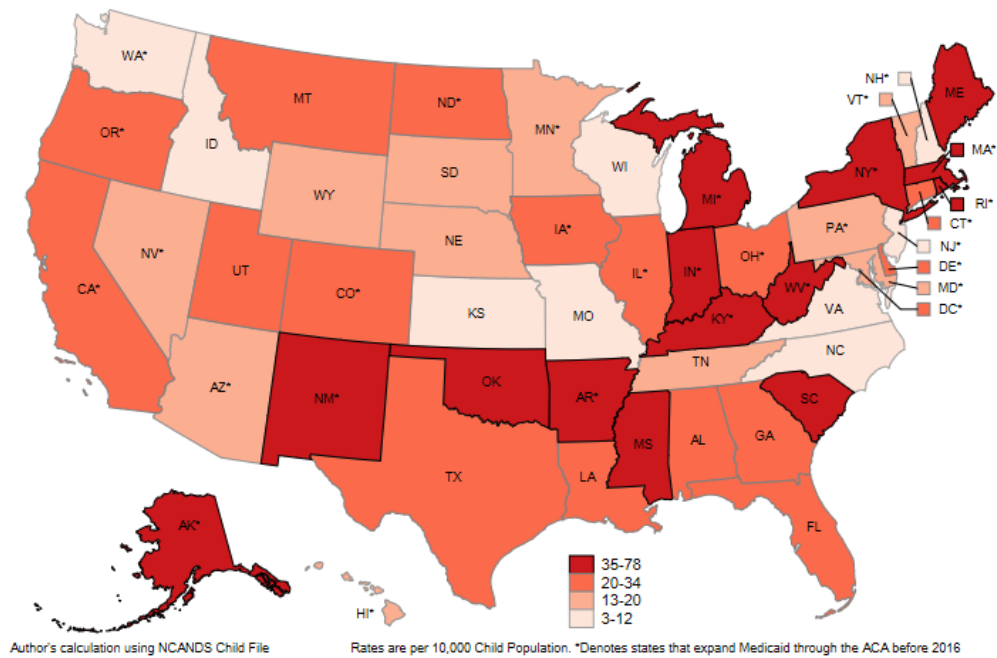
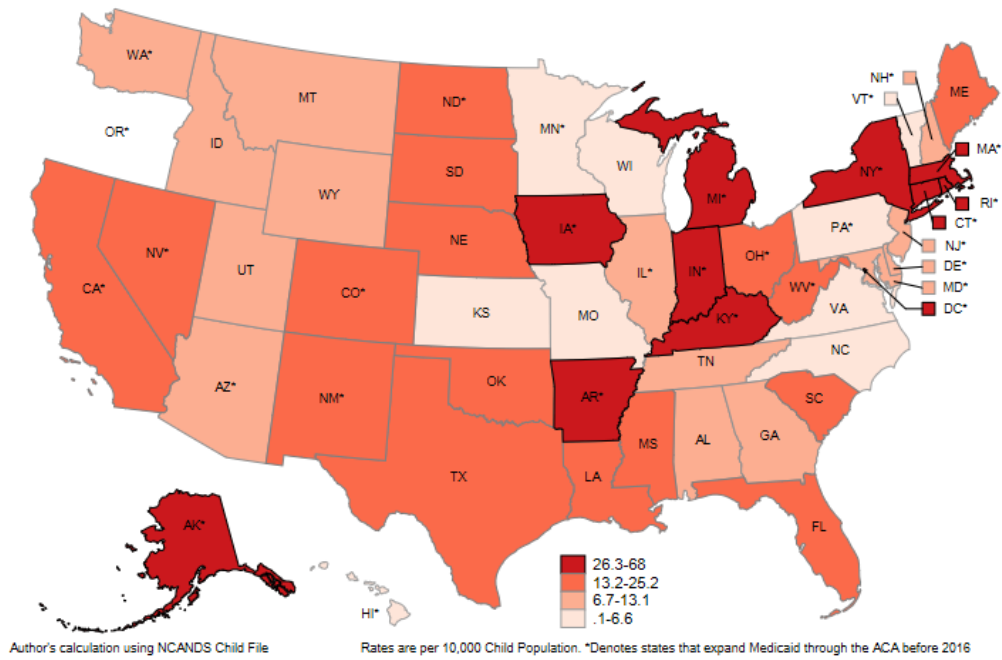


Figure 1. Map of the Average Quarterly Substantiated Maltreatment Rates per 10,000 Child Population 2010 and 2015

