2017

The Motherhood Wage Gap: An Industry Level Analysis

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This thesis is submitted in partial fulfillment of the requirements for the course Senior Seminar (EC 375), during the Spring semester of 2017

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I. Introduction

Fertility choices in the United States (U.S.) have significant wage implications for parents. Men generally do not experience any negative wage effects from children, and men with children are often among the best performers in the labor market as they are able to earn higher wages than their childless peers. On the contrary, children result in serious negative wage effects for women, and cause notable pay gaps among women. As compared to their female colleagues, mothers typically earn less and face slower wage growth. The degree to which this wage gap exists varies based on skill level, education, experience, and timing of childbirth. Additionally, wages for mothers may be determined by the industry a woman is employed in. This paper will focus upon the question: which industries do women with children experience lower wages than their childless peers? Furthermore, are there any industries in which women can have children and still experience wage growth? This issue should be of interest to policy makers and private employers if unequal pay and employment opportunities among women is to be addressed. The wage gap may be combatted, at least in part, by the government implementing a mandatory paid maternity leave across all sectors.

Previous literature identifies the gap in pay between women with children and those without as the motherhood wage gap or the family gap. This gap is primarily a result of individual's characteristics and the type of occupation the woman holds. Skill level, education, work experience, and timing of childbirth are relevant components in determining a woman's wage post-birth. Beyond individual traits and life decisions, there are factors relating to job quality that also play a crucial role in mothers' careers (Amuedo-Dorantes, 2003). In the labor market, specific jobs, and their broader industries may be categorized into a family-friendly or non-family-friendly sector. Personal characteristics influence the type of job a worker can obtain; however, if a woman is able to locate a family-friendly position, it is unlikely that there would be a motherhood wage gap among workers in that firm (Nielson, 2004).

The purpose of this paper is to examine six industries and their wage effects for mothers. This paper will attempt to categorize the six industries into the family-friendly or non-family-friendly sector. Through this classification, one can conclude which industries a woman would be more likely to retain the same wages as her female peers post-childbirth.

The contributions of this work are to build upon previous literature by examining what circumstances lead to women experiencing negative wage effects from children. The literature makes a critical distinction between family-friendly and non-family-friendly industries. Family-friendly industries being those in which women do not realize negative wage impacts from children, and mothers may even earn more than their childless peers. Non-family-friendly industries are those in which women experience negative wage effects post-birth. The literature does not label specific industries as belonging to either category, so this paper's main contribution to existing literature is to attempt to categorize industries into family-friendly or non-family-friendly sectors.

The results of this paper confirm that children largely have a negative impact on wages for women. Overall, women participating in financial, legal, or computer/math related industries will enjoy positive effects on their wages, while employment in food preparation/serving, personal care/service, or sales related occupations produce negative wage implications. In terms of childbearing, women are more fortunate in legal, financial, or personal care/service occupations. While financial and personal care/service occupations were not significant, the results demonstrated that these three industries might be family-friendly as women with children earned more than the average woman in that field. Conversely, computer/math, sales, and food preparation/serving occupations negatively affected wages for mothers; however, none of these values were found to be significant.

In studying the motherhood wage gap for specific industries, this paper will begin by introducing the analytical framework used to analyze this issue in Section 2, and continue with a review of relevant literature in Section 3. Following the literature review, Section 4 outlines the methodology and data used in this study. Section 5 evaluates and discusses the results of this paper. Lastly, data tables and graphs from this study are included in Sections 6 and 7.

II. Analytical Framework

The Mincer model is widely used when exploring wage effects for individuals. A great deal of the literature concerning the motherhood wage gap builds upon the Mincer model, which determines one's wage as a function of their experience and education. In the Mincer model below, the variable W represents wage, and W_0 is the earnings of an individual with no education or experience. The variable S represents returns to schooling, while the two variables for X indicate labor market experience (Lemieux, 2003).

$$ln(w)_i = lnW_0 + rS + \beta_1 X + \beta_2 X^2$$

This model is easily extended to study the motherhood wage gap as education and experience play a vital role in determining a woman's wage after children. While education and experience are generally expected to have positive wage implications for individuals, there is a debate within the literature as to how these variables affect women's wages post-birth. Some take the stance that while greater levels of education and work experience would have allowed women to initially achieve higher wages in the workforce, that there is also a greater opportunity cost for them to have children. These highly qualified women would have the greatest wage losses when they become mothers (Wilde, 2010). Other papers argue the opposite, proposing that greater levels of education and experience can mitigate wage losses (Todd, 2001). These issues are addressed in detail in the literature review section of this paper; however, education and experience are of great importance in examining wage effects in this context.

III. Literature Review

Within the United States, women with children generally earn less than their childless peers. This wage disparity is commonly referred to as the motherhood wage gap or family gap. Waldfogel tested for differences in wages between women with children and those without, and concluded that the initial decision to have children reduces a woman's wage by six percent. As women have more children, their wage continues to decline, and women with two children experience a 15 percent reduction in wage (Waldfogal 1998).

Acknowledging the family pay gap, Wilde and Ellwood delved deeper into the issue and examined the reasoning behind the wage variation among women. In conjunction with the children themselves, this gap is greatly dependent on workers' demographics, educational achievement, years of work experience and their job's characteristics. Wilde and Ellwood observed differences in the motherhood wage gap for various groups of women based on skill level. In this paper, skill was determined by the Armed Forces Qualification Test (AFQT) which was administered to respondents of their survey. This study concluded that for those with children, low skilled women give up 10 to 14 percent of their potential lifetime earnings, while highly skilled women will give up 21 to 33 percent of potential earnings (Wilde, 2010).

Similarly, Anderson estimated a total motherhood wage gap of about 15 percent per child, and attempted to see the specific effects of this gap across educational groups, suggesting that the gap can be explained by human capital variables such as work experience, education, and time out of the labor force. For white women specifically, the total motherhood wage gap is about 16 percent for one child and 29 percent for two or more children. These numbers vary across educational groups, and white women will experience a reduction in wages of about 10 percent per child if they have a high school or college education. Interestingly, there is no motherhood wage gap for those who do not have a high school degree, as leaving the workforce for children has little effect on their future earnings. Overall, for college educated women, the wage gap is only about 4 percent for one child, and increases to 15 percent for those who have two or more children. The fact that the wage gap varies so much between educational groups demonstrates how dependent the wage gap is on other factors besides children themselves (Anderson, 2002).

Todd presents a counter argument to the belief that highly skilled women experience the greatest wage losses from having children, stating that the more education mothers have the better off they will be in the labor market. Todd studied the motherhood wage gap in five industrialized countries, and found that for Canada and the United States educational attainment can be a “shock absorber” and may help women reduce or even eliminate the large negative effects of children on their wages. Educational level is of great importance in determining mother’s wages, and women receive the highest direct returns to education in Anglo-Saxon countries (Todd, 2001).

