BGPE Discussion Paper

No. 245

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December 2025

ISSN 1863-5733

Editor: Prof. Regina T. Riphahn, Ph.D.
Friedrich-Alexander-Universität Erlangen-Nürnberg

B G P E Discussion Paper Series

Women's Labor Market Status after World War II: The Missing Men in Germany

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December 9, 2025

Abstract

How does the death of soldiers shape women's participation in the labor market? Using county-level census data from 1925 to 1970, I examine how military mortality during World War II affected women's labor market status in the short and medium term in the German state of Bavaria. Employing a difference-in-differences approach, I find that higher military mortality did not lead to increased female labor force participation in the postwar period. Instead, within the group of non-participants, many women shifted their livelihood from household dependence to state support or self-provision. This effect is mainly driven by war widows.

JEL Classification: J16, J21, N34, N44

Keywords: Women's Labor Market Status; Female Labor Force Participation; World War II; Military Mortality; Postwar Germany

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I would like to thank Sebastian Till Braun, Timur Öztürk, Tim Baule, as well as participants at the GSWG PhD Workshop 2025 in Berlin, the 39th BGPE Research Workshop 2025 in Ingolstadt, the Graduate Seminar 2025 in Bayreuth, and the EHES Conference 2025 in Hohenheim for their helpful comments and suggestions. I gratefully acknowledge funding from the Stiftung Bildung und Wissenschaft (project number S0026/10280/2024).

1 Introduction

In the first half of the 20th century, the world experienced two devastating wars. Millions of men were mobilized into militaries, many of whom never returned home. These 'missing men' skewed the sex ratio in postwar societies, especially among the younger, prime-age population. These men were in their prime working years and consequently missing in the labor markets, potentially prompting drastic adjustments in labor force participation among the remaining population. A large body of the 'missing men' literature argues that particularly women have been drawn into the labor market as a result of the temporary or persistent absence of prime-age men due to the World Wars; for instance, in the US (Acemoglu et al. 2004) and in France (Boehnke and Gay 2022). The demographic shock to the gender balance may thus help to explain the substantial rise in female labor force participation observed in these countries during the 20th century.

Following the logic of the 'missing men' phenomenon, one would therefore expect an increase in female labor force participation in Germany after World War II (WWII), as it suffered the second-highest military losses of any belligerent in both World Wars (Müller 2008). However, in Figure 1, the opposite can be observed. Among all women aged 14 and older in Germany, the share of women participating in the labor market decreased after the war from 46% to 40% and then continued its downward trend, representing a striking contrast to the settings studied in the existing literature.[1] Interestingly, the share of women who relied on state assistance jumped from 12% to 20% right after the war and had almost doubled by 1970 relative to its prewar level. To what extent can military mortality explain these patterns? How did the 'missing men' shape the postwar labor market activity of women in Germany?

In this paper, I exploit conditional county-level variation in German military casualties as a large exogenous shock to identify the causal effect of 'missing men' on women's labor market status. Using occupational census data from 1925 to 1970 for Germany's largest postwar state, Bavaria, I compare counties that experienced high versus low military mortality. Identification requires that *which* counties suffered higher or lower soldier casualties is conditionally exogenous. However, the unconditional variation in military mortality was not entirely random as it was partly shaped by the German military's drafting process that drew disproportionately from certain regions (e.g., rural areas) for most of the war. After controlling for this systematic variation, I use the remaining, plausibly exogenous variation in military mortality for identification in a difference-in-differences approach. In this setup, military mortality serves as a continuous treatment variable.

[1] See, e.g., Goldin (1991, p. 742) and Acemoglu et al. (2004, p. 498) for continuously rising rates of female labor force participation between 1920 and 1970.

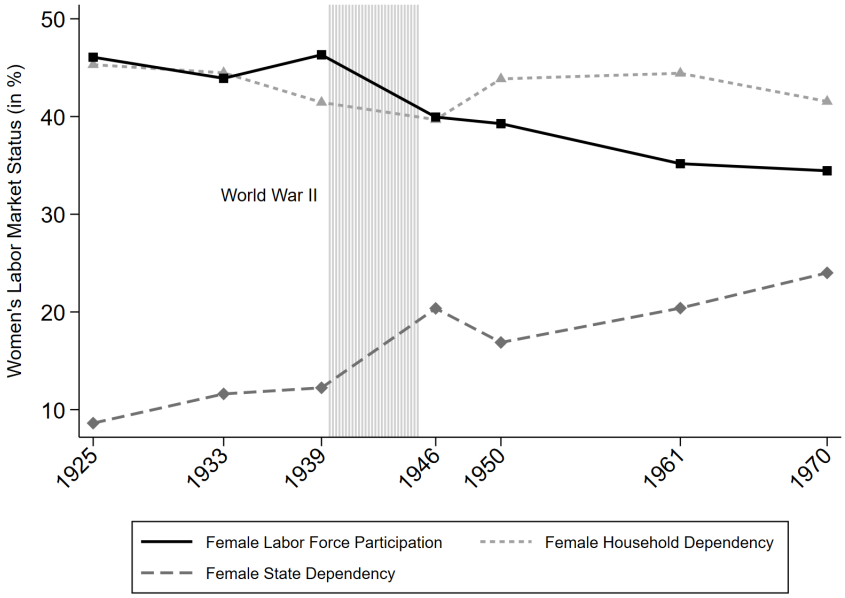

Figure 1: Labor Market Status of Women Aged 14 and Older in Germany

Notes: This figure shows the distribution of women aged 14 and older in Germany across three mutually exclusive labor market statuses in the seven census years from 1925 to 1970. The data refer to the German Reich in its respective borders in 1925, 1933, and 1939, to the four occupation zones in 1946, and to West Germany in 1950, 1961, and 1970. The vertical gray shading indicates WWII (1939–1945).
Sources: See Table A.1 in Appendix A.1.

As fine-grained data on German military casualties in WWII are scarce, I rely on unique county-level information on the fates of military personnel during and after WWII, provided by statistical records of the south German state of Bavaria. In addition, Bavaria's geographical and political consistency throughout Germany's various regime changes facilitates an analysis over several decades. Most other German states, like North Rhine-Westphalia and Baden-Württemberg, were newly founded in the years after the war and were composed of previously separate administrative regions. Figure C.1 in Appendix C shows that the trends in aggregate women's labor market statuses in Bavaria closely resemble those observed for Germany as a whole. Moving from these aggregate trends to the county level, I provide a comprehensive analysis of how military mortality affected women's labor market outcomes across the three categories in Figures 1 and C.1. These include participating in the labor market (*labor force participation*); not participating and relying on a relative's financial means, typically the father or husband (*household dependency*); and not participating and relying on state assistance or other means (*state dependency*).

In contrast to most of the existing literature, my results suggest no effect of military mortality on female labor force participation. Instead, I find that higher military mortality led to an increase in the share of women relying on state assistance or self-provision

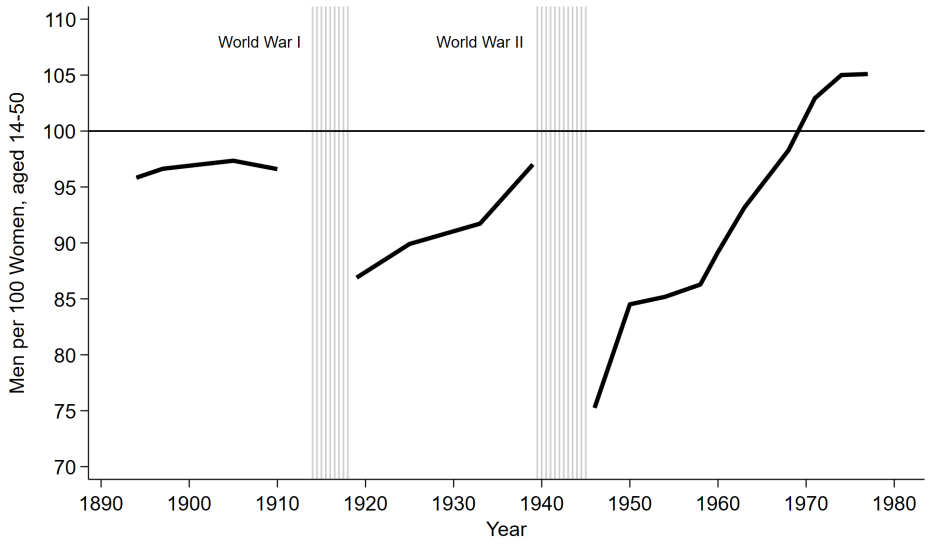

Figure 2: Prime-Age Sex Ratio in Bavaria, 1894-1977

Notes: This figure displays the sex ratio of men and women aged 14 to 50 in Bavaria from 1894 to 1977. The vertical gray shaded areas depict WWI (1914-1918) and WWII (1939-1945).
Sources: Various volumes of *Statistisches Jahrbuch für Bayern* between 1894 and 1978.

and to a decrease in the share of women in household dependency. The estimated coefficient of the continuous treatment variable can be interpreted by comparing counties at the 25th percentile of military mortality (where 26.8% of prime-aged men died) with counties at the 75th percentile (where 32.4% died). Under this interpretation, state dependency among women increased by about 1 percentage point, while household dependency fell by about 1.3 percentage points in counties with higher compared to lower military mortality. Relative to prewar levels, this amounts to an increase of about 10% in female state dependency and a decrease of about 5% in household dependency. The results therefore indicate that the loss of prime-aged men did not draw women into the labor market, but instead led them to remain outside and to shift their sources of livelihood. Additional evidence suggests that this response was driven largely by war widows.

The key finding of my analysis is that the 'missing men' did not necessarily lead to a rise in female labor force participation, since the historical context strongly shaped women's opportunities in the labor market. In fact, my results can only be fully understood in light of a unique characteristic of postwar Germany that sets it apart from other belligerent countries. Despite enormous military and civilian losses, the country actually experienced a population *increase* due to the inflow of approximately 12 million expellees (*Heimatvertriebene*) from Germany's former eastern territories. These forced migrants had to be integrated into the economy, which profoundly reshaped dynamics in the postwar labor market (Braun and Omar Mahmoud 2014). In this sense, while the 'missing

men' indeed skewed the population's sex ratio (see Figure 2)[2], their demographic gap was more than offset. I argue that among the various factors that likely prevented a notable increase in female labor force participation, the inflow of expellees appears to have been the most significant.

The remainder of the paper is structured as follows. The next section discusses the contribution of this paper to the related literature. In Section 3, I provide a brief overview of the historical background. Section 4 describes the data and outlines the empirical strategy, followed by the discussion of the main results in Section 5. Section 6 reviews the underlying mechanisms, and Section 7 concludes.

2 Related Literature

This paper joins the ranks of a growing literature on the 'missing men' phenomenon, which examines the consequences of the involuntary absence or death of large numbers of men for women's participation in the labor market. This paper is the first to apply the 'missing men' framework to labor market activity in Germany and thus provides the first quantitative assessment of the relevance of military mortality for postwar labor market outcomes for women in Germany.

Most of the established work uses variation in military mobilization for WWII in the US to show that women were largely drawn into the labor force during the war, but this surge was either short-lived or limited to specific groups of women (Bellou and Cardia 2016; Doepke et al. 2015; Jaworski 2014; Goldin and Olivetti 2013; Acemoglu et al. 2004; Fernández et al. 2004; Goldin 1991). Rose (2018) even contests the relationship between war mobilization and female wartime employment, suggests war industrialization to be the main driver in the employment surge and finds that shortly after the end of WWII, female labor force participation had actually returned to prewar levels. Also, Goldin (2024) suggests that the lasting effect of WWII on women's employment in the US is much smaller than previously thought.

More closely related to my study, recent contributions exploit variation in military mortality to analyze the labor market consequences of a permanent absence of men after wars. Brodeur and Kattan (2021) align with the aforementioned studies on the US and confirm short-run increases in female labor force participation. Eder (2022), on the other hand, uses male WWII casualties at the municipality level in Austria and finds, though

[2] As each year a new birth cohort entered the age range of 14 and 50, and the sex ratio of a newborn generation was approximately 1:1, the line towards rebalancing throughout the 1960s is quite steep. Moreover, the immigration of guestworkers, who were predominantly men between the ages 20 and 40 (Sippel 2009, p. 3), possibly accelerated the rebalance and even led to a reversal of the prime-age sex ratio.

not the focus of the paper, no significant effect on female labor force participation for 1961 and 1971. Strong evidence on the 'missing men' phenomenon is presented by Boehnke and Gay (2022), who exploit variation in World War I (WWI) soldier casualties in French départements and report large increases in female labor force participation in regions that experienced high rather than low military mortality throughout the interwar period.[3]

Furthermore, I complement existing evidence on the economic consequences from being widowed by WWII. Braun and Stuhler (2024) show that, compared to married women of similar age, West German war widows were significantly more likely to engage in market employment shortly after the war, but were more likely to drop out of the labor market and to rely on state assistance about 25 years later. Combining their findings with my results provides a comprehensive view: While Braun and Stuhler (2024) show that a notable amount of war widows increased their labor supply for a limited time after WWII, I show that the majority, however, poured into state dependency shortly after the war and remained there until 1970.

