What Happened to Rosie?

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Abstract

This study identifies women whose wartime work patterns exhibit those often associated with the iconic "Rosie the Riveter." The work patterns come from the 1973 Exact Match file that links Current Population Survey data to Social Security earnings records. These data tie wartime work to outcomes up three decades later. Relative to women who did not work during or immediately after the war, Rosies had greater labor force attachment later in life, but had similar earnings. Their husbands' earnings were also higher. The Rosies' outcomes were less distinguishable from the women who worked during and/or after the war.

The data utilized in this study were made available by the Inter-university Consortium for Political and Social Research. The data for the Current Population Survey, 1973, and Social Security Records: Exact Match Data were originally collected by the Social Security Administration. Neither the collector of the original data nor the Consortium bear any responsibility for the analyses of interpretation presented here.

Introduction

Scant work histories from the 1940s that extend to later years make it difficult to analyze how women's wartime work relates to life outcomes and to the general rise in female labor force participation in the decades after the war. Women accounted for over 35 percent of civilian workers at the peak of the influx of women into the labor force during World War II. Not until 1965 did women again make up such a large percentage of the workforce. The rise in women's labor force participation and in their share of workers since WWII is one of the dominant labor market changes of the past half century. Women's labor market participation was on the rise in the decades prior to WWII. In this study, we identify the women who participated in the labor force during the war and examine their and their spouses' labor market outcomes.

Understanding how the increased participation during the war affected the growth in women's labor force attachment after the war has been addressed in several key studies. Goldin (1991) focuses on the labor market dynamics at play immediately following the war. She finds that married women who worked during WWII accounted for about 20 percent of women who were working in 1950. She also finds that about 50 percent of the women who entered the labor force during the war withdrew between 1944 and 1950. Based on this and other evidence she concludes that though WWII was vital in the evolution of women's labor market participation, it did not necessarily account for the subsequent persistent rise in participation. Goldin does note that women's wartime labor force participation may have produced long-lasting changes in employers' attitudes about women's capabilities in the labor market.

Acemoglu, Autor, and Lyle (2004) also examine how women's wartime participation in the labor market affected participation rates and the wage structure after the war. These authors note that the percentage of men who served in the armed forces varied by states and that these

differentials produced plausibly exogenous differences in wartime and post-war female participation rates. Women's state level post-war participation rates were positively related to the men's state level military participation rates. They also infer that by 1950 women were closer substitutes for men who graduated high school than for those with less education based on the changes in males' wages across the education distribution.[1]

In a recent study, Goldin and Olivetti (2013) also examine the effects of state level differences in wartime female labor participation by instrumenting for women's labor supply using male military mobilization rates. They find that women's labor market participation and hours were higher after the war (in 1950 and 1960) in states that had higher wartime military participation among men. Their results also indicate that the post-war participation effects were greatest among women with at least 12 years of schooling.

We add to this literature by analyzing how women's temporary wartime labor market participation relates to their subsequent labor market and family outcomes. As in Goldin's 1991 study, we are able to identify the women who worked during the war, but we look at outcomes measured at a much later date and consider the effect of labor force participation on the probability of marriage and on husbands' attributes. We use individual level data from the 1973 Exact Match file, which paired the 1973 Current Population Survey data with Social Security Administration data. Crucial to this analysis is our ability to identify women who meet the work patterns typically attributed to the iconic Rosie the Riveter.[2]

[1] Fernandez, Fogli, and Olivetti (2004) also examine how the differences in mobilization rates impacted women's labor supply but focused on later generations of women who did not work during the war themselves.

[2] The Exact Match file allows us to examine the longer run impacts of wartime participation on women's own subsequent labor force participation. It also allows us to examine any links between women's wartime labor market participation and spousal matching and husbands' earnings. This study extends the time frame analyzed by Goldin (1991). That study was based on the Palmer Survey, which identified retrospective work histories for a sample of

Rosies can be defined as women who temporarily worked some time during the years 1942, 1943, 1944, and 1945 and then left the labor force after the war. The Social Security Administration data allow us to distinguish between women who did or did not work in the years 1947 to 1950 as well as distinguish between women who did or did not work in the years 1937 to 1946. With these data we identify several distinct work patterns for working age women during and after the war. We first focus on two groups of women, those born between 1906 and 1915 who were 30 to 39 years of age in 1945, the final year of the surge in women's labor market participation, and those born between 1916 and 1925 who were 20 to 29 years of age in 1945. For this younger group, identification of their labor market participation during the war is most precise given that they were at the beginning of their careers during the peak participation years.

Identifying potential participation during the war relies on aggregated earnings data between 1937 and 1950 combined with reported quarters of Social Security coverage during 1947 to 1950. With known quarters of coverage from 1947 to 1950 and an assumed dollar value for each quarter, labor market participation between 1937 and 1946 can be inferred. Members of the youngest birth cohort, those born in 1925 are 15 to 21 years of age in 1937 to 1946 and are between 17 and 20 during the critical years 1942-1945. The women born in 1916 are 22 to 29 in 1942 to 1945. Thus, though the data require inference concerning the distribution of when individuals worked between 1937 and 1946, the younger women are more likely to have worked in the later part of this ten year period (during the war years).

We find that women who were temporarily in the labor force during the war, but left at its conclusion, had different outcomes later in life than women who did not work or who had

women who worked in 1950. The Palmer Survey included labor market variables for the years 1940, 1944, and 1949-1951.

different work patterns during and after the war. They were more likely to work in the future than their nonworking peers, but their earnings, conditional on work, were similar. The women who temporarily worked during the war were also more likely to be married in 1973 than women who worked during and after the war and those who did not work during the war, but did work after the war. However, they were not more likely to be married in 1973 than their nonworking peers.

For married women we also analyze the relationships between their wartime work patterns and their husbands' characteristics and earnings. Women who worked during and after the war and those who worked during the war, but then exited, were more likely to be married to WWII veterans than women who did not work and women who first entered the labor force after the war. The relationship between women's wartime work patterns and their husbands' educations was mixed; however, women who temporarily worked during the war and then exited had more highly-educated spouses than nonworking women within each birth year group. The women who worked during the war and exited after it also had higher earning husbands than the spouses of nonworking women and the spouses of women who first entered the labor market immediately after the war.

We also construct a comparison group of women born in 1930 to 1934 who were not affected by the war, but for whom we can identify early work life labor market measures comparable to the measures used to identify war and post war labor market participation for a group of women born in 1916 to 1920. Women in the comparison group who worked and then exited the labor force were more likely to be married in 1973 than women who never worked or who had other work patterns. In contrast, the women born earlier, who worked and then exited were not more likely to be married than their nonworking peers.

Women in the comparison group who had temporary labor force participation did not exhibit higher future labor market participation than non-workers, but the women whose temporary work was during the war did (birth years 1916-1920). The relationship between women's early work patterns and their husbands' future earnings were similar for the comparison group and the women who were in their 20s during the war.

An alternative estimation strategy would be to perform instrumental variables analysis using the local WWII mobilization rate as an instrument for women's wartime labor force participation (similar to methods used by Acemoglu, Autor, and Lyle (2004) and Goldin and Olivetti (2013)). We feel that this is not optimal in this study for two reasons. First, the CPS data only provide the census region in which each woman lived in 1973. Although the average mobilization in a census region (using mobilization estimates from Acemoglu, Autor, and Lyle (2004)) does appear to be a sufficiently strong instrumental variable, we doubt that it meets the exclusionary restriction in our case because the wartime mobilization rate may have impacted later life outcomes directly. Second, we are unable to instrument for all observed work patterns because we have an insufficient number of instruments.[3] For these reasons, instrumental variables estimation is not our preferred method in this study.

While many of these findings are as expected, this study provides additional understanding of how wartime labor market participation varied for different birth years and how the participation was related to their earnings and labor force participation later in life as well as how it was related to their spouses' characteristic and earnings.

[3] Nevertheless, we have performed this analysis instrumenting for any work during the war (regardless of future labor force attachment). Generally, instrumental variables results are similar with the exception that these models report that women who worked during the war were less likely to be married or widowed in 1973 and had higher earnings in 1973 conditional on working. These differing results indicate that there is likely selection into working and are available upon request.

Labor Market Participation during WWII

Women increased their labor force participation during the war for numerous reasons. The contraction in male civilian labor supply led to increased wages for women, bidding more into the market. Some women entered the labor force in response to the same type of patriotic appeals that drew men into the armed forces. Further, lower family income while a husband was in the armed forces may have contributed to higher participation.[4]

How WWII impacted labor force participation can be seen in Figure 1. The figure presents men's and women's participation rates between 1940 and 1952. Both civilian and total, including participation in the armed forces, labor force participation are presented for individuals 14 years of age and above. During the war years, the total labor force participation rose for men and women with men's participation driven by service in the armed forces and women's driven by work in the civilian labor force.

The total participation rate for men rose from 82.6 percent in 1940 to 88.4 percent by 1944, and by 1950 it fell back to 83.2 percent. The importance of men's service in the armed forces is seen in the contrasting civilian participation rates. In 1944 over 11 million men were serving in the armed forces, representing 21 percent of men 14 years of age or older. The pre-war, male civilian labor force participation rate in 1940 of 81.5 percent, fell to 65.6 percent in 1945, and then rose to 80.3 percent in 1950.

Among women, the total participation rate rose from 27.9 percent in 1940 to its peak of 36.5 percent in 1944. By 1947 it had dropped to 30.8 percent, and by 1950 it was 32.8 percent.

[4] See Goldin (1991) for a discussion of other mechanisms affecting women's decision to enter the labor market during the 1940s. Mulligan (1998) addresses numerous explanations for the rise in employment and hours of work during WWII and finds that increased wages do not explain the rise, given that after tax wages did not rise during the war. He points to the possibility of non-pecuniary causes for the increased participation in the civilian workforce.

While women served in the armed forces, this participation was less pronounced than among men. Between 1942 and 1945 women accounted for 3 percent of all new Navy enlistments and they accounted for less than 1 percent of Army active duty personnel during these years.

As is evident from the figure, the concurrent rise in women's participation in the civilian labor force and drop in men's civilian participation during the war meant that women's share of the workforce grew substantially from 25.4 percent in 1940 to 35.3 percent in 1945. By 1950 women accounted for 31 percent of the civilian labor force.

