Rosie the Riveter, Vera the Volunteer:

Sexism, Racism, and Female Enlistment in WWII

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Abstract

What influenced women to volunteer for service in the U.S. military during World War II? While previous literature focused on potential intrinsic and extrinsic individual-level motives, we consider the broader structural context that may have played a role in female volunteerism. We leverage original data containing information on all volunteers who served in the U.S. Army during World War II, along with detailed county-level economic, political, and demographic data, to explore patterns of female volunteerism in the military. Our findings suggest that racism and sexism played a role in female volunteerism in many parts of the country, which may have undermined the government's goals of mobilizing the whole country in support of the war effort.

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When the United States entered World War II, women were mobilized in large numbers for non-combat military roles for the first time (Morden 1990). Women and men alike were willing to sacrifice extensively to win the war; in December 1941, 91 percent of Americans supported declaring war on the Axis Powers (Saad 2016). Given the overwhelming support for the war effort, it remains puzzling why recruitment targets were consistently missed. Ultimately, the Army recruited only 133,000 volunteers for the Women's Army Corps (WACs) out of a target of 300,000 (Morden 1990). Women from all walks of life had the opportunity to volunteer, but substantial variation in volunteerism rates persisted across geography, class, partisanship, and other demographic indicators. What factors influenced female volunteerism – or the lack thereof?

We argue that sexism and racism may have kept some women from serving. Local social pressures to not join the military and sustained campaigns disparaging women in the military worked against government efforts to encourage women to volunteer (Campbell 1984). Black women faced additional obstacles to volunteerism, ranging from Jim Crow laws in the South to hostile enlistment officials across the country.

We use original data on every U.S. Army volunteer during World War II to evaluate these propositions. We aggregate these data to the county-level and link them with electoral and Census data to explore female volunteerism rates during the war. Our data permits us to explore the relationship between economic, political, and demographic factors and women’s military enlistment. Understanding these relationships not only sheds light on an understudied historical case but may also offer insights into current inequities in military service.

Our research note makes two significant contributions. First, we augment existing theories of motivations for military volunteerism by incorporating broader structural and societal factors. Existing research on the determinants of wartime volunteerism focuses on two factors: institutional (intrinsic) and occupational (extrinsic) motivators (Moskos 1977). Scholars have found that these motivations often operate in conjunction (Eighmey 2006; Humphreys and Weinstein 2008; Cancian 2021). Further, we suggest that "push and pull" factors influencing decisions to volunteer for military service operate within a broader structural and societal context, which have a profound effect on individual decision-making, especially those for whom the structures are intended to exclude (Ditonto 2019; Conkel et. al. 2019; Bateson 2020). Accounting for racism and sexism towards female volunteers complements existing narratives, and for the first time, we may observe individuals with both the incentives to serve but were kept from service by structural barriers.

Second, we introduce an original dataset that contains detailed information on all volunteers who served in the U.S. Army during World War II, the *Soldiers of the Second World War* dataset. These data are drawn from a larger original dataset of all enlistees in the Army during the war (Atkinson and Fahey 2022). The Department of War gathered details about its enlistees in a raw, unusable format, and only released them to the public in 2002. We have extensively prepared these data for a variety of quantitative research purposes. Our dataset contains every enlistee's date of birth, state and county of residence, enlistment date, pre-war occupation, education level, race, gender, and ancestry. This finished dataset has potential applications across subfields and disciplines, ranging from historical analysis, sociological studies, political behavior, and the study of how countries mobilize for war. Appendix B contains a detailed description of the dataset.

We discover three major patterns in female enlistment during World War II. First, counties with higher female college graduation rates observed more than 9,000 additional volunteers across the country each year. Second, counties with higher racial segregation observed more than 3,000 fewer volunteers. These findings are consistent with our broader argument that sexism and racism deterred female volunteerism, and emphasize that institutional prejudices hindered the war effort. Finally, counties with higher civilian wages in the manufacturing, retail, and service sectors witnessed substantially higher female enrollment by tens of thousands.

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The Women of World War II

On December 7, 1941, Japan attacked Pearl Harbor, thrusting the U.S. into a two-front war against Japan, Germany, and Italy. The war would ultimately require the service of sixteen million Americans. To meet the labor demands of the war, the U.S. government relied on a selective conscription scheme, first implemented in 1940. Additionally, the U.S. Congress established the all-volunteer WACs in May 1942 to supplement the number of non-combat military personnel and additional auxiliary corps for the other services (Bellafaire 1993). Ultimately, nearly 350,000 women would serve in the armed forces, including 133,000 WACs (see Figure 1). Women were critical for the war effort; female volunteers in the Army drove and repaired military vehicles, served as clerks, worked in office jobs, conducted intelligence collection, among other roles (Bellafaire 1993).

