September 26, 2016

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The enclosed paper has been submitted to the *Journal of Extraordinary Ideas* for possible publication. I would appreciate your professional assessment as to the suitability of the paper for publication in *JEI*. I require a report by **Monday, October 31, 2016**.

For your report you should (1) submit a one-page cover letter addressed to me and (2) a separate 2-page anonymous report to the author.

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Thank you very much for your assistance in this important matter.

Sincerely,

Professor James P. Ziliak
Editor

I. INTRODUCTION

The 60-year-old government cash assistance program underwent a major transformation in 1996, with the initiation of the Personal Responsibility and Work Opportunity Reconciliation Act, also known as the Welfare Reform. One of the most radical changes was the inclusion of mandatory work requirements tied to welfare receipts. A little known fact, however, is that this requirement affects only three out of five welfare recipients (Table 1 column 2). The rest is either not counted in the work participation rate (i.e. Disregarded; Table 1 column 3) or not penalized for no work (i.e. Exempt; Table 1 column 4). The majority of these exemptions[1] are granted during pregnancy or immediately after giving birth. Despite the sizable portion of recipients exempt from work, there exist few studies on consequences of work exemptions granted directly around birth, when a mother's tradeoff between market work and home production is most pronounced[2].

The goal of this paper is to examine the effects of welfare work exemption rules on women's workforce participation and welfare receipt around childbirth. In the current study, my analyses focus on two exemption policies, the pregnancy exemption and the age of youngest child (AYC) exemption. These two make up 90 percent of all exemption cases.

Using data from the Survey of Income and Program Participation (SIPP), which allows a monthly trajectory of maternal work to be identified by following the same mothers, I use a difference in differences method within the event study framework. Two differences are estimated as changes in labor force participation 1) when a mother is eligible for exemptions relative to her own pre-birth participation level and 2) across the strictness of state exemption rules. I define the

[1] Hereafter, I call "exemption" for both "disregarded" and "exempt" categories, where this nuance is not critical.
[2] Ybarra (2014) used 2006 administrative data from Wisconsin and found almost half of program entrants are new mothers with infants or at-risk pregnancy, who are not subject to work requirements. 94 percent of these mothers were never married.

pregnancy exemption as strict if a state grants no exemption during pregnancy. The AYC exemption is defined as strict if a state grants an exemption shorter than 12 months after birth[3].

First of all, I find a notable increase in labor force participation for a mother exposed to strict exemption policies. Specifically, a mother not granted any exemption during pregnancy (strict pregnancy exemption) reveals a higher rate of labor force participation by 9 percentage points beginning in the last trimester compared to a mother granted an exemption during pregnancy (lenient pregnancy exemption). A mother with an AYC exemption shorter than 12 months (strict AYC exemption) shows jumps in labor force participation rate in certain months (i.e. by 5 percentage point in the first month, 7 percentage point in the fourth month, and 11 percentage point eight months after birth) relative to a mother with an AYC exemption longer than 12 months (lenient AYC exemption). These months precisely correspond to the three different types of the AYC allotments available in strict AYC states.

Secondly, I also investigate whether the increases in work activities induced by strict exemption rules help lower welfare dependency, such that stricter exemption policies lead women to leave welfare sooner than would more liberal exemptions. I find opposing pattern in welfare receipt trends between the two types of exemptions. The proportion of mothers on welfare decreases in the states with no pregnancy exemption. This suggests an accelerated welfare exit of mothers, who were stably attached to the labor force in the pre-birth period. Conversely, mothers who were subject to work activities shortly after birth show a higher rate of welfare dependency than those who were granted long work exemptions after childbirth. Collectively, these findings

[3] Note that the comparison is not exactly "apples-to-apples" so to speak. Instead, I am comparing the difference between NO exemption and some exemption for pregnant women, and the difference between a shorter and longer exemption for new mothers.

suggest that mothers face markedly different costs of working before and after childbirth, resulting in opposite welfare receipt responses.

There are five papers that examine the AYC exemption (Hofferth et al. 2002; Hofferth et al. 2005; Washbrook et al. 2011; Hill 2012; Herbst 2014), however, no study has examined the pregnancy exemption. Hofferth et al. (2002; 2005) evaluate the policies requiring work and their associations with welfare exit behavior. They discover that a tighter AYC exemption is associated with a higher likelihood of exiting welfare, but also an accelerated return to welfare. Washbrook et al. (2011) and Herbst (2014) utilize longitudinal data spanning nine months from the Early Childhood Longitudinal Study Birth cohort (ECLS-B) and exploit cross-state differences in the generosity of AYC allotments in 2001. Hill (2012) uses the June Fertility Supplement of the Current Population Survey between 1998 and 2008 to employ a standard difference-in-differences strategy. The papers showcase the strong impact of the AYC exemption, such that an AYC exemption shorter than 12 months increases maternal work during the first year after childbirth (Washbrook et al. 2011; Hill 2012), and has negative effects on children's cognitive ability (Herbst 2014). Yet, they are limited in identifying a trajectory of mother's labor force participation on a month-to-month basis both before and after childbirth.

The current study improves upon existing research by employing a more flexible measure of maternal employment, as well as an event study methodology to closely map out the evolution of labor force participation. Given that no study has examined the pregnancy exemption, another contribution of this paper is that it is the first to do so.

II. BACKGROUND: WORK EXEMPTIONS AFTER THE WELFARE REFORM

Before the Welfare Reform of 1996, work requirements existed in the form of Job Opportunities and Basic Skills Training (JOBS) program, which encouraged welfare recipients to engage in education, work, or training. Yet, it was not strictly enforced in that states' work participation rates could be as low as 10 percent of the caseload and penalties for non-compliance were mild (U.S. Department of Health and Human Services, 1996). Individuals were exempt from JOBS if they had a young child under age three (or one at state option) or if they were in their second or third trimester of pregnancy.

With the passage of the Welfare Reform, a new program named Temporary Assistance for Needy Families (TANF) replaced the old program. All states were required to meet higher work participation rate[4] targets by promoting welfare recipients to participate in countable work activities for an average of 30 hours per week.[5] Meeting the work participation rate has been a primary measure of success of state's new welfare program. However, states have often attempted to maximize the work participation rate at the expense of supporting welfare recipients in engaging in work activities—by closing cases, thereby reducing the size of the state's caseloads (Kauff and Derr, 2008).

The exemption criteria reduced substantially after the Welfare Reform. One of the few exemptions remaining for welfare recipients is the age of youngest child (AYC) exemption. Although federal law sets forth that single mothers with a child under age one be excluded from the work participation rate calculation, there exists considerable state variation regarding requiring

[4] The work participation rate was set at 25 percent in 1997, which increased to 50 percent in 2002.
[5] 20 hours for a single-parent family with a child under age six. Higher hours requirements would apply to two-parent families. When the original TANF authorization expired in 2002, Bush administration proposed work requirements of 40 hours per week, which did not become law. Until the Deficit Reduction Act of 2005, Congress passed only short-term extensions that largely maintained the original rules.

mothers with a child younger than age one to work. In addition, according to the federal guidelines, families are exempt from work requirements if any member has a severe disability or is in poor health (e.g. pregnancy). States were given wide discretion to design their own exemption rules and define specific criteria with respect to "young child", "disability" or "poor health".

Not every state enacted TANF in 1996. Some states have made changes to their exemption policies before the Welfare Reform by shortening them or by eliminating existing exemptions, while others made changes after. Table 2 and 3 present both cross-state and within-state changes between 1996 and 2003, the study period of this paper.

It is evident that the vast majority of states allowed pregnant women to collect benefits without fulfilling work requirements around the time of the Welfare Reform (Table 2 and Figure 1). 27 states eliminated the pregnancy exemption, imposing pregnant women to work as long as they are capable, with only 16 states retaining a pregnancy exemption by 2003.

Similarly, AYC exemptions longer than 12 months were the norm in 1996 across the country (Table 3 and Figure 2). However, 23 states shortened their AYC exemptions to be less than 12 months. By 2003, no states provided such a generous AYC exemption as during pre-welfare reform period, when a 36-month exemption was the most common allotment.

The current study explores the enormous between-state and within-state variation in exemption rules over the period of 1996 to 2003. I investigate whether stricter work exemptions led to an increase in women's labor force participation, particularly around childbirth, and how they have affected subsequent welfare receipts.

Another interesting variation in the AYC exemption is that some states apply different AYC exemptions to mothers depending on the child's birth order (e.g. longer exemption for first child), age and education of mothers (e.g. teen mothers without a high school degree are not

eligible for the AYC exemption). My paper takes advantage of the differential policy treatment at the individual, state and month level, which collectively provides an essential source of variation.

III. METHODOLOGY FOR ESTIMATING THE EFFECTS OF WELFARE WORK EXEMPTIONS

I employ an event study framework (Jacobson et al., 1993; Byker 2016) to depict a monthly trajectory of maternal labor force participation around the event of childbirth. I estimate a difference-in-differences within the event study, where two differences are changes in labor force participation of a woman 1) relative to her own pre-birth outcome 2) across the strictness of exemption rules, which is determined by the state, year, and order of childbirth.

To model the impact of the strict exemptions, I measure the policy as a simple binary indicator for the presence/absence of the pregnancy exemption and for the AYC exemption being shorter/longer than 12 months. I do not exploit all of the variation in the two policies by measuring the specific months that pregnant women are exempt from work or the months when the exemption expires after birth simply because there are disproportionate numbers of observations for each allotment. Making use of one significant cutoff in each exemption, I break down into two groups to clearly present it in a difference-in-differences model. I, however, provide descriptive evidence on women's labor force participation pattern by exploiting variation in each policy in the result section.

The choice of the cutoff is based on the federal guidelines. In specific, the federal government allows for a pregnancy exemption, but does not specify the month at which the exemption starts. Therefore, I consider states with a pregnancy exemption, no matter when the exemption begins, to be lenient, and states without a pregnancy exemption to be strict. For the AYC, single parents caring for an infant under age one are disregarded in measuring state

performance by the federal government. If states designed their AYC exemption rules such that single mothers are subject to mandatory work activities *before* an infant reaches age one, I define these states as AYC strict.

