Missing Men and Women's Fight for the Vote

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Abstract

In this paper, we investigate whether power vacuums lead to the empowerment of marginalised groups by analyzing women's empowerment in Germany during World War I. Specifically, we study whether the large share of men missing during the war led to an increase in women's fight for the vote. We exploit exogenous variation in the drafting probability arising from regional differences in recruitment responsibility and link it to the number of local suffragette clubs lobbying for women's right to vote. Our results suggest that women were more likely to organize in local suffragette clubs when more men were missing during the war. We continue by investigating spillovers of women's empowerment along two dimensions. First, we show that empowerment translated into higher political participation once female voting rights were introduced. Second, we use data on employment by industry and gender during World War I to show that missing men also led to a growing importance of women in the economic sphere.
Placeholder

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1 Introduction

Do power vacuums lead to the empowerment of marginalised groups? To analyse this question, we investigate the drivers of women's fight for vote in Germany. The extension of voting rights for women was one of the largest enfranchisement in history. Like in many other countries, Germany introduced female voting rights shortly after the end of *World War I* (WWI).

We investigate whether women's demand for political participation was driven by the power vacuum that arose from the large share of men missing during the war. Women founded suffragette clubs to actively demand and advertise the franchise for women in the beginning of the 20th century in Germany, which we digitized to measure female empowerment. Based on census data before and during WWI, we calculate the change in the sex ratio driven by drafting of men into the army to measure the extent to which men were missing locally from society, politics and the labour market. Linking both developments, we investigate whether more missing men led to a stronger local suffragette movement.

We exploit exogenous variation in the regional drafting probability arising from regional differences in recruitment responsibility. Drafting decisions were done on the level of recruitment areas, which were regional units only relevant for military decisions, not coinciding with larger political or administrative borders. Conditional on industry and age structure—since men in war-important industries were more likely to be exempted from drafting—the remaining variation arises from differences in drafting in different recruitment areas. In the baseline specification, we use this variation to estimate the effect of missing men on suffragette clubs. We then exploit the variation induced by recruitment areas more rigorously in a border-discontinuity design following Lichter et al., 2021 by restricting the variation to only bordering counties on opposite sides of different recruitment areas.

Our results suggest a positive effect of missing men on the local organization of women in suffragette clubs. An increase in the female to male ratio by one standard deviation results in an 1.6 percentage points higher probability that a suffragette club exists in a county.

Compared to the 10% probability of having a club before the war, this is a substantial increase. Our results are robust to several control variables and measurement choices of the dependent variable. We confirm the positive effect in the border discontinuity design.

We show that the missing men not only increased women's fight for the vote, but also translated into higher political participation of women after the war. We create a newly digitized dataset on the universe of politicians running for parliament in the first election after WWI in 1919. We show that an increase in the sex-ratio of one standard deviation results in a 2.3 percentage point higher share of women on the election list. Given the mean share of 21.3% of women, this is a large increase.

We show that the absence of men also led to an increase in female employment as well as a shift into sectors that were predominantly male before the war. To do so, we digitized a unique new dataset covering employment data before and during WWI separately by gender, sector and location. However, we do not find that the increase in participation in the economic sphere can explain the increased demand for participation in the political sphere.

This paper contributes to several strands of the literature. First, it contributes to the literature exploring the conditions under which voting rights get extended (Acemoglu and Robinson, 2000; Aidt and Franck, 2015; Braun and Kvasnicka, 2013; Lizzeri and Persico, 2004; Koukal et al., 2021; Bertocchi, 2011; Arnsbarger, 2023).[1] We contribute to this literature by shedding light on the conditions under which disenfranchised persons themselves organize to fight for their right to vote. Specifically, we show that a power vacuum by the ruling class can be exploited by minority groups to gain political representation.

Second, our paper contributes to the literature on social movements and collective action (Acemoglu et al., 2018; Battaglini et al., 2020; Enikolopov et al., 2020; Manacorda and Tesei, 2020; Bursztyn et al., 2021; García-Jimeno et al., 2022; Christensen and Garfias, 2018; Hager et al., 2023) by exploiting quasi-random variation in the absence of the ruling class to show

[1] See also Hanlon, 2022 for a literature review.

that groups can exploit such a power vacuum for organizational purposes. Additionally, we contribute by extending the analysis also to investigate the take-up of newly gained rights after a movement is successful.

By looking at women's uptake of their new passive voting rights, our paper also contributes to the literature on the consequences of the introduction of female voting rights (Cascio and Shenhav, 2020; Funk and Gathmann, 2006; Kose et al., 2021; Slotwinski and Stutzer, 2023).

We also contribute to a growing literature on the consequences WWI and WWII on women's labor force participation and fertility (Gay, 2023; Acemoglu et al., 2004; Bethmann and Kvasnicka, 2013; Brodeur and Kattan, 2021; Doepke et al., 2015; Goldin and Olivetti, 2013; Grant et al., 2018). We contribute by focusing on the consequences for the political economy of such a gender imbalance, specifically the demand for and uptake of female voting rights.

The rest of the paper is structured as follows: Section 2 explains the historical context while Section 3 describes the data sources used in the analysis. We explain our identification strategy in Section 4 and discuss the results in Section 5. Section 6 concludes.

2 Historical background

2.1 The women's movement in Germany before WWI

Early women's movement. Women began founding associations during the Anti-Napoleonic War in 1813 to 1815 for patriotic goals and charitable work. During the first half of 19th century, women continued their demands for better education and employment prospects, but politicians at the time agreed that women should not participate in the public sphere. For example, Robert Springer noted: "Women, you want to participate in the elections? Reassure us first that you will not vote for those who smile at you the sweetest [...]. I would say

you are not ready yet, if I even considered you to be able to get ready eventually."[2] Indeed, male politicians went as far as to prohibit women's participation in political associations and assemblies, first in Prussia in 1850 with most states following suite shortly after. This law was in effect until 1908. As a consequence, women's political participation was greatly hindered, and many of the associations and women's journals were forced to close (Schaser, 2020, Chapter II).