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The Influences on Female Volunteerism

We assume that individuals are rational when choosing to volunteer for military service. They weigh the costs and benefits of military service, maximizing their utility. The costs and benefits of service come from both internal and external motivators (Moskos 1977). Internal motivators include patriotism, religious beliefs, wages, a sense of duty, or educational opportunities. External motivators include structural forces such as military regulations that (dis)encourage service for certain demographic groups. For example, the U.S. military limited the opportunities available to black women during World War II to menial labor (Bolzenius 2018). External motivators also include social pressures that push people towards or pull them away from military service. For example, conservative communities promoted traditional gender norms and looked down on women joining the military (Permeswaran 2008). Below, we theorize several of the costs and benefits that influenced women's decisions to volunteer.

The first factor that shaped female volunteerism is the societal stigma around women serving in the military. Women feared the social sanctions from their communities – family and friends, political elites, and mass media – if they joined the military (Permeswaran 2008). We argue that these social sanctions were most potent in culturally conservative communities that observed strict gender norms. In these communities, women were encouraged to stay in the household and discouraged from engaging in non-traditional activities, including educational attainment and labor force participation (Glass and Jacobs 2005).

In a pre-war context, an appropriate proxy for the intensity with which a community held these traditional gender norms was the propensity for women within these communities to obtain higher education. Culturally conservative values are associated with lower female educational attainment (Glass and Jacobs 2005). Many conservative communities saw female higher education as violating "the ideal of true womanhood" (Graham 1978, 759). Resultingly, communities that were more comfortable with women pursuing higher education would be more willing to accept women taking on other non-traditional roles, such as military service.

If a woman's surrounding community objected to her enlisting, she would likely feel conflicted about doing so. For women in progressive communities, volunteering was far less costly. Therefore, communities with higher female college graduates will observe more volunteerism.

- ***Education Hypothesis:*** *Counties with higher proportions of women with college degrees will have higher enlistment rates, compared to counties with lower proportions of women with college degrees.*

The second factor that shaped volunteerism is racial discrimination. Volunteering for the military was extremely costly for black women, who had to overcome obstacles put in place due to both her gender and her race. Blacks only comprised one percent of local draft board members during World War II, leaving black women's enlistment primarily in the hands of white men, who often did not believe that black women belonged in the military (Murray 1971).

Many communities adopted recruitment rules that were responsible for gatekeeping potential volunteers on the basis of race. Although the military had no educational requirements,

it eventually implemented literacy requirements – through the Armed Forces Qualifications Test (AFQT) – that adversely affected black women. As a result of racial disparities in the U.S. public educational system, black women scored significantly lower than white women on the AFQT, particularly in segregated Southern communities (Moore 1991). When black women did pass the AFQT, local draft boards often delayed their enlistment by several months, claiming a lack of adequate training facilities (Murray 1971).

All of these challenges make it unsurprising that black women never comprised more than four percent of the WACs. For black women, attempting to enlist was extremely costly. Therefore, communities with more racial strife will observe less volunteerism.

- ***Race Hypothesis:*** *Counties with higher levels of observable segregation will have lower enlistment rates among black women, compared to counties with lower levels of observable segregation.*

The final factor that we examine is economic opportunity. During World War II, labor shortages led to significant increases in civilian wages (Schumann 2003). Increased wages at home primarily benefited men (Aldrich 1989). Most women who entered the labor market did not take over the jobs of enlisted men, nor the jobs that men who stayed home wanted. Instead, most women competed for newly-created jobs (Rose 2018). These jobs were geographically concentrated, temporary, and lower-paid; in 1942, women working civilian jobs earned fifty-three cents to a man's dollar (Aldrich 1989).

In 1943, Congress passed an equal pay provision for the WACs. Men and women from all racial backgrounds received equal pay according to rank and, with a few modifications for

WACs, nearly the same benefits (Bolzenius 2018). Such regulations provided opportunities for many women that were unimaginable at home. Increased pay and benefits may have partially ameliorated the high societal costs outlined previously.

We anticipate that as wages rose in a county, an influx of men seeking higher wages would drive the local women to take lower-paid jobs, thus making joining the WACs more attractive.. We expect women in counties with higher wages to face more costs in the civilian workforce and view military service as more desirable.