The arguments for the opposite point of view—higher educational levels leading to greater wage losses—are logical. The papers supporting this hypothesis agree that education or skill level alone should have a positive effect on the wages of individuals, but these highly skilled/educated women have more to lose when they have children. In the positions held by highly skilled/educated women, there is an opportunity for mothers to experience a reduction in pay or forgo future wage growth post-birth for a variety of reasons, which leads to a motherhood wage gap. Furthermore, Anderson points to the lack of a motherhood wage gap among women without a high school degree to highlight the wage gaps that exist among higher educational groups (Anderson, 2002). The absence of a wage gap for women without a high school degree is intuitive as these women would most likely hold menial minimum wage jobs where there is little room for differences between salaries. Todd's argument that education alone can serve as a shock absorber may not be accurate, and there are likely more characteristics at play that Todd's paper fails to recognize (Todd, 2001).

On the other hand, Amuedo-Dorantes and Kimmel's results align with Todd's support of higher education, but they indicate that other factors may be at play. Amuedo-Dorantes and Kimmel estimated a wage gap of 6 percent between mothers with one child and non-mothers, but found the opposite effect for certain college educated women (Amuedo-Dorantes, 2005). Amuedo-Dorantes and Kimmel found the same results in an earlier paper, which primarily focused on college educated women as the authors believed this group was likely to be the most career oriented since they were often observed postponing childbirth. Interestingly, their results demonstrated that mothers with a college degree are not subject to a motherhood wage penalty. In fact, some women in this group could achieve higher wages than their childless peers. Women who ended their educational careers before college were not able to achieve the same positive outcomes as women with a college education. Amuedo-Dorantes and Kimmel argued that these results were greatly due to these individuals' choices to delay fertility. This paper offers the hypothesis that the potential for higher post maternity wages from delayed motherhood explains why women consciously delay childbirth. For college educated mothers who delayed their first birth until age 30 or older, received higher wages, and often experienced wages higher than their childless peers. For women with a college degree, having children at a younger age interrupted human capital investments and that group was subject to a motherhood wage penalty (Amuedo-Dorantes, 2003).

A great deal of the literature regarding the motherhood wage gap also explores the effects of delaying childbirth. Wilde and Ellwood found that one can prevent income loss by waiting until later in life to start a family. Low skilled women can gain five percent of lifetime earnings, or less than $20,000 by delaying childbirth, while highly skilled women gain $125,000, or 15 percent of their lifetime earnings in waiting. Delaying childbirth does not fully remove the negative effects of children, and women still experienced a significant overall loss in wage post-birth. Even if women wait until age 30, they will give up almost $230,000 in the decision to have children (Wilde, 2010). Similarly, Miller estimates that those who choose to delay childbirth can gain an increase in total earnings of nine percent, an increase in wages of three percent, and an increase in work hours of six percent for every year that childbirth is delayed (Miller, 2011). Loughren and Zissimopoulos also support the idea that waiting to have children will benefit women's wages. They found that both marriage and children hinder wage growth for women and women should wait as long as possible before jeopardizing the growth rate of their wage by having children (Loughren, 2008).

Anderson et al. controlled for certain human capital inputs and unobserved heterogeneity and found they could explain 55-57 percent of the wage gap for mothers. This paper estimated a 10 percent motherhood wage penalty from a pooled cross-section of women ages 14 to 44 from the 1968-88 National Longitudinal Survey of Labor Market Experience of Young Women (NLSYW). Medium skilled women, or high school graduates, experienced the longest lasting and most severe wage losses among their peers, which supports the arguments against Todd's conclusion of education acting as a shock absorber. Conversely, these results could also point to women with the highest levels of education having the ability to mitigate wage losses through educational attainment and may prove Todd's arguments to be true (Todd, 2001). Overall, their results reflect differences in human capital in relation to children. On average, women who never had children attained 13.2 years of schooling as compared to mothers who attained 12.5 years (Anderson, 2003).

Women experience the highest wage penalties immediately after returning to work, even if their children are older. This fact may reflect the learning curve that is present for women to figure out how to manage the dual responsibilities of their work and children. Additionally, Anderson believes that the wage penalty may be high at this point due to illness among children when they first enter school or daycare, or a poor job match for the mother. Younger children impose a higher wage penalty than older children, which suggests that women may be experiencing lower wages due to expending less effort at work if they are spending a considerable amount of energy at home with their young children (Anderson, 2003).

In terms of alternate reasons for why women with children receive lower wages than their childless peers, experience and skill loss are often used as explanations. In having children women may miss valuable work experience, moving them to a slower career track. Additionally, women may not be able to stay with the same employer before and after childbirth, which could also negatively impact their wage (Wilde, 2010).

Waldfogel agrees that lost time in the labor market is an important component in explaining lower wages of mothers, but not the sole factor of this phenomenon. Part time employment is also a relevant element contributing to the family gap in wages, as there is a 10 percent penalty in wages for being employed part time rather than full time. On the other hand, women are better off choosing part time positions over exiting the labor force altogether, as Waldfogel argues that part time work is just as valuable as full time work in terms of maintaining skills and gaining experience (Waldfogel, 1997).

In their paper, Anderson et al. agree with existing literature in that one of the explanations for mother's wage losses is that many women exit the workforce post-birth. Even if those women come back to work soon after, they have already experienced a depreciation of general and firm-specific skills that would have helped them achieve a higher wage. For this reason, low skilled workers are less likely to experience a reduction in wage as compared to their peers as they possess less human capital. So, Anderson et al. conclude that highly skilled women experience the largest penalties if they choose to leave the labor force to care for their newborn child (Anderson, 2002).

Amuedo-Dorantes and Kimmel follow similar logic in terms of human capital, and found that educated women who delay childbirth can earn approximately the same wages as their peers, and 7 percent more than women who do not delay their first birth. The reasoning behind this is that the most important human capital investments are made during the early years of one's career, and these years cannot be made up for later if time at work is lost due to childbirth or childcare (Amuedo-Dorantes, 2005).

As wages for mothers are greatly affected by experience, it is logical that women may be able to guard against wage losses by manipulating the timing of their childbirth. Women often experience a reduction in wages at the time of childbirth, and slower wage growth post-birth. Delaying motherhood results in increases in hours worked and wages, which often results in greater career earnings post-birth. Miller also begins to examine how certain industries may contribute to the motherhood wage gap and found that women who have college degrees, those who are in professional or managerial positions, and women in careers with greater wage growth have the most to gain in delaying childbirth. Miller suggests that the timing of childbirth is so important because after childbirth mothers may reduce their hours in the labor market and invest less in skill development. On the other hand, employers may offer mothers less training and fewer opportunities to advance within the firm. While these are likely interconnected, the actions of the women and their employers post-birth contribute to mothers' slower wage growth (Miller, 2011).

Erosa et al. also employ human capital explanations to partially explain the motherhood wage gap. In terms of labor supply, fertility results in differences in employment and hours worked that results in differential returns to experience between men and women. This leads to a wage gap that increases over time. In this model, the gender wage gap between men and women was found to grow 21 percentage points for individuals from the age 20 until they reach 40. The impact of children on labor supply explained 40 percent of this increase in the gender wage gap. Children are responsible for career interruptions and reduce the labor supply of females during a stage of the life cycle when returns to human capital accumulation at work are high, therefore resulting in a large negative effect on wages. Generally, mothers work four percent fewer hours per child, and overall women were found to work 10 percent fewer hours than males even if they did not have a child. In addition to the tendency of women to work fewer hours than men, this paper concluded that fertility accounts for a great deal of the gap in labor supply and wages over the life cycle of a women (Erosa, 2016).

