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Citation

Goldin, Claudia D. 1991. "The role of World War II in the rise of women's employment." The American Economic Review (1991): 741-756.

Published version

<https://doi.org/10.3386/w3203>

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The Role of World War II in the Rise of Women's Employment

By CLAUDIA D. GOLDIN*

The 1940's were a turning point in married women's labor-force participation, leading many to credit World War II with spurring economic and social change. This paper uses two retrospective surveys, from 1944 and 1951, to show that half of all married women employed in 1950 were working in 1940, and more than half of the decade's new entrants joined after the war. Of all wartime entrants, the majority exited after 1944 but before 1950. The war had several significant indirect impacts on women's employment, but its direct influence appears to have been more modest. (JEL N30, J16).

The proportion of married women engaged in paid work in the United States increased more than tenfold during the past century, from less than 5 percent in 1890 to more than 60 percent in 1990. Much of the increased employment occurred in the years after 1940, and as can be seen in Figure 1, the 1940's mark an apparent break with the past in terms of women's work. The break, moreover, is evident mainly among older married women. The participation rate of white, married women 45-54 years old was 10.1 percent in 1940 but 22.2 percent in 1950. The timing of the initial advance in married women's employment and the extensive propaganda used to attract women into the labor force during the war have led many to credit World War II with spurring the modern increase in married women's paid employment. The evolution of married women's participation during the 1940's has been difficult to track with currently avail-

able data. The figures given in Table 1 add 1944 and 1947 to those of the census years and show the expansion in female participation during the war, the subsequent decrease to 1947, and the increase to 1950. Although it is clear that many women who entered the labor force during the war left at its conclusion, it is not obvious that they left permanently. Information from two retrospective surveys, one in 1944 and another in 1951, are used here to understand precisely how married women's employment evolved during the 1940's, particularly among the older age-groups.

Women may have been drawn into the wartime economy through a variety of mechanisms. A husband's absence often meant that his wife had less to do in the home and that the family's labor income dropped considerably; for others, patriotic duty was reason enough to join the war effort. Once in the labor market, various investments women made during the war, such as in job training and alternative housekeeping arrangements, decreased the costs and increased the gains to postwar work. Other factors, still dimly understood, also operated to entice working women to remain in the labor force (see James P. Smith and Michael P. Ward, 1984; Goldin, 1989). Some concerned the easing of norms held by society or by a husband against a wife's working. As John Durand (1948 p. 168) remarked when the impact of wartime employment was still uncertain, "It is not likely that the increase during the war pe-

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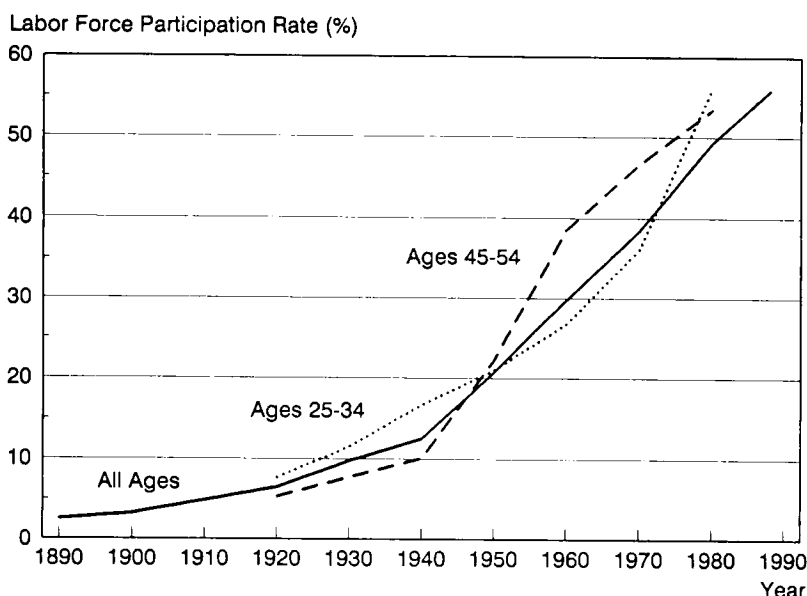


FIGURE 1. LABOR-FORCE PARTICIPATION RATES OF WHITE, MARRIED WOMEN

Source: Goldin (1990 tables 2.1, 2.2).

TABLE 1—LABOR-FORCE PARTICIPATION RATES OF WOMEN (ALL RACES), 1940–1950

Category	Husband	Participation rate (percentage)			
		1940	1944	1947	1950
Married:					
All ages	present	15.6	21.7	20.0	23.8
	absent, in armed forces		52.5		
25–44 years	present	17.7	24.7	22.4	26.0
	absent, in armed forces		55.0		
45–64 years	present	10.3	20.0	18.4	21.8
	absent, in armed forces		41.7		
All marital statuses:					
14–19 years	—	19.9	41.8	n.a.	22.6

Sources: Married 1940, 1947 (U.S. Bureau of the Census, 1948); married 1944 (U.S. Bureau of the Census, 1952); married 1950 (U.S. Bureau of the Census, 1951). The labor-force data for "all marital statuses" are from Goldin (1990 table 5); the adjusted figure for 1940 was used. The population number for 1944 was derived by extrapolation from census data for 1940 and 1950.

riod will be a complete exception to the rule...that a generation of women which once adopts a greater degree of participation in gainful employment tends to retain that characteristic throughout its potential working life."

On the demand side, the war led to increased labor requirements across the econ-

omy and to higher wages in general and specifically for women and other low-wage workers.¹ The war may have demonstrated

¹The average hourly wage of female manufacturing workers across 25 industries rose relative to that for male workers by almost 20 percent from 1941 to 1948

to employers that women could function well in jobs that had previously been male domains. The war may also have eroded various policies that had constrained the employment of married women. "Marriage bars"—the stated policies of firms, school districts, governments, and other organizations not to hire married women and to fire single women upon marriage—were instituted before the 1930's but were greatly expanded during the Depression (see Goldin, 1990 Ch. 6). The bars vanished sometime after the early 1940's and by the 1950's were rarely encountered.