The wartime participation rates among women within age-groups can be seen in Figure 2. From the figure it is clear that younger women had the highest participation rates. The participation rate for women in their early twenties rose from 49 to 54.7 percent between 1940 and 1944 while teenage women's participation rose from 23.1 to 41.7 percent. The relative gain in participation rates was also high among women ages 45 to 64 whose rate increased almost 10 percentage points, from 21.7 to 31.3 percent between 1940 and 1945. The participation rate for women 25 to 44 years of age rose by over 7 percentage points from 32.1 in 1940 to 39.5 percent in 1944. Next, we turn to Social Security Administration data to track the timing of women's entry into the labor force and the evolution of women's participation by birth years.

As suggested by Figures 1 and 2 women's participation in the labor force increased during wartime, but the timing of entry and the duration of women's participation can be better illustrated using data from the Social Security Administration (SSA). Figure 3 is derived from a table appearing in Correll (1947) and presents the distribution and pattern of prior years of work for workers who had Social Security covered earnings in 1944. The pattern among women helps to distinguish between women who temporarily entered the labor force during the war and those

who participated prior to and during the war. The SSA work histories begin in 1937, or two years after the passage of the Social Security Act. As seen in the figure, 19 percent of the women working in 1944 had worked continuously from 1937 to 1944. Another 17 percent had entered during 1938 to 1941 and worked continuously to 1944. But the pronounced entry of women in 1942, 1943, and 1944 accounts almost 48 percent of all women working in 1944. The remaining 6 percent of women had intermittent work histories for between 1937 and 1944. This evidence suggests that our characterization of wartime labor force participation, based on the Exact Match file variables while measured with some uncertainty, likely identifies actual participation during the years in question.[5]

Finding Rosie

The 1973 CPS data in the Exact Match file include the March demographic supplement's demographic data including household and family unit identifiers as well as labor market outcomes for the previous year. From the CPS we identify married couples based on the family identifiers and marriage indicator variables. The CPS is also a source for sex, race, education, marital status, and veteran status, census divisions, and standard metropolitan statistical area variables.[6]

The data from the SSA in the Exact Match file include annual Social Security taxable earnings and quarters of coverage in Social Security covered employment for each year from

[5] The Exact Match Data combine 1973 Current Population Survey (CPS) data with Social Security Earnings Records. The data are available from the Inter-University Consortium for Political and Social Research (ICPSR) in two separate, linkable files. The first data set designated as ICPSR 7616 is titled "Current Population Survey, 1973, and Social Security Records: Exact Match Data." The second data set designated as ICPSR 7617 is titled "Social Security Longitudinal Earnings Public Use File, 1937-1975."

[6] Sex, race, and marital status are each reported twice in the CPS data – on the control card and as a response on the March supplement, and sex and race are also reported on the SSA file. Individuals' sex or race are coded as female and black, respectively, if all three variables agree. Individuals are identified as married or widowed if the two CPS based marriage variables agree.

1951 to 1976, the last year of data is incomplete, however. The Social Security data also include aggregated earnings from 1937 to 1950 for each individual reported as a single variable. The data includes estimated quarters of coverage in Social Security covered earnings for the years 1937 to 1950, which is important to our identification of Rosies. We do not use the annual estimates of quarters of coverage because of the specific assumptions detailed in the documentation, however the documentation's description of the annual estimates for the years 1937 to 1950 indicates that they were derived from two variables – the aggregate earnings from 1937 to 1950 and an unreported aggregated quarters of coverage variable for the years 1947 to 1950.[7] From these variables we can identify the labor force participation pattern commonly associated with Rosie the Riveter – women who temporarily worked during wartime and then exited the labor force.

Women reporting no quarters in covered employment from 1947 to 1950, but who had positive aggregated earnings in the years 1937 to 1950 above a minimum threshold can be classified as working sometime during the period 1937 to 1946 and not working in 1947 to 1950.[8] This identification is closest to the definition of a Rosie, particularly a woman who was relatively young during the period from 1937 to 1946. There are three other groups to which these women are compared: (1) those who did not work at all in 1937 to 1950, (2) those who did not work in 1937 to 1946, but did in 1947 to 1950, and (3) those who worked from 1937 to 1950.[9]

[7] Ideally, the aggregated quarters of coverage would span the years 1946 to 1950 rather than 1947 to 1950 to better identify postwar exits, but the present identification allows for approximate identification of labor force participation during and after the war.

[8] Work in the period 1947 to 1950 is defined as at least one quarter of coverage in Social Security covered employment based on the reported quarters of for the period. Work in the period from 1937 to 1946 is defined as at least one year or at least four quarters of coverage utilizing the total quarters for this period as derived by the Social Security Administration and as described in the documentation.

[9] The file documentation for the Social Security earnings records describes how the aggregated quarters of coverage for the years 1947 to 1950 along with the aggregated earnings from 1937 to 1950 are used to estimate annual quarters of coverage for the years 1937 to 1950. The aggregate quarters of coverage for the years 1947 to 1950 are

These categories allow for the identification of women who had work patterns consistent with the iconic Rosie the Riveter. However, identifying women who were also concurrently employed in an occupation like craftsmen or operatives and in the manufacturing industry is not possible with these data. Thus, in the present study, "Rosie" refers to the work pattern only, rather than the more specific definition of "Rosie the Riveter" that would also include occupation and industry during the war years.

Figures 4 and 5 present the distributions of employed women by occupation and industry, respectively, in the 1940s and then in 1972 for the women in the CPS data. The left-hand panel of Figure 4 presents the distribution of women across eight occupation categories as of 1940, 1944, and 1972, and separately in 1972 for the two birth year groups we track. Between 1940 and 1944, the occupation category comprised of craftsmen, foremen, operatives, and laborers grew from 20% to 30% of employed women. The clerical occupations grew from 21% to about 27% of employed women over the same time period. By 1972 the overall distribution had shifted toward the clerical occupations which comprised almost 35% of employed women. In that year, the craftsmen, foremen, operatives, and laborers occupations accounted for 17% of all employed women, and is approximately the same percentage as for the subset of women born in 1906-1915. However, among women born in 1916-1925, 20% were in the craftsmen, foremen, operatives, and laborers occupations.

The right-hand panel further decomposes the 1972 occupational distribution for the women born in 1916-1925 by their work patterns during and immediately after the war. In 1972

used in the present analysis, but the annual distribution process adopted by the Social Security Administration is provided in the documentation. (See Social Security Administration (2008) pp 16-17.) The Social Security Administration allocated quarters of coverage to the years 1937 to 1946 if the total earnings from 1937 to 1950 are greater than the number of aggregate quarters from 1947 to 1950 times $500.

these women were 47 to 56 years of age. The prevalence of the clerical occupations among the women who had any wartime work experience is apparent. Of the employed women in 1972 (born in 1916-1925) who worked during the war but left immediately after it, 45% were in a clerical occupation. And among those who worked during the war and immediately after it, 43% were in a clerical occupation. The craftsmen, foremen, operatives, and laborers occupations were most prevalent among two groups of women at just over 22%: those who did not work during the war but did work immediately after it and those who worked during and immediately after the war.

Figure 5 replicates the presentation from Figure 4 but by industry rather than by occupation. The rise in the importance of manufacturing between 1940 and 1944 is evidenced by its share increasing from 21% to 34% of employed women. By 1972 its share dropped to 19% while the share in the finance, business, repair and professional industries grew to 40%. Decomposing the 1972 distribution by our two birth year groups reveals a distribution similar to the overall distribution, but among women born in 1916-1925, a slightly higher percentage, 21% were in manufacturing.

The decomposition of the 1972 industrial distribution for the women born in 1916-1925 in the right-hand panel by their work patterns during and immediately after the war indicates that manufacturing's share is highest, 28.5%, among the women who worked both during and immediately after the war. This suggests some evidence of persistence in manufacturing among women who had continuous work histories during and after the war. The women who exhibited the "Rosie" work pattern of work during the war and exit after the war had an industrial distribution in 1972 similar to the distribution among women who did not work before or immediately after the war. Together, the distributions of employed women as of 1972 indicate

that those who worked during and after the war were in clerical occupations and had the highest likelihood of work in the manufacturing industry among the other wartime work categories. The women who exhibited the "Rosie" work pattern had the highest percentage of women in the clerical occupations and shared the highest percentage in the finance, business, repair and professional industry among the other wartime work categories.

Table 1 presents the variable means for the four subsamples of women we consider. The first four columns summarize the means and standard deviations or the two birth year groupings that were of working age during WWII. The third and fourth columns are the subset of women born in 1916 to 1920 to whom we compare the group born in 1930-1934 who were not affected by the war. The younger birth cohorts have higher levels of education and are more likely to be married as of 1973, particularly the women in the comparison group born in 1930-1934. However, the total percent of women who are either married or widowed as of 1973 is similar across the birth year categories. The average annual earnings are presented in 2013 dollars and vary as expected by the years and ages over which they are averaged.[10] The pattern for the non-wage income, derived from CPS variables, as of 1972 is also as expected. This variable is the sum of property and other income and does not included any transfer income. The geographic controls' means are similar across the birth year groups.[11]

The proportion of the women who potentially worked during the war, based on the

[10] Earnings and non-wage income are rebased to 2013 dollars by the personal consumption expenditures price index.
[11] Table A-1 presents the variable means for the two primary age groupings by work patterns. These conditional means preview some of the following regression results. Further, women who worked during the war were less likely to be black. This difference is in part due to Social Security's industry coverage during the war years. Also, the women who worked during the war and then exited had the highest years of education. The geographic controls, as of locations in 1973, also indicate greater concentrations in the North East and Middle Atlantic among the women who worked during the war than among those who did not. Though the Exact Match file's location variables are reported as of 1973 wartime work is consistent with results reported by Acemoglu, Autor, and Lyle (2004).

definitions described above, is identified by summing the last two work pattern variables. Twenty-seven percent of the older cohort potentially worked during the war and 34 percent of the younger cohort born in 1916-1925 worked in Social Security covered employment. These percentages are lower than those reported in Figures 1 and 2 for several reasons. First, Social Security covered employment was a smaller fraction of the civilian labor force in the 1940s and 1950s than it is today.[12] Importantly, the work patterns we identify for the two primary birth year groupings are restricted to women who were not self-employed, were not in government jobs, in farming, in domestic services, or who worked for non-profits.[13] Second, the particular definition of work used here, requires that a women works at least one year from 1937 to 1946 as defined by the total quarters of coverage reported in the Social Security portion of the Exact Match file.