Broadly, the literature regarding the motherhood wage gap focuses upon individual's characteristics and women's behavior in the labor market to explain the gap. While these factors are important, one must also consider specific job characteristics to offer a more comprehensive analysis as to why mothers are losing wages. Nielsen et al. studied the private sector in Denmark, and split the labor market into two segments: family-friendly and non-family-friendly. Nielson et al. proposed that women self-select into sectors depending on their personal needs for family-friendly working environments and expected wage outcomes. In Nielson's definition, the family-friendly sector includes jobs that do not have a motherhood wage gap, while the non-family-friendly sector consists of jobs that negatively impact women's wages post-birth. This concept may also be applicable to the United States (Nielson, 2004).

Having a flexible workplace with family-friendly policies helps mothers to stay at work even if this flexibility comes at the cost of lower wages or fewer benefits. Part time work, despite the lower pay, is desirable for new mothers. These flexible and part time positions raise the question if flexible working hours would improve women's earnings in the long run as compared to women who drop out of the labor force altogether (Boushey, 2005).

Waldfogel explains that one reason why mothers lose wages is attributed to a work and family conflict. This conflict can either be in the form of employer discrimination towards mothers, or employee adjustments (women self-selecting into less demanding positions post-birth), but both have a negative effect on wages for mothers (Waldfogel, 1997). The work and family conflict demonstrates the need for family-friendly work, and lays the ground work for the idea that a family-friendly position may help women better manage their responsibilities in a way that does not negatively affect wages. This also contributes to Boushey's point that having flexible, family-friendly work available helps women to earn a wage when they may not have been able to otherwise.

The potential benefits of a family-friendly position are demonstrated in jobs that require a college degree as there is often a level of flexibility that can be achieved once the employee reaches a senior level. Amuedo-Dorantes and Kimmel draw the conclusion that the level of job flexibility for mothers is a vital component in determining post-birth wage outcomes. In considering that college educated mothers can avoid wage penalties after childbirth, Amuedo-Dorantes and Kimmel attempted to uncover the reasoning behind this phenomenon. They build upon the theory of family-friendly and non-family-friendly work environments, and suggested that something was occurring in terms of job quality beyond what could be observed in the data. Family-friendly positions were likely to be female-friendly firms that could offer women more opportunities for advancement. Additionally, these family-friendly positions may provide other benefits such as job training and flexibility. Women most likely seek jobs by identifying the ones that might best accommodate their work and family obligations. They argue that the self-selection into family-friendly positions diminishes any negative wage effects of childbearing (Amuedo-Dorantes, 2003).

In a paper two years later, Amuedo-Dorantes and Kimmel studied the impacts of the timing of childbirth, and continued to expand on the belief that family-friendly policies at work have a significant benefit for women with children. Women who delay childbirth are likely to have reached a senior level in their firm where they have access to benefits and greater flexibility. Firms are motivated to implement these family-friendly policies and flexible work hours for their most valuable employees, who are often educated workers with significant experience in their field. Once employees reach a certain level at their firm, productivity is not so closely tied with time spent in the office, and it is easier for women to take maternity leave or time off for childcare. Therefore, women at this level are not subject to the negative wage effects of children (Amuedo-Dorantes, 2005).

Providing further evidence for job flexibility playing a meaningful role in mothers' wage retention, Anderson examines wage differences between educational groups. Interestingly, college educated mothers do not face any penalty for having children. High school dropouts on the other hand, face a three percent penalty if they return to work when their children are infants or toddlers, but do not experience any wage penalties when their children are older. High school graduates that do not have a college degree experienced the worst wage penalties; even if they return to work when their children are older, this group experiences a four to six percent wage penalty until their children enter high school (Anderson, 2003).

The fact that the wage penalties vary greatly between educational groups leads one to doubt the expectation that mothers earn less because they put less effort into their jobs. These results lead to an alternative explanation, demonstrating that time during the middle of the day may be a key reason for the motherhood wage gap. High school graduates are most likely to have jobs that require them to work regular office hours and do not have much job flexibility in terms of being able to do work at night to compensate for time off during the regular workday. Using work flexibility as an explanation for the wage gap makes sense because women without a high school degree would most likely hold positions where they could schedule their shifts during hours that are most convenient for them. On the other hand, college graduates that have reached a senior position at work have the flexibility to take time off during the day and/or complete some of their work from home (Anderson, 2003).

In another paper, Amuedo-Dorantes and Kimmel offer somewhat of a counter argument to the positive effects of women self-selecting into certain jobs, and suggest that mothers may be voluntarily accepting lower wages by prioritizing benefits for their new family over a higher income. Specifically, mothers may be seeking jobs based on health care benefits rather than wages offered. While women's job market preferences may explain some of the lost wages, Amuedo-Dorantes and Kimmel conclude that using the prioritization of healthcare over wages among mothers to explain the motherhood wage gap was only statistically significant for mothers with two or more children (Amuedo-Dorantes, 2008).

The literature is beginning to move in the direction of determining industries or positions that may be most beneficial for women who plan to have children, but there has been little work done that delves into which industries may be considered family-friendly. Sasser studied the earnings gap among physicians, and her results suggest that generally female doctors earn less with children, but within this industry they can locate family-friendly practices to mitigate these wage losses. Women physicians that have children also lose overall salary because they reduce the hours worked per week, but do not sacrifice pay per hour. Sasser believes the same results would likely be found for business and law related professions (Sasser, 2004). The literature leaves significant room for additional work to be completed on this topic to determine the industries that have the smallest motherhood wage gap, which would classify them as family-friendly.

While women experience a negative effect on their wage from children as compared to their childless peers, men realize the opposite effect. First, in examining marriage, Hill found that married men earn higher wages than their unmarried peers, and this paper suggests that this may be a result of married men having a greater financial responsibility to their families. Consistent with the trends observed for children, the data shows that married women tend to earn lower wages than single women (Hill, 1979). Chiodo and Owyang also explored marriage's effect on wages and found that while the marriage premium has decreased over time, married men earn about 11 percent more than men who have never been married, and 9 percent more than divorced men. Married men may be able to achieve higher wages than their peers as a result of specialization occurring in the household—the more household responsibilities women take on the more effort men can exert at work. Additionally, employer discrimination may play a role in the wage disparity between married and single men (Chiodo, 2002).

After establishing the wage premium that men receive from marriage, one can then examine the effects of children on men's wages. Wilde and Ellwood tested the wage effects for men with children. They found that children have a positive effect on men's wages and, in fact, men without children are among the worst performers in the labor market (Wilde, 2010). One must also consider if marriage impacts this wage gap, as men with children are likely to also be married. Since marriage has been proven to have positive impacts on men's wages, the extent to which children have an additional positive impact is unclear.

While children have an adverse effect on women's labor market outcomes as compared to their childless female peers, Jacobsen discovered that there is little evidence of children affecting men's labor market outcomes. Furthermore, children have a minimal impact on male labor force participation (Jacobsen, 2005). Children ordinarily do not affect men's work; however, one could argue that when employers are hiring, it would be rational to acknowledge that any man has the same potential of taking time off work for childcare, or an extended paternity leave as a woman. Since men with children earn more, employers do not seem to discriminate against men with children when hiring or promoting. The same may not be able to be said for women.