There is evidence, therefore, that various constraints may have inhibited work for married women prior to 1940. If the impediments to economic change were partly ideological, then a major break with the past, such as that effected by war, could have redefined economic roles. Many historians have concluded that World War II was that "watershed event" (William H. Chafe, 1972 p. 195). Until recently, this view was well accepted. In the past decade, however, a revisionist literature has emerged, discounting the importance of World War II in altering the lives of American women (Karen Anderson, 1981; D'Ann Campbell, 1984; Ruth Milkman, 1987). American patriotism and inflated female wages during the war induced many women to enter the labor force, but according to this new literature, they did not become permanent participants.² Many of the jobs women were offered during the war—Rosie the Riveter's is the perfect example—were taken away from them at its conclusion and were not in sectors women had previously shown a desire to enter. Women had not been craft work-

ers before the war and had been leaving the manufacturing sector for clerical, sales, and professional jobs ever since the early 20th century. The rhetoric of wartime mobilization led many to believe that there would be real change, when in actuality, according to this new interpretation, none materialized.

I recently found a data set (called here the Palmer Survey) of retrospective work histories for 4,350 women, working full-time for at least one month in 1950, which has much of the information needed to explore the role of World War II in the working lives of American women.³ A complementary set of data, in tabular form only and contained in Women's Bureau Special Bulletin No. 20 (U.S. Department of Labor, 1944), are from a special question asked in a March 1944 survey by the Bureau of the Census of 30,000 households (a precursor of the *Current Population Survey* [CPS]).⁴ The remainder of this paper discusses what these data reveal.

I. Retrospective Data on Work Histories, 1940–1951

The individual-level data come from a study directed by Gladys L. Palmer (1954), with the assistance of the U.S. Bureau of the Census, that assessed labor turnover and geographic mobility in the 1940's. Coded versions of the original schedules, located at the University of Pennsylvania, have been put in machine-readable form. The data give information on the work histories of a probability-based sample of urban women in the United States from January 1940 to the date of enumeration, January 1951.⁵

(U.S. Bureau of the Census, 1975), and the earnings premium for war-related over consumer-related manufacturing was between 25 percent and 45 percent in 1944/1945, depending on the war production area (U.S. Department of Labor, 1946 p. 44). See also Goldin and Robert A. Margo (1990) on the overall narrowing of the wage structure in the 1940's.

²According to the historian D'Ann Campbell (1984 p. 236), "It is difficult to argue that World War II, in itself, constituted a watershed in the experience of American women."

³The original Palmer study also surveyed more than 9,000 men, and the schedules for both men and women will be archived at Temple University Urban Archives; see also Gladys L. Palmer (1954).

⁴Women's Bureau Special Bulletin No. 20 did not list the official name of the census survey, but it seems likely that it was executed by the Current Surveys Section of the Bureau of the Census and later became the *Current Population Survey*.

⁵The Palmer Survey, funded by the U.S. Air Force, was intended to provide the Air Force with information about manpower requirements in the face of occupational, industrial, and geographic mobility. The pop-

The coded schedules summarize much of the data in the original surveys, and the information they contain can be grouped into two categories: retrospective and contemporaneous. Among the retrospective variables are the occupation and industry of work (if the woman was in the labor force) as of January 1940, December 1944, December 1949, and January 1951. Occupation and industry are also given for the longest job in 1950, the longest job over the work history, the longest job from 1940 to 1949, and the woman's first job. Summary information is provided on months in the labor force from January 1940 to December 1949, the number of jobs during the same period, and the date at which work began prior to 1940. Variables pertaining to the individual as of January 1951, which might be called contemporaneous variables, include weekly earnings at the longest full-time job in 1950 (unless the woman was self-employed), education, marital status, age, number of children less than 18 years of age, years living in the current area, and father's occupation and industry. Some of the contemporaneous variables probably did not change over the preceding decade (e.g., education for women older than 34 years in 1950), but some probably did (e.g., marital status). An important, and somewhat limiting, aspect of the Palmer Survey is that all persons were working full-time for at least one month during 1950. The March 1944 census data are used to infer the work histories of women who were not in the labor force during 1950.

ulation sampling design of the April 1947 Metropolitan Area Surveys of the Bureau of the Census was used. Six cities were included for study: two in the East (New Haven and Philadelphia), two in the Midwest (Chicago and St. Paul), and two in the West (Los Angeles and San Francisco). Curiously, the final report, *Labor Mobility in Six Cities* (Palmer, 1954), did not investigate the role of World War II in the lives of American women.

The original schedules, not all of which have been located, contain detailed work histories. Although many of the coded schedules include transcribed versions of these accounts, they are difficult to read, and only the coded portions have been used here.

The central issue to address with these data is whether women who entered the labor force during World War II remained employed until 1950, thereby becoming the main contributors to the vastly increased labor-force participation of married women across the decade. An alternative scenario is that many women employed during the war left the labor force at its conclusion and that much of the increase in employment between 1940 and 1950 came from a post-war movement of women into the labor force. Part of this issue, that concerning the work histories of women employed as of 1950, can be addressed with the Palmer Survey data; the remaining issues are answered with the 1944 census data. I begin with the Palmer Survey.

Consider, first, the work histories of white women who were married by 1950 and between the ages of 35 and 64 in 1950. They were, therefore, 25–54 years old in 1940, at the start of the retrospective information. The issue, then, is their progressive involvement in the labor force over the decade from 1940 to 1950. How many entered during World War II, how many were drawn in after, and how do the groups differ from each other?

Although the entire Palmer Survey includes 4,350 women, about 1,200 were married, white, and between 35 and 64 years old (and, of course, working) in 1950. Of these, fully 52 percent were also in the 1940 labor force (i.e., employed, unemployed, or in the armed forces in January 1940). That is, more than half of those working in 1950 had also worked prior to America's entry into World War II. From January 1940 to December 1944, 7 percent of the eventual 1950 participants left the labor force temporarily, but 22 percent of the eventual 1950 workers joined during the war years. Thus, part of the decade's increased participation occurred from 1940 through 1944, the peak year of women's involvement in the wartime economy. However, an even greater increase occurred in the six years from December 1944 through 1950, which includes the demobilization period. Fully 26 percent of married women (35–64 years old) who were workers in 1950 were drawn into the labor force between December 1944 and

TABLE 2—LABOR-FORCE PARTICIPATION DURING 1940 AND 1944 OF WHITE, MARRIED WOMEN EMPLOYED IN 1950 OR PARTICIPATING IN JANUARY 1951

Category	Participation rate (percentage)		
	Age 35-64 in 1950	Age 35-44 in 1950	Age 45-54 in 1950
In labor force in 1950 and in labor force in:			
1940 and 1944	45.5	41.7	48.1
1940 but not 1944	6.6	8.2	5.3
1944 but not 1940	21.8	20.9	22.8
Neither 1940 nor 1944	26.2	29.1	23.7
Number of observations:	1,199	635	451
In labor force in January 1951 and in labor force in:			
1940 and 1944	47.7	44.7	49.8
1940 but not 1944	6.3	7.5	5.4
1944 but not 1940	21.0	19.9	22.3
Neither 1940 nor 1944	25.0	27.7	22.5
Number of observations:	1,067	558	404

Notes: Age and marital status are as of the survey enumeration date (January 1951), which for purposes of exposition is listed here as 1950. Working in a particular year means January 1940, December 1944, full-time during any month in 1950, or January 1951, for each of these respective years.
Source: Palmer Survey (see text).