2010 Child Neglect Average of the Quarterly Rates



2015 Child Neglect Rates Average of the Quarterly Rates

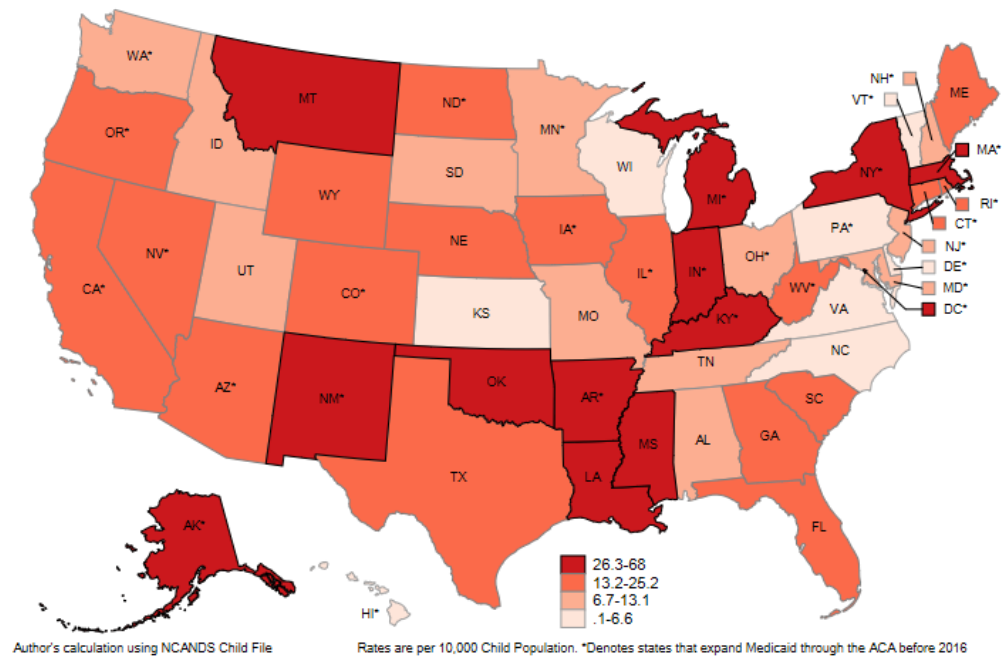
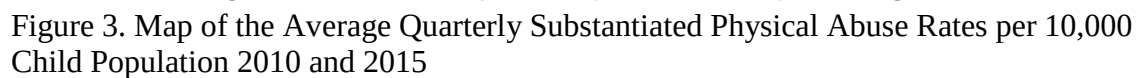
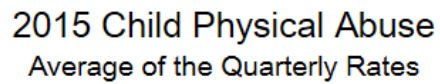
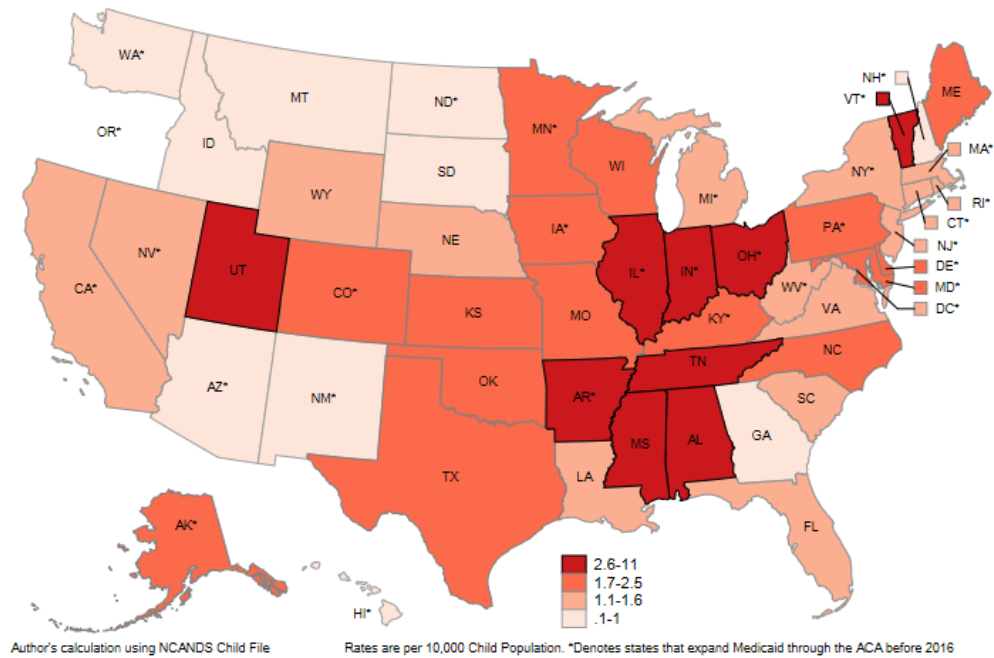


Figure 2. Map of the Average Quarterly Substantiated Neglect Rates per 10,000 Child Population 2010 and 2015



2010 Child Sex Abuse
Average of the Quarterly Rates



2015 Child Sex Abuse
Average of the Quarterly Rates

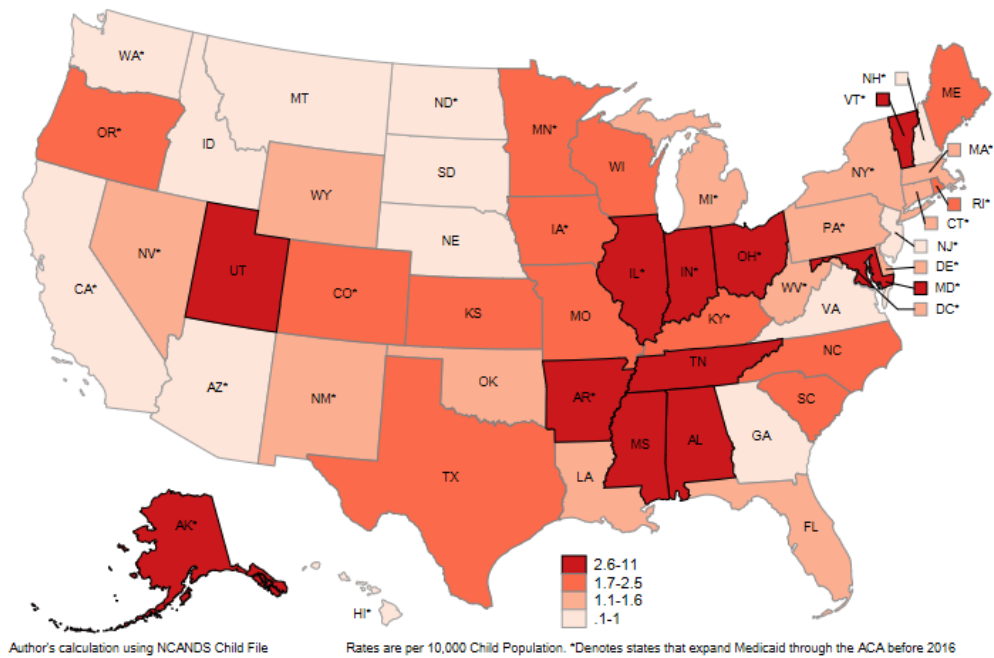


Figure 4. Map of the Average Quarterly Substantiated Sex Abuse Rates per 10,000 Child Population 2010 and 2015