Finally, this paper contributes to the understanding of male scarcity specifically in Bavaria after WWII. I complement earlier work by Bethmann and Kvasnicka (2013) and Bethmann and Kvasnicka (2014) who use the same military mortality data for Bavaria and find that out-of-wedlock birthrates and the sex ratio of newborns, respectively, have significantly increased as a result of the male shortages in the immediate aftermath of WWII.

3 Historical Background

3.1 Institutional Context

Bavaria, as part of Germany, underwent three regime changes during the observation period. In 1925, Bavaria was the second-largest state in the German Empire and part of the democratic Weimar Republic. In 1933, the National Socialists came to power, establishing a totalitarian regime that ultimately led to the outbreak of WWII in 1939. After the unconditional surrender of the German military on 8 May 1945, the Allied forces occupied and administered Germany, with Bavaria forming part of the American occupation zone. In 1949, the Federal Republic of Germany (West Germany) was constituted from the American, the French and the British occupation zones.

The German military suffered heavy losses during WWII. Of the 12 million German soldiers drafted, more than five million lost their lives on the battlefields, in war captivity

[3]Further related studies consider the 'missing men' effect on marriage and fertility after the world wars (Ogasawara and Igarashi 2025; Battistin et al. 2022; Kesternich et al. 2020; Brainerd 2017; Abramitzky et al. 2011) or due to other reasons of male scarcity (Fenske et al. 2022; Alix-Garcia et al. 2022).

or in military hospitals (Overmans 2004). The number of Bavarian soldiers who died during the war ranges between one-third and half a million. Civilian casualties were relatively low, totaling 28,000 (Lanzinner 1996, p. 16). Despite these tragic losses, Bavaria's population actually increased from 6.9 million in 1939 to 8.7 million in 1946. This increase is primarily the result of the massive inflow of displaced Germans to Bavaria at the end of WWII and in the immediate postwar period. Between 1944 and 1950, twelve million Germans in territories formerly part of the German Reich or occupied by the Nazi Regime were displaced and expelled from their homeland (e.g., the Sudetenland or Silesia). Of these, almost 2 million came to Bavaria, accounting for up to 21% of the total population in 1950. Expellees were primarily sent to rural areas due to greater housing capacity. Since large parts of the housing stock in urban areas were destroyed by aerial attacks during the war, the mostly intact housing in rural areas offered more accommodation for the expellees (Braun et al. 2021, pp. 234-237).

The state assistance for war victims represented a central political challenge after the end of the war. With millions of maimed and traumatized veterans, widowed women, orphaned children, and displaced persons, providing financial aid to war victims placed a heavy burden on postwar Germany's federal budget (Braun and Stuhler 2023). The sheer number of recipients of war victim compensation absorbed large shares of total social expenditure, above 15% in the 1950s and still above 5% in the 1970s (Obinger et al. 2020, p. 497).

3.2 Women and Work in Germany

The transition from the Weimar Republic to the Nazi regime featured adverse labor market conditions for German women. During the period of high male unemployment at the beginning of the Nazi dictatorship, labor market policies were introduced to crowd women out of jobs that could be filled by men. The Nazi regime did not seek to forbid women to work per se, but aimed to steer them into jobs aligned with the ideological goal of promoting procreation, such as positions in agriculture or the domestic sphere (Tröger 1981, pp. 250-255).

At the onset of the war, the Nazi regime hesitated to mobilize German women into the labor market on a large scale, in contrast to other belligerent countries such as the US or the UK. Kundrus (1995) argues that the Nazi regime heeded lessons from WWI and deliberately refrained from overstraining German women during the war.[4] Instead, wives of drafted men received generous financial support that could amount up to 85% of their husbands' previous income. These transfers, however, could be reduced if the

[4]Consequently, German women were generally not compelled into the wartime labor force, in contrast to, e.g., the extensive mobilization of British women into war industries (Milward 1979, pp. 219-220).

women took up employment. Additionally, women faced lower wages than men even when performing similar work. The literature generally agrees that these circumstances were major reasons for the absence of a broad increase in women's participation in the German labor market during the war, even as the male labor force steadily declined.[5] The Nazi regime counteracted the shortage of male workers by using foreign civilians and prisoners of war for forced labor, but these measures were never sufficient to fully compensate for the missing workforce.

In the immediate postwar period, the Allied Control Council introduced a mandatory employment measure for rubble clearance. Due to the scarcity of men, women in particular were assigned (Akbulut-Yuksel et al. 2017, p. 147). In addition, many women took over responsibilities formerly held by absent husbands, managing and protecting their families not only during the war years but also in the immediate postwar period. Many scholars argue that German women, as a result of these years of unavoidable self-reliance, emerged from their traditional role as housewives to become economically autonomous individuals (see, e.g., Höhn (1997) and Nave-Herz (1997)). However, this emancipation process was politically and socially suppressed, as the conservative government from 1949 onwards regarded the restoration of male predominance in the labor market as a key means to ensure social stability (Niehuss 2001, pp. 83, 88).[6]

4 Data and Identification

4.1 Women's Labor Market Status

For women's labor market status at the county level, I digitized census data for the years 1925, 1933, 1939, 1946, 1950, 1961, and 1970.[7] The German occupational censuses until 1950 classify the population into three mutually exclusive groups: 'Economically Active Persons' (*Erwerbspersonen*), 'Economically Inactive Persons' (*Selbständige Berufslose*), and 'Household Dependents without Main Occupation' (*Angehörige ohne Hauptberuf*). Individuals are assigned to a category based on the main source of their livelihood. If a person works and derives most of their income from that job, they are considered economically active. If a person primarily relies on the financial means of someone else in the household, they are classified as a household dependent without main occupation. If

[5] See, e.g., Spoerer and Streb (2013, pp. 196-197), Kundrus (1995, p. 338), Milward (1979, pp. 220-224), and Petzina (1970).

[6] For example, this was reflected in efforts to restrict dual-earner families, effectively targeting female labor market participants and partly aimed at reintegrating returning veterans. Such a "double-earner-campaign" (*Doppelverdienerkampagne*) was a strategy already used during the Nazi regime to push women out of certain jobs (Ruhl 1994, pp. 116-120).

[7] I thank Michael Wyrwich and Sebastian Till Braun for the processed data for 1925 and 1939, respectively.

a person is neither economically active nor dependent on someone in the household, they are classified as economically inactive.

The group of economically inactive women is quite heterogeneous in terms of their sources of income. Throughout the paper, I refer to this group as state dependents, as most of these women received public transfers, either in the form of welfare benefits or pension payments. However, some women in this category lived primarily off their savings. In 1946, the largest subgroup consisted of war widows and women whose husbands had not yet returned after the war (48%), followed by retirees (34%).[8]

Since the census records the main source of livelihood, household dependents without main occupation and state dependents could in fact be working, yet still be categorized as such if the majority of their livelihood did not come from current employment. Therefore, the economically active persons - referred to from now as the labor force - are those who work and mainly live off that source of income. The labor force covers both employed and unemployed persons.[9] Hence, labor force participation captures the willingness to participate in the labor market rather than actual employment (Wyrwich 2019, p. 214).

I construct three main outcome variables from the three labor market statuses. For each county c and census year t, I use the female population aged 14 and above as the denominator and divide it into the three groups: $FLFP_{c,t}$ denotes female labor force participation (in percent), $FSD_{c,t}$ female state dependency (in percent), and $FHD_{c,t}$ female household dependency (in percent). Since the groups are mutually exclusive and collectively exhaustive, they add up to 100% for every county and census year.[10] Summary statistics on the outcome variables are presented in Table 1.

4.1.1 Female Labor Force Participation by Sector and Occupation

Furthermore, the occupational censuses from 1925, 1939, 1946, and 1950 allow me to decompose the total labor force by economic sector and occupational position. However, this reporting differs across censuses. To ensure comparability, I group the sectors into primary, secondary, and tertiary, and the positions into self-employed, helping family members, white-collar workers (including civil workers), and blue-collar workers.[11]

Table C.1 in Appendix C presents the decomposition of the female labor force for

[8] The remaining women included, for example, residents of nursing homes or women in institutions. The subgroups of state dependents are reported at the county-level only in the 1946 occupational census.

[9] The occupational census of 1970 reports recipients of unemployment benefits as economically inactive, which leads to an underestimation of the labor force and an overestimation of state dependents for that year. However, since the unemployment rate in 1970 was only 1% (Bayerisches Statistisches Landesamt 1972b, p. 134), the figures remain broadly comparable.

[10] This assumes that all women under the age of 14 are household dependents anyway. This assumption is only violated for a small share of girls (2.2% of all girls aged between 0 and 13).

[11] Unemployed persons are assigned to the sector and position of their previous job. See Appendix A.2 for details on the data adjustments.

Table 1: Summary Statistics

Variable	Year	Mean	SD	Min.	Max.
Outcomes					
Female Labor Force Participation in %	1925	60.8	9.2	40.7	81.4
	1933	60.9	8.7	39.3	81.3
	1939	63.0	8.6	42.1	78.4
	1946	51.1	6.0	36.0	66.4
	1950	50.1	4.6	37.7	62.4
	1961	45.3	4.6	29.8	56.1
	1970	39.8	3.9	30.3	49.7
Female State Dependency in %	1925	10.2	2.2	4.7	16.3
	1933	10.3	2.1	6.0	16.8
	1939	10.3	2.1	6.1	16.5
	1946	16.5	1.9	12.3	21.0
	1950	17.0	1.6	12.7	22.1
	1961	21.2	1.8	16.7	26.3
	1970	24.6	2.1	19.3	29.7
Female Household Dependency in %	1925	29.0	9.0	9.2	49.9
	1933	28.7	8.2	10.4	49.5
	1939	26.7	7.7	13.6	46.6
	1946	32.4	5.0	21.3	46.8
	1950	32.9	4.4	23.1	46.1
	1961	33.5	5.1	23.1	50.6
	1970	35.6	5.0	24.9	48.3
Treatment					
Military Mortality in %	*WWII*	29.2	4.6	14.3	39.6
Controls					
Share of Workforce in Agriculture in %	1939	52.1	17.4	2.7	78.7
Population Density [a]	1939	1.0	1.3	0.3	10.8
Share of Expellees in Population in %	1946	21.7	5.0	5.7	33.4
	1950	23.5	4.8	8.2	34.8
	1961	17.5	4.3	8.3	33.7
Number of counties: 134					

Notes: This table provides summary statistics for the main variables used in the analysis. Military Mortality is measured by the sum of soldiers reported as killed in action until 1946 and soldiers reported as missing in action in 1947 over the male population aged 14-45 in 1939 (see Equation 1). [a] Population Density is calculated as the population (in hundreds) divided by the respective area in km^2.

the available census years. About half of the female labor force before WWII consisted of helping family members, who were generally employed in family businesses, without necessarily having formal labor contracts or remuneration.[12] This category primarily comprises wives and children of farmers. After the war, the labor force share in the primary sector decreased, while those in the secondary and tertiary sectors increased - a pattern typical of structural change. While female labor force participation among helping family members and blue-collar workers in the primary sector declined substantially over time, the other shares remained relatively stable or even increased slightly.

[12]See, e.g., Willms (1980, p. 35*) and Harvey (2023, p. 592) for additional information on helping family members in the German censuses.

4.2 Military Mortality

To identify the consequences of the war-induced loss of prime-aged men, I focus on the county-level variation in soldier deaths in Bavaria. Definitive statistics on fallen Bavarian soldiers at the county level do not exist. To circumvent this data limitation, I evaluate three different indicators of fallen and absent men in Bavaria shortly after the end of WWII. I start with county-level information on soldiers registered as killed in action between 1 September 1939 and 31 December 1946.[13] This total of 169,960 dead soldiers, however, was still considered incomplete by Bavarian authorities in 1947 due to the large number of soldiers who were still missing or held as prisoners of war.[14] Therefore, the Bavarian authorities conducted a count of men either missing in action or in war captivity between 6 and 21 June 1947. The results, considered complete and reliable by the conductors (Swoboda 1948, p. 48), revealed that 233,333 soldiers were reported missing and 212,494 were imprisoned. For simplicity, I denote soldiers registered as killed in action as KIAs, those missing in action as MIAs, and prisoners of war as POWs.

The count was based on forms completed by close relatives in response to an official bulletin calling for registration. Since the county to which a given MIA or POW was assigned was based on the county of registration, it could differ from the county where the soldier had lived and worked before the war. In fact, 38.3% of the MIAs and 26.6% of the POWs had lived outside Bavaria on the eve of WWII, most of whom were expellees (Swoboda 1948, pp. 50, 52). Although these missing or imprisoned men had not lived in the county where they were reported, they still reflect the postwar demographic male gap, as they were absent from their family units residing in Bavaria after the war.