Women's associations after 1850. The women's movement had to adapt, and did so in two ways. First, there was a focus on women's charitable work. One of the main arguments against women's franchise was their lack of military service. Women turned to charitable work as their contribution to the country, leading to the foundation of various women's associations for charitable work, such as religious ones. Second, women began advocating for women's education. They argued that women needed better education to better serve their nation (Schaser, 2020, p. 54), and also to become better educators, building on the notion that all women had a natural motherliness which helped them educate the young (Schaser, 2020, p. 42). One particular goal of the movement for women's higher education was better teacher education and recognition. This resulted in the foundation of a national association of female teachers (*Allgemeiner Deutscher Lehrerinnenverein*). At the same time, changes on the labor market, such as an growing service sector, meant that increasingly more women were employed. Thus, women founded particular associations to support working women (Schaser, 2020, Chapter VI).

To unite the German women's movement and also to have an international representation, several associations joined in the foundation of an umbrella organisation, the *Bund Deutscher Frauenvereine* (BDF) in 1894. Membership in the BDF became very popular with 70,000 members in 1900, 200,000 in 1908 and 328,000 in 1908 (Schaser, 2020, p. 58). However, as

[2]Own translation of the German: "Ihr Weiber wollt wohl an den Urwahlen teilhaben? Wohl aber versichert uns erst, dass ihr nicht denjenigen bevorzugt, der euch bei den Fensterpromenaden am süßesten zulächelt. ... Ich würde sagen, Ihr seid noch nicht reif, wenn ich Euch überhaupt für fähig hielte, reif zu werden." (p. 30)

the BDF grew with the goal to unite the entirety of the German women's movement, so did the tensions within its member associations. In particular, conservative members as the Protestant *Deutsch-Evangelischer Frauenbund* were openly against women's emancipation and franchise. Even among those in favour of women's emancipation, there was no consensus how to reach this. While some argued that women first had to earn their place in society through contributing to the country's welfare, others demanded instant equality of men and women (Schaser, 2020, Chapter IV).[3]

Demand for the franchise. As such, the BDF refrained from demanding voting rights for women until 1902 when Anita Augspurg and Lida Gustava Heymann founded the first association for women's franchise in Hamburg, the *Deutscher Verband für Frauenstimmrecht*. However, members had different ideas on the extent of the franchise that should be extended to women. In particular, some argued the existing class-based franchise should be kept but extended to women while others demanded the universal franchise for all men and women. This led to the formal division of the association by the foundation of another women's franchise organisation in 1911, the *Deutsche Vereinigung für Frauenstimmrecht*. In 1916, these different associations re-united in the *Reichsverband für Frauenstimmrecht* due to their similar nationalist and patriotic thinking during WWI. In 1913, a third association emerged, the *Deutscher Bund für Frauentimmrecht*, which remained separated (Wischermann, 2003, 112 ff.). In the analysis, we consider suffragette clubs of all three associations.

After women could become members of political associations in 1908, it was the explicit goal of the franchise associations to open local chapters of the head organisations—which we refer to as women's suffragette clubs—to bring attention to the topic of female voting rights as well as to strengthen the mobilization between women fighting for this goal. The

[3]Another, somewhat separated movement was the worker women's movement (*proletarische Frauenbewegung*. At the end of the 19th century, the working class women put more importance on women's employment and women's double burden of working in- and outside the home (Schaser, 2020, p. 37). They wanted to achieve equality of the sexes through socialism or communism, and therefore, rather than directly advocating for women's rights, supported by overall changes in society towards socialism/communism (Schaser, 2020, p. 11).

main activism of the clubs consisted of lobbying and propaganda for the introduction of female voting rights, and they held frequent meetings and events. Typically, a local chapter would hold two to four public events a year as well as member events once or twice a month, such as evenings of discussion. In addition, the chapter would organise social events, such as teas, theatre visits and other outings. Regarding propaganda, the local chapters would campaign before elections, disseminate flyers, and initiate petitions and collaborations with local chapters of other non-political women's clubs (Wischermann, 2003, pp. 109–118).

While the higher-level clubs, such as for an entire province, decided on the broader political agenda, local chapters were key for reaching the goals of the social movement by organising these activities locally (Wischermann, 2003, p. 120). The importance of the local chapters for the success of the women's franchise movement was also recognised at the time as the following contemporary quote demonstrates:

> "The association in a given small village or city may be small in number; there are no important speakers among its members, no special work is carried out – but through the small association the women's circles of the city maintain contact with the overall movement; through it they receive magazines, visits from speakers, work suggestions and the opportunity to take part in conferences and meetings on a larger scale. And through the small associations the head association or the overall organization always has a base and always the opportunity to spread an idea or a demand very quickly throughout the whole country."[4]

Figure 1 shows the total number of suffragette clubs over time. Figure 3 shows the average number of suffragette clubs across German counties before the war and during WWI.