A. Difference-in-Differences (DD) in the Event Study

For each exemption policy, I estimate a simple difference-in-differences (DD) in the event study, where the two differences are 1) nine months before birth (eligible for neither of the work exemptions) versus all other post-months (eligible time periods), and 2) strict versus lenient states. I observe the same women over time, so women's own pre-birth outcomes can serve as the control for outcomes during the eligible period. The DD analysis allows me to see heterogeneous work trajectory by the strictness of exemption rules before and after being eligible for an exemption. I estimate equation (1) for single mothers and married mothers, separately:

$$(1)\ LFP_{ist} = \beta_i + \sum_{m=-12}^{m=12} \delta_t \cdot I_{ist}(m = t - B_i) + \sum_{m=-12}^{m=12} \pi_t \cdot I_{ist}(m = t - B_i) \cdot Strict_{is} + \alpha \cdot X_{st} + \epsilon_{ist}$$

The outcome of interest (LFP_{ist}) takes a value of one if a mother, *i*, in state, *s*, is in the labor force during month, *t*. Another outcome studied in subsequent analyses is an indicator for TANF receipt during month, *t*. Since I follow the same mothers over time, I include a set of individual fixed effects (β_i) without controlling for the demographic characteristics of mothers.

B_i is the event month of childbirth to a mother, *i*. Thus, m counts months relative to the event of birth, which ranges from −12 to +12. I omit the 9th month prior to birth as a reference group so that coefficients of interest map out the time path of changes in outcomes relative to the level of nine months before the birth (i.e. when a mother is not eligible for any of the exemptions).

$Strict_{is}$ is one if a mother was affected by a strict exemption policy given her state of residence, birth year and birth order of a child. The time frame of the study was during a period of substantial transformation of welfare and other social policies, as well as unemployment rates. Hence, I adjust for state characteristics (X_{st}) over the study period such as the unemployment rate, the maximum TANF and Supplemental Nutrition Assistance Program (SNAP) benefit amounts for a family of three, the maximum refundable Earned Income Tax Credit (EITC) credit, and state child support enforcement expenditures[6]. I cluster standard errors at the mother-birth level, since the level of the treatment could differ across childbirths of the same mothers, which is a function of both the year and the state in which the birth occurred.[7] The vector of coefficients (π_t), captures the changes in outcome relative to 9 months pre-birth between a mother living in a state where a strict exemption is in effect and a mother in a state with a lenient exemption.

I implement DD analysis separately for single mothers and married mothers to test whether the DD estimates are significant only for women who are receiving TANF. Marital status is widely used as a proxy for TANF eligibility in the welfare literature.[8] This also avoids the empirically important issue of systematic measurement error of welfare receipts in many survey data. I follow the standard practice in the welfare literature by incorporating only low-educated (i.e. less than bachelor's degree) mothers, who are at risk of receiving welfare, in the sample.

It is worth noting that some low-educated married mothers in the sample may have received benefits from TANF. Marital status does not perfectly predict TANF eligibility since married mothers comprise 10 percent of TANF recipients. To the extent that married women can benefit

[6] I also included state and year fixed effects to the regression, which produced similar results.
[7] As a robustness check, I cluster at the state level, but the results remain substantially similar.
[8] Married women with children or single women without children often serve as comparison groups. (e.g. Meyer and Rosenbaum 2000, 2001; Kaushal and Kaestner 2001; Kaestner, Korenman and O'Neill 2003; Kaushal, Gao, and Waldfogel 2007; Hill 2012)

from TANF and single women may not receive TANF benefits, this study may *underestimate* the actual impact of TANF exemption policies and can be interpreted as a lower bound.

IV. DATA AND MEASUREMENT

A. Data: Survey of Income and Program Participation

To measure the month-to-month evolution of labor supply before and after childbirth, it is essential to know the exact timing of childbirth as well as the mother's monthly work status. The Survey of Income and Program Participation (SIPP) core module contains detailed information on all of these critical measures. SIPP is a nationally representative longitudinal data set, following the same respondents for three to four years in each panel. SIPP also uses a relatively short recall period of four months.

I use the 1996 and 2001 panels whose reference periods cover 1996 to 2003[9], a period starting from the passage of the Welfare Reform until its aftermath had been stabilized. In 2002, TANF was reauthorized with only a few modifications, creating little cross-year variation afterward. Therefore, I use only the 1996 and 2001 panels, during which the TANF policy had changed substantially year by year. Five U.S. states (Maine, Vermont, Wyoming, North Dakota, and South Dakota) are not uniquely identifiable in the SIPP, so observations from these states are dropped. For all analyses, I use individual weight measured at the last wave during the panel. Lastly, I obtain state TANF policy data from the Welfare Rules Database of the Urban Institute, which is widely used in the welfare literature (e.g. Washbrook et al. 2011; Hill 2012; Herbst 2014).

[9] The reference period of the 1996 panel is from December 1995 to February 2000, and that of the 2001 panel is from October 2000 to December 2003. Thus, the 7 months from March 2000 to September 2000 are not covered in the analysis.

B. Analysis Sample for Women's Labor Force Participation

SIPP reports birth month and birth year of all individuals in families. Accordingly, I can identify newborns whose birth month and year align with the month and year of survey, and identify mothers of newborns, using a mom identifier. There are a total of 1,811 mothers and 1,884 mother-births (meaning that some mothers had multiple births during the same panel) in the analysis sample. After identifying mothers using the month of childbirth, I merge their labor force participation information in the 12 months leading up to and the 12 months following childbirth, from other waves in the same panel. Note that not all women have information for the full 12 lead and 12 lag months because women give birth at different points over the course of the SIPP panel. Whether I can observe $m = t - Birth_i,\ m \in [-12,12]$ for a woman depends on when the birth falls in the SIPP panels, which is unlikely to be manipulated. Therefore, variation in m across mothers is not correlated with unobserved factors that affect women's labor force participation.

Month of birth is available for all observations. Consequently, the sample size is larger for months surrounding the event of birth and declines as the observations move farther away from the month of birth.

C. Measurement of Labor Force Participation

TANF defines work as labor force participation (U.S. Census Bureau, 2002). A broad range of work-related activities, such as community service or vocational training, also satisfy work requirements[10].

[10] Almost two-thirds of TANF recipients who met their work requirements did so by working full- or part-time jobs in the public or private sectors that are not subsidized by TANF or other public programs. Participation in all other categories was low (The Brookings Institution Policy Brief, 2004).

Therefore, I use an indicator of participation in the labor force as my main outcome. A woman is counted as *in the labor force* if she worked, was with a job, laid off, on leave, or searching for a job during the reference month[11]. She is considered *out of the labor force* if she had no job, no time on layoff, and no time looking for work all month.

D. Descriptive Evidence on Labor Force Participation

To grasp a descriptive picture of women's labor force participation patterns around childbirth, a simple event study specification is estimated:

$$(2) \quad LFP_{ist} = \beta_i + \sum_{m=-24}^{m=24} \delta_t \cdot I_{ist}(m = t - B_i) \; + \epsilon_{ist}$$

β_i are individual fixed effects and $I_{ist}(m = t - B_i)$ is a set of indicators for months relative to the event of birth (B_i), where *m* ranges from 24 months before to 24 months after. When drawing descriptive plots, I omit the 12th month prior to birth as a reference group so that the δ_t coefficients map out the time path of changes in labor force participation relative to the level a year before the birth.

Figure 3 Panel A depicts the overall labor force participation trend for all low-educated women in the sample. Labor force participation starts to decline from nine months prior to childbirth and then rebounds after giving birth. Heterogeneous patterns are observed by marital status: Panel B reveals that there is a more drastic dip and leap around birth for single mothers, while the rates for married mothers stay relatively stable.

[11] In the SIPP, there is an indicator for whether a mother attended schooling or training because social services or a welfare office paid for, referred, or sent her. But, this variable is asked for the reference period (4 months), not for each month. I included this variable to main outcomes, but the results remain substantially similar.

V. RESULTS: THE IMPACT OF THE PREGNANCY EXEMPTIOM

Pregnant women are eligible for TANF, in which case the enrollment is conditional on receipt of medical documentation of pregnancy. Although federal guidelines do not explicitly specify the month in pregnancy from which women can be exempt (Table 1 column 4), we see that some states grant exemptions early in the pregnancy (from the second trimester), while others grant it later in the pregnancy (from the third trimester or only for the last month). I define *strict* pregnancy exemption as *no* pregnancy exemption.

In this section, I explore the heterogeneous effects by the strictness of pregnancy exemption on women's labor force participation. Furthermore, I uncover any potential consequences on future welfare dependency.

A. The Impact of the Pregnancy Exemption on Labor Force Participation

Figure 4 displays descriptive evidence of women's labor force participation responses to the pregnancy exemption. As the arrow indicates in Panel A, the month in which a divergence in labor force participation occurs coincides precisely with what the policy dictates for the target group. Single mothers who are required to work during pregnancy reduce labor force participation by less than their counterparts who are exempt beginning in the second trimester. The gap between the two groups starts to open up exactly at the initiation of the second trimester. This trend is not observed for the low-educated married mothers in Panel B.

Figure 5 presents difference-in-differences (DD) event study estimates for single mothers (Panel A) and married mothers (Panel B). The DD coefficient (π_t) is depicted by a shaded area at the bottom, which indicates differences in outcome trends between strict and lenient states relative to the reference month (i.e. nine months before birth). In Panel A, the DD for single mothers becomes positive from the second trimester of pregnancy. Table 4 reports that the DD estimates

are positive and significantly different from zero between two months before giving birth and four months post birth. In contrast, in Figure 5 Panel B, the DD estimates are essentially zero for married mothers.

B. The Impact of the Pregnancy Exemption on TANF Receipt

I replace the main outcome with the monthly TANF receipt. Figure 6 reveals that the monthly TANF receipt pattern between the strict and lenient states diverges after childbirth. The difference is zero during the pre-birth period, but a greater increase in welfare receipts after childbirth is evident for single mothers who were exempt from work compared to those who were required to work during pregnancy. Table 5 documents that the difference between the two groups reaches almost 10 percentage points six months after birth. This finding suggests that work activities enforced during pregnancy lasts as a stable labor force attachment after birth, and subsequently, mothers do not seek for more or longer government assistance. On the other hand, work-exempt single mothers who opt out of the labor force during pregnancy may suffer from penalties from labor force interruptions, by signaling a lack of commitment or less accumulation of human capital. This triggers a higher and longer reliance on welfare as witnessed in Figure 6 and Table 5. A flat line at zero for low-educated married mothers in Panel B ensures that the effects originate from TANF recipients—low-educated single mothers.