One crucial distinction between these three fates concerns their probabilities of returning home (Bethmann and Kvasnicka 2013, p. 174). KIAs, of course, had a zero probability of returning. In another count of MIAs and POWs in June 1948, Bavarian authorities recorded that 80,923 POWs and 1,002 MIAs had returned home. Thus, within that year, 38.1% of the POWs had returned, whereas fewer than 1% of the MIAs made their way home (Swoboda 1948, p. 54). In yet another count in March 1950,[15] the numbers of POWs and MIAs had decreased to 11,829 and 211,291, respectively, meaning that 94.4% of POWs and only 9.4% of MIAs had returned (Swoboda 1950, p. 147).[16] Therefore,

[13] Soldiers were allocated based on their place of residence before the war (Bayerisches Statistisches Landesamt 1948c, pp. 38-39).

[14] Soldier deaths continued to be reported after 1947. Within one year, the number of reported deaths increased by 26,695 (Bayerisches Statistisches Landesamt 1948c, p. 40).

[15] The results of the counts in 1948 and 1950 are unfortunately not published at the county level.

[16] In the years after 1949, roughly 12,600 POWs returned to Bavaria (Statistisches Bundesamt 1963, pp. 4-5), so the vast majority eventually made it home, although some had to wait until 1955 for their release. The difference between the 12,600 repatriates and 11,829 POWs counted in March 1950 can be explained by soldiers who returned in January and February 1950, before the count.

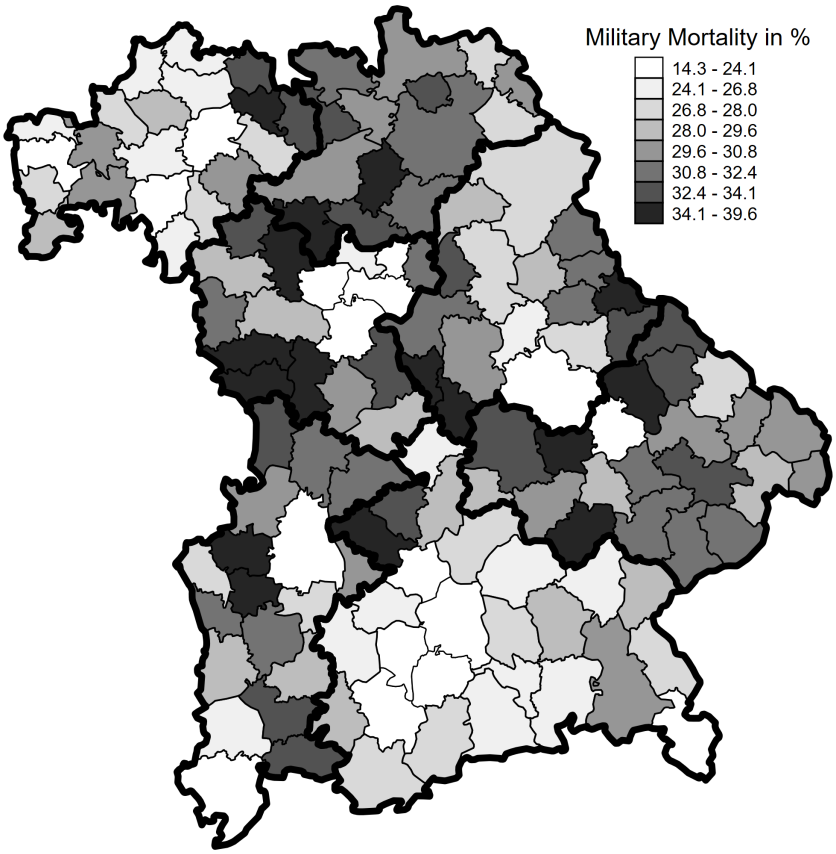

Figure 3: Distribution of Military Mortality in Bavaria

Notes: This figure displays the distribution of military mortality in percent across Bavaria. The 134 counties are divided in eight equal-sized groups, with darker tones indicating higher military mortality. Bold lines depict district borders. The counties Mellrichstadt and Lindau are excluded from the analysis and the map (see Appendix A.3).
Basemap: Bundesamt für Kartographie und Geodäsie (2011) and MPIDR and CGG (2011).

since the return probabilities of POWs were relatively high and those of MIAs very low, the combined total of KIAs and MIAs serves as an adequate proxy for the true number of soldiers who died during WWII. Hence, I define my measure of military mortality in WWII as

$$deathrate_c = \frac{KIA_{c,1946} + MIA_{c,1947}}{PrimeAgedMen_{c,1939}} \tag{1}$$

where $KIA_{c,1946}$ denotes the number of soldiers who died in action, registered from 1 September 1939 until 31 December 1946 in county c, $MIA_{c,1947}$ denotes the number of soldiers reported as missing in action in June 1947 in county c, and $PrimeAgedMen_{c,1939}$ denotes the male population aged 14-45 in 1939 in county c.[17]

[17]About 91.5% of drafted German soldiers were born after 1900, making them at most 39 at the outbreak and 45 at the end of the war (Overmans 2004, p. 226). My choice of the denominator aligns with Boehnke and Gay (2022), who use the male population aged 15-44 in 1911, three years before the outbreak of WWI (Boehnke and Gay 2022, p. 1216).

Figure 3 illustrates the geographical distribution of military mortality across Bavaria. The Munich area, with 14.3%, has the lowest mortality, while the county of Feuchtwangen, with 39.6%, has the highest. The districts of *Oberbayern* in the south and *Unterfranken* in the northwest exhibit relatively lower mortality rates compared to *Oberfranken* in the northeast. Table 1 also indicates that the mean military mortality is 29.2%, with a standard deviation of 4.6.

4.3 Sources of Variation in Military Mortality

The distribution of military mortality was not completely random. Part of this variation was systematically determined by the drafting process of the German military. Drafting was generally higher in rural areas and in regions of the former eastern part of the German Reich. However, after controlling for this systematic component, I show that military mortality is uncorrelated with prewar trends in women's labor market status. The remaining variation in military mortality can thus be considered as good as random.

4.3.1 Military Drafting

The recruitment policies of the German military partly determined the variation in soldier casualties, as the drafting process spared many skilled workers in the armaments industry until the final year of the war (Müller 2012, p. 99) and conscripted the rural male population on a larger scale (Swoboda 1948, p. 48).[18] Additionally, drafting was higher in the former eastern territories than in other regions of the German Reich, which also resulted in higher military mortality among soldiers from these areas (Overmans 2004, pp. 218, 253). Given that prewar female labor force participation was generally higher in rural areas than in urban areas, one would expect it to be positively correlated with military mortality. Similarly, recall that one component of my measure of military mortality consists of MIAs reported in 1947, when the majority of expellees had already arrived in Bavaria. Indeed, 32.7% of MIAs lived in the former eastern territories of the German Reich before WWII, which likely contributes to a positive correlation between military mortality and the share of expellees.

These correlations are verified and illustrated in Table 2, which reports, depending on the specification, results from regressing military mortality on the prewar levels of the outcome variables, prewar rurality and the expellee share in 1946. To capture prewar rurality, I employ two variables: the share of the workforce engaged in agriculture and population density in 1939. The former reflects rurality through the composition of the

[18] At the beginning of the war, German men got draft-eligible once they turned 18 (Reichsgesetzblatt 1935, pp. 609-614). In September 1944, with the *Volkssturm*, a new unit was forged out of all serviceable men between the ages 16 and 60 (Yelton 2002, pp. 1, 7).

Table 2: Women's Labor Market Status in 1939, Military Mortality and Covariates

	Military Mortality in %						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
FLFP 1939		0.34***	0.05				
		(0.04)	(0.06)				
FSD 1939				-0.44**	0.03		
				(0.22)	(0.11)		
FHD 1939						-0.39***	-0.07
						(0.04)	(0.07)
Agr. Workforce Share 1939	0.12***		0.10**		0.12***		0.09**
	(0.02)		(0.04)		(0.02)		(0.04)
Population Density 1939	-0.18		-0.20		-0.19		-0.23
	(0.14)		(0.15)		(0.15)		(0.16)
Expellee Share 1946	0.39***		0.39***		0.39***		0.38***
	(0.06)		(0.06)		(0.06)		(0.06)
Observations	134	134	134	134	134	134	134
Adj. R^2	0.636	0.405	0.635	0.036	0.633	0.431	0.636

Notes: This table reports OLS estimates from regressing military mortality on the three variables of women's labor market status and covariates, all measured in 1939 unless otherwise noted. FLFP denotes female labor force participation in percent, FSD denotes female state dependency in percent, and FHD denotes female household dependency in percent. Covariates include the share of the total workforce in agriculture in percent, population density (in hundred per km^2), and the share of expellees in the population (in 1946) in percent. Robust standard errors are in parentheses. Significance is given by * 10%, ** 5%, *** 1%.

labor market, while the latter provides a scaled measure accounting for differences in settlement agglomeration. Summary statistics for these three covariates are also reported in Table 1.

Column 1 shows the expected directions of correlation: Higher military mortality is associated with a larger share of the agricultural workforce in 1939, lower population density in 1939, and a larger share of expellees in 1946. As expected, the coefficients in columns 2, 4, and 6 also show high statistical significance when regressing military mortality on the prewar levels of the outcome variables. However, all these coefficients lose their significance and decrease markedly in size once the three covariates are included as controls in columns 3, 5, and 7. This suggests that the observed correlations between prewar outcomes and military mortality operate only through the outlined covariates, and do not indicate a direct causal relationship. Conditional on rurality and the share of expellees, military mortality is thus uncorrelated with prewar levels of women's labor market status.

4.3.2 War Deployment

One potential concern about the randomness of military mortality arises from the deployment processes of the German military, as the various WWII battle zones differed greatly in deadliness. Overmans (2004) shows that the eastern front was by far the deadliest, ac-

counting for more than half of the German soldier deaths. In particular, a stark imbalance emerged between the western and eastern fronts (Wendt 2015). However, deployment was not determined by a soldier's region of origin (Overmans 2004, p. 276). While the German military initially adhered to the so-called *landsmannschaftliche Prinzip*, under which men from relatively close home regions were deployed together, this practice was gradually abandoned as the war progressed (Kroener et al. 1999, p. 962). Moreover, the German military frequently redeployed soldiers in response to strategic needs or injuries and sickness, making it likely that many fought in more than one battle zone (Wendt 2015, pp. 1132-1133). Therefore, the deployment process should not give rise to systematic correlations between military mortality and prewar outcome variables.

4.4 Identification

For my identification strategy, I use a difference-in-differences approach. I estimate the following baseline specification:

$$y_{c,t} = \beta deathrate_c \times post_t + \phi ex_{c,t} + (x'_c \times \delta_t)\eta + \gamma_c + \psi_d \times \delta_t + \epsilon_{c,t} \tag{2}$$

where $y_{c,t}$ denotes one of the three outcome variables on women's labor market status in county c at year t in percent, $deathrate_c$ represents military mortality in county c in percent, and $post_t$ is an indicator variable equal to 1 for years after 1945. Throughout the analysis, I use robust standard errors clustered at the level of 46 local labor market regions in Bavaria, as defined in Institut für Weltwirtschaft (1974).[19]

Three control variables are included to account for the correlations of prewar outcome variables and military mortality, as already introduced in Table 2. These variables are the share of expellees in county c in year t in percent, $ex_{c,t}$,[20] and two measures of prewar rurality, captured in x'_c: the agricultural workforce share in percent and population density, both in county c in 1939. Both rurality measures are interacted with year fixed effects.

County fixed effects γ_c control for unobserved, time-invariant county characteristics, such as traditional views on gender roles which can differ regionally, and district-by-year fixed effects $\psi_d \times \delta_t$ capture fully flexible regional trends for each of the seven Bavarian districts. I will also present results using only standard year fixed effects δ_t, but will not use it as my preferred specification. Allowing for regional trends offers several advantages. The study spans a long time period characterized by major institutional changes in Bavaria.

[19] This is likely the earliest available definition of local labor markets in West Germany (Braun and Dwenger 2020).

[20] As the expellee population per county is not reported anymore in 1970, I approximate 1970 share using its 1961 value.

In particular after WWII, it is plausible that Bavarian regions developed at different paces and intensities, resulting in distinct environments for women's labor market status. By effectively comparing counties within districts, I rule out the possibility for regional trends to confound the effect of military mortality. Also, I reduce the risk of omitted variable bias, which is particularly important given the limited data availability of relevant covariates. At least at the district level, this threat can be reasonably mitigated. Although somewhat restrictive, this specification allows for a credible analysis of the effect of military mortality.