Table 2 presents the means for the husbands of the women in the sample. Veteran status is higher among the husbands of the younger cohort, born in 1916 to 1925, at 55%, relative to 21% for the husbands of the women in the older cohort. Husbands' average education rises for the younger cohorts. The average ages and earnings are as expected. The averages for the married women, in the lower part of the table, are generally similar to the averages for all women, but as will be seen in the next section there are several significant differences.

[12] Compson (2011) reports that in 1949, workers in Social Security covered employment accounted for 60.2 percent of total civilian employment, by 1955 the covered employment rose to 82.5 percent of civilian employment and by 1975 it accounted for 90.6 percent.

[13] These industry restrictions of Social Security covered employment prior to 1951 are discussed in Kopczuk, Saez, and Song (2010),p. 102.

Results

Women's Marriage and Employment

It is reasonable to assume that a woman's employment during WWII is related to her marital status both then and later in life. Women may have decided to enter the workforce before or during the war as a result of whether they were married, and if so as a result of their husband's war service (or lack thereof). Conversely, we may also expect whether a woman entered the workforce during the war to affect her marriage market outcomes both then and later.

Table 3 displays results from probit regressions (marginal effects) where whether a woman was married or widowed in 1973 is the dependent variable. We report results for 4 groups of women as discussed in the previous section. The first sets of two columns contain results for women born in 1906 to 1915 and 1916 to 1925 (our two main age groups that are eligible to be Rosies). The remaining sets of columns pertain to those born in 1916 to 1920 and 1930 to 1934.

The education controls provide mixed results across the groups with college graduates in the oldest group less likely to be married or widowed and those with high school educations born in 1916 to 1925 more likely to be married or widowed. Black women are also less likely to be married or widowed in 1973 for all four age groups.

Across the board, women who worked consistently throughout the war and immediate post-war period were less likely to be married or widowed than those who never worked; they may have made the decision to work based on their marital status, making this result unsurprising. Similarly, women who worked after, but not during the war are less likely to be married or widowed in 1973. The comparison group of women who were too young to work during the war are not less likely to be married or widowed if they joined the labor force at an

equivalent time in their lives. The group of interest, women who worked during the war, but not after, are not more likely to be married or widowed in 1973 than those who never worked among the oldest age group. Among those born in 1916-1925 women with the Rosie work pattern are more likely to be married or widowed than women who did not work during or immediately after the war. They were more likely to be married or widowed than women who did not work during the war, but did immediately after, and were more likely to be married or widowed than women who worked during and after the war. In the comparison group, women who worked, then exited the labor force are more likely to be married or widowed in 1973 than those who never worked.

We next consider women's selection into the labor force later in life as well as their conditional earnings. Figures 6 and 7 preview the Heckman selection model's results presented later in Table 4. Figure 6 tracks the two primary age groups' labor force attachment and conditional earnings by their respective work status during and immediately after the war. Consider the series reflecting the percent of women working from 1951 to 1971 for both birth year groupings. The two upper series reflect the higher participation rates for the women who worked immediately after the war. The highest participation rates among the oldest group were among those who worked during and after the war. These two series exhibit similar time series patterns among the women born in 1916-1925 that are distinct from the patterns from the previous panel – reflecting the effects of the baby boom generation on the work patterns of members of these birth years. The lower two series distinguish between the labor force participation of women who worked during the war and then exited immediately after and those who did not work during those periods. On average, the women with the Rosie work pattern had higher labor force participation in each year than did women who did not work during and after

the war. The participation rate of the women with the Rosie work pattern rose to the same rate by the early 1970s as women who did not work during the war but did work immediately after it.

The real annual earnings conditional on participation are presented in the bottom two panels. The existence of higher real annual earnings for women who worked during and after the war relative to the other groups is clear from these graphs. However, the other series are less distinguishable from each other. The following regressions will help distinguish relative earning once we condition on additional controls.

Figure 7 presents the comparison between the women born in 1916 to 1920 and the comparison group of women not affected by the war – those born in 1930-1934. These graphs indicate the general similarities across the two birth year groupings when subdivided by work status variables defined at the same ages for the two groups. However, there are a few features that are different. The labor force participation rates of women who worked during the war but not after it was higher in each year from 1951 to 1961 than the rate among those who did not work. In contrast, within the comparison group (born in 1930-1934) the labor force participation rates were essentially the same for the two groups defined by the labor force participation patterns over the same ages as the older cohort (born in 1916-1920). Also, the real annual earnings series conditional on participation of women born in 1930-1934 indicates that the women who enter the labor force sometime between 1961 and 1964 after not working between 1951 and 1960 have the second highest earnings series.

Table 4 contains results from a Heckman selection model in which we first predict whether a woman decides to participate in the labor force based on her individual characteristics, and in the second step consider her annualized earnings (in 2013 dollars). The selection step includes three variables, married, widowed, and non-wage income not included in the average

earnings step. These three variables are assumed to influence the decision to work but not the annual earnings conditional on work.

We report results for the same four groups of women as in Table 3. Based on when their earnings are observed, the oldest group's labor outcomes (leftmost columns) are observed when they are 45 to 60 years old and the younger group of women are observed between ages 35 and 50. The younger comparison sample and restricted potential Rosie sample are observed between ages 35 and 41.

In the selection step, results are inconsistent on the effects of education on the decision to participate in the workforce. For the oldest group of women, we see that more educated women are more likely to work than those with less than a high school degree, although they are equally likely or less likely to work in the other age groups. Results also show that married and widowed women are less likely to work across the board, due to the presence of their spouses' income or other income, besides the non-wage income, which is also included in this step. Recall that the non-wage income is property and other income and does not include any government transfer income including Social Security benefits. When significant, in the second and fourth regression this income has a negative effect on participation. Black women in the oldest group are more likely to work, but in the other groups there is no statistical difference. The census division controls (South Atlantic is excluded) as well as the urban controls are generally individually insignificant, though women in the two primary age groupings who reside in ring cities are less likely to work.

Turning to the work pattern controls indicates that women who consistently participated in the workforce during and immediately after the war (or the equivalent for the comparison group) are more likely to work than those who never worked during that period. We find similar

results for women who joined the labor force after the war. The women who worked during the war but left the labor force after are also more likely to work, although this is not the case for the comparison group. The coefficient for the comparison group is about a third the size of the coefficient in column 3, and not statistically different from zero.

The effects of various attributes on women's earnings are quite aligned with expectations. For all groups, each incremental increase in educational level is associated with a larger premium over women who did not finish high school. For example, our results indicate that women who finish high school receive between $1,725 and $3,268 more per year than those who do not, and women who finish college receive between $4,574 and $13,238 more than those who did not finish high school. Black women get paid less in general. The Census division controls indicate higher earnings for women in the Middle Atlantic and in the East North Central regions. The Lowest earnings are in the West South Central. Women in SMSAs and the ring cities have higher earnings than women residing in rural areas or smaller cities.

The pattern suggested in Figures 6 and 7 is confirmed here with strong evidence that women who participated in the labor force throughout the war and post-war period have higher income and some evidence that those who joined the workforce after the war also have higher incomes. The group of interest, those who worked during the war, and then left the labor force after its end, do not have higher or lower incomes than those who never worked in three of the four regressions. Among the women born in 1916 to 1925 the women who worked during but not after the war earned $963 less per year which was marginally significant at the 0.058 level. The likelihood ratio tests indicate that the model is appropriate in each case.

Husbands' Outcomes

We now turn to investigating how women's wartime labor market participation and other characteristics are related to their husband's characteristics. Table 5 reports the probit regression results (marginal effects) when the dependent variable is husbands' veteran status.[14] From the table it is evident that the likelihood that a woman's husband was a WWII veteran increases as her education increases. The likelihood that black women born in 1906 to 1915 were married to a veteran was not statistically different than the likelihood for other women. Among women born in 1916 to 1925, black women were less likely to be married to WWII veterans.

For the women born in 1916 to 1925, the coefficients on the Census division controls from the 1973 CPS data are somewhat consistent with the mobilization rates presented in Acemoglu, Autor, and Lyle (2004) even though the location variable does not necessarily correspond to the women's location during the war years. Women in New England, for example, were almost 9% more likely to be married to a WWII veteran than women in the South Atlantic states. The Census division controls are all insignificant among women born in 1906 to 1915. Recall from Table 2 that 21% of husbands of this group were veterans while 55% of the husbands married to women born in 1916 to 1925 were veterans.

Importantly though, even with location controls, the work pattern variables indicate that women who worked during the war, but not after, and those who worked during and after the war were more likely to be married to veterans than women who did not work in either period and women who first entered the labor force after the war. Among the women born in 1906 to 1915, those who worked during and after the war were 26 percent more likely to be married to veterans than the women who did not work during or after the war and this likelihood was

[14] The "Rosie the Riveter" song from 1942 includes the lyrics "Rosie's got a boyfriend, Charlie, Charlie, he's a Marine, Rosie is protecting Charlie, Working overtime on the riveting machine."

significantly higher than the likelihood for women who worked during the war but exited after the war.

Table 6 presents the relationships between a woman's characteristics and her husband's education level, reported as a continuous variable. Across the board, husbands' education levels were positively related to their wives' education levels. Black women's husbands had lower education levels than the husbands of other women, though the side-by-side comparisons indicate that the negative effect declined for the younger cohorts. The census divisions have the most significant relationships with husbands' education among the oldest cohorts and the SMSA controls are as expected with significantly higher years of education.

The three controls for prior work patterns present different results among the separate year of birth cohorts. Among the oldest group born in 1906 to 1915, women who worked during the war, but exited after the war were married to men who had about a third of a year more education than the spouses of women who did not work. The women with the Rosie work pattern had significantly more highly educated husbands than the women with the other two work patterns.

Women who worked during the war, but exited after the war, as well as the women who worked during and after the war were married to men with more education than the husbands of women in the other categories for the group born in 1916-1925. The results for the comparison group born in 1930 to 1934 indicate an education advantage of 1.08 years for the husbands of women who worked and then exited that is significantly higher than all of the other work pattern categories. Among the similar group of women born in 1916 to 1920, the relationship between their work pattern controls and their husbands' education levels, while all positive, are not

significantly distinguishable from each other. These results are largely suggestive of assortative mating within each birth year grouping.