VI. RESULTS: THE IMPACT OF THE AGE OF YOUNGEST CHILD (AYC) EXEMPTION

New mothers represent a large share of TANF entrants (Ybarra, 2014), in which case TANF enrollment is conditional on receipt of a birth certificate. Federal TANF guidelines allow states to provide benefits to mothers during the first year after giving birth without imposing work

requirements (Table 1, second part of column 3). The length of the work exemptions available for new mothers varies considerably across states and by the birth order of a child, ranging from 0 months (i.e. no exemption) to 60 months. The most common AYC exemption is 12 months (about 50 percent), complying with the federal guidelines, followed by 3 to 4 months and 36 months[12].

I define an AYC exemption as strict if it is less than 12 months, which is shorter than what the federal TANF guidelines suggest. In this section, I quantify the heterogeneous effects by the strictness of the AYC exemption on women's labor force participation and TANF receipt.

A. The Impact of the AYC Exemption on Labor Force Participation

Figure 7 Panel A illustrates a descriptive pattern of average labor force participation across three different AYC groups. For all three groups, the month in which labor force participation rates return to the same level as nine months before birth (i.e. reference month) corresponds to the state's allotment, as the arrows indicate. This pattern is not observed for married mothers in Panel B.

Figure 8 presents the difference-in-differences (DD) event study estimates for single mothers (Panel A) and married mothers (Panel B). Labor force participation for single mothers with an AYC exemption shorter than 12 months exhibits a jump in the first, fourth, and eighth month after giving birth, as indicated with arrows. These timings are surprisingly consistent with the fact that the most common AYC length in the strict states is 3 to 4 months (64 percent), followed by 0 month (21 percent) and 6 months (14 percent). In Table 6, the DD estimates are

[12] Concerns may arise that these mothers could also benefit from the Family and Medical Leave Act (FMLA), which guarantees 12 weeks of unpaid, job-protected leave. But, the act has garnered widespread criticism for covering only about half of all women in the workforce (Berger and Waldfogel, 2004), and only a fifth of new mothers (Ruhm, 1997). Acs and Nichols (2007), using 2004 Current Population Survey data, found that those who use FMLA coverage are most likely to be professional, salaried workers with higher earnings and education (U.S. Department of Labor, 2001). Therefore, the uniform consensus is that the FMLA has disproportionately excluded low-income women. Ybarra (2013) discovered that new-mother welfare participants use TANF in a similar way to how other mothers use FMLA or paid leave in Wisconsin, which provides evidence related to a lack of employer-provided paid leave.

close to zero during the pre-birth period, but become positive after birth. Labor force participation rates are higher by 5 percentage points in the first month, by 7 percentage points in the fourth month, and by 11 percentage points in the eighth month for mothers who are subject to work within 12 months of birth than their counterparts who are not subject to work for the first 12 months. The DD estimates are not distinguishable from zero for married mothers.

These estimates are well within the range reported from previous studies (Hill, 2012; Washbrook et al., 2011). Hill (2012) finds that no AYC exemption increases *full-time* work by single mothers by 23 percentage points compared to an AYC exemption of 12 months or longer. Washbrook et al. (2011) reports that long AYC exemptions reduce maternal work at or before four months by 7 percentage points, which is sustained intact to nine months after birth.

B. The Impact of the AYC Exemption on TANF Receipt

The monthly TANF receipt by the strictness of the AYC exemption is presented in Figure 9 and Table 7. Single mothers with a short AYC exemption exhibit a greater increase in TANF receipt by 6 to 8 percentage points during pregnancy and up to one year post-birth. This pattern suggests that work enforced when a mother is balancing the competing roles of work and motherhood may impede her stable attachment to the workforce, only to extend her time on welfare. The opposing patterns in welfare dependency between the pregnancy exemption and the AYC exemption could be attributable to different opportunity cost of working for mothers. Conflict between employment and home life is maximized immediately after birth, which enormously increases the opportunity cost of working relative to the pre-birth period. Therefore, work imposed shortly after birth may impair their self-sufficiency in the long run.

C. Are Other TANF Policies Changing Simultaneously?

Another difficulty arises because a state's choices of TANF program parameters may be correlated. The work exemption is only one parameter of TANF program. It is challenging to disentangle the impact of provisions in the TANF package and attribute any effects specifically to the work exemptions. Therefore, an additional identifying assumption is needed: Between-state and within-state variation in the exemption policies should be orthogonal with variation in other TANF policy parameters. Possible TANF policies established after the Welfare Reform could also affect labor force participation rates, including the minimum hours required for work, family cap, full sanctions, and welfare lifetime limits,[13] all of which vary across states.

Indeed, I find that states with strict exemption policies are also strict in other dimensions of their welfare policy. For example, a state with a short AYC exemption or no pregnancy exemption is more likely to terminate the benefits as a penalty for non-compliance (i.e. full sanction) rather than to reduce the benefits (i.e. partial sanction). These states are also more likely to impose a cap on TANF maximum benefits and to have a shorter lifetime limit. Hence, estimates of this study could be overestimated to the extent that other TANF policies also affect mothers' labor force participation decisions in the same direction as the work exemption.

However, I make use of one particular feature of the exemption policies: They become effective at a specific month during pregnancy or after giving birth. None of the other policies necessarily come into effect in the months proximate to childbirth. Welfare recipients could alter their work decisions in any month when the rule is likely to bind. A key component of my findings

[13] Currently, about 23 states have implemented some type of a "family cap" or "child exclusion" policy, which denies the increase in welfare benefit amounts after the birth of another child. Under the "full sanction", benefits are terminated as a penalty for failure to engage in work, whereas benefits are reduced under the "partial sanction". Moffitt (2007) provides an excellent review of the rules and structure of the TANF as well as comparison of TANF with the historic AFDC (Aid to Families with Dependent Children) program.

is that the effects visibly appear at two months before childbirth in response to the absence of the pregnancy exemption. In response to the short AYC exemption, the effects emerge in the months when the exemption expires in the strict AYC states. If these results were due to other welfare policies, then we would not see the changes in mothers' work behavior at months when the pregnancy or the AYC entitlements begin or expire.

VII. CONCLUSION

Welfare reform transformed the longstanding cash assistance program by tying welfare benefits more strongly to work. States were given block grant funding from the federal government to design their own TANF programs, such as work requirement and exemption rules, and achieve high work participation rates among welfare recipients.

In this paper, I shed light on the effects of the two most prevalent exemption policies which apply to pregnant women or new mothers. These policies vary considerably across states in the length of the exemption. Exploiting not only cross-state but also cross-year variation during the post-welfare reform period, I explore mothers' labor supply responses to the exemption policies. Also, I closely examine the monthly trajectory of welfare receipt by the strictness of exemption to address whether the policies achieved their goal of moving people from welfare to work.

I discover a sizable impact on labor force participation, strongly driven by single mothers. Work enforced during pregnancy, due to the absence of the pregnancy exemption, induces more women to be attached to the workforce before they give birth. Work required shortly after birth leads to a higher labor force participation rate in months exactly when the AYC exemption expires. In contrast, effects on TANF receipts are different between the two exemptions. Work required during pregnancy eventually lowers welfare dependency, whereas work required after birth is found to be associated with higher welfare dependency. This opposite pattern in welfare receipt

can be explained by different economic cost of working for mothers – Having difficulty balancing work and family is the reason that welfare receipt increases after childbirth in states that require mothers to work sooner after giving birth. Meanwhile, women required to work during pregnancy do not face as high cost of working as new mothers with infants.

All in all, this suggests that mandatory work required when family responsibilities are pressing can make it even harder for single mothers to find a stable and consistent attachment to the workforce, thereby triggering more dependency on welfare.

A widely accepted agreement is that work should be a key element of government assistance programs. Yet, prescriptive work requirements imposed on a mother with a young child may give rise to mere labor force *participation*, but not actual *employment*. By delving into welfare work exemption policies that have been studied little, I quantify mothers' behavioral responses, which is pivotal for understanding the potential costs and benefits of work enforcement on mothers directly around childbirth. This paper offers useful insights into the optimal structure of TANF work exemption rules to better support vulnerable groups in engaging in the workforce more stably and consistently. Well-established work requirements and exemption policies can have a long-lasting impact, helping these groups to eventually achieve economic independence and self-sufficiency.

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TABLE 1

Distribution of TANF Recipients by Work Participation Status

(1)	(2)	(3)		(4)	(5)
Fiscal year	**Work required**	**Disregarded[1)]**		**Exempt[2)]**	**Deemed engaged in work**
		Sanction[3)]/ tribal work[4)]	**Child under 12 months**	**Disabled, in poor health or pregnant**	**Single parents with child under age 6/ teen parents[5)]**
FY98	58.3	3.3	8.4	16.8	12.2
FY99	55.2	3.5	9.2	13.9	17.2
FY03	61.7	6.1	8.6	12.9	10.7
FY07	60.6	3.3	11.7	13.5	9.7
FY09	61.6	1.5	11.1	12.6	11.0
FY10	59.9	1.8	10.4	14.6	11.2
FY11	59.1	1.9	9.8	14.9	11.8

Notes: 1) "Disregarded" means that the TANF family is not included in the calculation of the work participation rate; 2) "Exempt" means that the individual will not be penalized for failure to engage in work (i.e., good cause exception); 3) Benefits are reduced or terminated for families under sanction as a penalty, thus they are disregarded from the calculation of work participation rates until the sanction is removed; 4) Work participation rates are not applicable to tribes; 5) Single parents with a child under age 6 engaged in work activities for at least 20 hours per week and teen parents who participate in education are deemed engaged in work

Source: TANF Annual Report to Congress, Administration for Children and Families (ACF) Archives, U.S. Department of Health and Human Services

FY98: 2nd Annual Report to Congress Table 9:19 (http://archive.acf.hhs.gov/programs/ofa/data-reports/annual2/tan19995.pdf)

FY99: 3rd Annual Report to Congress Table 10:19 (http://archive.acf.hhs.gov/programs/ofa/data-reports/annual3/annual3.pdf)

FY03: 7th Annual Report to Congress Table 10:28 (http://archive.acf.hhs.gov/programs/ofa/data-reports/annualreport7/Appendix/TANF_7th_Report_Appendix.pdf)