In addition to the baseline specification, I employ an event study approach, estimating the following equation:

$$y_{c,t} = \sum_{\substack{\tau=1925 \\ \tau \neq 1939}}^{1970} \left(\beta_\tau deathrate_c + \phi_\tau ex_{c,t} \right) \times year_\tau + (x_c' \times \delta_t)\eta + \gamma_c + \psi_d \times \delta_t + \epsilon_{c,t} \tag{3}$$

where $year_\tau$ denotes a set of indicator variables for each census year from 1925 to 1970. The year 1939 is omitted so that the time-specific coefficients reflect the estimated effects of military mortality on women's labor market status in each year relative to the outcome level in 1939, just prior to WWII.

For β to have a causal interpretation, the identification assumption requires *deathrate* to be exogenous, conditional on the control variables, fixed effects, and regional time trends. As shown in the previous section, the variation in military mortality was partly determined from the drafting process. While this systematic part is accounted for by the control variables, the remaining, arguably exogenous variation provides the identifying source of variation. Additionally, identification requires that women's labor market statuses in counties with high and low military mortality would have followed parallel trends if all counties had experienced similar soldier deathrates. The validity of this parallel trends assumption is discussed in detail below.

When interpreting the military mortality coefficients, I follow Goldin and Olivetti (2013) and Boehnke and Gay (2022) by comparing counties with lower military mortality to those with higher military mortality. More precisely, I compare counties with military mortality of 26.8% to those with 32.4%, corresponding to the 25th and 75th percentiles of the distribution. Hence, the effect of this difference in military mortality is obtained by multiplying the estimated coefficient by the difference between 32.4% and 26.8%, which equals 5.6%.

5 Results

In this section, I report the results of employing the identification strategy to estimate the effect of military mortality on female labor force participation (FLFP), female state dependency (FSD), and female household dependency (FHD). I will use the respective abbreviations for brevity in this section. In summary, I find that while no effect on FLFP is detected, military mortality led to an increase in FSD and a decrease in FHD.

5.1 Baseline and Event Study Estimates

Table 3 reports the coefficients of military mortality when estimating Equation 2. Although district-by-year fixed effects are preferred to standard year fixed effects for the reasons mentioned above, both specifications are reported for each outcome variable. For FLFP as the outcome in column 1, the coefficient is 0.24 and statistically significant. However, the coefficient shrinks substantially to 0.05 and becomes insignificant once district-by-year fixed effects are incorporated in column 2. It seems that allowing for flexible regional trends is indeed necessary to mitigate concerns about omitted variable bias. Columns 3 and 4 present large and statistically significant coefficients (0.21 and 0.18) for regressions using FSD as the outcome variable. For FHD as the outcome, the coefficients are negative and statistically significant (-0.45 and -0.23). Panels A, B, and C in Figure 4 display the coefficients estimated using Equation 3. The effects on FSD and FHD are stable in the postwar period.

Economically, the coefficient in column 4 implies that in counties that experienced military mortality of 32.4% rather than 26.8%, FSD increased by 1 percentage point, corresponding to a 10% increase relative to its prewar level. Given that there is virtually no effect for FLFP but a large negative effect for FHD (corresponding to a decrease of 1.3 percentage points), I conclude that the loss of prime-aged men did not induce women to enter the labor market. Instead, women remained outside the labor market but relied increasingly on state assistance as main income source rather than on someone in their household.

5.2 Validity

I next provide evidence on the credibility of the main results. I first argue that the parallel trends assumption is reasonable and then discuss a wide range of alternative specifications to the baseline which generally show robustness.

Table 3: The Effect of Military Mortality on Women's Labor Market Status

	Female Labor Force Participation		Female State Dependency		Female Household Dependency	
	(1)	(2)	(3)	(4)	(5)	(6)
Deathrate x post	0.24**	0.05	0.21***	0.18***	-0.45***	-0.23**
	(0.11)	(0.09)	(0.04)	(0.05)	(0.10)	(0.09)
1939 mean	63.0	63.0	10.3	10.3	26.7	26.7
County fixed effects	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
District-by-year fixed effects	no	yes	no	yes	no	yes
Controls	yes	yes	yes	yes	yes	yes
Counties	134	134	134	134	134	134
Observations	938	938	938	938	938	938
Within R^2	0.908	0.948	0.963	0.968	0.643	0.794

Notes: This table reports OLS coefficients from estimating Equation 2 with varying dependent variables (in percent). Controls include population density in 1939, the share of the total labor force in agriculture in 1939 in percent and the (time-varying) share of expellees in the population in percent. The prewar controls are interacted with year dummies. Standard errors in parentheses are clustered at the level of 46 local labor markets. Significance is given by * 10%, ** 5%, *** 1%.

5.2.1 Parallel Trends

The parallel trends assumption is supported if coefficients of military mortality for 1925 and 1933 are insignificant and close to zero in the event study estimation. All prewar estimates of military mortality for the outcome variables are insignificant. Panel B of Figure 4 shows that they are very close to zero with FSD as the outcome. Albeit, one could interpret Panel A and Panel C to show prewar dynamics between 1933 and 1939 as there might be a somewhat positive (negative) 'anticipation effect' on FLFP (FHD). This raises the question of whether 1939 is an entirely appropriate reference year. The occupational census was conducted four months prior to the outbreak of the war. At that time, the German economy was already oriented toward production for the war effort, and with full employment, the workforce reserves among female household dependents contributed to an increase in FLFP and a corresponding decrease in FHD (Bayerisches Statistisches Landesamt 1949a, p. 10), making the census in May 1939 potentially not ideal for representing prewar conditions.

Furthermore, the Nazi regime reintroduced compulsory military service for all men in 1935 and extended the duration of mandatory service to two years in 1936 (Reichsgesetzblatt 1936, p. 706). As a result, conscripted men were absent from their homes for two years during ages when they would arguably have been active in the labor market. Across Bavaria, at the time of the 1939 census, this affected 134,199 men (Bayerisches Statistisches Landesamt 1949a, p. 7). As previously noted, military mortality also reflects conscription rates. Since many young men were absent in high-conscription regions, women may have entered the labor market already before WWII in response. Conse-

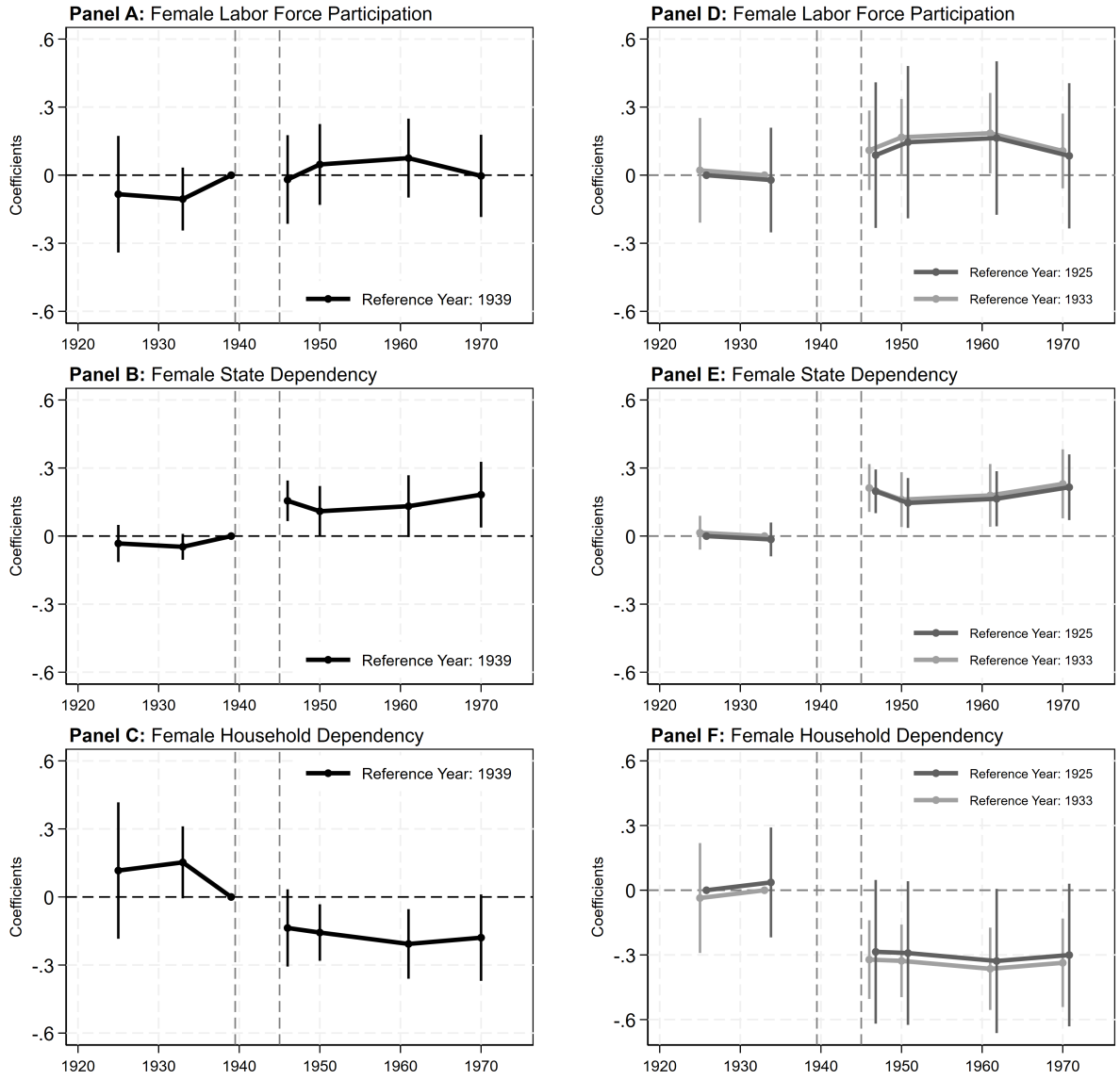

Figure 4: Effect of Military Mortality on Women's Labor Market Status: Event Study Estimates

Notes: This figure plots event study estimates from estimating Equation 3. The headers indicate the respective outcome variable in percent. Controls include population density in 1939, the share of the total labor force in agriculture in 1939 in percent and the (time-varying) share of expellees in the population in percent, which are all interacted with year dummies. All regressions include county and district-by-year fixed effects. The vertical bands indicate the 95% confidence interval for each estimate. The vertical gray lines depict WWII (1939-1945).

quently, the modest increase in FLFP in 1939 in counties with higher rather than lower military mortality may reflect the effects of prewar conscription.

This is further illustrated by an additional check for parallel trends. For that, I divide the Bavarian counties into three groups - low, medium, and high military mortality - and display the trends of the outcome variables in Figure C.2 in Appendix C, similar to Boehnke and Gay (2022, p. 1220). Despite differing levels, FLFP and FHD display

parallel trends between 1925 and 1933. After 1933, counties with high military mortality experienced a larger increase in FLFP by 1939 compared to counties with lower military mortality. The opposite holds for FHD. In contrast, the levels of FSD are very similar across counties, and their trends are generally parallel.

To verify that the postwar event study coefficients still present credible estimates, I re-estimate the event study excluding the 1939 data. Instead, I use 1925 and then 1933 as alternative baseline years. The results are shown in Panels D, E, and F in Figure 4. Importantly, the FSD estimates closely match those from the baseline specification in Panel B. For FLFP and FHD, the alternative specifications indicate slightly larger estimates for FLFP and more negative estimates for FHD. However, the FLFP estimates generally remain statistically insignificant, implying that any increase in FLFP due to military mortality, regardless of potential distortions in 1939, cannot be detected. Since the coefficients for 1925 and 1933 are very close to each other, the parallel trend assumption appears generally valid. Although minor pretrends are visible between 1933 and 1939, they do not affect the main results and are therefore not of substantive concern.

5.2.2 Robustness Checks

I run several checks to assess the robustness of my main results. Table 4 reports the results of various modifications and extensions to the baseline specification. First, I drop the share of expellees in row II as a control variable to avoid potential bad control problems. Although I argued for its importance in the baseline specification, this variable is a post-treatment outcome, realized only after the war or at its very end.

Second, postwar labor markets in Bavaria, particularly in the immediate aftermath of WWII, may have been strongly affected by wartime destruction. Since the scale of destruction varied considerably across regions, especially between rural and urban areas, I successively add two measures of war damage. In row III, I include the percentage share of dwellings destroyed by the end of the war relative to the 1939 housing stock, and in row IV, I add the amount of rubble at the end of the war relative to the 1939 population. Both variables are zero for all prewar years and take the respective value of war destruction in all postwar years.