Chiodo and Owyang offer an interesting possible explanation for the family wage premium men experience, and suggest that there is a level of specialization that occurs within marriage. Women typically take on more house work and childcare responsibilities so that men can exert more energy at work, which could explain why married men see an increase in their wages while marriage is not significant in determining women's wages (Chiodo, 2002). Extending this logic to the motherhood wage gap, if women are in fact taking on the burden of additional house work and childcare, this loss of time and energy is likely to affect the woman's work performance. There is not a great deal of content within the literature to explain what other factors influence the wage gap between men with children and those without. Building on previous work completed on the motherhood wage gap, one might infer that factors such as education and work experience would also influence the wage gap among men.

In terms of policy implications regarding family wage gaps, women losing wages and job opportunities from childbearing is a pressing concern. Within the literature, maternity leave is a generally accepted policy that is believed to help women within the workforce after childbirth with respect to work retention and wages. In studying women's childbearing decisions, Miller argues that the fact that women must make tradeoffs between early motherhood and long term career success should be a signal to the government that intervention is needed. The government could potentially support working mothers by mandating paid maternity leave, extending protected leave to all workers, and/or providing universal access to quality affordable childcare services (Miller, 2011).

Waldfogal suggests that it would be possible for the United States to actively combat the wage gap between mothers and non-mothers. One possible solution is to attempt to raise work retention for women during the period that they are having children. This could be accomplished through the implementation of maternity leave policies. Waldfogal concluded that allowing women to take a short break after childbirth before they return to work could potentially lead to an increase in mothers' pay as women would lose minimal experience and the policy would increase job tenure. If women can stay with the same employer before and after childbirth, they are likely to see less of a negative effect on their wage (Waldfogal 1998).

Similarly, Boushey finds that children, and a lack of family-friendly work policies are among the most influential factors of lower lifetime earnings for mothers. Citing a cross-country study of seven industrialized nations, Boushey points out that the family gap is the greatest in the United Kingdom followed by Anglo-American countries. Typically, in Anglo-American nations workers do not have wide-spread access to family-friendly policies at work. Often tying into family-friendly versus non-family-friendly sectors, differences in maternity leave and childcare policies can be noted as a major factor in the difference in the family pay gap between nations (Boushey 2005).

Berger focused on the extent to which individual characteristics, pre-birth employment, and maternity leave coverage impacted the number of weeks women remain at home after childbirth. Berger concluded that employment before birth is strongly correlated with women working post-birth, as women who were employed prior to having a child returned to work much faster than those who had not recently held a job. Overall, half of the mothers in the United States will return to work within six months of giving birth, and a third will return within three months. The study also focused on how maternity leave might influence women's employment decisions and concluded that women who were given the option of a twelve-week maternity leave were more likely to take time off as compared to their peers who did not have the option of a maternity leave; however, those who did take advantage of maternity leave programs returned to work quickly after their allotted time off (Berger, 2004).

Controlling for personal and job specific characteristics, Boushey found that mothers who worked before having their first child, and were offered paid maternity leave, have present day wages that are nine percent higher than their peers who did not have access to maternity leave. Women who self-financed their time off after the birth of their child experienced no effect on their wage (Boushey 2005).

As of 2005, under the Family and Medical Leave Act (FMLA) about half the women in the U.S. labor market had access to unpaid leave to care for a sick family member, or bond with a newly born or adopted baby. Most mothers, especially those without a college degree do not have access to pay during maternity leave after their first child. Boushey concluded that providing universal access to a policy like this could help more women stay in the labor market, and ultimately aid in closing the wage gap in women's pay. The benefits of providing paid maternity leave are high, and interestingly, the costs would be relatively low. In a 2005 study, Massachusetts found that providing a paid parental leave program that would last for 12 weeks and pay workers 50 percent of their original wage would only have an annual cost to every worker in the state between \$19 and \$22. To implement such policies, the government must intervene, as we cannot rely on the private sector to implement maternity leave programs and make family-friendly decisions. Some states in the United States have already made progress towards policies that would benefit new mothers. In 2002 California's Governor Gray Davis signed a bill that afforded workers paid time off to spend time with a new child or care for sick family members which would pay 55 percent to 60 percent of worker's original wage for a period of six weeks. This bill is the first of its kind in the U.S. and is fully financed by payroll taxes and employees (Boushey 2005).

After controlling for differences between mothers, Choi's results also support that maternity leave positively influences labor market outcomes for mothers with newborn babies in the United States. Maternity leave can help to increase job tenure during motherhood which is often correlated with higher wages. Women who plan on starting families attempt to self-select into positions that offer maternity leave coverage to mitigate wage losses; however, even women with maternity leave experienced slower wage growth after childbirth. The positive effects of maternity leave policies are more so realized on the labor supply side rather than through higher wages. Choi found that women that have access to maternity leave have a higher propensity to continue work post-birth. Maternity leave also prevents involuntary job separation at the time of birth, and leads to a decrease in job turnover for women one-year post-birth. While maternity leave does not fully resolve the wage gap between mothers and women without children, those who did have maternity leave coverage at the time of childbirth maintained higher wages than mothers without the ability to take time off (Choi, 2003).

On average, in the United States, 30-year-old women with children earn 70 percent of their male peer's pay and non-mothers earn 90 percent. Waldfogel found that having access to a maternity leave program has significant positive wage effects for mothers, and can offset a great deal of the negative wage effects of children. Additionally, women who had access to maternity leave were more likely to return to their employers after childbirth. Despite the positive implications of maternity leave, many still argue against this policy and Waldfogel addresses one of the main concerns which is the costs of these programs becoming a burden on employees. Many believe that if the government implemented maternity leave programs it would impose costs on employers, which would then be forced on employees. While this is a valid thought process there is little direct evidence that supports this possible negative externality of maternity leave (Waldfogel, 1998).

Many women experience a motherhood wage gap and the literature reaches a consensus that while other factors may play a role, this gap is highly dependent on individual's characteristics and the type of job the woman holds. Post-birth wages will vary based on skill level, education, experience, and timing of childbirth. In addition to these factors, the industry that a woman works in also plays a significant role in post-birth wage outcomes. The literature makes little progress in identifying specific industries beyond providing characteristics to place jobs into a family-friendly or non-family friendly sector. The next step in evaluating the motherhood wage gap should be to assess how specific industries impact mother's wages. Maternity leave has proven to be successful, and with more specific information on an industry level the government may be able to adjust policy to support a smaller wage gap between women with children and those without.

IV. Methodology

This paper implements data from the 2013 Panel Study of Income Dynamics (PSID) to explore the wage effects of having children for women in the United States. PSID data is generated from a study that began in 1968 with a sample of 18,000 individuals and 5,000 families across the United States. The total number of observations in the data set approaches 3,000. The data from 2013 is the most recent data that has been published from this study that includes family level information. Through a series of regressions, this paper will compare women with children to those without to determine what factors would allow women to have children and not experience negative wage effects. The literature recognizes that women's wages are in part dependent on worker's demographics, specifically years of education and work experience (Anderson, 2002). For those who choose to have children, the industry that the woman is employed in may play a significant role in determining her post-birth wage. Broadly, the literature categorizes women's jobs into family-friendly and non-family friendly sectors, but fails to place specific industries into either category (Nielson, 2004). Thus, this paper will explore which industries may fall into family-friendly, or non-family friendly sectors.