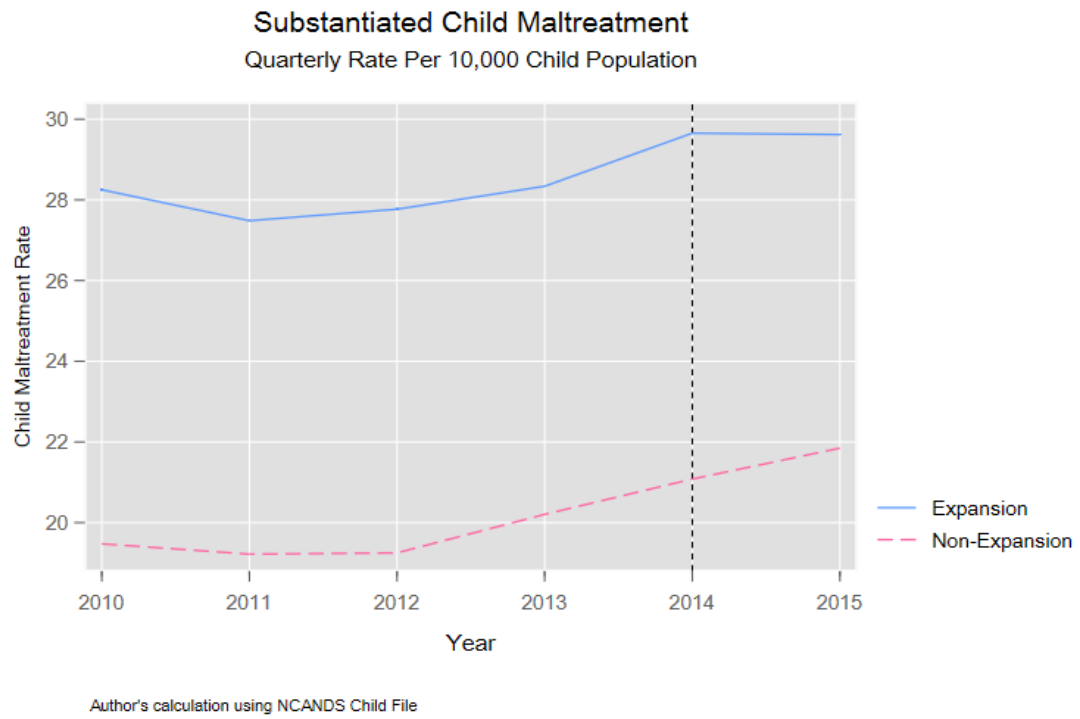


Figure 5. Average Quarterly Substantiated Child Maltreatment Rates by Expansion Status, 2010 to 2015.

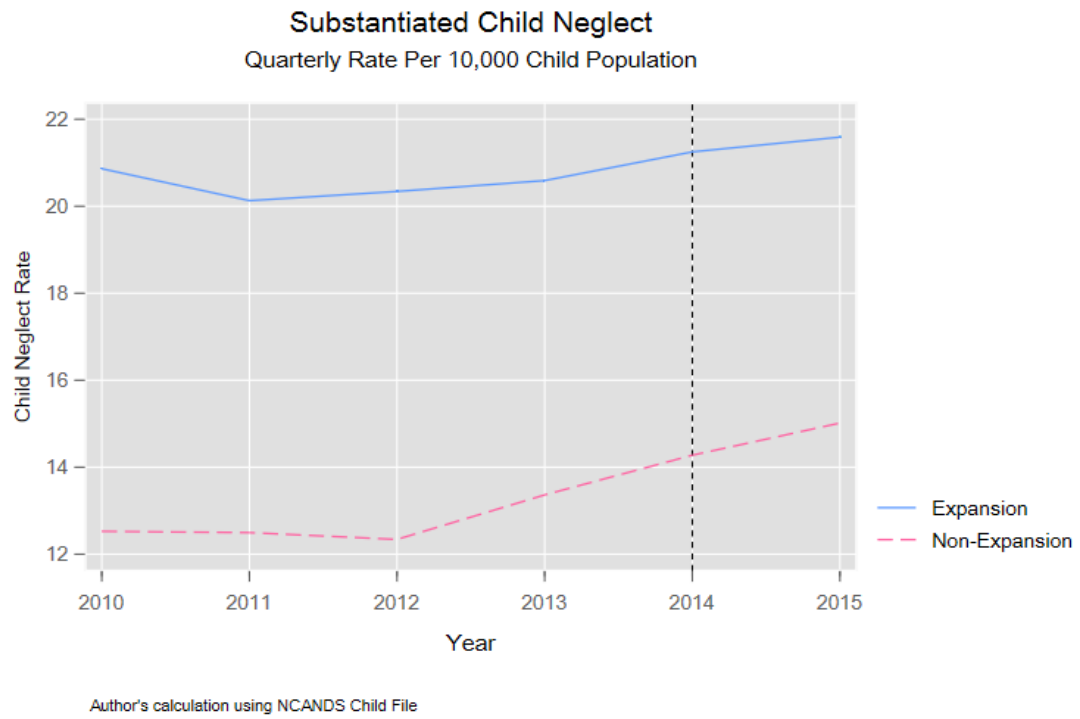


Figure 6. Average Quarterly Substantiated Child Neglect Rates by Expansion Status, 2010 to 2015.

