Essays in Labor Economics

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Abstract

In my first chapter, I consider the long-term effects of World War II on women. WWII drew women into the workforce in unprecedented numbers and, often, into atypical occupations. After the war, they returned home where they became the mothers of the baby boom generation. Their daughters changed the female labor force by pursuing higher education and careers. My research analyzes whether cultural change during World War II helped to produce this break with the past. I use data on war manufacturing infrastructure and armed forces mobilization rates to predict whether the daughters were affected by the war's impact on their mothers. I also construct a measure of predicted war plants using pre-war infrastructure to remove the possibility of an endogenous decision to locate plants where women were particularly amenable to employment. My analysis shows that these war-related variables increased baby boomer women's education, although not their labor force participation. The primary impact was on their attainment of a college degree. The Quiet Revolution in women's employment, careers and education was therefore impacted greatly by their mothers' experiences before their daughters were born.

My second chapter also considers intergenerational impacts on women's careers, though in a more contemporary context. This chapter considers the effect of a stay-at-home mother on her daughter's career choice, specifically her tendency to choose her father's career. I provide some descriptive statistics of women who choose to be homemakers and those who have chosen their parents' occupations. I hypothesize that a woman with a stay-at-home mom is more likely to choose her father's career, given that she lacks a female

occupational role model in the home. I find no conclusive evidence of this, even when I only examine women in competitive careers. However, I do find statistically significant effects of the community in which she grows up. Women who grew up in communities where women were employed in competitive careers are less likely to choose their father's careers. Communities with men who are employed in competitive careers are more likely to produce women who inherit their father's occupation. Such a decision proves highly advantageous, since women in their father's careers earn more, while women in their mother's careers earn less.

My final chapter focuses on the rural South and analyzes trends in segregation due to private schools. Though in less extreme conditions than during the 1960's, school children are still segregated by race. Throughout the United States, this primarily occurs because of residential segregation. But there exists a unique pattern and opportunity in the heart of the South, its rural communities. Segregation in the rural South occurs largely through the presence of private schools. This is fascinating in that different races can live relatively near each other but never go to school together. White students' enrollment in private schools is highly dependent on the black proportion of the student population. Thus, black students in public schools in largely black areas have even fewer white peers. Segregation due to private schools is highest within the Cotton Belt, a region historically known for racism. The evidence is also consistent with a detrimental effect of private schools on public school funding. I find that rural Southern school districts with high levels of private school segregation also have low levels of school resources per student, even after controlling for what the median voter could afford. Using votes for segregationist presidential candidate Strom Thurmond as an instrument for segregation due to private schools only strengthens the results. Moreover, the recent increases in white enrollment at private schools may be slowly increasing racial separation due to private schools.

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Acknowledgments

"No one achieves anything alone." - Leslie Knope

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there was more to life than career and success. Both these forms of support are important, and I am grateful to have had both of them. I would also like to thank my baby sister Grace for never really caring about the details of my education and career; she was just there to talk about whatever I wanted.

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Chapter 1

The Daughters of Rosie the Riveter

1.1 Introduction

World War II had long-term impacts on geopolitics and on those who fought. Less well known is that the war also had long-term effects on those who did not go overseas.[1] In many ways, all Americans of the 1940s were affected by the war, even those left at home. I am adding to a growing literature on the long-term effects of the war by analyzing its impact on the daughters of the women who remained on the home front.

Since the 1940s, the labor force participation rate of women has almost tripled from 24 percent to 68 percent. The increase is greater for married women: from 15 percent to 66 percent.[2] Many would like to attribute this phenomenon to the increase in working women during World War II, claiming that women experienced jobs for the first time, developed a taste for work, and never left. But the story is more complicated. Many women left the workforce after the war, returned home, and gave birth to the baby boom generation. However, as I will demonstrate, the legacy of WWII's working women was passed down from mother to daughter.

1. For scholarship on the history of the home front during WWII, see Campbell (1984), Herman (2012), Carew (2010), and Hartmann (1982). Acemoglu, Autor, and Lyle (2004) analyze the effect that World War II had on the labor market.

2. These statistics are calculated for women aged twenty-five to sixty-four, from 1940 to 2010.

My research will answer the following questions: did the influx of women into the labor force during World War II affect their daughters, the baby boomers? Was the effect on the daughters' labor force participation or their education? And if so, through which channel: the mothers who inspired their daughters to pursue careers or the mothers who taught their sons that a woman can work even after marriage?[3]

First, I review the history relevant to my research. I outline the American WWII manufacturing boom and how both industry and the government encouraged women to shift their attitudes about work. The women of the 1940's entered the labor force in unprecedented numbers and scope. However, in a conservative backlash after the war, these same women were forced out of their jobs or left willingly to start their families. The women born directly after WWII were part of the baby boomer generation, coming of age in the 1960's and 1970's. This generation created the "Quiet Revolution," a nationwide change in their approach to careers and education (Goldin 2006a). I present historical evidence of how their mothers' generation influenced this revolution. I describe the previous research that pertains to WWII as a shock to women's labor force participation and its effect on subsequent generations. The following section describes the historical data sources used in my analysis. I begin by using the number of WWII manufacturing plants to measure the effect that WWII had on baby boomer women's labor and educational outcomes through their mothers. To correct for a possible omitted variable bias, I then create another instrument for war manufacturing's shock to women's labor force participation. Using this manufacturing measure and mobilization rates as measures of WWII's impact, I analyze the effect on the choices of baby boomer women. Finally, I include all parents' WWII variables in the analysis to compare the effect of the mother's influence with that of the other parents.

I find that the measures of WWII's shock have a positive impact on a baby boomer woman's education but not her labor force participation. This is true when the measures are assigned by both the mother's and the mother-in-law's counties.

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3. Fernández, Fogli, and Olivetti (2004) analyze the effects of WWII through both mothers and mother-in-laws. Their findings confirm an impact on a woman's labor force participation through her mother-in-law but not through her mother.

1.2 History

1.2.1 Industry Response to WWII

Mobilization of U.S. manufacturing for wartime began with the Neutrality Act of 1939, which effectively allowed Great Britain and France to order war materials from the United States. The Land Lease Act, passed by Congress in 1941, allowed the United States government to purchase materials, including weapons, and lease them to countries whose survival was in America's best interest. Thus, American war manufacturing stimulated by WWII began slightly before the U.S. formally entered the war.

War manufacturing rapidly accelerated due to the stimulus of World War II. Before 1939, the Army was still maintaining weapons in their arsenal from Gettysburg and Antietam. In 1940, President Roosevelt enlisted the help of General Motors' president William Knusden to assist with the mobilization process. As a result, American business and industry worked effectively with the government to equip and feed the armed forces. The government primarily ordered supplies from large companies, such as GM and Ford, who had the engineers to meet the immense orders with unprecedented speed. The United States covered all of the costs plus 7 percent as profit (a "cost-plus" contract). This system provided the incentives for manufacturers to voluntarily produce goods for the government. These large companies used smaller plants as subcontractors to manufacture the smaller components of their projects.

The effects were far-reaching. Knusden believed that the war would require retooling of nearly every American factory before the war even started. The conversion of existing plants was also spurred by the government's ban on civilian automobile manufacturing, a priority system for raw inputs, and civilian goods rationing.[4] In the end, war materials were produced by a huge assortment of manufacturers, including refrigerator, jukebox, and typewriter companies. By 1944, 70 percent of manufacturing was geared toward wartime

4. In this paper, I use the term 'conversion' to refer to plants producing war goods. The term makes the most sense for firms converting from civilian goods to war goods, but this transition does not necessarily entail radical shifts in production. For example, a boot company could be commissioned to produce shoes for soldiers.

production (Herman 2012). Only $1.9 billion was being spent on defense in 1940, but by the end of the war $304.4 billion had been spent, mostly for munitions (Carew 2010).[5] The United States officially entered World War II in December 1941, prompted by Japan's attack on Pearl Harbor, and fought until victory in August 1945.

The war had a profound impact on the labor force, as 46.2 percent of all eligible men aged 18 to 44 were mobilized (Goldin and Olivetti 2013). In response, employers first tried to fill empty positions with the men left behind. However, employers quickly grew tired of hiring young men only to lose them to the draft (Milkman 1982). Despite these labor shortages, war manufacturers were reluctant to employ women. The federal government desperately needed war manufacturing to run as efficiently as possible. Sensing manufacturers' reluctance, the government used both directives and propaganda to pressure companies to hire women (Hartmann 1982; Honey 1984). Eventually, businesses hired women and African Americans in unprecedented numbers (Milkman 1982). At first skeptical, managers began to notice that women often excelled at certain tasks, and they eventually praised women for specific skills, such as their "lightning-quick fingers" and ability to fit into tight places (Ford 1941; Herman 2012).

1.2.2 The Appeal to Women

The government used pressure to increase the demand for female labor, and it also felt the need to increase the supply. In 1942, President Roosevelt created the Office of War Information (OWI) to disseminate information about government programs and to coordinate with the War Advertising Council (WAC), established by the beleaguered advertising industry. The OWI and the WAC worked together to entice women into the workforce. The OWI published a monthly *War Guide for Advertisers* so that all propaganda material would be neatly tailored to immediate goals and maintain consistency across the advertisers and magazines who voluntarily complied. These guidelines affected both advertising and the very content of magazines, including advice columns, fictional stories, and interviews. The

5. In 2015 dollars, this is an increase from under $32 billion to over $4 trillion.

advertising push was massive. For example, in *Saturday Evening Post*, one of America's most popular magazines, 55 percent of all half- or full-page copy was devoted to recruiting women to war work (Honey 1984).

Since 61 percent of all women ages fifteen and over were married, it was necessary for the government to target this population. Their employment was a challenge since most respectable married women, particularly those with children, did not hold jobs. Furthermore, they were employed in "clean" white-collar jobs when they did (Goldin 2006a). Employment in manufacturing would be seen as a mark of shame, not pride. This is why the image of Rosie the Riveter was so memorable. The poster combined the respectability of a middle-class woman with the pride of blue-collar brawn, two concepts that previously had clashed.

Rosie was only one of many pieces of propaganda attempting to bestow respectability and femininity on employment. Particularly striking is the newsreel "Glamour Girls of 1943," sponsored by the Office of War Information, which portrayed white women workers in war manufacturing. Every line of the narrative emphasized how natural and feminine this activity was.[6] In order to convey middle-class respectability, the newsreel asserted that women war workers are not pulled into the labor force due to "economic calamity" but only by their patriotism.[7] War-time films often emphasized the enormous impact women could have on the outcome of the war. One film depicted the female labor force as the war-winning factor the Axis did not see coming, as the fictional clip shows a defeated Hitler writing his book "The Hidden Army" from prison (OCSO 1944).

All of these factors led to unprecedented employment opportunities for women despite the fact that sex discrimination in hiring was common.[8] Because of the war's demands on the labor force, employers for the first time advertised jobs in heavy industry for women.

6. The newsreel even compares a drill press to a juicer and a lathe to an electric washing machine.

7. Interviewed years later, a woman who worked in the shipyards of Kaiser clarified that she did not take the job for patriotism but because it paid three times her previous wage (Northwest Women's History Project 1982).

8. Until the passage of the Civil Rights Act of 1964, it was perfectly legal to list jobs under columns of "Help Wanted, Male" and "Help Wanted, Female".

Female recruits received accelerated training provided by their employers and no longer needed to work as apprentices for years (Field 1980). Moreover, to keep women on the job, firms hired counselors to help women adjust to their new jobs and to make men more amenable to their new female coworkers (Hartmann 1982).

1.2.3 Women's Response

For the first time in U.S. history, there were more married women than single women in the workforce. The number of women in the labor force increased by 49 percent from 1940 to 1944. The increase for 14 to 19-year-olds was 130 percent, and for 45 to 64-year-olds it was 65 percent (Goldin 1990).

Moreover, women's response influenced the location of war manufacturing activity. The War Production Board (WPB) kept close track of labor market conditions in areas that were critical to war production. This information was reported to the government in order to influence decisions regarding supply contracts and new plants, recommending only areas with sufficiently loose labor markets (USES 1948). These recommendations included information on whether the labor shortages were among both men and women or just among men.

In terms of earnings, women seem to have benefitted from the war. For example, of the women working in the Ford Willow Plant, 68 percent of them earned more than three times their prewar wages (Milkman 1982).[9] Women also discovered the "nonmaterial satisfactions of employment" (Hartmann 1982, p. 79). The documentary "The Life and Times of Rosie the Riveter" reveals that many women in heavy industry during World War II enjoyed their new high wages and also the sense of purpose that their work provided. During this time, manufacturing companies continued to maintain gender segregation, though rapid change meant that the line between men's and women's jobs was constantly shifting and never consistent across plants (Milkman 1982).

However, after the war ended, businesses laid their female employees off in order to offer

9. This was true for only 15 percent of men.

these jobs to homecoming soldiers.[10] As the women in the documentary testify, this outcome was heartbreaking to some.[11] One woman had taken up welding because she could earn a week's pay in one day. Describing war work as a "godsend," many of these women had worked as domestic houseworkers, farm laborers, and workers in less well-paying factories. After the war, many women still needed work, but they found only the same low wages and unskilled jobs as before the war. Each woman interviewed in "The Life and Times of Rosie the Riveter" worked after the war, but in cafeterias, kitchens, and domestic work (Field 1980). One woman recalled that employers did not even consider her war work in the shipyards of Kaiser as part of her history of employment: "You've never had a woman's job" (Northwest Women's History Project 1982). This disappointment was not confined to women who had worked before the war. A survey revealed that 57 percent of housewives who entered the labor force wished to continue working after the war (Women's Bureau 1946). Almost 90 percent of female war industry workers saw their wages drop, with the average wage dropping by 26 percent (Hartmann 1982).

In fact, the closer one looks at women's employment, the more one realizes how temporary many of the effects of World War II were. In 1944, a third of the female labor force had entered during the war. Of those who entered, only two-thirds were still working in 1950. Perhaps this is due to the uncharacteristic nature of women's work during the war: one-sixth of the female labor force was in a war-related industry (fabricated metals, airplane assembly, etc.). Many of the women who continued working immediately after the war probably would have been working anyway. In fact, 80 percent of women working in 1950 had worked for the entire 1940s decade, including the year before Pearl Harbor. However, this is not to say that women as a whole were largely unaffected by World War II.

10. After the war, two million women were laid off from their jobs (Ruthsdotter, Eisenberg, and MacGregor 1988). Just between June and September 1945, one in every four women was laid off from their factory job (Hartmann 1982). One news reel brazenly announced "Each serviceman will get his job back when this war is won. And you women and girls will go home, back to being housewives and mothers again, as you promised to do when you came to work for us" (Rochemont 1943).

11. One woman who worked during World War II recalls her belief: "We were going to be welders forever and ever" (Field 1980). The "government girls" in Washington D.C. also believed they would keep their jobs after the war (Sewell 2004).

One-fifth of all American women entered the labor force during the war. Most eventually left, either immediately after the war or when they began having children (Goldin 1991). The propaganda of World War II had many progressive elements, but feminist messages were undermined by traditional overtones.[12]

1.2.4 Women after the War

Even though the war did not have a revolutionary effect on women's labor force participation in the years immediately following World War II, it did have a strong delayed impact. This impact was perhaps magnified, though at first smothered, by the intense antifeminist backlash of the 1950s.[13] After America's security was no longer dependent on working women, the national dialogue shifted to the newest threat: the Cold War. Women were most certainly needed in the fight against communism, but only as mothers and wives (Hartmann 1982).

Understandably, after World War II ended and the economy began to boom, women began the families that had been delayed or seemed infeasible during the Depression and the war (Friedan 1963). Marriages were hastily entered into, and many women did become full-time mothers. The 1950s offered previously unavailable time-saving appliances such as the microwave oven and the automatic washing machine. However, accompanying this new freedom were even higher standards of cleanliness, keeping the number of hours spent in housework between fifty-one and fifty-six hours per week from 1920 to 1960. Moreover, Dr. Spock, the new authority in child care, prescribed an ever-watchful and demanding form of parenting (Hartmann 1982). After the war, an unprecedented number of families purchased cars, enabling them to move to the suburbs. This relocation often left women without the

12. The war propaganda could not help but have some feminist messages. In order to reassure women war workers, magazines pointed to the women who settled the West and feminist suffragettes. They published information on the Equal Rights Amendment. "Women were portrayed more positively than at any time before the war with the notable exception of blacks or other minorities. They were praised for bravery, loyalty to soldiers, intelligence, steadfastness, and competence" (Honey 1984, p.179).

13. Historian Maureen Honey writes that "the great puzzle of the 1940s has been the paradoxical spawning of a reactionary postwar feminine mystique by a crisis that necessitated radical revision of traditional views" (p .1).

social connections of family or old friends, precisely those relationships that had enabled working women to balance the demands of both employment and motherhood.

A burgeoning economy needed women as consumers. No longer constrained by a war, the advertising industry released its pent-up energy convincing women how easy their lives would be with some new product. Advertisements bragged about how useful the new goods would be to "Rosie the Housewife" (Honey 1984, p. 123). Such strong and contradictory messages targeted at the women of the 1920s cohort created a lot of stress that would finally erupt in the 1960s.

1.2.5 Links between WWII and the Quiet Revolution

The mothers of the baby boomers witnessed both the unique movement of women into the labor force during World War II and the conservative portrayal of their lives in the decade after. By 1952, women were actually at the same labor force participation rate as they had been at their peak in World War II (Ruthsdotter, Eisenberg, and MacGregor 1988). While it may not have created an immediate upheaval of work patterns, the World War II propaganda was "the most comprehensive, well-organized effort this society has made towards ending prejudice against women in male occupations and toward legitimizing the notion that women belong in the paid work force" (Honey 1984, p. 211). Many of the issues brought to light by the war sustained a small body of feminists throughout the 1950's (Hartmann 1982). Moreover, many feminists lay dormant, only venting their frustrations in the 1960s as the reform wing of the Second Wave.[14]

These women of the 1920's cohort not only effected change on their own behalf, they fought for their daughters as well. Susan Douglas, a member of the baby boomer generation, recalls the frustration her mother felt in the conflicting messages she received from American culture regarding women's work. The mothers of baby boomers encouraged their daughters to pursue careers and receive the education they would need to get them (Douglas 1995).

14. For more specific information regarding the links between WWII and the feminist movement, see Section A.1 in the Appendix.

One woman recalls the support she received to run for Congress from her mother, whose own dreams of working in a laboratory had been thwarted many years before: "Women became supportive of their daughters when they were fearful before that their daughters, if they tried it, they wouldn't be successful. But, she thought, 'Ah! This time, she might be successful!"' (Follet 1998).

This transition, coined the "Quiet Revolution," is one of the key changes for women in the last century (Goldin 2006a). This revolution was not an historic acceleration of the number of women in the workforce; it was a revolution of how women approached that work. Young women in the 1960s accurately predicted the time they would spend in the labor force, whereas previous generations had underestimated their working years. Consequently, they had time to fully prepare their education for the paths they had chosen. This was the first generation where a large number of women began planning for careers, not jobs. Their mothers had only pursued enough education for the few years they had predicted they would spend working. When it turned out that they worked much longer, they found themselves stuck in jobs with no advancement and little fulfillment. Moreover, unlike their mothers, female baby boomers chose their careers as a piece of their own identity, something they often developed before they married and subsequently gained an identity as a wife.

There were several contributing factors to the precise timing of the "Quiet Revolution." Many mothers of the baby boomer generation did continue to work after the war, either immediately or when their children were sufficiently grown. The combination of rising life expectancy and early childbearing left many of the baby boomers' mothers with an empty nest in their 40s or 50s (Collins 2009). With a suddenly lightened load, many of the 1920s cohort returned to work. Also, many of the hastily entered marriages of the 1920s cohort eventually dissolved, leading to record-breaking levels of divorce. The daughters witnessed the precariousness of their mothers' situation.[15] Even if a mother stayed financially secure

15. A common theme among second wave authors is the desire to avoid becoming like their mothers (Collins 2009; Citron 1979). Gloria Steinem said "A lot of my generation are living out the un-lived lives of our mothers" (Kunhardt 2011). In an interview, she blamed patriarchal culture for her mother's fate: "Our mothers met pretty

within a marriage where she was a stay-at-home mother, the daughters witnessed both the media and their mothers describe the role as "just a housewife," which conveyed the lack of respect or appreciation for what these women did. Moreover, there is evidence that the direct contrast between the pride of WWII labor and the portrayal of women in the 1960s was related directly by mothers to their daughters.[16] These daughters were also the first generation to use birth control pills, which allowed women to plan their futures with certainty without the need for celibacy (Brownmiller 1999; Goldin and Katz 2002).

1.3 Previous Research

Surprisingly, few economic studies have analyzed the relationship between the baby boomer generation and their mothers, with regard to their labor force participation and education. The most relevant study is Fernández, Fogli, and Olivetti (2004). This paper first shows that a mother-in-law's employment during her son's childhood is correlated with his wife's employment. In contrast, they do not find a correlation between a woman's labor force participation and her own mother's work history. The authors then use WWII's mobilization rate, assigned by a woman's state of birth, to analyze the effect on her labor supply. They study married white women born between 1930 and 1935, who would have been alive but too young to work during WWII. Thus, the authors treat the mobilization rate as a shock to the young girls observing working mothers in their community. They find a robust positive impact of WWII on the number of weeks worked. Combining these results, the authors offer two explanations for their results. First, they hypothesize that boys who grew up in homes with working mothers would be more open to the idea of their own future wives working. Second, boys who grew up with working mothers may be more capable of

rough fates, at least in my generation, and that's what happened to my mother. Her spirit really was broken by... the way the world ran. She had to give up, you know, everything she loved: her profession, everything she cared about" (Colbert and Cardona 1997). Even average women made similar vows: "whether a young woman adored her mother or loathed her, if she grew up in the '60s, she probably vowed that her life would be far different" (Collins 2009, p. 171).

16. Beverly Jones, born in 1927, calls for women to "learn their own history because they have a history to be proud of and a history which will give pride to their daughters" (Jones 1968).

performing household chores, thus freeing up their wife's time for a job. In equilibrium, girls who observed their male peers being raised by working women would internalize this and therefore invest in their future careers.

There are several reasons why I would favor an alternative interpretation of these findings. First, the narrative of girls observing the work of their male peers' mothers is questionable. It is not true that most women who worked in World War II also worked while their children grew up.[17] It is only a recent phenomenon that the majority of women with small children work. Most growth in married female labor force participation from 1940 to 1960 was due to older women who went back to work after their children were in high school or out of the house. Thus, many children would have seen their mothers work for only a short period of time, if at all. Second, this explanation robs women of their own agency. These women had the time to plan their working lives before choosing a husband, allowing them to choose a husband who fit in with their career, not vice versa.[18] It seems unlikely that young girls planned their futures based on the predicted number of men willing to marry them and allow a career because the little boys in their class had mothers who worked. Instead, one can interpret this positive impact of a mother-in-law's working life on a woman's career as selection, not causation.

Morrill and Morrill (2013) offer selection as an alternative explanation to the results in Fernández, Fogli, and Olivetti (2004). First, the authors perform variations on the regressions in Fernández, Fogli, and Olivetti (2004) to investigate the findings that the mother-in-law's work history is correlated with a woman's employment but that her mother's is not. Using alternative specifications, they show that the mother's effect is statistically significant and equivalent in magnitude to the mother-in-law's. Moreover, they provide a model where a

17. While it is true that labor force participation of women with children under 10 increased during the war, this increase was only from a rate of 7.8 percent to 12.1 percent from 1940 to 1944 (Eskin 1944). In 1950, only 11.9 percent of women with children under the age of 10 worked (C. D. Long 1958).

18. The cohort studied by Fernández, Fogli, and Olivetti (2004), those born between 1930 and 1935, were far more likely than surrounding cohorts to marry between age 14 and 18 and between age 19 and 23 (Rodgers and Thornton 1985). Thus, the birth cohort from 1930 to 1934 had a median age at first marriage of 20.3 years in 1975 (U.S. Bureau of the Census 1976). Though the median age at first marriage was historically low, it is still high enough to be after high school graduation.

woman's employment preference is determined randomly, with the only influence being her mother's employment preference. In this simple model, assortative matching makes it possible for a mother-in-law's employment to have a stronger correlation with a woman's work than her mother's. While they do not repeat the analysis using WWII as a shock to the employment of the mother and the mother-in-law, Morrill and Morrill (2013) posit that the results in Fernández, Fogli, and Olivetti (2004) are consistent with the mother being the true source of a daughter's desire to work. Both explanations of a mother-in-law's influence on a woman's career can also apply to assortative matching. Women who have already decided that they want to work may be more attracted to men who are open to their wives working and who are good at chores. In my paper, I favor the assortative matching explanation for any statistically significant relationships with a mother-in-law's variables.

My research studies fundamentally different populations than Fernández, Fogli, and Olivetti (2004). They study the children who were old enough to observe their mothers' work in World War II, who would have been in their late twenties in 1960. According to the historical evidence, we would expect there to be an effect on those born after World War II, raised by the Rosies of the 1940s and the Betty Friedans of the 1960s. Thus, this paper will look at women born in the decade after the war.

Also relevant is the research related directly to the impact of WWII on the women who lived through it. Acemoglu, Autor, and Lyle (2004) were the first authors to use state-wide mobilization rates as a shock to women's labor force participation. After confirming that there was a higher increase in women's employment in states with higher mobilization, the authors use these rates as an instrument in order to analyze the effect of increased women's labor supply on both men's and women's wages. They found that the effect was to lower both men and women's wages and to increase wage inequality between men. Goldin and Olivetti (2013) use the same mobilization rates as an instrument and more thoroughly analyze the effect on women's labor during WWII. They show that WWII impacted both the labor force participation and weeks worked by women with a high school degree. Moreover, there were different effects in the short-run and the long-run. The short-run impact is

strongest on married women who had no children, with some effect on the labor force participation of married women who had children. The long-run impact is greatest on married women, both with and without children during WWII.

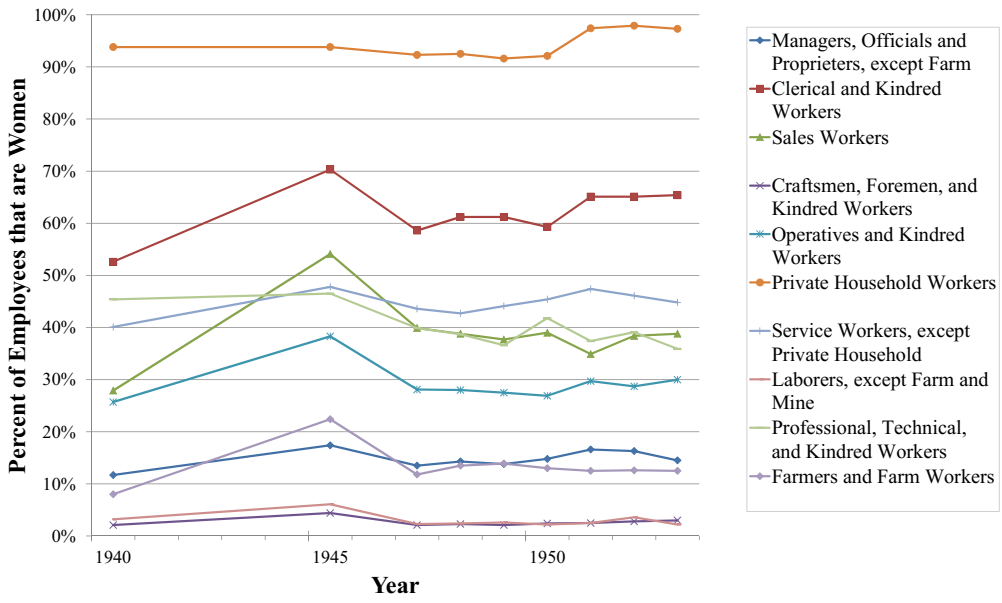
1.4 Purpose

The purpose of my research is to determine whether there was an impact that WWII had on the women of the baby boomer generation, through their mothers' shocked labor decisions. I will determine if there is an impact on their labor force participation, weeks worked, or education.

My research closely resembles the methods of Fernández, Fogli, and Olivetti (2004), with the difference being that I will analyze children born after WWII, not before. I also improve upon the exogenous shock to women's labor supply the authors use. Fernández, Fogli, and Olivetti (2004) use the state-wide mobilization rates from Acemoglu, Autor, and Lyle (2004). These rates have a statistically significant positive impact on weeks worked by women during the war. However, a more complete view on World War II would take into account not only the jobs left behind by the soldiers but also the jobs created by the war. American manufacturing companies took advantage of pre-existing infrastructure for war production, so many jobs were created in areas where steel mills, airplane factories, and auto plants were already built. Because these large companies subcontracted with smaller companies, the war also created jobs in geographic areas with various other manufacturing industries. For example, even refrigerator, jukebox, and typewriter plants converted to war manufacturing.

Figure 1.1 reports the percentage of the workforce that is female, by occupation, from 1940 to 1953. During the war, the largest increases in the proportion of female workers occurred in sales, machine operative, clerical, and farm workers. In fact, women went from being a minority of sales workers to the majority. However, the total number of sales jobs dropped by 70 percent from 1940 to 1945, so the number of women in sales jobs actually decreased between these years. In contrast, the number of operative and clerical jobs

Figure 1.1: *Percent Women of All Employees in Each Occupational Group, 1940-1953*



Source: Women's Bureau (1953).
Notes: Data is from U.S. Department of Commerce, Bureaus of the Census, Current Population Reports; and U.S. Department of Labor, Bureau of Labor Statistics, Monthly Labor Review, August 1947.

increased 40 percent, and the number of farm jobs stayed nearly the same (Women's Bureau 1953). So, we can attribute the increase of women in farm jobs to the draft, but the increase of women in clerical and operative jobs to both the draft and increased war production.[19] Therefore it is important to include in my analysis both the mobilization rate and the WWII manufacturing infrastructure, as measures of the war's impact on both supply and demand.

Much like Fernández, Fogli, and Olivetti (2004), I want to use an instrument that is exogenous to women's taste for work. To measure a shock to women's labor force participation in WWII that is unrelated to women's behavior and attitudes, I take advantage of the unique history of WWII. The location of war manufacturing was determined by pre-existing infrastructure that was converted to produce war goods. It is reasonable to assume that whichever industries were converted to war manufacturing had made their

19. Figure 1.1 also shows us that many of the advances women made in atypical occupation groups during the war receded afterwards.

pre-war location decisions independently of local women's willingness to work, especially considering how unexpected their necessity would be. I use data on pre-war manufacturing infrastructure to create a predicted number of WWII manufacturing plants, which should be free of any correlation with women's work during the war. Thus, while my analysis begins by using the actual number of WWII manufacturing plants, the regressions using the constructed measure are more convincing.

1.5 Data

To study the determinants of a woman's labor decisions, I use the Michigan Panel Survey of Income Dynamics (PSID). This data set is a nationally representative longitudinal study of families that began with over 5,000 families in 1968. In addition to collecting detailed data on both the household "head" and "wife"[20] (if present) of the original families, the study has also followed every child to leave one of the PSID families. The child is then considered either a "head" or "wife"[21] in a new family, and detailed information is gathered on him or her. Thus, the sample maintains a nationally representative sample for every year.

The PSID is uniquely suited to analyzing intergenerational effects. For years 1976, 1985, and 1997, the dataset reports information on where the respondent's parents grew up.[22] The PSID also reports the employment status and annual weeks worked in employment for both the head and the wife. Various education measures[23] for the head and the wife are

20. The PSID labels a cohabitating couple as "Head" and "Wife" if the opposite-sex romantic partner was recorded as cohabitating with the respondent in the last survey. The PSID does not collect detailed information on same-sex cohabitators.

21. The PSID uses a very traditional method of labeling respondents as "head" or "wife". Any single female respondent from the original PSID draw or single female family member who leaves a PSID household is considered the "head" of her household. If she marries or cohabitates with a male romantic partner for more than a year, she is reassigned to "wife" and her partner becomes the "head".

22. For all years from 1970 onwards, the PSID reports the county where both the head and his or her parents grew up. For 1976 and 1985, the dataset reports the county where the wife grew up. The county in which the wife's parents grew up is reported in 1985 and 1997 onwards. Only the state in which her parents grew up is reported in 1976.

23. The variables reporting the education of both the head and the wife changed between 1985 and 1997. Thus, for the analysis comparing 1976 to 1985, we use the categorical education variable in 1976 and the comparable

included, as well as the education of their parents.

To measure pre-war manufacturing activity on a local level, I digitize Table 10 in Volume III of the 1939 Census of Manufactures. This table lists the number of manufacturing establishments[24]of sufficient size[25] by industry group in each county. The industry classification consists of twenty categories into which establishments are classified according to their primary manufactured products. Figure 1.2 shows the geographical distribution of manufacturing plants in 1939. The data indicates that even though manufacturing activity pervaded much of the United States, it tended to concentrate in specific regions. Plants are concentrated in areas of New England, the Midwest, and the West Coast.

I also use data on manufacturing plants during the war. While the Census of Manufactures halted data collection during WWII, the WPB was collecting similar data for its own purposes. The WPB was established by Executive Order in January 1942, and it acted as a central planner to smoothly transition peacetime manufacturing to war-related manufacturing. A list of all plants producing war goods that required facilities expansions costing $25,000 or more[26] over the course of the entire war was published periodically in a series of classified documents. The last document compiling the list of data was *War Manufacturing Facilities Authorized through December 1944 by State and County* (WPB 1945). This document covers the period from July 1, 1940, to December 31, 1944. It lists, by county, the name of each authorized war manufacturing producer; details the war goods produced in each individual plant; and breaks down the costs of expansions by type and source.