1950. The annual rate of entry for the five years from January 1940 to December 1944 is identical to that for the six years from December 1944 through 1950. These increases do not count the group in the labor force in 1940, out by 1944, and in again by 1950. Moreover, these findings are robust to using various criteria. Two are given in Table 2: employed full-time during any month in 1950 and working in January 1951.⁶

⁶One might expect a bias to result from using the criterion of working during any month in 1950 if women are noncontinuous participants over the year. That is, more women will be found in that group than in one comprising women participating during a particular month. However, there would only be a bias if the criterion altered the distribution of women by employment history (e.g., the categories in Table 2). The Palmer Survey also includes labor-force status at the time of enumeration (in January 1951), and the results (see Table 2) are very similar. If anything, the results using January 1951 strengthen the finding of persistence for women who worked since 1940. However, note that, in this case, there is a bias against an increase during the December 1944–January 1951 period. Because all women in the sample worked during some month in 1950, the group working in January 1951 cannot include any woman who entered for the first time in that month.

In sum, among white, married women who were employed full-time for one month in 1950 (or in the labor force during January 1951), more than half were employed in 1940. The war was associated with a large increase in eventual employment, but it was smaller than that occurring from 1944 to 1950, which was 33 percent of the eventual 1950 labor force. Fully 26 percent of the 1950 participants were never employed during 1940–1944. Table 2 summarizes the data for the 35–64-year-old age-group and for two subsets.

Another important feature of these retrospective work histories is the remarkable persistence of women in the work force. Summary data on total months worked from January 1940 to December 1949, from the coded forms for the Palmer Survey, are given in Table 3. More than 80 percent of the women employed in January 1940, December 1944, and December 1949 had worked 9–10 years during the 1940's decade (75 percent, just slightly less, of those who worked only in January 1940 and December 1949). Fully 72 percent were employed every month of the decade, one-half of whom stayed on the same job for all 10 years (not

TABLE 3—WORK EXPERIENCE DURING THE 1940'S OF WHITE, MARRIED WOMEN, 35–64 YEARS OLD WHO WERE EMPLOYED IN 1950

Work experience 1940–1949	Participation during the following years (and 1950) (percentage)				Entire sample (1940, 1944, or 1949)
	1940 and 1949	1940, 1944, and 1949	1944 and 1949 (not 1940)	1949 (not 1940, nor 1944)	
0 < 1	0.35	0.00	0.00	19.44	7.38
1 < 2	0.35	0.20	1.23	19.44	5.04
2 < 3	0.88	0.39	1.64	18.52	5.13
3 < 4	1.23	0.20	3.28	13.43	4.95
4 < 5	1.94	0.20	6.97	24.07	7.47
5 < 6	2.46	0.79	15.57	2.31	5.65
6 < 7	4.75	3.54	21.72	1.39	7.91
7 < 8	7.04	6.09	26.23	0.46	9.82
8 < 9	5.99	5.89	16.39	0.93	7.82
9 < 10	10.74	11.00	6.56	0.00	7.04
10	64.26	71.71	0.41	0.00	31.80
Number of observations:	568	509	244	216	1,151

Note: Working in a particular year means January 1940, December 1944, December 1949, or full-time during any month in 1950, for each of these respective years.

Source: Palmer Survey (see text).

shown in Table 3). Only 5 percent were employed fewer than six years.

Also revealed in Table 3 is that 52 percent of those who entered the labor force by 1944 accumulated seven or more years of work experience over the decade. Only 12.5 percent had less than five years of work experience. The only reasonable inference to be drawn is that the majority of these women were continual participants from the time they entered the work force until 1950. Also consistent with this view is that the majority of those not employed in 1940 and 1944, yet who were working in 1949, had been employed for rather short durations during the 1940's. Almost 94 percent of this group had worked fewer than five years.

Because a large fraction of those working in 1950 were also employed in 1940 and had been continuously employed during the decade, the increase in participation over the decade—nearly a doubling among most of the age-groups and cohorts—must have come about by the entrance of women who had not been in the labor force in recent years. The main inference to be drawn from Table 3 is that married women 35–64 years old and (I emphasize) employed in 1950 did not transit in and out of the labor force with much rapidity even during the 1940's. A

qualification to this statement will be made concerning young women exiting just after Pearl Harbor, most of whom did not return to the labor force by 1950.

Persistence has been recently discovered in data for employed women in the period prior to 1940 and after 1950 (Smith and Ward, 1984; Goldin, 1989, 1990). Although comparisons across data sets are often difficult to make, the data in Table 3 are remarkably consistent with those for the 1950's and 1960's (Goldin, 1990 table 2.7). Among women who worked in 1965 and who were born between 1911 and 1915, 50 percent had been in the labor force for 79 percent of the years from 1951 to 1969.⁷ In the survey being considered here, 47 percent of those in the entire sample (thus, who were in the labor force in 1950; see

⁷Table 2.7 in Goldin (1990) contains the distribution of years worked from 1951 to 1969 among married women in two cohorts (1906–1910 and 1911–1915) who worked in any one of three years: 1953, 1960, and 1965. The finding that about half worked 80 percent of these years holds for both cohorts and for all three possible years. The year 1965 was chosen in the example because it is at the end of the period considered and, therefore, similar to 1950 in the example at hand for the 1940's.

Table 3) were employed for 80 percent of the years from 1940 to 1950. Married and adult women once in the labor market tend not to leave. However, although the data in Table 3 demonstrate persistence for women employed in 1950, the question is whether this was also true of all women in the 1940's.