The final outcome variable based on husbands' characteristics is their annualized earnings over several years. The left-hand panel of Table 7 presents the results of two regressions restricted to the husbands of women born in 1906 to 1915. Following the age restrictions used for this group's own earnings estimates as reported in Table 4, the dependent variable in this regression is husbands' average real annual earning between the ages of 45 to 60.[15] Husband's own characteristics are used to estimate earnings in the first regression. For this group, veteran status was associated with lower earnings. Recalling that the earnings records are contingent on work in Social Security covered employment, the negative coefficient for veteran status may indicate fewer years in covered employment if these men continued in the military. The negative effect could also arise from differential selection into the armed forces.[16] Higher education levels were generally associated with higher earnings and older men had lower annualized earnings. This negative relationship for age is due in part to rising real wages. Over the period for which we observe the men's earnings, 1951 to 1975, real annual earnings grew 54 percent, or 1.8 percent per year. The negative relationship between age and average earnings is also due to Social Security's increasing coverage of the United States' work force during the years over

[15]Men's real average annual earnings are in 2013 dollars. Men's earnings from the SSA earnings histories are capped at the Social Security taxable maximum. Men whose earnings are at the taxable maximum in a given year are imputed using the conditional mean earnings above the taxable maximum for that year. The conditional mean earnings above the taxable maximum are derived from Table 4B in the 2013 *Annual Statistical Supplement to the Social Security Bulletin*.

[16]Angrist and Krueger (1994) examine the relationship between WWII veteran status and earnings and find that veterans earn more than non-veterans in regressions that do not use quarter of birth as an instrument for veteran status. The authors note that certain factors like low AFQT scores and disabilities lead to positive selection into the armed forces even with conscription. Using the instruments actually indicate a negative effect caused by veteran status. The authors compare their main results based on the 1980 Census to results based on other data including results based on the 1973 Exact Match file. Their results based on the Exact Match file are based on a different sample than is used here, but they find results consistent with their primary estimates that are less statistically robust.

which earnings are averaged. The location controls indicate that husbands' earnings are highest in the Middle Atlantic and East North Central states and are higher in SMSAs and their ring cities than in rural areas.

The next two columns add wives' characteristics to the husbands' earnings regressions.[17] The coefficients on the husbands' characteristics are generally lessened by the inclusion of their wives' controls. Women's education levels were significantly positively related to husbands' earnings for both age groupings and husbands of black women had lower annual earnings.

Women's work pattern controls indicate that women who worked during the war but exited after the war had the highest earning husbands, though the earnings advantage was not significantly greater than the earnings effect for the women who worked during and after the war or the effect for women who entered the labor force after the war.

The right-hand set of regressions in Table 7 presents the results for the husbands of women born in 1916 to 1925. The husbands of these women who were veterans had higher annual earnings than the non-veterans with the last column indicating that the premium was $1,859 per year, when wives' characteristics are included in the regression. Own and wives' education levels again indicate a positive relationship with earnings. All of the women's work pattern controls were related to higher earning spouses. The women who worked during the war and then exited had marginally significantly higher spousal earnings than the spouses of the women who worked between 1947 and 1950, but not before.

Table 8 compares the husbands' earning regression results for women born in 1916 to 1920 to the results for the comparison group of women born in 1930 to 1934. As anticipated, husbands' own education levels were positively related to their earnings. For the group married

[17]See Lam and Schoeni (1993) for an example of earnings equations that include men's own characteristics along with their wives' and other family members' schooling as independent variables.

to women born in 1916 to 1920 the husband's education coefficients were not significantly different from each other. For the later birth year comparison group, college graduates had significantly higher earnings than all other education levels. Women's education levels were positively related to their husbands' earnings for both groups. However, of the women born in 1916 to 1920 only those with some college had significantly higher earnings spouses than the husbands of the excluded education group. The women's education level coefficients from the final regression, while all positive and significant, are not different from each other.

Across the regressions for the two 35-41 age groups (born in 1916-1920 and 1930-1934) the women's prior work pattern controls exhibit the same relative magnitudes. The women who worked and then exited had the highest earning husbands and the advantage was significantly greater than the earnings effect for the women who had other work patterns. These results indicate that the relationship between husbands' earnings and wives' prior work patterns were quite comparable for both birth-year groups. The relationship between temporary work by group of wartime "Rosies" and their husbands' future income was thus quite similar to the effect of temporary work by the comparison group born 14 years later.

Summary and conclusions

We have examined how women's work patterns during WWII were related to their subsequent labor market outcomes, marriage rates, and their husband's human capital and earnings. Data from the 1973 Exact Match file that linked CPS data to Social Security earnings records allow us to identify women who exhibit the work pattern that is consistent with women commonly known as "Rosie the Riveter." These women were temporarily in the labor force during the war, but left at its conclusion. Our identification of women by their wartime work

patterns that are available through the earnings records should be thought of as identifying "Rosies" because we cannot also identify wartime industry or occupation of employment.

Comparing these women to women who had other work patterns during and after the war suggests that they are just as likely to be married or widowed as of 1973 as women who did not work during or after the war conditional on other characteristics. They were more likely to be married or widowed than women who worked both during and after the war and women who first entered the labor force immediately after the war.

We also analyze the relationship between women's work patterns during and after the war and their future earnings. Women who temporarily worked during the war were more likely to work in the future than women who did not work during or immediately after the war, but conditional on working, their earnings were no higher. In contrast, women who worked during and after the war and those who entered immediately after the war had higher likelihoods of future labor market participation. As expected, women who worked during and after the war had the highest future earnings.

There is also evidence that the women who worked during and after the war were more likely to be employed in manufacturing later in life based on the industry of employment from the CPS. Women who had any wartime work experience were also more likely to be employed in clerical occupations later in life than were women who did not work during the war.

Conditional on marriage we consider the relationship between the women's work patterns and their husbands' characteristics. Women who worked during and/or immediately after the war were more likely to be married to WWII veterans than were women who did not work during or immediately after the war as were women who worked during and immediately after the war. Husbands' education levels were positively related to their wives' education levels. Also, wives

who worked during the war and then exited had more highly educated spouses than nonworking women.

Husbands' earnings are positively related to both their own and their wives' human capital indicators. Women who worked during the war and exited after it had higher earning husbands than the spouses of nonworking women and women who first entered the labor market immediately after the war.

Our identification of women who exhibited the Rosie work pattern is most precise, due to the availability of data, for women who were relatively young during the war – women in their 20s. However, apart from the wartime effects on labor market participation, women in their 20s during this time period were also likely to experience temporary labor market attachment followed by a period of years out of the labor market as a result of having children at home. We identify a comparison group of other young women, born later, for whom we construct identical labor market participation control variables as the controls we constructed for the women affected by the war. This comparison group is comprised of women born between 1930 and 1934 and they are compared to the younger Rosies who were born between 1916 and 1920. For both groups we can track labor market participation and earnings when the women are 35 to 41 years old. The comparison between the two cohorts allows us to test whether the labor market behavior while the women were in the twenties had different impacts on the same set of outcome variables.

Women in the comparison group who worked and then exited the labor force were more likely to be married or widowed in 1973 than women who never worked or who had other work patterns. In contrast, the older group born in 1916 to 1920 who worked and then exited were not more likely to be married or widowed than their nonworking peers. The effects of these

differential marriage rates are seen in the two birth year groups' labor market participation and earnings at later ages. Women in the comparison group who worked and then exited the labor force are not more likely to work at later ages than are their nonworking peers, but women who worked during the war and after are also more likely to work. In the husbands' earnings regression the two groups' work pattern controls produce similar results. Thus, the effect of temporary work by women during the war on their husband's future earnings was not distinguishable from the effect of temporary work by the comparison group on their spouses' earnings.

Altogether these result from the 1973 Exact Match file bolsters some of the earlier findings related to women's wartime labor market participation. Consistent with Goldin's (1991) observation, labor market participation during the war does not appear to be a primary driver of the subsequent rise in women's participation, at least at the individual level. The evidence here enhances our understanding of the long-run outcomes for women who temporarily worked during the war and how they compare to the outcomes of women who had different work patterns.

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Tables

Table 1
Variable Means – Women

	Birth Years							
	1906-1915		1916-1925		1916-1920		1930-1934	
Variables	Mean	Std. Dev	Mean	Std. Dev.	Mean	Std. Dev	Mean	Std. Dev
high school	0.31	0.46	0.42	0.49	0.39	0.49	0.49	0.50
some college	0.09	0.29	0.11	0.31	0.10	0.30	0.10	0.31
college graduate	0.08	0.27	0.08	0.27	0.08	0.27	0.10	0.30
married	0.61	0.49	0.76	0.43	0.74	0.44	0.81	0.39
widowed	0.24	0.43	0.10	0.30	0.12	0.33	0.03	0.16
non-wage income	3,726	12,904	2,385	10,102	2,665	10,033	1,740	10,263
black	0.07	0.26	0.08	0.28	0.08	0.27	0.09	0.29
New England	0.06	0.24	0.06	0.24	0.06	0.24	0.06	0.24
Middle Atlantic	0.19	0.39	0.18	0.38	0.19	0.39	0.17	0.38
East North Central	0.19	0.39	0.21	0.40	0.20	0.40	0.20	0.40
West North Central	0.09	0.28	0.07	0.26	0.07	0.26	0.08	0.27
South Atlantic	0.15	0.36	0.15	0.35	0.14	0.35	0.14	0.35
East South Central	0.06	0.24	0.06	0.24	0.06	0.24	0.06	0.23
West South Central	0.10	0.30	0.09	0.29	0.09	0.28	0.11	0.31
Mountain	0.04	0.19	0.05	0.21	0.05	0.21	0.05	0.22
Pacific	0.12	0.33	0.13	0.34	0.13	0.34	0.14	0.34
Central City	0.32	0.47	0.30	0.46	0.31	0.46	0.28	0.45
Ring City	0.34	0.47	0.38	0.49	0.36	0.48	0.41	0.49
no work/work	0.17	0.38	0.21	0.41	0.18	0.38	0.08	0.26
work/no work	0.08	0.27	0.11	0.31	0.12	0.33	0.30	0.46
work/work	0.19	0.39	0.23	0.42	0.21	0.417	0.43	0.50
Observations	5,355		6,815		3,253		3,249	
Average Annual Earnings	11,375	11,818	9,771	10,893	8,702	9,410	12,705	13,456
Earnings Observations	3,758		5,144		1,847		2,350	
Age range	45-60		35-50		35-41		35-41	

Notes: For birth years 1906 to 1925 the three labor force participation variables (no work/work, work/no work, work/work) are defined by participation in 1937 to 1946 and 1947 to 1950. For the comparison birth years of 1930 to 1934, the labor force participation variables are defined by participation in 1951 to 1960 and 1961 to 1964.