The data I use is a manual count of the number of war manufacturing plants within each county. Figure 1.3 shows the geographical distribution of war manufacturing plants

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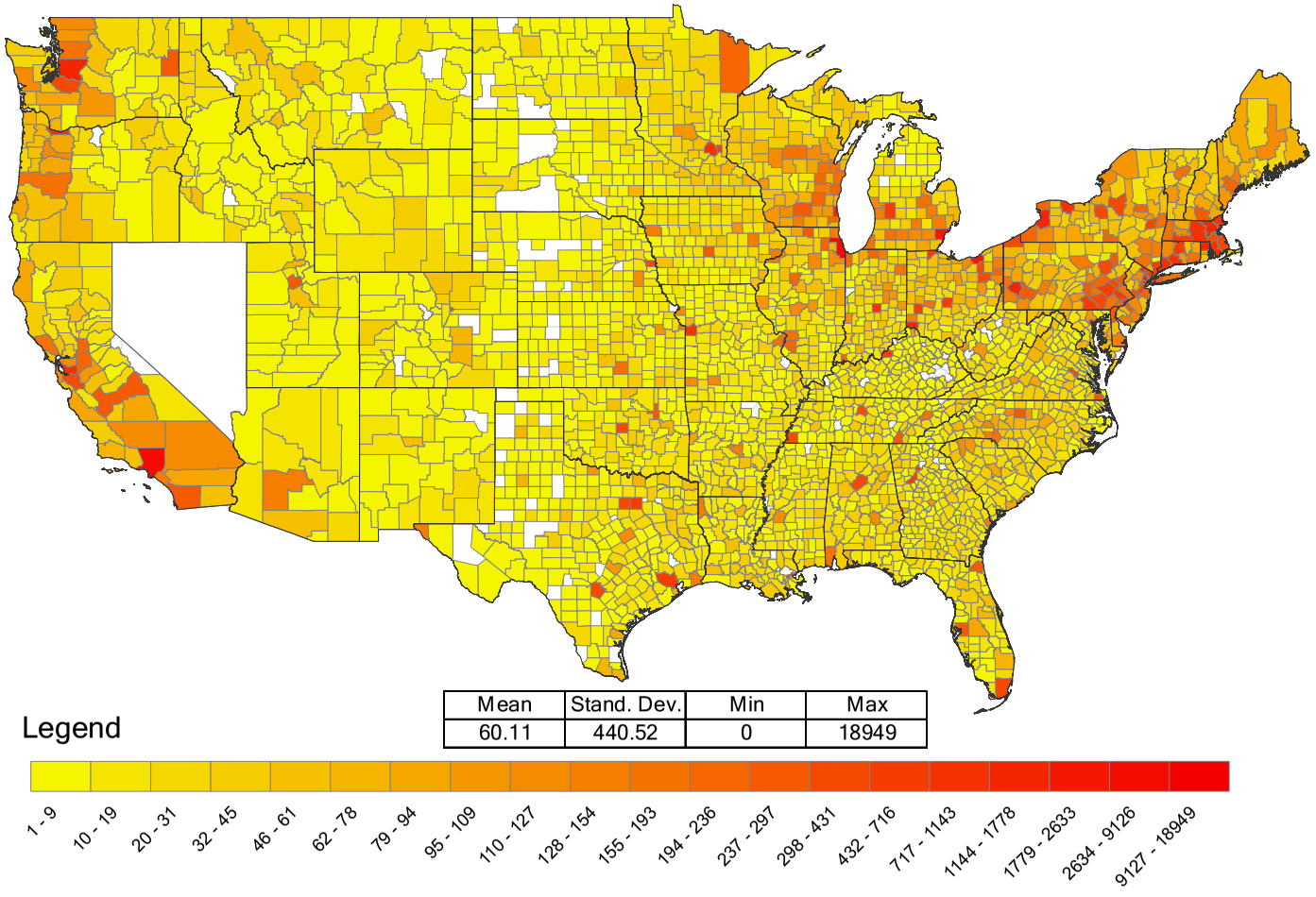
one for 1985. When analyzing 1985 data versus 1997 data, I created my own categorical education variable similar to the previous one.

24. An establishment is typically defined as a single plant or factory. Occasionally, the Census would count a plant as having more than one establishment if separate lines of activity under different industry classifications took place in the same plant.

25. Only manufacturing establishments reporting output valued at $5,000 in 1940 dollars are included in the Census. This much output would be valued at approximately $85,000 in 2014 dollars.

26. This included both expansions to structures and to equipment, and the total amount is from both public and private funds. $25,000 in 1944 dollars is approximately $338,000 in 2014 dollars.

Figure 1.2: *Manufacturing Plants by County, 1939*



Source: Census of Manufactures: 1939 (1942).
Notes: Map displays counties as they were in 1940. Nevada is not included for the same reasons as Acemoglu, Autor, and Lyle (2004); Fernández, Fogli, and Olivetti (2004); and Goldin and Olivetti (2013): the state had a small population base in 1940 and underwent a large population change during the decade after.

during WWII. War manufacturing plants were geographically clustered in many of the same areas as pre-war manufacturing. Figure 1.4 shows the histogram of the number of war manufacturing plants within a county. Of all the counties in our sample, 49.1 percent have no war-related plants at all. The distribution is highly skewed, with the top 1 percent of counties holding 38.8 percent of the war manufacturing plants.

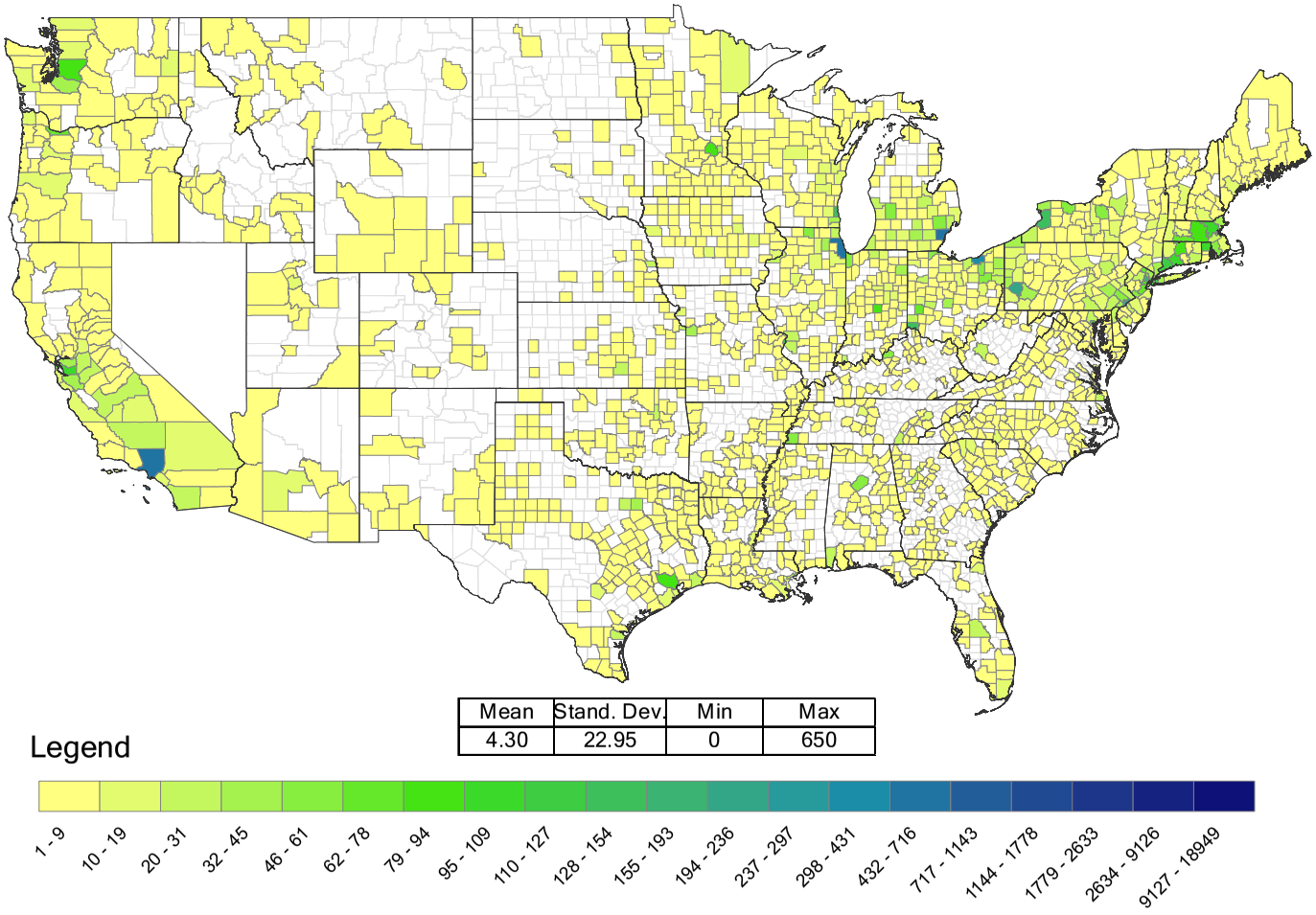
In the robustness analysis, I use WPB data on women's work in war manufacturing. Plants manufacturing metal products were required to submit documentation regarding their employees quarterly. These numbers, compiled in the *Survey of Plants Manufacturing Metal Products,* include the total number of employees and the female percentage of the plant's labor. These numbers are reported by Labor Market Areas (LMA), which the WPB defined as areas which contained a city and any surrounding area that contributed labor to the city's economy.[27] The number of women working in metal manufacturing plants is easily calculated. To get a sense of the saturation of Rosies within the community, we can also compute the percentage of the LMA's total population that are women working in a plant manufacturing metal products. Thus, the *Survey of Plants Manufacturing Metal Products* provides us with three measures of female employment in metal manufacturing by LMA: the number of women employed, the female percentage of employees, and the percentage of the population that are women employed in metal manufacturing.[28]

Another important shock to women's labor was the local mobilization rate of men. Since almost half of eligible men aged 18 to 44 were mobilized in the armed forces during WWII, firms turned to women to fill their empty positions. Demand for women's labor increased. Moreover, as posited by Goldin and Olivetti (2013), men's absence may have also affected the labor supply of women. Military men would have received lower wages in the armed forces than they would have received otherwise, lowering their wives' reservation wages.

27. The concept of a labor market area was "more fluid than the political or population boundaries." The WMC defined a labor market area as "a geographical area consisting of a central city (or cities) and the surrounding territory, in which there is a concentration of urban economic activity or urban labor demand, and in which workers can change jobs without changing their residence." (USES 1948)

28. Since LMAs are not constrained by political boundaries, the data from the *Survey of Plants Manufacturing Metal Products* must be converted to county-level. Section A.2 in the Appendix details this procedure.

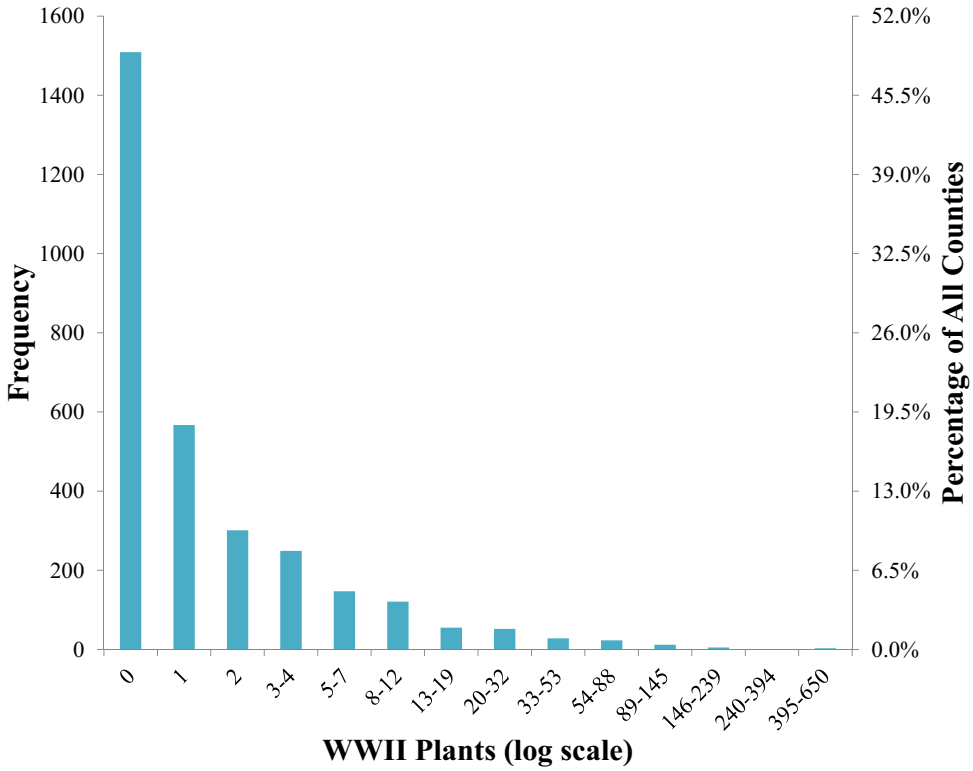
Figure 1.3: *WWII Manufacturing Plants by County, 1940-1944*



Source: WPB (1945).

Notes: Map displays counties as they were in 1940. Nevada is not included for the same reasons as Acemoglu, Autor, and Lyle (2004) and Goldin and Olivetti (2013): the state had a small population base in 1940 and underwent a large population change during the decade after.

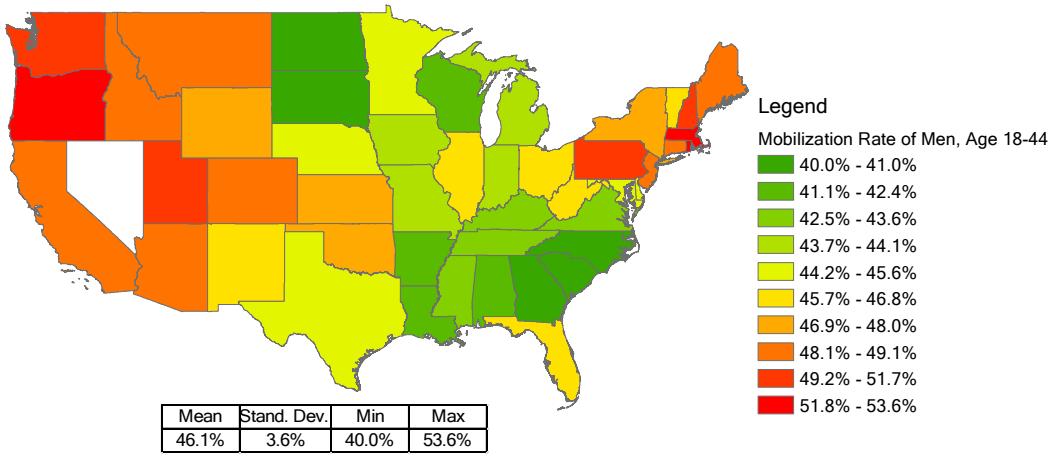
Figure 1.4: *Histogram of WWII Manufacturing Plants by County, 1940-1944*



Source: WPB (1945).

Also, these men's absence would have reduced their ability to discourage the women in their lives from working. Goldin and Olivetti (2013) measure the impact of various measures of mobilization on women's labor supply. The authors find that the largest impact, both in the short-run and the long-run, are from the most general measure of mobilization: the percentage of all men aged 18 to 44 who were mobilized. This is the measure I use in my analysis as well, mapped in Figure 1.5. Both Acemoglu, Autor, and Lyle (2004) and Goldin and Olivetti (2013) confirm that important predictors of the mobilization rate are the percentage of farmers, percentage non-white, and average education of the state's population. These controls account for the types of deferments or exceptions allowed during WWII, and they are included in all my analysis.

Figure 1.5: *Statewide Mobilization Rates, 1940-1945*



Mean	Stand. Dev.	Min	Max
46.1%	3.6%	40.0%	53.6%

Source: Goldin and Olivetti (2013).
Notes: Rates are calculated for all men aged 18 to 44. Data is through August, 1945.

1.6 Analysis of WWII's Impact on Baby Boomer Women

First, I will use the data from WPB (1945) and Goldin and Olivetti (2013) to analyze the impact of WWII on baby boomer women. Specifically, I concentrate on the effect of the number of WWII manufacturing plants and state-wide mobilization rates. There are many ways to classify the baby boomer generation. For the purpose of my research, I define baby boomers as those born in the decade after World War II, between 1946 and 1955.

Statistics regarding baby boomer women confirms their link to the generation of women who were young adults during WWII. Among white baby boomer women, their mothers' median birth year was 1925. This mother would have been around seventeen years old when the war started and around twenty when it ended. White baby boomer women were predominantly born to the 1920's birth cohort: 54.0 percent of them had mothers who were born between 1920 and 1929. Only 22.7 percent were born to members of the 1930's birth cohort, a group too young to be working during WWII.[29]

29. These statistics are calculated using the 1960 Census from IPUMS, when baby boomer women would have

The PSID contains geographical information on respondents' parents in years 1976, 1985, and 1997. Baby boomers are the group treated by WWII, through their mothers, while other cohorts serve as the control group. Thus, I perform two comparisons. I compare baby boomers in 1985 to a control group in 1976, and I compare baby boomers in 1997 to a control group in 1985. To prevent overlap, I use the sample of thirty- to thirty-eight-year-olds in 1985 as my baby boomer sample and use women of the same age group in 1976 as my control group.[30] I use the sample of forty-two- to fifty-one-year-olds in 1997 to compare to similarly aged women in 1985.[31] Following Fernández, Fogli, and Olivetti (2004) and Goldin and Olivetti (2013), I restrict my sample to married women. These authors also restrict their sample to white women, given the different employment histories over the 20th century for women of different races. Specifically, for most of the 20th century, nonwhite women have had much higher participation rates than white women, and they were predominantly in agricultural jobs, which are excluded from this study. The PSID only asks the race of the heads, so I will restrict my sample to women married to white men. Finally, my data is restricted to women who grew up and, at the time of survey, were currently living in the continental United States, excluding Nevada.[32] Table 1.1 summarizes the two comparisons.

Generally following Fernández, Fogli, and Olivetti (2004) and Goldin and Olivetti (2013),

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been aged five to fourteen. Information on the mother's age is provided, as long as the child is currently living with her mother. Only 2.8 percent of the sample are missing information on their mother's age.

30. This control group was alive for at least part of World War II, meaning that their mothers would have had infant children during the war. From Goldin and Olivetti (2013), we know that this group is far less likely to be pulled into the labor force by the war. We can draw similar inferences about this group from the IPUMS 1950 Census. The median birth year of their mothers was 1916, translating to an age of twenty-six to thirty during the war. In this sample of women, 52.9 percent had mothers born between 1910 and 1919.

31. This control group would also have been small children during the war, meaning that their mothers would have been less likely to be pulled into the labor force. According to statistics calculated from the IPUMS 1950 Census, white women born between 1934 and 1943 had mothers whose median year of birth was 1912. A mother born in 1912 would have been thirty to thirty-four during the war. Calculations show that 53.0 percent of these women had mothers born between 1910 and 1919.

32. Nevada is not included for the same reasons as Acemoglu, Autor, and Lyle (2004); Fernández, Fogli, and Olivetti (2004); and Goldin and Olivetti (2013): the state had a small population base in 1940 and underwent a large population change during the decade after. We only consider the continental United States because Hawaii and Alaska did not become states until 1959.

Table 1.1: *Summary of PSID Data*

	Age 30-38		Age 42-51	
	1976	1985	1985	1997
Weeks Worked	22.5	29.0	32.8	38.6
	(21.1)	(21.3)	(20.2)	(18.5)
Worked Last Year	52.9%	61.8%	68.2%	78.1%
	(50.0)	(48.6)	(46.7)	(41.4)
College	17.5%	25.7%	12.7%	36.4%
	(38.1)	(43.7)	(33.3)	(48.2)
Observations	385	740	310	588
Unique Mother's States	42	45	43	43
Unique Mother's Counties		426	239	342
Birth Years	1938-46	1947-55	1934-43	1946-55
Baby Boomers	✗	✓	✗	✓

Source: Panel Study of Income Dynamics, public use data set *(2012)*.
Notes: Sample restricted to women who are married to white men and who were born in and living in the continental United States, excluding Nevada. A respondent is counted as having gone to college if she went to college but does not have a degree, if she has a college degree, or if she has some post-graduate education.

I perform the following regression to analyze the impact of WWII on baby boomer women:

$$w_{ict} = X'_{ict}\beta_{1t} + \gamma_t e'_c \beta_2 + \gamma_t M'_c \alpha + d_c + \gamma_t + \epsilon_{ict} \tag{1.1}$$

In the regression, w_{ict} is an outcome variable for person i in year t whose mother grew up in county c. The outcome variables are either labor measures or education outcomes. The matrix X_{ict} contains dummy variables for a respondent's age and, for some specifications, dummy variables for both of her parent's education levels. The variable γ_t is an indicator that the cohort belongs to the baby boomer generation. When the regression pools together the 1985 and 1976 cohorts, it is a dummy variable for 1985. Similarly, it is a dummy variable for 1997 when the 1985 and 1997 cohorts are pooled together. The matrix e_c contains county c's state-level control variables that predict the state-wide mobilization rates: percentage of the population employed in farm-work, percentage non-white, and average education.[33] The

33. These statistics were compiled for men aged thirteen to forty-four using the IPUMS 1940 Census (Ruggles et al. 2010).

matrix also contains county c's land area,[34] and d_c contains the state dummies pertaining to county c. Finally, the matrix M_c contains county c's WWII variables: the number of WWII plants and the state-level mobilization rate.

The coefficients of interest are contained within α. Equation (1.1) determines whether baby boomer women whose mothers grew up in counties greatly impacted by WWII have higher levels of the outcome variables. This impact may be due to supply, demand, or cultural factors. What matters is that women with high levels of M_c had mothers more likely to be pulled into the labor market or to observe the women around them working during WWII.

Table 1.2 reports the results from the comparison of the 1985 and 1976 cohorts. In this pooled regression, baby boomers are aged thirty to thirty-eight and from the 1985 sample. Columns (1) and (2) use the respondent's number of weeks worked in the last year as the dependent variable, while columns (3) and (4) use instead whether the respondent worked at all last year. The even numbered columns include controls for both of her parents' level of education, with coefficients allowed to vary over time.

The regressions show that neither the mobilization rate nor the number of WWII manufacturing plants have a significant positive relationship with either measures of a daughter's labor force participation. In fact, regressions (3) and (4) show a significant negative effect of WWII plants in the mother's county on whether a woman works. Thus, while WWII certainly positively affected the labor force participation of the mother's generation, there is possibly a negative impact on the daughter's labor force participation.

I also investigate the impact on the baby boomer's education. Columns (5) and (6) use a categorical education variable as the dependent variable, while columns (7) and (8) use an indicator variable of whether the respondent went to college. For general levels of education, the coefficients on the number of WWII manufacturing plants and mobilization rates are not statistically significant. In contrast, both WWII variables are statistically significant and positively correlated with whether a respondent went to college. The coefficients become

34. County land area is taken from the 1940 Census of Agriculture (Haines and ICSPR 2010).

Table 1.2: *Effect of WWII Manufacturing in Mother's County on Baby Boomers, Age 30-38*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother	Weeks Worked		Employment		Education		College	
WWII Plants (thousands)	-4.204	-6.290	-0.195*	-0.234**	0.597	0.198	0.313*	0.238**
	(3.546)	(4.120)	(0.0980)	(0.104)	(0.501)	(0.302)	(0.163)	(0.104)
% Farmers	-9.136	-9.079	-0.389	-0.485	-0.314	-0.530	0.626**	0.599***
	(15.94)	(17.80)	(0.406)	(0.455)	(1.071)	(1.050)	(0.240)	(0.222)
% Nonwhite	16.27	28.69	-0.362	-0.228	-0.636	-0.974	0.121	0.0285
	(16.08)	(21.30)	(0.629)	(0.716)	(1.062)	(0.978)	(0.331)	(0.280)
Average Education	3.964*	5.091*	0.00563	-8.94e-05	-0.120	-0.168	-0.00408	-0.0177
	(2.225)	(2.980)	(0.0725)	(0.0912)	(0.114)	(0.121)	(0.0390)	(0.0365)
Mobilization Rate	-5.522	9.570	0.204	0.264	0.472	3.655	2.554**	3.109***
	(38.99)	(39.40)	(1.049)	(1.105)	(2.909)	(3.003)	(1.144)	(0.959)
Control for Parent's Education	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,118	1,103	1,125	1,109	1,122	1,107	1,125	1,109
R-squared	0.099	0.130	0.082	0.105	0.151	0.351	0.098	0.262

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); and WPB (1945). Notes: Robust standard errors in parentheses, clustered at the mother's state and year level. PSID data is pooled from 1976 and 1985. Baby boomers are from the 1985 sample. Sample restricted to women aged 30 to 38 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and number of WWII plants are assigned by the county and state where the respondent's mother grew up. Regressions include dummy variables of the respondent's age, with coefficients allowed to vary over time. Regressions that control for parents' education include dummy variables for the categorical education variable of the respondent's parents, with coefficients allowed to vary over time. The categorical education variables are separated into the following brackets: grades 0-5, grades 6-8, grades 9-11, high school, high school and non-academic training, college but no degree, college degree, and post-graduate education. A respondent is counted as having gone to college if she went to college but doesn't have a degree, if she has a college degree, or if she has some post-graduate education. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

even more significant after controlling for both parents' education levels. Note that since dummy variables of the parents' categorical education variables are used, regression (6) includes controls for whether the respondent's parents went to college. Despite these controls, the WWII variables of a respondent's mother still have a positive significant effect on whether she goes to college.

I repeat this analysis for baby boomers in 1997, using the 1985 sample as a control group. The sample is restricted to women aged forty-two to fifty-one. Table 1.3 reports the results. There is no statistically significant coefficient on the mobilization rate in any of the regressions, even regressions (7) and (8). Thus, the statistically significant effect on going to

Table 1.3: *Effect of WWII Manufacturing in Mother's County on Baby Boomers, Age 42-51*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother	Weeks Worked		Employment		Education		College	
WWII Plants (thousands)	10.30	7.837	0.0885	0.0362	0.907**	0.328	0.370***	0.240***
	(8.654)	(9.058)	(0.187)	(0.196)	(0.385)	(0.337)	(0.109)	(0.0926)
% Farmers	8.518	3.607	0.472	0.259	0.917	0.885	0.519	0.538
	(19.78)	(21.63)	(0.450)	(0.478)	(1.401)	(1.260)	(0.405)	(0.378)
% Nonwhite	23.83	26.40	1.162*	1.075	6.099**	4.512**	0.875	0.210
	(31.98)	(33.67)	(0.694)	(0.709)	(2.400)	(1.961)	(0.556)	(0.474)
Average Education	3.245	2.756	0.0910	0.0665	0.619**	0.588**	0.0972	0.0627
	(3.737)	(3.984)	(0.0800)	(0.0825)	(0.295)	(0.246)	(0.0705)	(0.0620)
Mobilization Rate	-32.09	-17.77	0.266	0.214	2.528	1.355	1.855	1.053
	(70.84)	(73.53)	(1.629)	(1.666)	(5.206)	(4.436)	(1.490)	(1.326)
Control for Parent's Education	No	Yes	No	Yes	No	Yes	No	Yes
Observations	888	839	891	842	891	842	891	842
R-squared	0.103	0.147	0.103	0.150	0.211	0.391	0.162	0.321

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); and WPB (1945). Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's mother grew up. Regressions include dummy variables of the respondent's age, with coefficients allowed to vary over time. Regressions that control for mother's education include dummy variables for the categorical education variable of the respondent's mother, with coefficients allowed to vary over time. The categorical education variables are separated into the following brackets: grades 0-5, grades 6-8, grades 9-11, high school, high school and non-academic training, college but no degree, college degree, and post-graduate education. A respondent is counted as having gone to college if she went to college but does not have a degree, if she has a college degree, or if she has some post-graduate education. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

college that was there when the cohort was thirty to thirty-eight disappears by the time they turn forty-two to fifty-one.[35]

Since the coefficients on mobilization rate are no longer statistically significant, I will concentrate on the effect of predicted WWII plants. When the dependent variable is either weeks worked or whether the respondent works, the coefficients on predicted plants are

35. While the regressions in Table 1.2 could only cluster the error term at the state-year level, the regressions in this table cluster at the county-year level. This is because the variable I am most interested in varies at the county-level. When the analysis is run with errors clustered at the state-year level, the coefficients on the WWII variables are very similar in statistical significance. The main difference is that the coefficient on mobilization rate is statistically significant at the 5 percent level in regression (7).

not statistically significant. This analysis also shows that while there is a statistically significant relationship between a categorical education variable and predicted WWII plants in regression (5), it disappears once parents' education is controlled for. The most interesting results are from columns (7) and (8), the regressions where the variable indicating whether a respondent went to college is the dependent variable. As in Table 1.2, the coefficients on predicted WWII plants are positive and statistically significant, even after controlling for parents' education levels.

These results imply that there is some intergenerational effect of WWII on baby boomer women, despite the fact that they were not born until after the war. However, the coefficients in Tables 1.2 and 1.3 are vulnerable to omitted variable bias. If the location of WWII manufacturing plants was in any way influenced by women and their willingness to work, the WWII variables would not be exogenous to the baby boomers' labor force participation or even education. The WMC evaluated an area's labor market conditions and recommended that manufacturing activity be directed to places with better labor market conditions. Their categorization included information on whether the labor shortages were among both men and women or just among men. There remains the possibility that a measure of war manufacturing would be correlated to women's behavior and attitudes, which can then be transmitted from mother to daughter. Table 1.4 regresses the number of WWII manufacturing plants in a county on various measures of female employment within war metal manufacturing plants. Female employment is significantly positively correlated with WWII manufacturing plants, sometimes even after controlling for the county's number of manufacturing plants in 1939. In order to remove the omitted variable bias, the next section constructs a predicted measure of WWII manufacturing plants using only variables that would be exogenous to women's work and attitudes.

1.7 Infrastructure's Conversion to War Manufacturing

In this section, I construct a measure of manufacturing during WWII that is exogenous to women's behavior during WWII. I can take advantage of the abrupt change in working

Table 1.4: *Relationship between WWII Manufacturing and Female Employment in Metal Industries*

	(1)	(2)	(3)	(4)	(5)	(6)
	WWII Plants					
Total Number of Women Employed (thousands)	2.739**			1.295		
	(1.329)			(0.828)		
Total Number Employed (thousands)	-0.315			-0.0963		
	(0.327)			(0.209)		
Average Female Percentage of Employees		0.139***			0.0676**	
		(0.0429)			(0.0303)	
Percentage of Population that are			79.87			39.92
WWII Manufacturing Women			(172.7)			(113.4)
Percentage of Population in			116.5*			95.06**
WWII Manufacturing			(61.67)			(47.26)
1939 Number of Manufacturing Plants				0.0267	0.0332**	0.0329**
				(0.0164)	(0.0168)	(0.0167)
Observations	801	801	801	801	801	801
R-squared	0.276	0.003	0.024	0.500	0.422	0.436

Sources: Census of Manufactures: 1939 (1942); WPB (1945); WPB 1944; and U.S. Bureau of the Census (1944).
*Notes: Each observation is a county. Robust standard errors in parentheses. Total number of women employed is defined as the female percentage of labor times the total number employed, averaged across any LMAs contained within the county. The average female percentage of employees is the sum of the total number of women employed divided by the sum of the total number of employees. Percentage of population that are WWII manufacturing women is computed as the sum of the total number of women employed divided by the county's total population. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

practices to construct a measure without these correlations. Since manufacturing firms before the war were not dependent on women's labor, prewar manufacturing infrastructure would be uncorrelated with women's behavior and attitudes. Thus, I use prewar manufacturing infrastructure to create a measure of predicted war manufacturing, which will be used as a shock to women's labor. This is the first study to analyze which industries were indeed likely to convert to WWII manufacturing.

There is historical evidence that certain plants were more likely to convert to war manufacturing, based on the type of good they produced before WWII. The most salient example is auto manufacturing. Auto companies were very likely to convert because automobile production was banned during the war and because their well-trained engineers could adapt to the demands of war production. Shipbuilding companies were naturally well-equipped to produce war ships. Anecdotes and common wisdom regarding which

industries were more likely to convert abound, but there has been no statistical analysis to confirm such claims.

To determine which industries were indeed most likely to convert, I use a zero-inflated negative binomial model (ZINB) to analyze the likelihood of a plant in 1940 converting to a war-related plant by 1945. This model predicts count data, which in this case is the number of war manufacturing plants in each county. The ZINB model is appropriate for over-dispersed count data with excessive zeroes. Figure 1.4 serves as the justification for this choice, as the data is clearly skewed to the right. Moreover, the zero-inflation component of the model is appropriate because there are two reasons a county can show up as having no war manufacturing plants: either there are actually no such plants within the county or the plant(s) within the county did not have expansions large enough to be included within WPB (1945). The former would be a "real zero", while the latter would be a "fake zero".

The ZINB model is a two-stage model. The first stage runs a logit model on 1939 plant attributes to determine whether a county will be identified as a fake zero. If not, the next stage is a negative binomial model to determine the total number of plants within a county that convert to war manufacturing. A negative binomial model is a modification of the Poisson model, allowing the mean of the distribution to differ from the variance. The model allows for overdispersion due to unobserved heterogeneity. The validity of using a negative binomial model over a simpler Poisson model is tested using an overdispersion test, while the zero-inflation hypothesis is tested by a Vuong statistic (J. S. Long 1997). The model is able to determine which industries have more zeros than the second stage negative binomial would predict. These industries are presumed to be the ones with many fake zeros.

In my specification, the unit of measure is the county, and the dependent variable is the number of WWII manufacturing plants within that county. The first-stage zero-inflation is modeled as being dependent on the number of plants within each industry category in 1939.[36] For the second stage of the model, the negative binomial stage, I use the number

36. Results are robust to regressing instead on the percentage of plants within each industry category. This is a natural result, since the predicted results from this alternate specification are highly correlated with the predicted results from Table 1.5.

of WWII manufacturing plants as the exposure variable, which is intended to capture the number of opportunities for a WWII manufacturing plant.[37] The likelihood of converting is then determined by the industry composition of those pre-WWII plants: the percentage within each industry group.[38]

Table 1.5 displays the results of the analysis. First, regression (1) uses an OLS regression to show the correlations across the data. The 1939 industries with the largest, significantly positive correlations with WWII plants are petroleum and coal, rubber, iron and steel, non-electrical machinery, automobiles, and transportation. These industries have historical significance within the literature but had not previously been statistically confirmed to convert to WWII plants. Moreover, they remain important within the ZINB model.