[4]Own translation of text quoted in Wischermann (2003, p. 117) "Der Verein in Xhausen oder Ystadt ist vielleicht zahlenmäßig schwach; bedeutende Rednerinnen sind nicht unter seinen Mitgliedern, irgendeine Sonder- aufgabe wird nicht betrieben – aber durch den kleinen Verein erhalten die Frauenkreise der Stadt die Verbindung mit der Gesamtbewegung aufrecht; durch ihn bekommen sie Zeitschriften, Besuch von Vortragenden, Arbeitsvorschläge und die Möglichkeit, an Tagungen und Zusammenkünften in größerem Rahmen teilzunehmen. Und durch die kleinen Vereine hat der Spitzenverein oder die Gesamtorganisation immer einen Fußpunkt und immer die Möglichkeit, einen Gedanken oder eine Forderung sehr schnell durch das ganze Reich zu verbreiten."

TODO: DESCRIBE FIGURES: Important points to make are: (1) Local chapters were almost exclusively founded before the war (also in line with Wischermann, p. 118) and during the war their number decreased, even when taking mergers of associations into account. (2) Chapters were spread all over the country but there is also regional variation.

2.2 Men and women during WWI

Drafting of men. All men from the birth cohort 1896 to 1900 were required to serve in the war (Nash, 1977) and exemptions for unfitness were rigorously checked and re-examined in 1915. The main reason for men not to serve in the war was thus their occupation. In particular those working in factories and mines were likely to not be drafted or to be called back home to continue their work in a war-related industry. Note that volunteers to serve in the army were moderate in size even if also selected in terms of occupation, consisting of academics, students, tradesmen and men of the middle class predominantly (Koenig, 2023, Online Appendix A1). Overall, the local age structure and industry composition were the main drivers of differential changes in drafted men during WWI which is why we will control for this in our empirical analysis.

Service and labour of women. The BDF had already demanded a service year for women in 1912, which was thought of as an equivalent to the military service of young men such that women would contribute to public welfare. Early in the war, the BDF proposed a concept on how to best use women for the war effort, and in 1917 local initiatives united in the National Women's Service (*Nationaler Frauendienst* (NFD)). While no general obligation for women to serve in the NFD was introduced, a department for women's work was included in the newly founded Ministry of War in 1916, appreciating the importance of women's contributions (Schaser, 2020, Chapter VIII).

In addition, women took over the workplaces of men (but with lower wages) during the war and also often had to make important family decisions on their own due to the lack

of male family members. However, after the war, their contributions were marginalised and they had to return their jobs to men returning home (Schaser, 2020, p. 77). Yet, Schaser (2020, p. 113) argues that women's scopes of action increased greatly during the war, in particular beyond the home. Especially the increase of women working in jobs previously held by men shifted the perception of women as more serious participants of the work force(**fervert˙1896**). Due to that, even women opposing emancipation experienced emancipation during the war. This can be seen in the fact that women opposing emancipation were voted into the National Assembly in 1919. We investigate women's wartime employment patterns to study empirically whether missing men led to higher participation of women in the labor force, and whether this emancipation plays a role in increasing demand for political participation.

2.3 The introduction of the women's franchise in Germany

When the Emperor announced comprehensive political reforms in 1917, the BDF demanded that the women's franchise be included. In particular, they referred to women's contributions during the war as well as their importance for the economy and population. They argued that women's greater representation had been initiated during the war, and now needed legal support (Schaser, 2020, p. 75).

In 1918, the Council of People's Deputies (*Rat der Volksbeauftragten*) introduced the general franchise, including for women. Historians have reached no consensus as to why voting rights for women were eventually included. Some historians, such as Ute Rosenbusch, argue that political power considerations were the main reason as it was expected that the women's franchise would predominantly benefit the Social Democratic Party of Germany [German: *Sozialdemokratische Partei Deutschlands*] (SPD). Gisela Bock, on the other hand, views the women's movement as a crucial factor. She argues that the joint promotion of the women's franchise of social democratic women, the BDF and the socialist women movement in 1917 and 1918 lead to important support of the idea in liberal as well as socialist circles

(Schaser, 2020, p. 76).

TODO: THE FOLLOWING INFO NEEDS TO BECOME PROPER PARAGRAPHS. (1) 19.01.1909 erste Wahl: 87.7% Wahlbeteiligung der Frauen (vs. 89.4% bei Männern), 300 Frauen ließen sich aufstellen 37 weibliche Abgeordnete (8.7% aller Abgeordneten) (Statistisches Monatsheft Baden-Württemberg 10/2018)

(2) Link zur Resolution: ab PDF-S. 39. Einführung des Wahlrechts 1918: Selbstauflösung des Verbandes Fortschrittlicher Frauenvereine da Ziel erreicht. Danach verließen Verbände den Verein, 1933 Auflösung wegen NSDAP.

3 Data

Clubs To proxy the local demand for voting rights, we created a newly digitized panel dataset of suffragette clubs. The data is taken from the yearbook of the BDF, which published a list of all women's associations in Germany with their respective location and head of the club every year from 1912 onwards (Bund Deutscher Frauenvereine, 1912–1918). Our dataset spans from 1912–1918 and covers all types of suffragette clubs, which were associations dedicated to fighting for female voting rights. We argue that these clubs capture local demand for female voting rights as their goal was to function as local lobby groups to strengthen the mobilization for franchise extension, both by convincing other women and by informing the general public (Wischermann, 2003, p. 120). The yearbook differentiates between clubs on different regional levels, e.g. the regional club for the city of Berlin, and the national club which was also located in Berlin. We define the number of clubs as all types of female voting rights clubs, independent of their organizational level. Thus, we count both all regional as well as all supra-regional clubs in a location. These clubs are not necessarily located in the capital of the province or region, but where there was a women who was active in organizing the female voting clubs.[5] In addition, some smaller states only

[5]For example, the supra-regional club for the province of the Rhineland was located in Aachen instead of Koblenz, which was the capital of the province.

have clubs listed as supra-regional clubs for the whole state since the state was too small for additional regional clubs.[6] Moreover, the regional and supra-regional clubs were often managed by different persons even if located in the same city. Thus, both the regional as well as the supra-regional clubs are a proxy for the demand for franchise extension in each location. No county had more than 5 clubs at any point between 1912 and 1918, and the median number of clubs for counties with at least one club was 1. In our baseline, we therefore rely on the extensive margin of whether a county had any club and create dummy variables for whether there was a club in the pre-war years (1912 and 1913) and in the years during the war (1914–1918) for each county. Figure 4 shows the regional distribution of these two measures. Figure 1 shows the absolute number of voting right clubs over time.