Third, women's participation and non-participation in the labor market was potentially also shaped by prewar age structure and sex ratios. In counties with relatively more young women or lower prime-aged sex ratios, female labor force participation may have been somewhat higher. Conversely, in counties with relatively more older women and higher prime-aged sex ratios, female non-participation may have been somewhat higher. Accordingly, in row V I include the prewar share of women aged 65 and older among the whole female population, and in row VI I add the prewar sex ratio of men and women

Table 4: Effect of Military Mortality on Women's Labor Market Status: Robustness Checks

	FLFP	FSD	FHD
	(1)	(2)	(3)
I: Baseline			
Deathrate x post	0.05	0.18***	-0.23**
	(0.09)	(0.05)	(0.09)
II: Without Expellees			
Deathrate x post	-0.01	0.17***	-0.16*
	(0.09)	(0.05)	(0.09)
III: War Destruction Proxy 1			
Deathrate x post	0.10	0.16***	-0.26***
	(0.10)	(0.05)	(0.09)
IV: War Destruction Proxy 2			
Deathrate x post	0.11	0.16***	-0.26***
	(0.09)	(0.06)	(0.09)
V: Prewar Female Age Structure			
Deathrate x post	0.01	0.18***	-0.19**
	(0.09)	(0.05)	(0.08)
VI: Prewar Prime-Age Sex Ratio			
Deathrate x post	0.08	0.19***	-0.27***
	(0.09)	(0.05)	(0.09)
VII: Prewar Turnover Per Worker			
Deathrate x post	0.03	0.18***	-0.21**
	(0.09)	(0.05)	(0.09)
VIII: Population Growth 1925-1939			
Deathrate x post	0.00	0.16***	-0.17*
	(0.09)	(0.05)	(0.09)
IX: Net-Commuting 1970			
Deathrate x post	0.05	0.18***	-0.23**
	(0.10)	(0.05)	(0.09)
X: Population Weights as of 1939			
Deathrate x post	-0.00	0.20***	-0.19**
	(0.10)	(0.06)	(0.08)
XI: Population Weights as of 1939 (without Munich)			
Deathrate x post	-0.03	0.25***	-0.22**
	(0.10)	(0.06)	(0.09)
XII: Linear District Time Trends			
Deathrate x post	0.04	0.14***	-0.19**
	(0.08)	(0.04)	(0.08)
XIII: Only KIAs in Military Mortality			
Deathrate x post	0.10	0.19*	-0.29*
	(0.20)	(0.10)	(0.17)

Notes: This table reports results of several robustness checks of the baseline specification, where each coefficient stems from a separate regression. FLFP denotes female labor force participation in percent, FSD denotes female state dependency in percent, and FHD denotes female household dependency in percent. All regressions include controls (population density in 1939, the share of the total labor force in agriculture in 1939 in percent and the (time-varying) share of expellees in the population in percent), unless otherwise noted. The prewar controls are interacted with year dummies. All regressions include county and district-by-year fixed effects, unless otherwise noted. The number of observations is generally 938, except for row XI, where it is 931. Standard errors in parentheses are clustered at the level of 46 local labor markets. Significance is given by * 10%, ** 5%, *** 1%.

aged 14 to 50 as controls. Both are interacted with year fixed effects.

Fourth, the prewar economic development of a county may have influenced the opportunities for labor market participation. To account for this, I successively add two measures of economic productivity and growth to the baseline specification. In row VII,

I include the total gross turnover[21] in 1935 relative to the total workforce in 1939, and in row VIII, I add population growth between 1925 and 1939. Again, both are interacted with year fixed effects.

Fifth, the area size of counties might be limiting if commuting takes place across county borders. To control for that, I use information on the number of employed persons in 1970 that commute *to* a county and *from* a county. I construct the share of net-commuting in 1970 over its respective labor force and add it in row IX. To the best of my knowledge, there exists no prewar county-level information on commuting across county borders. Assuming that the share of net-commuting in 1970 proxies commuting patterns between Bavarian regions for the whole observation period, I interact it with year fixed effects.

Sixth, since the Bavarian counties vary widely in population size, I estimate the baseline specification using 1939 population weights in row X. Due to Munich's large population, this single observation receives a substantial weight. Consequently, I also report results from the same regression excluding Munich in row XI.

Seventh, to provide an alternative way to control for distinct regional trends, I report the results of replacing the flexible district-by-year fixed effects with more restrictive linear district time trends in row XII.[22]

Eighth, my measure of military mortality may overstate the demographic loss caused by soldier casualties, because the numerator ($KIA_{c,1946} + MIA_{c,1947}$) partly includes soldiers who had not lived in Bavaria before the war, whereas the denominator ($PrimeAgedMen_{c,1946}$) is based only on the prewar Bavarian population. This mainly stems from soldiers from expellee-families in the MIAs. To address this potential overestimation, I run the baseline specification using only KIAs in the numerator of military mortality in row XIII. Note that this approach substantially underestimates the true military mortality, given that the vast majority of MIAs never returned. However, it validates the main findings if the coefficients show similar patterns to the baseline estimates.

In summary, Table 4 shows that the main results are qualitatively robust to all these robustness checks. The coefficients of military morality with FSD as the outcome remain highly stable and statistically significant. The coefficients of military mortality with FLFP as the outcome remain insignificant and even switch signs in some specifications. FHD

[21] As Vonyó (2012) notes, this measure serves as a proxy for gross output rather than value added. Accordingly, differences in turnover depend on local economic structures: large volumes of intermediate production can increase turnover even when labor productivity remains constant. Thus, comparing turnover levels across counties is limited in validity. However, since county-level data on economic output before WWII are scarce, it serves as a suitable proxy.

[22] Another alternative for the region-by-year fixed effects would be military regions. Yet most of Bavarian counties belonged to only two such regions, so-called *Wehrkreise* (Tessin 1996), and counties within the same district typically fell into the same military region. Hence, district-by-year fixed effects already capture the within-*Wehrkreis* variation.

also displays some instability, but remain statistically significant and fairly close to the baseline estimate.

5.3 Additional Results

To provide a complementary perspective, I next use the baseline and event study specifications to examine how military mortality affected the sectoral composition in female labor force participation, postwar migration, and men's labor market status. For readability, I only summarize its results here and relegate most of the discussion to Appendix B. I start with showing how the aggregate null effect on female labor force participation masks underlying heterogeneity. At least in the first five years after the war, military mortality led women to engage more in blue-collar agricultural work. Then, I propose that women might have responded to the loss of prime-aged men by moving to less affected regions. Higher military mortality has a significant negative effect on female net-migration (i.e., a positive effect on *out*-migration of women), whereas no significant effect is found for men's postwar migration responses. The magnitude of the effect corresponds to roughly twice the prewar mean of female net-migration in counties with higher military mortality.[23] Lastly, I show that the remaining male population in Bavaria also responded to military mortality with an increase in state dependency, however, this increase came at the expense of lower labor force participation of men, while there is virtually no effect on male household dependency.

6 Mechanisms

What are the underlying mechanisms explaining the effect I find for military mortality on women's labor market status after WWII in Bavaria? The starting point to this answer is the observation by contemporary statisticians who evaluated the 1946 occupation census identifying two main reasons for the decrease in female labor force participation despite the growing female population. First, war widows and women whose husbands had not returned shortly after the war poured into state dependency, and second, many female expellees struggled to integrate into the labor market and largely remained non-participants. I show that these observed aggregate trends actually prove to be relevant mechanisms for the effect of military mortality on women's labor market status.

[23] Table B.3 in Appendix B shows that the main findings on the effect of military mortality on women's labor market status are robust to accounting for postwar female migration responses.

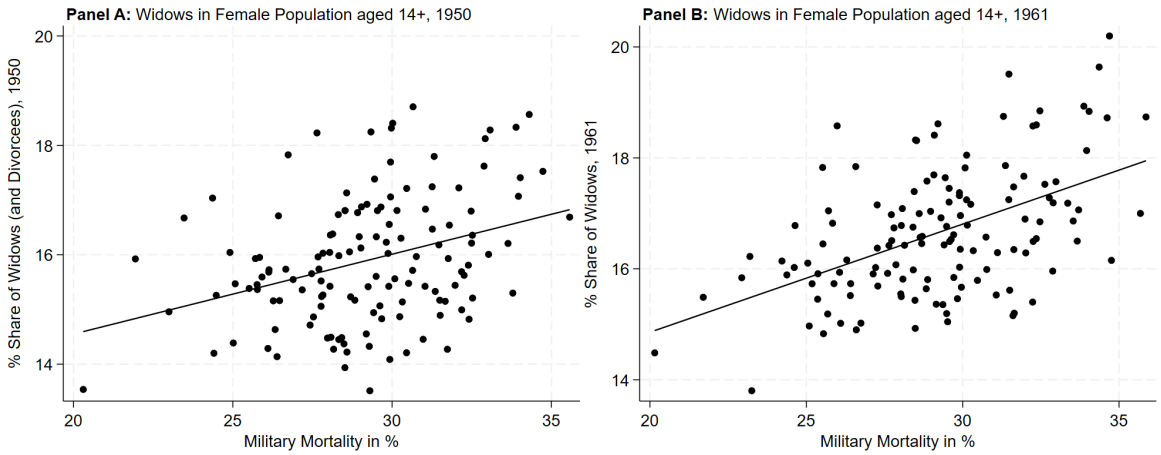

Figure 5: Military Mortality and Share of Widows

Notes: This figure shows conditional scatter plots of military mortality in percent and the percentage share of widows in 1950 (Panel A) and 1961 (Panel B). Controls include population density in 1939, the share of the total labor force in agriculture in 1939 in percent, the share of expellees in 1946 (in Panel A) or in 1950 (in Panel B) in the population in percent. The share of divorcees among all women aged 14 and older in Bavaria was 1.75% in 1950 (Bayerisches Statistisches Landesamt 1952a, p. 19).

6.1 War Widows

Contemporary observers attributed the sharp increase in female state dependency in 1946 and 1950 primarily to war widows and wives whose husbands had not yet returned home after the war (so-called *widows of living men*). In the 1946 occupational census, these women were categorized as 'independent housewives without declaration of a source of income'. With roughly 307,000 women, or 8% of the female population aged 14 and older, this group was considerable.[24] These women reportedly lived off savings, the sale of assets, pensions or state assistance (see Bayerisches Statistisches Landesamt (1949a, p. 10) and Grallert (1951, p. 266))

Building on this contemporary evidence, I next examine whether the increase in the share of widows was indeed more pronounced in counties with higher military mortality. To the best of my knowledge, no county-level data on women's marital status are available for prewar years, so I cannot estimate the effect of military mortality on the share of widows using a difference-in-differences specification analogous to Equation 2. However, Figure 5 shows that in both 1950 and 1961, conditional on the control variables (prewar agricultural workforce share, prewar population density, and the share of expellees), military mortality had a substantial positive impact on the share of widows among women aged 14 and older. Thus, counties with higher losses of prime-aged men

[24]This category is only reported in 1946. In a cross-county regression of the 1946 share of independent housewives on military mortality and the standard controls, the coefficient on *deathrate* is positive and statistically significant, indicating that higher military mortality is associated with a larger share of women classified as war widows or 'widows of living men'.

indeed had relatively more widows in the postwar years.

The war widows and 'widows of living men' shifted almost entirely out of the group of household dependents without main occupation (Bayerisches Statistisches Landesamt 1949a, p. 10), helping to explain the large negative effect of military mortality on female household dependency (see column 6 in Table 3). However, also labor force participation among war widows decreased from 1939 until 1950: in the sample of West German war widows in Braun and Stuhler (2024), 42% were employed in 1939 (before widowhood) and 39% in 1950.[25] They also show that, 25 years after the war, war widows were significantly more likely to depend on state assistance than married women of similar age. Taken together with this evidence, my results suggest that the labor market responses to higher military mortality can largely be traced to war widows, most of whom remained outside the labor market and relied on state assistance in *both* the short and medium run. With more than 200,000 recipients of war widows' pensions in early-1950s Bavaria and still around 160,000 in 1980 (see Figure C.3 in Appendix C), the war imposed not only a severe and often traumatic individual toll but also a long-lasting fiscal burden on postwar public finances.

6.2 Expellees

The inflow of expellees is the main reason for an actual population increase despite the large military and civilian losses. Hence, at least in aggregate terms, there was no demographic gap in Bavaria's population after WWII. As the incoming (male) expellees could also have closed the labor supply gap of deceased men after the war, there was possibly no large demand effect for female labor in the immediate postwar period. When reviewing the coefficients of the expellee variable in the event study results, an interesting pattern can be noted (see Table C.2 in Appendix C): with female labor force participation as the outcome variable, the coefficients are negative and statistically significant in the first five years after the war, then decline substantially and become insignificant. The coefficients for the first five years after the war are mirrored in the regression with female household dependency as the outcome, whereas all expellee coefficients are virtually zero and insignificant when female state dependency is the outcome.

Therefore, in the first years upon arrival, high expellee shares are associated with lower female labor force participation and higher female household dependency.[26] The Bavar-

[25] See Table 1 for the 1939 mean and Table 3 for the 1950 mean in Braun and Stuhler (2024). The 1950 control mean for 'out of the labor force' is 0.703; adding the estimated effect of war-widowhood (–0.093) implies that roughly 39% of war widows were employed in 1950. Note that they define 'employment' as being economically active irrespective of the main source of livelihood, whereas my definition of 'labor force participation' requires both activity and relying primarily on labor income.