Columns (2) and (3) show the results of the ZINB analysis. Column (2) reports the results of the zero-inflation first stage, determining which variables predict the number of WWII plants showing up as a "fake zero." These would be the plants, for example, that were producing war goods but did not show up in WPB (1945) because they did not have large enough conversion costs. The industries significantly likely to show up as a "fake zero" are food, lumber and timber, furniture, chemical, petroleum and coal, leather, and electrical machinery. Paper; printing; stone, clay, and glass; and nonferrous metal industries are significantly unlikely to be "fake zeroes."

Finally, Column (3) determines which industries, conditional on not showing up as

37. Predicting the number of absences of a high school student would be a typical application of a negative binomial model. In order to incorporate the fact that students with longer enrollments would have had more opportunities to be absent, the enrollment variable would be used as the exposure variable. Along this line of reasoning, it also seems appropriate to incorporate the fact that counties that already had many manufacturing plants are much more likely to have war manufacturing plants, due to the number of opportunities for conversion ("Annotated Stata Output: Negative Binomial Regression" 2012).

38. Another typical application of the ZINB model would be predicting the number of fish caught by groups. In this example, one might regress the number of people within each group in the logit stage. The negative binomial stage would then regress on the number of children in the group and whether the group camped or not. Similarly, I regress on the prewar number of plants within each industry category in the logit stage of my model. Since the total number of prewar manufacturing plants is already incorporated as an exposure variable, it makes sense to incorporate the composition of each county as the percentage of those plants within each industry category. In this way, the exposure variable captures the number of opportunities for conversion, with the composition as regressors influencing the probabilities of conversion ("R Data Analysis Examples: Zero-Inflated Negative Binomial Regression" 2014).

Table 1.5: *Predicting WWII Plants from Prewar Infrastructure*

	(1)	(2)	
	WWII Plants		
Plants, 1940:	OLS	ZINB, probit	
		Plants=0	Plants≥0
Food & Kindred Products	-0.0314*	0.0699***	-0.0780
	(0.0168)	(0.0176)	(0.127)
Tobacco Manufactures	0.0439	-0.414	-2.875**
	(0.127)	(1.874)	(1.417)
Textile-Mill Products and Other Fiber Manufactures	0.0697**	-0.330*	-0.377
	(0.0304)	(0.170)	(0.241)
Apparel and Other Finished Products Made from Fabrics and Similar Materials	0.00609	-0.107	-1.397***
	(0.0130)	(0.179)	(0.496)
Lumber and Timber Basic Products	0.0992***	0.0764**	-0.426***
	(0.0186)	(0.0339)	(0.164)
Furniture and Finished Lumber Products	-0.319***	0.298***	-0.168
	(0.0862)	(0.115)	(0.411)
Paper and Allied Products	-0.0467	-3.848***	1.215**
	(0.170)	(1.332)	(0.495)
Printing, Publishing, and Allied Industries	0.0313	-0.917***	-0.414*
	(0.0440)	(0.242)	(0.219)
Chemical and Allied Products	-0.0332	0.120**	0.972***
	(0.0622)	(0.0512)	(0.290)
Products of Petroleum and Coal	1.701***	0.884***	2.599***
	(0.360)	(0.230)	(0.716)
Rubber Products	0.850***	0.288	4.442***
	(0.304)	(2.272)	(1.582)
Leather and Leather Products	-0.0808***	0.264***	-1.549**
	(0.0226)	(0.0631)	(0.608)
Stone, Clay, and Glass Products	0.274***	-1.284**	-0.0222
	(0.0956)	(0.515)	(0.279)
Iron and Steel and Their Products, Except Machinery	0.424***	-1.478*	2.955***
	(0.128)	(0.842)	(0.378)
Nonferrous Metals and Their Products	0.0750	-29.08***	0.686
	(0.169)	(1.433)	(0.950)
Electrical Machinery	0.0887	2.345***	3.589**
	(0.275)	(0.792)	(1.459)
Machinery (except Electrical)	0.410***	-0.459	2.764***
	(0.0981)	(0.324)	(0.382)

Continued on next page

Table 1.5 – Continued from previous page

Automobiles and Automobile Equipment	2.202***	-0.754	5.021***
	(0.251)	(0.975)	(1.212)
Transportation Equipment except	0.590**	0.0819	3.695***
Automobiles	(0.241)	(0.367)	(0.965)
Miscellaneous Industries	-0.144	0.00981	-1.141
	(0.149)	(0.301)	(0.703)
Independent Variables	#	#	%
Exposure Variable		Number of Plants, 1939	
Observations	3,073	3,073	
R-squared	0.971		
Overdispersion Test, Chi-Squared		589.5***	
Vuong Test Statistic		4.365***	

Sources: Census of Manufactures: 1939 (1942) and WPB (1945).
*Notes: Each observation is a county. Robust standard errors in parentheses. Vuong test and overdispersion test performed on specification using non-robust standard errors. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

a "fake zero," converted to WWII manufacturing. The industries most likely to convert were the products of petroleum and coal, rubber, iron and steel, electrical machinery, non-electrical machinery, automobiles, and transportation industries. Also significantly likely to convert were the paper and chemical industries. The industries significantly unlikely to convert were tobacco, apparel, and lumber industries.

This confirms that what happened during WWII was not merely a general manufacturing conversion. The industries likely to convert to war manufacturing were very specific industries. Figure 1.6 shows the distribution of manufacturing plants by industry in 1939. The largest industries, in terms of numbers, are not those that converted to war manufacturing. In fact, it is the industries with the least numbers, the niche industries, that converted to WWII manufacturing.

I use the results from Columns (2) and (3) of Table 1.5 to predict the number of war manufacturing plants. The predicted number of plants seems to fit the actual number of manufacturing plants well, as evidenced by the scatter plot in Figure 1.7. The largest outliers

are New York county and Kings County in New York state, but these counties are predicted to have fewer WWII manufacturing plants than they actually did. This predicted measure of WWII manufacturing plants will be used in the analysis on intergenerational effects of WWII in the next section, because it is far more likely to be exogenous to women's proclivity to working and wartime culture shifts.

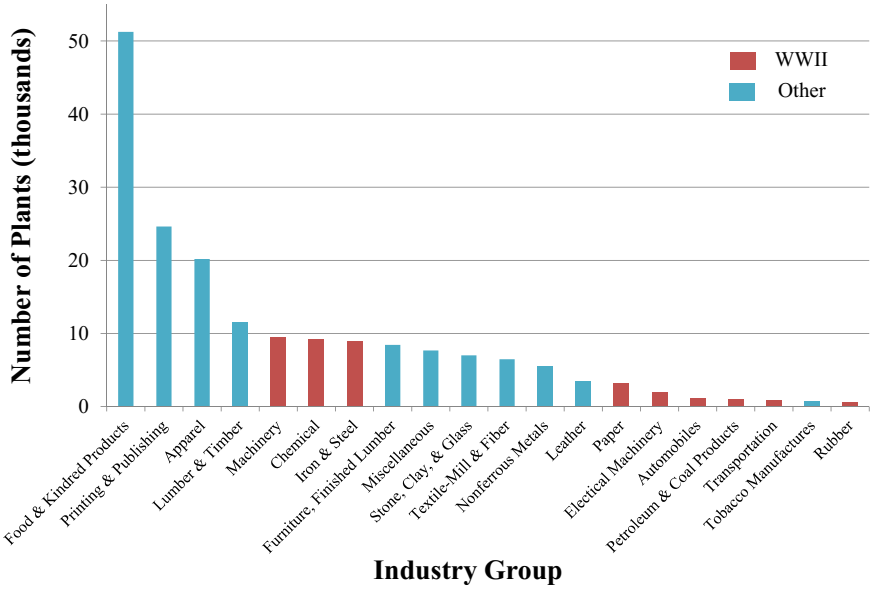
1.8 Analysis of Predicted WWII Plants' Impact on Baby Boomer Women

Having created a variable of predicted WWII plants that is exogenous to women's willingness to work during the war, I now analyze the effect of the war manufacturing boom and draft-induced labor shortage on baby boomer women. This analysis is conducted in the same manner as Section 1.6, except that I use the predicted number of WWII plants from Section 1.7 instead of actual numbers of WWII manufacturing plants.

Table 1.5 reports the results from the comparison of the 1985 and 1976 cohorts. The regressions show that the mobilization rate is still not significantly correlated with either measures of a daughter's labor force participation. Moreover, while the actual number of WWII plants had a significantly negative effect on the respondent's employment, the coefficients on the predicted number of plants in columns (3) and (4) are not significant. So, when we attempt to remove any omitted variable bias regarding women's attitudes and behaviors, WWII no longer has an intergenerational impact on baby boomer women's labor force participation or number of weeks worked.

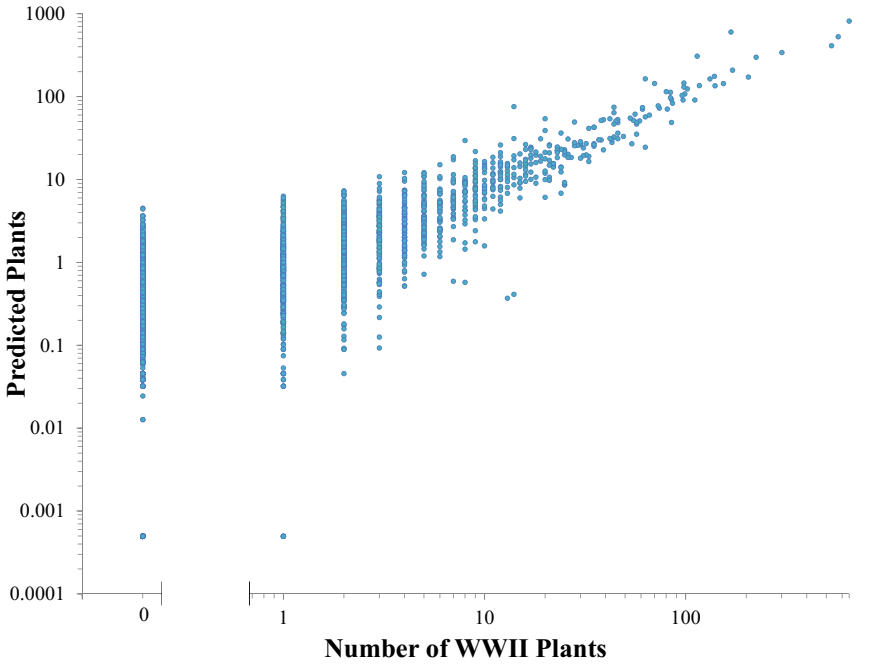
The results from Table 1.2 regarding education outcomes are even stronger when I use the constructed measure of WWII plants. For general levels of education, the predicted number of WWII manufacturing plants is significantly positive in regression (5); though, this significance disappears once we control for parents' levels of education. The mobilization rate is still not significantly correlated with education in either regression (5) or (6). In contrast, both WWII variables are highly significant and positively correlated with whether

Figure 1.6: *Distribution of U.S. Manufacturing Plants, by Industry (1939)*



Source: Census of Manufactures: 1939 (1942).

Figure 1.7: *Predicted Plants vs. WWII Plants by County*



Source: WPB (1945) and predicted results from Table 1.5.
Notes: Both axes are in log-scale.

Table 1.5: *Effect of Predicted WWII Manufacturing in Mother's County on Baby Boomers, Age 30-38*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother	Weeks Worked		Employment		Education		College	
Predicted WWII Plants (thousands)	0.404	-1.488	-0.0855	-0.115	0.871**	0.523	0.340***	0.259***
	(3.907)	(3.448)	(0.119)	(0.110)	(0.409)	(0.403)	(0.115)	(0.0933)
% Farmers	-6.950	-7.029	-0.348	-0.442	-0.0980	-0.334	0.673***	0.633***
	(15.87)	(17.64)	(0.403)	(0.451)	(1.047)	(1.038)	(0.242)	(0.225)
% Nonwhite	15.57	28.33	-0.369	-0.229	-0.766	-1.068	0.0814	-0.00220
	(15.80)	(21.11)	(0.625)	(0.714)	(1.065)	(0.973)	(0.327)	(0.279)
Average Education	3.793*	4.963*	0.00305	-0.00206	-0.143	-0.186	-0.0103	-0.0223
	(2.187)	(2.955)	(0.0718)	(0.0908)	(0.113)	(0.119)	(0.0384)	(0.0364)
Mobilization Rate	-0.721	14.44	0.311	0.382	0.789	3.984	2.597**	3.132***
	(38.91)	(39.13)	(1.054)	(1.103)	(2.874)	(3.018)	(1.121)	(0.951)
Control for Parent's Education	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,118	1,103	1,125	1,109	1,122	1,107	1,125	1,109
R-squared	0.098	0.129	0.081	0.103	0.154	0.352	0.101	0.264

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); and predicted results from Table 1.5.*
*Notes: Robust standard errors in parentheses, clustered at the mother's state and year level. PSID data is pooled from 1976 and 1985. Baby boomers are from the 1985 sample. Sample restricted to women aged 30 to 38 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's mother grew up. Regressions include dummy variables of the respondent's age, with coefficients allowed to vary over time. Regressions that control for parents' education include dummy variables for the categorical education variable of the respondent's parents, with coefficients allowed to vary over time. The categorical education variables are separated into the following brackets: grades 0-5, grades 6-8, grades 9-11, high school, high school and non-academic training, college but no degree, college degree, and post-graduate education. A respondent is counted as having gone to college if she went to college but does not have a degree, if she has a college degree, or if she has some post-graduate education. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

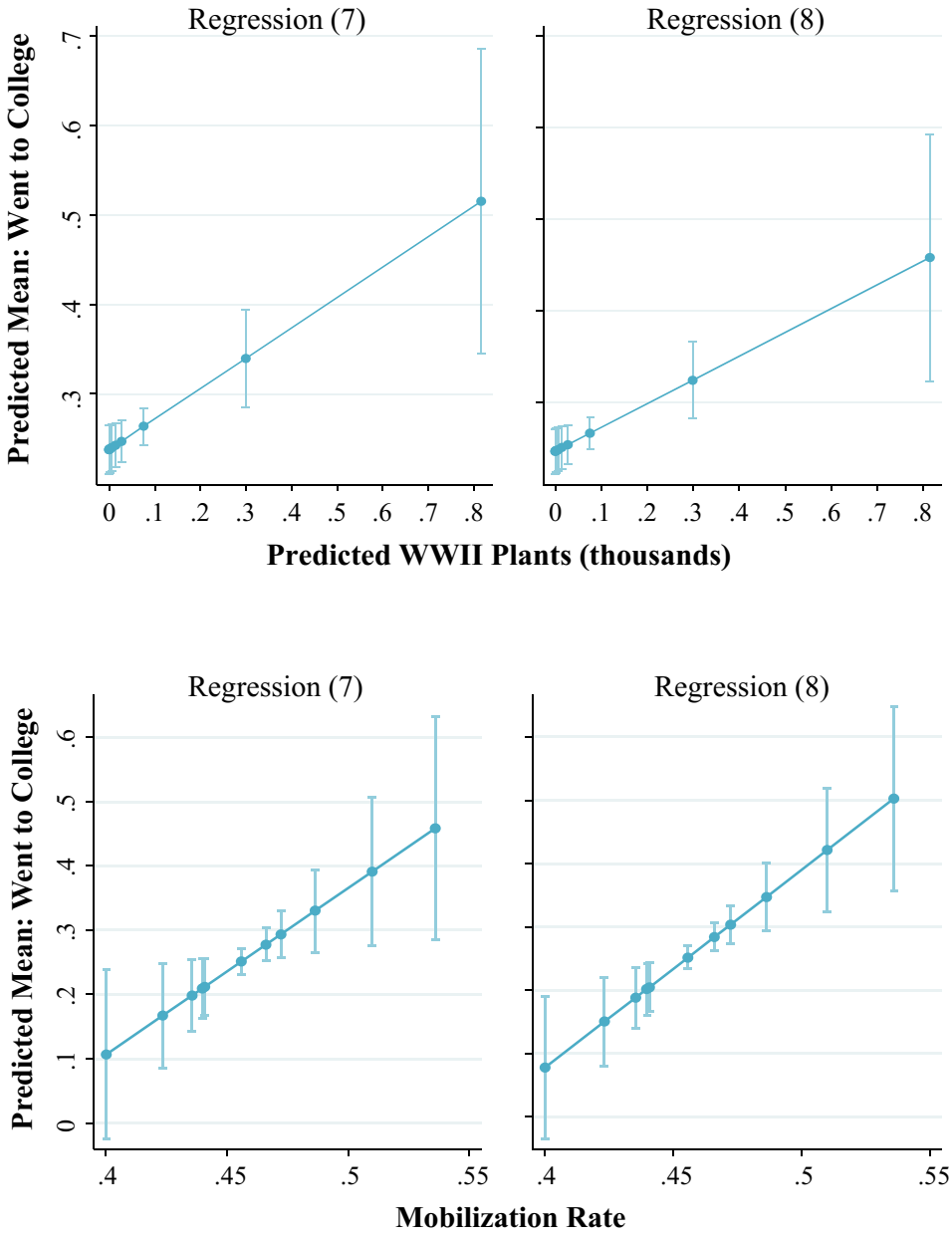
a respondent went to college. The coefficients are now significant at the 1 percent level, even after controlling for both parents' education levels. They are also of the same magnitude as the coefficients in Table 1.2.

Not only are these coefficients statistically significant, they are also economically significant. Figure 1.8 graphs the margin plots for the coefficient on the WWII variables in regressions (7) and (8). Each point is a decile of the predicted number of WWII plants. The results from regression (7) are stark: moving from the tenth percentile to the ninetieth percentile of predicted WWII plants raises the chance of going to college from 23.8 percent to 34.0 percent, which is over a 40 percent increase. Using the results from regression (8), moving from the tenth percentile of predicted WWII plants to the ninetieth percentile increases the likelihood of attending college from 24.6 percent to 32.4 percent. Clearly, this is driven mostly by the last three deciles of the dependent variable, respondents whose mothers grew up in counties that are predicted to have more than 30 WWII manufacturing plants. The state-wide mobilization rate has a large effect as well. In both regressions (7) and (8), moving from the tenth percentile to the ninetieth percentile more than doubles the probability of the respondent going to college, increasing it from under 20 percent to almost 40 percent or above. Therefore, the history of WWII and its impact on Baby Boomer women through their mothers is potentially a very important factor in the Quiet Revolution.

Table 1.6 continues my analysis regarding the effect of predicted WWII manufacturing plants on the behavior of baby boomers in 1997, as in Table 1.3. Once again, there is no statistically significant coefficient on the mobilization rate in any of the regressions.[39] Regarding the predicted number of WWII manufacturing plants, the relationships found in Table 1.5 remain. When the dependent variable is either weeks worked or whether the respondent works, the coefficients on predicted plants are not statistically significant, nor are the signs always in the right direction. As before, the statistically significant coefficient

39. While the regressions in Table 1.5 could only cluster the error term at the state-year level, the regressions in this table cluster at the county-year level. This is because the variable I am most interested in varies at the county-level. When the analysis is run with errors clustered at the state-year level, the coefficients on the WWII variables are very similar in statistical significance. The main difference is that the coefficient on mobilization rate is statistically significant at the 5 percent level in regression (7).

Figure 1.8: *Margin Plots for College with 95 Percent Confidence Intervals, Age 30-38*



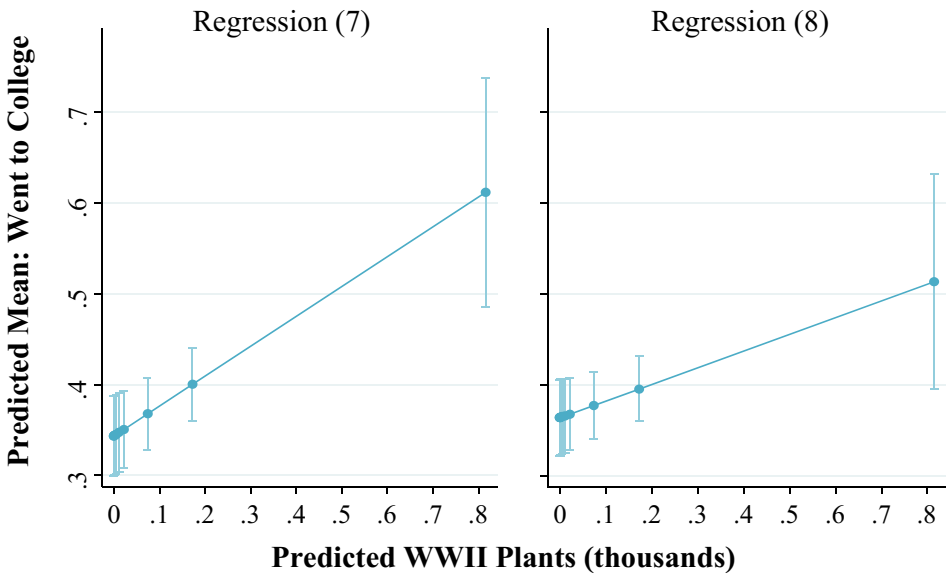
Source: Coefficients on predicted WWII manufacturing plants and mobilization rate for baby boomer respondents, in regressions (7) and (8) from Table 1.5.
Notes: Sample restricted to women aged 30 to 38 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Predicted number of WWII plants are assigned by the county and state where the respondent's mother grew up. Each point is a decile of the independent variable, and the bars surrounding the point are 95 percent confidence intervals for the margin plot.

Table 1.6: *Effect of Predicted WWII Manufacturing in Mother's County on Baby Boomers, Age 42-51*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother	Weeks Worked		Employment		Education		College	
Predicted WWII Plants (thousands)	5.856	3.600	0.0259	-0.0211	0.813**	0.236	0.328***	0.183**
	(7.716)	(8.178)	(0.163)	(0.172)	(0.330)	(0.310)	(0.0865)	(0.0845)
% Farmers	6.627	1.865	0.445	0.235	0.881	0.850	0.503	0.517
	(19.75)	(21.59)	(0.449)	(0.478)	(1.394)	(1.254)	(0.403)	(0.378)
% Nonwhite	24.42	26.95	1.175*	1.088	6.051**	4.511**	0.856	0.206
	(32.06)	(33.77)	(0.696)	(0.710)	(2.400)	(1.960)	(0.556)	(0.473)
Average Education	3.379	2.871	0.0934	0.0686	0.615**	0.589**	0.0958	0.0631
	(3.749)	(3.997)	(0.0802)	(0.0826)	(0.295)	(0.246)	(0.0705)	(0.0619)
Mobilization Rate	-37.29	-21.97	0.204	0.170	2.291	1.235	1.756	0.973
	(71.15)	(73.63)	(1.633)	(1.667)	(5.167)	(4.410)	(1.481)	(1.328)
Control for Parent's Education	No	Yes	No	Yes	No	Yes	No	Yes
Observations	888	839	891	842	891	842	891	842
R-squared	0.102	0.146	0.103	0.150	0.212	0.391	0.162	0.320

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); and predicted results from Table 1.5.*
*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's mother grew up. Regressions include dummy variables of the respondent's age, with coefficients allowed to vary over time. Regressions that control for mother's education include dummy variables for the categorical education variable of the respondent's mother, with coefficients allowed to vary over time. The categorical education variables are separated into the following brackets: grades 0-5, grades 6-8, grades 9-11, high school, high school and non-academic training, college but no degree, college degree, and post-graduate education. A respondent is counted as having gone to college if she went to college but does not have a degree, if she has a college degree, or if she has some post-graduate education. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

Figure 1.9: *Margin Plots for College in 1997 with 95 Percent Confidence Intervals*



Source: Coefficients on predicted number of WWII plants for baby boomer respondents from Table 1.6.
Notes: Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Predicted number of WWII plants are assigned by the county and state where the respondent's mother grew up. Each point is a decile of the independent variable, including the minimum and the maximum, and the bars surrounding the point are 95 percent confidence intervals for the margin plot.

in regression (5) disappears once parents' education is controlled for. In columns (7) and (8), there are positive and statistically significant relationships between whether a respondent went to college and the predicted number of WWII plants where her mother grew up. The coefficient in column (7) is similar to the coefficient in Table 1.3. However, once we control for parents' education, the coefficient in column (8) is larger and now significant at the 1 percent level. So, if anything, the results show a stronger effect of WWII on baby boomer women once we use measures exogenous to women's behavior in the 1940's.

To show the economic significance of the results from columns (7) and (8) of Table 1.6, Figure 1.9 graphs the margin plots for the predicted WWII plants. In regression (7), a respondent's chances of going to college increase from 34.4 percent to 40.0 percent by moving her from the tenth percentile of predicted WWII plants to the ninetieth. This is a smaller effect than the one found in Figure 1.8, even though the coefficients are similar in

magnitude. The increase from the tenth to the ninetieth percentile is even smaller in the graph for regression (8), moving from 36.4 percent to 39.5 percent.

1.9 Comparing the Effects of Parents

One potential downfall of the analysis of Section 1.8 is that parents and parents-in-law may have grown up near each other, subjecting the analysis of Tables 1.5 and 1.6 to omitted variable bias. Thus, what seems like a causal effect through the WWII background variables of the mother may in fact be from the WWII variables of the father, father-in-law, or mother-in-law.

I cannot correct for this potential misidentification in Table 1.5 because the 1976 survey does not ask respondents about all four parents' backgrounds. Both the 1985 and 1997 surveys include this information, so the analysis in this section will build upon the results from Table 1.6. The regressions in Table 1.6 only required that data pertaining to the respondent's mother be included in the data set and that the mother had grown up in the continental United States minus Nevada. In contrast, in order to analyze the comparative effects of all four parents and parents-in-law, the PSID must report background information on all of them. Moreover, to be included in the sample, the respondent must have parents and parents-in-law who all grew up in the continental United States minus Nevada. These additional restrictions translate into an approximately 30 percent decrease in sample size, reducing the statistical power of many of the regressions.

Table 1.7 repeats the analysis in Table 1.6 with the inclusion of all parents' WWII variables. Like the previous tables, the odd-numbered regressions do not control for parent's education. In order to distinguish the effect of WWII on the respondent separately from its effects on parents' educations, the even-numbered regressions include dummy variables for all four parents' education levels. However, in these regressions, there are approximately 150 right-hand-side variables and only a little over 600 observations. There are too few observations to pass the $50 + 8 * m$ rule of thumb, where m is the number of independent variables (Green 1991). As a result, few of the WWII variables in the even-numbered regressions are

positively significant, though they are included for completeness.

I focus then on the odd-numbered regressions. Regressions (1) and (3) analyze parents' effects on measures of labor force participation. Only the mother-in-law's county's mobilization rate has a statistically significant effect on weeks worked, at the 10 percent level. It has a positive effect, similar to the results in Fernández, Fogli, and Olivetti (2004). However, there is no effect of any of the parents' WWII variables on the respondents' employment status. So, the only effect of WWII on labor force participation is through the mother-in-law on the intensive margin.

The remaining regressions measure the effect of parents on the respondent's education. Regression (5) shows that there is some effect of both the mother's and the mother-in-law's predicted WWII plants on the respondent's categorical education variable. The coefficients are positive and statistically significant at the 10 percent level. Neither the father nor the father-in-law supplies any statistically significant variables in regression (5).

Finally, regression (7) analyzes the WWII variables' effects on the respondent going to college. The coefficients on the predicted number of WWII plants of both the mother and the mother-in-law are positive and statistically significant. The mother's coefficient is significant at the 1 percent level, whereas the mother-in-law's is at the 5 percent level. The coefficient on the mother-in-law's variable is larger, though the two coefficients are not statistically different from one another. Moreover, despite all of the additional controls, the magnitude of the coefficient for the mother's predicted number of WWII plants is very similar to the same coefficient in column (7) of Table 1.6.

There are only two coefficients to take note of in the male parents' influence. The coefficient on the mobilization rate in the state where the father grew up is positive and significant at the 10 percent level. This coefficient's magnitude is very similar to the coefficients on the mother's mobilization rate in Table 1.5's columns (7) and (8). Thus, whereas the influence of the mother's county's predicted WWII plants is robust, it is possible that the statistical significance of the mobilization rate may actually be through the father. Surprisingly, the effect of the father-in-law's county's predicted number of WWII

Table 1.7: *Effect of Predicted WWII Manufacturing in All Parents' Counties on Baby Boomers, Age 42-51*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother	Weeks Worked		Employment		Education		College	
Predicted WWII Plants (thousands)	3.745	5.214	0.00111	0.0135	0.839*	-0.0995	0.369***	0.166
	(5.997)	(5.984)	(0.127)	(0.123)	(0.483)	(0.385)	(0.135)	(0.137)
Mobilization Rate	-13.32	-23.24	-0.851	-0.976	-7.407	-11.28	-3.072	-4.173*
	(73.09)	(73.64)	(1.637)	(1.624)	(7.965)	(7.480)	(2.300)	(2.428)
Mother-In-Law								
Predicted WWII Plants (thousands)	3.673	-1.137	0.224	0.0908	1.126*	0.287	0.607**	0.409*
	(11.17)	(11.20)	(0.221)	(0.241)	(0.635)	(0.648)	(0.236)	(0.233)
Mobilization Rate	158.5*	168.6*	2.736	2.836	6.193	8.933	1.999	2.821
	(92.90)	(89.11)	(1.956)	(1.941)	(6.342)	(5.599)	(2.179)	(1.896)
Father								
Predicted WWII Plants (thousands)	10.16	9.267	0.146	0.0694	-1.302	-0.521	-0.276	-0.0715
	(6.530)	(7.773)	(0.140)	(0.150)	(0.808)	(0.753)	(0.242)	(0.240)
Mobilization Rate	6.260	10.17	0.351	0.621	4.930	3.122	3.431*	2.768
	(71.59)	(73.94)	(1.536)	(1.618)	(6.071)	(6.208)	(1.976)	(2.303)
Father-in-Law								
Predicted WWII Plants (thousands)	-12.35	-8.461	-0.315	-0.133	-0.287	-0.0753	-0.439*	-0.428*
	(12.15)	(11.99)	(0.237)	(0.255)	(0.774)	(0.746)	(0.253)	(0.240)
Mobilization Rate	-142.8	-188.5**	-2.076	-3.034	4.258	3.207	1.706	1.506
	(87.12)	(90.53)	(1.821)	(2.030)	(6.517)	(5.660)	(1.966)	(1.738)
Control for Parent's Education	No	Yes	No	Yes	No	Yes	No	Yes
Observations	637	610	639	612	639	612	639	612
R-squared	0.065	0.133	0.077	0.147	0.180	0.382	0.183	0.334

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); and predicted results from Table 1.5.*
*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's parent grew up, for all four parents: mother, mother-in-law, father, and father-in-law. Regressions include dummy variables of the respondent's age, with coefficients allowed to vary over time. Regressions that control for parents' educations include dummy variables for the categorical education variable of the respondent's parents, with coefficients allowed to vary over time. The categorical education variables are separated into the following brackets: grades 0-5, grades 6-8, grades 9-11, high school, high school and non-academic training, college but no degree, college degree, and post-graduate education. A respondent is counted as having gone to college if she went to college but does not have a degree, if she has a college degree, or if she has some post-graduate education. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

Table 1.8: *Effect of Predicted WWII Manufacturing in All Parents' Counties on Baby Boomers' Education, Age 42-51*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)
Mother	Some College		College Degree		Postgrad	
Predicted WWII Plants (thousands)	-0.0611	-0.0947	0.314**	0.287**	0.0558	-0.121
	(0.139)	(0.146)	(0.129)	(0.140)	(0.0956)	(0.111)
Mobilization Rate	3.163	2.799	-0.950	-1.551	-2.122	-2.621
	(2.192)	(2.214)	(1.590)	(1.830)	(2.348)	(2.360)
Mother-In-Law						
Predicted WWII Plants (thousands)	-0.200	-0.232	0.563***	0.510**	0.0445	-0.101
	(0.178)	(0.193)	(0.210)	(0.222)	(0.174)	(0.192)
Mobilization Rate	-1.490	-1.509	-0.956	-0.551	2.955*	3.372*
	(1.801)	(1.811)	(2.156)	(2.170)	(1.763)	(1.830)
Father						
Predicted WWII Plants (thousands)	0.0448	-0.0360	-0.0153	0.0633	-0.261	-0.135
	(0.166)	(0.173)	(0.167)	(0.173)	(0.177)	(0.210)
Mobilization Rate	-3.852*	-3.237	2.061	2.015	1.370	0.753
	(2.135)	(2.182)	(1.684)	(1.853)	(1.958)	(1.973)
Father-in-Law						
Predicted WWII Plants (thousands)	0.141	0.239	-0.546**	-0.554**	0.107	0.125
	(0.227)	(0.229)	(0.227)	(0.246)	(0.225)	(0.233)
Mobilization Rate	0.0395	-0.395	2.136	2.167	-0.429	-0.660
	(1.674)	(1.757)	(1.725)	(1.776)	(1.749)	(1.722)
Control for Parent's Education	No	Yes	No	Yes	No	Yes
Observations	639	612	639	612	639	612
R-squared	0.074	0.169	0.125	0.201	0.119	0.215

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); and predicted results from Table 1.5.*
*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's parent grew up, for all four parents: mother, mother-in-law, father, and father-in-law. Regressions include dummy variables of the respondent's age, with coefficients allowed to vary over time. Regressions that control for parents' educations include dummy variables for the categorical education variable of the respondent's parents, with coefficients allowed to vary over time. The categorical education variables are separated into the following brackets: grades 0-5, grades 6-8, grades 9-11, high school, high school and non-academic training, college but no degree, college degree, and post-graduate education. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

plants is actually negative and statistically significant at the 5 percent level in regression (2).[40] This negative effect is of similar magnitude to the mother and mother-in-law's positive effects.[41]

In order to further investigate the specific effect of WWII on baby boomer women, Table 1.8 analyzes separately the components of the dependent variable in columns (7) and (8) of Table 1.7. A respondent can have gone to college but not graduated, she can have a college degree, or she can have graduated college and also received some postgraduate education.

The most significant effects of WWII seem to be constrained to earning a college degree. These effects are through the predicted WWII plants variable, not the mobilization rate. Moreover, despite the lack of power in the regressions, the coefficients remain statistically significant even after controlling for all four parents' education levels.