Missing Men We measure the extent of missing men by the change in the sex ratio during the war compared to before the war in each county, using census data from 1910, 1916 and 1917 for the complete German Empire (Kaiserliches Statistisches Amt, 1915; Kriegsernährungsamt, 1916 Kriegsernährungsamt, 1918).[7] The data separately reports male and female population numbers for each county.[8] We then construct our main explanatory variable, which is the change in the female-to-male ratio before the war (1910) and during the war (1916–1917):

$$\Delta fpm_{i,pre,post} = \frac{women_{i,t}}{men_{i,t}} - \frac{women_{i,1910}}{men_{i,1910}} \tag{1}$$

Figure 2 shows the regional distribution of this difference over the German counties.

Controls To control for pre-war differences in the support of women's franchise, we include the average number of voting clubs before the war in all specifications. We always control for

[6]For example, Lübeck only has a supra-regional club.

[7]For Prussian counties in 1910, we use the already digitized data by Galloway, 2007.

[8]The male population includes the military personnel stationed at the respective county. We control for their share in total population and TODO in a robustness check also calculate the female to male ration excluding military personnel.

the share of men employed in the industry sector as men working in the industry sector were more likely to be exempt from drafting because their occupation was considered important for the war effort.[9] We use the occupational census of 1907 to construct this measure Kaiserliches Statistisches Amt, 1910. We also control for the share of men already employed in the military taken from the same source. Because younger men were more likely to be drafted, we control for the share of men between 12 and 18 in 1910, thus aged 20 to 26 years in 1918.[10] In robustness checks, we additionally control for the share of urban population and the share of protestants taken from Thome, 2006.

Recruitment Areas In our analysis, we rely on the fact that conditional on local industry and age structure, differences in the gender ratio were driven by quasi-random variation in the drafting intensity. The regional military entity responsible for drafting were the so-called *Landwehr-Bezirke* (henceforth recruitment areas) (Koenig, 2020). Such a recruitment area covered on average of 3.4 counties. To exploit the variation between recruitment areas, we digitized information on these military entities from Reichsamt des Innern, 1914-b. Figure **??** shows the recruitment area borders overlaid on the county borders.

Election Lists Beyond women's demand for their voting rights, we want to understand whether the power vacuum opened up by missing men during WWI also led to women taking up their newly acquired voting rights following their introduction after WWI in 1918. We are the first to digitize the universe of politicians running for parliament in the first election of the Weimar Republic's national assembly in 1919 taken from Reichsamt des Innern, 1919-b. For each of the XX constituencies, the data lists the politicians running for parliament with information on their name, party affiliation, the rank on their party list, and their occupation. Based on their first name, we coded the politician's gender. In total, the list

[9]The industry sectors covers mining, pit and quarry, metal, machines, chemicals, textiles, paper, timber, food, clothing, construction, and print.

[10]Men aged 20 to 27 were part of the standing army ("Gesetz betreffend die Verfassung des Deutschen Reiches", 1871), and the youngest cohort drafted for WWI were 18 years old in 1918 (Nash, 1977).

covers XX individuals, thereof XX male and XX female candidates. Of these, XX male and XX female candidates were elected. Figure 9 shows the regional distribution of the average share of female candidates across the constituencies of the Weimar Republic.

Labor Force Participation To investigate whether the missing men also affected female labor force participation, and whether participation in the economic sphere is a contributing factor to the increased demand for political participation, we construct a newly-digitized dataset on employment before the war (1913) and during the war (1918) taken from Reichsamt des Innern, 1914-a and Reichsamt des Innern, 1919-a.[11] The data differentiates between XX German regions and includes the number of men and women employed across 16 different sectors. The data covers all firms with at least 10 employees. Since women were often employed in smaller firms or had a quasi self-employment at home (e.g. in the textiles sector), this data underestimates female labor force participation. Figure **??** shows the regional distribution of the change in female labor force participation from before to during the war.

Table 1 shows the descriptive statistics for the main variables.

4 Empirical Strategy

In order to identify the effects of missing men on the local demand for voting rights, we need to ensure that the variation in gender ratios during the war is not correlated with other factors that could also be related to the existence of suffragette clubs. To do so, we in a first step control for the existence of suffragette clubs before the war to capture all pre-existing differences in regional gender norms. Since our main explanatory variable is defined as changes in the sex ratio from before to during the war, any remaining omitted variables would need to be correlated with differential trends in the sex ratio and the suffrage movement. One possible confounder could be the local industry structure, as men working in

[11] The data for 1918 was collected between 1914 and 1918, with the majority being collected in 1918.

industries involved in the war effort were more likely to be exempt from drafting, and places with a larger industry sector may evolve differently in terms of their franchise demand. We therefore directly control for the share of men employed in the industry sector.[12] Similarly, counties with a higher share of men working in the military face a higher probability of men being drafted, and may also have different trends in demand for female enfranchisement. We therefore also control for the share of men employed in the military sector in 1907. Additionally, we control for different age structures of counties, as it were predominantly young men who were drafted for the military, and younger areas may have different changes in gender norms and support for female franchise.[13]. In all specifications, we also control for state fixed effects because the German states had historically differed in allowing women to organise in formal associations.