[26] Aggregate statistics show that in 1946, the 'native' female population in Bavaria was divided into 40.8% in the labor force, 12.3% in economically inactives, and 46.9% in household dependents, whereas

ian labor market likely could not absorb the newcomers that easily[27], prompting many expellees to withdraw from the labor market, either by retiring early or switching into household dependency (Braun and Dwenger 2020). A representative survey in 1949 of expellees in Bavaria revealed that female expellees in particular faced substantial difficulties integrating economically. In that sample, 53% of women had been working before their displacement, but only 33% held a job in 1949. Displaced farmers largely poured into unemployment or reliance on state transfer due to the loss of their land, which explains why almost no expellees were among the female helping family members after the war (Bayerisches Statistisches Landesamt 1949a, p. 10).

This effect persisted for decades. Bauer et al. (2013) find that female expellees in West Germany were more likely to be out of the labor force in 1971 compared to their 'native' West German peers. They suggest that this results from displaced women having worked as helping family members before WWII and being unable to resume employment after the war, since their families had lost farms and businesses.

7 Discussion and Concluding Remarks

This paper links military mortality in Bavaria during WWII to women's labor market status from 1925 to 1970. By employing a difference-in-differences approach and exploiting regional variation in the war-induced loss of prime-aged men, I provide evidence that, rather than entering the labor market, military mortality prompted many women in Bavaria to remain outside and to rely on other financial resources. This offers new insights into the prominent 'missing men' effect following wars and conflicts. Unlike the US after WWII or France after WWI, I find no evidence of either a short-lived surge or a persistent increase in female labor force participation.[28] In Bavaria, many women in counties with higher military mortality shifted from household dependency to other forms of labor market non-participation. These included drawing on savings and the sale of assets in the short run, and receiving war victim benefits in the medium run. I present evidence that this effect was mainly driven by war widows.

I interpret the main findings as follows. The fact that the results primarily stem from the behavioral adjustments of war widows implies that military mortality had little effect on the labor market activity of other women. This suggests that the loss of prime-aged

the respective shares for the female expellee population were 28.8%, 16.6%, and 54.6% (Bayerisches Statistisches Landesamt 1949a, p. 11).

[27]Unemployment rates in 1950 were lower for men than for women, particularly among expellees: male expellees 22.3%, female expellees 28.9%, male 'natives' 6.1%, and female 'natives' 6.9% across Bavaria at the time of the 1950 census (Bayerisches Statistisches Landesamt 1952a, p. 72).

[28]If anything, higher military mortality prompted women to enter blue-collar positions in agriculture in the short run.

men mainly influenced the individual labor supply decisions of war widows, rather than triggering broader shifts in county-level labor demand for women as substitutes, which might have led to increases in female labor force participation. However, it cannot be ruled out that women also responded to military mortality in more indirect ways. Higher male casualties may have reduced the likelihood of finding a suitable husband, causing younger women to postpone marriage and remain in the labor market for longer periods. Being relatively mobile, many of these unmarried women may have migrated to less affected regions, thereby contributing to the observed increase in female out-migration (Table B.2 in Appendix B). Further research is needed to examine these migration responses in more detail.

Besides the role of expellees in the postwar labor market, other factors may also have contributed to the absence of a surge in female labor force participation after WWII. To start with, unlike in the US or the UK, German women were not extensively mobilized into war industries during WWII. Without wartime employment, German women lacked the opportunity to leverage a short-term path dependency that might have kept them in the labor market, as was observed for US women (see, e.g., Bellou and Cardia (2016)). Then, in the immediate aftermath of the war, the economy and labor market were far from what one would consider 'normal' by today's standards. Survival in a largely devastated country with precarious food supply dominated everyday life (see, e.g., Heineman (1996)). Women were heavily involved in barter trade and the black market (Allmendinger 1994, p. 122). Since this is not captured in the occupational census data, it cannot be directly accounted for, yet it represents a crucial factor that undoubtedly shaped the postwar economic situation of many women (and men).

The decades following WWII were characterized by institutional constraints for women's employment. Many women, after years without fathers or husbands, had become economically self-reliant. This process of emancipation, however, was curtailed both politically and socially to restore societal stability in the 1950s. Until 1957, the German Civil Code allowed a husband to forbid his wife from taking up gainful employment. Following subsequent legal reforms, women were granted the right to engage in paid employment, provided that such work was 'compatible with their duties within marriage and the family'. Thus, even in the late 1950s, domestic and family responsibilities were still considered the primary role of married women by the legislature (Allmendinger 1994, p. 146). Another policy measure that discouraged women from entering the labor market was the introduction of the *Ehegattensplitting* in 1958, which provided tax advantages to married couples if the wife remained out of the labor force (Pfau-Effinger 2000, pp. 129-130). From the late 1950s onward, some women may have benefited from the rising labor demand in West Germany due to the economic miracle. However, this labor demand was largely met

through the recruitment of foreign guestworkers (Ruhl 1994, pp. 291-292).[29]

The results of this paper are likely to apply to West Germany as a whole, given that war widow assistance was not limited to Bavaria, but regulated nationwide under the *Bundesversorgungsgesetz*. A larger agrarian workforce prior to WWII may have led to higher military mortality and thus a disproportionate number of war widows, raising the question of whether the main result of this paper is more pronounced in Bavaria than in other German states. However, in terms of the share of women receiving war widow compensation payments, Bavaria actually ranks in the lower half among West German states.[30] Also, the shares of women relying on state assistance in Germany and Bavaria are very similar throughout the whole postwar period, as already seen in Figures 1 and C.1.

The divergence of findings in the existing literature, reinforced by new evidence from this study, highlights the crucial role of historical context in understanding the 'missing men' phenomenon. Since each war is unique, and consequently each postwar society faces distinct challenges and opportunities, the results of related studies must always be interpreted within their specific historical setting. Given that notable differences already emerge in the cases of the US, France, and Germany, further research on other participants in the world wars, as well as in other conflicts, could substantially enhance our general understanding and help to clarify the interplay between 'missing men' and women's labor market status.

[29] Consistent with the rather traditional institutional environment that reinforced the male breadwinner model, attitudes toward women's employment in West Germany in the late 1980s were less progressive than in the United States and Great Britain (Alwin et al. 1992).

[30] The share for Bavaria is 4.1%, placing it eighth out of ten. West-Berlin ranks first with 6.0% while North Rhine-Westphalia ranks last with 3.8%. These shares are calculated as the number of recipients of war widow compensation in 1952 (Bundesministerium für Arbeit 1952, p. 70-72) over the respective female population in 1950.

A Data Appendix

A.1 Sources

Table A.1: Data and Sources

Data	Sources
County-level analysis	
Labor Market Status 1925	Statistisches Reichsamt (1928)
Labor Market Status 1933	Statistisches Reichsamt (1936b)
Labor Market Status 1939	Statistisches Reichsamt (1943)
Labor Market Status 1946	Bayerisches Statistisches Landesamt (1949a)
Labor Market Status 1950	Bayerisches Statistisches Landesamt (1953)
Labor Market Status 1961	Bayerisches Statistisches Landesamt (1965)
Labor Market Status 1970	Bayerisches Statistisches Landesamt (1973b)
Population by Age Groups 1925	Bayerisches Statistisches Landesamt (1927)
Population by Age Groups 1933	Statistisches Reichsamt (1936c)
Population by Age Groups 1939	Statistisches Reichsamt (1941a)
Population by Age Groups 1946	Bayerisches Statistisches Landesamt (1948b)
Population by Age Groups 1950	Bayerisches Statistisches Landesamt (1952b)
Population by Age Groups 1961	Bayerisches Statistisches Landesamt (1964)
Population by Age Groups 1970	Bayerisches Statistisches Landesamt (1973a)
Soldiers killed in action	Bayerisches Statistisches Landesamt (1948c)
Soldiers missing in action and prisoners of war	Bayerisches Statistisches Landesamt (1948a)
Expellee Population 1946, 1950, and 1961	Braun and Franke (2021)
Dwellings damaged during the war	Braun and Franke (2021)
Rubble due to war destruction	Deutscher Städtetag (1949)
Turnover 1935	Statistisches Reichsamt (1939)
Net-Migration 1925-1933	Statistisches Reichsamt (1936d)
Net-Migration 1933-1939	Statistisches Reichsamt (1941b)
Net-Migration 1947-1949	Bayerisches Statistisches Landesamt (1949b)
Net-Migration 1950-1961	Braun and Franke (2021)
Net-Commuting 1970	Bayerisches Statistisches Landesamt (1972a)
Figure 1	
Labor Market Status 1925	Statistisches Reichsamt (1936a)
Labor Market Status 1933	Statistisches Reichsamt (1936a)
Labor Market Status 1939	Statistisches Reichsamt (1942)
Labor Market Status 1946	Ausschuß der deutschen Statistiker für die Volks- und Berufszählung 1946 (1950)
Labor Market Status 1950	Statistisches Bundesamt (1953)
Labor Market Status 1961	Statistisches Bundesamt (1964)
Labor Market Status 1970	Statistisches Bundesamt (1972)
Population by Age Groups 1925	Statistisches Reichsamt (1930)
Population by Age Groups 1933	Statistisches Reichsamt (1936c)
Population by Age Groups 1939	Statistisches Reichsamt (1941a)
Population by Age Groups 1946	Ausschuß der deutschen Statistiker für die Volks- und Berufszählung 1946 (1949)
Population by Age Groups 1950	Statistisches Bundesamt (1952)
Population by Age Groups 1961	Statistisches Bundesamt (1964)
Population by Age Groups 1970	Statistisches Bundesamt (1972)

A.2 Data Adjustments

This paper analyzes women's labor market status in Bavaria over a long stretch of the 20th century, which is increasingly complicated by differences in census procedures and publications. In this section, I describe the adjustments made to ensure comparability of

Table A.2: Pooling of Economic Sectors

Year	Primary Sector	Secondary Sector	Tertiary Sector
1925	Agriculture, Forestry, and Fisheries	Industry and Crafts	Commerce and Transport; Public Administration, Military, Church, Liberal Professions; Healthcare, Sanitary Trades, Social Welfare; Domestic Services, Employment without a Fixed Position or without Indication of Company Affiliation
1939	Agriculture and Animal Husbandry, Horticulture, Forestry and Hunting, Fisheries	Industry and Crafts	Commerce and Transport; Public Service and Private Services (excluding Domestic Services); Domestic Services
1946	Agriculture and Forestry	Industry and Crafts	Commerce and Transport; Public Service and Private Services; Domestic Services
1950	Agriculture and Forestry	Industrial Primary Production; Iron and Metal Trades; Manufacturing (excluding Iron and Metal Trades); Construction and Building Trades	Trade, Banking, and Insurance; Services; Transport; Public Service and Public Interest Services

Notes: This table illustrates how the various economic sectors reported in the occupational censuses 1925, 1939, 1946, and 1950, are pooled into three main sectors. Distinctly reported sectors that are pooled to the same main sector are separated by semicolons.

censuses over time.

A.2.1 Inconsistency in the Occupational Censuses

The 1961 and 1970 censuses departed from the earlier reporting procedure by classifying all working individuals as economically active persons, regardless of hours worked or whether their work provided a livelihood. As a result, the labor force appears larger in 1961 and 1970 than it would under the earlier scheme. However, supplemental occupational census data for 1961 and 1970 enable me to identify the number of women in each county who were part of the labor force *and* relied on it as their main source of income. As this is exactly the definition of the labor force used in earlier censuses, I can reconstruct the female labor force accordingly for 1961 and 1970. However, this procedure cannot be applied to economic sectors and occupational positions, which is why the decomposition analysis cannot cover the full observation period. State and household dependents can also be reconstructed using the same approach.

A.2.2 Pooling of Economic Sectors

The classification of economic sectors varies across occupational censuses. To ensure comparability over time, I aggregate the sectors into three main sectors, as shown in Table A.2.

A.2.3 Smaller Modifications

In the 1925 occupational census, 'self-employed homeworkers' (*Heimgewerbetreibende*) were classified as self-employed. From 1939 onwards, however, they were classified as blue-collar workers together with all the other homeworkers (Statistisches Reichsamt 1943, p. 2). To ensure comparability, I therefore reassign the 1925 homeworkers to the blue-collar occupation as well. Moreover, in 1925 the subsector 'domestic services' (pooled into the tertiary sector) included 'domestic servants' as a separate occupational position, which was dissolved in later censuses. For comparability, I also reclassify these domestic servants as blue-collar workers.

Unlike earlier censuses, the 1970 population census does not report the female and male population aged 14-15 at the county level. Relying only on the female population aged 15 and older (instead of aged 14 and older) would introduce a slight bias due to the relatively smaller denominator. I therefore approximate the size of the 14-15 age group in 1970 using the corresponding figures from 1961.