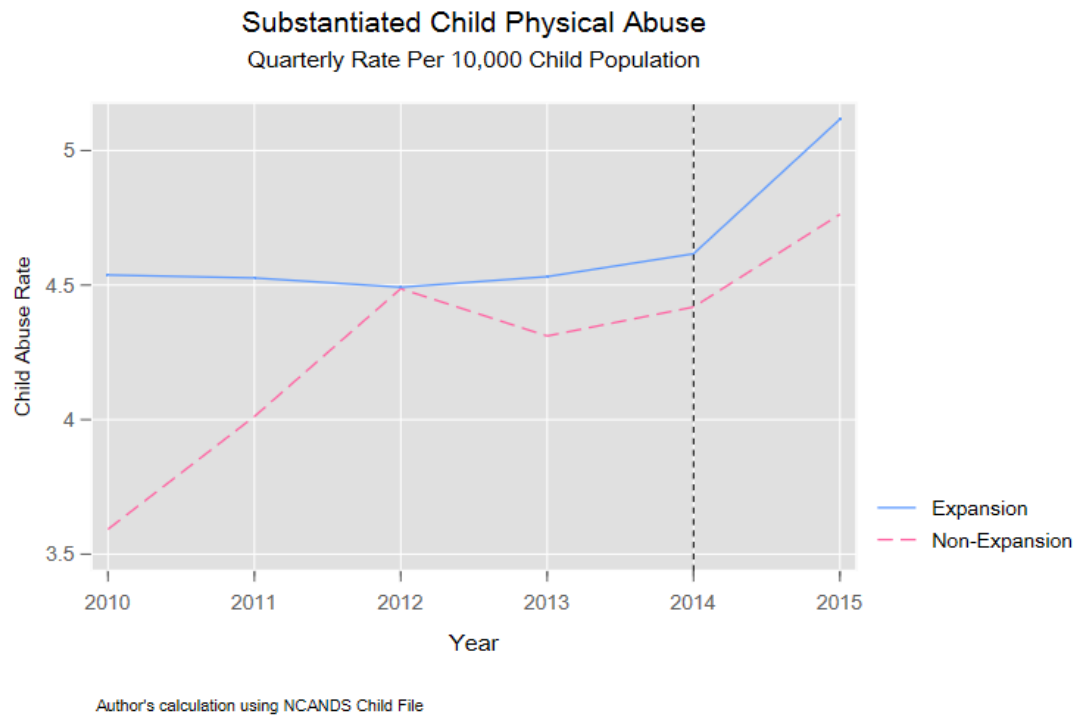


Figure 7. Average Quarterly Substantiated Child Physical Abuse Rates by Expansion Status, 2010 to 2015.

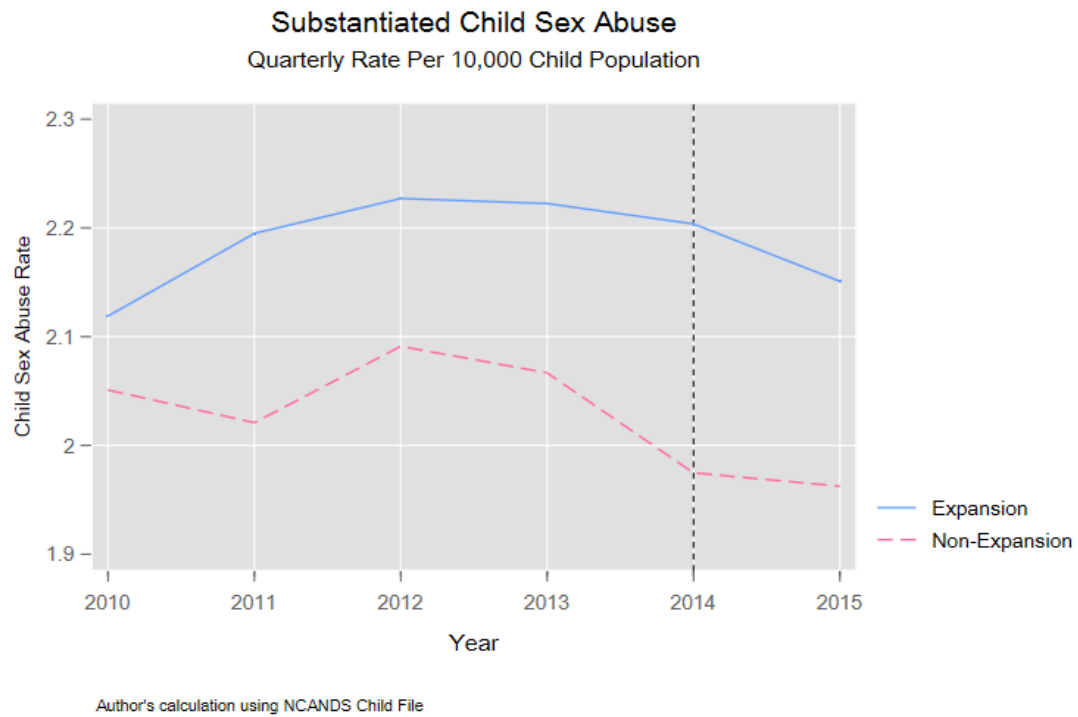


Figure 8. Average of the Quarterly Substantiated Child Sex Abuse Rates by Expansion Status, 2010 to 2015.