FY07: 9th Annual Report to Congress Table 10:28 (http://www.acf.hhs.gov/sites/default/files/ofa/ar9appendix.pdf)

FY09: Characteristics and Financial Circumstances of TANF Recipients, Fiscal Year 2009, Table 27 (http://www.acf.hhs.gov/programs/ofa/resource/character/fy2009/tab27)

FY10: Characteristics and Financial Circumstances of TANF Recipients, Fiscal Year 2010, Table 27 (http://www.acf.hhs.gov/sites/default/files/ofa/appendix_ys_final.pdf)

FY11: Characteristics and Financial Circumstances of TANF Recipients, Fiscal Year 2011, Table 27 (http://www.acf.hhs.gov/sites/default/files/ofa/appendix_fy2011_final_amend.pdf)

TABLE 2

Pregnancy Exemption for 1996−2003 (Month in Pregnancy)

State	1996	1997	1998	1999	2000	2001	2002	2003	Changes
Alabama	No	No	No	No	No	No	No	No	Same
Alaska	4	4	No	No	No	No	No	No	Stricter
Arizona	4	4	No	No	No	No	No	No	Stricter
Arkansas	7	7	7	7	7	7	7	7	Same
California	4	4	4	No	No	No	No	No	Stricter
Colorado	4	4	No	No	No	No	No	No	Stricter
Connecticut	No	No	No	No	No	No	No	No	Same
Delaware	No	No	No	No	No	No	No	No	Same
District of Columbia	4	4	4	4	6	6	6	6	Same
Florida	4	4	No	No	No	No	No	No	Stricter
Georgia	4	4	No	No	No	No	No	No	Stricter
Hawaii	4	No	No	No	No	No	No	No	Stricter
Idaho	4	4	No	No	No	No	No	No	Stricter
Illinois	4	4	No	No	No	No	No	No	Stricter
Indiana	4	4	4	4	4	4	4	4	Same
Iowa	No	No	No	No	No	No	No	No	Same
Kansas	4	No	No	No	No	No	No	No	Stricter
Kentucky	4	No	No	No	No	No	No	No	Stricter
Louisiana	4	4	No	No	No	No	No	No	Stricter
Maine	4	4	No	No	No	No	No	No	Stricter
Maryland	4	No	No	No	No	No	No	No	Stricter
Massachusetts	NA	NA	NA	NA	NA	NA	NA	NA	NA
Michigan	No	No	No	No	No	No	No	No	Same
Minnesota	4	4	4	No	No	No	No	No	Stricter
Mississippi	4	4	7	7	7	7	7	7	Same
Missouri	4	4	4	7	7	7	7	7	Same
Montana	4	4	No	No	No	No	No	No	Stricter
Nebraska	4	4	6	6	6	6	6	6	Same
Nevada	4	No	No	No	4	4	4	4	Lenient
New Hampshire	4	4	4	4	4	4	4	4	Same
New Jersey	4	4	7	7	7	7	7	7	Same
New Mexico	4	4	6	7	7	7	7	7	Same
New York	4	4	4	9	9	9	9	9	Same
North Carolina	No	No	No	No	No	No	No	No	Same
North Dakota	4	4	4	4	4	4	4	4	Same
Ohio	3	3	No	No	No	No	No	No	Stricter
Oklahoma	4	No	No	No	No	No	No	No	Stricter
Oregon	4	9	9	9	9	9	9	9	Same
Pennsylvania	4	No	No	No	No	No	No	No	Stricter
Rhode Island	4	7	7	7	7	7	7	7	Same
South Carolina	4	7	7	7	7	7	7	7	Same
South Dakota	4	4	No	No	No	No	No	No	Stricter
Tennessee	4	No	No	No	No	No	No	No	Stricter
Texas	4	3	3	3	3	3	No	No	Stricter
Utah	No	No	No	No	No	No	No	No	Same
Vermont	4	4	4	4	4	4	No	No	Stricter
Virginia	4	4	4	4	4	4	4	4	Same
Washington	4	4	No	No	No	No	No	No	Stricter
West Virginia	4	7	7	7	7	7	7	No	Stricter
Wisconsin	4	No	No	No	No	No	No	No	Stricter
Wyoming	4	4	No	No	No	No	No	No	Stricter
Number of States with Pregnancy Exemption	43	34	20	18	19	19	17	16	

Note: "No" indicates that there is no exemption granted during pregnancy otherwise one is proved to be incapable of working. “NA” means that data is not available

TABLE 3

AYC Exemption for 1996−2003 (in Months)

State	1996	1997	1998	1999	2000	2001	2002	2003	Changes
Alabama	36	12	12	12	3	3	3	3	Stricter
Alaska	36	36	12	12	12	12	12	12	Same
Arizona	24	12	0	0	0	0	0	0	Stricter
Arkansas	12	12	3	3	3	3	3	3	Stricter
California	36	36	36	12	12	12	12	12	Same
Colorado	12	12	0	0	0	0	0	0	Stricter
Connecticut	24	12	12	12	12	12	12	12	Same
Delaware	36	36	3.25	3.25	3.25	3.25	3.25	3.25	Stricter
District of Columbia	36	36	36	12	12	12	12	12	Same
Florida	36	3	3	3	3	3	3	3	Stricter
Georgia	36	36	12	12	12	12	12	12	Same
Hawaii	36	6	6	6	6	6	6	6	Stricter
Idaho	36	36	0	0	0	0	0	0	Stricter
Illinois	36	36	12	12	12	12	12	12	Same
Indiana	36	24	12	3	3	3	3	3	Stricter
Iowa	3	3	3	3	3	3	3	3	Same
Kansas	36	12	12	12	12	12	12	12	Same
Kentucky	36	12	12	12	12	12	12	12	Same
Louisiana	12	12	12	12	12	12	12	12	Same
Maine	36	36	12	12	12	12	12	12	Same
Maryland	36	12	12	12	12	12	12	12	Same
Massachusetts	24	24	24	24	24	24	24	24	Same
Michigan	12	3	3	3	3	3	3	3	Stricter
Minnesota	36	36	36	12	12	12	12	12	Same
Mississippi	36	36	12	12	12	12	12	12	Same
Missouri	36	36	12	12	12	12	12	12	Same
Montana	12	12	0	0	0	0	0	0	Stricter
Nebraska	12	3	3	3	3	3	3	3	Stricter
Nevada	36	12	12	12	12	12	12	12	Same
New Hampshire	36	36	24	24	24	24	24	24	Same
New Jersey	24	24	3	3	3	3	3	3	Stricter
New Mexico	36	36	12	12	12	12	12	12	Same
New York	36	36	36	3	3	3	3	3	Stricter
North Carolina	36	60	60	12	12	12	12	12	Same
North Dakota	36	24	4	4	4	4	4	4	Stricter
Ohio	12	12	12	12	12	12	12	12	Same
Oklahoma	12	12	3	3	3	3	3	3	Stricter
Oregon	12	3	3	3	3	3	3	3	Stricter
Pennsylvania	36	12	12	12	12	12	12	12	Same
Rhode Island	36	12	12	12	12	12	12	12	Same
South Carolina	36	12	12	12	12	12	12	12	Same
South Dakota	12	12	3	3	3	3	3	3	Stricter
Tennessee	12	4	4	4	4	4	4	4	Stricter
Texas	36	60	48	48	36	24	12	12	Same
Utah	0	0	0	0	0	0	0	0	Same
Vermont	18	18	18	18	18	18	24	24	Same
Virginia	36	18	18	18	18	18	18	18	Same
Washington	36	12	4	4	4	4	4	4	Stricter
West Virginia	36	12	12	12	12	12	12	6	Stricter
Wisconsin	12	3	3	3	3	3	3	3	Stricter
Wyoming	12	12	3	3	3	3	3	3	Stricter
Number of States with AYC longer than 12 months	49	41	30	28	27	27	27	26	

TABLE 4

Difference-in-Differences Estimates of The Pregnancy Exemption on Labor Force Participation

Month-relative-to-birth	7 months before birth	6 months before birth	5 months before birth	4 months before birth	3 months before birth	2 months before birth	1 month before birth	month of birth
Panel A: Before birth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Strict x (months to birth)	-0.034	-0.023	-0.005	0.040	0.042	0.089*	0.093**	0.089**
	(0.048)	(0.049)	(0.049)	(0.051)	(0.050)	(0.049)	(0.047)	(0.047)
Month-relative-to-birth	1 month after birth	2 months after birth	3 months after birth	4 months after birth	5 months after birth	6 months after birth	7 months after birth	8 months after birth
Panel B: After birth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Strict x (months from birth)	0.083*	0.074	0.069	0.111**	0.058	0.049	0.018	0.048
	(0.047)	(0.048)	(0.049)	(0.049)	(0.053)	(0.052)	(0.052)	(0.053)

Notes: These are the monthly DD estimates in Figure 5, corresponding to π_t in equation (1). The end-of-survey SIPP sampling weights are used for each mother-birth level observation. Standard errors are clustered by mother-birth.

*** P<0.01; ** P<0.05; * P<0.1.

TABLE 5

Difference-in-Differences Estimates of The Pregnancy Exemption on TANF Participation

Month-relative-to-birth	8 months before birth	7 months before birth	6 months before birth	5 months before birth	4 months before birth	3 months before birth	2 months before birth	1 month before birth	month of birth
Panel A: Before birth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Strict x (months to birth)	-0.003	0.004	0.004	0.010	-0.027	-0.015	-0.009	-0.010	-0.041
	(0.033)	(0.034)	(0.036)	(0.035)	(0.031)	(0.034)	(0.033)	(0.034)	(0.036)
Month-relative-to-birth	1 month after birth	2 months after birth	3 months after birth	4 months after birth	5 months after birth	6 months after birth	7 months after birth	8 months after birth	9 months after birth
Panel B: After birth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Strict x (months from birth)	-0.046	-0.061*	-0.047	-0.041	-0.055	-0.091***	-0.099***	-0.1***	-0.138***
	(0.036)	(0.037)	(0.037)	(0.037)	(0.035)	(0.038)	(0.039)	(0.041)	(0.041)

Notes: These are the monthly DD estimates in Figure 6, corresponding to π_t in equation (1). The end-of-survey SIPP sampling weights are used for each mother-birth level observation. Standard errors are clustered by mother-birth.