The PSID data set includes variables for the occupation and broader industry in which the wife of the family is employed. The employment information in the PSID data set was sourced from 2010 Census data. Each industry in the data set is comprised of a range of related occupations that are not explicitly stated in the PSID data. The literature acknowledges that marriage also impacts wages, and may hinder wage growth for women (Chiodo, 2002; Hill, 1979; Loughren, 2008). All the variables in the regressions explored in this paper only include information for the wife of the family which will control for the effects of marriage. This data set also includes a variable for hourly wage rate, and this variable will be used to determine the individual's income level. There is a variable for children, and it is simply the number of children in the family. This variable ranges from zero to eighteen children. Lastly, the data set includes information regarding the level of educational attainment and age of the women included in this study. The summary statistics of the data implemented in this paper can be seen in Table 1.

To explore the effects of children on women's wages, this paper uses the mincer model as a guide, examining the log of wage as a dependent variable, with children, education, and experience as independent variables. Since the PSID data does not include information on women's job experience, age will be used as an indication of experience level, as one can assume that older women would have more work experience than younger women. The following population regression function is estimated to explain women's wages in terms of children, education, and their experience level. The expectation is that children will have a negative effect on women's wages. Schooling and age, or experience level, should have a positive effect on women's wages. Age-squared should result in a negative coefficient to demonstrate the diminishing returns of experience level.

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \varepsilon_i$$

While previous work experience and level of education plays an important role in determining women's wages, the literature suggests that these variables alone may not tell the whole story. In addition to other factors, Amuedo-Dorantes concludes that a woman's wage post-birth can be highly dependent on the type of job she holds (Amuedo-Dorantes, 2003). The literature makes a distinction between family-friendly and non-family-friendly sectors (Nielson, 2004). The family-friendly sector includes jobs in which women have more flexible work hours, opportunities for advancement, and other benefits at work that make balancing a family with their occupation easier. Women with these types of jobs often do not realize a negative effect on their wage from having children, and the literature has found that some mothers in this sector are even able to earn more than their childless peers (Amuedo-Dorantes, 2003). One can conclude from the literature that many jobs within this sector would be occupations that require higher education and/or highly skilled employees that are valuable to the firm (Amuedo-Dorantes, 2005). Additionally, the literature refers to educational attainment for women as a "shock absorber" that can help women mitigate or eliminate post-birth wage losses (Todd, 2001). This supports the notion of family-friendly jobs requiring higher education and skill levels.

On the other hand, the non-family-friendly sector includes jobs that have less flexibility, making it difficult for women to balance the responsibility of having children with their work obligations. Jobs in this sector are likely to be those that require less skill, and in industries where employees need to be available at specific hours to service customers, or are only able to contribute to the firm during normal business hours (Anderson, 2003). Women in this sector ultimately experience a motherhood wage penalty.

While the literature makes the distinction between these two sectors, it fails to establish which occupations can be considered part of either sector. This paper attempts to categorize certain industries that are included in the data set into family-friendly and non-family-friendly sectors. To examine the effects for women with children in different industries, six separate regressions will be analyzed. These regressions include an intercept dummy for the industry in question and a slope dummy variable to represent those who have children and work in that particular industry. This paper studies three industries that are expected to be family-friendly and three that may not be family-friendly. These preliminary industry predictions are based on the job and employee characteristics referred to in the literature when explaining family-friendly, and non-family-friendly jobs. The results from these regressions will demonstrate the general wage effects for mothers in each industry as compared to the average worker in that industry.

The family-friendly industries are likely to be financial specialists, computer and mathematical occupations, and legal occupations. These three fields require highly skilled and educated workers. Each worker is likely to be of high value to their firm. When Sasser studied the earnings gap among physicians, she found that female physicians can mitigate wage losses from children by locating family-friendly practices. Sasser believes that women may also be able to locate family-friendly work within business and law related professions (Sasser, 2004).

Additionally, the literature states that employers are likely to implement flexible policies in these types of jobs as the employees add great value to the firm. These three professions are likely to offer some flexibility in terms of when work may be completed. Employees may have the option of bringing work home at night, or may have the ability to take extra time off for childcare (Amuedo-Dorantes, 2005).

In terms of non-family-friendly industries, this paper examines food preparation and serving occupations, personal care/service occupations, and sales occupations. Workers in these industries are likely to be less educated and easily replaceable, leaving the employer no incentive to help them balance their family life with work. Work-life balance and flexibility are crucial factors in protecting against wage losses (Waldfogel, 1997). Anderson found that medium skilled women, or high school graduates, experienced the longest and most severe wage losses among all women (Anderson, 2003). These three industries are likely to employ medium skilled women, and those women may be experiencing such harsh wage penalties due to these industries being non-family-friendly. Additionally, it is likely that these occupations require the employees to be at work during normal business hours to service customers. In all three of these fields most, if not all, of the work would have to be completed at the site of the job which makes it even more difficult for women to complete their work if they have competing family obligations. Below are three regressions examining non-family-friendly sectors, followed by three regressions for family-friendly sectors.

<u>Family-Friendly Industries</u>

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \beta_5 Legal + \beta_6 ChildLegal + \varepsilon_i$$

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \beta_5 ComMath + \beta_6 ChildComMath + \varepsilon_i$$

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \beta_5 Fiancial + \beta_6 ChildFinancial + \varepsilon_i$$

Non-Family-Friendly Industries

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \beta_5 Food + \beta_6 ChildFood + \varepsilon_i$$

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \beta_5 Service + \beta_6 ChildService + \varepsilon_i$$

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \beta_5 Sales + \beta_6 ChildSales + \varepsilon_i$$

These six regressions are built using the framework from the Mincer model, so independent variables are included for years of education, age (experience) and age-squared (experience-squared). As with the previous regression, the variables for children and age-squared are expected to be negative while schooling and age should have a positive effect on wage. The wage effects for the industry intercept dummy variables in the family-friendly sector (Legal, Computer/Math, or Financial) are expected to all have positive effects on one's wage. The intercept dummy variables in the non-family-friendly sector (Food, Service, and Sales) are likely to have less of a positive effect on wages than the professions in the family-friendly sector, as these industries typically consist of lower paying jobs. Some of these coefficients may even be negative.

The coefficients for the slope dummy variables that combine the variable for children with a particular industry are likely to have little effect on wages, or even a positive effect in the family-friendly-sector. For the non-family-friendly sector, the coefficients for these slope dummy variables are expected to be negative, as mothers are likely to see a negative effect on their wages if they have children and work in the non-family-friendly sector. The literature noted that there is no motherhood wage gap for mothers that do not have a high school degree (Anderson, 2002). These women may find themselves in low-skilled jobs that also may not have a wage penalty for children, as workers may have the flexibility to schedule shifts around their childcare obligations (Anderson, 2003). The data provides no specifics about the types of positions held within these broader industries, so depending on the skill level required in these jobs, it is possible that mothers could experience little negative effect on wages in any of the three industries that are initially categorized as non-family-friendly. It is expected that the food preparation/serving industry would be the most likely to have this effect, and may not have a motherhood wage gap.