The data in Tables 2 and 3 do not reveal the number of women who were in the labor force during the 1940's yet who exited by 1950. One possibility is that increased wages and patriotic sentiment led women to enter the labor force during World War II and, once in the labor force, women did not leave. Even though a minority of employed women (22 percent) in 1950 had entered the labor force from 1940 to 1944, they may have been a large fraction of those who were employed at all during the war. Another possibility is that a large fraction of women who entered the labor force during the war left during demobilization. The truth is far closer to the latter view.

An analysis of labor-force turnover among women during World War II requires additional data concerning those not in the labor force in 1950. Such data are available from a special question asked in the March 1944 precursor to the CPS. At the request of the Women's Bureau of the Department of Labor, the Bureau of the Census asked women in 1944 what they were doing during the week preceding Pearl Harbor, December 1-6, 1941.⁸ The census data yield labor-force transitions from December 1941 to March 1944, the first two sets of branches in Table 4. The Palmer Survey contains information on the distribution of those "in the labor force," that is, "in" during 1951. By distributing the total number of women known to have been in the labor force in 1951 according to the proportions in the Palmer Survey for the four "in" branches, one can easily obtain the entire transition tree. Two such transition trees are given in Table 4: one for married women 20-44 years

old in 1944 and another for women of all marital statuses in this age group.

The linkage of the census data with the Palmer Survey is not without possible biases, and they seem more severe for married women. The Palmer Survey listed a woman's marital status in January 1951 but not in any of the previous years. Young married women in 1951 were likely to have been unmarried in the early 1940's. Because the Women's Bureau data for 1944 are given only for women 20-44 years old and those older, one cannot use older age groups to get around the problem.⁹ The only solution is to use the Palmer data for women in a slightly older group: 30-51 years old, rather than 27-51 years old, in 1951.¹⁰ The same problem does not afflict the data for the all-marital-statuses category. In the absence of mortality and immigration, these women form a closed population, and their marital status in any particular year is of no consequence.

The primary reason for constructing the tree diagrams in Table 4 is to compute the percentage of women drawn into the labor force during World War II who remained employed until 1951. The data for married women indicate that more than 85 percent of the women employed in December 1941 and March 1944 were similarly engaged in January 1951. The data, once again, reinforce the findings of other studies that show a tendency for women to remain in the labor force.

⁹The only document that has more detailed data on the labor-force participation of women in 1944 is *Current Population Reports*, Series P-50, Number 39 (U.S. Bureau of the Census, 1952). The Bureau released these data in 1951, using its more usual age categories (20-24, 25-34, 35-44, and 45-64 years), when it was reported that the proportion of married women in the labor force had exceeded the peak achieved during World War II. However, these figures were not published along with the information on what the women were doing in the week preceding Pearl Harbor.

¹⁰Other possible biases may stem from the fact that the women in the Palmer Survey were all residents of large cities, while the data in the census are a national sample. This bias would matter only if the distribution among the four "in" branches in 1951 differed by urbanization level.

⁸The Bureau of the Census chose December 1-6, 1941, because it was thought that women would remember what they were doing the week before Pearl Harbor better than any other week just prior to America's entry into World War II.

TABLE 4—LABOR-FORCE TRANSITIONS OF WOMEN, DECEMBER 1941–JANUARY 1951

Date: Age:	Married women			Women of all marital statuses		
	December 1941 18–42	March 1944 20–44	January 1951 27–51 ^a	December 1941 18–42	March 1944 20–44	January 1951 27–51
	In: 85.3 percent (2,305) In: 66.7 percent (2,702) Out: 14.7 percent (397) In: 20.9 percent (4,049) In: 33.5 percent (451) Out: 33.8 percent (1,347) Out: 66.5 percent (896) In: 46.2 percent (1,008) In: 14.3 percent (2,182) Out: 53.8 percent (1,174) Out: 79.1 percent (15,308) In: 8.9 percent (1,172) Out: 85.7 percent (13,126) Out: 91.1 percent (11,954)			In: 64.0 percent (4,534) In: 81.3 percent (7,079) Out: 36.0 percent (2,545) In: 32.5 percent (8,710)^c In: 37.8 percent (617) Out: 18.7 percent (1,631) Out: 62.2 percent (1,014) In: 65.1 percent (2,363) In: 20.1 percent (3,631) Out: 34.9 percent (1,268) Out: 67.5 percent (18,066) In: 12.0 percent (1,723) Out: 79.9 percent (14,435) Out: 88.0 percent (12,703)		
Labor-force participation rate (percentage): ^b	20.9	25.2	25.5	32.5	40.0	34.5
Total population:	19,357,000			26,776,000		

Notes and Sources for Table 4: All numbers in parentheses are in thousands and are the actual numbers of women in the age-and-marital-status group in or out of the labor force (U.S. Department of Labor, 1944). Women who died or emigrated between 1941 and 1944 cannot be included.

The data for December 1941 and March 1944 are from U.S. Department of Labor (1944), which in turn uses data from the CPS. The data for January 1951 are derived from the Palmer Survey (see text for a description of the sample). The Palmer Survey gives only the number of women in the "in" branches for January 1951. The actual total number in all the branches in 1951 is derived by multiplying the total number of women in the population by the aggregate labor-force participation rate (e.g., 34.5 percent for all women in 1951). A blow-up factor is then computed by dividing this total number by the Palmer total, to obtain consistency with the national data for December 1941 and 1944. The Palmer numbers for each of the branches are then multiplied by the blow-up factor, and the resulting numbers are in parentheses in the January 1951 columns. For example, the Palmer Survey number for the in-in-in branch in 1951 for all women is 1,410, and the aggregate number of women in the labor force in this age group is 2,873 in the Palmer Survey. The total number of women actually in the labor force is $0.345 \times 26,776 = 9,238$ ($\times 1,000$). Dividing this number by the Palmer figure gives the blow-up factor of 3.215. The original number 1,410 times 3.215 equals 4,534, which is the datum listed in the first line for "all marital statuses."