Table 2
Variable Means – Husbands' Regressions

	Women's Birth Years							
	1906-1915		1916-1925		1916-1920		1930-1934	
Variables	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Husbands'								
WWII Veteran	0.21	0.41	0.55	0.50	0.46	0.50	0.22	0.42
education in years	11.08	3.60	12.07	3.32	11.82	3.34	12.90	3.29
high school	0.23	0.42	0.34	0.47	0.31	0.46	0.36	0.48
some college	0.07	0.26	0.11	0.32	0.11	0.32	0.11	0.31
college graduate	0.11	0.31	0.12	0.33	0.11	0.31	0.21	0.40
age in 1973	64.86	5.56	55.46	5.51	58.02	5.01	44.41	4.68
New England	0.06	0.24	0.06	0.25	0.07	0.25	0.06	0.24
Middle Atlantic	0.17	0.38	0.17	0.38	0.18	0.39	0.16	0.37
East North Central	0.19	0.40	0.21	0.41	0.21	0.40	0.20	0.40
West North Central	0.09	0.29	0.08	0.27	0.08	0.27	0.08	0.28
South Atlantic	0.15	0.35	0.14	0.35	0.14	0.34	0.14	0.35
East South Central	0.06	0.24	0.06	0.24	0.06	0.23	0.06	0.24
West South Central	0.10	0.30	0.09	0.29	0.09	0.28	0.10	0.30
Mountain	0.04	0.19	0.05	0.22	0.05	0.22	0.05	0.22
Pacific	0.13	0.34	0.13	0.34	0.13	0.34	0.13	0.34
Central City	0.28	0.45	0.27	0.44	0.27	0.45	0.24	0.42
Ring City	0.35	0.48	0.40	0.49	0.38	0.49	0.43	0.49
Average Annual Earnings	26,204	17,448	28,145	17,079	18,605	15,763	36,382	20,081
Earnings Age range	45-60		35-50		35-41		35-41	
Women's								
high school	0.34	0.47	0.44	0.50	0.40	0.49	0.51	0.50
some college	0.09	0.29	0.11	0.31	0.10	0.30	0.11	0.31
college graduate	0.08	0.27	0.08	0.27	0.08	0.27	0.11	0.31
black	0.05	0.21	0.06	0.23	0.05	0.23	0.06	0.23
no work/work	0.16	0.37	0.20	0.40	0.17	0.37	0.07	0.26
work/no work	0.09	0.28	0.12	0.32	0.13	0.34	0.33	0.47
work/work	0.17	0.37	0.22	0.42	0.20	0.40	0.40	0.49
Observations	3,150		4,904		2,268		2,473	

Notes: For birth years 1906 to 1925 the three labor force participation variables (no work/work, work/no work, work/work) are defined by participation in 1937 to 1946 and 1947 to 1950. For the comparison birth years of 1930 to 1934, the labor force participation variables are defined by participation in 1951 to 1960 and 1961 to 1964.

Table 3

Probit Regressions
Dependent Variable – Married or Widowed as of 1973

	Birth Years							
	1906-1915		1916-1925		1916-1920		1930-1934	
Variable	dF/dx	z	dF/dx	z	dF/dx	z	dF/dx	z
high school	-0.016	-1.44	0.024	2.51	0.018	1.31	0.016	1.06
some college	-0.020	-1.09	-0.001	-0.08	-0.009	-0.43	0.002	0.07
college graduate	-0.119	-5.96	-0.028	-1.70	-0.043	-1.79	0.007	0.30
black	-0.117	-5.78	-0.157	-9.13	-0.131	-5.34	-0.168	-6.95
New England	-0.050	-2.12	-0.032	-1.54	-0.006	-0.19	0.002	0.07
Middle Atlantic	-0.049	-2.80	-0.035	-2.27	-0.048	-2.15	-0.018	-0.80
East North Central	0.002	0.10	-0.004	-0.27	-0.006	-0.30	0.011	0.50
West North Central	-0.005	-0.25	0.013	0.66	0.011	0.39	0.028	1.01
East South Central	-0.003	-0.15	0.014	0.70	-0.032	-1.05	0.063	2.16
West South Central	-0.044	-2.17	0.019	1.09	0.039	1.56	0.006	0.24
Mountain	0.008	0.29	-0.013	-0.58	0.021	0.65	-0.019	-0.55
Pacific	-0.013	-0.71	-0.039	-2.32	-0.046	-1.90	-0.028	-1.13
Central City	-0.061	-4.99	-0.078	-6.71	-0.080	-4.76	-0.098	-5.23
Ring City	0.010	0.79	-0.015	-1.32	-0.013	-0.77	-0.026	-1.57
no work/work	-0.052	-3.75	-0.028	-2.54	-0.044	-2.56	-0.017	-0.64
work/no work	0.013	0.69	0.026	1.83	0.015	0.74	0.062	3.33
work/work	-0.122	-8.74	-0.037	-3.27	-0.069	-4.11	-0.047	-2.74
Observations	5,355		6,815		3,253		3,249	
Psuedo R^2	0.054		0.048		0.054		0.071	

Table 4
Heckman Selection Model

	Birth Years							
	1906-1915		1916-1925		1916-1920		1930-1934	
	Coef.	z	Coef.	z	Coef.	z	Coef.	z
outcome: average annual earnings	**ages 45 to 60**		**ages 35 to 50**		**ages 35 to 41**		**ages 35 to 31**	
high school	3,268	8.06	2,445	7.36	1,725	3.70	2,214	3.64
some college	5,430	8.50	2,494	4.82	2,665	3.50	3,413	3.61
college graduate	13,238	19.17	9,169	15.57	4,574	5.60	10,511	10.68
black	-2,874	-4.17	-1,654	-3.03	-1,276	-1.67	-1,954	-2.20
New England	392	0.48	144	0.21	1,130	1.12	-1,912	-1.55
Middle Atlantic	2,210	3.59	1,217	2.34	1,557	2.12	1,294	1.40
East North Central	976	1.61	1,055	2.10	1,812	2.52	210	0.23
West North Central	-802	-1.06	438	0.66	1,929	1.94	-541	-0.47
East South Central	305	0.35	1,021	1.45	796	0.80	-724	-0.59
West South Central	-1,703	-2.35	-1,069	-1.73	1,036	1.13	-1,791	-1.71
Mountain	231	0.23	-1,187	-1.53	-122	-0.11	-2,217	-1.62
Pacific	-313	-0.46	911	1.64	97	0.13	1,160	1.16
Central City	1,657	3.69	1,670	4.34	1,153	2.11	2,364	3.35
Ring City	1,417	3.12	1,048	2.81	828	1.54	1,639	2.54
no work/work	160	0.30	1,170	2.89	61	0.09	3,176	2.82
work/no work	-209	-0.30	-963	-1.90	-818	-1.11	492	0.57
work/work	6,683	12.33	4,841	11.76	5,657	8.56	7,869	9.61
constant	7,353	7.89	5,015	7.11	5,591	5.53	5,968	4.91
selection: worked								
high school	0.20	4.36	-0.02	-0.47	0.01	0.15	-0.09	-1.39
some college	0.20	2.84	-0.08	-1.28	-0.18	-2.15	-0.17	-1.88
college graduate	0.29	3.92	-0.06	-0.88	0.10	1.05	-0.29	-3.21
married	-0.46	-7.54	-0.58	-10.05	-0.45	-6.32	-0.65	-8.30
widowed	-0.09	-1.38	-0.19	-2.39	-0.25	-2.71	-0.35	-2.02
non-wage income	3.39e-7	0.24	-4.56e-6	-2.93	-1.78e-6	-0.79	-5.47e-6	-2.31
black	0.35	4.27	0.09	1.31	0.07	0.79	-0.01	-0.10
New England	0.13	1.42	-0.07	-0.87	-0.19	-1.67	-0.06	-0.46
Middle Atlantic	-0.01	-0.14	-0.06	-0.96	-0.15	-1.83	-0.12	-1.29
East North Central	0.03	0.45	-0.10	-1.75	-0.15	-1.87	-0.17	-1.89
West North Central	0.04	0.44	-0.06	-0.75	-0.23	-2.19	-0.12	-1.06
East South Central	-0.05	-0.52	-0.08	-0.94	0.01	0.07	0.14	1.06
West South Central	-0.01	-0.15	-0.02	-0.29	-0.15	-1.51	-0.20	-1.91
Mountain	0.09	0.81	-0.01	-0.11	0.02	0.18	-0.19	-1.40
Pacific	-0.01	-0.08	0.10	1.52	0.17	1.84	-0.23	-2.29
Central City	-0.03	-0.56	-0.05	-1.16	0.11	1.70	-0.09	-1.35
Ring City	-0.08	-1.71	-0.12	-2.79	0.09	1.48	-0.07	-1.13
no work/work	0.96	16.26	0.65	13.52	1.09	15.69	1.03	8.67
work/no work	0.63	8.45	0.55	9.32	0.28	3.86	0.09	1.26
work/work	1.12	18.13	0.68	14.25	1.04	15.76	1.04	14.91
constant	0.19	1.99	0.95	10.16	0.19	1.73	0.87	6.86
Observations, (censored)	5,355 (1,597)		6,815 (1,671)		3,253 (1,406)		3,249 (899)	
ρ,*(standard error)*	-0.42 (0.05)		-0.31 (0.04)		-0.38 (0.07)		-0.46 (0.05)	
likelihood ratio test, ρ=0 χ^2, (probability > χ^2)	27.83 (0.00)		28.55 (0.00)		13.38 (0.00)		30.15 (0.00)	

Notes: Regressions also include dummy variables for year of birth. For birth years 1906 to 1925 the three labor force participation variables (no work/work, work/no work, work/work) are defined by participation in 1937 to 1946 and 1947 to 1950. For the comparison birth years of 1930 to 1934, the labor force participation variables are defined by participation in 1951 to 1960 and 1961 to 1964.