V. Discussion of Results

The following sample regressions were estimated in Stata to determine the effects that education, experience and number of children have on a woman's wage.

$$log(\widehat{Wage})_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2$$

$$log(\widehat{Wage})_i = .665 - .023Children + .092Schooling + .077Age - .001Age^2$$

This sample regression resulted in a negative coefficient for children and age-squared, and a positive coefficient for schooling and age. These results matched predictions, as children should have a negative effect on women's wages. This relationship is depicted visually in Graph 1. Years of education and age should positively affect wage. Additionally, the value for age-squared was negative, and confirms that there are diminishing returns to experience level. The variable for children was significant at the five percent level, while all other coefficients were significant at a one percent level. All these coefficients are consistent with the literature and this paper's predictions; however, the value for R-Squared and the fact that the constant was significant are concerning. The R-Squared value for this sample regression was .0837, which is lower than desired. This could indicate that these variables do not fully explain the variation seen in women's wages, although regressions concerning labor often do result in lower R-Squared values (Table 2). There was no multicollinearity or heteroscedasticity present in this regression (Table 9). Additionally, the fact that the constant is significant points to a possibility of missing variables in the regression. This missing component in the regression may be traced to the industry that each woman works in. The literature recognizes the importance of education and experience in determining women's wages, but also believes that mothers' wages are dependent on whether they are working in a family-friendly sector.

For the six-individual industry regressions, the following sample regression functions were estimated:

<u>Family-Friendly</u>

<u>Legal</u>

$$log(\widehat{Wage})_i = b_0 + b_1 Children + b_2 Schooling + b_3 Age + b_4 Age^2 + b_5 Legal + b_6 ChildLegal$$

$$log(\widehat{Wage})_i = .698 - .032 Children + .091 Schooling + .075 Age - .001 Age^2 + .404 Legal + .139 ChildLegal$$

Legal = 0

$$log(\widehat{Wage})_i = .698 - .032 Children + .091 Schooling + .075 Age - .001 Age^2$$

Legal = 1

$$\widehat{log(Wage)}_i = 1.102 + .091Schooling + .075Age - .001Age^2 + .107Children$$

<u>Computer and Math</u>

$$\widehat{log(Wage)}_i = b_0 + b_1Children + b_2Schooling + b_3Age + b_4Age^2 + b_5ComMath + b_6ChildComMath$$

$$\widehat{log(Wage)}_i = .669 - .028Children + .092Schooling + .076Age - .001Age^2 + .562ComMath - .008ChildComMath$$

ComMath = 0

$$\widehat{log(Wage)}_i = .669 - .028Children + .092Schooling + .076Age - .001Age^2$$

ComMath = 1

$$\widehat{log(Wage)}_i = 1.231 + .092Schooling + .076Age - .001Age^2 + .562ComMath - .036Children$$

<u>Financial</u>

$$\widehat{log(Wage)}_i = b_0 + b_1Children + b_2Schooling + b_3Age + b_4Age^2 + b_5Financial + b_6ChildFinancial$$

$$\widehat{log(Wage)}_i = .658 - .030Children + .091Schooling + .077Age - .001Age^2 + .238Financial + .126ChildFinancial$$

Financial = 0

$$\widehat{log(Wage)}_i = .658 - .030Children + .091Schooling + .077Age - .001Age^2$$

Financial = 1

$$\widehat{log(Wage)}_i = .896 + .091Schooling + .077Age - .001Age^2 + .096Children$$

Non-Family-Friendly

Food Preparation and Serving

$$\widehat{log(Wage)_i} = b_0 + b_1 Children + \; b_2 Schooling + \; b_3 Age + b_4 Age^2 + b_5 Food$$
$$+ b_6 ChildFood$$

$$\widehat{log(Wage)_i} = .721 - .027 Children + \; .090 Schooling + \; .075 Age - .001 Age^2 - .449 Food$$
$$- .041 ChildFood$$

Food = 0

$$\widehat{log(Wage)_i} = .721 - .027 Children + \; .090 Schooling + \; .075 Age - .001 Age^2$$

Food = 1

$$\widehat{log(Wage)_i} = .272 + \; .090 Schooling + \; .075 Age - .001 Age^2 - .068 Children$$

Personal Care and Service

$$\widehat{log(Wage)_i} = b_0 + b_1 Children + \; b_2 Schooling + \; b_3 Age + b_4 Age^2 + b_5 Service$$
$$+ b_6 ChildService$$

$$\widehat{log(Wage)_i} = .792 - .021 Children + .087 Schooling + \; .073 Age - .001 Age^2$$
$$- .599 Service + .009 ChildService$$

Service = 0

$$\widehat{log(Wage)_i} = .792 - .021 Children + .087 Schooling + \; .073 Age - .001 Age^2$$

Service = 1

$$\widehat{log(Wage)_i} = .193 + .087 Schooling + \; .073 Age - .001 Age^2 - .012 Children$$

Sales

$$log(\widehat{Wage})_i = b_0 + b_1 Children + \ b_2 Schooling + \ b_3 Age + b_4 Age^2 + b_5 Sales$$
$$+ b_6 ChildSales$$

$$log(\widehat{Wage})_i = .708 - .022Children + \ .092Schooling + \ .075Age - .001Age^2 - .047Sales$$
$$- .058ChildSales$$

Sales = 0

$$log(\widehat{Wage})_i = .708 - .022Children + \ .092Schooling + \ .075Age - .001Age^2$$

Sales = 1

$$log(\widehat{Wage})_i = .661 + \ .092Schooling + \ .075Age - .001Age^2 - .08Children$$

As expected, the coefficients for the children and age-squared variables across all six regressions were negative, while schooling and age had positive effects on wage. Also, similar to the preliminary regression shown in Table 2, the R-squared was lower than desired, and all constants were significant for these six regressions. There was no multicollinearity present in these regressions. Park's tests were conducted for all six regressions and they indicated that there is not heteroscedasticity present (Tables 10-13).

Considering the legal industry, the coefficient for the intercept dummy variable representing the industry suggests that women in this industry on average earn 40 percent more than women in other industries. The fact that the coefficient for the slope dummy variable ChildLegal was positive indicates that women with children in this industry can earn more than those without. Both these variables were significant at the ten percent level. In addition to meeting Sasser's predictions about legal professions, these results are consistent with my prediction that the Legal industry is family-friendly (Sasser, 2004; Table 3). Additionally, since the legal industry likely requires a specific set of skills and higher education, these results confirm the prediction that highly skilled women are of high value to their firms, incentivizing employers to implement flexible policies for them.

The financial industry was also initially categorized as family-friendly for the purposes of this study. Like the other two industries with this initial categorization, the coefficient for the slope intercept dummy representing participation in the industry was positive. This coefficient was significant at the five percent level and indicated that women in the financial industry earn 24 percent more than the average worker. The slope dummy variable ChildFinancial was also positive, but not significant (Table 5).

The computer/math industry also had positive wage implications for women in that field, with average earnings 56 percent higher than other industries, and this coefficient was significant at the one percent level. The coefficient for the slope dummy variable ChildComMath demonstrates that having children in this industry may result in slight negative wage effects, but this variable was not significant. This industry was initially categorized in this paper as family-friendly. The results for women with children working in a computer or math related job were inconclusive as the results were not significant; however, these results suggest that this industry's categorization may not be consistent with predictions (Table 4). These results may provide evidence to support the literature that argues highly skilled women experience higher wage penalties post-birth as compared to low skilled women (Wilde 2010).