- ***Wages Hypothesis:*** *Counties with higher wages will see higher enlistment rates, compared to counties with lower wages.*

Data and Methods

To test our hypotheses, we analyze a novel dataset of all female volunteers in the U.S. Army during World War II (1941-1945), gathered by the Department of War and converted into the *Soldiers of World War II* dataset.[i] Workers at local induction stations took the data from enlistees, and placed this information on punch cards for use on early computers. Decades later, researchers at the National Archives combined these records into ASCII files. We cleaned these files and converted them into a format usable for analysis. This dataset contains every enlistee's date of birth, state and county of residence, enlistment date, pre-war occupation, education level, race, and ancestry.

To address the immediate research questions in this paper, we further subset our enlistments to women who served. While the records do not indicate the gender of the enlistee, we can obtain this information using the enlistees' serial numbers. Namely, female enlistees had an "A" placed before their serial number, indicating that they were a part of the WACs. In total,

we have access to over nine million service member records, of which 133,843 were women in the WACs.[ii]Ideally, we would compare predictors of volunteer rates at an individual level; however, crucial granular, individual-level partisan, demographic, and economic data do not exist. Therefore, we aggregate information to the county-year, resulting in a balanced panel of 15,580 observations, 1941-1945. This approach permits us to compare the influence of various county-level attributes on that county's female volunteer rate.

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Dependent Variables

Our first outcome measure is the proportion of female volunteers in a county-year. We create additional subsets for white volunteers and black volunteers.[iii] Figure 2 presents the number of volunteers by year.

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Independent Variables

Consistent with the Education Hypothesis, women from counties with higher rates of female college education will have higher enlistment rates. The distribution of college-educated women by county can be found in Figure 3. Consistent with the Race Hypothesis, areas with more overt racial segregation should have lower volunteerism rates, particularly black volunteers. We operationalize county-level racial segregation using two reliable measures of racial segregation used by Logan and Parman (2017). The first is the isolation index, which

measures the probability that a member in one group (whites) will interact with a member of another group (blacks). The isolation index ranges from 0 to 1, where higher values indicate lower segregation. The distribution of neighborhood isolation can be found in Figure 4. The second is the dissimilarity index, which measures the percentage of a group's population that would have to change residence for each neighborhood to have the same percentage of that group. The dissimilarity index also ranges from 0 to 1, where higher scores indicate higher segregation. To test our Wages Hypothesis, we include county-level information on economic indicators, including wages in the four major Census sectors: manufacturing, retail, wholesale, and service (Dodd and Dodd 1973).

<Place figure 3 here>

We control for two partisan indicators, including county-level vote shares for President Roosevelt and the Democratic candidate for the U.S. House of Representatives (Haines et al. 2005). We also include county-level demographic data, such as the percentage of white women and men, the percentage of black women and men over 21,[iv] the proportion of the urban population, and the total population.[v]

<Place figure 4 here>

To analyze these data, we employ ordinary-least-squares (OLS) regressions with state-year fixed-effects and clustered standard errors.[vi] The first model is all female volunteers, the second all white female volunteers, and the third all black female volunteers.[vii] In reporting our analyses, we show estimated coefficients on separate figures, although they originate from the same models, to highlight results by hypothesis.[viii]

Results

In Figures 5 and 6, we report the estimated coefficients for education, racial dissimilarity, and racial isolation. We find a positive, marginally significant relationship between college education and white female volunteerism at the $p<0.01$ level. Substantively, a one standard-deviation increase in education results in 3.14 additional female volunteers per county-year. With 3,116 counties in our sample, the substantive impact is quite large, equaling to 9,784 additional volunteers in the U.S. in a year. There is both statistical and substantive support for our ***Education Hypothesis***: college education is associated with increased female volunteerism.

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We find a negative, statistically significant relationship between racial dissimilarity (higher segregation) and black female volunteerism at the $p<0.01$ level. At the same time, we find a positive, statistically significant relationship between racial isolation (lower segregation) and black female volunteerism at the $p<0.01$ level. This demonstrates support for the ***Race Hypothesis***, as counties with lower isolation and dissimilarity scores are associated with higher female volunteerism. The substantive significance for our racial variables are small, with a one standard-deviation increase in dissimilarity (higher segregation) resulting in about one less volunteer per county-year, or about 3,000 fewer volunteers throughout the U.S. in a year. This is potentially because more progressive counties had fewer institutional roadblocks for women of color hoping to enlist.