We thus estimate the following equation:

$$\begin{aligned} club_{i,post} =& \beta_0 + \beta_1 \Delta fpm_{i,pre,post} + club_{i,pre} + empshareIndustry_i + empshareMilitary_i + \\ & u18share_i + \gamma_s + \epsilon_i \end{aligned} \tag{2}$$

where i is the county *pre* are years before WWI, and *post* war years during the war. $club_{i,post}$ is a dummy variable for whether county i had any voting club during the war (1914–1918), and $club_{i,pre}$ is a dummy whether there was a voting club before the war (1912–1913). Our main explanatory variable, $\Delta fpm_{i,pre,post}$ is the average difference in the female to male ratio during the war (1916 and 1917) compared to before the war (1910), which captures the intensity with which men were missing from the local population. In our preferred

[12]This is measured as the share of men working in mining, pit and quarry, metal, machines, chemicals, textiles, paper, timber, food, clothing, construction, and print in the full time male working population in 1907. Since we already implicitly control for initial differences in gender composition by having a change in the gender composition as our main explanatory variable, we take the full time male working population as the denominator, assuming that all men work full time, because both come from the same data source of the occupational census in 1907.

[13]Men aged 20 to 27 were part of the standing army ("Gesetz betreffend die Verfassung des Deutschen Reiches", 1871), and the youngest cohort drafted for WWI were 18 years old in 1918 (Nash, 1977). We proxy the share of draftable men by the share of men who were between 12 and 18 years old in 1910, thus aged 20 to 26 years in 1918.

specification, we control for the local share of men employed in the industry sector and in the military in 1907, and the share of men between 12 and 18 in 1910. γ_s are state fixed effects.

To exploit the fact that we do have yearly data on the presence of suffragette clubs, including two years before the beginning of the war, we estimate a flexible event-study setup where we allow the effect to vary over time to check for pre-trends and heterogeneities in the effect during the war. We estimate the following equation:

$$\begin{aligned} club_{i,t} =& \beta_0 + \beta_{1,t} Treat_i + club_{i,pre} + empshareIndustry_i + empshareMilitary_i + \\ & u18share_i + \eta_t + \gamma_s + \epsilon_{i,t} \end{aligned} \tag{3}$$

where $club_{i,t}$ is a dummy variable for the presence of a suffragette club in county i and year t, $Treat_i$ is a dummy variable that measures whether a county had a high or low increase in the sex ratio, i.e. it takes the value of one if the county is in the upper 25 percentile of counties in terms of the change in the sex ratio $\Delta fpm_{i,pre,post}$, and zero if the county is in the bottom 25 percentile of counties in terms of the change in the sex ratio.[14] Additionally to our baseline controls, we control for year fixed effects η_t.

Border discontinuity design Drafting decisions for the war were made on the level of recruitment areas, which was an administrative unit only relevant for military decisions and encompasses on average 3.4 counties, but did not coincide with other political or general administrative borders. We therefore argue that the remaining variation in sex ratios is largely driven by idiosyncratic differences in drafting decisions between different recruitment areas, resulting in quasi-random variation in the extent of missing men. We exploit this setup by complementing our analysis with a border discontinuity design following Lichter et al., 2021. The idea is based on two main points of reasoning: First, we want to keep unobserved

[14] In both cases, the sex ratio is demeaned, conditional on our baseline controls.

factors that may bias our results as constant as possible. To do so, we restrict the analysis to comparing counties that are close to each other, specifically counties that share a border, arguing that neighboring counties are comparable in unobservables. Second, since we argue that a large part of our identifying variation comes from differences in recruitment processes in different recruitment areas, we further limit our analysis to counties that lie on opposite sides of a recruitment area border, thus in two different recruitment areas. Conditional on our baseline controls, these counties should be comparable in other aspects that influence changes in sex norms because of their geographic proximity. Differences in the intensity with which men were drafted should do not translate into other institutional differences since the recruitment areas were relevant only for military decisions. Following Lichter et al., 2021, we discard county-pairs with very short borders below 2km, and, in the case of multiple bordering counties, restrict the analysis to county-pairs with the longest border.

We then estimate the following equation:

$$\begin{aligned} club_{i,post} =& \beta_0 + \beta_1 \Delta fpm_{i,pre,post} + club_{i,pre} + empshareIndustry_i + empshareMilitary_i + \\ & u18share_i + \gamma_s + \delta_b + \epsilon_i \end{aligned} \tag{4}$$

subscripts correct? where county i is part of the county-pair b. In addition to our baseline controls, we add county-pair fixed effects δ_b to only exploit variation between neighboring counties.

5 The Effect of Missing Men on Women's Political Representation

5.1 Fight for the Vote: Suffragette Clubs

Figure 6 shows the results of the event study specification in equation 3, comparing counties which experienced a very large change in the local sex ratio (top 25%, treatment group) to

those which experienced a relatively small change (bottom 25%, untreated group). Part (a) displays the analysis for the likelihood that any suffragette club is present locally; Part (b) for the number of suffragette clubs. While we do not have data on a long pre-period, the results are still reassuring as there seems to be no differential trend between the two groups of counties between 1912 and 1913, conditional on our main set of controls. This suggests that, just before the war, clubs were not systematically opened or closed in regions which later experience a larger change in the local sex ratio. Looking at the evolution of the gap in suffragette clubs during the war, it can be seen that counties with a large change in the sex ratio were more likely to have a suffragette club locally. Recall the decreasing overall trend in the number of suffragette clubs, indicating that women were more likely to keep alive existing suffragette clubs during the war when there were more missing men.