Examining what was predicted to be the non-family-friendly sector, the food preparation and serving industry did not have positive effects for worker's wages; women in this industry earn on average 45 percent less than other workers. This coefficient that represents all women in the industry was significant at the one percent level. The ChildFood slope dummy variable resulted in a positive coefficient, initially indicating that this industry is family-friendly. This did not match predictions; however, this coefficient was not significant (Table 6). Participation in the personal care and service industry resulted in wages for women 60 percent lower than those in other occupations. This coefficient was significant at the one percent level. Likewise, the data suggests that women in this industry with children may also experience wage penalties. This would imply that the personal care and service industry is not family-friendly, although these results are not conclusive as the ChildService dummy variable was not significant (Table 7).

The sales industry establishes an overall negative effect on women's wages, with those in the industry earning five percent less than other workers. Similarly, the slope dummy variable indicates that having children in this industry would result in further wage penalties. While these two variables did match the original predictions, both were not found to be significant (Table 8).

In terms of addressing the research questions set forth by this paper: In which industries do women with children experience lower wages than their childless peers? Furthermore, are there any industries in which women can have children and still experience wage growth? The legal industry proved with statistical significance that mothers could obtain a job in this field and still earn more than their childless peers. On the other hand, the first question remains largely unanswered, as all three industries that were suspected to meet this criterion were not statistically significant.

In examining the shortcomings of this study, the research questions were not fully answered because the only slope dummy variable that was significant was for the legal industry. These results confirm the prediction that this industry is family-friendly. Each industry in the data set includes a variety of different jobs grouped into that broader industry level category. It is possible that such a broad range of jobs within each industry may interfere in classifying of the other five industries as family-friendly or non-family-friendly with statistical significance.

The PSID industry data was adapted from 2010 census data. Each industry includes a range of professions that are not disclosed in the PSID data package. The sales and personal services industries each had 35 jobs contained as part of the broader category. The food industry was comprised of 16 jobs. The computer/math industry had 24 jobs within that category, the financial industry had 15 jobs, and the legal industry was comprised of 5 jobs. The fact that the slope dummy variable was only significant in the legal industry may be a result of the limited amount of jobs categorized as being part of that industry. As made clear by the literature, a specific set of qualities must be met for a job to be family-friendly. The large variety of jobs within the other five sectors may have impacted the lack of significance on the coefficient determining family-friendliness. This type of issue was also present in Sasser's work examining the earnings gap among physicians. This paper found that not all positions for physicians were family-friendly, but family-friendly practices could be located to prevent wage losses (Sasser, 2004).

Although none of the industries categorized in this paper as non-family-friendly defied expectations, it is important to note that some industries requiring lower skill or educational levels may in fact be family-friendly and these characteristics cannot always predict motherhood wage effects. In some cases, women without a college degree are not subject to the motherhood wage gap. These women may match into positions that provide enough flexibility for them to schedule shifts around their childcare responsibilities and not lose wages (Anderson, 2002). As mentioned previously, since there are a variety of jobs within each industry studied in this paper one reason why the slope dummy variables were not significant in the non-family-friendly regressions might be because of the variety of jobs included in the broader industry. Some of these jobs could be highly flexible positions where there is no motherhood wage gap, while others may have little flexibility and result in adverse wage effects for mothers.

Another reason that many of the slope dummy variables representing mothers in that industry were not significant may point back to the idea that the motherhood wage gap is greatly dependent on the individual. Everyone within a firm has a different set of skills and characteristics which ultimately aid in determining one's wage. Women also make personal decisions as to how much time to take off when their child is born and whether to stay with the same employer before and after childbirth (Waldfogel, 1998; Wilde 2010). All these characteristics and highly individual decisions contribute to women's labor market outcomes.

Additionally, women have control over the timing of their childbirth. The literature suggests that this plays a large role in determining wage outcomes, and will potentially determine if the woman will hold a family-friendly position. Generally, women who wait until age 30 to have children realize better labor market outcomes (Miller, 2011). Deciding to have children before the age of 30 may interrupt important human capital investments made in the employee by the firm. These potential losses of general and firm specific skills are often not able to be recouped later and will force young mothers onto a slower career track, with slower wage growth (Amuedo-Dorantes, 2003). Since the data does not include information about when each woman's first birth occurred it was not possible to control for this effect.

Further limitations of this study include the fact that to some degree women who plan to have children, or who are already mothers may consciously alter their labor market decisions and attempt to self-select into family-friendly positions (Nielson, 2004). Additionally, when making employment decisions, some mothers may have other priorities than wages, such as health care benefits for their family (Amuedo-Dorantes, 2008). These factors may make it difficult to accurately assess industry effects on mother's wages as mothers actively adjust their employment to meet their own needs.

All things considered, it may not be possible to accurately categorize broader industries into a family-friendly or non-family-friendly sector. The degree to which a firm is family-friendly is highly dependent on specific characteristics of the jobs offered. Even then, women's personal choices or qualifications may limit their ability to obtain such a position. It is possible that within any industry there are specific firms that provide family-friendly work environments to their employees. For future work, a narrow analysis of selected jobs may be more successful in studying how the motherhood wage gap varies between occupations. An in-depth analysis of selected positions could also help to determine additional criteria to locate family-friendly occupations.

In terms of policy, the literature finds that maternity leave is of high value to women in the workforce, and can help them retain jobs post-birth, ultimately leading to continued wage growth for individuals which could shrink the motherhood wage gap. While there is no doubt that more generous maternity leave policies should be implemented, it is unclear if these policies could ever fully address the motherhood wage gap. If wages are dependent on family-friendly industries or jobs, then this type of policy may only work to a certain extent. With maternity leave policies, it makes it easier for women to retain their job, but if that job is non-family-friendly then the wage gap between women would not fully be resolved. Nonetheless, implementing a paid maternity leave across all sectors would be relatively cheap and have significant positive results for women (Boushey, 2005).

More information is needed about what specific job characteristics or broader industries promote the motherhood wage gap. At this point, one cannot conclusively determine which jobs or industries are likely to have the best wage outcomes for mothers; however, after more research is completed on this topic there may be other policies that could be implemented in addition to maternity leave that would aid mothers in the workforce post-birth. While increasing women's job retention during the period of childbirth is greatly beneficial to long term wages, it is evident that mothers still need assistance during the years that they are raising their children (Anderson, 2003; Waldfogel, 1997).