The predicted number of WWII plants in both the mother's and the mother-in-law's counties have a significant positive effect on whether the respondent receives a college degree. The coefficient on the mother-in-law's variable is larger, though the difference is not statistically significant. It is possible that the mother-in-law's background has a larger impact on whether the respondent receives a college degree. This would not seem to hold true for women who had not yet met their husbands before finishing college, which is important to keep in mind because the age of first marriage increases by cohort over time. Morrill and Morrill (2013) offers an alternative explanation: the coefficient on the mother-in-law's variable may be more indicative of a respondent's selection than the mother's coefficient. Thus, it is possible that the only causal effect is through the mother and that the daughter's preferences are revealed by her choices, showing up through the mother-in-law's variable.

There are a few other interesting results in Table 1.8. The effect of the father-in-law's

40. When this table is run with errors clustered at the state-year level, the coefficients on predicted WWII plants have the same statistical significance. The coefficients on the mobilization remain largely the same. The only difference is on the mobilization rate of the father-in-law's county: the coefficients in regressions (1) and (4) become significant at the 10 percent level.

41. These results are very similar in sign and statistical significance to regressions run on the actual number of WWII manufacturing plants, assigned by parents' county of growing up. These results can be seen in Table A.3, in the Appendix.

predicted number of WWII plants on a respondent receiving a college degree is statistically significant and negative. It is also roughly equal in magnitude to the mother-in-law's positive effect.[42] The only significant effect on postgraduate education is a positive coefficient on the mother-in-law's mobilization rate. There is also only one significant effect on college education without a degree: the coefficient on the father-in-law's mobilization rate is negative. Both of these effects are significant at the 10 percent level.[43] The primary result of this analysis, though, is that there does seem to be an effect of WWII on a baby boomer woman through her female parents.

These results cast doubt on the results from Section 1.8 being due to family income effects, whereby the manufacturing boom allowed daughters to go to college because their parents had higher incomes. If this explanation were driving my results, one would expect positive effects from both the mother and the father. The positive effect of the mobilization rate in the father's county may be due to the G.I. Bill.

1.10 Robustness

The predicted number of WWII plants constructed in Section 1.7 was intended to correct for omitted variable bias. The concern is that the coefficient on the actual number of WWII plants would be affected by local women's attitudes and behaviors. Thus, the WWII variable would not only measure the effect of the shock that the war had on women but also longstanding culture. This would only be a problem if women who grew up in areas with industries likely to convert to WWII manufacturing had a culture welcoming to women working or pursuing an education. It is highly likely that the analysis using the predicted number of WWII plants in Section 1.8 and Section 1.9 would be free of this

42. These results are very similar in sign and statistical significance to regressions run on the actual number of WWII manufacturing plants, assigned by parents' county of growing up. These results can be seen in Table A.4, in the Appendix.

43. When this table is run with errors clustered at the state-year level, the coefficients on predicted WWII plants have the same or higher statistical significance. The coefficients for the father-in-law become significant at the 1% level. The coefficients on the mobilization remain largely the same. The only difference is on the mobilization rate of the father's county: the coefficient in regressions (1) loses all statistical significance.

omitted variable bias. This section will confirm that by repeating the previous analysis and including measures of female war manufacturing employment. Since LMAs can only be assigned if the county where the mother grew up is known in both sample years, my analysis is again limited to comparing the years 1985 and 1997. My sample is limited to forty-two- to fifty-one-year-olds, where baby boomers are from year 1997.

The *Survey of Plants Manufacturing Metal Products* includes many measures of female employment, which were used in Table 1.4 to show that the actual number of WWII plants was correlated with women's response to the war. The survey reports the female percentage of employees, which can be multiplied by the total number of employees to find the total number of female employees. Also, dividing the total number of female employees by the population of an LMA results in the percentage of the population that were WWII manufacturing women, the 'Rosies'.[44] However, the areas with the highest number of female employees tend to be the most populous communities. Many times, the female percentage of employees is high in communities with few WWII manufacturing plants. The last statistic, the percent of the population that are WWII manufacturing women, seems to be the best measure of women's behavior during the war and it's saturation into the surrounding community's culture. This measure tends to be highest in the Midwest, especially Michigan; parts of New England; and the West Coast. This aligns with the anecdotal history of the war. My analysis will use this last measure as a robustness check; but for the sake of completeness, all regressions in this section are repeated with the other two measures in the Appendix.

Table 1.9 analyzes whether the change in dependent variables is affected by the county where a baby boomer's mother grew up, as in Equation (1.1). Both the predicted number of WWII manufacturing plants and the percent of the population that are WWII manufacturing women are included in M_c. The percentage of the population that are WWII manufacturing employees is included in M_c as well, to control for how influential war manufacturing

44. Figures A.2, A.3, and A.4 in the Appendix map these three statistics by county. Further intuition regarding these measures can be gleaned from Table A.2, which lists the top ten LMAs by each variable.

Table 1.9: *Effect of WWII Manufacturing and Female Employment in Mother's County on Baby Boomers, Age 42-51*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother	Weeks Worked		Employment		Education		College	
Predicted WWII Plants (thousands)	-0.605	-2.566	-0.132	-0.166	0.889**	0.429	0.380***	0.287***
	(6.393)	(5.779)	(0.117)	(0.102)	(0.417)	(0.394)	(0.104)	(0.105)
% Farmers	25.31	34.00	1.092	1.126	-0.221	0.826	-0.0386	0.0594
	(39.51)	(43.26)	(0.858)	(0.940)	(2.657)	(2.290)	(0.822)	(0.727)
% Nonwhite	74.73	71.40	0.682	0.306	4.824	1.269	0.549	-0.590
	(72.60)	(78.99)	(1.540)	(1.648)	(4.435)	(4.168)	(1.251)	(1.327)
Average Education	8.814	11.04	0.0934	0.0921	0.380	0.288	0.0284	-0.0385
	(7.760)	(8.605)	(0.152)	(0.159)	(0.507)	(0.466)	(0.134)	(0.138)
Mobilization Rate	52.16	73.15	2.178	2.015	0.637	1.281	1.106	0.493
	(95.07)	(97.08)	(2.142)	(2.211)	(7.355)	(6.084)	(2.167)	(1.827)
Percentage of Population that are	-44.08	-3.817	2.198	3.735	-32.38*	-18.06	-9.369*	-4.772
WWII Manufacturing Women	(240.0)	(258.9)	(5.228)	(5.629)	(17.73)	(20.33)	(5.405)	(5.949)
Percentage of Population that are	-12.30	-27.08	-0.958	-1.467	9.400*	3.837	2.468	0.664
WWII Manufacturing Employees	(74.64)	(82.49)	(1.585)	(1.756)	(5.535)	(5.657)	(1.738)	(1.705)
Control for Parent's Education	No	Yes	No	Yes	No	Yes	No	Yes
Observations	504	470	505	471	505	471	505	471
R-squared	0.186	0.271	0.184	0.259	0.259	0.459	0.205	0.394

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); predicted results from Table 1.5; WPB (1944); and U.S. Bureau of the Census (1944).*

*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's mother grew up. Regressions include dummy variables of the respondent's age, with coefficients allowed to vary over time. Regressions that control for mother's education include dummy variables for the categorical education variable of the respondent's mother, with coefficients allowed to vary over time. The categorical education variables are separated into the following brackets: grades 0-5, grades 6-8, grades 9-11, high school, high school and non-academic training, college but no degree, college degree, and post-graduate education. A respondent is counted as having gone to college if she went to college but does not have a degree, if she has a college degree, or if she has some post-graduate education. Percentage of population that are WWII manufacturing women is computed as the sum of the total number of women employed divided by the county's total population. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

would have been on the entire community.

The results found in Table 1.6 are even stronger after adding female employment to the controls. The positive coefficient on the predicted number of WWII plants in the first regression for the categorical education variable is similar in magnitude and significance. Both coefficients on predicted WWII plants in the regressions for whether the respondent went to college are larger and now statistically significant at the 1 percent level. While female employment appears to be an important control, the relationship between this measure and the education variables is only ever negative and at best statistically significant at the 10 percent level. It has no statistically significant relationship to the labor force participation measures.

To check the robustness of the analysis in Section 1.9, Table 1.10 analyzes the effect of all parents' WWII variables on baby boomers' labor and education decisions. As in Table 1.7, the number of observations is greatly reduced and the number of independent variables is quite large. Consequently, the even numbered regressions have little statistical significance. The regression results are still very similar to Table 1.7. The effects of the predicted number of WWII plants in the mother's county are similar in magnitude and statistical significance. The coefficients on the mother-in-laws' variables are similar, except that there is no longer a statistically significant effect of the predicted number of WWII plants on the respondent's categorical education variable. Interestingly, the percentage of the population that were WWII manufacturing women in the mother's county has a very statistically significant negative coefficient on a woman's categorical education variable but not whether she graduates from college. Female employment has a positive and statistically significant effect on both education and whether the respondent goes to college, when assigned by the mother-in-law's county. The findings that WWII had a positive shock on baby boomer's education through their female parents is robust to the inclusion of measures for female employment during the war. In fact, the results are stronger once we add this control.

Finally, Table 1.11 determines which stages of a baby boomer woman's education these

Table 1.10: *Effect of WWII Manufacturing and Female Employment in All Parents' Counties on Baby Boomers, Age 42-51*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother	Weeks Worked		Employment		Education		College	
Predicted WWII Plants	2.734	4.235	-0.0192	-0.0190	0.882*	-0.115	0.353**	0.145
(thousands)	(6.700)	(6.306)	(0.135)	(0.134)	(0.486)	(0.399)	(0.137)	(0.148)
Mobilization Rate	-34.46	-39.90	-1.232	-1.318	-5.744	-10.04	-2.526	-3.731
	(75.49)	(75.78)	(1.666)	(1.628)	(8.026)	(7.645)	(2.362)	(2.563)
Percentage of Population,	-147.9	-122.8	-5.509	-4.918	-74.57***	-79.37***	-14.63	-13.52
WWII Manu. Women	(419.6)	(409.8)	(8.694)	(8.228)	(26.97)	(24.66)	(9.366)	(8.850)
Mother-in-Law								
Predicted WWII Plants	4.913	-0.743	0.192	0.0185	0.683	-0.238	0.537**	0.330
(thousands)	(10.99)	(10.77)	(0.208)	(0.216)	(0.623)	(0.613)	(0.250)	(0.247)
Mobilization Rate	138.4	141.3	1.988	1.900	9.105	10.45*	3.240	3.716**
	(98.14)	(95.06)	(2.034)	(2.044)	(6.326)	(5.667)	(2.108)	(1.849)
Percentage of Population,	-392.0	-461.3	-11.53	-13.58	46.37*	29.59	17.56**	14.94
WWII Manu. Women	(411.1)	(393.7)	(9.220)	(8.871)	(26.65)	(25.59)	(8.815)	(9.080)
Father								
Predicted WWII Plants	10.79*	10.76	0.133	0.101	-0.986	0.0236	-0.137	0.110
(thousands)	(6.154)	(7.587)	(0.137)	(0.160)	(0.865)	(0.715)	(0.247)	(0.238)
Mobilization Rate	13.95	18.33	0.639	0.886	1.166	-1.237	2.237	1.368
	(78.57)	(81.32)	(1.641)	(1.723)	(5.862)	(6.492)	(2.069)	(2.559)
Percentage of Population,	487.9	355.3	13.76	9.249	38.24	56.13*	0.361	5.401
WWII Manu. Women	(572.6)	(570.8)	(11.55)	(11.91)	(33.23)	(31.63)	(10.58)	(10.51)
Father-in-Law								
Predicted WWII Plants	-11.62	-6.760	-0.223	-0.00425	0.450	0.857	-0.339	-0.275
(thousands)	(12.14)	(11.90)	(0.222)	(0.230)	(0.817)	(0.716)	(0.274)	(0.254)
Mobilization Rate	-121.7	-166.1*	-1.499	-2.381	0.429	1.172	0.316	0.606
	(91.56)	(95.50)	(1.899)	(2.111)	(6.718)	(5.831)	(1.954)	(1.744)
Percentage of Population,	520.6	441.5	9.662	10.80	-24.17	-30.76	1.550	-1.007
WWII Manu. Women	(414.3)	(436.3)	(9.353)	(9.997)	(30.69)	(24.39)	(9.501)	(8.415)
Control for Parent's Education	No	Yes	No	Yes	No	Yes	No	Yes
Observations	637	610	639	612	639	612	639	612
R-squared	0.073	0.140	0.086	0.159	0.210	0.415	0.209	0.360

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); predicted results from Table 1.5; WPB (1944); and U.S. Bureau of the Census (1944).*

*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's parent grew up, for all four parents: mother, mother-in-law, father, and father-in-law. The percent of the population that are employed in metal manufacturing is included as a control, assigned by each parent's county. The categorical education and college variables are defined as in Table 1.2, and controls are included identically. Percent of population that are WWII manufacturing women is defined as in Table 1.4. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

WWII variables affect. Once again, the results show that the primary effect is on the attainment of a college degree. The coefficients on the predicted number of WWII plants in the mother's county are positive and statistically significant, though the level in regression (4) has dropped to 10 percent. The coefficient on the mother-in-law's predicted number of WWII plants remains positive, statistically significant, and larger in magnitude than the mother's. Moreover, once female employment is controlled for, the relationship between the mother-in-law's mobilization rate and a baby boomer's postgraduate education is now larger and more statistically significant. Additionally, the negative coefficients for the father-in-law are now even more statistically significant.

There are a few interesting results to note regarding the percentage of the population employed in WWII manufacturing plants. This variable has a statistically significant negative effect on receiving a college degree through the father and a positive effect through the father-in-law. The opposite is true for postgraduate education: the coefficient for the father is positive, and the coefficient for the father-in-law is negative. Both are statistically significant. The largest coefficients are on the percentage of the population employed as women in WWII manufacturing plants in the mother's county. This coefficient on postgraduate education is negative and significant at the 1 percent level.

Overall, adding robustness controls for WWII female employment strengthens my findings. The predicted number of WWII plants has a positive effect on a baby boomer woman receiving a college degree, through both her mother and mother-in-law. The mother-in-law's effect is still larger than the mother's, though this is not simply interpreted as causal. It may be due to selection, as argued in Morrill and Morrill (2013). Any effect through the predicted number of WWII plants in the father-in-law's county is negative, and the father's variables are not noteworthy. Moreover, when we do find an effect of female WWII employment, it has the opposite effect of WWII plants. This variable in the mother's county has a negative effect on whether the baby boomer woman receives any postgraduate education. Female employment in war manufacturing primarily effects the baby boomer's education through the father and father-in-law.

Table 1.11: *Effect of WWII Manufacturing and Female Employment in All Parents' Counties on Baby Boomers' Education, Age 42-51*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)
Mother	Some College		College Degree		Postgrad	
Predicted WWII Plants	-0.0314	-0.0578	0.289**	0.273*	0.0643	-0.128
(thousands)	(0.155)	(0.151)	(0.146)	(0.162)	(0.0980)	(0.116)
Mobilization Rate	2.945	2.609	-0.889	-1.535	-1.637	-2.195
	(2.185)	(2.219)	(1.556)	(1.808)	(2.349)	(2.302)
Percentage of Population,	6.385	5.534	11.23	14.41*	-25.86***	-27.93***
WWII Manu. Women	(8.399)	(8.408)	(7.266)	(7.805)	(7.293)	(7.561)
Mother-in-Law						
Predicted WWII Plants	-0.220	-0.273	0.595***	0.552***	-0.0583	-0.222
(thousands)	(0.170)	(0.185)	(0.198)	(0.206)	(0.165)	(0.177)
Mobilization Rate	-1.878	-2.074	-0.611	-0.416	3.852**	4.132**
	(1.918)	(1.881)	(2.195)	(2.205)	(1.786)	(1.881)
Percentage of Population,	-3.733	-6.353	2.798	2.064	14.77*	12.87
WWII Manu. Women	(6.374)	(7.337)	(5.910)	(5.816)	(8.201)	(8.046)
Father						
Predicted WWII Plants	-0.0581	-0.133	0.0429	0.131	-0.180	-0.0211
(thousands)	(0.137)	(0.149)	(0.184)	(0.185)	(0.160)	(0.191)
Mobilization Rate	-3.230	-2.560	2.196	2.062	0.0413	-0.694
	(2.222)	(2.342)	(1.667)	(1.830)	(1.825)	(1.942)
Percentage of Population,	0.369	-1.788	-20.25**	-20.93**	20.61**	26.33***
WWII Manu. Women	(9.510)	(10.26)	(8.034)	(8.598)	(8.825)	(9.602)
Father-in-Law						
Predicted WWII Plants	0.184	0.285	-0.639***	-0.634***	0.300	0.359
(thousands)	(0.233)	(0.231)	(0.221)	(0.229)	(0.226)	(0.221)
Mobilization Rate	0.124	-0.177	1.542	1.832	-1.225	-1.226
	(1.687)	(1.717)	(1.827)	(1.860)	(1.833)	(1.777)
Percentage of Population,	3.916	3.824	15.96**	15.49**	-14.41*	-16.50**
WWII Manu. Women	(6.398)	(6.732)	(6.428)	(6.569)	(8.426)	(7.761)
Control for Parent's Education	No	Yes	No	Yes	No	Yes
Observations	639	612	639	612	639	612
R-squared	0.086	0.179	0.150	0.227	0.161	0.263

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); predicted results from Table 1.5; WPB (1944); and U.S. Bureau of the Census (1944).*

*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's parent grew up, for all four parents: mother, mother-in-law, father, and father-in-law. The percent of the population that are employed in metal manufacturing is included as a control, assigned by each parent's county. The categorical education and college variables are defined as in Table 1.2, and controls are included identically. Percent of population that are WWII manufacturing women is defined as in Table 1.4. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

1.11 Conclusion

My research analyzes the effect that World War II had on baby boomer women, the daughters of the generation of women whose attitudes and labor force participation were affected by the war. The two avenues of influence that I analyze are the mobilization rate of men and the number of WWII manufacturing plants. These are shocks to women's labor force participation and attitudes towards working during WWII. So that I can analyze the intergenerational effects of WWII on baby boomer women, these shocks are assigned to a respondent by the county where her mother grew up. These two variables have a positive effect on a baby boomer's education but not her labor force participation. Specifically, the WWII variables increase the likelihood that the woman will go to college.

There remains a possibility that these results are influenced by local women's attitudes towards work. Since labor markets were very tight, it may be that plants were more likely to locate in areas where women were willing to work in war manufacturing. This culture would then possibly be transmitted to the daughters. My research concerns the effect of WWII as a shock to women's behavior, not pre-existing behaviors and attitudes. In order to mitigate possible endogeneity problems, I determine which industries were the most likely to convert to war manufacturing. Pre-war manufacturing infrastructure should be uninfluenced by women since they were hardly ever employed at plants. The most commonplace industries were not as likely to convert; it was the more specialized industries that seized the economic opportunities presented by the war. As predicted by historical accounts, the industries most likely to convert were the ones that produced machinery, iron and steel, electrical machinery, automobiles, petroleum and coal products, transportation products, and rubber products. As far as I know, this is the first study to use regression analysis to back up the historical accounts.

My analysis proceeds with both the number of WWII manufacturing plants predicted by prewar infrastructure and the mobilization rate. The war did affect baby boomer women's educational decisions, though not their labor force participation. A woman whose mother was highly affected by WWII was significantly more likely to attend college, even after

controlling for her parents' education. Moreover, there is variation in which WWII variables remained important. Both the mobilization rate and the war manufacturing measure affected the education of thirty- to thirty-eight- year-olds, but only the manufacturing shock remained significant by the time the baby boomers were forty-two to fifty-one.

Having established that there was an effect of the war through the baby boomers' mothers, I then evaluate the relative effect of WWII through all four parents and parents-in-law. The coefficient on the predicted number of WWII manufacturing plants of the mother's county retains both its magnitude and significance, suggesting that the preceding results are not driven by correlation with other parents' variables. Moreover, the mother-in-law's predicted number of WWII plants is significantly positively correlated to a baby boomer woman's college attendance, and the coefficient is of similar magnitude to the mother's. The mobilization rate of the state where the respondent's father grew up has a positive effect on her going to college, whereas the predicted number of WWII manufacturing plants in the father-in-law's county seems to have a negative correlation.

Finally, these results are robust to including controls for the WWII female employment in metal manufacturing plants. Despite adding these controls for each parent's county, I still find a positive relationship between the WWII shock on manufacturing and women's educations, through the mother and mother-in-law's counties. This would seem to imply that the effect is greater than the simple increase in female employment in metal manufacturing during the war.

Interpreting these statistical results is an interesting matter. A baby boomer woman had likely been affected by her parents' backgrounds for all of her years leading up to her decision to go to college. In contrast, these women probably met their husbands and in-laws after that decision. Thus, while it seems reasonable to consider her parents' influence causal, it is unlikely that the same can be said of her in-laws' influence. The most obvious interpretation is that women who went to college were more likely to marry men whose mothers had been impacted by WWII and less likely to marry those whose father had been impacted. What lies behind this trend warrants further study.

Many of these results add nuance to the economic history of the baby boomer generation. The Quiet Revolution is a phenomenon where baby boomer women differed from previous generations in how they approached their labor decisions (Goldin 2006a). There was not an increase in the rate at which women's labor force participation was rising; women changed instead the types of jobs they pursued. This generation's unprecedented pursuit of human capital was caused by a revolutionary change in their horizons, identity, and decision-making. They decided to pursue more education in order to achieve careers because they accurately predicted that they would spend much of their life in the labor force. One reason for the timing of the Quiet Revolution was their ability to observe how the generations before them had underestimated their working years. Also, these women were the first to have access to the birth control pill in their early twenties, allowing them to incorporate controlled fertility into their plans.

My results add another potential reason for the Quiet Revolution's timing. This generation was raised by the women who had been affected by World War II. The war either directly caused these mothers to expect careers for their daughters or drew the daughters' attention to the way their mothers had been treated during and after the war.

Chapter 2

The Effect of Mother Homemakers on a Woman's Job Inheritance

2.1 Introduction

The motivation for this research paper comes primarily from first- and second-hand experience. As an undergraduate, I noticed that many students were pursuing careers that one of their parents held. This seemed especially true for students in the sciences, particularly women, whose careers aligned with their fathers. This pattern makes sense; having a parent in the field can be a "foot in the door" to a career. A child has access to field-specific human capital that would lower the costs of entering their parents' fields. These advantages would seem most useful in careers that require significant amounts of preparatory schooling, such as medicine.

In fact, due to the increasing competitiveness of college education, many careers require preparation as early as the very beginning of high school. A student must begin building her resumé as soon as high school begins if she wants to get into a selective school. Thus, early preparation is critical to entering any career which is facilitated by education at competitive, top-tier colleges and graduate schools. Consequently, as we move forward into the twenty-first century, we could be seeing more of a pattern once familiar to the

seventeenth century: job inheritance.

Would this phenomenon impact women differently? Consider this: careers are still a very uncertain area for young girls. Whereas boys can look to many members of their community to approximate what a career would look like to them, girls have far fewer role models. Because women are still segregated into low-paying jobs, role models for high-income jobs are even scarcer. In 2010, 50.6% of working women were confined to just twenty-six[1] occupational categories. The median weekly income of these occupations was just $602 (WOW 2011). These women are employed in occupations identified as "pink collar": secretarial work, nursing, and teaching. A recent article in The Economist's "Special Report on Women and Work" blames this situation for the stagnant growth of women in senior positions at American companies (Beck 2011). "[Women] have few female role models to look up to, so it takes a leap of imagination to picture themselves in charge." Thus, as the timeline for college preparation starts earlier for each cohort, girls are at even more of a disadvantage because they have few female role models to guide them through the career path.

Because choosing a career is a much different process for girls than it is for boys, one wonders how career-driven girls make the best of their situations. Perhaps when a girl cannot find a suitable role model in a career she would like to have, she mentally latches on to the best career information she has: her father's. Here, she still does not know how her gender will affect her career, but she can know almost everything else about that occupation. She can take full advantage of her father's knowledge and learn the "ins and outs" of his profession. I hypothesize that a girl with a stay-at-home-mom or who lives in a community with few working women would be more likely to pursue her father's career. This fact may even result in girls with stay-at-home mothers being more likely to pursue traditionally male occupations!

1. The Department of Labor identifies 505 occupational categories.

2.2 Inheriting Careers: What Do We Know?

Research regarding the effect of parents on children primarily looks at education and income. Haveman and Wolfe (1995) summarize studies analyzing the relationship between parents' and children's outcomes. Predictably, parents have been shown to influence both the educational attainment, occupational prestige, and wage earnings of their children. Hossler, Schmit, and Vesper (1999) stress that children with highly educated parents are more likely to aspire to attend college, and that parents who have gone to college transmit critical information on the process in order to better their children's chances (p. 26). They also show that in the early stages of high school, students are more likely to be influenced by their parents. As they age, students reach outside their family for additional information (p. 103). Parent's education and income, however, became more strongly influential on actualized college plans later in the student's high school career.

Dustmann (2004) highlights the way educational institutions allow parents to influence the education of their children, and he argues that this is one of the crucial determinants of intergenerational mobility. Early educational decisions are especially likely to be heavily affected by parental background. His results show that, in Germany, a father's education and career have more influence on his daughter's secondary education choices than do her mother's. Moreover, girls seem to be more influenced by their parents than boys do. For a cohort born in 1965, girls with academic parents are more likely to attend the highest level of secondary school than boys with academic parents.

There are quite a few studies on career choice, generally. Gupta (1993, 1994) uses students' career aspirations and outcomes to analyze the reasons for men and women being in different careers. He finds that the two genders differ in their preferences, but that there are also differences because employers prefer different genders. Many other studies have tried to determine differences in preferences between the genders in order to explain the persistent lack of women in competitive fields (Niederle and Vesterlund 2007).

There has been some work on parental influences on choice of career, but most studies do not even analyze the careers of women, let alone the influence of stay-at-home mothers.

However, there is some evidence that career-driven women are more influenced by their fathers. Dryler (1998) found that in Sweden, where mothers work in higher percentages than in the U.S., teenage girls were equally influenced by each parent's career-sector in their secondary school program, whereas boys' secondary school choices were less influenced by their mothers' career-sector. Gates (2002) found that women in nontraditional fields were more likely to cite their fathers as being influential in their choices. Dick and Rallis (1991) found that high school students who were pursuing coursework in math and science were more influenced by their parents than students who were not. Given how commonly math and science are perceived to be tedious and difficult, this is perhaps not surprising. Brown, Ortiz-Nuñez, and Taylor (2011) analyze a panel study of British teenagers and find that hearing about a career from a parent significantly increases their probability of entering certain occupations. They also find that a parent's occupation only has significant impact between a father and a son, although they are only considering very broad definitions of occupation[2] ("clerical," "military," etc.) and they do not take into account whether the mother is stay-at-home.

There has been only a little theoretical insight into career choice. Holland, Davis, and Cooley (1967) emphasize that ignorance about most careers can bias students towards job inheritance. Mani and Mullin (2004) theoretically model how communities communicate information to young people about their relative effectiveness in different fields and, therefore, influence the next generation towards their own careers.

This emphasis on social approval brings up another interesting perspective on women's choices: perhaps women need the approval of their parents to pursue a degree in science (which they are more likely to receive from parents in the sciences) to outweigh the implicit and explicit disapproval communicated by U.S. culture. Dryler (1998) explores this possibility, but she finds no evidence that parents' gender-atypical career choices influenced their children to make gender-atypical choices in school courses.

2. Erikson and Goldthorpe (2009) highlight the dangers of using only broad definitions of occupations.

2.3 How Parents Impact Children's Careers

I would like to analyze how a child's career choices are influenced by her parents. First, I would like to provide some basic descriptions of the current population who chose the same career as their parent and the women who chose to become stay-at-home moms. I then answer the question, how does being a woman with a stay-at-home mom interact with this decision? Are women with stay-at-home moms more likely to choose to become stay-at-home moms themselves? Or, if they choose to work, are they then more likely to choose their father's career? How are the answers to these questions different for women in competitive occupations?

I then extend these questions to the women's occupational role models during her childhood and teenage years. Are there effects to being in a community with many women in prestigious occupations? What about effects from lacking female role models, where a high percentage of women are stay-at-home-mothers?

Section 2.4 describes the data used to answer these questions and describes the gender concentration within occupations. Section 2.5 analyzes the general population, while Section 2.6 restricts attention to women in competitive careers. Finally, Section 2.7 looks at the influence of respondents' counties regarding occupational role models. Section 2.8 concludes.

2.4 Data

To perform my analysis, I use the Michigan Panel Survey of Income Dynamics (PSID). This data set is a representative longitudinal study that began with over 5,000 families in 1968. In addition to collecting detailed data on both the household "head" and "wife"[3] (if present) of the original families, the study has also followed every child to leave one of the PSID

3. The PSID labels a cohabitating couple as "head" and "wife" if the opposite-sex romantic partner was recorded as cohabitating with the respondent in the last survey. The PSID does not collect detailed information on same-sex cohabitators.

families. The child is then considered either a "head" or "wife"[4] in a new family, and detailed information is gathered on him or her. Thus, the sample maintains a nationally representative sample for every year. Moreover, the Private-Use PSID contains information on the childhood county of each "head".

As of 2001, the survey reports new data concerning occupation formatted as its 3-digit occupation code[5] from the 2000 Census, which is more useful than the previously used Census 1970 classifications. The Census 2000 can be grouped into twenty-five categories, such as "Farming, Fishing, and Forestry" and "Architecture and Engineering" occupations, whereas the Census 1970 occupation codes are only grouped into eleven categories. Most importantly, beginning in 1997, the survey asked respondents the "usual" occupation of his or her mother and father when the respondent was "growing up." The survey later reported this data in terms of Census 2000 classifications.[6]

I restrict my attention to the 2009 sample of men and women who are currently employed or "keeping house," aged twenty-three to sixty-five. Table 2.1 provides some descriptive statistics for the data. The sample slightly over-represents women because the men in the overall population are more likely to be disabled, retired, or unemployed than women are. The data also over-represents married individuals,[7] since this is one of the primary ways of being inducted into the PSID. The sample is especially educated, with higher rates of high school degrees and college degrees than the national average.[8] The average person in the

4. The PSID uses a very traditional method of labeling respondents as "head" or "wife." Any single female respondent from the original PSID draw or single female family member who leaves a PSID household is considered the "head" of her household. If she marries or cohabitates with a boyfriend for more than a year, she is reassigned to "wife" and her partner becomes the "head."

5. Refer to www.census.gov/hhes/www/ioindex/ioindex.html for complete listings.

6. My research began with the hope that longitudinal family data would provide me with the opportunity to determine a respondent's parents and gather the parents' detailed longitudinal data. Unfortunately, because the PSID changes who the "head" of a family is based on gender, it is incredibly difficult to trace an individual over time, even though her family is incredibly easy to trace. In fact, the PSID strongly discourages trying to identify parents and children across family units.

7. In 2009, 61.1% of individuals aged 25 to 64 were married, 20.4% were single, 2.0% were widowed, 12.1% were divorced, and 2.8% were separated (CPS 2010c).

8. Among the country's adult population in 2009, 86% had completed high school and 27% received a bachelor's degree or higher (CPS 2010a).

Table 2.1: *Summary of Respondent Characteristics*

	Percentage		
Female	55.4		
Married or Cohabitating	75.5		
Single	13.1		
Widowed	1.1		
Divorced	7.6		
Separated	2.7		
No High School	2.5		
Some High School	9.9		
High School Degree	31.0		
Some College	27.8		
College Degree	19.0		
Some Post-Graduate Work	9.7		
	Median	Mean	SD
Age	41.0	41.4	11.3
Family Income	$70,364	$90,216	$114,651
Number of Children	1.00	1.03	1.2

Source: Panel Study of Income Dynamics, public use data set *(2012)*
Sample is restricted to respondents currently working or "keeping house" within ages 23 to 65.

sample is around forty years old. Much like the U.S. population, the income distribution of families is highly skewed, but it is slightly higher than the national average of $67,976 (CPS 2011).

Table 2.2 reports the current occupations for my sample. Much like the general population, women are mostly working in education, office and administrative support, and healthcare occupations (WOW 2011). They are also much more likely to be primarily taking care of the home. Men are primarily working within management, transportation, construction, and production occupations. I also observe that the occupations most female-dominated are healthcare, personal care and service, and office and administrative support occupations. The most male-dominated occupations are extraction, construction, maintenance and repair, and military occupations.

Table 2.2: *Current Occupations by Gender*

Occupation	Male		Female		Total	
	Number	% in Occ.	Number	% in Occ.	Number	% Female
Architecture and Engineering Occupations	126	3.1	31	0.6	157	19.7
Arts, Design, Entertainment, Sports, and Media Occupations	77	1.9	76	1.5	153	49.7
Building and Grounds Cleaning and Maintenance Occupations	200	4.9	127	2.5	327	38.8
Business Operations Specialists	83	2.0	94	1.8	177	53.1
Community and Social Services Occupations	56	1.4	131	2.6	187	70.1
Computer and Mathematical Occupations	125	3.1	48	0.9	173	27.7
Construction Trades	349	8.5	8	0.2	357	2.2
Education, Training, and Library Occupations	129	3.2	431	8.5	560	77.0
Extraction Workers	10	0.2	0	0.0	10	0.0
Farming, Fishing, and Forestry Occupations	66	1.6	11	0.2	77	14.3
Financial Specialists	81	2.0	101	2.0	182	55.5
Food Preparation and Serving Occupations	122	3.0	240	4.7	362	66.3
Healthcare Practitioners and Technical Occupations	96	2.3	346	6.8	442	78.3
Healthcare Support Occupations	23	0.6	260	5.1	283	91.9
Homemaker	50	1.2	883	17.3	933	94.6
Installation, Maintenance, and Repair Workers	290	7.1	9	0.2	299	3.0
Legal Occupations	36	0.9	57	1.1	93	61.3
Life, Physical, and Social Science Occupations	45	1.1	40	0.8	85	47.1
Management Occupations	495	12.1	298	5.9	793	37.6
Military Specific Occupations	71	1.7	8	0.2	79	10.1
Office and Administrative Support Occupations	267	6.5	961	18.9	1228	78.3
Personal Care and Service Occupations	35	0.9	248	4.9	283	87.6
Production Occupations	337	8.2	169	3.3	506	33.4
Protective Service Occupations	163	4.0	70	1.4	233	30.0
Sales Occupations	325	7.9	352	6.9	677	52.0
Transportation and Material Moving Occupations	434	10.6	92	1.8	526	17.5
Total	4,091		5,091		9,182	

Source: Panel Study of Income Dynamics, public use data set *(2012)*
Sample is restricted to respondents currently working or "keeping house" within ages 23 to 65.