Table 5
Probit Regression
Dependent Variable – Husband WWII Veteran

	Birth Years			
	1906-1915		1916-1925	
Women's Variables	dF/dx	z	dF/dx	z
high school	0.076	4.51	0.105	6.31
some college	0.153	5.37	0.162	6.55
college graduate	0.236	7.40	0.205	7.57
black	0.052	1.42	-0.070	-2.08
New England	-0.027	-0.82	0.089	2.54
Middle Atlantic	-0.005	-0.18	0.060	2.24
East North Central	0.001	0.04	0.040	1.58
West North Central	-0.005	-0.16	-0.015	-0.45
East South Central	-0.007	-0.20	0.060	1.69
West South Central	0.009	0.29	0.048	1.54
Mountain	-0.004	-0.11	0.011	0.29
Pacific	-0.004	-0.15	-0.001	-0.03
Central City	0.029	1.54	-0.007	-0.36
Ring City	0.031	1.70	0.017	0.94
no work/work	0.036	1.68	0.123	6.38
work/no work	0.181	6.28	0.218	9.46
work/work	0.263	11.62	0.217	11.47
Observations	3,150		4,904	
Psuedo R^2	0.106		0.082	

Notes: Regressions also include dummy variables for women's year of birth. The three labor force participation variables (no work/work, work/no work, work/work) are defined by participation in 1937 to 1946 and 1947 to 1950.

Table 6

OLS Regression
Dependent Variable: Husbands' Years of Education

	Birth Years							
	1906-1915		1916-1925		1916-1920		1930-1934	
Women's Variable	Coef.	t	Coef.	t	Coef.	t	Coef.	t
high school	2.888	24.95	2.557	29.24	2.562	20.03	2.446	19.28
some college	4.360	23.61	4.339	32.46	4.117	20.80	4.420	23.03
college graduate	5.879	29.63	5.375	35.84	5.284	24.07	5.896	30.92
black	-2.199	-8.78	-1.733	-10.00	-2.074	-7.93	-1.450	-6.25
New England	0.745	3.00	0.149	0.81	-0.004	-0.01	-0.204	-0.82
Middle Atlantic	0.582	3.17	0.114	0.82	0.076	0.37	0.224	1.16
East North Central	0.399	2.26	0.173	1.31	0.011	0.06	-0.046	-0.25
West North Central	0.512	2.39	0.206	1.21	-0.125	-0.50	0.085	0.37
East South Central	-0.109	-0.44	-0.427	-2.29	-0.803	-2.82	0.073	0.29
West South Central	-0.290	-1.39	-0.217	-1.33	-0.471	-1.93	-0.304	-1.41
Mountain	0.608	2.07	0.340	1.70	0.265	0.91	0.021	0.08
Pacific	0.728	3.71	0.587	3.98	0.419	1.91	0.399	1.96
Central City	0.663	4.98	0.676	6.59	0.750	4.96	0.518	3.55
Ring City	0.590	4.63	0.800	8.45	0.764	5.50	0.715	5.63
no work/work	-0.291	-2.04	0.175	1.70	0.237	1.48	0.409	1.79
work/no work	0.327	1.77	0.408	3.24	0.468	2.61	1.083	7.05
work/work	-0.116	-0.80	0.415	4.06	0.309	2.02	0.563	3.85
Observations		3,150		4,904		2,268		2,473
Psuedo R^2		0.376		0.363		0.362		0.387

Notes: Regressions also include dummy variables for women's year of birth. For birth years 1906 to 1925 the three labor force participation variables (no work/work, work/no work, work/work) are defined by participation in 1937 to 1946 and 1947 to 1950. For the comparison birth years of 1930 to 1934, the labor force participation variables are defined by participation in 1951 to 1960 and 1961 to 1964.

Table 7
OLS Regressions
Dependent Variable – Husbands' Average Annual Earnings

	Women born in 1906 to 1915 Husbands' Average Annual Earnings Ages 45 to 60				Women born in 1916 to 1925 Husbands' Average Annual Earnings Ages 35 to 50			
Variable	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Husbands' Controls								
WWII Veteran	-3,340	-4.64	-3,624	-4.94	2,454	5.62	1,859	4.19
high school	4,020	5.84	2,608	3.46	4,000	8.14	2,655	5.01
some college	5,625	5.21	3,891	3.40	5,227	7.39	3,335	4.41
college graduate	5,431	5.88	3,277	3.00	6,420	9.34	4,381	5.47
age in 1973	-1,100	-20.84	-1,068	-18.21	-1,182	-29.93	-1,191	-26.60
New England	3,580	2.68	3,013	2.26	5,133	5.17	3,843	3.88
Middle Atlantic	7,542	7.66	7,086	7.20	5,154	6.81	4,227	5.60
East North Central	6,436	6.74	6,009	6.32	7,355	10.23	6,567	9.18
West North Central	1,335	1.16	745	0.65	2,116	2.29	1,203	1.31
East South Central	-1,785	-1.34	-1,239	-0.94	-1,613	-1.59	-1,422	-1.41
West South Central	-901	-0.80	-675	-0.60	-1,048	-1.18	-1,301	-1.47
Mountain	2,200	1.39	1,539	0.98	2,721	2.50	1,714	1.58
Pacific	2,317	2.19	1,765	1.68	2,442	3.04	1,657	2.07
Central City	3,781	5.29	4,210	5.87	1,931	3.51	2,558	4.59
Ring City	5,860	8.51	5,633	8.21	4,620	8.90	4,445	8.61
Women's controls								
high school			1,982	2.87			1,755	3.38
some college			2,279	2.10			3,052	3.79
college graduate			3,175	2.57			2,370	2.55
black			-8,348	-6.20			-8,411	-8.94
no work/work			241	0.31			981	1.75
work/no work			2,054	2.00			2,289	3.32
work/work			707	0.89			1,658	2.95
Constant	90,089	24.86	87,406	20.20	83,997	35.40	84,149	28.77
Observations		3,150		3,150		4,904		4,904
Adjusted R^2		0.224		0.238		0.278		0.295

Notes: Regressions also include dummy variables for women's year of birth. For birth years 1906 to 1925 the three labor force participation variables (no work/work, work/no work, work/work) are defined by participation in 1937 to 1946 and 1947 to 1950. For the comparison birth years of 1930 to 1934, the labor force participation variables are defined by participation in 1951 to 1960 and 1961 to 1964.

Table 8
OLS Regressions
Dependent Variable – Husbands' Average Annual Earnings

	Women born in 1916 to 1920 Husbands' Average Annual Earnings Ages 35 to 41				Women born in 1930 to 1934 Husbands' Average Annual Earnings Ages 35 to 41			
Variable	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Husbands' Controls								
high school	2,949	4.85	2,079	3.16	5,234	5.72	3,394	3.48
some college	3,625	4.20	2,079	2.20	4,834	3.65	2,260	1.62
college graduate	3,477	3.92	1,969	1.90	10,798	10.07	7,200	5.39
age in 1973	-1,741	-33.14	-1,712	-30.96	-938	-11.59	-929	-10.98
New England	4,969	4.06	4,367	3.57	1,657	0.93	210	0.12
Middle Atlantic	3,971	4.23	3,521	3.75	7,603	5.56	6,470	4.74
East North Central	5,291	5.83	4,864	5.37	8,068	6.21	6,903	5.32
West North Central	1,704	1.49	1,299	1.13	3,273	2.01	2,167	1.33
East South Central	-1,852	-1.42	-1,574	-1.21	1,546	0.84	1,739	0.96
West South Central	-929	-0.83	-875	-0.79	-269	-0.17	-554	-0.36
Mountain	3,149	2.35	2,598	1.94	2,980	1.54	2,146	1.11
Pacific	2,405	2.39	2,080	2.07	1,993	1.37	1,489	1.03
Central City	1,357	2.00	1,577	2.27	2,031	1.96	2,764	2.66
Ring City	3,889	6.07	3,697	5.79	5,213	5.72	5,086	5.62
Women's controls								
high school			602	0.94			2,179	2.25
some college			2,700	2.71			3,001	2.00
college graduate			1,358	1.18			3,290	2.02
black			-4,192	-3.50			-7,771	-4.66
no work/work			706	0.97			-294	-0.18
work/no work			3,498	4.27			5,283	4.81
work/work			1,672	2.39			1,733	1.66
Constant	113,476	35.39	110,551	31.16	66,928	17.29	64,981	14.88
Observations		2,268		2,268		2,473		2,473
Adjusted R^2		0.395		0.400		0.152		0.172

Notes: Regressions also include dummy variables for women's year of birth. For the birth years 1906 to 1925 the three labor force participation variables (no work/work, work/no work, work/work) are defined by participation in 1937 to 1946 and 1947 to 1950. For the comparison birth years of 1930 to 1934, the labor force participation variables are defined by participation in 1951 to 1960 and 1961 to 1964.

Appendix Table

Table A-1
Variable Means by Women's Work Patterns During and Immediately After WWII

Birth Years 1906-1915

	no work/no work		no work/work		work/no work		work/work	
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
years of school	11.32	3.59	10.84	3.02	12.20	2.45	11.49	2.65
married	0.64	0.48	0.59	0.49	0.67	0.47	0.54	0.50
widowed	0.25	0.43	0.25	0.43	0.22	0.42	0.23	0.42
non-wage income	4,390	15,035	2,271	6,553	3,598	10,007	3,094	11099
black	0.08	0.28	0.10	0.29	0.03	0.16	0.03	0.18
New England	0.05	0.22	0.06	0.24	0.08	0.27	0.10	0.30
Middle Atlantic	0.17	0.37	0.16	0.37	0.24	0.43	0.24	0.43
East North Central	0.18	0.38	0.19	0.39	0.20	0.40	0.22	0.41
West North Central	0.10	0.30	0.08	0.28	0.06	0.24	0.06	0.23
South Atlantic	0.16	0.36	0.16	0.37	0.14	0.35	0.15	0.35
East South Central	0.07	0.26	0.06	0.24	0.03	0.17	0.04	0.19
West South Central	0.12	0.33	0.11	0.31	0.05	0.22	0.05	0.21
Mountain	0.04	0.19	0.05	0.21	0.02	0.15	0.03	0.18
Pacific	0.11	0.32	0.13	0.33	0.18	0.38	0.13	0.33
Central City	0.29	0.45	0.35	0.48	0.32	0.47	0.39	0.49
Ring City	0.31	0.46	0.31	0.46	0.45	0.50	0.38	0.49
Observations	3,026		909		417		1,003	
Average Earnings ages 45-60	8,898	11,018	9,884	9,297	10,745	11,274	17,681	13,161
Earnings observations	1,731		797		329		901	