APPENDIX C

MEDICAID AND HEALTH INSURANCE FIGURES

States By Expansion Status Pre-2016

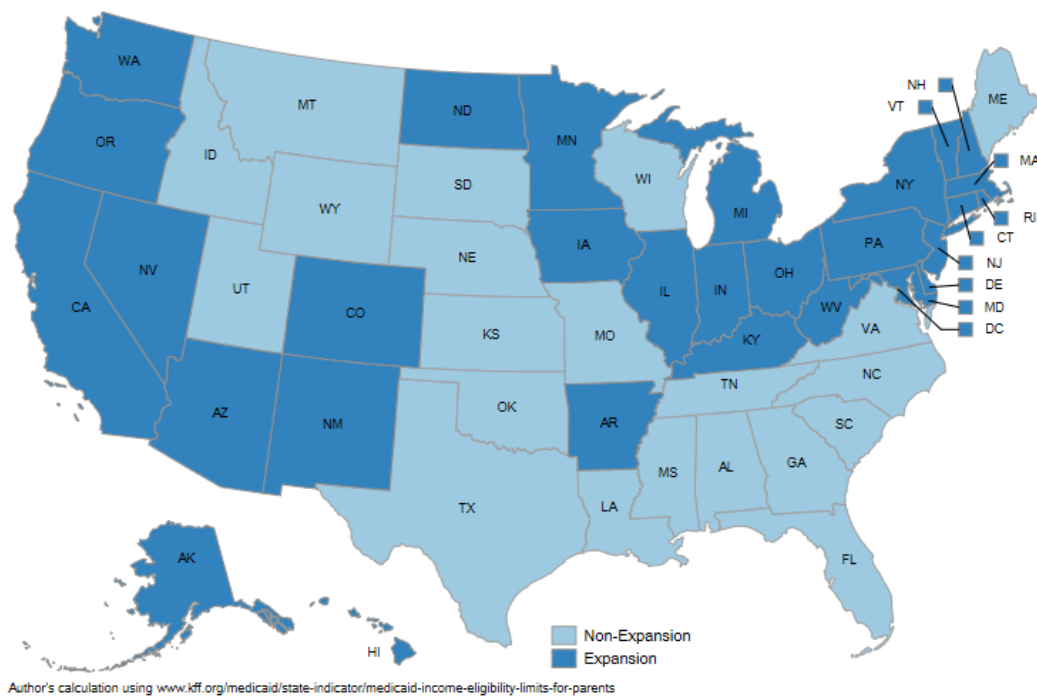
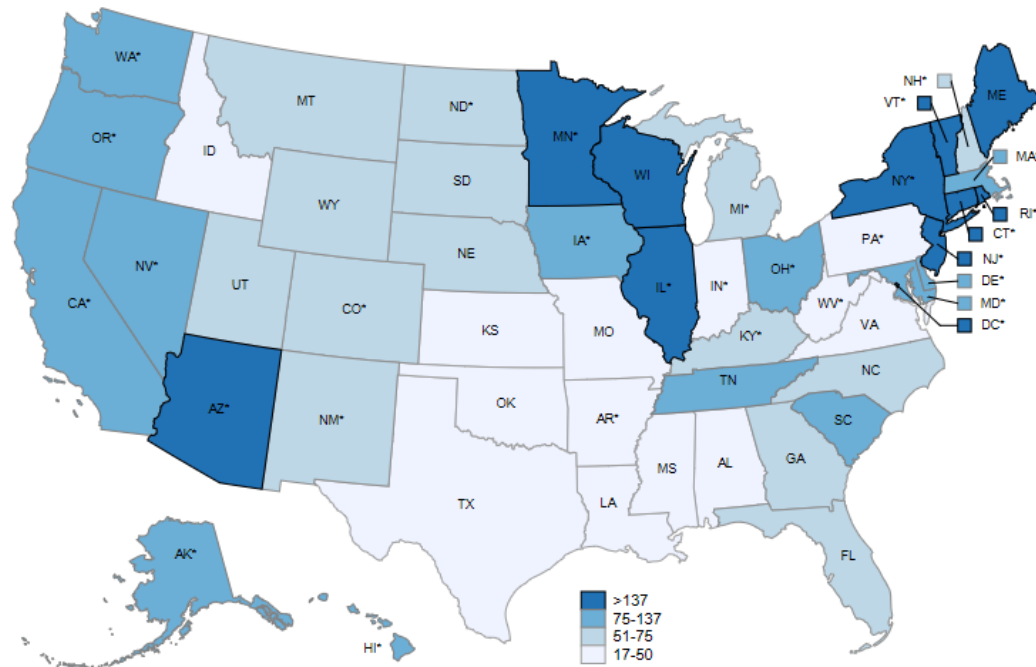


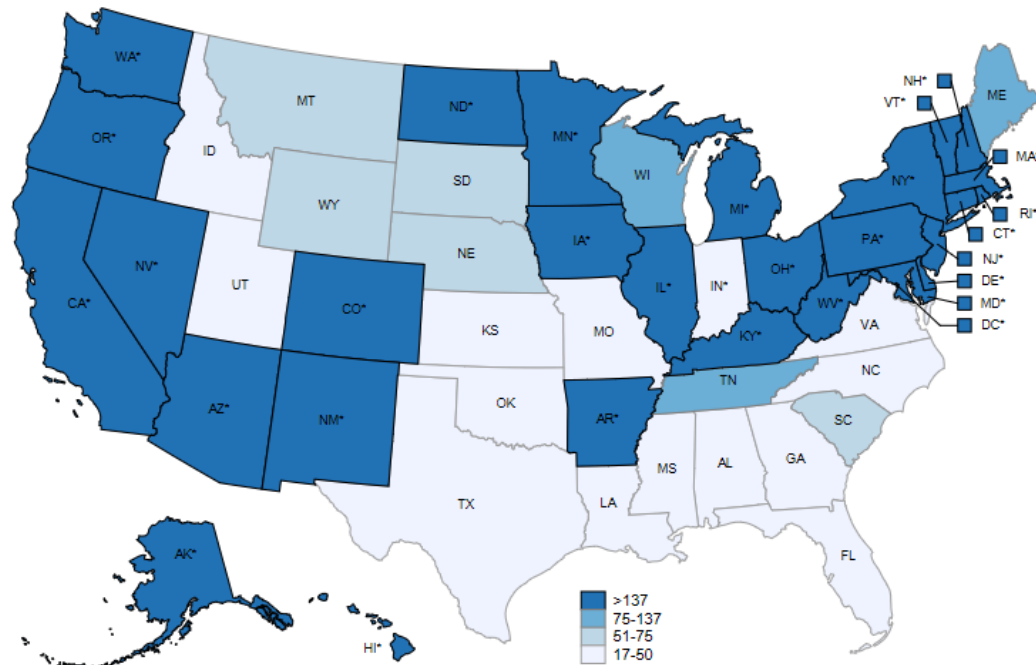
Figure 9. Map of States by Expansion Status Pre-2016

2010 Medicaid Income Eligibility Limits (%FPL)



Author's calculation using www.kff.org/medicaid/state-indicator/medicaid-income-eligibility-limits-for-parents *Denotes ACA Expansion Pre-2016

2015 Medicaid Income Eligibility Limits (%FPL)



Author's calculation using www.kff.org/medicaid/state-indicator/medicaid-income-eligibility-limits-for-parents *Denotes ACA Expansion Pre-2016

Figure 10. Map of Parent Income Eligibility Limits in 2010 and 2015 by State.