2.5 Stay-At-Home Moms and Job-Inheritance, All Occupations

The PSID provides us with the advantage of respondents self-reporting the occupations of the parents of both head and spouse in Census 2000 3-digit codes. However, in response to the question "What was your mother's usual occupation when you were growing up?" the PSID does not distinguish between the answers "inapplicable," "deceased," "no [parent],"

Table 2.3: *Information Lacking for Parents Occupation*

Reports Occupation of At Least One Parent	89.8%		
	Father	Mother	Both
Don't Know	15.9%	10.0%	6.6%
Not an Occupational Role Model	1.0%	38.8%	0.2%

Source: Panel Study of Income Dynamics, public use data set *(2012)*
Sample is restricted to respondents currently working or "keeping house" within ages 23 to 65.

and "never worked." A respondent does have the option of answering "Don't Know; No Answer."

While certainly not ideal, I can still glean some useful information from this variable. In the scenarios where a respondent's parent was absent, the child certainly cannot look to that parent for career guidance, much like a child whose parent is not working. Moreover, even if a respondent's parent was known, I can interpret a survey respondent's inability to identify an occupation for that parent as a signal that this information was not salient to the individual. A respondent would remember a parent's occupation if it had been important in his or her career path. This response is less valuable in a scenario where a respondent answers incorrectly on behalf of their romantic partner. With these problems in mind, I code an answer of "inapplicable," "deceased," "no [parent]," or "never worked" as "Not an Occupational Role Model."

Table 2.3 presents some evidence in favor of this interpretation. Most importantly, mothers are far less likely than fathers to be occupational role models. Fathers, on the other hand, are more likely to be described with an answer of "Don't Know." This may reflect the fact that fathers are far less likely to live with their children than mothers are: in 2009, 26.8% of children did not live with their father but only 7.4% did not live with their mother (CPS 2010b). There seem to be clear differences between how mothers and fathers are reported. Less than 7% of respondents did not know either parents' occupations, and less than one percent can have both parents classified as not being role models. There also do not seem to

Table 2.4: *Characteristics and Whether Respondents Choose Parent's Occupation*

All		
	Male	Female
Has Father's Occupation	12.3%	4.1%
Has Mother's Occupation	4.3%	6.6%

Female		
	Mother Occupational Role Model	
	Yes	No
Homemaker	14.9%	20.7%
Working:		
Father's Occupation	4.8%	5.1%
Father's Occupation, College	7.3%	6.1%

		Median		
Group		Income	Age	Years of School
Homemaker	Yes	$52,900	41	12
	No	$69,035	41	14
Mother Occupational Role Model	Yes	$64,000	37	14
	No	$71,000	46	13
Working:				
Father's Occupation	Yes	$84,125	43	14
	No	$68,250	41	14
Mother's Occupation	Yes	$67,760	37	13
	No	$69,331	42	14

Source: Panel Study of Income Dynamics, public use data set *(2012)*
Sample is restricted to respondents currently working or "keeping house" within ages 23 to 65. We drop respondents who answered "Don't Know" to both their parents occupations. "College" indicates that respondent has at least a college degree. "Income" refers to family income. Having a parent's occupation excludes being a homemaker and having an unknown occupation.

be huge flaws in recalling information about parents. Almost ninety percent of respondents have occupational information about at least one of their parents. For the rest of the paper, I will only analyze respondents who knew at least one of their parents' occupations.

Table 2.4 summarizes the respondent's occupations in comparison with their parents' occupations. Given the gender distinctiveness of occupations, it is not surprising that daughters are more likely to choose their mother's occupation than their father's occupation. Likewise, sons are more likely to choose their father's occupations than their mother's. However, a man is twice as likely to inherit his father's occupation as a woman is to inherit her mother's. This finding is due to the fact that almost 40% of respondents'

mothers did not work during the respondent's childhood. The women who do inherit their mother's occupation are highly concentrated in two fields: 41.5% are in "Office and Administrative Support" and 13.3% are in Education. The largest share of sons who have their father's occupation is 18.5% in "Management Occupations." Blue Collar Work can also be inherited: the second highest concentration of men in their fathers' occupations are 14.6% in "Transportation and Material Moving."

I also observe how women behave, depending on whether their mother worked during their childhood. Unsurprisingly, women are statistically more likely to become homemakers if their mother was not an occupational role model.[9] A woman in the sample is not statistically more likely to be in her father's occupation if her mother was a homemaker, though the percentage is a little higher for women with some at least a college degree. These women are mostly in "Management," "Education, Training, and Library," and "Sales" occupations. Of the women with their father's occupation and no college education, the majority are in "Production Occupations" or "Office and Administrative Support." Blue collar work can also be inherited from father to daughter.

There are several problems with such rudimentary analysis. The choice to pursue a parent's career is likely to be correlated with income, education, and cohort. I would suspect that older cohorts are more likely to be housewives because female labor force participation has been increasing over time and because older cohorts are more likely to have children (Goldin 2006b). I might expect highly educated women to have high potential wages and to have signaled a taste for work. On the other hand, the education and incomes of husbands and wives have become positively correlated over the last century. Highly educated women may have high-earning husbands, and thus income effects may encourage them not to participate in the labor force (Neal 2004). Similarly, whether one chooses a parent's occupation may be endogenously related to income. Parents in high-income occupations can ensure a high-income occupation for their children by sending their children to good schools and paying for college. Children of low-earning parents may have a difficult

9. This difference is statistically significant at the .01% level.

time choosing a high-earning occupation because of adverse circumstances.

Table 2.4 shows the median characteristics of each of these groups of women. There is some variation among groups in terms of education. Each group has a median education of some college, except homemakers. The median woman from this group has only a high school education. I also observe variation in age. The youngest group is the women choosing their mother's occupation and those whose mothers worked during their childhood. The oldest group is the women whose mothers did not work. The difference between women whose mothers worked and those whose did not is about a decade.

There are also differences between the family incomes of the groups. Comparing median family incomes between homemakers and working women does not tell us what a homemakers family income would have been if she were working, so it is not surprising that families with homemakers earn less than those with working women. More surprisingly, women whose mothers worked during their childhood have lower incomes than women whose mothers did not. Finally, among working women, those who have chosen their father's occupation have much higher incomes than those that did not. There is no difference between women who chose their mother's occupations and those who did not.

Table 2.5 performs regression analysis to determine what predisposes a woman to choose her father's occupation, controlling for all of the variations I observed above. I control for background variables that are determined before the respondent chooses her occupation. While education may be chosen endogenously with occupation, I anticipate that choices such as college major are more likely to correspond with occupation. Years of education will mostly reflect her parents' resources and ability. Odd-numbered regressions use the entire sample of working women, while even-numbered regressions consider the respondents under forty-five. Equations (1) and (2) control for the respondent's age, education, race and ethnicity, and the state she grew up in. Regressions (3) and (4) use dummies for education categories instead of a continuous variable. Regressions (5) through (8) repeat these specifications using probit analysis, instead of OLS.

The only variable to factor significantly is education, for the younger cohorts. Higher

Table 2.5: *Effect of Whether Mother Had Occupation on Whether a Woman Takes Her Father's Occupation*

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) Probit	(6) Probit	(7) Probit	(8) Probit
Mother Not Occupational	-0.000192	-0.00767	0.000261	-0.00730	-0.00297	-0.106	0.00643	-0.0914
Role Model	(0.00761)	(0.0113)	(0.00761)	(0.0113)	(0.0790)	(0.144)	(0.0793)	(0.144)
Age	0.000309	0.000529	0.000302	0.000285	0.00309	0.00865	0.00324	0.00287
	(0.000328)	(0.00104)	(0.000322)	(0.000329)	(0.00344)	(0.0128)	(0.00331)	(0.00347)
Education	0.00215	0.00553**			0.0224	0.0748**		
	(0.00166)	(0.00239)			(0.0169)	(0.0307)		
Constant	-0.0338	-0.0748	-0.0127	-0.0211	-5.657	-6.007	-5.107	-5.381
	(0.0720)	(0.107)	(0.107)	(0.0670)	(180.9)	(113.7)	(80.53)	(114.5)
Young Cohort	No	Yes	No	Yes	No	Yes	No	Yes
Dummies:								
Race, Hispanic Origin, State Grew Up	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education	No	No	Yes	Yes	No	No	Yes	Yes
Observations	3,785	1,773	3,785	1,773	3,523	1,522	3,523	1,522
R-squared	0.016	0.035	0.018	0.038	0.030	0.068	0.036	0.075

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Panel Study of Income Dynamics, public use data set *(2012)*
Sample is restricted to women within ages 23 to 65 who are currently working. We drop respondents who answered "Don't Know" to both their parents occupations. "College" indicates that respondent has at least a college degree.

levels of education are positively correlated with choosing a father's occupation. More surprisingly, age is positively correlated with choosing a father's occupation, even within the younger cohorts. This may reflect either a decreasing trend in father-daughter occupation inheritance or the fact that one's targeted occupation may take time to acquire. The PSID asks respondents their first full-time occupation, and only 26.6% of working women are still in their first occupations.[10] I therefore favor the later interpretation.

The coefficient on whether the respondent's mother worked during her childhood is never significant. Moreover, the coefficient is very small and most often negative. The coefficient only becomes more negative for younger cohorts, and using education dummies does not seem to have a consistent effect.

2.6 Stay-At-Home Moms and Job-Inheritance, Competitive Careers

I now determine whether my hypothesis that women with stay-at-home mothers choose their father's career holds for jobs that are characterized by significant education investments and are characterized by specialized methodologies that can be passed down to children. I use the Nam-Powers-Boyd scale (NPB) to measure this aspect of an occupation and refer to the measure as an occupation's competitiveness (Nam and Boyd 2004). The NPB is a percentile ranking that ranges from 1 to 100 and is based on occupation-associated median income and education. This score is based solely on census data, and the scores are calculated explicitly for the Census 2000 three-digit occupational codes. Table 2.6 lists all occupations (on the three-digit level) with an NPB score greater than eighty-five. A quick survey of the titles reveals that these are precisely the occupations which require significant effort to enter, often from a relatively early age (e.g. surgeon, engineer, computer scientist).

I restrict my sample to the respondents who are currently in a competitive career, defined as one with an NPB score greater than eighty-five. What characterizes the respondents in competitive occupations? Table 2.7 replicates Table 2.4 for the restricted sample. I first

10. First Occupations are more heavily weighted towards the Food, Service, and Sales occupations. The most frequent first job for women is "Retail Salesperson."

Table 2.6: *Most Prestigious Occupations, by Nam-Powers-Boyd Code*

NPB	Census 2000 Occupation	NPB	Census 2000 Occupation
86	General and operations managers	92	Architects, except naval
86	Advertising and promotions managers	92	Computer hardware engineers
86	Financial managers	92	Marine engineers and naval architects
86	Purchasing managers	92	Materials engineers
86	Managers, all other	92	Sociologists
86	Postsecondary teachers	92	Aircraft pilots and flight engineers
86	Secondary school teachers	93	Chief executives
86	Producers and directors	93	Computer and information systems managers
87	Market and survey researchers	93	Mechanical engineers
87	Speech-language pathologists	93	Medical scientists
87	Detectives and criminal investigators	93	Environmental scientists and geoscientists
87	Securities, commodities, and financial services sales agents	93	Psychologists
88	Biological scientists	94	Financial analysts
88	Conservation scientists and foresters	94	Computer software engineers
88	Other education, training, and library workers	94	Civil engineers
88	Occupational therapists	94	Electrical and electronics engineers
89	Public relations managers	94	Engineers, all other
89	Budget analysts	94	Atmospheric and space scientists
89	Computer scientists and systems analysts	95	Aerospace engineers
89	Database administrators	95	Chemical engineers
89	Technical writers	95	Environmental engineers
90	Marketing and sales managers	95	Petroleum engineers
90	Computer programmers	96	Engineering managers
90	Operations research analysts	96	Actuaries
90	Statisticians	96	Nuclear engineers
90	Industrial engineers, including health and safety	96	Urban and regional planners
90	Physical therapists	97	Natural sciences managers
90	Sales engineers	97	Chiropractors
91	Financial examiners	97	Pharmacists
91	Miscellaneous mathematical science occupations	98	Mathematicians
91	Agricultural engineers	98	Economists
91	Biomedical engineers	98	Judges, magistrates, and other judicial workers
91	Mining and geological engineers	98	Veterinarians
91	Chemists and materials scientists	99	Astronomers and physicists
91	Physical scientists, all other	99	Lawyers
91	Audiologists	99	Optometrists
92	Education administrators	99	Podiatrists
92	Management analysts	100	Dentists
92	Personal financial advisors	100	Physicians and surgeons

Source: Nam and Boyd (2004)

Table 2.7: *Characteristics and Whether Respondents Choose Parent's Occupation*

Prestigious Occupations

All		
	Male	Female
Has Father's Occupation	12.0%	9.4%
Has Mother's Occupation	4.5%	6.9%

Female		
	Mother Occupational Role Model	
	Yes	No
Father's Occupation	8.6%	10.7%
Father's Occupation, College	9.3%	10.7%

		Median		
Group		Income	Age	Years of School
Mother Occupational Role Model	Yes	$106,010	37	16
	No	$125,049	46	16
Father's Occupation	Yes	$128,200	42	16
	No	$110,300	40	16
Mother's Occupation	Yes	$98,650	35	17
	No	$113,353	40	16

Source: Panel Study of Income Dynamics, public use data set *(2012) and Nam and Boyd (2004)*
Sample is restricted to respondents within ages 23 to 65 and currently working in an occupation with a Nam-Powers-Boyd score of eighty-five or above. We drop respondents who answered "Don't Know" to both their parents occupations. "College" indicates that respondent has at least a college degree. "Income" refers to family income. Having a parent's occupation excludes being a homemaker and having an unknown occupation.

observe that women in competitive occupations are significantly more likely to inherit their father's occupation than those who are not in competitive occupations.[11] I do not see an increase in the percentage of any other job inheritance, even from father to son. I also see an opposite relationship between having a stay-at-home mom and inheriting a father's occupation than I saw in Table 2.4. A higher percentage of working women with their father's occupation had stay at home moms. This holds true even for women with college degrees. Finally, when looking at the demographics of the different groups, I see many of the same patterns as I did in Table 2.4. Women with competitive occupations who had

11. This is significant at the .01% level.

Table 2.8: *Effect of Whether Mother Had Occupation on Whether a Woman Takes Her Father's Occupation, Prestigious Occupations*

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) Probit	(6) Probit	(7) Probit	(8) Probit
Mother Not Occupational	0.0131	0.00596	0.0132	0.00856	0.0299	-0.186	0.0371	-0.189
Role Model	(0.0306)	(0.0489)	(0.0307)	(0.0492)	(0.202)	(0.421)	(0.203)	(0.425)
Age	0.000835	0.00213	0.000734	0.000896	0.00508	0.0271	0.00436	0.00583
	(0.00137)	(0.00473)	(0.00127)	(0.00137)	(0.00918)	(0.0398)	(0.00800)	(0.00937)
Education	-0.000167	-0.00546			0.00458	-0.0546		
	(0.00942)	(0.0156)			(0.0628)	(0.130)		
Constant	0.192	0.231	0.172	0.176	-1.547	-5.250	-5.053	-6.099
	(0.425)	(0.490)	(0.490)	(0.390)	(1.233)	(477.8)	(241.2)	(225.5)
Young Cohort	No	Yes	No	Yes	No	Yes	No	Yes
Dummies:								
Race, Ethnicity, State Grew Up	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age, Education	No	No	Yes	Yes	No	No	Yes	Yes
Observations	482	230	482	230	297	95	297	95
R-squared	0.111	0.144	0.113	0.148	0.048	0.057	0.053	0.066

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1*
Source: Panel Study of Income Dynamics, public use data set *(2012)*
Sample is restricted to respondents within ages 23 to 65 and currently working in an occupation with a Nam-Powers-Boyd score of eighty-five or above. We drop respondents who answered "Don't Know" to both their parents occupations. "College" indicates that respondent has some college education.

stay-at-home moms earn more and are older than those whose mothers worked during their childhood. Women who chose their father's occupation earn more than those who did not. Here, I find another difference from Table 2.4: women who choose their mother's occupation earn $15,000 less and are five years younger than those who did not. However, those who chose their mothers' occupations are the only ones for whom the median education involves post-graduate work.

Table 2.8 repeats the regressions in Table 2.5 for women in prestigious occupations, in order to control for the differences in these groups. Probit analysis is particularly problematic and drops large portions of the sample, so I restrict my attention to the OLS regressions. There is very little variation in the sample in terms of education, so this variable loses all explanatory power and is even negative. I again observe a trend where older cohorts are more likely to inherit their father's occupation. Most importantly, though they still lack significance, the coefficient on a mother being a stay-at-home mom is now positive and larger in magnitude than it was in Table 2.5. Thus, while I do not observe the trend in general, women in competitive occupations may be more likely to choose their father's occupation if their mother was a homemaker.

2.7 Childhood Role Models and Job Inheritance

Finally, I use the Restricted-Use PSID data to determine the childhood county of each respondent. Since the PSID has not asked for the childhood county of wives since the 1985 survey, I can only analyze women without male "heads" of the household. This severely reduces the observations, since two thirds of the women in the 1997 survey are married or cohabitating. I use Census data from 1960 to 2000 to compute statistics for each county. These statistics include the percentage of women not in the labor force, the percentage of women in prestigious occupations, and the percentage of men in prestigious occupations.[12] I then assign these statistics to each respondent by county, using the Census year in which

12. As before, I define prestigious occupations as those with a Nam-Boyd-Powers scale of 85 or above.

they were eight- to seventeen-years-old.

Table 2.9 repeats the analysis of columns (3) and (7) in Table 2.5, while incorporating the statistics regarding role models available in her childhood community. Since the Census only reports information on counties with sufficiently large populations, the sample size is even further reduced. The effect of having a stay-at-home mother during childhood remains statistically insignificant.

Columns (2) and (4) show that incorporating information on the percentage of men in prestigious occupations leads to statistical significance on the county variables. Women who grow up in counties with a high percentage of women in prestigious occupations are significantly less likely to pursue their father's occupation. In contrast, women who grow up in counties with a high percentage of men in prestigious occupations are actually more likely to pursue their father's occupation.[13] Columns (5) and (6) perform the same analysis, using whether a woman takes her mother's occupation as the dependent variable. The pattern does not extend to whether a woman takes her mother's occupation, as none of the relevant coefficients is statistically significant.

Table 2.10 repeats this analysis for male respondents. Despite having significantly more observations in each regression, few of the coefficients on county data regarding childhood role models are statistically significant. Columns (1) and (2) analyze the impact on the respondent choosing his father's occupation. In contrast to the findings of Table 2.9 on women, these regressions show no impact of the prestigious occupations of men or women in his county. Interestingly, there are statistically significant coefficients in columns (3) and (4), which analyze the male respondent's choice to pursue his mother's occupation. The higher the percentage of women in prestigious occupations in his childhood county, the less likely he is to pursue his mother's occupation.

Since it is not clear whether parents' human capital would lend their children an advantage to their occupation or their industry, I continue my analysis on industry instead

13. There is a concern that these variables may be proxies for the availability of prestigious jobs to the women. Table A.11 repeats the analysis for women in prestigious occupations and finds the same patterns.

Table 2.9: *Effect of Childhood Role Models on Whether a Woman Takes Her Parent's Occupation*

Women	Father's Occupation				Mother's Occupation	
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	Probit	Probit	OLS	Probit
Mother Not Occupational	-0.00502	-0.0725	-0.184	-0.164		
Role Model	(0.0210)	(0.203)	(0.268)	(0.272)		
Percentage Women in Prestige	-0.469	-1.733**	-5.491	-22.08**	-0.701	-12.16
	(0.332)	(0.673)	(3.988)	(8.735)	(0.803)	(12.15)
Percentage Men in Prestige		0.657**		7.795**	0.283	8.876
		(0.305)		(3.546)	(0.363)	(6.002)
Women in Stay at Home	0.0491	-0.0725	(2.371)	-1.269	0.146	-0.775
	(0.196)	(0.203)	(0.268)	(2.726)	(0.242)	(4.400)
Age	-0.000162	-0.00160	-0.00224	-0.0179	-0.00443*	-0.0313
	(0.00180)	(0.00191)	(0.0225)	(0.0248)	(0.00226)	(0.0377)
Constant	-0.0292	0.0643	-4.873	-3.521	1.006***	0.875
	(0.314)	(0.316)	(222.8)	(170.1)	-0.701	(2.153)
Dummies:						
Race, Hispanic Origin, State Grew Up	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes
Observations	627	627	382	382	627	198
R-squared	0.099	0.106	0.130	0.153	0.120	0.119

Standard errors in parentheses
*** *p<0.01*, ** *p<0.05*, * *p<0.1*
Source: Panel Study of Income Dynamics, public use data set *(2012)*
Sample is restricted to women within ages 23 to 65 who are currently working. We drop respondents who answered "Don't Know" to both their parents occupations. "College" indicates that respondent has at least a college degree. County information is assigned to the census year in which the respondent was eight- to sixteen-years-old.

Table 2.10: *Effect of Childhood Role Models on Whether a Man Takes His Parent's Occupation*

Men	Father's Occupation		Mother's Occupation	
	(1)	(2)	(3)	(4)
	OLS	Probit	OLS	Probit
Mother Not Occupational	0.0367	0.0665		
Role Model	(0.164)	(0.103)		
Percentage Women in Prestige	0.423	2.388	-0.605*	-8.026**
	(0.497)	(2.645)	(0.332)	(3.979)
Percentage Men in Prestige	-0.0670	-0.386	0.250	3.245*
	(0.232)	(1.238)	(0.155)	(1.789)
Women in Stay at Home	0.0367	0.238	0.000740	0.00606
	(0.164)	(0.909)	(0.109)	(1.263)
Age	0.000552	0.00229	-0.00162	-0.0211*
	(0.00167)	(0.00931)	(0.00111)	(0.0124)
Constant	-0.103	-8.320	0.0123	-7.232
	(0.293)	(181.1)	(0.196)	(227.9)
Dummies:				
Race, Hispanic Origin, State Grew Up	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes
Observations	1,532	1,441	1,532	1,287
R-squared	0.046	0.0546	0.060	0.0827

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1*
Source: Panel Study of Income Dynamics, public use data set *(2012)*
Sample is restricted to women within ages 23 to 65 who are currently working. We drop respondents who answered "Don't Know" to both their parents occupations. "College" indicates that respondent has at least a college degree. County information is assigned to the census year in which the respondent was eight- to sixteen-years-old.

of occupation. Table 2.11 analyzes whether a woman chooses her father's or her mother's industry. The results are less convincing that those of Table 2.9. Columns (1) and (3) show a statistically significant negative impact of women in prestigious occupations on a woman choosing her father's industry. However, this effect's statistical significance lessens or disappears once the percentage of men in prestigious occupations is controlled for. Moreover, there is little impact a woman's county has on her choosing her mother's industry. If she grew up in a county with a high percentage of stay-at-home mothers, she is more

likely to pursue her mother's industry. Table 2.12 shows no significant patterns for men choosing either of his parents' industries.

2.8 Conclusion

I have observed several interesting trends in job inheritance. Women whose mothers have worked in the labor market are significantly more likely to be in the labor force. Moreover, job inheritance is very gender-biased: women are more likely to inherit from their mothers; sons, from their fathers. When I consider all occupations, working women are not more likely to have inherited their fathers' occupations if their mother was a stay-at-home mom. This is to their deteriment since women who inherited a career from their father earn significantly more than those who do not.

On the other hand, women in competitive careers are significantly more likely to inherit a career from their fathers. These women are more likely to enter their fathers' occupations if their mothers stayed at home. There are clear advantages to this choice. Even when I restrict my attention to those in competitive careers, women earn significantly more if they are in their father's occupation.

These trends are suggestive but not conclusive, since my regressions lack statistical significance. Thus, it is not clear whether these trends are explained by some other correlated variable.

Looking more generally at the county in which respondents grew up yields very interesting results. Women are unique in their job inheritance, especially in pursuing their fathers' occupations. Women who grow up in a county with many female occupational role models in prestigious occupations are significantly less likely to have their fathers' occupations. In contrast, counties with a high percentage of male role models in prestigious occupations produce women who inherit their fathers' jobs. This pattern seems more relevant to occupation than industry. Moreover, this does not apply to whether a woman pursues her mother's occupation. This trend is also not seen in the male respondents.

Table 2.11: *Effect of Childhood Role Models on Whether a Woman Takes Her Parent's Industry*

Women	Father's Industry				Mother's Industry	
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	Probit	Probit	OLS	Probit
Mother Not Occupational	-0.00521	0.209	0.0129	0.0146		
Role Model	(0.0253)	(0.246)	(0.217)	(0.217)		
Percentage Women in Prestige	-0.793**	-1.125	-8.187**	-12.54*	0.670	2.382
	(0.399)	(0.814)	(3.558)	(7.110)	(0.990)	(6.106)
Percentage Men in Prestige		0.172		2.112	-0.322	-1.590
		(0.369)		(2.962)	(0.448)	(2.849)
Women in Stay at Home	0.241	0.209	(1.951)	2.782	0.496*	2.590
	(0.236)	(0.246)	(0.217)	(2.000)	(0.299)	(1.701)
Age	-0.00446**	-0.00484**	-0.0508***	-0.0572***	-0.00607**	-0.0380**
	(0.00216)	(0.00231)	(0.0193)	(0.0215)	(0.00279)	(0.0164)
Constant	0.950**	0.974**	-3.533	-3.192	-0.117	-3.725
	(0.378)	(0.381)	(180.6)	(168.7)	(0.464)	(171.1)
Dummies:						
Race, Hispanic Origin, State Grew Up	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes
Observations	627	627	455	455	627	577
R-squared	0.148	0.148	0.153	0.155	0.082	0.0916

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1*
Source: Panel Study of Income Dynamics, public use data set *(2012)*
Sample is restricted to women within ages 23 to 65 who are currently working. We drop respondents who answered "Don't Know" to both their parents occupations. "College" indicates that respondent has at least a college degree. County information is assigned to the census year in which the respondent was eight- to sixteen-years-old.

Table 2.12: *Effect of Childhood Role Models on Whether a Man Takes His Parent's Industry*

Men	Father's Industry		Mother's Industry	
	(1)	(2)	(3)	(4)
	OLS	Probit	OLS	Probit
Mother Not Occupational	0.271			
Role Model	(0.174)			
Percentage Women in Prestige	0.428		0.421	1.966
	(0.527)	(2.562)	(0.527)	(2.560)
Percentage Men in Prestige	0.0938	0.435	0.0930	0.430
	(0.246)	(1.199)	(0.246)	(1.199)
Women in Stay at Home	0.271	1.274	0.276	1.307
	(0.174)	(0.870)	(0.174)	(0.868)
Age	-0.00155	-0.00830	-0.00138	-0.00737
	(0.00177)	(0.00890)	(0.00176)	(0.00884)
Constant	-0.124	-9.170	-0.124	-9.136
	(0.311)	(386.3)	(0.311)	(388.1)
Young Cohort	Yes	Yes	Yes	Yes
Dummies:				
Race, Hispanic Origin, State Grew Up	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes
Observations	1,532	1,474	1,532	1,474
R-squared	0.045	0.0510	0.044	0.0501

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1*
Source: Panel Study of Income Dynamics, public use data set *(2012)*
Sample is restricted to women within ages 23 to 65 who are currently working. We drop respondents who answered "Don't Know" to both their parents occupations. "College" indicates that respondent has at least a college degree. County information is assigned to the census year in which the respondent was eight- to sixteen-years-old.

Chapter 3

A Closer Look at Private Schools' Role in Rural Southern Segregation

3.1 Introduction

It too often goes unsaid that the American school system is still segregated, even though most Americans would claim that the battle was won by the 1980's. Though in less extreme conditions than during the 1960's, school children are still separated by race. Throughout the United States, this primarily occurs because of residential segregation. But there exists a unique pattern and opportunity in the heart of the South, its rural communities. There, segregation occurs largely through the presence of private schools. This is fascinating in that different races can live relatively near each other but never go to school together. Also, it seems uniquely easy to remedy. The better we can understand this phenomenon, the more easily we can curtail some of the harmful impacts of segregation across the South.

This paper focuses on the rural South and analyzes trends in segregation due to private schools. I also consider the possibility that segregation due to private schooling causes communities to devote fewer resources to public school students. My analysis does find that decreases in student resources have a significant negative relationship to this type of segregation, especially when using instrumental analysis. In Section 3.2, I briefly describe

the history concerning desegregation across America. Section 3.3 surveys the literature concerning this phenomenon and motivates this research. I further develop this motivation in Section 3.4 and then describe the data in Section 3.5. The data I am using is unique in the level of detail concerning schools' student populations over a sustained period of time. Section 3.6 analyzes the segregation in rural South as a result of private schools over time and measures its relationship to school resources. Section 3.7 concludes.

3.2 Background

Desegregation in school systems is often referred to as the most important change in the American education system within the last century. For much of this period, the ghost of slavery still permeated southern life. Despite legal emancipation, most freed slaves and their descendants chose to remain in the South. In 1920, 85.2% of blacks lived in the South, and by 1960 this figure was still as high as 59.9%.[1] As a result of the Jim Crow laws legislated after Reconstruction, these African Americans faced discrimination at every turn: segregated bathrooms, bans on interracial marriage, restrictions from voting, and even death at the hands of the Klu Klux Klan. One noteworthy discriminatory practice was the segregation of southern public school systems. Legal, or *de jure*, segregation of schools was instrumental in maintaining the abject conditions that southern African Americans faced every day.

Like all other segregated facilities, black schools compared dismally to white schools. In 1896, the Supreme Court ruled in Plessy v. Ferguson that segregated school systems were legal as long as they were "separate but equal." A simple measure of per student expenditures reveals that this was hardly the case. In fact, the black-white gap in student resources was larger in districts with higher black shares of enrollment (Reber 2011). Money was allocated to schools on a per student basis, and school districts with more black students simply diverted the funds into white schools. It is a testament to these schools' blatant inferiority that the National Association for the Advancement of Colored People (NAACP)

1. These statistics include border states.

was able to win several cases across a white-supremacist South by proving that specific school districts were unequal. Throughout the early twentieth century, however, the NAACP was only able to make changes district-by-district. As a result, southern blacks remained relatively uneducated. In 1960, the average black man had only completed eight years of schooling, whereas the average white man had completed almost eleven (Smith and Welch 1989).

True change began with Brown vs. Board of Education in 1954. The Supreme Court ruled that legally segregated school systems were, in fact, "inherently unequal" and therefore unconstitutional. Nominal changes in segregation occurred, with the South begrudgingly opening the doors of its white schools to a select few black students. White Southerners had no incentive to further integrate. It was not until the Civil Rights Act of 1964 that the United States government could threaten to withhold Title I funding from any discriminating schools. Since Title I funding is allotted based on the percentage of students from low-income families, the relatively impoverished South had no choice but to speedily eliminate the dual school system[2] (Cascio et al. 2010).

While school segregation was most extreme and influential in the South, the North had its own period of desegregation as well. As a result of financial and legal pressure, southern public schools became the most integrated, de facto, in the United States by the 1970's[3] (Boozer, Krueger, and Wolkon 1992). The Supreme Court attacked de facto segregation in Keyes v. Denver. It ruled that school segregation that resulted from residential patterns, as it often did in the North, was also unconstitutional. The rest of America spent the 1970's scrambling to satisfy the Supreme Court's standards by creating magnet schools and busing within school districts.

Unsurprisingly, parents and communities across the United States were unhappy with

2. George Wallace, the governor of Alabama, was fully aware of how pertinent this threat was. He promoted segregation within his own state by offering to offset any Title I losses (Cascio et al. 2010).

3. Here, integration is not a legal state but a practical one. For example, a school district would be considered quite integrated, de facto, if the average black student attends school with a student body consistent with the racial makeup of the school district.

the courts disrupting their comfortable, racially homogeneous worlds. The mob that resisted the Little Rock Nine and the Ole Miss Riot of 1962 typified the virulent and sometimes deadly response to desegregation in the South. However, Southerners also openly defied desegregation in less violent ways. In 1959, Prince Edward County of Virginia enacted a Massive Resistance by cutting off all funds to its public school system instead of integrating it. For five years, white children attended hastily created private schools, funded by state grants and local tax credits. While this is the most extreme example, "segregation academies" became a common occurrence throughout the South. In particular, from 1968 to 1970, the number of children enrolled in Mississippi private schools rose by 170%, resulting in a full 20% of white students attending a private school (Clotfelter 1976).

3.3 Segregation: What We Know

It is important to keep in mind that "white flight," the exodus of white children from integrated schools either through private schooling or physically moving to a white suburban school district, occurred throughout the entire United States, not just the South. This is actually where a bulk of the literature on segregation lies. Boustan (2010, 2016) exploits the predictability of the Great Migration to estimate the magnitude of white flight to the suburbs as a direct result of an increasing urban black population. She finds that, within Northern cities, 2.7 white people fled to the suburbs for every one black migrant. Thus, the suburbanization of the mid-twentieth century was not simply a long term trend coincidental with the Great Migration, as some had hypothesized. In contrast, Baum-Snow and Lutz (2011) analyze regional responses to desegregation and find that, within major cities, Southerners fled to the suburbs and that people from other regions responded by enrolling in private schools. These results are not statistically significant. They do find, however, that black private school enrollments declined in southern central districts. Moreover, while it is easy to argue that all of America reacted badly to desegregation, Boustan (2012) finds that the South reacted quantifiably more strongly. She is able to estimate, via housing prices on either sides of district lines, that Northern urbanites were four times less resistant to

desegregation than Southerners.

Authors have also analyzed broad trends in segregation over time. Cascio et al. (2008) provide a comprehensive timeline of the court's supervision of Southern desegregation. They also show that districts with high percentages of black residents and votes for segregationist presidential candidate Strom Thurmond fell significantly behind in their desegregation. Boozer, Krueger, and Wolkon (1992) analyze trends in segregation between the 1960's and 1990. They find that racial segregation is the highest in the Northeast, not the South, but that it has been rising in both these areas since 1970. Orfield et al. (1997) find that segregation in the South has increased more rapidly than segregation in any other region, causing the national average to increase as well. The majority of these segregation trends result from patterns in major cities.