Birth Years 1916-1925

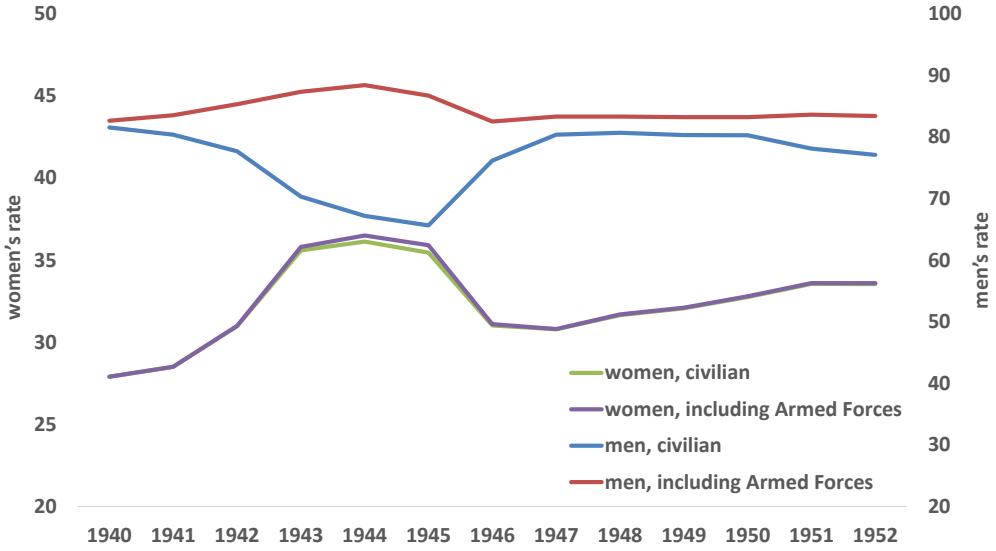
	no work/no work		no work/work		work/no work		work/work	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
years of school	11.77	3.37	11.97	2.77	12.81	2.09	12.39	2.17
married	0.77	0.42	0.73	0.45	0.82	0.39	0.75	0.43
widowed	0.10	0.30	0.10	0.30	0.09	0.29	0.09	0.28
non-wage income	2,531	10,040	1,730	9,433	3,102	10,684	2,357	10,500
black	0.10	0.30	0.13	0.34	0.02	0.13	0.03	0.17
New England	0.05	0.21	0.06	0.23	0.07	0.25	0.10	0.30
Middle Atlantic	0.15	0.36	0.15	0.36	0.23	0.42	0.24	0.43
East North Central	0.19	0.39	0.18	0.38	0.25	0.43	0.25	0.43
West North Central	0.08	0.28	0.08	0.27	0.08	0.27	0.05	0.22
South Atlantic	0.16	0.36	0.17	0.37	0.11	0.32	0.13	0.33
East South Central	0.08	0.27	0.07	0.25	0.04	0.20	0.03	0.18
West South Central	0.12	0.32	0.11	0.31	0.05	0.21	0.05	0.21
Mountain	0.06	0.23	0.04	0.20	0.05	0.21	0.03	0.18
Pacific	0.13	0.33	0.16	0.36	0.13	0.34	0.12	0.32
Central City	0.27	0.45	0.34	0.47	0.29	0.45	0.34	0.47
Ring City	0.33	0.47	0.36	0.48	0.44	0.50	0.46	0.50
Observations	3,058		1,444		752		1,561	
Average Earnings ages 35-50	7,585	9,570	9,686	9,556	8,123	9,313	13,900	13,206
Earnings observations	1,987		1,231		607		1,319	

Notes: The three labor force participation variables (no work/work, work/no work, work/work) are defined by participation in 1937 to 1946 and 1947 to 1950.

Figures

Figure 1. Labor force participation rates 1940-1952

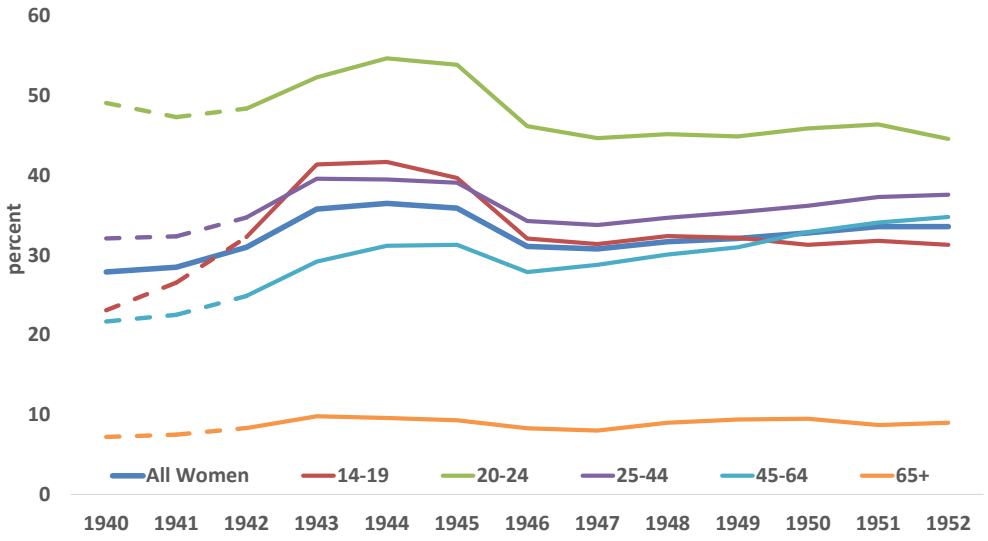
persons 14 years old and over



Sources: ***Historical Statistics of the United States, 1789-1945*****, p. 63 and** ***Historical Statistics of the United States, Colonial Times to 1957*****, pp. 70-71.**

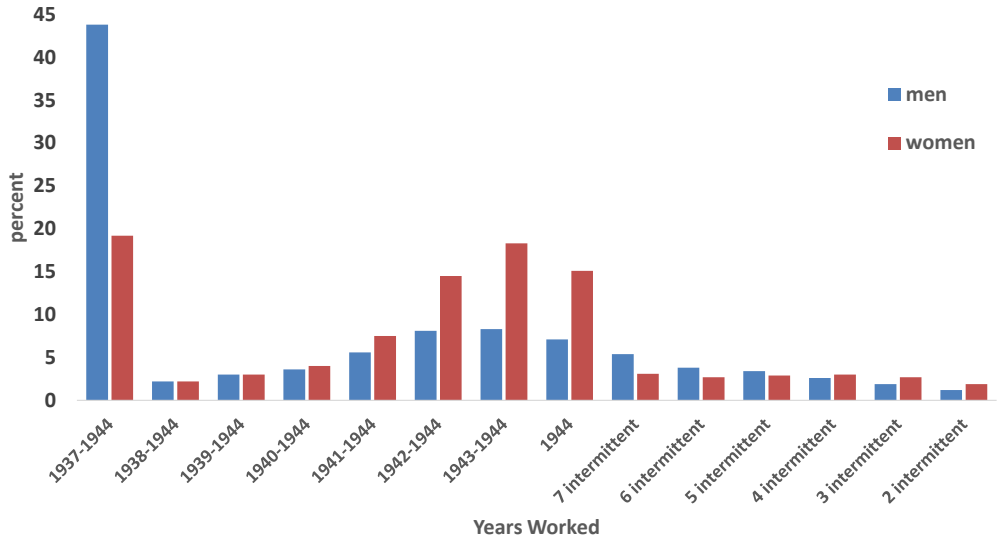
Figure 2. Labor force participation rates 1940-1952

women 14 years old and over



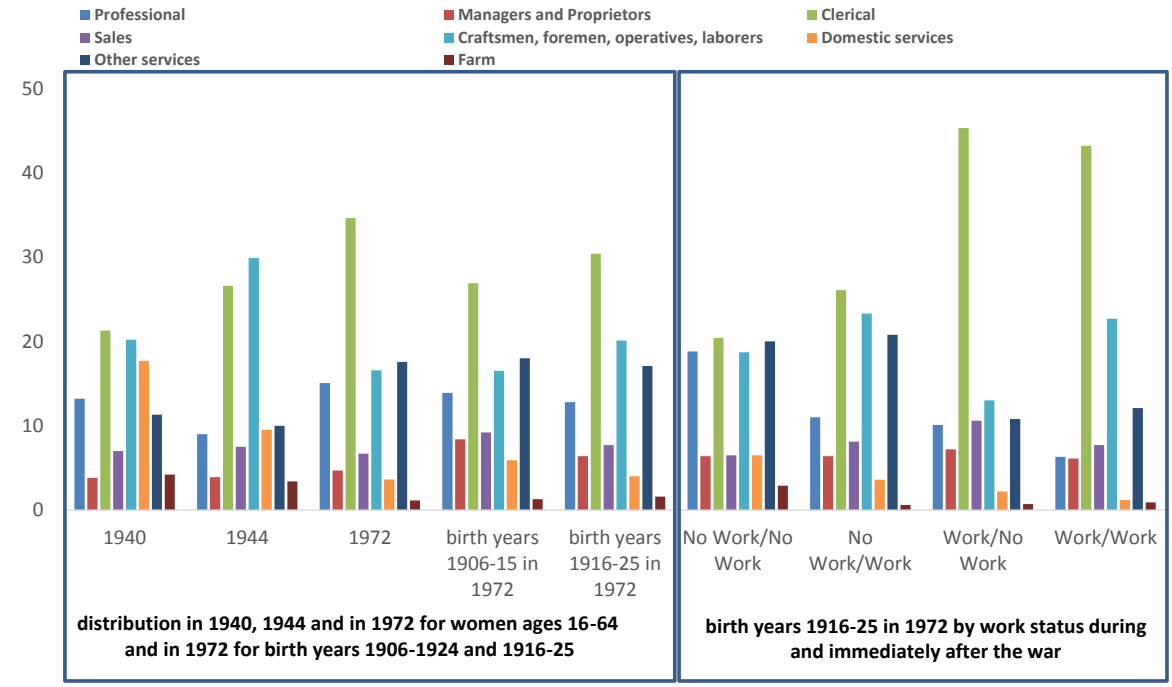
Source: ***Historical Statistics of the United States, Colonial Times to 1957*****, pp. 71. Age group participation rates estimated for years 1941 and 1942.**

Figure 3. Percentage Distribution of Workers with Social Security Wage Credits in 1944