VI. Tables

Table 1:
Summary Statistics

Variable	Mean	Standard Deviation	Min/Max Values	Number of Observations
Children	1.048736	1.224	0/7	2,770
Wage	22.05143	21.706	.14/576.92	2,770
Education	4.805776	1.623	1/8	2,770
Age	41.72563	12.628	18/18	2,770
Industry	374.2014	197.023	1/982	2,770

Table 2:
OLS Estimates

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \varepsilon_i$$

Children	-0.0287222** (0.0123814)
Schooling	0.0922291*** (0.0086265)
Age	0.0765586*** (0.0076957)
Age^2	-0.0007603*** (0.000088)
Constant	0.6652415*** (0.1649589)
R-Squared	0.0837
Adjusted R-Squared	0.0824
N	2,770

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

Table 3:
OLS Estimates

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \beta_5 Legal + \beta_6 ChildLegal + \varepsilon_i$$

Children	-0.0320784* (0.0124848)
Schooling	0.090606*** (0.0086011)
Age	0.0752477*** (0.0076694)
Age^2	-0.0007464*** (0.0000877)
Legal	0.4042955* (0.1564528)
Child*Legal	0.138809* (0.0784965)
Constant	0.6982478*** (0.1644785)
R-Squared	0.0917
Adjusted R-Squared	0.0897
N	2,770

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

Table 4:
OLS Estimates

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \beta_5 ComMath + \beta_6 ChildComMath + \varepsilon_i$$

Children	-0.0279795** (0.0123799)
Schooling	0.0917857*** (0.0086084)
Age	0.0761818*** (0.0076817)
Age^2	-0.0007554*** (0.0000878)
Computer/Math	0.5617547*** (0.2062873)
Child*Computer/Math	-0.0077036 (0.1553676)
Constant	0.668278*** (0.1647107)
R-Squared	0.0887
Adjusted R-Squared	0.0867
N	2,770

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

Table 5:
OLS Estimates

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \beta_5 Financial + \beta_6 ChildFinancial + \varepsilon_i$$

Children	-0.0296282** (0.0124191)
Schooling	0.0911809*** (0.0086074)
Age	0.0768072*** (0.007676)
Age^2	-0.0007629*** (0.0000877)
Financial	0.2375098** (0.1153445)
Child*Financial	0.1264613 (0.086792)
Constant	0.6575331*** (0.1645647)
R-Squared	0.0897
Adjusted R-Squared	0.0877
N	2,770

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

Table 6:
OLS Estimates

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \beta_5 Food + \beta_6 ChildFood + \varepsilon_i$$

Children	-0.0266938** (0.0125081)
Schooling	0.090401*** (0.0086109)
Age	0.0747987*** (0.0076834)
Age^2	-0.0007436*** (0.0000878)
Food	-0.449364*** (0.1503616)
Child*Food	-0.0408126 (0.0707199)
Constant	0.7210549*** (0.1649139)
R-Squared	0.0902
Adjusted R-Squared	0.0882
N	2,770

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

Table 7:
OLS Estimates

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \beta_5 Service + \beta_6 ChildService + \varepsilon_i$$

Children	-0.0209678* (0.0125343)
Schooling	0.0871736*** (0.0084579)
Age	0.0730777*** (0.0075387)
Age^2	-0.0007212*** (0.0000862)
Service	-0.5989842*** (0.074263)
Child*Service	0.0087801 (0.040244)
Constant	0.7922263*** (0.1619336)
R-Squared	0.1229
Adjusted R-Squared	0.1210
N	2,770

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

Table 8:
OLS Estimates

$$log(Wage)_i = \beta_0 + \beta_1 Children + \beta_2 Schooling + \beta_3 Age + \beta_4 Age^2 + \beta_5 Sales + \beta_6 ChildSales + \varepsilon_i$$

Children	-0.0225153* (0.0129322)
Schooling	0.0918471*** (0.0086186)
Age	0.0748443*** (0.0077293)
Age^2	-0.0007419*** (0.0000883)
Sales	-0.0471507 (0.06032)
Child*Sales	-0.0581023 (0.0361616)
Constant	0.7076375*** (0.1663497)
R-Squared	0.0864
Adjusted R-Squared	0.0844
N	2,770

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

Table 9:
Park's Test: Initial Regression Without Industry Variables

Park X	.16511 (.1229994)
Constant	-2.240796*** (.0910996)
R-Squared	0.0012
Adjusted R-Squared	0.0005
N	1,473

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

Table 10:
Park's Test: Legal Industry Regression

Park X	.1264189 (.1242669)
Constant	-2.241921*** (.0920384)
R-Squared	0.0007
Adjusted R-Squared	0.0000
N	1,473

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

Table 11:
Park's Test: Computer and Math Industry Regression

Park X	.1600542 (.1216129)
Constant	-2.234868*** (.0900727)
R-Squared	0.0012
Adjusted R-Squared	0.0005
N	1,473

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

Table 12:
Park's Test: Financial Industry Regression

Park X	.1478292 (.1240055)
Constant	-2.254069*** (.0918448)
R-Squared	0.0010
Adjusted R-Squared	0.0003
N	1,473

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

Table 13:
Park's Test: Food Industry Regression

Park X	.0835965 (.1278227)
Constant	-2.274193*** (.094672)
R-Squared	0.0003
Adjusted R-Squared	-0.0004
N	1,473

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

Table 14:
Park's Test: Service Industry Regression

Park X	.0597626 (.0565064)
Constant	-1.305907*** (.0418515)
R-Squared	0.0008
Adjusted R-Squared	0.0001
N	1,473

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

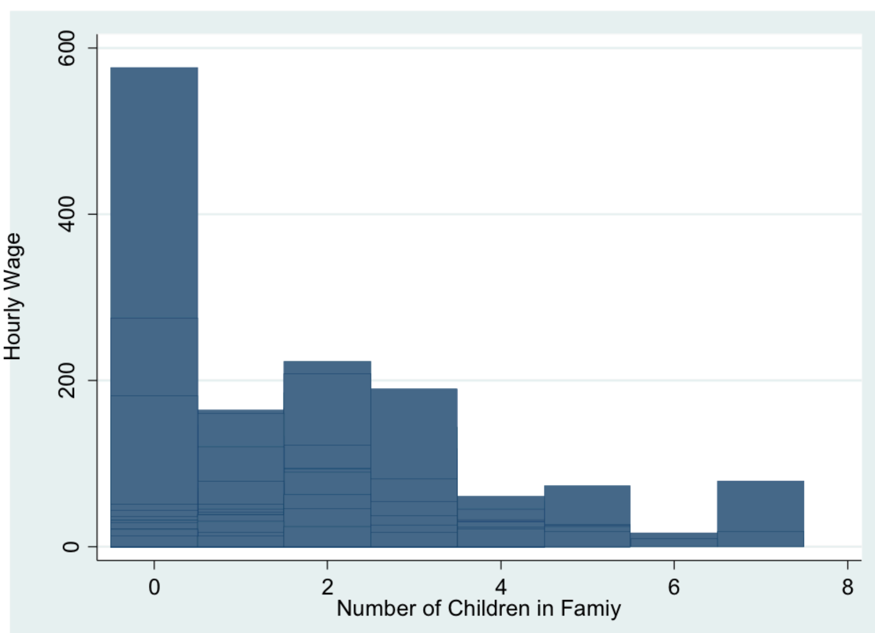
Table 15:
Park's Test: Sales Industry Regression

Park X	.1110291 (.1279934)
Constant	-2.24705*** (.0947984)
R-Squared	0.0005
Adjusted R-Squared	-0.0002
N	1,473

All standard errors are in parenthesis
* indicates significance at 10% level of significance
** indicates significance at 5% level of significance
*** indicates significance at 1% level of significance

VI. Graph

Graph 1:
Wife's Hourly Wage vs. Number of Children in the Family



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