The dynamic specification only uses very strong variation in treatment strength while also estimating yearly effects. Both result in a very demanding specification given the sample size which is why we use the complete variation of the change in the sex ratio in the following analysis, estimating equation 2. The results are shown in Table 2 where we investigate in how far the change in the local sex ratio affects the probability of having any suffragette club locally. We subsequently build up our set of main controls, starting by controlling for the presence of a suffragette club prior to the war as this likely captures pre-existing differences in women's attitudes and local gender norms. We continue by including controls for the industry composition (columns (2) and (3)) to capture differences in drafting probabilities which, through different working environment, might be correlated with local gender norms. In columns (4) and (5), we additionally control for the local age structure for the same reason, i.e. the age structure might be correlated with both the drafting probability and local attitudes towards women's roles. The results are remarkably stable across specifications.

In our preferred specification in column (5), we find that a one-unit increase in the sex ratio results in an 11.5 percentage point higher probability that a suffragette club exists in the county. This is a very large change as this would correspond to halving the number of

males in the county while keeping the female population constant. The mean change that counties exhibit is 0.227, which would correspond to a 2.6 percentage point increase in the likelihood that a suffragette club is present. Given that only 10% of counties had a suffragette club during the war, this is a substantial increase corresponding to 26% evaluated against the baseline. Considering that 83% of counties with a pre-war club also had a suffragette club during the war (17% of clubs closed), this 2.6 percentage point increase at the mean would correspond to around 15% of the club closures during the war.

Robustness to specification choice. In Table 3, we test the robustness of these estimates against including further controls which might be correlated with the likelihood that a suffragette club exists locally. Specifically, we include the share of the urban population in 1900 (column (2)), the share of the population living in a large city in 1900 (column (3)), and the share of Lutherans in 1900 (column (4)). Compared to the baseline estimates, the results change very little, likely reflecting the fact that these variables do not affect drafting probabilities a lot. In column (5), we exclude Berlin, which is the largest city and, as the capital, different in terms of political climate. This does not change the results.

Robustness to choice of outcome. We further test whether our results are driven by the specific choice of outcome, the probability that any club is present in a given county. The results are displayed in Table 4. We first restrict the clubs to local chapters of clubs in column (2), excluding headquarters of larger regions which might be located in a city. GIVE AN EXAMPLE HERE. Our results are robust to this. In columns (3) and (4), we use the number of suffragette clubs as the dependent variable. We find very similar results, likely due to the fact that most counties do not have more than one club. We still prefer to use the binary club indicator in our main specification as it can deal with the fact the the two main associations for the women's franchise merged in XXX, mechanically reducing the number of clubs in counties in which both associations were active before their union.

5.2 Border discontinuity design

We now turn to the border discontinuity design to more formally exploit the variation driven by different recruitment areas. In a first step, we confirm that indeed a large part of our variation is driven by the varying drafting intensity in different recruitment areas. Figure 8 shows the average within-pair difference in the change in the female-to-male ratio $\Delta fpm_{i,pre,post}$ for neighboring county-pairs on opposite sides of a recruitment area border, and for county-pairs within the same recruitment area (conditional on our baseline controls).[15] The variation is indeed larger for counties in different recruitment areas by a factor close to 2. This means that the majority of the variation that we exploit is in fact driven by plausibly exogenous variation in the likelihood of drafting based on the differences in recruitment processes between different recruitment areas.[16]

We then estimate equation (4) where we restrict our analysis to only county-pairs which lie on opposite sides of recruitment area borders. The results are displayed in column (1) of table 5. The coefficient of the change in the sex ratio remains highly significant and is of similar size to our baseline result (0.102 compared to 0.115 in our baseline). In Column (2), we additionally control for recruitment area fixed effects as a placebo exercise, taking out the arguably most exogenous identifying variation of differences in drafting intensity between recruitment areas. As expected, the coefficient becomes closer to zero and is insignificant.

5.3 Political Participation: Female Candidates

How does women's increased fight for the vote during WWI when men were scare translate to their political participation after the war? To investigate this, we analyse candidates for the election to the National Assembly in 1919. This election was the first after the war and

[15] These controls are the share of men employed in the industry sector and in the military in 1907, and the share of men below 18 in 1910. The sample is restricted to counties with a border of at least 2km and, in the case of multiple bordering counties, the county with the longest shared border.

[16] The non-zero differences in changes in gender ratios for county-pairs within the same recruitment area result from the fact that there was no uniform recruitment probability across all counties within a recruitment area. As long as these differences are driven by factors unrelated to changes in female empowerment, this variation should not bias our results.

members to the National Assembly were elected with the goal to formulate a constitution for the new state and pass it as legislation. For the first time, women were allowed to participate, both as voters as well as as candidates. We investigate whether more missing men during the war translate into a larger representation of women among candidates and elected members of the National Assembly, by re-estimating equation 2 at the level of constituencies, with the share of women in election lists as the dependant variable.

The results are displayed in Table 6 where we subsequently build up our set of main controls. In column (1), we only control for the political orientation of the party. Compared to conservatives which are the excluded base category, liberal parties have a 4 percentage point higher share of women in an election list. Social-democrats, on the other hand, do not have more women on their election lists. Comparing the estimates on the change in the sex ratio during WWI across specifications shows that they are remarkably stable when further controls are added. In our preferred specification in column (5), controlling for all regional controls that determine drafting probabilities as well as the party's political orientation, we find that a one-unit increase in the sex-ration is associated with a 27.3 percentage point higher share of women on the election list. This is a large effect given the mean share of 21.3% of women and even when the estimate is scaled by the mean change in the sex ratio (0.227) which corresponds to an increase in the share of women on the election list of 6.2 percentage points (29% of mean female share).