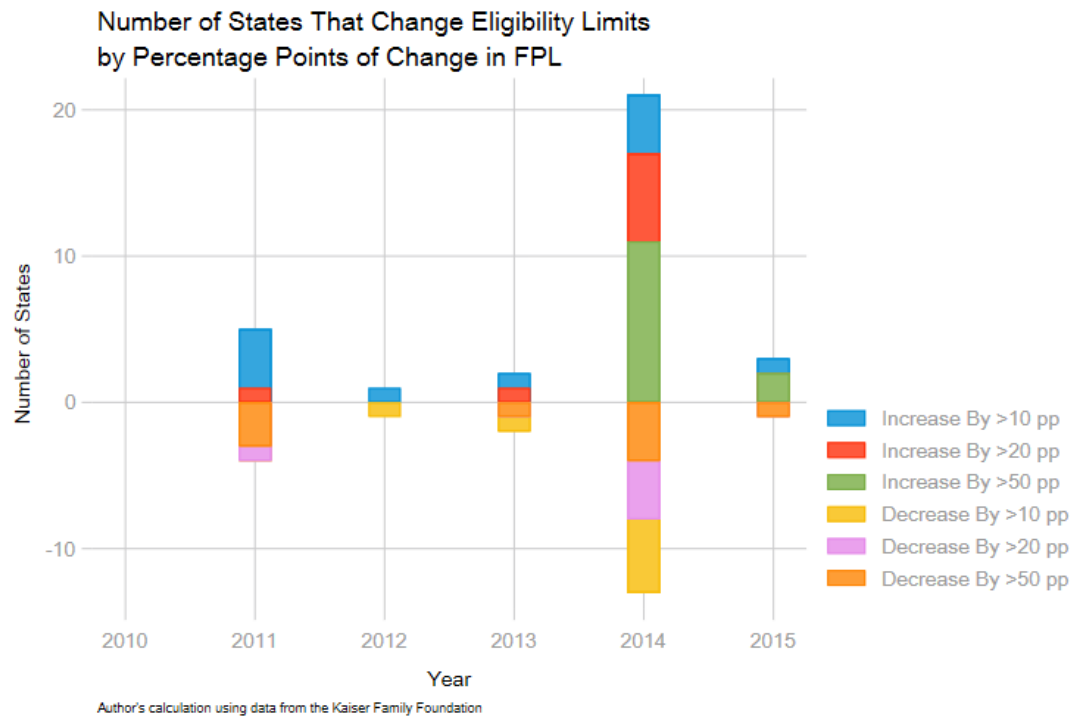
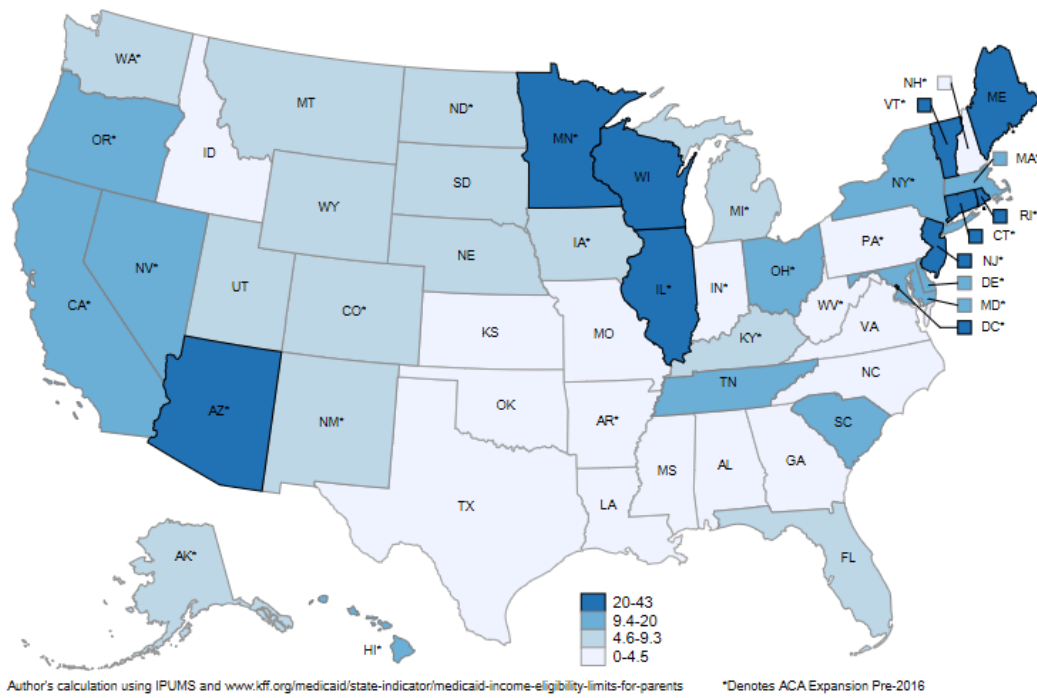


Figure 11. Number of States That Change Parent Income Eligibility Limit by Percentage Points of Change.