The preceding description of the computation of the 1951 figures is equivalent to the following in algebraic terms. Considering the in-in-in branch, the question asked is: what is the probability of being in the labor force in 1951, conditional on being in the labor force in 1941 and 1944? That is,

$$\Pr(L_{51} = 1 | L_{44} = 1 \text{ and } L_{41} = 1) = \{\Pr(L_{51} = 1 \text{ and } L_{41} = 1 \text{ and } L_{44} = 1)\} / \Pr(L_{44} = 1 \text{ and } L_{41} = 1) \\ = \{\Pr(L_{44} = 1 \text{ and } L_{41} = 1 | L_{51} = 1) \times \Pr(L_{51} = 1)\} / \Pr(L_{44} = 1 \text{ and } L_{41} = 1)$$

by Bayes' Theorem, where L_t is labor-force status in year t (1 is in the labor force, and 0 is out of the labor force). $\Pr(L_{44} = 1 \text{ and } L_{41} = 1 | L_{51} = 1)$ comes from the Palmer Survey, $\Pr(L_{51} = 1)$ is the labor-force participation rate, and $\Pr(L_{44} = 1 \text{ and } L_{41} = 1)$ is from the CPS data. The same algebra can be manipulated for each of the "in" branches for 1951 in the table. The "out" branches for 1951 are derived by simple subtraction of the percentages for the "in" branches from 1.

^aThe labor-force participation rate at the bottom of the table is for the 27-51-year-old group, but only 30-51 year olds are used to derive the branches for married women in January 1951. The Palmer data include marital status as of January 1951, and many women who were younger than 30 years old in 1951 were not married in December 1941 and, therefore, should not be connected to them in the transition tree. See the text for a fuller explanation.

^bThe figures of 20.9 percent and 25.2 percent for December 1941 and March 1944 are from CPS data (U.S. Department of Labor, 1944) and include "married spouse present" and "married spouse absent in Armed Forces" (but not "married spouse absent, not in Armed Forces"). The increase between 1940 and 1944 was even greater. The figure of 25.5 percent for 1951 is obtained from one of 24.0 percent from U.S. Bureau of the Census (1953), for women of all races, and an inflation factor of 1.07 is used to correct decennial census figures for consistency with the CPS. The blow-up factor of 1.07 is derived from a comparison of the census data for 1950 with that from the CPS (U.S. Bureau of the Census, 1951). The corresponding blow-up factor for the "all marital statuses" group is 1.04, also derived from a comparison of census data with that from the CPS for 1950.

There was, however, a substantial attrition of employed married women (i.e., married by 1944) from 1941 to 1944, when 34 percent of women employed just before the war exited. The decreased employment among this group deserves further comment. Because the census data include young women and give marital status in 1944, not 1941, many of these women may have married just following Pearl Harbor. Others, married before Pearl Harbor, may have become pregnant to enable their husbands to obtain draft deferments.¹¹ The

reasoning accords well with the finding, also in Table 4, that women of all marital statuses who were 20-44 years old in 1944, had a persistence rate of more than 80 percent from 1941 to 1944. The war years, however, do appear peculiar with regard to the persistence of women workers.

Of greater interest is how women working in 1944, but out of the labor force on the eve of World War II, responded at the war's conclusion. These may be called the "Rosies" of the war effort and are contained in the "out-in" branch, from 1941 to 1944. In 1944, this group contained 45 percent of married women workers 20-44 years old (but 34 percent of all women workers 20-44 years old). Part of the reason why the

¹¹The years 1942 and 1943 did witness a "baby boomlet," particularly for young women.

new entrants were such a large proportion of all working married women is that a large fraction left the labor force after Pearl Harbor.

Of these wartime entrants, only 46 percent of the married women remained employed until January 1951 (65 percent of women of all marital statuses did).¹² The "Rosies" of 1944 were 20 percent of the eventual 1951 employment among married women, but at that time, they were less than half their original number. Rosie and her compatriots did not remain in the postwar labor force to the degree entrants had in normal times.

Increased employment of women during the war, according to an extensive literature, greatly affected their employment afterwards. However, the data in Table 4 indicate that about half the wartime entrants exited the labor force by 1951. Aspects of the exodus are well known. Many women were forced out of high-paying jobs in traditionally male industries, such as aircraft and machinery, through seniority systems that favored returning servicemen (Milkman, 1987). However, the relative magnitudes of those who remained in the labor force and those who exited had previously not been known. Women employed in wartime industries could have been pushed out at the war's conclusion but reemployed in other sectors. The atypical behavior of the wartime entrants should not be too surprising. Labor-force participation among women whose husbands were in the armed forces and away from home greatly exceeded that among women whose husbands were at home in 1944. For married women 25–44 years old, for example, the figures are 55.0 percent for those with husbands in the Armed Forces and 24.7 percent for those whose husbands were not (see Table 1). Increased participation, therefore, was not

just a function of the demands of the wartime economy; it was also a product of the draft.

While the war years were not anomalous in terms of producing the eventual female labor force of 1950, the women who entered during the war were distinctive in terms of their persistence rate, education, and numbers of children. I turn now to differences among the waves of female entrants during the 1940's.

II. Earnings, Occupations, and Attributes of Women Workers, 1940–1950

The Palmer Survey reveals that women employed in 1940 and during any other year in the 1940's, were considerably different from those who entered during the 1940's but were not in the labor force in 1940. Those employed in 1940 were more educated and had far fewer children than those who were not in the labor force in 1940 but entered at some subsequent date. As Table 5 indicates, there is almost a nine-month difference in education between those who were employed in 1940 and those who were not; twice as many had attended college, and one-third more had graduated from high school.

Because many of these women's children were older than 18 years by 1950, and thus not included in the survey's question, it is useful to consider only the younger group in comparing the number of children. The differences here are even greater. Among those younger than 45 years old in 1950, the mean number of children under 18 years old was 1.77 for those in the labor force in 1950 but not working in 1940 and 1944; it was only 0.50 for those in the labor force in 1940 and 1944. The largest differences are found in the proportion of women who had no children younger than 18 years old in 1950. The group who were 35–54 years old in 1950 would have been 25–44 years old in 1940, when the children covered by the question would have been less than 8 years old. Fully three-quarters of the women in the labor force in 1940 and in the labor force at any of the subsequent dates had no children in this age-group; but one-third of the women

¹²The figure for persistence among the Rosies increases to about 55 percent when the 1950 (rather than the January 1951) data are used and to 48 percent when the data for December 1949 are used. The result that about half the Rosies left the labor force sometime after the war seems robust to the choice of end point among the three available.