Given that we have information on the entire election lists, we can investigate further outcomes. Table 7 presents the results, where columns (1)-(4) refer to candidates on the election lists and columns (5) and (6) to elected candidates. More missing men during WWI in a constituency are associated with a higher likelihood that any woman is on the election list, with a higher likelihood of a woman as the top candidate, and with a higher share of women among the top three candidates. The results among elected candidates, however, is less clear. This could indicate that the local people were less likely to vote for women or it could reflect that women were more likely to be on lists and/or list position that were

less likely to be elected. We plan to investigate this further by providing more summary statistics on the position and type of list of women.

5.4 Female labor force participation

Previous studies have found that missing men due to WWI and WWII led to an increase in female labor force participation (Gay, 2023; Goldin and Olivetti, 2013; Brodeur and Kattan, 2021). To confirm these results for the German setting, and to investigate whether increased empowerment on the labor market is a contributing factor for the empowerment of women in the political sphere, we expand our data to include information on employment by men and women before and during WWI. Figure **??** shows the employment share of women across 16 different sectors. We see an increase in female labor force participation across all sectors. We see a greater increase in previously male-dominated industries such as chemicals, metals, machinery and mining.

We first check whether also in the German case, a higher number of missing men led to higher female labor force participation, conditional on our baseline controls, now controlling for initial gender norms by including the female labor force participation rate of 1913.[17] Figure **??** shows the results. The coefficient is positive but imprecisely estimated due to the small sample size. If taken at face value, it implies that increasing the change in gender ratio by one unit leads to an increase in female labor force participation by 23 percentage points. We show that the positive effect is driven by an increase of female labor force participation in male-dominated industries, while we find no effect on the employment share in female-dominated industries.[18] Since the data covers only employment in firms with at least 10 employees, our results could also be interpreted as a shift from home-production to more formal employment instead of a absolute increase in female labor force participation.

In this small sample, a regression including our baseline controls is already demanding.

[17] We do not control for state fixed effects, as these would take out most of the variation present in the data.

[18] We define industries as male-dominated if an industry was in the bottom 25 percentile of industries with respect to the female employment share in 1913, and as female-dominated if it was in the top 25 percentile.

We still present some suggestive evidence that the positive effect of the missing men on female voting clubs cannot be explained by an uptake in female employment alone: In table 8, we first replicate our baseline results for this sample of larger German regions, confirming a positive effect of the change in the female-to-male ratio on the indicator of a female voting right club, albeit imprecisely estimated (see column (1)). In column (2), we perform a horse race regression where we regress the dummy variable indicating the presence of a female voting right club on both the difference in the gender ratio and the difference in the female employment share. Due to the small sample size, both estimates remain insignificant. However, the point estimate of the gender ratio stays in a similar range compared to our baseline results (both in the regional and the county sample), suggesting that the effect of missing men on women's political empowerment cannot be explained by an increase in women's economic empowerment on the labor market. However, as the sample is small and the change in female labor force participation is itself driven by the change in the gender ratio, the results are only suggestive evidence and should be interpreted with caution.

6 Conclusion

In this paper, we analyze whether power vacuums can lead to an emancipation of marginalized groups. We study the setting of missing men due to WWI and relate changes in the sex ratio in German counties to the presence of suffragette clubs. We exploit exogenous variation in the drafting intensity driven by local differences in recruitment responsibilities.

Our analysis shows that the absence of men had a significant impact on the presence of suffragette clubs. We show that the power vacuum that opened up during the war also led women to run for parliament in the post-war period with a higher probability. Moreover, our study shows that the empowerment of women also extended to the economic sphere, with women being more likely to enter the labor market in regions with a absence of men, particularly in male-dominated sectors. However, we find no clear evidence that increased

female labor force participation can explain the rise in demand for political participation.

By highlighting the role of power vacuums in facilitating collective action and the subsequent uptake of political rights, this paper contributes to the broader understanding of democratization processes, social movements, and the consequences of gender imbalances during wartime. Our findings emphasize that shifts in societal power structures, even temporary ones, can create opportunities for marginalized groups to gain political influence.

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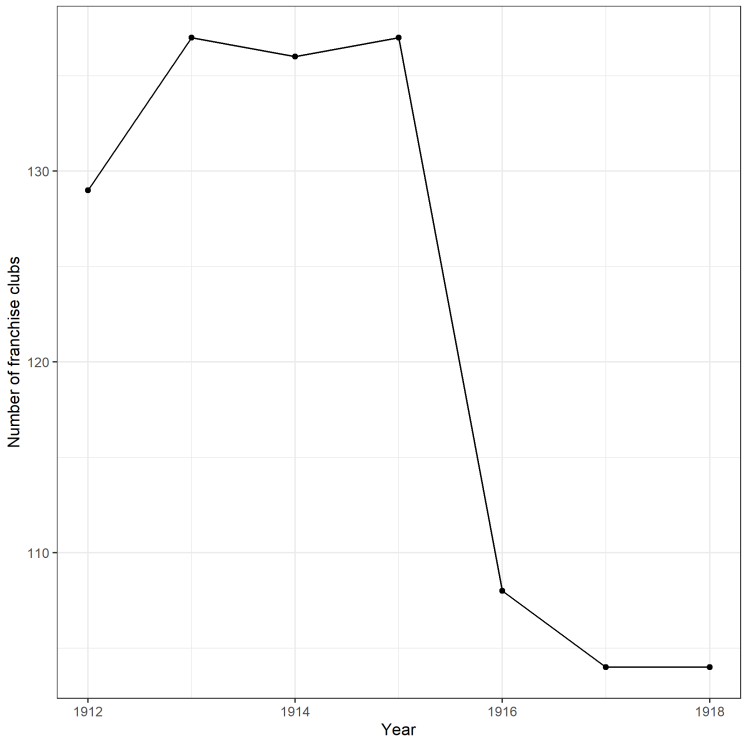
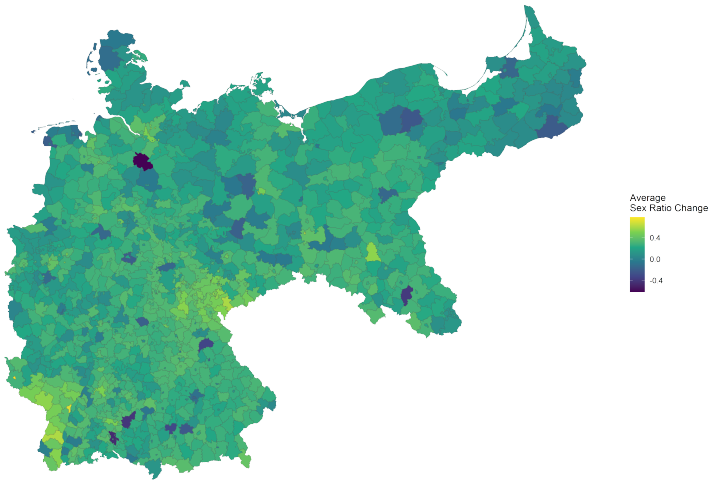
Figure 1: The evolution of suffragette clubs over time: Absolute numbers