2010 Simulated Percent Eligible



2015 Simulated Percent Eligible

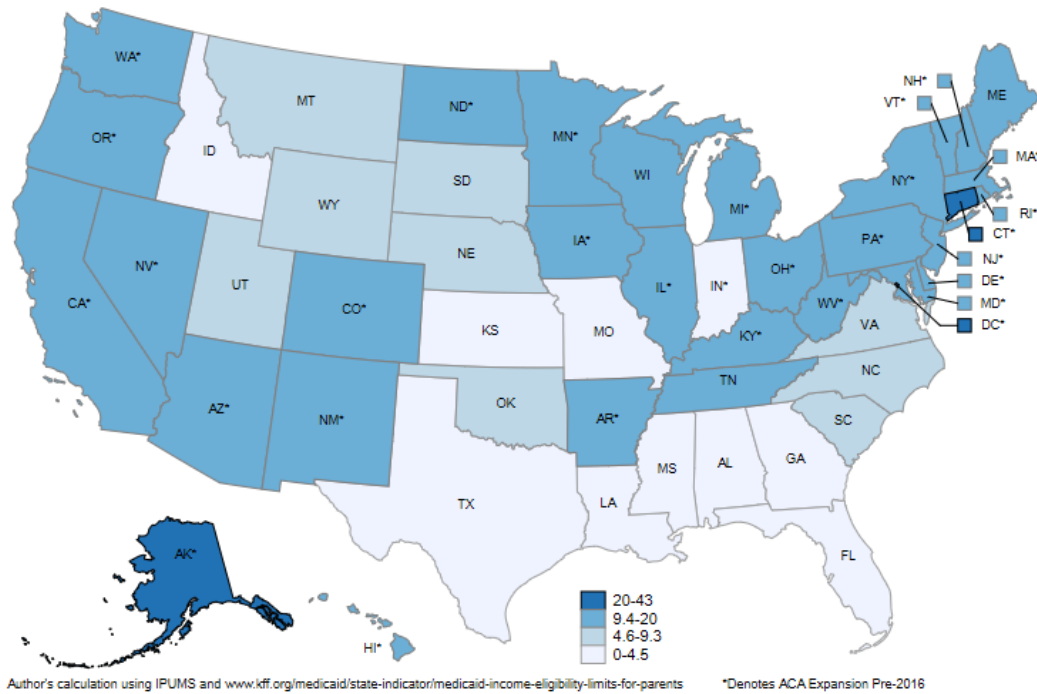


Figure 12. Map of the Simulated Percent of Parents Eligible in 2010 and 2015 by State.

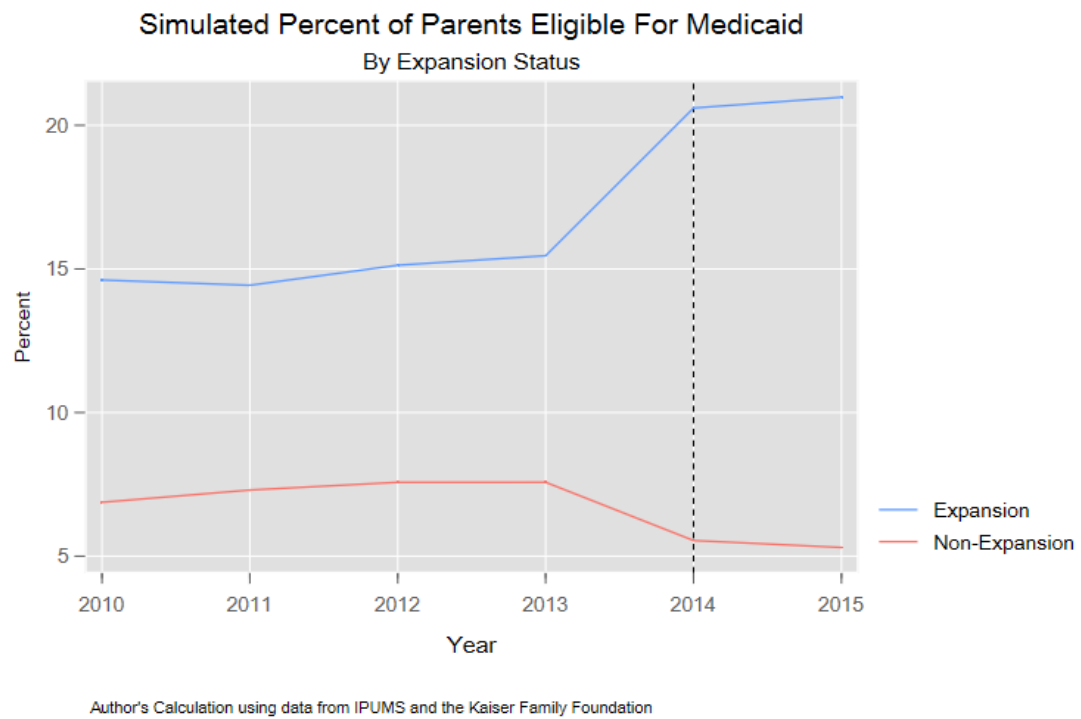


Figure 13. Simulated Percent of Parents Eligible for Medicaid by Expansion Status