TABLE 5—CHARACTERISTICS OF WORKERS AND NONWORKERS AMONG WHITE, MARRIED WOMEN, 35–64 YEARS OLD, EMPLOYED IN 1950

Variable	Not in labor force in 1940			In labor force in 1940		
	But in during:		In only during 1950	And in during:		
	1944	1950		1940	1944	1950
Age in 1950	45.2	44.5	43.9	45.0	45.4	45.0
Weekly earnings in 1950	\$44.27	\$40.83	\$38.10	\$49.57	\$50.60	\$49.57
Education:						
Years	9.56	9.57	9.59	10.28	10.27	10.28
Percentage high school graduates	34.1	33.2	32.5	45.4	45.5	45.4
Percentage with some college	8.0	9.2	10.2	18.4	18.3	18.4
Number of children < 18 years old in 1950	0.60	1.04	1.40	0.37	0.31	0.37
Number of children < 18 years old in 1950, for 35–44 year olds	0.87	1.40	1.77	0.58	0.50	0.58
Percentage with no children < 18 years old in 1950, for 35–54 year olds	61.9	45.4	32.2	73.5	76.1	73.5
Occupational distribution, if in civilian labor force (percentages):						
Professional	5.4	5.4	6.4	12.9	12.4	12.5
Managerial	7.0	6.1	4.8	8.7	10.0	12.0
Clerical and sales	34.0	37.5	38.2	34.7	35.2	34.2
Operative and craft	40.9	34.9	34.1	31.1	32.4	30.2
Domestic and service	12.7	16.2	16.6	12.6	10.1	11.1
Number of observations:	261	576	314	624	545	624

Notes: Age and marital status are as of the survey enumeration date (January 1951), which for purposes of exposition is listed here as 1950. A labor-force participant is either employed, unemployed, or in military service (there were very few in the last category). The column for those in the labor force in 1940 and during 1950 is virtually identical to that for 1940 alone, because all women were at work full-time for at least one month in 1950. The difference is the occupational distribution, which is specific to the given year. The number of observations refers to the age variable and differs somewhat by variable.

Source: Palmer survey (see text).

who were not in the labor force in 1940 and 1944 did.

The bottom portion of Table 5 gives differences in the occupational distributions among the new entrants and those previously employed. Women who were not in the labor force in 1940 had rather similar occupational distributions when employed in either 1944 or 1950. Similarly, women employed in 1940 and during any of the subsequent years given also had comparable occupational distributions across the 1940's. However, the difference between the two groups—those employed in 1940 and those not—is substantial. For those employed in 1940, the percentage in the professional and managerial class is almost twice that for those who were not employed in 1940. The human capital of these two groups, not the demands of the economy, seems to have been vital in their occupational (although perhaps not their industrial) choices.

The feature that the most highly educated women in a particular cohort enter the labor force earliest and are joined, over time, by progressively less educated women in their cohort has also been found by Smith and Ward (1984) in more recent CPS data.¹³ Although there is little information regarding the relationship between education and labor-force participation before the 1940's,

¹³The Palmer data show that educational attainment among all women 35–44 years old (in 1950) in the labor force falls sharply from 1940 to 1949, then rises slightly from 1949 to 1950. Among those in the labor force in 1940, when the cohort was 30 years old, mean schooling was 10.86 years. In 1944, when the cohort was 34 years old, the mean schooling level was 10.49; by 1949, it was 10.29; and in 1950, it was 10.34. Note that participants include only those in the Palmer Survey and, therefore, only those employed full-time for at least one month in 1950. The mean schooling level for the entire cohort was probably just below 10 years (Smith and Ward, 1984 p. 35).

TABLE 6—OCCUPATIONS OF WOMEN DURING WORLD WAR II, ALL AGES AND ALL MARITAL STATUSES (PERCENTAGES)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Persistence rates		Occupational distributions in 1944				
	(1941 and 1944)	(1944 and 1949)			Employed in	Employed in	Employed in
Occupational groups	1941	1944	Entrants in 1944	Employed in 1944	1942 and 1944	1944 and 1950	1940, 1944, and 1950
Professional and semiprofessional	93.3	92.9	5.4	9.0	11.4	11.3	12.9
Managerial and proprietary	93.5	76.2				6.1	7.4
Clerical	95.6	88.9	27.5	26.6	25.9	37.2	35.3
Sales	67.1		9.8	7.5	6.0		
Operative, craft, and laborer	91.3	79.7	37.4	33.3	30.5	30.4	28.0
Domestic	71.4	86.5	7.1	9.5	11.2	15.1	16.4
Other service	71.6		11.0	10.0	9.4		
Across all groups	85.1	85.5					

Notes: Farm-sector employment is included in the operative-laborer category. Persisters are women who remained in the same occupational category between 1941 and 1944 or between 1944 and 1949. Information for columns 3, 4, and 5 comes from the census data for which there is information about 1941 and 1944. Therefore, column 4 gives information for those women employed in 1944 who could have been in or out of the labor force in 1941. Similarly, columns 6 and 7 refer to the Palmer Survey data. Column 6, for example, gives the occupational distribution of women employed in 1944 and 1950 who could have been in or out of the labor force in 1940.

Sources: Columns 1, 3, 4, and 5, U.S. Department of Labor (1944); columns 2, 6, and 7, Palmer Survey (see text).

what does exist suggests that it was very different. Married women whose educational attainment was below the average for their cohort were in the work force (see Goldin 1990 [especially Ch. 5]). Thus the 1940's mark a break in the characteristics of working women, but much of this difference was not due to the war. However, the war did entice into the labor force a small group of women who remained employed at least until 1950 and whose personal characteristics were very different from those of current participants. It might be said, therefore, that this group represented the residual impact of the war on female employment.

Occupational distributions for 1944 and the persistence women demonstrated in them are given in Table 6. Women remained employed in a particular occupational group from year to year even during the somewhat turbulent 1940's. More than 90 percent of women in operative positions in 1941 remained in them until 1944. Among the least persistent, not surprisingly, were those in the operative group in 1944 who were employed in 1949 and 1950 as well.

The divergent findings regarding industrial jobs during and after the war are to be expected. It is the persistence across the spectrum of occupations that is surprising. Among all women employed in 1940, few, it seems, altered their occupations during and after the war. Of those employed in both 1941 and 1944, only 15 percent changed their major occupational group; and of those employed in 1944 and 1949, only 14.5 percent did.