A.3 Time-Consistent Administrative County Borders

Before WWII, Bavaria comprised its main territory, depicted in Figure 3, and Palatinate, a separated area on the left bank of the Rhine River. Since this smaller territory became part of the newly founded German state Rhineland-Palatinate in 1946, it is excluded from the analysis. Accordingly, when I use the term Bavaria, I refer to 'Bavaria on the right side of the Rhine', as it was called before WWII. In 1925, Bavaria consisted of 198 counties, most of which were rural counties (*Bezirksämter*, renamed *Landkreise* in 1939). Many larger cities formed a separate county (*Kreisunmittelbare Stadt*, renamed *Stadtkreise* in 1939) located within a surrounding rural county that usually bore the same name. Since these cities generally represented the economic and political centers of their regions, I merge each city county with its corresponding rural county to account for commuting and integrated labor markets. This procedure applies to 49 city counties.

Moreover, the administrative borders of some Bavarian counties changed between 1925 and 1970, resulting in the exchange of municipalities between counties. To ensure that the results are not merely driven by administrative border changes, I compare each county's population in one census with its population in the next census while keeping the borders fixed to those from one census. If the population change caused by the exchange of municipalities exceeds 5% in both counties, the counties are merged. For the census years between 1939 and 1970, this rule only affects exchanges between city counties and their respective rural counties (see Appendix F in Braun et al. (2021)), which are merged in any case. Comparing population data in 1925 and 1933 using 1933 borders

results in the following modifications: Five counties are merged to form two new counties: Rottenburg-Kelheim and Kemnath-NeustadtAnDerWaldnaab-Tirschenreuth. Furthermore, three counties were dissolved between 1925 and 1933, and their municipalities were allocated to neighboring counties. The counties that gained municipalities from these dissolutions were subsequently merged. This applies to the new counties Bayreuth-Kulmbach-Münchberg, which gained from Berneck; Kronach-Naila, which gained from Teuschnitz; and Augsburg-Wertingen, which gained from Zusmarshausen.[31]

Finally, I exclude two counties: Lindau, which was not part of Bavaria between 1946 and 1955 and therefore lacks data for that period, and Mellrichstadt, which gained more than 5% of its 1939 population through the exchange of municipalities with areas of the Soviet Occupation Zone. As a result, the dataset comprises 134 counties in Bavaria.

[31]The merging procedure complicates the assignment of local labor markets defined in Institut für Weltwirtschaft (1974) whenever the to-be-merged counties belong to different local labor markets. If this is the case, they will, for consistency, constitute an own local labor market. This applies to Rottenburg-Kelheim, Bayreuth-Kulmbach-Münchberg, Kronach-Naila, and Kemnath-NeustadtWaldnaab-Tirschenreuth.

B Additional Results

In this section, I use Equations 2 and 3 to examine how military mortality affected further dimensions of the postwar labor market. First, I test whether the aggregate null effect on female labor force participation masks underlying heterogeneity. Second, I analyze postwar migration, as the drastic demographic changes within a county may have influenced relocation decisions. Third, I investigate how military mortality affected the remaining male population, whose labor market statuses may also have changed in the postwar period.

B.1 Decomposition of Female Labor Force Participation

The occupational census data up to 1950 allow me to decompose overall female labor force participation (here: FLFP) into different economic sectors and occupational positions, analogous to Table C.1 in Appendix C. In this analysis, I compute twelve FLFP variables, one for each combination of economic sector and occupational position. This enables me to identify whether effects exist in particular labor market segments that would be overlooked when focusing only on total FLFP. The twelve variables sum up to the original outcome variable FLFP.[32] Using this fine-grained decomposition, I estimate twelve modified versions of the baseline specification, each time employing a different sector-position combination of FLFP as the dependent variable. The results are presented in Table B.1.

The only coefficient that exhibits strong statistical significance is obtained when using FLFP in blue-collar positions in the primary sector as the outcome variable. Its coefficient corresponds to an increase of 0.4 percentage points. Hence, in counties with higher rather than lower military mortality, FLFP in agricultural blue-collar positions increased by 8% relative to its prewar level. Although there is no overall effect of military mortality on FLFP, the loss of prime-aged men led women to engage in blue-collar agricultural work in the immediate postwar years. This aligns with the observation that farmers and agricultural workers in particular were drafted and therefore absent in postwar Bavaria. Taken together, these findings suggest that in the immediate aftermath of WWII, women (partly) replaced the missing male agricultural workforce.[33]

[32] In 1950, sector or position were not specified in some cases, so in these years the decomposed FLFP variables do not add up exactly to the original FLFP. The unassigned labor force is therefore excluded from the decomposition analysis.

[33] It cannot be determined with certainty from the analysis whether these women transitioned from household dependency or from other labor force segments, for instance from helping family members in the secondary sector or from white-collar positions in the tertiary sector (see the negative but only weakly significant coefficients of military mortality in Table B.1).

Table B.1: Effect of Military Mortality on Decomposed Female Labor Force Participation, until 1950

	Female Labor Force Participation in %											
	Primary Sector				Secondary Sector				Tertiary Sector			
	Self	Help	White	Blue	Self	Help	White	Blue	Self	Help	White	Blue
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Deathrate x post	0.00	0.06	-0.00	0.07***	-0.00	-0.04*	-0.00	0.04	-0.00	-0.01	-0.04*	-0.03
	(0.01)	(0.11)	(0.00)	(0.02)	(0.00)	(0.02)	(0.01)	(0.06)	(0.00)	(0.01)	(0.02)	(0.05)
Expellees x post	-0.04***	-0.41***	0.00	-0.08***	-0.01***	-0.00	0.01*	0.12***	-0.00	-0.02*	-0.01	-0.02
	(0.01)	(0.08)	(0.00)	(0.02)	(0.00)	(0.01)	(0.01)	(0.03)	(0.00)	(0.01)	(0.02)	(0.03)
1939 mean	2.1	35.4	0.0	5.2	1.1	1.0	0.7	5.3	1.1	1.9	3.7	5.4
County fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
District-by-year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Counties	134	134	134	134	134	134	134	134	134	134	134	134
Observations	536	536	536	536	536	536	536	536	536	536	536	536
Within R^2	0.814	0.936	0.580	0.935	0.703	0.241	0.868	0.589	0.566	0.739	0.797	0.486

Notes: This table reports OLS coefficients from estimating Equation 2, with female labor force participation decomposed into twelve sector-occupation combinations. In each column, the dependent variable is female labor force participation of a specific sector-occupation combination (in percent). 'Self' denotes self-employed, 'Help' helping family members, 'White' white-collar workers, and 'Blue' blue-collar workers. Controls include population density in 1939, the share of the total labor force in agriculture in 1939 in percent, and the (time-varying) share of expellees in the population in percent. The prewar controls are interacted with year dummies. Standard errors in parentheses are clustered at the level of 46 local labor markets. Significance is given by * 10%, ** 5%, *** 1%.

Table B.2: Effect of Military Mortality on Migration

	Female Net-Migration	Male Net-Migration
	(1)	(2)
Deathrate x post	-0.50***	-0.14
	(0.12)	(0.24)
County fixed effects	yes	yes
District-by-year fixed effects	yes	yes
Controls	yes	yes
Counties	134	134
Observations	536	536
Within R^2	0.793	0.655

Notes: This table reports OLS coefficients from estimating Equation 2, using gender-specific net-migration as the outcome. Net-migration is measured for four distinct time periods: 1925-1933, 1933-1939, 1947-1949, and 1950-1961, expressed as a percentage of the respective initial population. Controls include population density in 1939, the share of the total labor force in agriculture in 1939 in percent and the (time-varying) share of expellees in the population in percent. The prewar controls are interacted with year dummies. Standard errors in parentheses are clustered at the level of 46 local labor markets. Significance is given by * 10%, ** 5%, *** 1%.

This increase was likely driven by 'native' women, i.e., non-expellees. Bauer et al. (2013) show that expellees largely shifted from the primary to other sectors in their places of settlement. This pattern is also visible in Table B.1, where the expellee variables show negative coefficients in regressions with primary sector FLFP as the outcome, while they yield positive coefficients when blue-collar FLFP in the secondary sector is used as the dependent variable.

B.2 Postwar Migration

I now turn to migration patterns after the war. Since migration can have various motivations, it can also be a response to military mortality. For example, young women in regions with high military mortality might be incentivized to move to less affected areas in order to improve their chances of finding a suitable husband. As this represents a consequence of military mortality, it cannot be included as a control variable and is instead treated as an outcome. Table B.2 reports the results of estimating Equation 2 using female and male net-migration (measured by the percentage share of in-migration minus out-migration over the initial population per county) as outcome variables.

While no effect is observed for male net-migration, military mortality appears to have a substantial negative impact on female net-migration. The estimated coefficient of *deathrate* (-0.5) implies a decrease of female net-migration of 2.8 percentage points, corresponding to a magnitude of roughly twice the prewar mean. Such migration across county borders may violate the stable unit treatment value assumption (SUTVA), as po-

Table B.3: Effect of Military Mortality on Women's Labor Market Status: Excluding Counties with High Female Postwar Net-Migration

	FLFP	FSD	FHD
	(1)	(2)	(3)
I: Baseline			
Deathrate x post	0.05	0.18***	-0.23**
	(0.09)	(0.05)	(0.09)
II: Excluding Top and Bottom 5% of Female Net-Migration 1947-49			
Deathrate x post	0.07	0.15***	-0.22**
	(0.09)	(0.06)	(0.09)
III: Excluding Top and Bottom 10% of Female Net-Migration 1947-49			
Deathrate x post	0.05	0.14**	-0.19*
	(0.10)	(0.06)	(0.10)
IV: Excluding Top and Bottom 5% of Female Net-Migration 1950-61			
Deathrate x post	0.11	0.17***	-0.28***
	(0.10)	(0.06)	(0.10)
V: Excluding Top and Bottom 10% of Female Net-Migration 1950-61			
Deathrate x post	0.11	0.12*	-0.23**
	(0.12)	(0.06)	(0.11)

Notes: This table reports OLS coefficients from estimating Equation 2, while each coefficient stems from a separate regression. In rows II-V, counties with high female postwar net-migration are excluded. In rows II and IV, 12 counties are excluded and in rows III and V, 26 counties are excluded. Therefore, the number of observations is 938 in row I, 854 in rows II and IV, and 756 in rows III and V. Controls include population density in 1939, the share of the total labor force in agriculture in 1939 in percent and the (time-varying) share of expellees in the population in percent. The prewar controls are interacted with year dummies. All regressions include county and district-by-year fixed effects. Standard errors in parentheses are clustered at the level of 46 local labor markets. Significance is given by * 10%, ** 5%, *** 1%.

tential spillovers through population movements and their links to women's labor market status in other counties cannot be captured with the available data. This issue is a general challenge in the regional economics literature, where analyses typically rely on spatially aggregated units rather than individual-level data.

A surge in out-migration of women induced by military mortality might mask effects on female labor force participation through selective migration. If some women out-migrated and remained unwed for an extended period, they were arguably more likely to participate in the labor market. However, because the labor supply response of these out-migrated women cannot be observed in my data - since they no longer contributed to labor supply in their home counties - a potential increase in female labor force participation would not be captured. I assess whether the results are affected by postwar female migration by excluding counties with particularly high levels of female net migration (see Brodeur and Kattan (2021) for a similar approach). Specifically, I drop counties in the top and bottom 5% and, in a separate specification, the top and bottom 10% of the female net

migration distribution between 1947 and 1949, and repeat the same procedure for female net migration between 1950 and 1961. Table B.3 presents the results of this robustness check that leave the main findings qualitatively unchanged.

B.3 Men's Labor Market Status

While the primary focus lies on women's labor market responses, examining men's labor market status provides a useful complementary perspective. In particular, it can reveal whether military mortality induced broader shifts in local labor market structures that also affected the remaining male population. In Figure B.1, I plot the coefficients for estimating Equation 3, this time using men's labor market status as the three outcome variables. The results reveal a mirror image of the findings for women: male state dependency also increases in the postwar period in response to military mortality, but this is not driven by a decrease in male household dependency, but rather by a decrease in male labor force participation. As argued earlier, military mortality is highly correlated with mobilization, so the positive effect on male state dependency may reflect that a larger share of men in counties with higher military mortality - arguably many veterans with service-related injuries or disabilities - transitioned from labor market participation into state dependency, relying on war victim compensation payments.