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In Figure 7, we report estimated coefficients for our set of economic variables. All four of our wage variables are statistically significant. Both manufacturing wages and retail wages have positive, statistically significant influences on female volunteerism at the $p<0.01$ level. Service wages have a positive, statistically significant influence on female volunteerism at the $p<0.05$ level. Interestingly, wholesale wages have a negative, statistically significant influence on female volunteerism at the $p<0.05$ level. We do not find significant evidence for unemployment. In terms of substantive significance, a one standard-deviation increase in wages increases the number of female volunteers by 2.70 (manufacturing), 10.87 (retail), and 8.94 (service) per county-year. This would equal to 8,413 (manufacturing), 33,871 (retail), and 27,845 (service) throughout the U.S. in a year. A one standard-deviation increase in wholesale wages decreases the number of female volunteers by 7.85 per county-year. We find considerable support for our ***Wages Hypothesis***: even when wages in several fields increases, so does female volunteerism. This suggests that as wages rose in these sectors, young women were not taking civilian jobs, possibly because they experienced increased competition for these more lucrative jobs from men.

<Place figure 7 here>

In Figures 8 and 9, we report the coefficients for our controls. We find a positive, statistically significant influence of urbanism on female volunteerism, significant at the $p<0.05$ level. The percentage of white females in a county has a negative, marginally significant influence on volunteerism at the $p<0.1$ level. We do not find significant evidence for the county-level vote shares for President Roosevelt, county-level vote shares for the Democratic congressional candidate, or the percentage of white males, black females, or black males in a county.

<Place figure 8 here>

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In sum, we find sizeable support for our hypotheses. Increased college education, lower levels of racial segregation, and wages in the manufacturing, retail, and service sectors were all associated with increased female volunteerism. Wholesale wages were negatively associated with volunteerism. Some controls also prove interesting: urbanism and the percentage of white females in a county were positively associated with increased volunteerism.

Conclusion

This paper overviews the motives for female volunteerism in the U.S. military during World War II. While previous literature focused on potential intrinsic and extrinsic individual-level motives, we have considered the broader structural context that may have played a role in female volunteerism. Using a novel dataset of all volunteers who served in the U.S. Army during World War II, we find that a combination of political and economic factors influenced female volunteerism. Counties with higher female college graduation rates had a higher rate of female volunteers. Counties with less observable racial segregation observed higher rates of black female volunteers, implying that more socially progressive counties put fewer institutional roadblocks for women of color. Finally, counties with higher manufacturing, retail, and service wages had higher rates of female volunteers. This finding runs contrary to the claim that women were offered higher-paying civilian jobs due to men enlisting and therefore had fewer incentives to volunteer in the military.

In sum, we find sizeable support for our hypotheses. Increased college education, lower levels of racial segregation, and wages in the manufacturing, retail, and service sectors were all associated with increased female volunteerism.

The significance of this research note is twofold. First, it introduces a novel dataset of broad interest to political scientists across subfields, ranging from scholars of gender and politics, race and ethnicity, political behavior, and international relations. Second, it offers a first look at the county-level demographic and economic factors that shape female volunteerism during World War II. Many of these factors led to fewer women and women of color volunteering in the military at a time when volunteering was needed the most. It is important to consider these results when doing future research in this field and assess whether such patterns are practiced today.

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[i] See Appendix A for a detailed discussion of this dataset.
[ii] See Appendix C for a series of analyses that examine male volunteers.
[iii] We aggregate all female volunteers to the county-year; see the Appendix.
[iv] The number of black women and men is not aggregated to all age cohorts for the 1940 census as it is for white women and men.
[v] We rescale the 1940 Census' as wages per population. The number of white and black women and men over 21 are also rescaled as a proportion of the population.
[vi] To avoid concerns that we violate the OLS assumption of linearity in the parameters, we have transformed our dependent and independent variables using the inverse hyperbolic sine and re-run our estimates in Appendix D.
[vii] There are not enough volunteers from other racial groups across states and counties to include in this paper. However, we anticipate that racial constraints on volunteerism would differ (Sickels 2004).
[viii] See Appendix B for a full table of all estimated coefficients.

Figure Numbers and Titles

Figure 1. Female Volunteer Rates by County, 1943
Note: Darker gray indicates lower volunteerism, while lighter grey indicates higher volunteerism

Figure 2. Female Volunteers, 1941-1945.

Figure 3. Female College Graduation Rates by County, 1940
Note: Darker gray indicates fewer graduates, while lighter gray indicates more graduates.

Figure 4. Racial Isolation Rates by County, 1940
Note: Darker gray indicates higher segregation, while lighter gray indicates lower segregation.

Figure 5. Coefficient Plot of Influence of College Education on Female Volunteerism, with 95% CIs

Figure 6. Coefficient Plot of Influence of Racial Variables on Female Volunteerism, with 95% CIs

Figure 7. Coefficient Plot of Influence of Economic Variables on Female Volunteerism, with 95% CIs

Figure 8. Coefficient Plot of Influence of Political Variables on Female Volunteerism, with 95% CIs

Figure 9. Coefficient Plot of Influence of Demographic Variables on Female Volunteerism, with 95% CIs