Most research cannot calculate segregation measures from units smaller than a school district. One exception is Clotfelter, Ladd, and Vigdor (2003). Using a uniquely detailed data set of North Carolina schools, they are able to measure classroom segregation as well as district segregation. They find that district segregation measures systematically understate actual segregation, since classes differ in their racial compositions. However, district segregation and classroom segregation are highly correlated. Within-school measures are much more important in explaining middle and high school students' segregation (50%) than in explaining elementary students' segregation (20%).

Many studies analyze trends in residential segregation. Bayer, McMillan, and Rueben (2005) find evidence that racial sorting in San Francisco perpetuates black-white differences in students' school quality. Even wealthy blacks are very likely to choose to live within low quality neighborhoods with large black populations instead of whiter areas with better schools. These residential patterns are very likely allowing inter-generational persistence of racial educational differences. Similarly, Boustan (2007) finds that from 1940 to 1970 white people paid higher housing prices to live in all-white neighborhoods and that there is some evidence that black families were more eager to live in diverse neighborhoods. Cutler, Glaeser, and Vigdor (1999) find that from 1940-1970 blacks did prefer to live with

other blacks. However, they find that blacks prefer to live in whiter neighborhoods by 1990. Benabou (1996) models the transition from de jure segregation to de facto segregation and shows that local school expenditures and taxes are an additional segregating force. Benabou emphasizes that segregation is much harder to undo the longer it persists, and so it is imperative to redress it as quickly as possible.[4]

Most studies concerning segregation have either ignored or trivialized the role of Southern private schools. Clotfelter (2004b, 2004a) however, points out that the South seems to have a unique relationship with private schools. In 1960, the South had a private school enrollment rate of only 5.0%, while the national average was 13.6%. Even as the national average declined, the South has been the only region with increasing enrollment in private schools. During the height of political heat concerning desegregation, non-Catholic private school enrollment doubled, with the most rapid growth within the South (Clotfelter 1976). For example, from 1965 to 1970, the share of white students in private schools in Louisiana increased by 8 percentage points, nearly doubling (Reber 2011). This represented a permanent shift, as enrollment did not decrease during the 1970's. Clotfelter (2004b) shows that the Northeast's relatively high amount of private school enrollment is due primarily to high enrollment rates in metropolitan areas. Indeed, within metropolitan areas, the Northeast and Midwest have the highest measures of segregation, and private schools only contribute 16% of segregation. The majority of the segregation in these areas can be attributed to differences in the racial makeup of public school districts. However, a very different type of segregation occurs in the South. For nonmetropolitan areas, the South has the highest segregation indices by far. Moreover, within these areas, private schools account for 42% of total segregation. Reber (2011) estimates that students' switching to private schools accounted for 60% of white flight in Louisiana during the 1960's.

Why does the South have this unique relationship between segregation and private schools? School districts with higher shares of public enrollment that were black before

4. Analyzing residential segregation, Cutler, Glaeser, and Vigdor (1999) also find that segregation is highly persistent. Across a century, this type of segregation has a correlation of 0.5.

desegregation had significantly higher percentages of white students enrolled in private schools afterwards (Reber 2011). Clotfelter (1976) proposes a theory to explain this relationship. When black enrollment reaches a "tipping point," this relationship between private school enrollment and percentage of public school students who are black becomes much more pronounced. Analyzing Mississippi data, Clotfelter finds a tipping point of 60%. Interestingly, the relationship between private school enrollment and income is unclear, suggesting that low income communities have higher tastes for segregated schools. A tipping point of 60% suggests that such enrollment behavior will occur primarily in the South, where the majority of districts with such large black populations are. Reber (2005) does not find a relationship between white flight and the number of existing private schools at the time of court-ordered desegregation. However, evidence presented in Clotfelter (2004a, p. 103) suggests that a bulk of the private schools white students fled to were hastily created in response to desegregation, likely due to the unprecedentedly huge increases in demand.

3.4 Motivation

Segregation as a result of private schools in the South demands more attention. A majority of African Americans still receive elementary and secondary education within the South,[5] where private schools pose the greatest threat to full integration. Most studies of segregation neglect several key characteristics of the South that make private schools so threatening. First, whereas much of the United States, particularly the Northeast, offers suburbs that allow white families to flee more fully integrated schools within the city and still maintain their current jobs, the South is still relatively rural. There are far fewer suburban alternatives, and school districts are often defined by counties. In contrast, a Northeastern county contains many school districts. Thus, private schools and home schooling are the most

5. According to the Census 2010, 56.0% of African Americans under the age of 18 live in the South. The Census defines the South as Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. If I follow Clotfelter (2004a) and exclude Delaware, Kentucky, Maryland, Oklahoma, and West Virginia, this figure becomes 49.7%.

realistic options for students fleeing interracial contact in the South.

As the studies in the previous section indicate, Southern segregation is unique. It is extremely high in non-metropolitan areas and largely due to private school enrollment patterns. We must pay particular attention to this segment of segregation, as it affects the education of a significant percentage of African Americans. Blackmon (1992) describes how his hometown of Leland, MS, slowly lost hope that integration could be achieved as nearly all white students migrated to the local private school over the last half century. As segregation across the United States has been rising, has public-private segregation also been rising in the South?

There have been many attempts to document the effects of desegregation, and research indicates that the outcomes for black students are positive. In his model, Benabou (1996) shows that the results of residential segregation are sustained racial disparities in education and slower growth of per capita income and employment. Cutler and Glaeser (1997) analyze residential segregation and find that high measures of segregation cause bad outcomes for blacks, including lower graduation rates from both high school and college and higher rates of single motherhood. This is likely because segregation separates blacks from high-quality public goods, like education. Guryan (2004) finds that southern desegregation in the 1960's had a significant beneficial impact on black students, reducing black dropout rates by two to three percentage points. Moreover, white flight in Louisiana meant that the elimination of the dual system caused school districts with higher black percentages to have significantly more revenue per pupil, instructional spending, and teachers per student (Reber 2011). However, it also meant that black students within these districts had lower increases in exposure to white students. Across the United States, white flight foiled a third of the potential decrease in segregation within a decade of court-ordered desegregation. Reber (2010) finds that within Louisiana the increase in resources was actually more important than increased integration, since students in districts with higher initial black enrollment had greater decreases in dropout rates. Smith and Welch (1989) attribute the declining black-white wage gap from 1940 to 1980 to the gains in education for black students achieved

mid-twentieth century. Orfield et al. (1997) find that, while the teacher-pupil ratio is similar for white and black students, students in schools with a higher proportion of black students receive fewer years of schooling, enter less integrated work environments and colleges, and earn lower wages. They claim that a significant portion of the rising black-white wage gap is due to differences in computer resources at schools.

The detrimental effects of racial separation have been well-documented. Many of the benefits from eliminating the dual system came from the increased financial resources for black students. But how has this evolved over time? One would expect voters in areas with large proportions of students in private schools to reduce the taxes they pay to support public schools that their children are not attending. This is the "ends-against-the-middle" result predicted by Epple and Romano (1996). This decrease in local funding could be magnified if reduced contact with black families created even more apathy towards their situations. Cutler and Glaeser (1997) propose that residential segregation can harm blacks by causing whites to use stereotypes of African Americans instead of characterizing them based on actual experience. They also suggest that racial separation can reduce whites' willingness to spend money, particularly taxes, on blacks. Thus, while white flight to private schools may have benefited black students in the 1960's, over time public school students in these areas may now be in the worst position.

Much research has shown that white people's proclivity towards segregation has always had a significant relationship to money, specifically school resources, and that this relationship has possibly been more important to desegregation than legal change. In fact, Ashenfelter, Collins, and Yoon (2006) show that Brown v. Board should be seen as a marker of change, not as a tide-turning event. Changes in educational quality occurred gradually over the last century, beginning with improvements as a result of NAACP lawsuits and the threat southern school districts feared because of them. The school quality gap had already begun to shrink by the time of desegregation, but the elimination of the dual school system also had significant impacts on blacks' income and high school completion rates. Moreover, Cascio et al. (2010) strongly support the hypothesis that Southern desegregation owed much

to the threat of withdrawn Title I funding. They show that, even after Brown v. Board, Southern schools had only nominally integrated. During the late 1960s, however, schools eligible for Title I funding were significantly more likely to desegregate. They conclude that Title I funding explains a third of the shift away from token desegregation and, by reducing the number of court orders that needed to be handed out, lessened the courts' burden by 75%. Recently, courts have been instrumental in allowing more freedom to segregate. Clotfelter, Vigdor, and Ladd (2006) analyze how racial segregation changes after school districts are released from court supervision, as a result of Board of Education of Oklahoma v. Dowell. They find that school districts that had been deemed "unitary" in the 1990's had higher measures of racial imbalance than schools still under court supervision.

The effect of segregation due to private schools on public school revenue is potentially significant. Only 10 percent of school funding comes from the federal government. On average, the rest of school funding is split around evenly between state and local funding. Most states determine how much money to give each school district by a "Foundation Formula" or "Modified Foundation Formula" (Odden and Clune 1998). The state ensures that each school district has a minimum expenditure per student, determining how much the local government needs to contribute based on ability to pay. Any expenditure above this is up to the local government.

This paper attempts to answer the following questions. What characterizes segregation that results from private schooling in the rural South? Has this specific type of segregation affected funding for public schools? Because of the racial patterns in education within the rural South, the answers to these questions could have profound impacts on the education of many African American children.

3.5 Data

For data on private schools, I use the Private School Universe Survey (PSS) from the National Center for Education Statistics (NCES). This data set's purpose is to biennially document the entire population of private schools in the United States. Each unit of observation is a

private school. Since the response rate is 90%, the results are weighted in order to correct for non-response.[6] The data provides information on the racial makeup of each school's student body for every other school year from 1999-2000 to 2011-2012. For these years, the data also provides the school's county.

To analyze public schools, I use the Common Core of Data's Public School Universe (PSU), published by the NCES. It is a comprehensive data set of all public elementary and secondary schools in the United States. For all years from 1999-2000 to 2011-2012, the data reports the total enrollment, the racial makeup of each school's student body, and whether the school receives Title I assistance. Each school also specifies its local education agency, i.e. its school district. I match each public school to the CCD's local education agency dataset, which reports financial data. This includes both amount of revenue from local sources and total revenue. The data contains no information on the public schools' test scores. I measure school resources as school revenue per student. For years prior to 2003-2004, I also use the local education agency's county as the public school's county, since this information is not reported by the school. This paper analyzes every other school year from 1999-2000 to 2011-2012.[7]

While ideal analysis would consider a much longer time-frame, the PSS is the only consistent, large data set measuring private schools. Thus, I am limited to studying only a relatively recent time period.

Since private schools are not listed by school district, I follow Clotfelter (2004a) and analyze segregation metrics by counties. Thus, I convert the CCD revenue data from the school district level to county level. I calculate average total revenue per student in a school's local education agency. I then multiply these averages by the number of students in each school to calculate total and local revenue for a school. These measures are aggregated to the

6. Results are robust to excluding the weights.

7. Since both the PSU and PSS err on the side of inclusion, I restrict my analysis to schools the average student would consider. Thus, regarding public schools, I include only self-reported "regular" and "alternative/other" schools and exclude special education, vocational, and "reportable" schools. For private schools, I restrict my analysis to "regular", Montessori, special program, early childhood, "alternative/other" schools. I drop special education and vocational schools.

county level to form estimates of total revenue within a county. Finally, also like Clotfelter, I define the South as the historical South, i.e. the former eleven states of the Confederacy. I omit Tennessee from analysis on segregation measures because data on public schools in this state was not available for all years considered.

Table 3.1 presents some summary statistics of the public and private schools for the year 2011-2012. First, note that black students attend private school at much higher rates in metropolitan areas. Only 8.57% of private school students across the nation are black, and this figure decreases to 3.19% in rural America. The black percentage in American public schools is almost twice as large at 15.60%. So, across the nation, private schools are significantly less black than the total student body. If we compare rural private schools to rural public schools, we see a similar picture. African Americans students are more than three times as common in public schools as in private schools.

These racial disparities become more extreme when we look at the South. In the entire region, African Americans make up 24.44% of public school students, one and a half times the national average. However, they make up only 10.74% of private school students. Blacks are just as represented in private schools in the South as they are in the nation at large, even though the African American student population is heavily concentrated in the South. Black students in the South are more than two times as common in public schools as in private schools. In the rural South, they are nearly five times as common. A full 84.00% of rural black students in public school reside in the South, whereas only 49.54% of rural black private school students live there.

The picture is clear: the black student in the South, especially rural South, has a much different life than African American students in other parts of the United States. She is three to five times less likely than her white peer to attend private school. The public school she attends has a much higher percentage of black students than the average private school in her region. Moreover, this story is that of the average black American. Southern black students are 49.13% of the black students in 2011-2012.

Table 3.1 also includes a brief amount of information on Title I assistance in today's

Table 3.1: *Summary of Data for Public and Private Schools by Region, 2011*

		US	Rural US	South	Rural South
Private schools					
	Total White Students	2,737,003	300,633	754,324	113,325
	Total Black Students	327,302	11,111	114,566	7,606
	Black Percent of Student Body	8.57%	3.19%	10.74%	5.81%
Public Schools					
	Total White Students	25,308,301	6,353,609	7,181,769	1,940,134
	Total Black Students	7,704,008	972,144	3,954,565	807,073
	Black Percent of Student Body	15.60%	10.62%	24.44%	23.94%
Schools receiving Title I Assistance					
	Percent of Total Students Attending	65.53%	74.11%	62.64%	72.86%
	Percent of Black Students Attending	72.24%	73.63%	67.76%	74.20%
	Percent of Public Schools Eligible	73.07%	77.97%	70.60%	78.66%
Private School Students	Percent at Religious School	82.07%	81.49%	77.57%	69.57%
	Percent at Catholic School	43.94%	31.31%	27.56%	13.65%
Black Private School Students	Percent at Religious School	81.54%	76.20%	80.82%	79.40%
	Percent at Catholic School	37.32%	20.29%	19.64%	16.69%

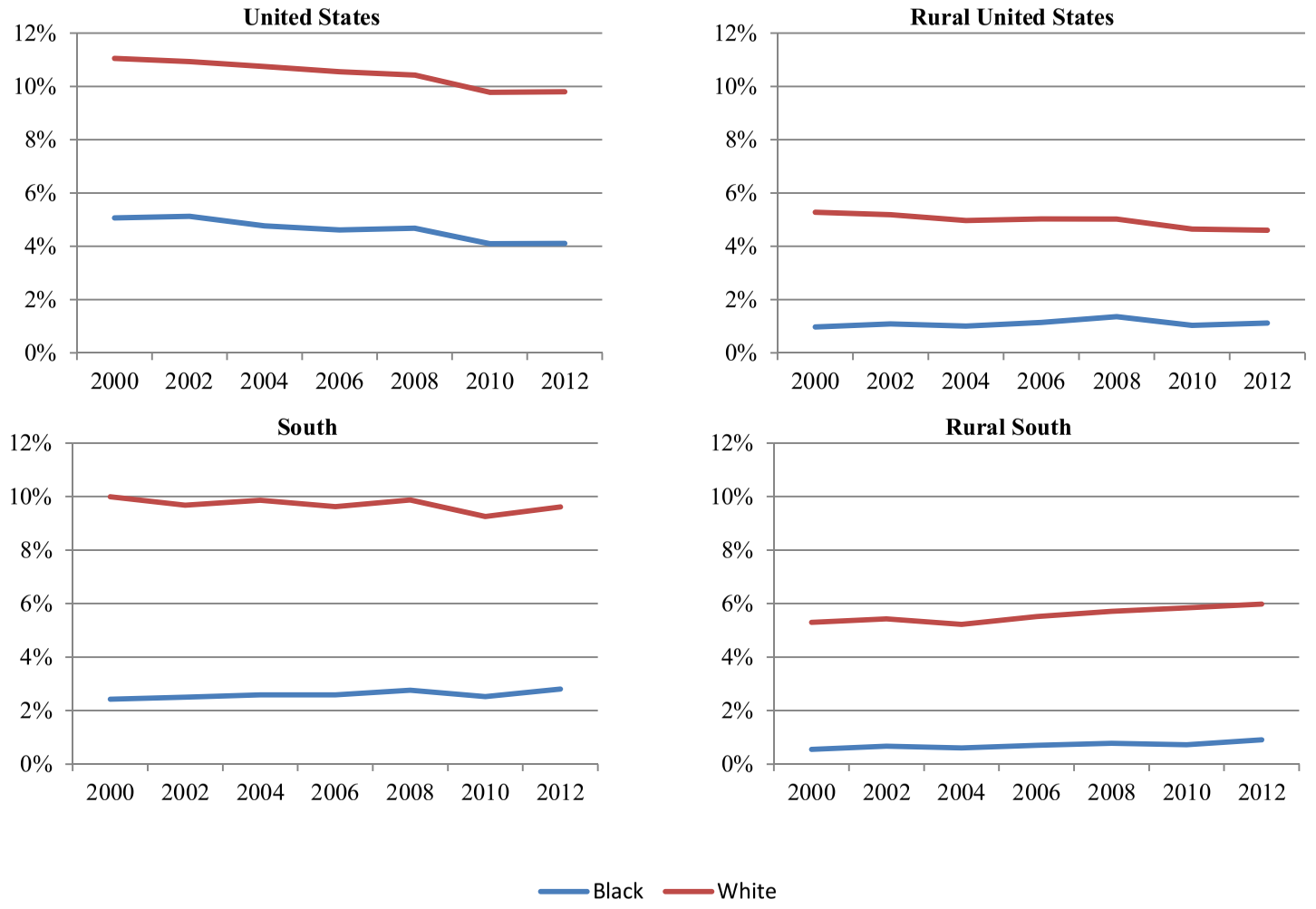
Source: Common Core of Data, PSU (2016) *and* PSS (2016).
Data covers school year 2011-2012. Private School Data is weighted to correct for non-response.

schools. Whether a school receives Title I assistance provides a glimpse at the poverty levels of these schools. The data shows that rural schools are only slightly more likely to receive this funding. And while rural Southern blacks are the most likely to attend Title I funded schools, for the most part each region is very similar with regards to this statistic. In fact, in the rural U.S. and the rural South, black students just as likely to attend Title I assistance schools as the general student population.

Finally, Table 3.1 includes information regarding religious private schools. One might worry that white students are more likely to attend private schools for religious reasons, and that segregation due to private schools merely reflects different attitudes among races concerning religion and education. It is particularly important to address this explanation for the rural South, which is known for its religiosity. However, the data does not support this counterargument. Across the United States, the vast majority of private school students are attending religious schools, but the percentage is actually smaller for students in the rural South. Therefore, religious private schools are less pertinent in the region this paper studies. More importantly, the differences between races contradict this potential counterargument. White and black private school students attend religious schools in equal proportions across the Unites States. In contrast, Southern black private school students are actually more likely to attend religious schools than their white counterparts. This is true for Catholic schools as well, but these schools are less common in the rural South than in the rest of the United States. Thus, any segregation due to private schools in the South cannot be explained by white students' proclivity for religious education.

Although observable trends will be limited by only using seven school years of data, Figure 3.1 presents several time series for the percentages of black and white students in private schools. Clearly, African Americans enroll in private schools at a much lower rate than do whites. The disparity in rates is most pronounced in the South. Other patterns, though too slight to be interpreted as significant, are consistent with the analysis in Clotfelter (2004a). In the United States as a whole, the percentage of students in private schools has been declining from 1999-2000 to 2011-2012. This holds true for both races. White private

Figure 3.1: *Percentage of Students in Private School, by Race*



Source: Common Core of Data, PSU (2016) *and* PSS (2016).
Data covers school years 1999-2000, 2001-2002, 2003-2004, 2005-2006, 2007-2008, 2009-2010, and 2011-2012. Private School Data is weighted to correct for non-response. All Tennessee data is dropped because this state did not report racial makeup of public schools for years 1999-2000, 2001-2002, and 2003-2004.

school enrollment in the South exhibits no clear trend, whereas southern black private-school-enrollment is slightly increasing. In contrast, private school enrollment seems to be increasing for black students but decreasing for white students in rural America. Finally, the rural South shows increasing private school enrollment for both races but with larger increases for white students. Once again, the rural South shows unique patterns with regards to private school enrollment.

3.6 Analysis of Segregation due to Private Schools

By far, the most common and useful measure of a location's segregation is the gap-based segregation index. This measure uses the exposure rate of white students to black students. This is defined as the percent of non-white students at the typical white student's school. To standardize this measure, it is compared to the maximum exposure rate a white student could achieve: the non-white percentage in the area. So, a segregation index of zero indicates complete integration, while an index of one occurs when whites are completely separated from any nonwhites.

Mathematically, the exposure rate for an area is defined as

$$E = \frac{\Sigma W_j n_j}{\Sigma W_j}$$

where W_j is the number of whites in school j and n_j is its non-white percentage. To standardize the exposure rate in order to make it useful for area comparisons, one calculates the gap-based segregation index as

$$\frac{n - E}{n}$$

where n is the area's non-white percentage.

As Clotfelter (2004a, p. 210) details, this segregation index is particularly useful because it can be broken down into four sources: racial disparities within districts, racial disparities between districts, segregation among private schools, and public-private racial disparity.[8]

8. For equations defining the four components of segregations, see Clotfelter (2004b, p. 211).

Critical to the analysis in this paper is the fact that all of these measures of segregation are independent of a county's racial composition. Much attention has been paid to the segregation due to racial disparities between districts, which is the primary cause of most American segregation Clotfelter (2004b). I am primarily concerned with segregation involving private schools, the sum of the last two portions of segregation. To calculate it, imagine the following hypothetical scenario. All public schools have the same racial composition, but there are differences between public and private schools and differences among private schools. With this scenario, one can isolate the racial separation of students that is due to the existence of private schools in an area. I calculate the gap-based segregation measure due to private under these assumptions.

The segregation index due to private schools simplifies to

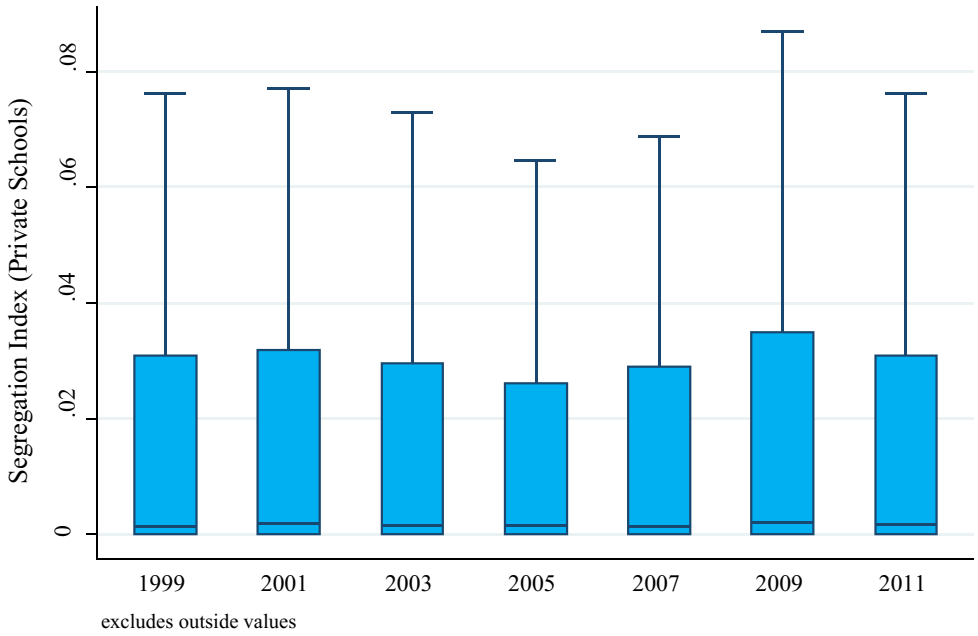
$$S^{private} = \frac{n - \frac{n_1 W_1 + E_2 W_2}{W_1 + W_2}}{n}$$

Here, n is the racial composition of the county and n_1 is the racial composition of the public schools. W_1 is the number of white students in public schools, and W_2 is the number of white students in private schools. Finally, E_2 is the exposure rate within private schools. The segregation measure that I analyze in this paper is $S^{private}$.

I use a county as the unit of observation to study segregation.[9] Figure 3.2 is a box plot detailing trends in segregation due to private schooling over time. While the average values are too low to show any real pattern, the ranges of the measure in Figure 3.2 do suggest that segregation due to public schooling does not have a trend. This negative time trend is not significant across the sample or for any state. Outliers are omitted from the box plot, but for every year, outliers reach all the way to complete segregation. For example, in 2007, the highest measure of private school segregation was in Wilcox County, AL. There are 2,548 students in the county and 312 white students. Only 7 of these white students attend public school.

9. Virginia allows cities to register as "independent cities," acting as their own county. I absorb these independent cities into the surrounding county and recode the surrounding county as metropolitan if the independent city was considered a metropolitan area.

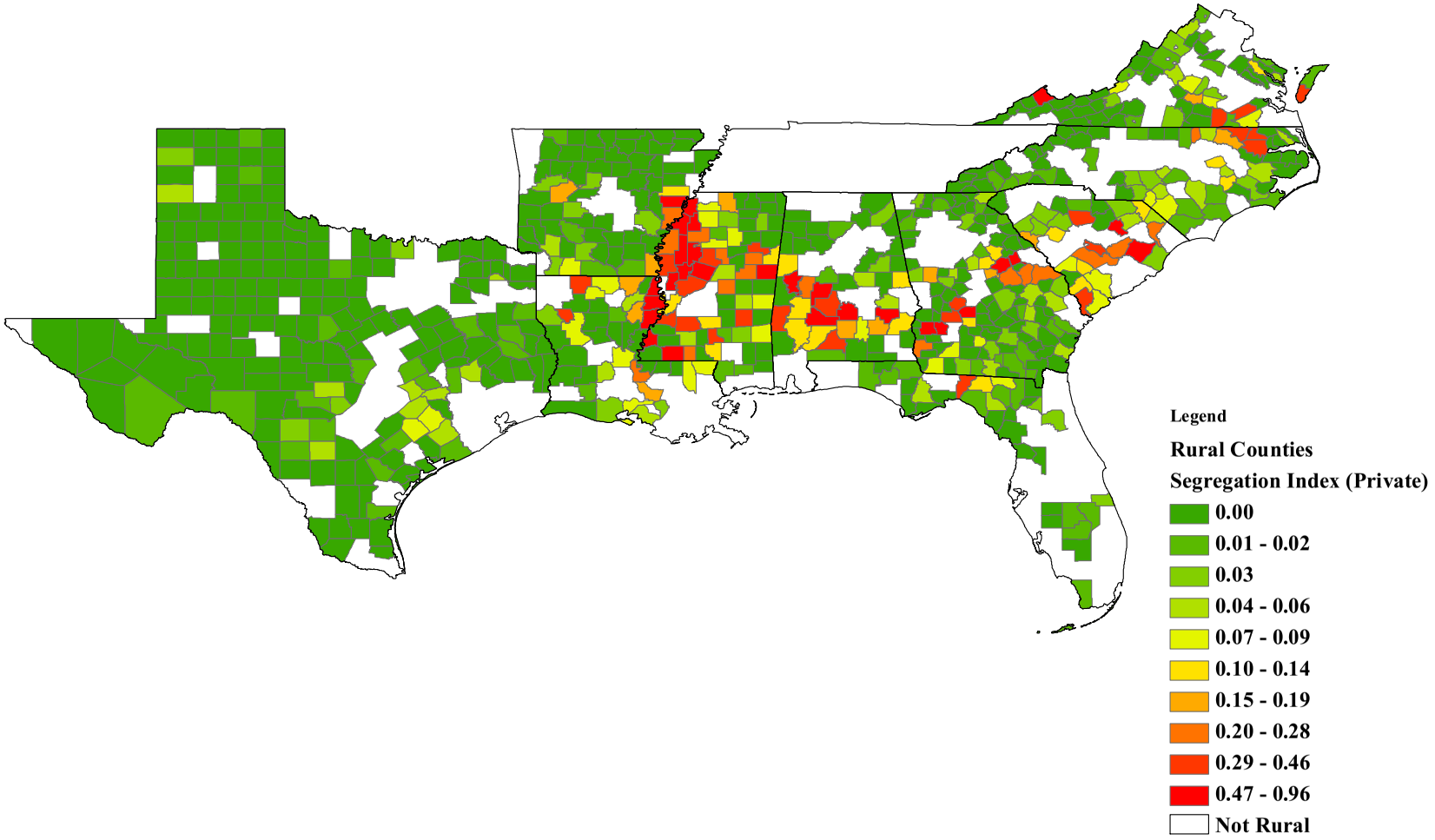
Figure 3.2: *Segregation Index for Rural South, 1999 to 2011*



Source: Common Core of Data, PSU (2016); PSS (2016); *and author's calculations.*
Each observation is a county in the rural South. The box delimits the upper and lower quartiles. Data covers school years 1999-2000, 2001-2002, 2003-2004, 2005-2006, 2007-2008, 2009-2010, and 2011-2012. Private School Data is weighted to correct for non-response. All Tennessee data is dropped because this state did not report racial makeup of public schools for years covered in analysis.

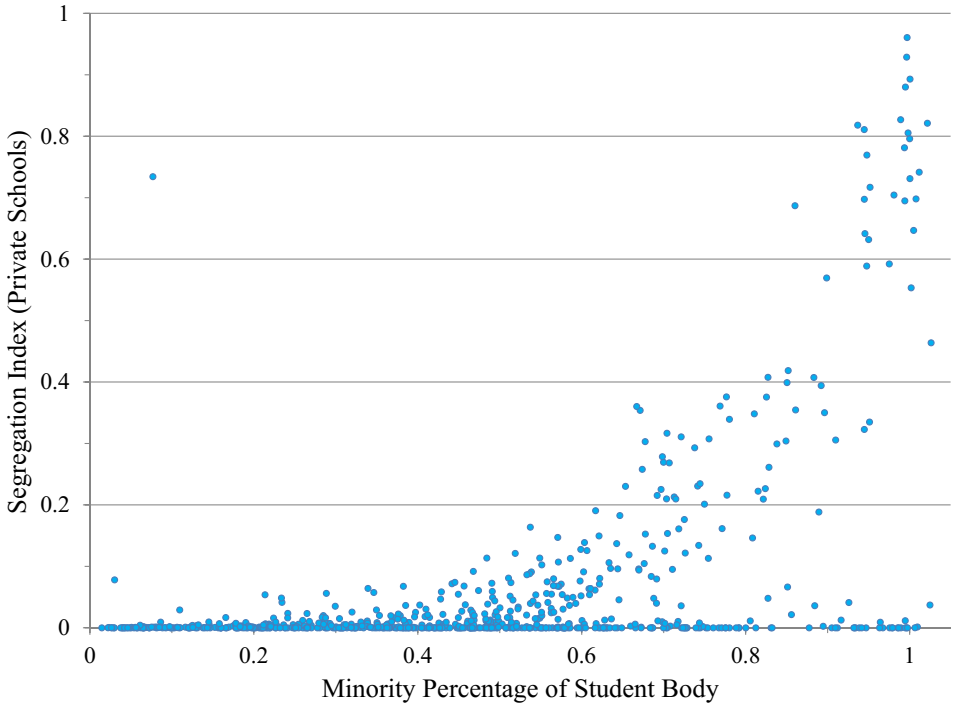
We can observe the geographic trends for private school segregation in the rural South in Figure 3.3. First and foremost, it is obvious that private schools cause the most segregation in the Cotton Belt. The largest amounts of segregation due to private schools cluster along the Mississippi river, but high levels spread eastward and continue up along the coast to Virginia. There are two reasons why one might expect this. First, because of cotton production, many black slaves were brought to the Cotton Belt. While many African Americans emigrated from the South in the 20th century, some still remained. Thus, there are large populations of black students in this region. Second, because of this region's history with slavery, these are the areas that may be particularly infected with racism. For a contrasting example, the southwestern corner of Texas has large populations of minority students, and yet there are very small levels of segregation in these areas. This finding is consistent with previous

Figure 3.3: *Map of Segregation Due to Private Schools in Rural Southern Counties, 2011-2012*



Source: Common Core of Data, PSU (2016); PSS (2016); *and author's calculations.*
Each observation is a county. Data covers school year 2011-2012. Private School Data is weighted to correct for non-response. All Tennessee data is dropped because this state did not report racial makeup of public schools for years considered in analysis.

Figure 3.4: *Segregation Index (Private Schools) and Student Body Racial Composition, 2011-2012*



Source: Common Core of Data, PSU (2016); PSS (2016); *and author's calculations.*
Each observation is a county in the rural South. Data covers school year 2010-2012. Private School Data is weighted to correct for non-response. All Tennessee data is dropped because this state did not report racial makeup of public schools for years considered in analysis.

research, which shows that white students are more segregated from black students than from any other non-white group (Clotfelter, Ladd, and Vigdor 2003). Finally, note that since the highest levels of private school segregation are contained within Mississippi and Alabama (two of the poorest states in the U.S.), segregation cannot be driven primarily by income. It may also be related to educational quality, since these two states are notorious for their poor education.

Figure 3.4 is consistent with previous research on the relationship between private school segregation and the proportion of the student population that is black. For some counties, the segregation measure and minority percentage is strongly correlated, especially after 60% of the student body is a racial minority. These areas are concentrated in the Cotton Belt,

Table 3.2: *Means of Data used in Regression Analysis*

Segregation Due to Private Schools	0.0638
	(0.164)
Revenue Per Student	9,447
	(5,350)
Median Income * 10^{-3}	33.07
	(6.634)
Percentage in Poverty	19.60
	(6.018)
Percentage Non-White, Student Body	42.36
	(24.01)
Total County Student Population * 10^{-3}	4.529
	(4.022)
Percent Votes for Thurmond, 1948	27.56
	(28.93)
Percent Votes for Bush, 2000	57.23
	(12.34)

Source: Common Core of Data, PSU (2016); PSS (2016); *and author's calculations.*
Each observation is a county in the rural South. Data covers school year 2010-2012. Private School Data is weighted to correct for non-response. All Tennessee data is dropped because this state did not report racial makeup of public schools for years considered in analysis. Standard Deviations in parentheses.

where minority populations are primarily black. However, there are other counties that seem unaffected by the racial composition of their student bodies. These low segregation measures for large minority populations are primarily in Texas, where minority students are usually Hispanic.