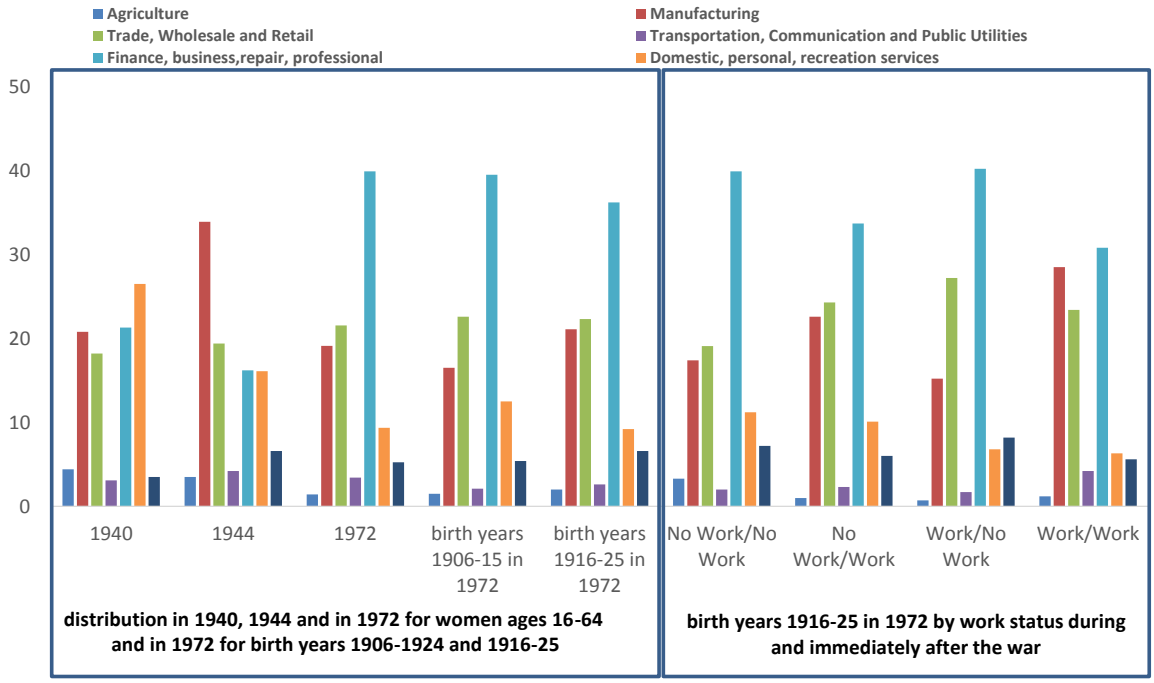
Source: Correll, *Social Security Bulletin*, July 1947: p. 14, Table 5.

Figure 4. Percent of Employed Women by Occupation



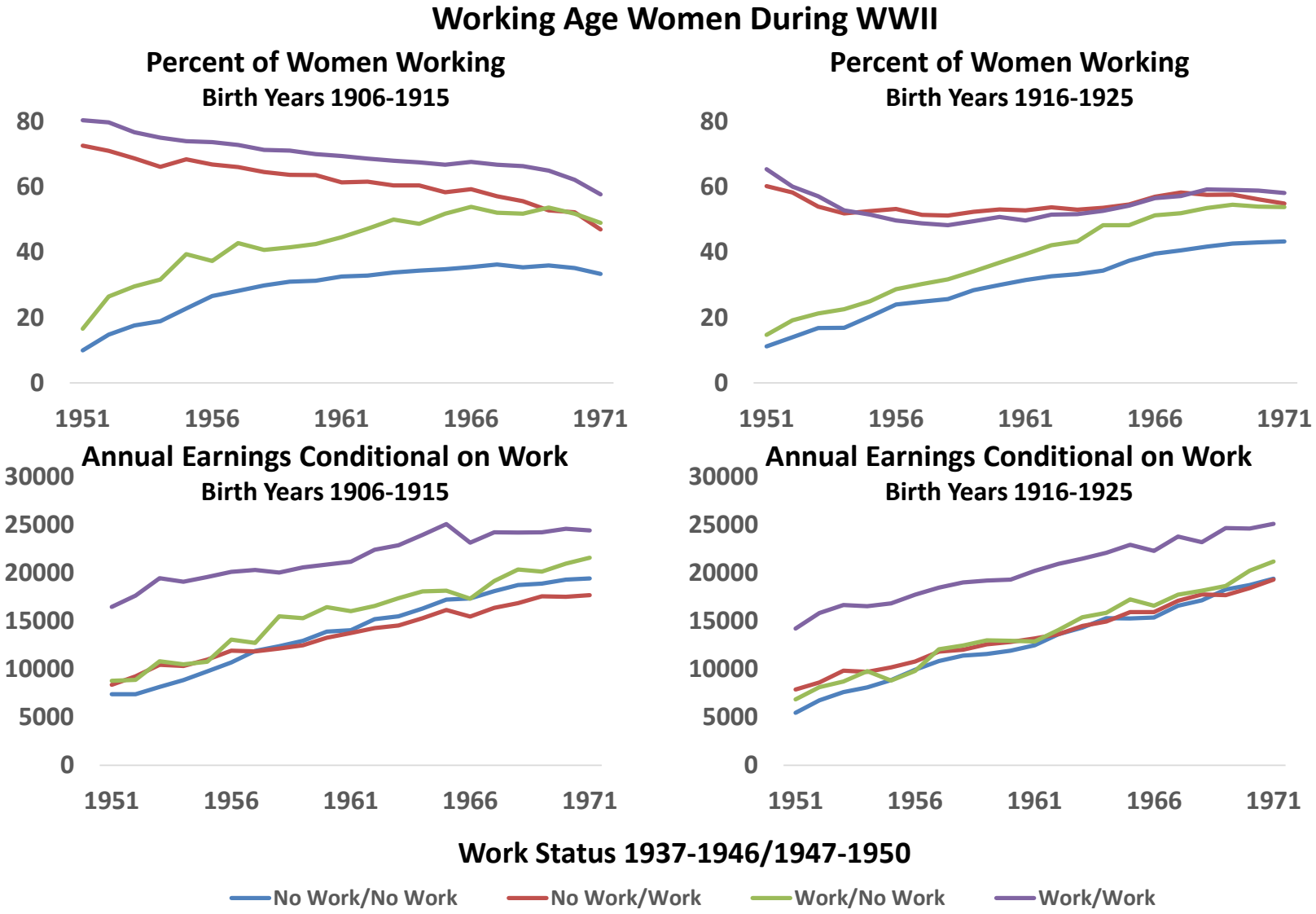
Sources: 1940 and 1944 from *Employment of Women in the Early Postwar Period*, Table 3, p.4. 1972 data from the 1973 Exact Match file.

Figure 5. Percent of Employed Women by Industry



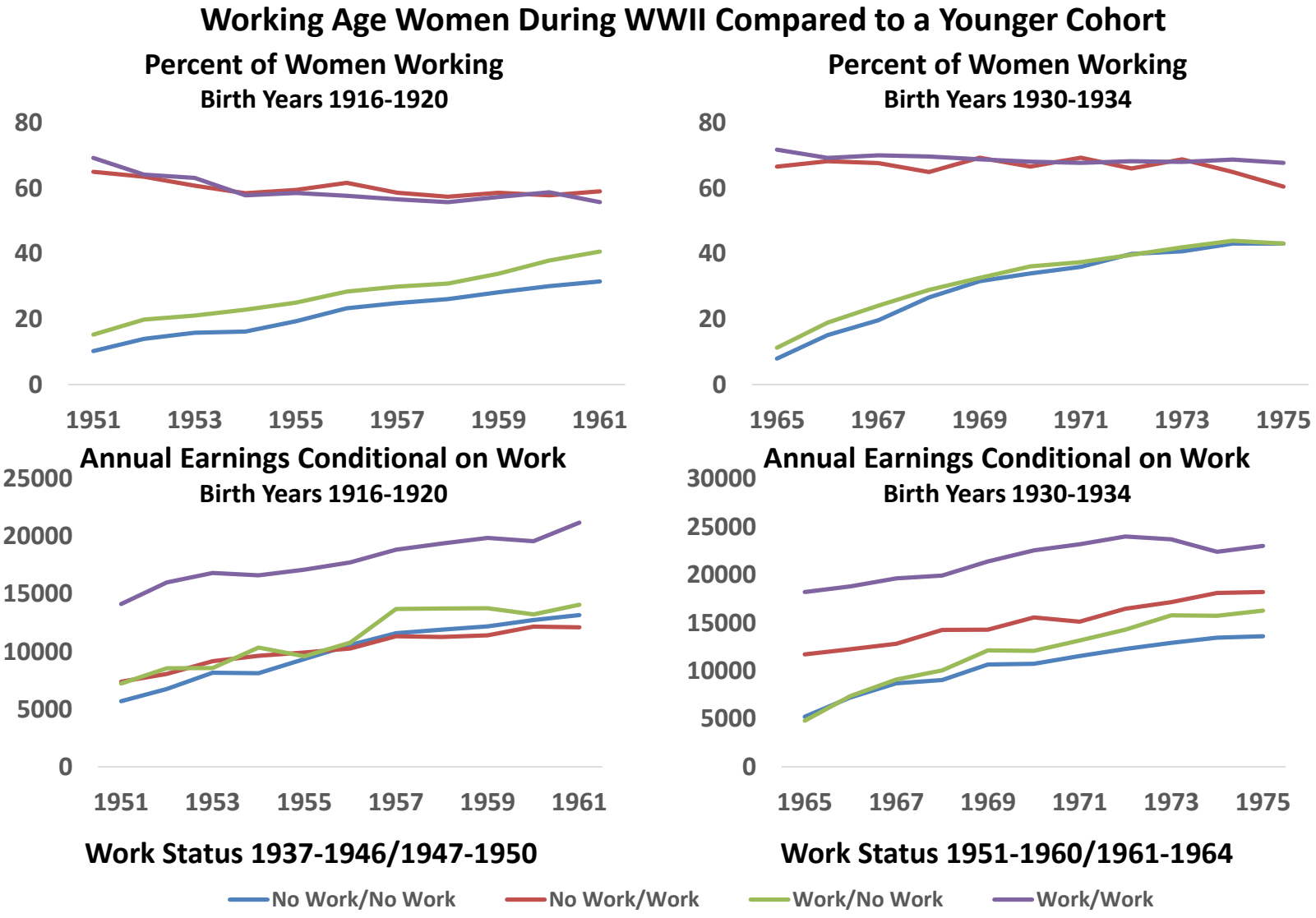
Sources: 1940 and 1944 from *Employment of Women in the Early Postwar Period*, Table 4, p.4. 1972 data from the 1973 Exact Match file.

Figure 6. Labor Force Participation and Annual Earnings



Source. The 1973 Exact Match file.

Figure 7. Labor Force Participation and Annual Earnings



Source. The 1973 Exact Match file.