*** P<0.01; ** P<0.05; * P<0.1.

TABLE 6

Difference-in-Differences Estimates of The AYC Exemption on Labor Force Participation

Month-relative-to-birth	7 months before birth	6 months before birth	5 months before birth	4 months before birth	3 months before birth	2 months before birth	1 month before birth	month of birth
Panel A: Before birth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Strict x (months to birth)	0.007	0.015	0.019	0.016	0.021	0.034	-0.004	0.009
	(0.040)	(0.049)	(0.054)	(0.054)	(0.053)	(0.056)	(0.056)	(0.057)
Month-relative-to-birth	1 month after birth	2 months after birth	3 months after birth	4 months after birth	5 months after birth	6 months after birth	7 months after birth	8 months after birth
Panel B: After birth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Strict x (months from birth)	0.053	0.035	0.027	0.068	0.084	0.028	0.054	0.111*
	(0.058)	(0.060)	(0.063)	(0.068)	(0.072)	(0.073)	(0.072)	(0.069)

Notes: These are the monthly DD estimates in Figure 8, corresponding to π_t in equation (1). The end-of-survey SIPP sampling weights are used for each mother-birth level observation. Standard errors are clustered by mother-birth.

*** P<0.01; ** P<0.05; * P<0.1.

TABLE 7

Difference-in-Differences Estimates of The AYC Exemption on TANF Participation

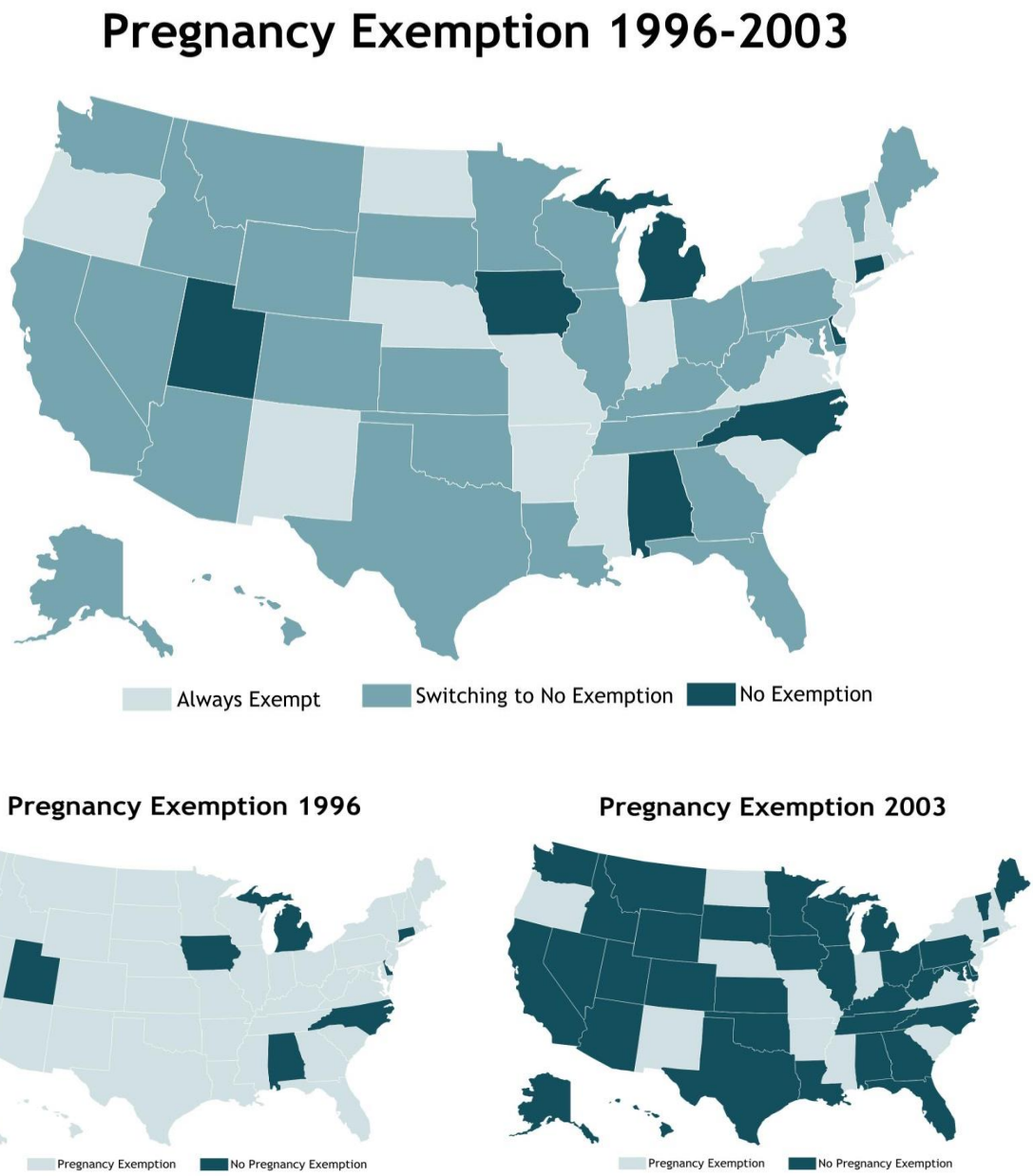
Month-relative-to-birth	8 months before birth	7 months before birth	6 months before birth	5 months before birth	4 months before birth	3 months before birth	2 months before birth	1 month before birth	month of birth
Panel A: Before birth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Strict x (months to birth)	0.011	0.033	0.032	0.056*	0.078**	0.059	0.064*	0.082**	0.052
	(0.013)	(0.023)	(0.029)	(0.034)	(0.035)	(0.038)	(0.036)	(0.039)	(0.040)
Month-relative-to-birth	1 month after birth	2 months after birth	3 months after birth	4 months after birth	5 months after birth	6 months after birth	7 months after birth	8 months after birth	9 months after birth
Panel B: After birth	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Strict x (months from birth)	0.065	0.073*	0.052	0.072	0.085*	0.066	0.083*	0.079	0.067
	(0.042)	(0.045)	(0.043)	(0.047)	(0.048)	(0.050)	(0.052)	(0.053)	(0.056)

Notes: These are the monthly DD estimates in Figure 9, corresponding to π_t in equation (1). The end-of-survey SIPP sampling weights are used for each mother-birth level observation. Standard errors are clustered by mother-birth.

*** P<0.01; ** P<0.05; * P<0.1.

FIGURE 1

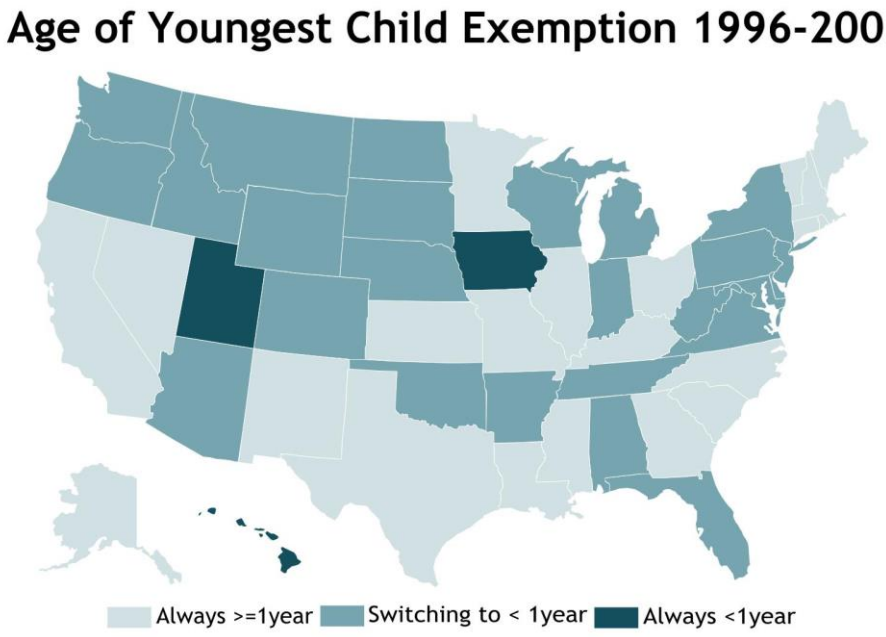
Cross-State and Within-State Variation in The Pregnancy Exemption

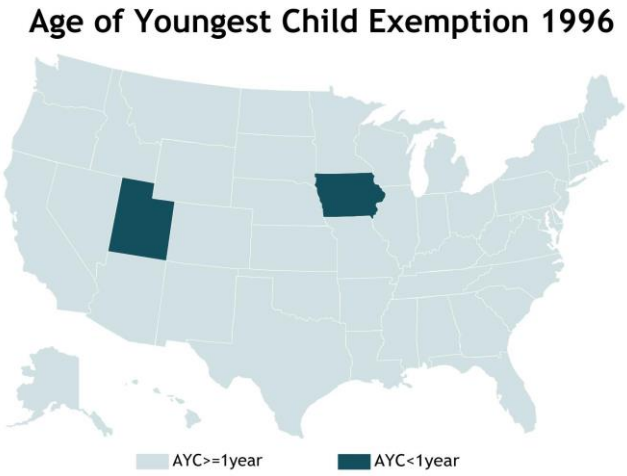


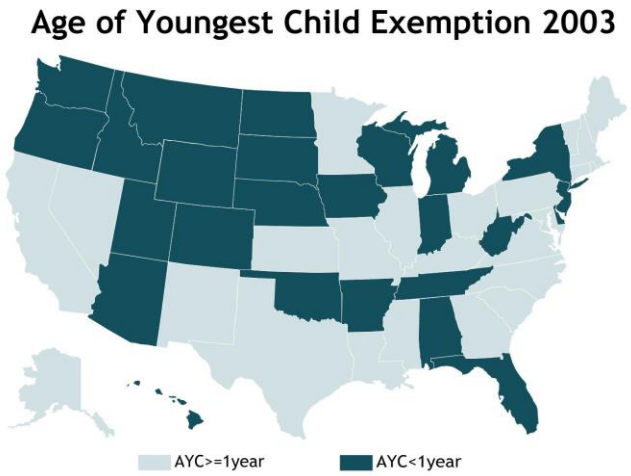
Pregnancy exemption 1996-2003	Always lenient (Pregnancy exemption always existed)	Always strict (Pregnancy exemption never existed)	Lenient to strict (Eliminated pregnancy exemption)
Number of states	15	7	27
States	AR, DC, IN, MS, MO, NE, NH, NJ, NM, NY, ND, OR, RI, SC, VA	AL, CT, DE, IA, MI, NC, UT	AK, AZ, CA, CO, FL, GA, HI, ID, IL, KS, KY, LA, ME, MD, MN, MT, OH, OK, PA, SD, TN, TX, VT, WA, WV, WI, WY