Large differences in occupations existed between women who entered in 1944 and who were employed in 1940 or 1941. New entrants (column 3 in Table 6) were far less likely to be in the professional and managerial groups and were more likely to be in the operative and service groups than those previously employed. Rosie the Riveter and her fellow workers are apparent in the 37 percent who were operatives in 1944 among those not in the labor force in 1941, a figure that is nearly 10 percentage points higher than that for women who were also in the labor force in 1940 and 1950 (column 7).

The wartime entrants who exited the labor force by 1950 were a substantial group.

Although there are enough conditional distributions in Table 6 to prove that the group was rather different from those who remained employed, the computation of the precise distribution is complicated. It is likely that 67 percent of the Rosies who exited at the war's conclusion were operatives and service-sector workers in 1944, a figure substantially higher than that for other groups. Among all new entrants, the figure was 55 percent; and among those who remained employed until 1950, it was 47 percent. Table 5 indicates that, even among the wartime entrants who remained employed until 1950, educational levels were considerably lower and the number of children was higher than among those employed in 1940. Given the divergence in occupations, educational differences were probably even larger between those who exited after the war and those who were participants in 1940.

Fully one-sixth of the working women in 1944 were in a war-related industry (e.g., fabricated metals, airplane assembly, rubber, chemicals). Even in the Palmer Survey, which includes only those in the labor force in 1950, one in 6.26 or 16 percent were in these industries in 1944 (U.S. Department of Labor, 1944 p. 26). One-third of the Palmer Survey women in these industries, however, were not operatives and craft workers, but were in clerical positions. Of those in war-related industries in 1944 and also in the labor force in 1950, 45 percent remained in war-related industries to 1950, and 66 percent were in the manufacturing sector in general (not shown in table), indicating considerable persistence even in the war-related sector. It remains an interesting question what female employment would have been had women not been pushed out of war-industry jobs and had unions been more receptive to their continued employment.

Even though the increase in employment among those working in 1950 was greater after World War II, one may still wonder whether wartime employment enhanced women's marketable skills. One way of testing this hypothesis, and also of evaluating the determinants of earnings during the

1940's, is to estimate a standard earnings function that includes variables capturing wartime labor-force status. Columns 1 and 2 of Table 7 contain such regressions.

The functions estimated are similar to those in other studies of earnings. The dependent variable is the log of weekly earnings for the longest full-time job in 1950, although it seems clear from the unexplained variance of earnings that hours must have differed greatly among workers. The somewhat low R^2 values are likely to be the result of this excluded variable. The sample for the column-1 estimates includes all white, married women in the Palmer Survey who meet the age criterion.

Work experience across the 1940's decade increased earnings by 3.5 percent for each year, and schooling increased earnings by 2.3 percent, again for each year.¹⁴ High school graduation and college attendance added little extra (although see column-2 results). Continuity in a particular geographic area had benefits; moving away from a residence of 25-years duration meant that a woman forfeited 7 percent of her income.

Of particular interest for this study is the variable indicating whether a woman entered the labor force between 1940 and 1944 and its interaction with age. Earnings for the wartime entrants were higher (although the difference is not statistically significant) for those under 45 years old ($0.260/0.00577$) but lower for those over 45 years old. According to these coefficients, a 29-year-old woman (born in 1915) who began employment between 1940 and 1944 earned a 9-percent premium for the rest of her working life, relative to a comparable individual who entered prior to 1940.¹⁵

Note that there is nothing unusual about the war. An even larger premium exists for women younger than 43 years of age ($0.626/0.0145$) who entered the labor force between 1944 and 1949. A 32-year-old

¹⁴Higher-order terms for both experience and schooling were not statistically significant and are not included in the final estimations.

¹⁵The woman would be 29 years old in 1944 and 35 years old in 1950.

TABLE 7—EARNINGS FUNCTIONS FOR MARRIED, WHITE WOMEN,
35–54 YEARS OLD IN 1950

Variable	Regression coefficients		Means of columns	
	(1)	(2)	(1)	(2)
Constant	3.091 (39.70)	3.093 (26.72)		
Work experience (in years) during 1940's	0.0348 (7.77)	0.0236 (3.16)	6.54	8.63
Schooling (years)	0.0232 (3.02)	0.0169 (1.64)	9.96	10.32
High school graduate	0.0619 (1.49)	0.153 (2.66)	0.387	0.450
Attended college	0.0335 (0.72)	0.0891 (1.53)	0.134	0.183
Years living in area	0.00271 (3.13)	0.00375 (3.04)	26.1	27.3
Entered labor force between 1940 and 1944	0.260 (1.36)		0.246	
Interaction of above with age	–0.00577 (1.34)			
Entered labor force between 1944 and 1949	0.626 (3.12)		0.203	
Interaction of above with age	–0.0145 (3.19)			
Occupation same in 1940 and 1950		0.0891 (2.23)		0.777
Log of weekly earnings from longest full-time job in 1950 (dependent variable)			3.75	3.84
R^2 :	0.22	0.25		
Number of observations:	900	449		

Notes: Other variables included: regional dummy variables for West (Los Angeles and San Francisco) and Midwest (Chicago and St. Paul). Occupations are in five groups: professional, managerial, clerical and sales, craft and operative, and service. Absolute values of t statistics are given in parentheses.

Source: Palmer Survey sample for white, married women 35–54 years old.

woman (again, one born in 1915) who entered the labor force in 1947 earned a 16-percent premium in comparison with a woman who entered prior to 1940 and a 7-percent premium in comparison with the woman above who entered in 1944.¹⁶ Even though one of these women has three more years of job experience, the earnings difference is only 3.6 percent. These results suggest a vintage effect in new hirings. They also suggest that women over age 45 were less able to adapt to new technologies or

were discriminated against at the time of hiring.¹⁷

The regression of column 2 contains a variable indicating whether the woman had the same occupation in 1940 and 1950. The sample, therefore, includes only (white, married) women employed in 1940. There was a 9-percent premium for remaining in the same occupational group in both years, which is evidence that continuity in an occu-

¹⁶A 32-year-old woman in 1947 was 35 years old by 1950 and could be the same individual who was 29 years old in 1944.

¹⁷I have not encountered a similar variable included in earnings functions using recent longitudinal data and therefore do not know whether the result is a product of the particular time period or is a more pervasive vintage effect.

pation, not just wartime work, enhanced a woman's earning ability. Being in a war-related industry in 1944 did not affect earnings and is not included in the results.