Table 3.2 reports means and standard errors for all variables used in the regression analyses that follow.

Table 3.3 uses the NCES's School District Finance Survey to characterize the relationship between county characteristics and our measures of interest: segregation due to private schools and public school resources. I calculate school resources as the total revenue acquired by public schools divided by the total number of public school students. Since the Foundation Formula for school requires a minimum amount of local funding per student, any increase in revenue per student will reflect what the median voter is willing to pay

Table 3.3: *Determinants of Per Student Revenue and Segregation due to Private Schools*

	(1)	(2)	(3)	(4)	(5)
	Revenue Per Student	Segregation Due to Private Schools			
Median Income * 10^{-3}	178.6***	-0.00787***			-0.00186**
	(47.57)	(0.00111)			(0.000807)
Total County Student Population * 10^{-3}	-300.4***		-0.00385***		-0.00149
	(43.19)		(0.00103)		(0.000932)
Percentage Non-White, Student Body	8.972			0.000912***	0.000790***
	(8.964)			(0.000183)	(0.000208)
Percentage Non-White, if > 60%	5.642			0.00320**	0.00288*
	(25.65)			(0.00151)	(0.00151)
Constant	1,330	0.367***	0.181***	0.0855***	0.149***
	(1,290)	(0.0533)	(0.0408)	(0.0263)	(0.0360)
Observations	5,026	5,029	5,029	5,029	5,029
R-squared	0.286	0.232	0.172	0.375	0.380

Source: Common Core of Data, PSU (2016); PSS (2016); Common Core of Data, Finance Survey (2016); *and author's calculations.*
*Robust standard errors in parentheses, clustered at the county level. Each observation is a county in the rural South. Each regression includes dummy variables of the observation's state and year. Total Student Population includes both public and private school enrollment. Data covers school years 1999-2000, 2001-2002, 2003-2004, 2005-2006, 2007-2008, 2009-2010, and 2011-2012. Private school data is weighted to correct for non-response. Includes control for whether non-white percentage of student body is greater than 60%. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

above that amount. Thus, I control for the median income of each county, as reported by the U.S. Census each year. We should expect to see that counties with higher incomes will raise more revenue for public school students, as regression (1) confirms. Note also that school revenue per student is smaller in counties with more students. Interestingly, the relationship between student resources and the proportion of minority students in a county is not statistically significant.

We can also observe how segregation relates to county characteristics. Segregation due to private schools is significantly negatively related to median income, even once we include the full set of controls. This is consistent with the finding in Clotfelter (1976) that low-income communities may have a taste for segregation. Segregation due to private schools has a significant positive relationship to racial composition and no robustly significant relationship with student body size. Clotfelter, Ladd, and Vigdor (2003) also find that segregation increases with the proportion of non-white students. Table 3.3 also finds that the tipping point of sixty percent in Clotfelter (1976) and observed in Figure 3.4 is significant.

I then examine whether this segregation measure negatively impacts school resources. Table 3.4 uses OLS regressions to determine a relationship between segregation due to private schools and public school revenue per student. Regression (1) shows that when we simply regress segregation due to private schools on student resources, there is a significant negative relationship. Regressions (2) through (4) control for other county characteristics. By controlling for median income within a county, we control for the student resources the median voter could afford. Adding only this control takes away the significant coefficient on student resources, but adding controls for the racial makeup of the student body causes the relationship to become significant again. Regression (4) shows that the percent of a county's population in poverty is also an important control. Adding county fixed effects to the OLS regression with the full set of controls reveals the relationship between trends in variables. As can be seen in regression (5), the relationship between segregation due to private schools and revenue per student is not robust to including county fixed effects.

While it may be that white flight to private schools may be decreasing public school

Table 3.4: *Regressions of Segregation Due to Private Schools on School Resources*

	(1)	(2)	(3)	(4)	(5)
	Revenue per Student				
Segregation Due to Private Schools	-668.8***	170.4	-1,460*	-1,178*	-635.4
	(252.9)	(524.4)	(809.3)	(684.1)	(820.0)
Median Income * 10^{-3}		80.48*	111.5**	22.20	360.5***
		(43.84)	(44.52)	(90.34)	(89.87)
Percentage in Poverty				-241.3**	-75.85**
				(102.6)	(30.60)
Percentage Non-White, Student Body			2.937	24.20**	41.37
			(9.381)	(10.11)	(29.71)
Percentage Non-White, if > 60%			5.076	34.48	69.71
			(26.83)	(23.86)	(55.00)
Total County Student Population * 10^{-3}				-280.9***	-827.3***
				(41.25)	(130.7)
Constant	5,131***	2,893**	1,895	9,516**	-817.3
	(132.7)	(1,253)	(1,338)	(3,982)	(3,281)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes	No
County Fixed Effects	No	No	No	No	Yes
Observations	5,026	5,026	5,026	5,026	5,026
R-squared	0.230	0.236	0.245	0.300	0.821

Source: Common Core of Data, PSU (2016); PSS (2016); Common Core of Data, Finance Survey (2016); *author's calculations.*
*Robust standard errors in parentheses, clustered at the county level. Each Observation is a county in the rural South. Total Student Population includes both public and private school enrollment. Data covers school years 1999-2000, 2001-2002, 2003-2004, 2005-2006, 2007-2008, 2009-2010, and 2011-2012. Private School Data is weighted to correct for non-response. Includes control for whether non-white percentage of student body is greater than 60%. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

resources, there is another explanation for the relationship. It may be that poor public school resources spur parents to send their students to private schools, if they can afford them. Since whites typically earn more money than black workers in the South, de facto racial segregation may simply be a reflection of disparate resources. In order to correct for this endogeneity, I use a county's votes for segregationist candidate Strom Thurmond as a measure of poor attitudes towards minoritiesClubb, Flanigan, and Zingale (2016). This is the same measure used by Cascio et al. (2008), who show that districts with more segregationist votes fell significantly behind in the desegregation of their public schools.[10] Figure 3.5 maps the percentage of a counties votes for Strom Thurmond.[11] Votes are highly concentrated in the Cotton Belt, especially Mississippi and South Carolina.

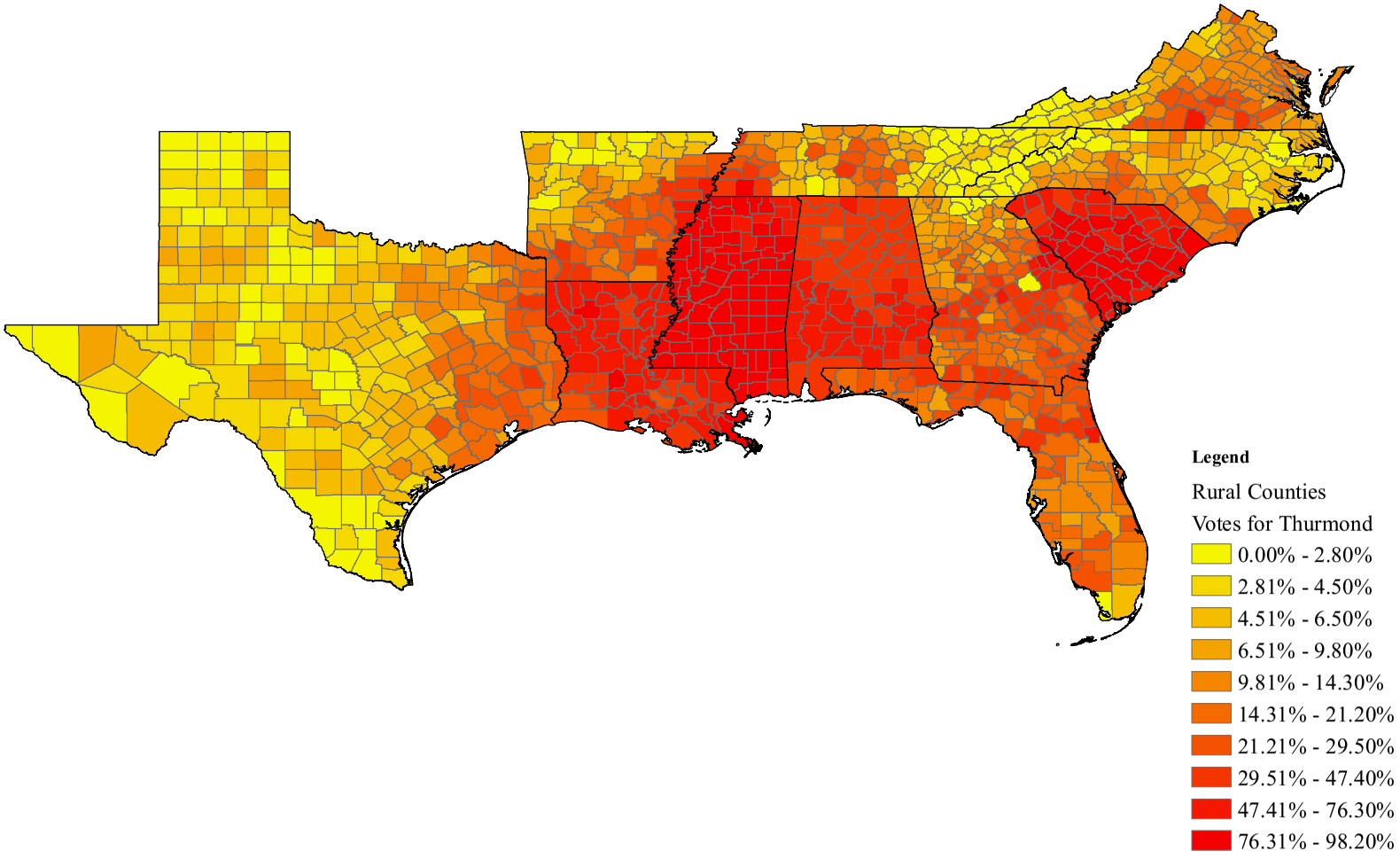
Table 3.5 continues the analysis of the relationship between segregation due to private schools and school resources, using votes for Strom Thurmond as an instrument for the segregation measure. Column (1) shows the first stage of the IV analysis, regressing segregation on votes for Thurmond and other relevant controls. This regression confirms that counties that voted for Thurmond are significantly likely to have higher levels of segregation due to private schooling. Column (2) adds a control for votes for George Bush in 2000. This is to show that the Thurmond variable is not just measuring overall conservativism and preferences for small government. The significant coefficient on votes for Thurmond remains unchanged from column (1) to (2). Interestingly, the coefficient on votes for Bush is actually significantly negative. Moreover, once votes for Thurmond are controlled for, the coefficient on median income becomes significantly positive. The coefficients on the percent of the student body that are non-white also become less significant.

Columns (3) through (6) repeat the analysis of Table 3.4, using votes for Thurmond as an instrument for the private school segregation measure. The coefficient on segregation due to private schools is robustly significant and negative in all regressions. Moreover, the

10. Clubb, Flanigan, and Zingale (2016) are missing certain counties in Texas, so I supplement the data with Bartley and Graham (2016) to complete the dataset. Moreover, to consolidate independent counties in Virginia with their surrounding counties, I use an average of their votes, weighted by their voting populations.

11. Only the states shown, plus Maryland, included Strom Thurmond on the ballot.

Figure 3.5: *Map of Votes for Strom Thurmond, 1948*



Clubb, Flanigan, and Zingale (2016) and Bartley and Graham (2016).
Each observation is a county in the South. Data is percent of votes for Strom Thurmond in the election of 1948.

coefficient is now much larger than in Table 3.4. This remains true even when controlling for a county's percentage of votes for George Bush in 2000. Thus, the portion of segregation driven by white flight, and not political conservatism, significantly reduces school resources for the students left behind in public schools.

The coefficients on the student body's racial composition remain positive but are more statistically significant. Interestingly, the effect of a county's poverty is no longer statistically significant. Neither is the effect of a county's median income, which loses significance once poverty is controlled for. Finally, the votes for Bush in 2000 do not have a significant relationship to school resources.

3.7 Conclusion

Desegregation in the United States is fascinating from a number of perspectives. It was historically momentous, a dramatic tale that causes one to feel both pride and shame. The legal ramifications of the 1960's still live with us today and shape how children currently attend schools. Even more importantly, research shows us that desegregation is far from complete. Though the barriers to integration are no longer so obvious and hateful, they are certainly engrained into American social structures.

Of particular importance is the South. This is the landscape that shapes the lives of the majority of African American children. Moreover, the unique ways in which the rural South segregates deserve to be studied. White students' enrollment in private schools is highly dependent on the black proportion of the student population. Thus, black students in public schools in largely black areas have even fewer white peers. Segregation due to private schools is highest in the rural South, a region historically known for racism. The evidence is also consistent with a detrimental effect of private schools on public school funding. I find that rural Southern school districts with high levels of private school segregation also have low levels of school resources per student, even after controlling for what the median voter could afford. This relationship is robust to including county fixed effects. As segregation due to private schools increase, public school funding decreases. Despite

Table 3.5: *Determinants of Per Student Revenue and Segregation due to Private Schools, IV analysis*

	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV	(6) IV
	Segregation		Revenue per Student			
Percent Votes for Thurmond, 1948	0.00201***	0.00194***				
	(0.000552)	(0.000541)				
Percent Votes for Bush, 2000		-0.00190***			-0.938	-1.134
		(0.000701)			(33.99)	(33.46)
Segregation Due to Private Schools			-13,738***	-11,777**	-13,757**	-11,799**
			(5,138)	(5,058)	(5,461)	(5,296)
Median Income * 10^{-3}	0.00244**	0.00310***	153.1***	50.18	153.5***	50.63
	(0.00103)	(0.00102)	(51.07)	(90.27)	(44.10)	(82.67)
Percentage in Poverty	0.00633***	0.00597***		-166.7		-166.8
	(0.00185)	(0.00186)		(106.5)		(107.4)
Percentage Non-White, Student Body	-7.63e-05	-0.000329	19.88*	28.20**	19.75	28.05**
	(0.000276)	(0.000296)	(11.15)	(11.28)	(12.14)	(11.37)
Percentage Non-White, if > 60%	0.00292**	0.00194	45.18	57.13**	44.75	56.60*
	(0.00148)	(0.00149)	(29.93)	(28.00)	(35.62)	(32.74)
Total County Student Population * 10^{-3}	-0.00186**	-0.00202**	-321.1***	-303.4***	-321.2***	-303.5***
	(0.000890)	(0.000906)	(45.82)	(43.86)	(45.88)	(43.47)
Constant	-0.144**	-0.0360	3,371**	8,616**	3,420	8,677
	(0.0613)	(0.0778)	(1,610)	(4,012)	(3,058)	(5,285)
Instrument for Segregation Due to Private Schools			Thurmond	Thurmond	Thurmond	Thurmond
Observations	5,029	5,029	5,026	5,026	5,026	5,026
R-squared	0.405	0.411	0.205	0.236	0.205	0.236

Source: Common Core of Data, PSU (2016); PSS (2016); Common Core of Data, Finance Survey (2016); *Clubb, Flanigan, and Zingale (2016); Bartley and Graham (2016); Lublin and Voss (2001); and author's calculations.*

*Robust standard errors in parentheses, clustered at the county level. Each Observation is a county in the rural South. Total Student Population includes both public and private school enrollment. Data covers school years 1999-2000, 2001-2002, 2003-2004, 2005-2006, 2007-2008, 2009-2010, and 2011-2012. Private School Data is weighted to correct for non-response. Includes control for whether non-white percentage of student body is greater than 60%. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

the recent increases in black enrollment at private schools, there is no discernable trend regarding racial separation within private schools.

My findings regarding the effect of segregation due to private schools on school resources are robust and even strengthened by instrumental variable analysis. When I use votes for Strom Thurmond, a pro-segregation presidential candidate, as an instrument for the segregation measure, the statistically significant relationship remains. This result is unaffected by controls for republican votes in the 2000 election, and so it is not explained by conservativism. It is driven by something much more racial in sentiment. Moreover, this dispels concern that my findings are driven by poor school resources simply driving wealthy students (who tend to be white) fleeing to private schools.

This type of segregation is fascinating in that it is far less structural than the majority of the segregation in the United States. Most American segregation stems from people of different races living in different districts. This is especially well-cemented in metropolitan areas. One cannot expect long-standing racial enclaves to achieve racial balance in any short amount of time. Thus, segregation arising from private schools is far more flexible. Scholarships for minority students to attend private schools could assuage some harmful effects of segregation, especially if decreased local funding is partly driven by decreased exposure to and thereby empathy for African Americans, the typical public school student. Targeted evaluation of racial inhospitality within private schools in the Cotton Belt may also help to undo racial differences in student body makeup.

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Appendix A

Appendix to Chapter 1

A.1 The Second Wave

The "Quiet Revolution" should not be confused with the second wave of feminism, but the two phenomena do seem to be related. Feminist leaders were calling attention to the barriers, both legal and cultural, that the women of the "Quiet Revolution" were facing in their pursuit of careers. There were many women who did not self-identify as feminists and yet were making the choices that feminists had fought to bring into the norm. The second wave certainly seems to at least be evidence of the "Quiet Revolution".

There are several ways by which WWII influenced the Second Wave of feminism. The war had an immediate impact on female blue-collar workers. Despite the assurance of "a man's job, a man's pay," women who organized into unions in heavy industry soon began to compare their pay to their male colleagues'. Many workers had been employed in domestic work or light industry, where there were no unions (Field 1980). The obvious pay gaps alarmed them, causing many to unionize and pressure union leaders to fight on their behalf. Some unions, such as the CIO, were more receptive than others. Even hostile unions began to fight for equal pay laws for fear that, after the war, businesses would replace male union workers with much cheaper female labor. This collective action and social awareness pushed many of the industrial women workers of World War II into politics and, later, into the

Second Wave of the feminist movement. Many of the founders of the National Organization of Women (NOW), Betty Friedan's brain-child and a powerful political pressure group during the 1960's and 1970's, were female union leaders from the Midwest (Follet 1998).

The connections between World War II and the second wave may seem precarious, but many women testify that the links are there.[1] When asked after a screening of "The Life and Times of Rosie the Riveter" about the irony that only a young feminist in the 1970s would have the empowerment to create a documentary about female World War II workers, Connie Field rejected any disconnect between her generation and Rosie's.[2] When asked explicitly for the connection, she replied simply "We're the daughters" (Field and Weixel 2007). Gail Collins writes that the 1970 Strike for Equality, where thousands of women marched in New York City on their own behalf, was a climax to the struggle started in World War II. "Things they had always done in emergencies — such as working in defense factories during the war — and things only a few unusual 'women lawyers' or 'women engineers' had done, were now going to be recognized as part of the normal deal" (Collins 2009, p. 206). Historian Susan Hartmann claims that World War II, through its increase in married women's employment, sustenance of a small body of feminists, and the expansion of higher education to women led to the "awakened womanhood of the 1960's" (Hartmann 1982, p. 216).

To clarify, there were two primary factions within the second wave, one of which has more concrete ties to World War II than the other. Betty Friedan was largely considered the mother of the second wave, and she was a member of the 1920s cohort. Friedan entered the workforce as a journalist in 1943. Her revolutionary book, "The Feminine Mystique," revealed the discontent that her generation felt from becoming full-time housewives during the 1950s. She points explicitly to their experiences in college and early careers as the personal fulfillment that housewives secretly missed (Friedan 1963). Betty Friedan has been

1. Susan Brownmiller, an intellectual leader of the second wave, says that movements "start small and curiously, an unexpected flutter that is not without precedence, a barely observable ripple that heralds a return to the unfinished business of prior generations" (Brownmiller 1999).

2. "I'm part of that generation, because I'm a baby boomer" (Field and Weixel 2007).

criticized for narrowly focusing on middle-class housewives, whose experiences were not representative of most women. Yet her critiques of American culture were so far-reaching that both blue-collar workers of the Midwest and the more radical leaders of the Women's Liberation movement have testified how deeply "The Feminine Mystique" changed their lives (Brownmiller 1999; Follet 1998). Baby boomers would have been anywhere from age eight to seventeen when their mothers first read Friedan's book.[3] Of the thirty-three founding members of NOW listed in "Feminists Who Changed America, 1963-1975", fifteen were born in the 1920s (Love 2006; NOW 2011). This faction was considered the reform wing of the feminist movement because the members sought to work within the system.

The other side of the second wave was called the Women's Liberation movement. This movement's leaders had worked as young women in the Civil Rights movement and were also active in the anti-war movement during the 1960s. Facing sexism within these movements, they split off to create their own Leftist movement. They were counter-cultural and adopted many of the Left's techniques: mimeographed articles and papers, theatrical protests, and property defacement (Brownmiller 1999). Women's Liberation created consciousness-raising groups across America, where women shared their experiences in order to analyze how culture defined women and how their own behavior and self-perceptions were affected. Although the leaders of this much louder faction of the second wave were primarily members of the 1930's cohort, of critical importance to the movement were women in their twenties: the baby boomers.[4]

Although differences between the two factions still existed, the schism between the reform wing and Women's Liberation was mended in 1970.

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3. There are many ways to define the baby boomer generation, with some definitions including all of the years between 1946 and 1964. For this paper's purposes, I will define baby boomers as being born in the decade after World War II, between 1946 and 1955.

4. Brownmiller called them the "driving force" (Brownmiller 1999, p. 9). Also, Radical Women were self-described as "the postwar middle class generation that grew up with the chance to vote, the chance at higher education, and training for supportive roles in the professions and business" (McAfee and Wood 1969, p. 138).

A.2 Converting LMA Data to County

The WMC published a *Directory of Important Labor Market Areas* which lists the cities contained within each LMA. Using this information, I determined which counties were at least partially contained within an LMA. Of the counties within our sample, 35 percent are contained within an LMA. Of the counties that are in an LMA, 90 percent are within only one LMA. Figure A.1 includes a table describing the frequency of LMAs within counties. This map shows that most of the areas which contain WWII manufacturing plants in Figure 1.3 are contained within at least one LMA. In order to use the data presented in *Survey of Plants Manufacturing Metal Products* with the PSID dataset, I compute all relevant employment statistics by county. In counties with only one LMA, this are simply the numbers reported for that one LMA. For counties with multiple LMAs, I use the averages of the employment statistics across all LMAs contained within a county.

Since the *Survey of Plants Manufacturing Metal Products* does not report population totals for each LMA, I can construct them. I calculate an LMA's population as the sum of populations of counties contained within the LMA. To validate this method, I use the LMA populations reported for January 1945 in USES (1948). The 1945 numbers are limited, since the WMC had already reduced the number of LMAs needed for analysis. I regress the constructed LMA populations for 1943 against the actual LMA populations in 1945, reported in Table A.1. The coefficient is positive and statistically significant at the 1 percent level. The three biggest outliers were Chicago Heights-Harvey, IL; Joliet, IL; and Gary-Hammond-South Chicago, IN-IL. These small labor market areas contained cities within Cook County, IL, which meant that their constructed LMA population included populous Chicago. For robustness, I repeated all of my analysis by dropping these three LMAs and reconstructing all female employment measures. Results remain robust, because no PSID respondents had any parents who grew up in these counties.

A.3 Supplementary Tables and Figures

Table A.1: *Accuracy of LMA Population Measure*

	Constructed LMA Population, 1943
LMA Population, 1945	0.939***
	(0.0588)
Constant	130,733***
	(24,267)
Observations	338
R-squared	0.625

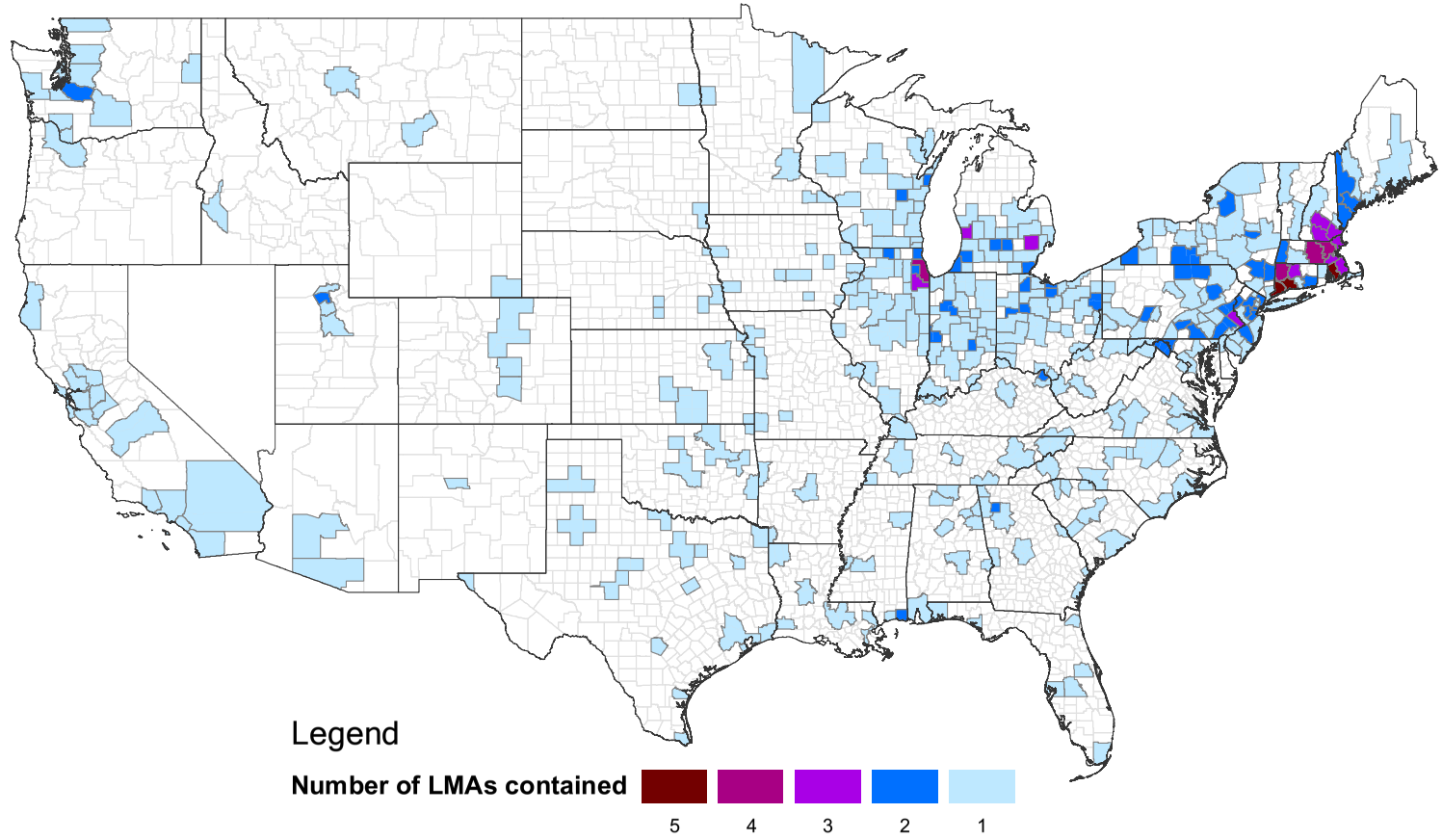
Source: USES (1948); U.S. Bureau of the Census (1944); and WMC (1944).
Notes: Each observation is an LMA. Constructed LMA population in 1943 is calculated as the sum of populations in counties contained in each LMA.

Table A.2: *Top LMAs by Female Employment Statistic*

Number of Women Employed		Female Percent of Employees		Percentage of Population, WWII Manufacturing Women	
#	Name	%	Name	%	Name
488,093	Detroit, Mich	79.2%	Owensburg, Ky.	19.9%	Elkton, Md.
302,394	Chicago, Ill	78.3%	Gloversville, N.Y.	10.6%	Michigan City-La Porte, Ind.
302,649	Los Angeles, Calif	78.0%	Lexington, Ky.	8.1%	Owensburg, Ky.
251,319	New York, N.Y.	71.9%	Bloomington-Burns City, Ind.	5.9%	Anderson, Ind.
226,657	Newark, N.J.	70.6%	Sioux Falls, S. Dak.	5.7%	Akron, Oh.
227,658	Philadelphia, Pa.-NJ.	69.2%	Charlotte, N.C.-S.C.	5.5%	Rochester, N.Y.
147,761	Cleveland, Ohio	68.6%	North Adams, Mass.	5.1%	Kokomo, Ind.
100,601	Buffalo-Niagara Falls, N.Y.	68.4%	Elkton, Md.	5.0%	Newport, R.I.
179,544	San Fransisco Bay, Calif.	65.6%	New Bedford, Mass.	4.7%	Owosso, Mich.
128,795	Baltimore, Md.	65.4%	Little Rock, Ark.	4.7%	Detroit, Mich.

Source: USES (1948) and U.S. Bureau of the Census (1944).
Notes: Constructed LMA population in 1943 is calculated as the sum of populations in counties contained in each LMA.

Figure A.1: *Metal Products: Number of Women Employed, 1944*

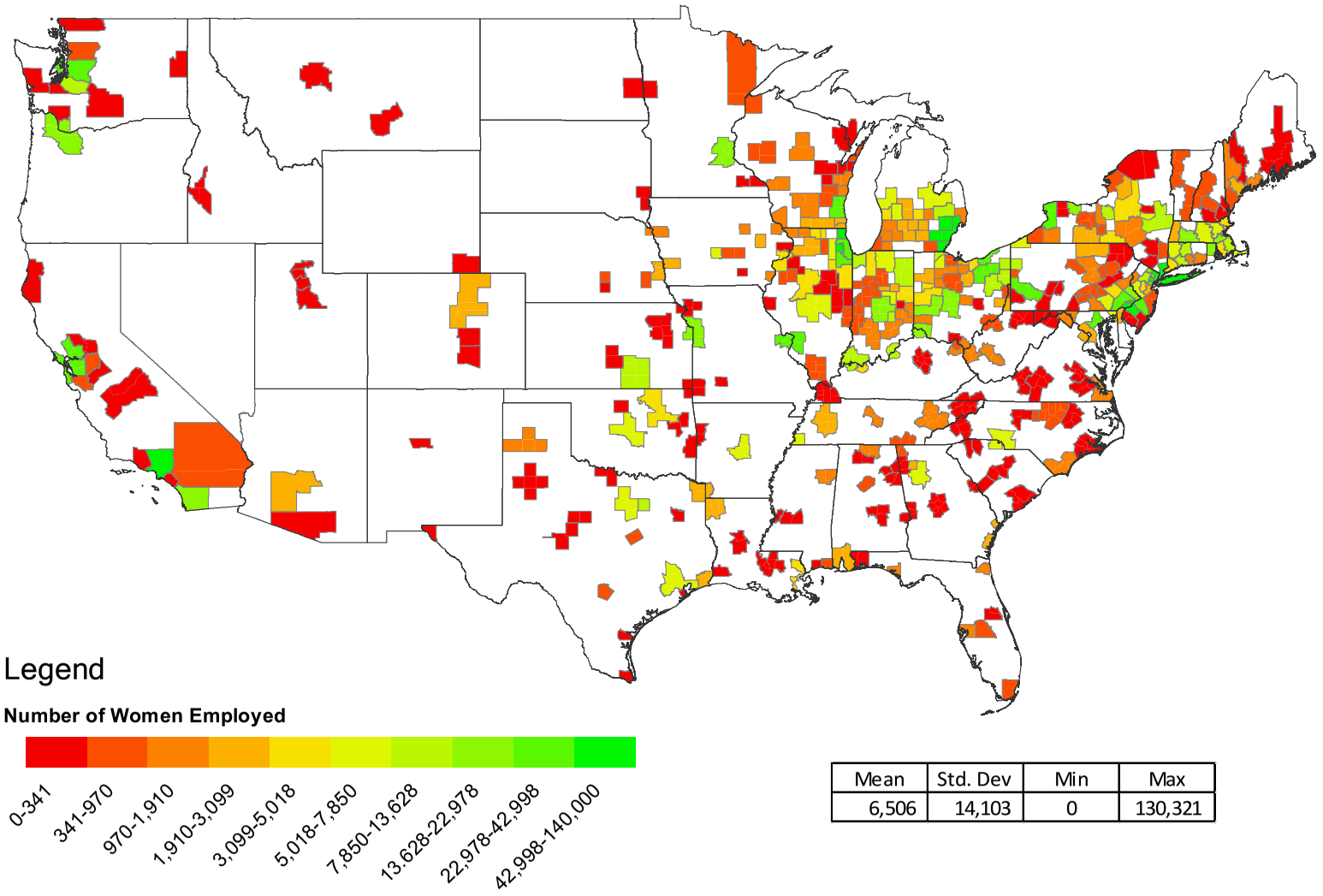


Number of LMAs within County				
1	2	3	4	5
721	62	11	4	3

Source: WMC (1944).

Notes: Map displays the number of LMAs within each county, as of February 1944. Nevada is not included for the same reasons as Acemoglu, Autor, and Lyle (2004) and Goldin and Olivetti (2013): the state had a small population base in 1940 and underwent a large population change during the decade after.