FIGURE 2

Cross-State and Within-State Variation in The Age of Youngest Child Exemption





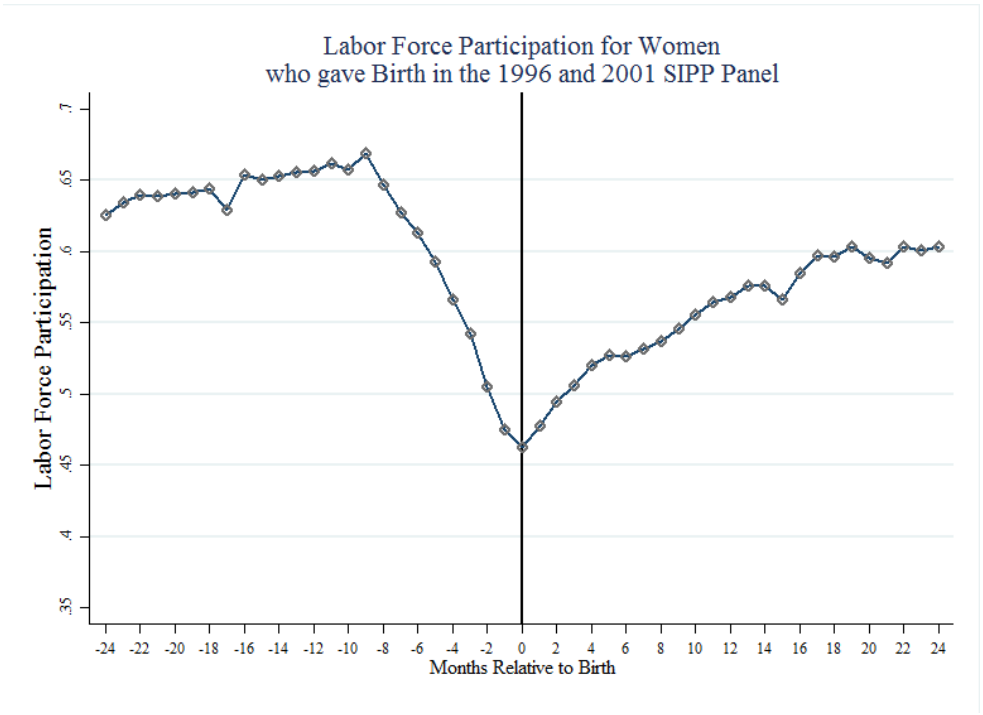


AYC Exemption 1996-2003	Always lenient (≥ 12 months)	Always strict (<12months)	Lenient to strict
Number of states	26	2	23
States	AK, CA, CT, DC, GA, IL, KS, KY, LA, ME, MD, MA, MN, MS, MO, NV, NH, NM, NC, OH, PA, RI, SC, TX, VA, VT	IA, UT	AL, AZ, AR, CO, DE, FL, HI, ID, IN, MI, MT, NE, NJ, NY, ND, OK, OR, SD, TN, WA, WV, WI, WY

FIGURE 3

Descriptive Patterns in Low-Educated Women's Labor Force Participation

Panel A



Panel B

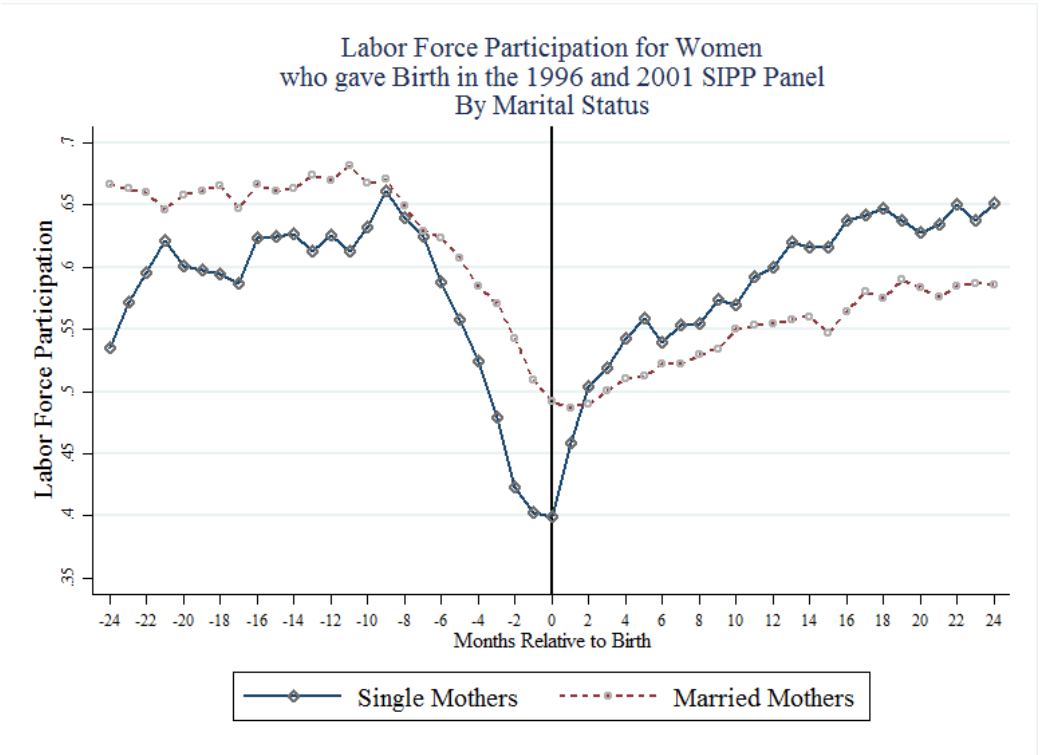
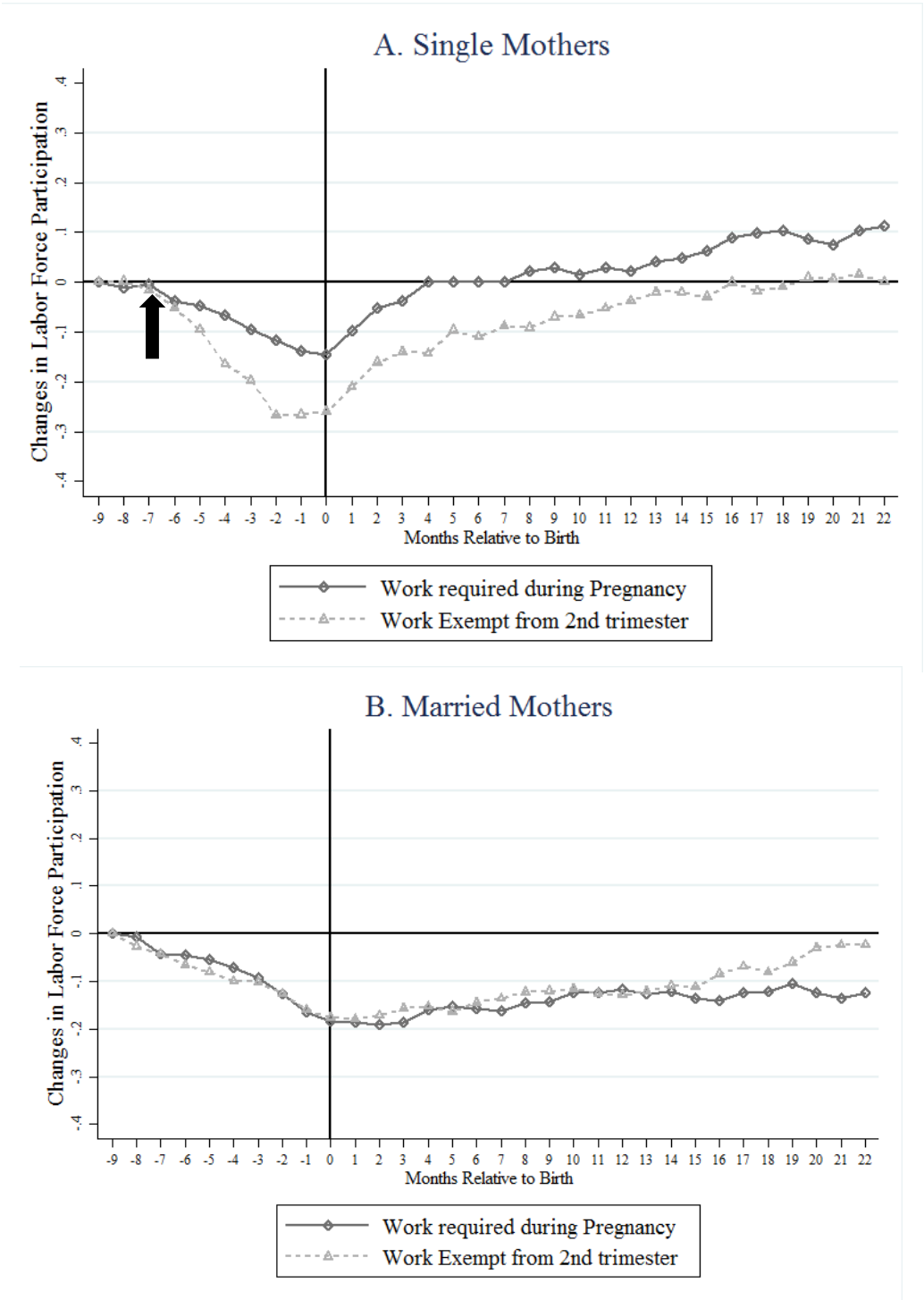