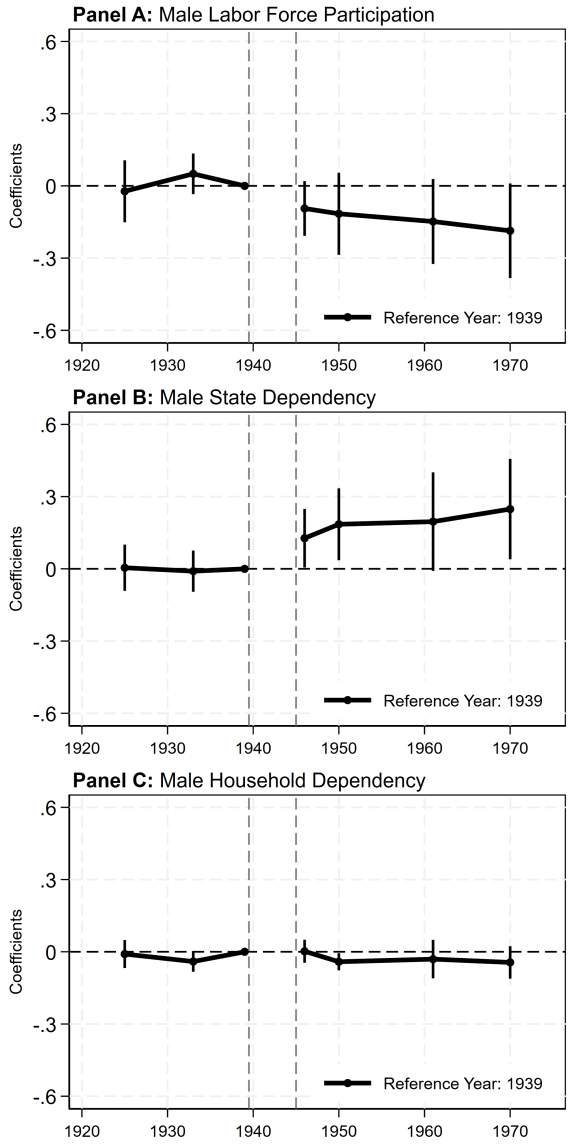

Figure B.1: Effect of Military Mortality on Men's Labor Market Status

Notes: This figure plots event study estimates from estimating Equation 3. The headers indicate the respective outcome variable in percent. Controls include population density in 1939, the share of the total labor force in agriculture in 1939 in percent and the (time-varying) share of expellees in the population in percent, which are all interacted with year dummies. All regressions include county and district-by-year fixed effects. The vertical bands indicate the 95% confidence interval for each estimate. The vertical gray lines depict WWII (1939-1945). Unlike in the estimation for women's labor market status, the county Pfaffenhofen a. d. Ilm is excluded because male labor force participation exceeds 100 percent in 1933. This is arguably due to some young men under age 14 already being part of the labor force or part of state dependents. In some cases where male labor force participation and male state dependency together slightly exceed 100 percent, male household dependency is set to zero.

C Additional Figures and Tables

C.1 Figures

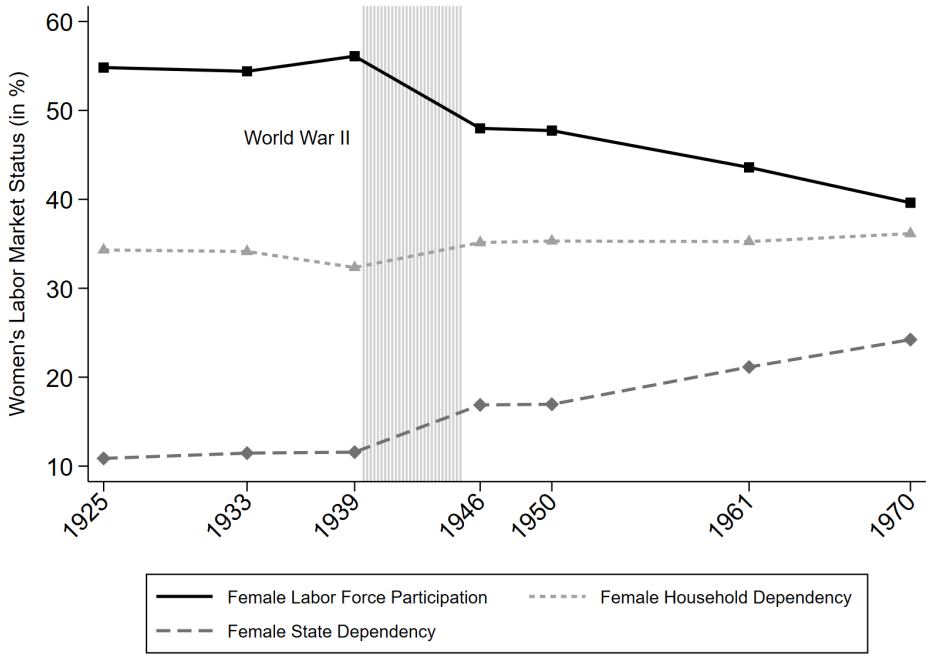

Figure C.1: Labor Market Status of Women Aged 14 and Older in Bavaria

Notes: This figure shows the distribution of women aged 14 and older in Bavaria across three mutually exclusive labor market statuses in the seven census years from 1925 to 1970. The vertical gray shading indicates WWII (1939–1945).

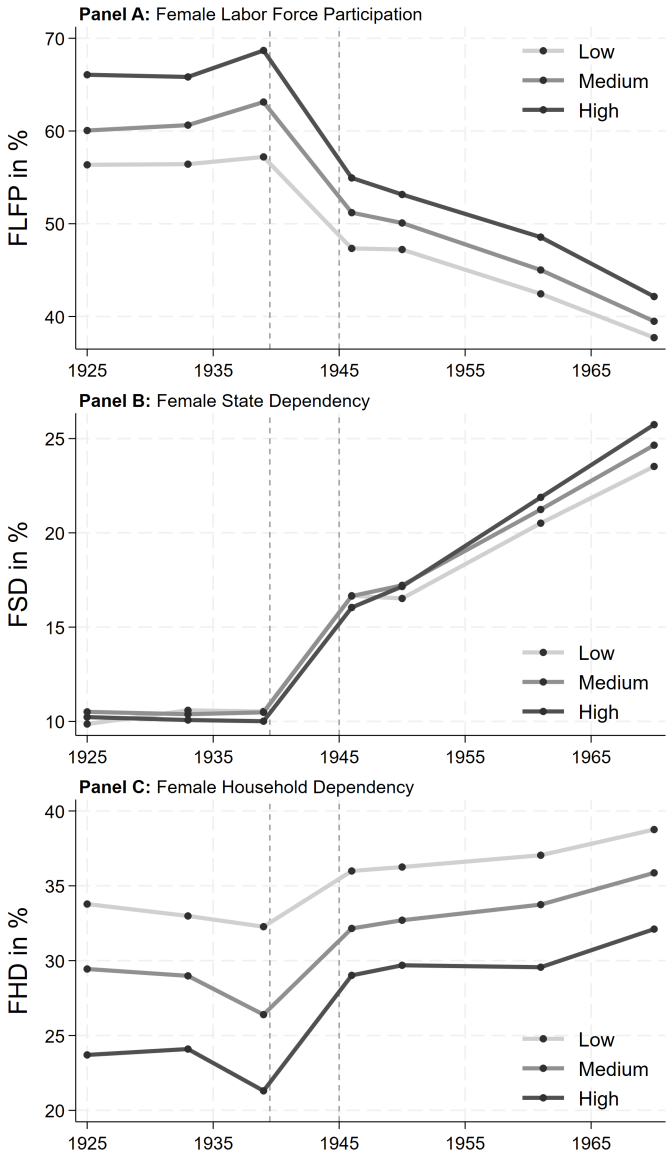

Figure C.2: Trends in Women's Labor Market Status

Notes: This figure displays trends in women's labor market status between 1925 and 1970 across three equal-sized groups of counties classified by low, medium, and high military mortality. The vertical gray lines depict WWII (1939-1945).

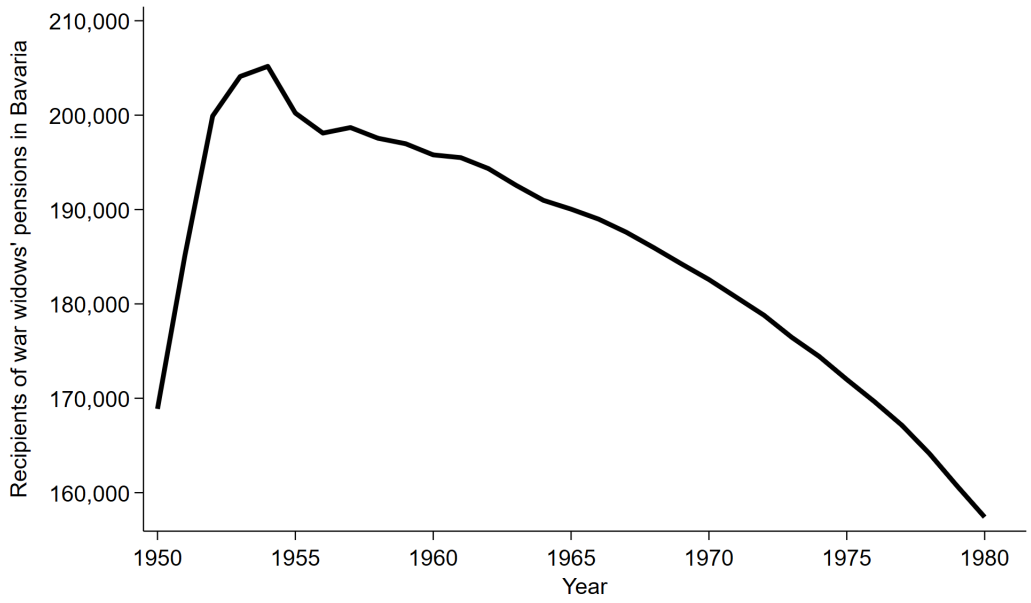

Figure C.3: Recipients of War Widow Compensation, 1950-1980

Notes: This figure shows the absolute number of recipients of war widows' pensions in Bavaria between 1950 and 1980.
Sources: Various volumes of *Statistisches Jahrbuch für Bayern* between 1955 and 1984.

C.2 Tables

Table C.1: Decomposed Female Labor Force Participation

	1925	1939	1946	1950
Primary Sector	44.1	42.7	29.9	26.6
Self-Employed	2.5	2.1	3.0	2.2
Helping Family Members	33.6	35.4	21.7	20.9
White-Collar Workers	0.0	0.0	0.1	0.0
Blue-Collar Workers	8.0	5.2	5.2	3.5
Secondary Sector	6.7	8.1	8.7	9.0
Self-Employed	1.0	1.1	1.3	1.0
Helping Family Members	0.7	1.0	0.8	0.9
White-Collar Workers	0.4	0.7	1.4	0.9
Blue-Collar Workers	4.5	5.3	5.2	6.2
Tertiary Sector	10.0	12.1	12.5	11.6
Self-Employed	0.9	1.1	1.2	1.2
Helping Family Members	1.7	1.9	1.0	1.7
White-Collar Workers	2.6	3.7	5.0	4.1
Blue-Collar Workers	4.8	5.4	5.2	4.7
Undefined	0.0	0.0	0.0	2.9
Total	60.8	63.0	51.1	50.1

Notes: This table provides percentage means for decomposed female labor force participation in the available census years, computed by the number of women in each sector-occupation combination over the female population aged 14 and older. Deviations from the sums are due to rounding.

Table C.2: Effect of Military Mortality on Women's Labor Market Status: Event Study Estimates

	FLFP	FSD	FHD
	(1)	(2)	(3)
Deathrate x 1946	-0.02	0.16***	-0.14
	(0.10)	(0.04)	(0.08)
Deathrate x 1950	0.05	0.11*	-0.16**
	(0.09)	(0.06)	(0.06)
Deathrate x 1961	0.08	0.13*	-0.21***
	(0.09)	(0.07)	(0.08)
Deathrate x 1970	-0.00	0.18**	-0.18*
	(0.09)	(0.07)	(0.09)
Expellees x 1946	-0.47***	0.02	0.45***
	(0.09)	(0.04)	(0.09)
Expellees x 1950	-0.47***	0.04	0.43***
	(0.09)	(0.03)	(0.08)
Expellees x 1961	-0.11	-0.04	0.15*
	(0.08)	(0.03)	(0.08)
Expellees x 1970	-0.04	-0.10	0.14
	(0.08)	(0.06)	(0.09)
1939 mean	63.0	10.3	26.7
County fixed effects	yes	yes	yes
District-by-year fixed effects	yes	yes	yes
Controls	yes	yes	yes
Counties	134	134	134
Observations	938	938	938
Within R^2	0.951	0.968	0.800

Notes: This table reports OLS coefficients from estimating Equation 3, with the dependent variable varying by column. FLFP in column 1 denotes female labor force participation in percent, FSD in column 2 denotes female state dependency in percent, and FHD in column 3 denotes female household dependency in percent. For brevity, the coefficients of military mortality interacted with prewar years are not reported, but they are shown in Panels A, B, and C in Figure 4. All regressions include county and district-by-year fixed effects. Controls include population density in 1939, the share of the total labor force in agriculture in 1939 in percent, the share of expellees in the population in percent (listed). All controls are interacted with year dummies. Standard errors in parentheses are clustered at the level of 46 local labor markets. Significance is given by * 10%, ** 5%, *** 1%.

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