III. Concluding Remarks: World War II and Women's Economic Status

Is there no truth, then, to the notion that World War II was a watershed in the lives of American women and altered the way in which women were perceived as workers? The primary conclusion from the Palmer Survey data is that more than 50 percent of the women working in 1950 had been employed in 1940 and that the rate of entrance into the labor force, among those employed in 1950, was the same during the first half of the 1940's (the war period) as during the second half. Just 20 percent of those working in 1950 had entered the labor force during World War II, and about half the wartime entrants left the labor force sometime after December 1944.

The Palmer Survey has offered a unique view of the female labor force in World War II but does not enable a direct test of the hypothesis concerning a changed ideology. The war could still have altered norms that circumscribed the behavior of married women. It could also have changed the attitudes of the young single women who entered the labor in record numbers from 1940 to 1944 (see participation rates for 14-19-year-olds in Table 1).¹⁸ There is,

however, mounting evidence that the wide-ranging shift in women's economic role after World War II was primarily due to longer-run factors, such as the rise of the clerical sector and increased education. Further, historical evidence on "marriage bars" suggests that the rhetoric surrounding women's work changed only when the supply of young single women was substantially reduced and when the supply of well-educated, older, married women increased. Demographic events culminated in the late 1940's to bring about these changes. If the war had anything to do with these changes, it was to rekindle family values, thus depleting the already reduced labor supply of younger married women, and to restore the economy to full employment, thus creating a demand for older married women workers.

It has been difficult to isolate the economic impact of World War II from the one it served in ending the Great Depression, but there is considerable evidence from a variety of sources that the war had far less direct influence on female labor supply than was believed. The Palmer Survey data have reinforced the conclusions of a growing literature that wartime work did not by itself greatly increase women's employment.

APPENDIX: DATA SOURCE

The Palmer Survey (see Palmer, 1954) is a population-based sample of workers from six cities (Chicago, Los Angeles, Minneapolis, New Haven, Philadelphia, and San Francisco) collected by the U.S. Bureau of the Census to explore labor mobility in the 1940's. It is currently available from the author as an ASCII or a STATA file and will be eventually archived at ICPSR. The data set contains retrospective work histories, from 1940 to 1950, for 4,350 women who worked full-time at least one month in 1950. The work histories are in summary form, containing information on the employment status, industry, and occupation of the individual in 1940, 1944, 1949, 1950, and 1951 and at the time of her first job. Also included are age, marital status, race, years in area, children under 18 years old, place of birth, relationship to household head, education, and father's occupation and industry.

¹⁸It seems unlikely, though, that the impact of the war worked entirely through young women who were the mothers of the "baby boom" in the 1950's. This hypothesis can be assessed in the American case and has already been tested for Britain. Heather E. Joshi et al. (1985) analyze a pooled cross-section, time-series analysis of annual data. They include cohort dummies in a first-stage regression to explain within-cohort effects and then use the cohort dummies in a second-stage regression to explain across-cohort differences. Joshi et al. note, "The Second World War enormously increased women's participation in all kinds of work [in Britain]... The experience of warwork led many women (especially in their twenties) to acquire skills they would not otherwise have acquired." This, they hypothesize, "must have made many of them more willing to work later" (p. S168). In their second-stage equation, Joshi et al. test whether labor-force participation rates of cohorts of British women who were 20-29 years of age

during World War II had changed. They find only a small, though positive, impact of the war but do not discuss the finding (see their table 9).

REFERENCES

- Anderson, Karen**, *Wartime Women: Sex Roles, Family Relations, and the Status of Women during World War II*, Westport, CT: Greenwood Press, 1981.
- Campbell, D'Ann**, *Women at War with America: Private Lives in a Patriotic Era*, Cambridge, MA: Harvard University Press, 1984.
- Chafe, William H.**, *The American Woman: Her Changing Social, Economic, and Political Roles, 1920-1970*, New York: Oxford University Press, 1972.
- Durand, John D.**, *The Labor Force in the United States, 1890-1960*, New York: Social Science Research Council, 1948.
- Goldin, Claudia**, "Life-Cycle Labor Force Participation of Married Women: Historical Evidence and Implications," *Journal of Labor Economics*, January 1989, 7, 20-47.
- _____, *Understanding the Gender Gap: An Economic History of American Women*, New York: Oxford University Press, 1990.
- _____ and **Margo, Robert A.**, "The Great Compression: The Wage Structure at Mid-Century," unpublished manuscript, Harvard University, November 1990.
- Joshi, Heather E., Layard, Richard and Owen, Susan J.**, "Why Are More Women Working in Britain?" *Journal of Labor Economics*, January 1985 (supplement), 3, S147-S176.
- Milkman, Ruth**, *Gender at Work: The Dynamics of Job Segregation by Sex During World War II*, Urbana: University of Illinois Press, 1987.
- Palmer, Gladys L.**, *Labor Mobility in Six Cities: A Report on the Survey of Patterns and Factors in Labor Mobility, 1940-1950*, New York: Social Science Research Council, 1954.
- Smith, James P. and Ward, Michael P.**, *Women's Wages and Work in the Twentieth Century*, Santa Monica, CA: Rand Corporation, 1984.
- U.S. Bureau of the Census**, "Marital and Family Characteristics of the Labor Force in the United States: April 1948", *Current Population Reports*, Series P-50, No. 11, Washington, DC: U.S. Government Printing Office, December 1948.
- _____, "Marital and Family Characteristics of the Labor Force in the United States: March 1950", *Current Population Reports*, Series P-50, No. 29, Washington, DC: U.S. Government Printing Office, May 1951.
- _____, "Marital and Family Characteristics of the Labor Force in the United States: April 1951", *Current Population Reports*, Series P-50, No. 39, Washington, DC: U.S. Government Printing Office, May 1952.
- _____, *U.S. Census of Population: 1950; Special Reports: Employment and Personal Characteristics*, 1950 Population Census Report P-E No. 1A, Washington, DC: U.S. Government Printing Office, May 1953.
- _____, *Historical Statistics of the United States: Colonial Times to 1970*, Washington, DC: U.S. Government Printing Office, 1975.
- U.S. Department of Labor (Mary Elizabeth Pidgeon)**, *Changes in Women's Employment During the War*, Women's Bureau Special Bulletin No. 20, Washington, DC: U.S. Government Printing Office, 1944.
- _____, *Women Workers in Ten War Production Areas and Their Postwar Employment Plans*, Bulletin No. 209, Washington, DC: U.S. Government Printing Office, 1946.