FIGURE 4

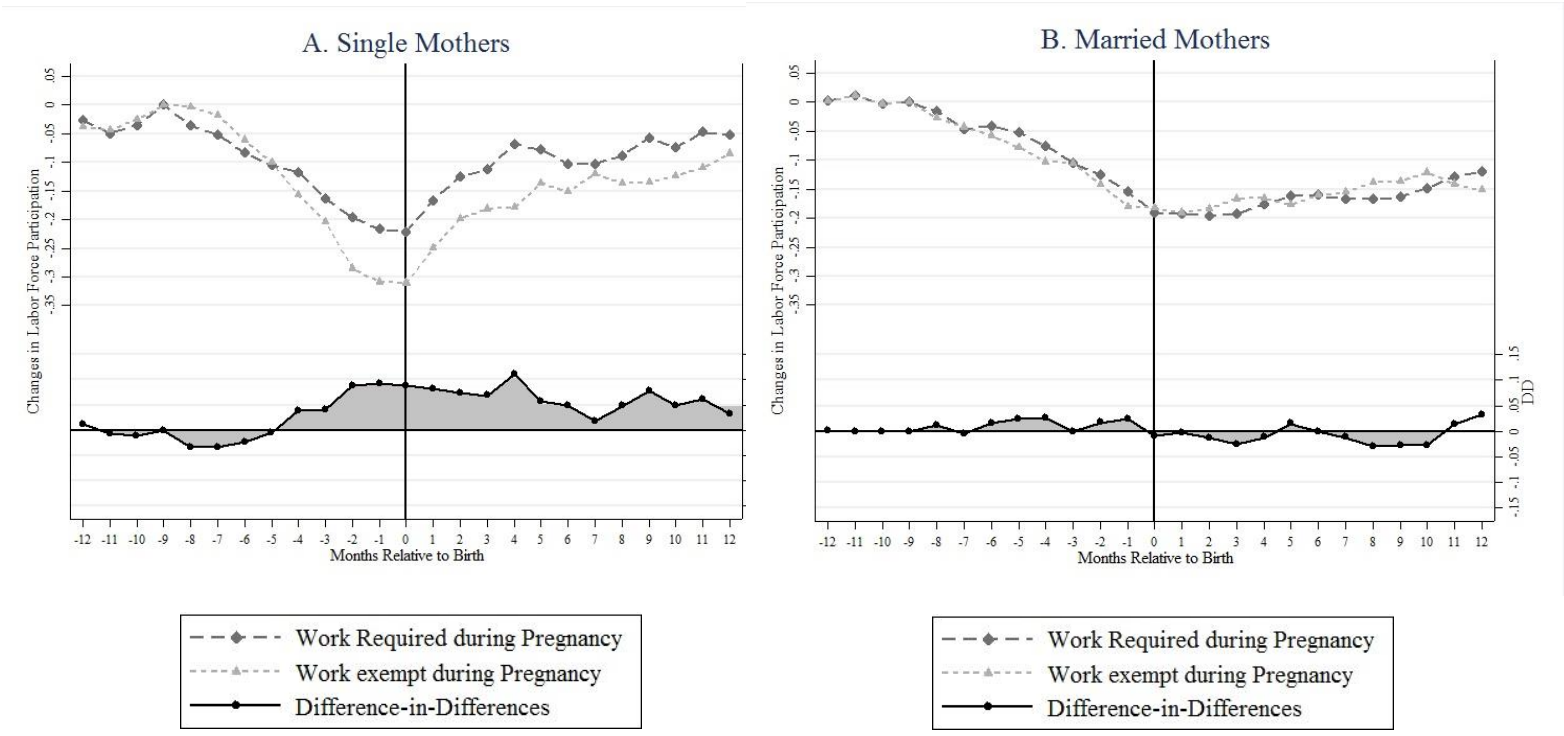
Labor Force Participation Patterns by the Strictness of Pregnancy Exemption



Notes: Panels A and B in Figure 4 show the *changes* in labor force participation relative to 9 months prior to birth. With month –9 omitted, the level of labor force participation is normalized to zero at –9. The end-of-survey SIPP sampling weights are used. Standard errors are clustered by mother-birth.

FIGURE 5

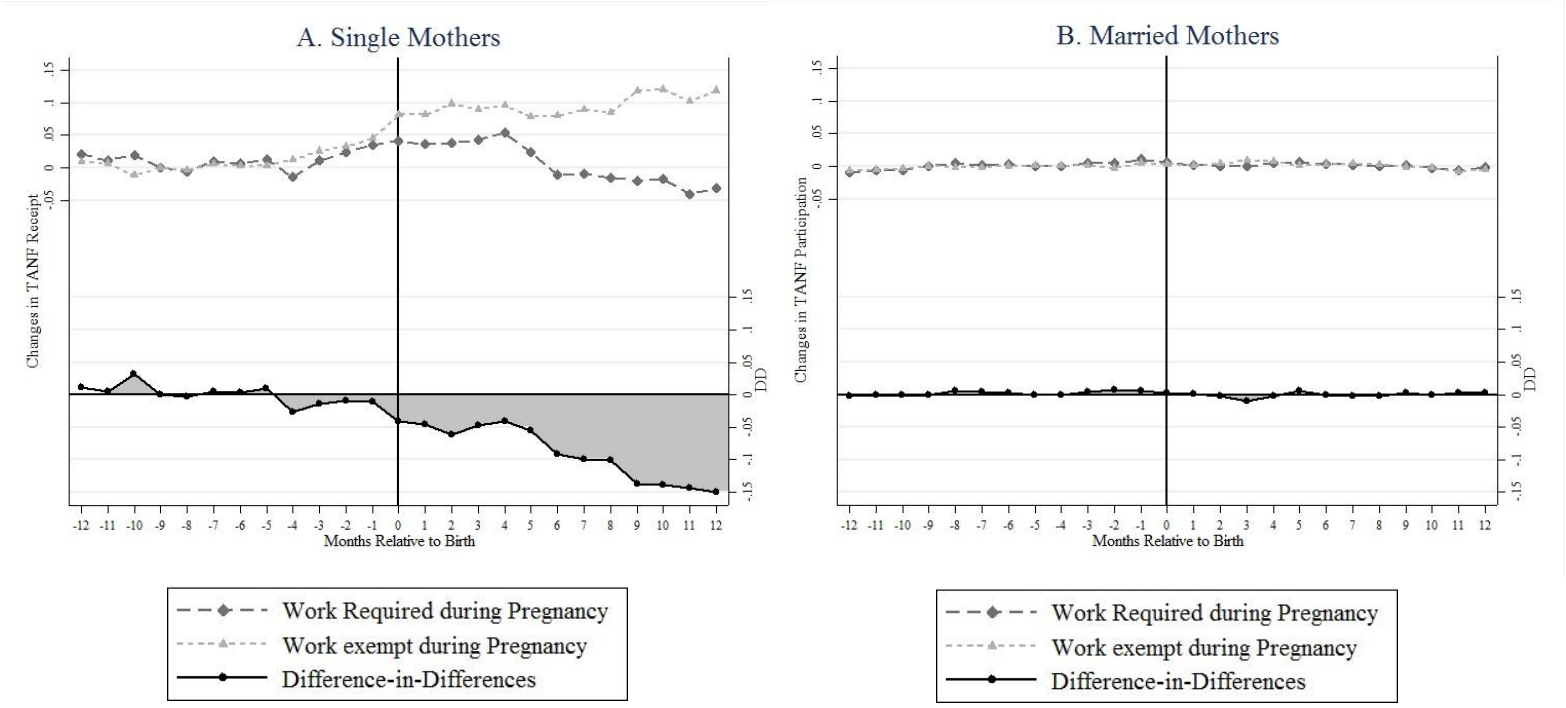
Impact of the Pregnancy Exemption on Mothers' Labor Force Participation



Notes: Panels A and B in Figure 5 show the *changes* in labor force participation relative to 9 months prior to birth by the strictness of the pregnancy exemption. With month –9 omitted, the level of labor force participation is normalized to zero at –9. These are the π_t coefficients from estimating equation (1) with the dependent variable being an indicator for participation in the labor force. The shaded area at the bottom indicates differences in labor force participation between strict and lenient states in each month surrounding birth. Table 4 presents the DD estimates for single mothers.

FIGURE 6

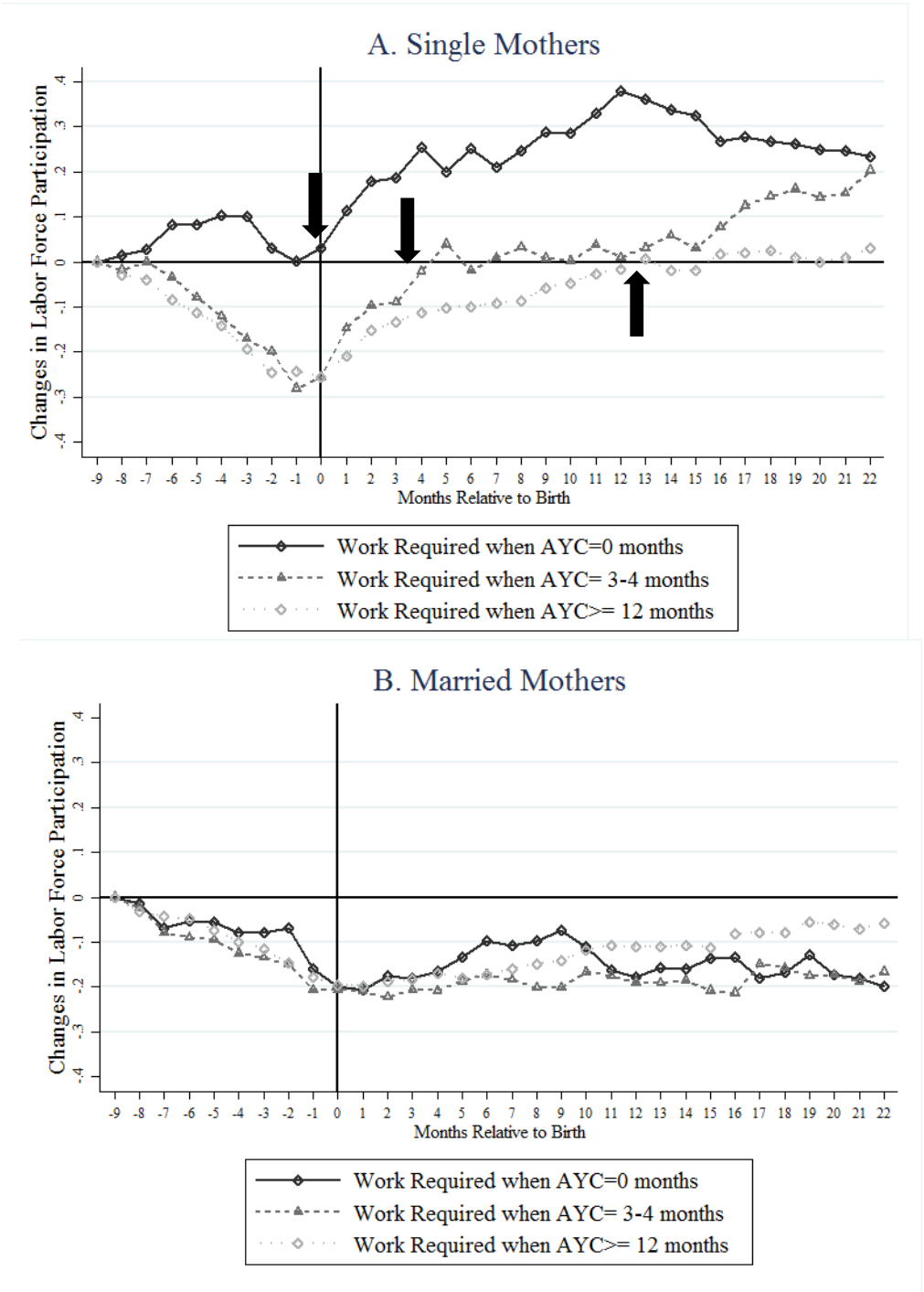
Impact of the Pregnancy Exemption on TANF Receipt