Figure A.2: *Metal Products: Number of Women Employed, 1944*

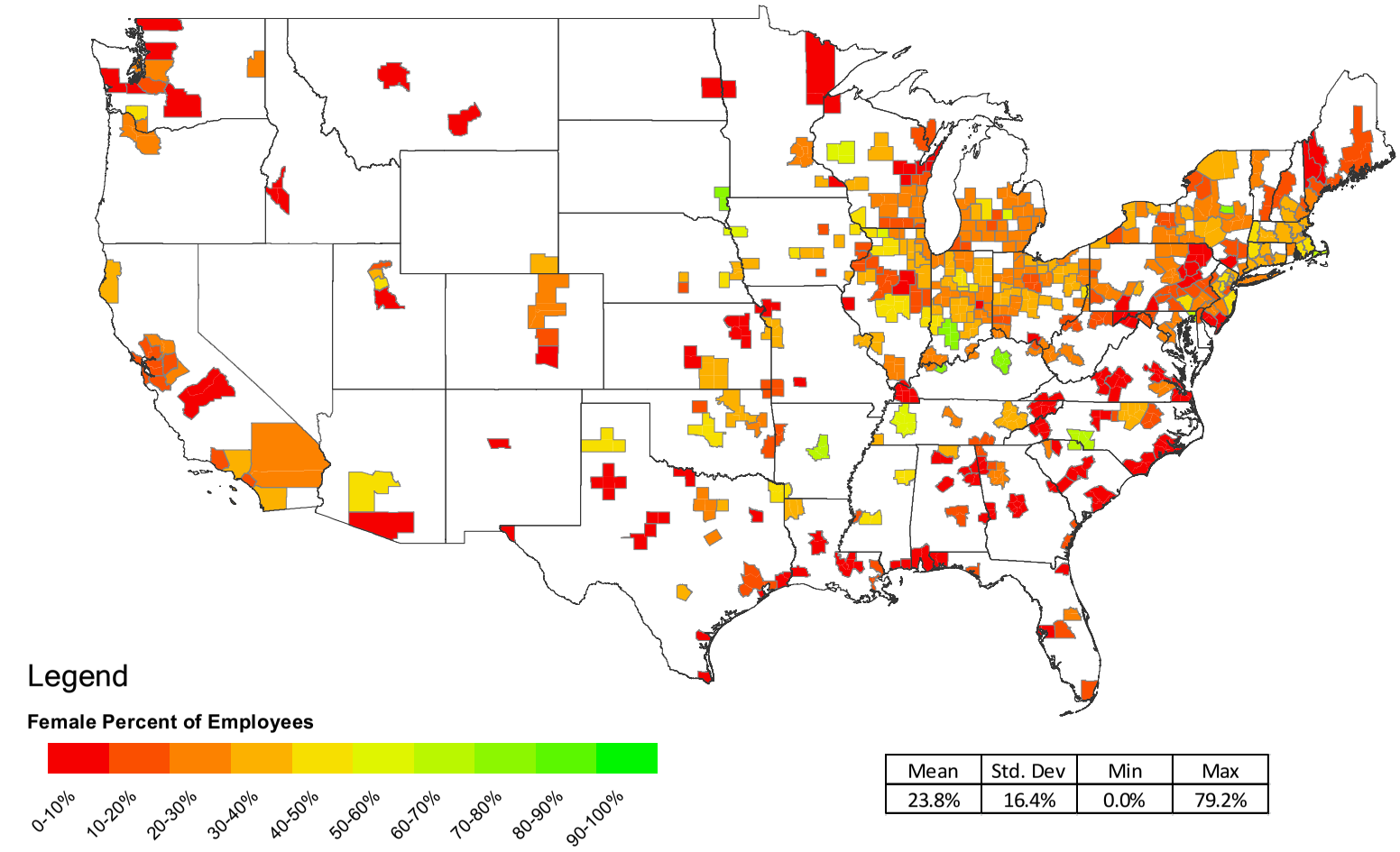


Mean	Std. Dev	Min	Max
6,506	14,103	0	130,321

Source: WPB (1944).

Notes: Map displays counties as they were in 1940. Nevada is not included for the same reasons as Acemoglu, Autor, and Lyle (2004) and Goldin and Olivetti (2013): the state had a small population base in 1940 and underwent a large population change during the decade after.

Figure A.3: *Metal Products: Female Percent of Employees, 1944*

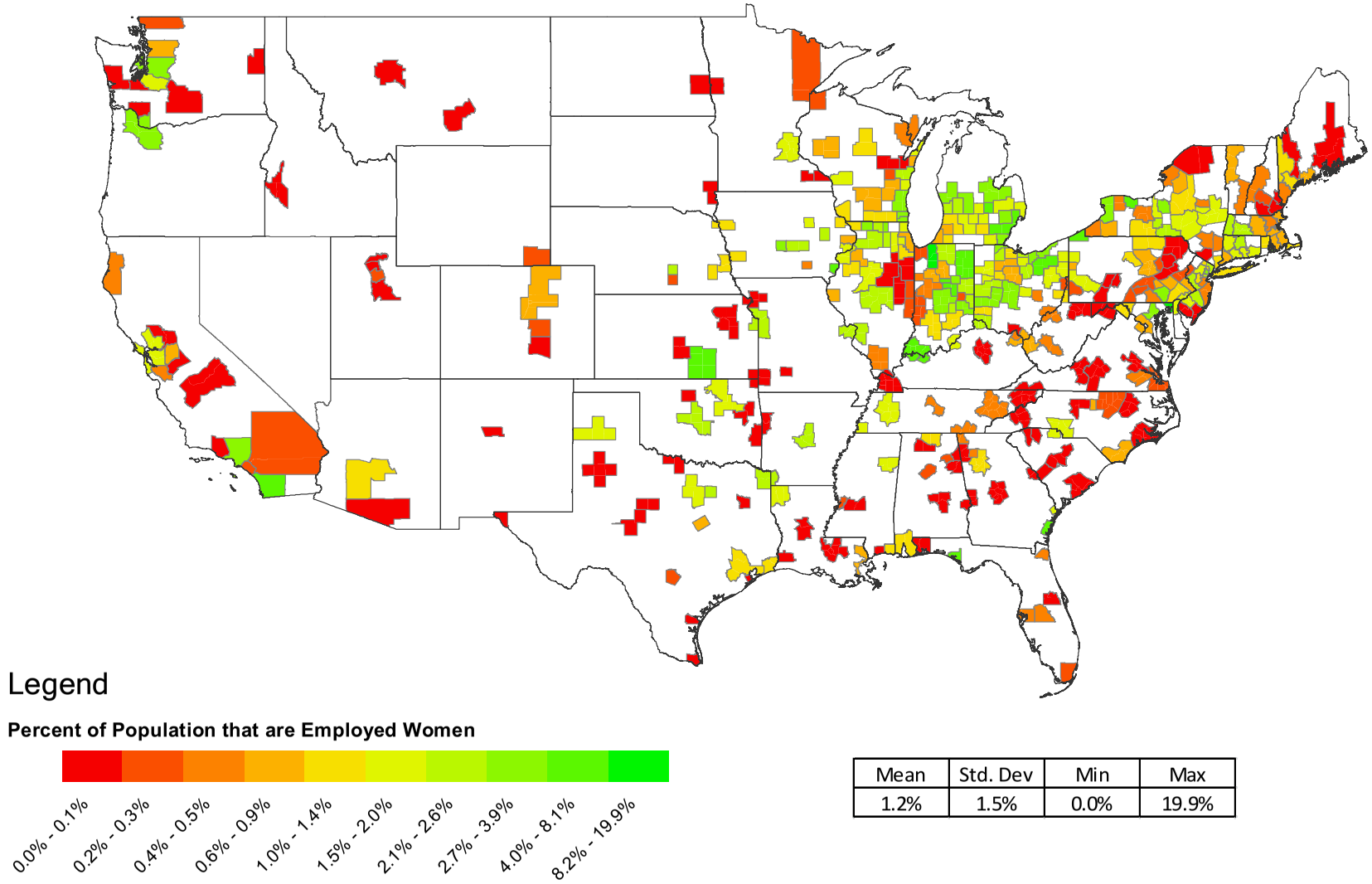


Mean	Std. Dev	Min	Max
23.8%	16.4%	0.0%	79.2%

Source: WPB (1944).

Notes: Map displays counties as they were in 1940. Nevada is not included for the same reasons as Acemoglu, Autor, and Lyle (2004) and Goldin and Olivetti (2013): the state had a small population base in 1940 and underwent a large population change during the decade after.

Figure A.4: *Metal Products: Employed Women as Percent of Population, 1944*



Mean	Std. Dev	Min	Max
1.2%	1.5%	0.0%	19.9%

Source: WPB (1944) and U.S. Bureau of the Census (1944).
Notes: Map displays counties as they were in 1940. Nevada is not included for the same reasons as Acemoglu, Autor, and Lyle (2004) and Goldin and Olivetti (2013): the state had a small population base in 1940 and underwent a large population change during the decade after.

Table A.3: *Effect of WWII Manufacturing in All Parents' Counties on Baby Boomers' Education, Age 42-51*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother	Weeks Worked		Employment		Education		College	
WIII Plants (thousands)	6.237	7.624	0.0501	0.0841	1.083**	0.205	0.489***	0.310*
	(7.276)	(7.180)	(0.164)	(0.163)	(0.523)	(0.500)	(0.157)	(0.169)
Mobilization Rate	-17.59	-21.52	-0.996	-1.016	-7.453	-11.33	-3.328	-4.415*
	(73.53)	(73.80)	(1.626)	(1.603)	(8.047)	(7.437)	(2.315)	(2.410)
Mother-In-Law								
WIII Plants (thousands)	-5.243	-9.881	0.0507	-0.0683	1.112	0.303	0.582*	0.403
	(14.91)	(15.09)	(0.300)	(0.330)	(0.835)	(0.769)	(0.296)	(0.256)
Mobilization Rate	151.7*	161.0*	2.515	2.615	5.203	8.288	1.718	2.594
	(91.52)	(88.40)	(1.946)	(1.937)	(6.157)	(5.515)	(2.161)	(1.886)
Father								
WIII Plants (thousands)	11.34	11.95	0.200	0.119	-1.195	-0.574	-0.380	-0.181
	(7.743)	(8.972)	(0.169)	(0.178)	(0.736)	(0.727)	(0.250)	(0.243)
Mobilization Rate	12.92	13.15	0.615	0.814	6.216	3.614	3.931**	3.107
	(70.85)	(73.31)	(1.532)	(1.604)	(6.054)	(6.204)	(1.967)	(2.299)
Father-in-Law								
WIII Plants (thousands)	-5.690	-3.029	-0.275	-0.105	-0.714	-0.636	-0.426	-0.502**
	(16.46)	(16.34)	(0.326)	(0.360)	(0.849)	(0.805)	(0.274)	(0.237)
Mobilization Rate	-134.3	-182.2**	-1.948	-2.944	4.114	3.137	1.775	1.567
	(84.91)	(89.28)	(1.794)	(2.016)	(6.474)	(5.661)	(1.981)	(1.765)
Control for Parent's Education	No	Yes	No	Yes	No	Yes	No	Yes
Observations	637	610	639	612	639	612	639	612
R-squared	0.066	0.136	0.077	0.148	0.176	0.382	0.180	0.335

Sources: Panel Study of Income Dynamics, public use data set *(2012), Goldin and Olivetti (2013), and WPB (1945).*
*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and number of WWII plants are assigned by the county and state where the respondent's parent grew up, for all four parents: mother, mother-in-law, father, and father-in-law. Regressions include dummy variables of the respondent's age, with coefficients allowed to vary over time. Regressions that control for parents' educations include dummy variables for the categorical education variable of the respondent's parents, with coefficients allowed to vary over time. The categorical education variables are separated into the following brackets: grades 0-5, grades 6-8, grades 9-11, high school, high school and non-academic training, college but no degree, college degree, and post-graduate education. A respondent is counted as having gone to college if she went to college but does not have a degree, if she has a college degree, or if she has some post-graduate education. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

Table A.4: *Effect of WWII Manufacturing in All Parents' Counties on Baby Boomers' Education, Age 42-51*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)
Mother	Some College		College Degree		Postgrad	
WIII Plants (thousands)	-0.0873	-0.0987	0.417***	0.416***	0.0721	-0.106
	(0.157)	(0.186)	(0.139)	(0.152)	(0.107)	(0.116)
Mobilization Rate	3.360	2.971	-1.264	-1.883	-2.064	-2.532
	(2.127)	(2.152)	(1.571)	(1.807)	(2.338)	(2.331)
Mother-In-Law						
WIII Plants (thousands)	-0.204	-0.234	0.571**	0.544**	0.0109	-0.141
	(0.213)	(0.217)	(0.250)	(0.254)	(0.224)	(0.224)
Mobilization Rate	-1.553	-1.534	-1.089	-0.682	2.807	3.276*
	(1.834)	(1.837)	(2.174)	(2.182)	(1.726)	(1.820)
Father						
WIII Plants (thousands)	0.194	0.0109	-0.152	-0.105	-0.227	-0.0762
	(0.227)	(0.245)	(0.138)	(0.140)	(0.195)	(0.211)
Mobilization Rate	-3.917*	-3.356	2.438	2.386	1.493	0.721
	(2.076)	(2.116)	(1.644)	(1.825)	(1.940)	(1.944)
Father-in-Law						
WIII Plants (thousands)	-0.0314	0.160	-0.464*	-0.522*	0.0385	0.0204
	(0.253)	(0.271)	(0.254)	(0.276)	(0.250)	(0.253)
Mobilization Rate	-0.0246	-0.435	2.269	2.261	-0.494	-0.694
	(1.708)	(1.767)	(1.788)	(1.828)	(1.742)	(1.720)
Control for Parent's Education	No	Yes	No	Yes	No	Yes
Observations	639	612	639	612	639	612
R-squared	0.075	0.169	0.123	0.201	0.116	0.215

Sources: Panel Study of Income Dynamics, public use data set *(2012), Goldin and Olivetti (2013), and WPB (1945).*
*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and number of WWII plants are assigned by the county and state where the respondent's parent grew up, for all four parents: mother, mother-in-law, father, and father-in-law. Regressions include dummy variables of the respondent's age, with coefficients allowed to vary over time. Regressions that control for parents' educations include dummy variables for the categorical education variable of the respondent's parents, with coefficients allowed to vary over time. The categorical education variables are separated into the following brackets: grades 0-5, grades 6-8, grades 9-11, high school, high school and non-academic training, college but no degree, college degree, and post-graduate education. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

Table A.5: *Effect of WWII Manufacturing and Female Employment in Mother's County on Baby Boomers, Age 42-51: Number of Women in WWII Manufacturing*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother	Weeks Worked		Employment		Education		College	
Predicted WWII Plants (thousands)	-8.818	-11.16	-0.215	-0.250**	1.138**	0.775	0.346**	0.230
	(8.576)	(7.369)	(0.154)	(0.119)	(0.565)	(0.549)	(0.172)	(0.170)
% Farmers	31.31	39.69	1.080	1.103	-0.0309	0.833	0.0861	0.156
	(38.54)	(42.50)	(0.852)	(0.939)	(2.682)	(2.307)	(0.837)	(0.733)
% Nonwhite	72.88	68.30	0.785	0.426	4.765	1.262	0.506	-0.628
	(71.61)	(77.01)	(1.540)	(1.627)	(4.417)	(4.226)	(1.256)	(1.355)
Average Education	7.612	9.353	0.0891	0.0807	0.426	0.279	0.0275	-0.0639
	(7.619)	(8.321)	(0.154)	(0.159)	(0.492)	(0.460)	(0.131)	(0.142)
Mobilization Rate	78.25	103.0	2.375	2.299	-0.501	1.193	1.080	0.873
	(91.95)	(94.85)	(2.079)	(2.151)	(7.117)	(5.797)	(2.109)	(1.713)
Number of Women in WWII	0.0412	0.212	-0.00649	-0.00328	-0.0434	-0.0216	-0.0116	-0.00440
Manufacturing (thousands)	(0.380)	(0.379)	(0.00856)	(0.00860)	(0.0264)	(0.0267)	(0.0101)	(0.0107)
Number of Employees in WWII	0.0129	-0.0366	0.00213	0.00121	0.0116*	0.00497	0.00340	0.00137
Manufacturing (thousands)	(0.103)	(0.102)	(0.00233)	(0.00235)	(0.00701)	(0.00705)	(0.00268)	(0.00280)
Control for Parent's Education	No	Yes	No	Yes	No	Yes	No	Yes
Observations	504	470	505	471	505	471	505	471
R-squared	0.189	0.273	0.187	0.260	0.258	0.459	0.206	0.393

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); predicted results from Table 1.5; and WPB (1944).*
*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's mother grew up. Regressions include dummy variables of the respondent's age, with coefficients allowed to vary over time. Regressions that control for mother's education include dummy variables for the categorical education variable of the respondent's mother, with coefficients allowed to vary over time. The categorical education variables are separated into the following brackets: grades 0-5, grades 6-8, grades 9-11, high school, high school and non-academic training, college but no degree, college degree, and post-graduate education. A respondent is counted as having gone to college if she went to college but does not have a degree, if she has a college degree, or if she has some post-graduate education. Total number of women employed is defined as the female percentage of labor times the total number employed, averaged across any LMAs contained within the county. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

Table A.6: *Effect of WWII Manufacturing and Female Employment in Mother's County on Baby Boomers, Age 42-51: Female Percentage of Employees*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother	Weeks Worked		Employment		Education		College	
Predicted WWII Plants (thousands)	-1.068	-3.261	-0.140	-0.179*	0.883**	0.411	0.364***	0.263**
	(6.182)	(5.500)	(0.114)	(0.0983)	(0.414)	(0.396)	(0.108)	(0.108)
% Farmers	26.68	34.25	1.077	1.078	0.252	1.099	0.128	0.149
	(38.63)	(42.62)	(0.851)	(0.937)	(2.692)	(2.292)	(0.841)	(0.738)
% Nonwhite	74.90	72.09	0.697	0.360	4.440	1.030	0.386	-0.682
	(71.88)	(77.64)	(1.521)	(1.606)	(4.490)	(4.209)	(1.246)	(1.297)
Average Education	8.206	10.03	0.0771	0.0682	0.422	0.276	0.0168	-0.0674
	(7.647)	(8.443)	(0.151)	(0.156)	(0.500)	(0.457)	(0.129)	(0.135)
Mobilization Rate	68.24	89.18	2.370	2.170	0.704	2.354	1.258	0.904
	(93.28)	(95.40)	(2.100)	(2.164)	(7.177)	(5.788)	(2.128)	(1.729)
Average Female Percentage of Employees	-0.0275	0.0130	0.00127	0.00229	-0.0104	-0.00860	-0.000451	-3.41e-06
	(0.0846)	(0.106)	(0.00210)	(0.00246)	(0.00767)	(0.00890)	(0.00239)	(0.00278)
Control for Parent's Education	No	Yes	No	Yes	No	Yes	No	Yes
Observations	504	470	505	471	505	471	505	471
R-squared	0.185	0.270	0.184	0.259	0.257	0.459	0.202	0.392

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); predicted results from Table 1.5; and WPB (1944).*
*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's mother grew up. Regressions include dummy variables of the respondent's age, with coefficients allowed to vary over time. Regressions that control for mother's education include dummy variables for the categorical education variable of the respondent's mother, with coefficients allowed to vary over time. The categorical education variables are separated into the following brackets: grades 0-5, grades 6-8, grades 9-11, high school, high school and non-academic training, college but no degree, college degree, and post-graduate education. A respondent is counted as having gone to college if she went to college but does not have a degree, if she has a college degree, or if she has some post-graduate education. The average female percentage of employees is the sum of the total number of women employed divided by the sum of the total number of employees, across any LMA contained within the county. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

Table A.7: *Effect of WWII and Female Employment in All Parents' Counties on Baby Boomers, Age 42-51: Number of Women in WWII Manufacturing*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother	Weeks Worked		Employment		Education		College	
Predicted WWII Plants	0.871	1.870	0.0499	-0.0276	1.069	-0.0523	0.291	0.0522
(thousands)	(7.846)	(7.724)	(0.163)	(0.171)	(0.656)	(0.558)	(0.191)	(0.200)
Mobilization Rate	-4.802	-15.05	-0.712	-0.860	-5.988	-10.41	-2.285	-3.467
	(72.57)	(74.28)	(1.636)	(1.660)	(7.668)	(7.198)	(2.197)	(2.369)
Number of Women in	-0.126	0.0148	-0.0121	-0.00680	-0.109**	-0.0932*	-0.0264	-0.0208
WWII Manu. (thousands)	(0.564)	(0.567)	(0.0125)	(0.0124)	(0.0491)	(0.0519)	(0.0167)	(0.0184)
Mother-in-Law								
Predicted WWII Plants	18.81	16.09	0.372	0.245	1.744**	0.115	1.052***	0.618**
(thousands)	(13.34)	(13.13)	(0.268)	(0.281)	(0.815)	(0.838)	(0.288)	(0.298)
Mobilization Rate	136.6	135.0	2.632	2.371	5.902	8.043	1.656	2.410
	(95.86)	(94.63)	(2.036)	(2.012)	(6.446)	(5.813)	(2.214)	(1.963)
Number of Women in	-0.677	-0.795	-0.00785	-0.0109	-0.0208	-0.00964	-0.0117	-0.00513
WWII Manu. (thousands)	(0.646)	(0.682)	(0.0141)	(0.0154)	(0.0428)	(0.0348)	(0.0135)	(0.0108)
Father								
Predicted WWII Plants	-3.862	-4.655	-0.144	-0.109	-0.322	0.344	0.150	0.288
(thousands)	(9.021)	(8.025)	(0.196)	(0.173)	(1.064)	(1.006)	(0.282)	(0.284)
Mobilization Rate	-10.61	-2.921	-0.140	0.205	1.607	1.597	1.955	1.747
	(73.20)	(76.59)	(1.567)	(1.666)	(5.986)	(6.152)	(1.997)	(2.301)
Number of Women in	0.0280	-0.0506	0.000215	-0.00470	0.00683	0.0238	-0.00837	-0.00563
WWII Manu. (thousands)	(0.570)	(0.622)	(0.0125)	(0.0140)	(0.0410)	(0.0422)	(0.0119)	(0.0140)
Father-in-Law								
Predicted WWII Plants	-22.50	-18.96	-0.500*	-0.296	-0.974	0.499	-0.856**	-0.492
(thousands)	(13.82)	(14.21)	(0.269)	(0.291)	(1.072)	(1.013)	(0.345)	(0.331)
Mobilization Rate	-94.15	-134.3	-1.238	-1.940	4.437	2.947	2.169	1.859
	(86.22)	(93.45)	(1.844)	(2.056)	(6.417)	(5.692)	(2.014)	(1.817)
Number of Women in	1.052*	0.951	0.0231	0.0242	0.0533	0.0162	0.0264**	0.0159
WWII Manu. (thousands)	(0.620)	(0.673)	(0.0140)	(0.0159)	(0.0400)	(0.0334)	(0.0128)	(0.0103)
Control for Parent's Education	No	Yes	No	Yes	No	Yes	No	Yes
Observations	637	610	639	612	639	612	639	612
R-squared	0.082	0.149	0.093	0.163	0.201	0.399	0.218	0.361

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); predicted results from Table 1.5; and WPB (1944).*

*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's parent grew up, for all four parents: mother, mother-in-law, father, and father-in-law. The categorical education and college variables are defined as in Table 1.2, and controls are included identically. Total number of women employed is defined as in Table 1.4. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

Table A.8: *Effect of WWII and Female Employment in All Parents' Counties on Baby Boomers, Age 42-51: Female Percentage of Employees*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother	Weeks Worked		Employment		Education		College	
Predicted WWII Plants	4.721	7.045	0.0219	0.0262	1.003**	0.120	0.373***	0.192
(thousands)	(6.537)	(6.468)	(0.139)	(0.136)	(0.507)	(0.421)	(0.138)	(0.144)
Mobilization Rate	6.728	-3.105	-0.598	-0.770	-6.837	-10.62	-3.034	-4.101
	(73.04)	(73.29)	(1.647)	(1.609)	(7.976)	(7.540)	(2.352)	(2.501)
Average Female	-0.120	-0.125	-0.00144	-0.000906	-0.00499	-0.00650	-0.000155	-0.000702
Percentage of Employees	(0.0842)	(0.0897)	(0.00188)	(0.00201)	(0.00626)	(0.00563)	(0.00193)	(0.00215)
Mother-in-Law								
Predicted WWII Plants	3.936	-1.092	0.192	0.0437	1.008	0.0681	0.580**	0.359
(thousands)	(11.71)	(11.80)	(0.232)	(0.251)	(0.656)	(0.663)	(0.247)	(0.249)
Mobilization Rate	164.2*	167.0*	2.628	2.608	5.770	8.252	1.952	2.698
	(91.02)	(88.42)	(1.962)	(1.951)	(6.315)	(5.605)	(2.198)	(1.894)
Average Female	0.0308	0.0303	0.00132	0.00115	0.00517	0.00702	0.00118	0.00178
Percentage of Employees	(0.0884)	(0.0896)	(0.00210)	(0.00211)	(0.00677)	(0.00665)	(0.00229)	(0.00241)
Father								
Predicted WWII Plants	13.72*	11.98	0.217	0.151	-1.240	-0.411	-0.266	-0.0610
(thousands)	(7.195)	(8.142)	(0.150)	(0.156)	(0.806)	(0.789)	(0.240)	(0.247)
Mobilization Rate	0.410	7.299	0.373	0.776	4.734	3.110	3.385*	2.739
	(71.26)	(71.93)	(1.544)	(1.576)	(6.109)	(6.396)	(2.026)	(2.373)
Average Female	-0.125	-0.0848	-0.00270	-0.00286	-0.000619	-0.000415	-0.000857	-0.000513
Percentage of Employees	(0.0857)	(0.0841)	(0.00197)	(0.00210)	(0.00630)	(0.00583)	(0.00185)	(0.00194)
Father-in-Law								
Predicted WWII Plants	-14.78	-9.431	-0.317	-0.0952	-0.212	0.121	-0.437*	-0.397
(thousands)	(12.80)	(12.58)	(0.245)	(0.261)	(0.802)	(0.746)	(0.264)	(0.248)
Mobilization Rate	-153.7*	-190.3**	-2.092	-2.951	4.763	3.963	1.732	1.635
	(86.20)	(89.37)	(1.835)	(2.026)	(6.533)	(5.661)	(1.977)	(1.722)
Average Female	0.0995	0.0474	0.000326	-0.000454	-0.00477	-0.00882	-2.62e-05	-0.00122
Percentage of Employees	(0.0779)	(0.0865)	(0.00191)	(0.00208)	(0.00638)	(0.00593)	(0.00198)	(0.00196)
Control for Parent's Education	No	Yes	No	Yes	No	Yes	No	Yes
Observations	637	610	639	612	639	612	639	612
R-squared	0.078	0.141	0.085	0.154	0.183	0.388	0.184	0.336

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); predicted results from Table 1.5; and WPB (1944).*

*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's parent grew up, for all four parents: mother, mother-in-law, father, and father-in-law. The categorical education and college variables are defined as in Table 1.2, and controls are included identically. Female percent of employees is defined as in Table 1.4. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

Table A.9: *Effect of WWII and Female Employment in All Parents' Counties on Baby Boomers' Education, Age 42-51: Number of Women in WWII Manufacturing*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)
Mother	Some College		College Degree		Postgrad	
Predicted WWII Plants	-0.0444	-0.126	0.00896	-0.0285	0.282*	0.0807
(thousands)	(0.218)	(0.219)	(0.157)	(0.167)	(0.157)	(0.162)
Mobilization Rate	3.076	2.619	-0.175	-0.806	-2.109	-2.661
	(2.249)	(2.258)	(1.584)	(1.853)	(2.279)	(2.287)
Number of Women in	0.00832	0.0110	0.0102	0.0167	-0.0366**	-0.0375**
WWII Manu. (thousands)	(0.0162)	(0.0163)	(0.0106)	(0.0126)	(0.0139)	(0.0149)
Mother-in-Law						
Predicted WWII Plants	-0.348*	-0.300	1.055***	0.967***	-0.00277	-0.349
(thousands)	(0.210)	(0.231)	(0.275)	(0.286)	(0.248)	(0.270)
Mobilization Rate	-1.319	-1.627	-1.695	-1.428	3.351*	3.837**
	(1.928)	(1.894)	(2.023)	(2.027)	(1.753)	(1.802)
Number of Women in	0.00460	-0.00150	-0.0152	-0.0136	0.00349	0.00850
WWII Manu. (thousands)	(0.00877)	(0.00866)	(0.00946)	(0.0101)	(0.0116)	(0.0111)
Father						
Predicted WWII Plants	-0.232	-0.261*	0.207	0.223	-0.0566	0.0650
(thousands)	(0.192)	(0.151)	(0.189)	(0.191)	(0.237)	(0.278)
Mobilization Rate	-3.627	-2.953	0.966	1.078	0.989	0.668
	(2.280)	(2.312)	(1.704)	(1.862)	(1.893)	(1.956)
Number of Women in	-0.00356	-0.00580	-0.0288**	-0.0328**	0.0204*	0.0272**
WWII Manu. (thousands)	(0.0107)	(0.0121)	(0.0105)	(0.0125)	(0.0116)	(0.0125)
Father-in-Law						
Predicted WWII Plants	0.287	0.322	-0.951***	-0.880***	0.0949	0.388
(thousands)	(0.280)	(0.268)	(0.286)	(0.309)	(0.316)	(0.319)
Mobilization Rate	0.140	-0.141	3.219*	3.375*	-1.050	-1.517
	(1.824)	(1.832)	(1.721)	(1.765)	(1.689)	(1.631)
Number of Women in	-0.000950	0.000689	0.0272***	0.0257***	-0.000784	-0.00977
WWII Manu. (thousands)	(0.00939)	(0.00876)	(0.00859)	(0.00858)	(0.0108)	(0.00998)
Control for Parent's Education	No	Yes	No	Yes	No	Yes
Observations	639	612	639	612	639	612
R-squared	0.080	0.174	0.173	0.249	0.142	0.242

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); predicted results from Table 1.5; and WPB (1944).*

*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's parent grew up, for all four parents: mother, mother-in-law, father, and father-in-law. The categorical education and college variables are defined as in Table 1.2, and controls are included identically. Total number of women employed is defined as in Table 1.4. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

Table A.10: *Effect of WWII and Female Employment in All Parents' Counties on Baby Boomers' Education, Age 42-51: Female Percentage of Employees*

Baby Boomer ×	(1)	(2)	(3)	(4)	(5)	(6)
Mother	Some College		College Degree		Postgrad	
Predicted WWII Plants	0.0184	-0.0382	0.293**	0.268*	0.0793	-0.0765
(thousands)	(0.151)	(0.162)	(0.135)	(0.145)	(0.0992)	(0.121)
Mobilization Rate	3.207	2.811	-1.072	-1.712	-1.962	-2.390
	(2.211)	(2.237)	(1.594)	(1.839)	(2.346)	(2.366)
Average Female	-0.00108	-0.000847	0.00100	0.00115	-0.00116	-0.00185
Percentage of Employees	(0.00195)	(0.00207)	(0.00164)	(0.00193)	(0.00166)	(0.00182)
Mother-in-Law						
Predicted WWII Plants	-0.286	-0.331	0.543**	0.483**	0.0367	-0.124
(thousands)	(0.179)	(0.203)	(0.216)	(0.230)	(0.185)	(0.201)
Mobilization Rate	-1.855	-1.794	-0.989	-0.612	2.941*	3.310*
	(1.865)	(1.873)	(2.210)	(2.202)	(1.780)	(1.847)
Average Female	0.00307	0.00283	0.000630	0.000581	0.000547	0.00120
Percentage of Employees	(0.00197)	(0.00211)	(0.00179)	(0.00184)	(0.00205)	(0.00205)
Father						
Predicted WWII Plants	0.0362	-0.0178	-0.0289	0.0535	-0.237	-0.115
(thousands)	(0.169)	(0.172)	(0.172)	(0.175)	(0.166)	(0.207)
Mobilization Rate	-3.881*	-3.192	2.058	2.061	1.328	0.678
	(2.193)	(2.206)	(1.739)	(1.902)	(1.990)	(2.008)
Average Female	0.000909	0.000136	-0.000299	-0.000234	-0.000558	-0.000279
Percentage of Employees	(0.00178)	(0.00180)	(0.00155)	(0.00166)	(0.00177)	(0.00176)
Father-in-Law						
Predicted WWII Plants	0.223	0.332	-0.541**	-0.532**	0.103	0.135
(thousands)	(0.220)	(0.224)	(0.235)	(0.254)	(0.233)	(0.237)
Mobilization Rate	0.505	-0.0692	2.161	2.221	-0.428	-0.586
	(1.768)	(1.852)	(1.773)	(1.802)	(1.775)	(1.744)
Average Female	0.00422**	0.00388**	3.72e-05	-0.000551	-6.34e-05	-0.000668
Percentage of Employees	(0.00157)	(0.00171)	(0.00142)	(0.00154)	(0.00195)	(0.00187)
Control for Parent's Education	No	Yes	No	Yes	No	Yes
Observations	639	612	639	612	639	612
R-squared	0.083	0.178	0.126	0.203	0.121	0.218

Sources: Panel Study of Income Dynamics, public use data set *(2012); Goldin and Olivetti (2013); predicted results from Table 1.5; and WPB (1944).*

*Notes: Robust standard errors in parentheses, clustered at the mother's county and year level. PSID data is pooled from 1985 and 1997. Baby boomers are from the 1997 sample. Sample restricted to women aged 42 to 51 who are married to white men and who were born in and living in the continental United States, excluding Nevada. Both the mobilization rate and predicted number of WWII plants are assigned by the county and state where the respondent's parent grew up, for all four parents: mother, mother-in-law, father, and father-in-law. The categorical education and college variables are defined as in Table 1.2, and controls are included identically. Female percent of employees is defined as in Table 1.4. * Significance at 10 percent level. ** Significance at 5 percent level. *** Significance at 1 percent level.*

Table A.11: *Effect of Childhood Role Models on Whether a Man Takes His Parent's Industry*

Women	Father's	
	(1)	(2)
	Occupation	Industry
Mother Not Occupational	-0.0974	-0.129
Role Model	(0.107)	(0.131)
Percentage Women in Prestige	-8.836***	-5.391
	(2.846)	(3.489)
Percentage Men in Prestige	4.132***	1.419
	(1.485)	(1.820)
Women in Stay at Home	-0.632	-0.0500
	(0.853)	(1.046)
Age	-0.00859	-0.00967
	(0.00996)	(0.0122)
Constant	0.291	1.195*
	(0.503)	(0.617)
Dummies:		
Race, Hispanic Origin, State Grew Up	Yes	Yes
Education	Yes	Yes
State	No	No
Observations	62	62
R-squared	0.391	0.341

Standard errors in parentheses
**** p<0.01, ** p<0.05, * p<0.1*
Source: Panel Study of Income Dynamics, public use data set *(2012)*
Sample is restricted to women within ages 23 to 65 who are currently working in an occupation with a Nam-Powers-Boyd score of eighty-five or above. We drop respondents who answered "Don't Know" to both their parents occupations. "College" indicates that respondent has at least a college degree. County information is assigned to the census year in which the respondent was eight- to sixteen-years-old.