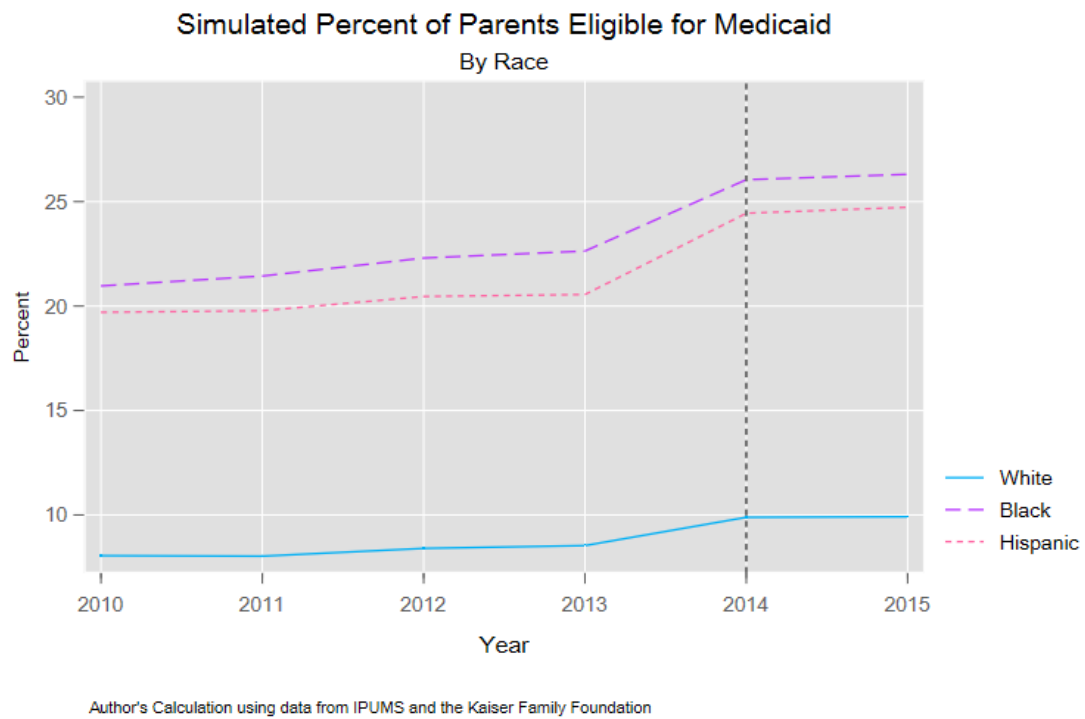


Figure 14. Simulated Percent of Parents Eligible for Medicaid by Race

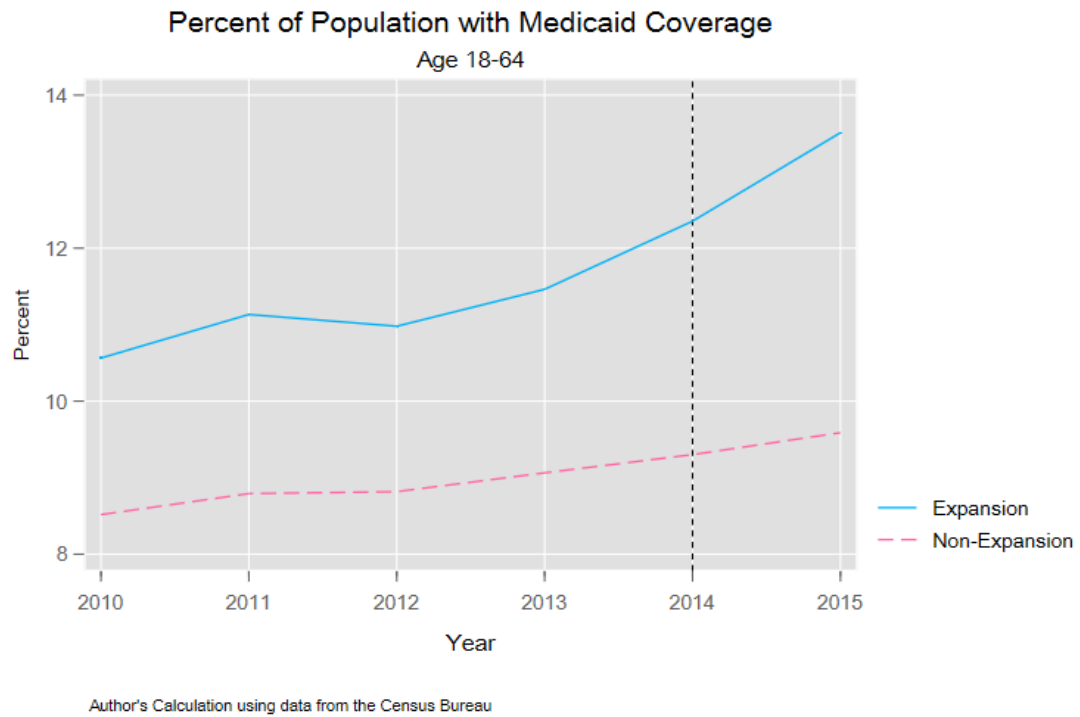


Figure 15. Percent of the Population Age 18-64 with Medicaid Coverage by Expansion Status

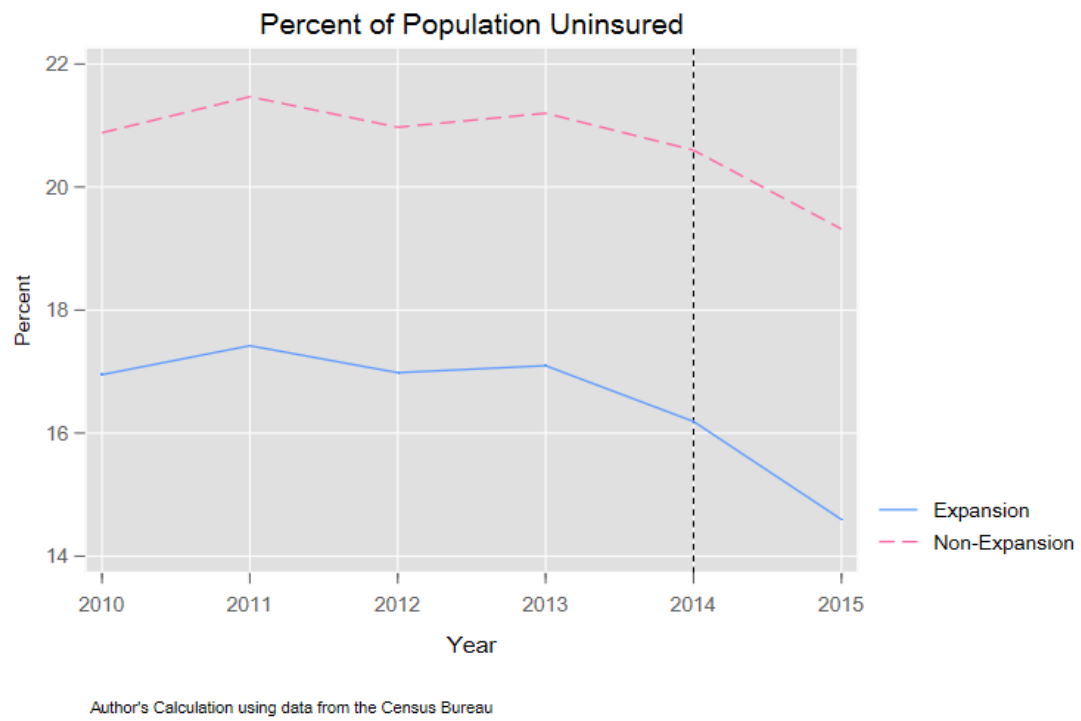


Figure 16. Percent of the Population Uninsured by Expansion Status