Notes: Panels A and B in Figure 6 show the *changes* in TANF receipt relative to 9 months prior to birth by the strictness of the pregnancy exemption. With month –9 omitted, the level of TANF receipt is normalized to zero at –9. These are the π_t coefficients from estimating equation (1) with the dependent variable being an indicator for participation in TANF. The shaded area at the bottom indicates differences in TANF receipt between strict and lenient states in each month surrounding birth. Table 5 presents the DD estimates for single mothers.

FIGURE 7

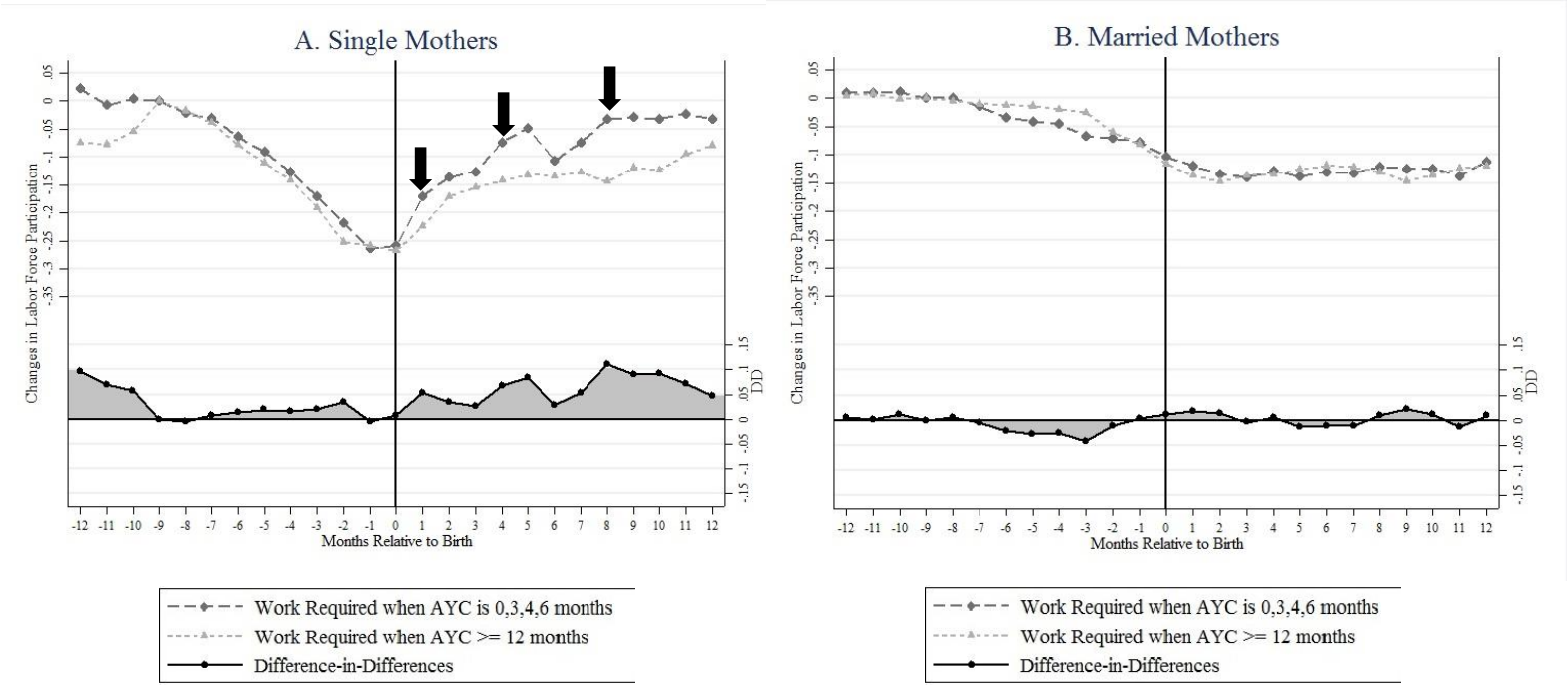
Labor Force Participation Pattern by the Strictness of AYC Exemption Policy



Notes: Panels A and B in Figure 7 show the *changes* in labor force participation relative to 9 months prior to birth. With month –9 omitted, the level of labor force participation is normalized to zero at –9. The end-of-survey SIPP sampling weights are used. Standard errors are clustered by mother-birth.

FIGURE 8

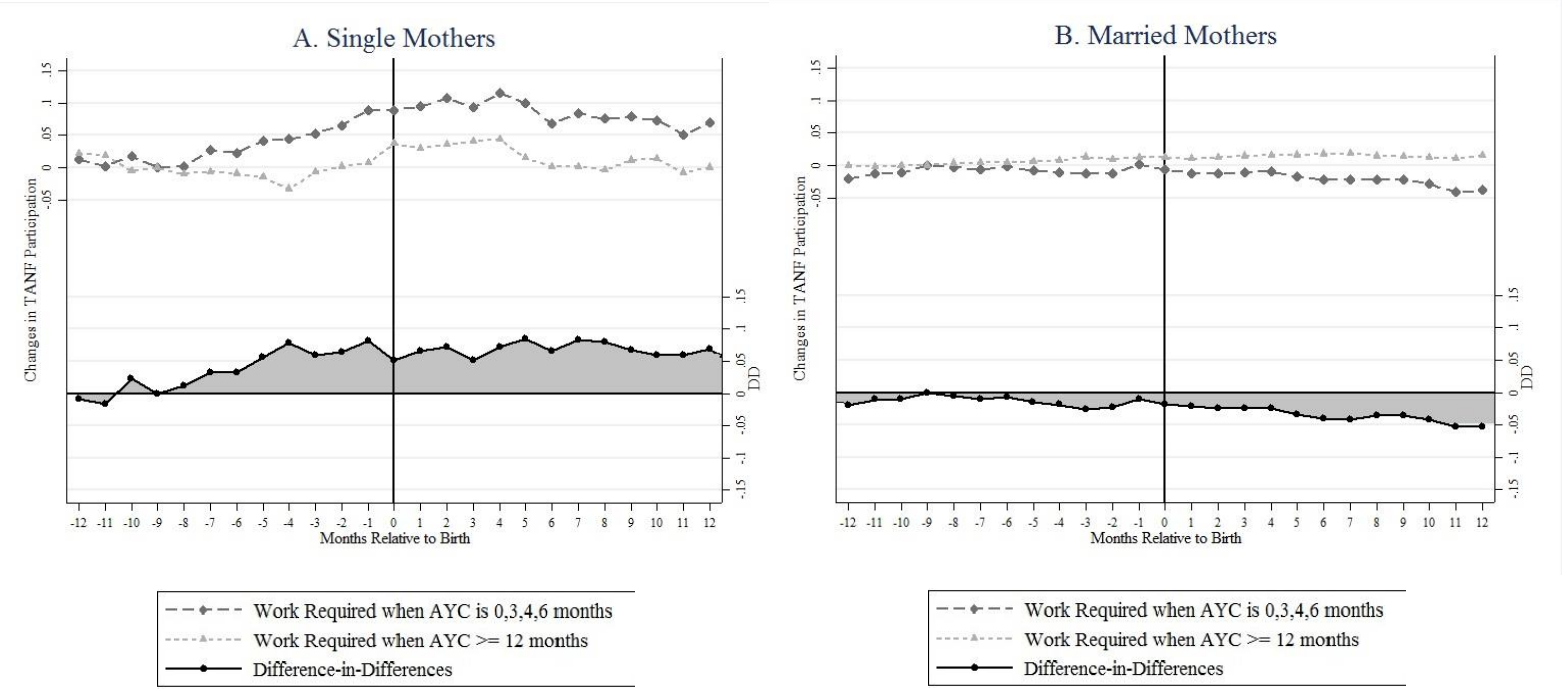
Impact of the AYC Exemption on Mothers' Labor Force Participation



Notes: Panels A and B in Figure 8 show the *changes* in labor force participation relative to 9 months prior to birth by the strictness of the AYC exemption. With month –9 omitted, the level of labor force participation is normalized to zero at –9. These are the π_t coefficients from estimating equation (1) with the dependent variable being an indicator for participation in the labor force. The shaded area at the bottom indicates differences in labor force participation between strict and lenient states in each month surrounding birth. Table 6 presents the DD estimates for single mothers.

FIGURE 9

Impact of the AYC Exemption on TANF Receipt



Notes: Panels A and B in Figure 9 show the *changes* in TANF receipt relative to 9 months prior to birth by the strictness of the AYC exemption. With month –9 omitted, the level of TANF receipt is normalized to zero at –9. These are the π_t coefficients from estimating equation (1) with the dependent variable being an indicator for participation in TANF. The shaded area at the bottom indicates differences in TANF receipt between strict and lenient states in each month surrounding birth. Table 7 presents the DD estimates for single mothers.