Notes: The figure shows the total number of suffragette clubs for every year between 1912 and 1918, counting clubs on all organizational levels as separate clubs. *Source:* Own illustration based on Bund Deutscher Frauenvereine, 1912–1918.

Figures

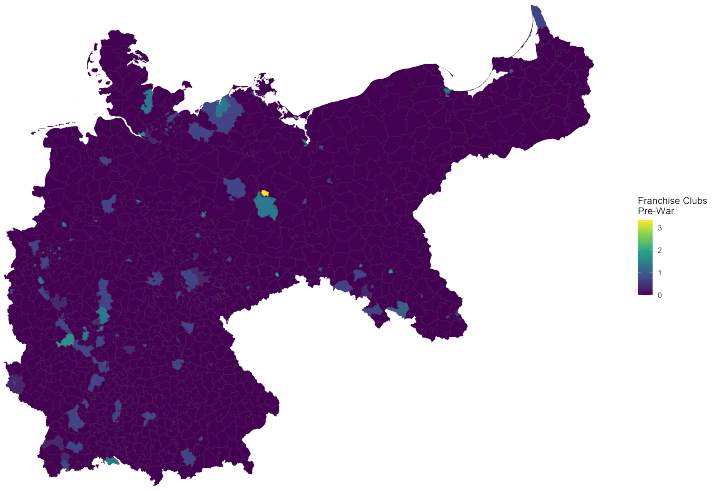
Figure 2: Map of the missing men



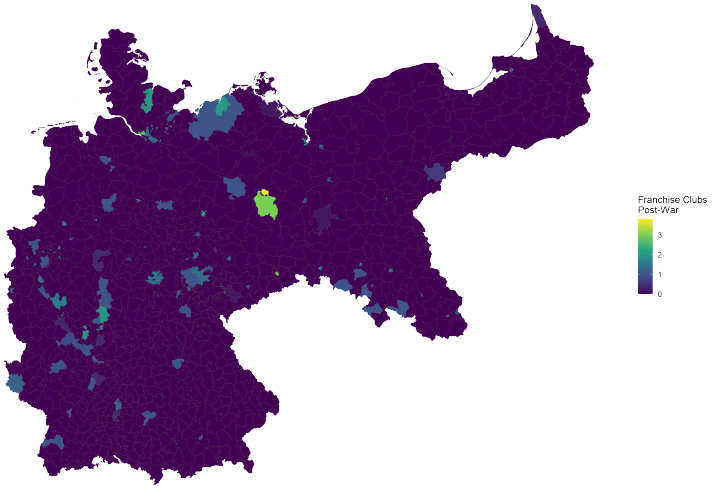
The map shows the average change of the female-to-male ratio from before the war (1910) to during the war (1916 and 1917) in German counties in the borders of 1907.

Notes: Source: Own illustration based on Kaiserliches Statistisches Amt, 1915; Kriegsernährungsamt, 1916; Kriegsernährungsamt, 1918.

Figure 3: Map of the number of suffragette clubs



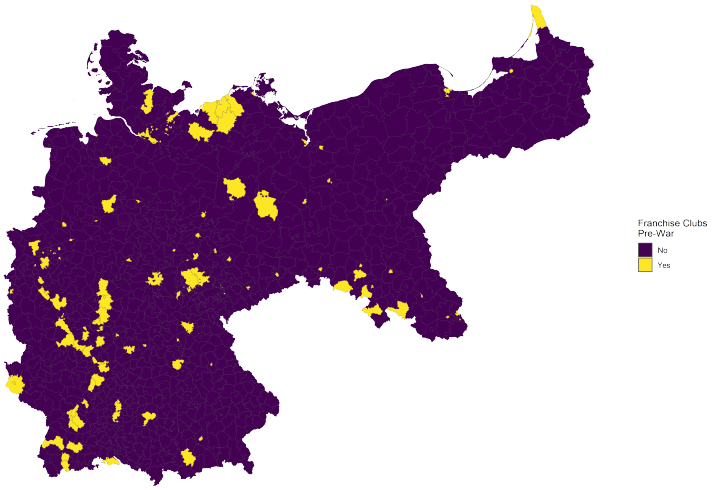
(a) Before WWI



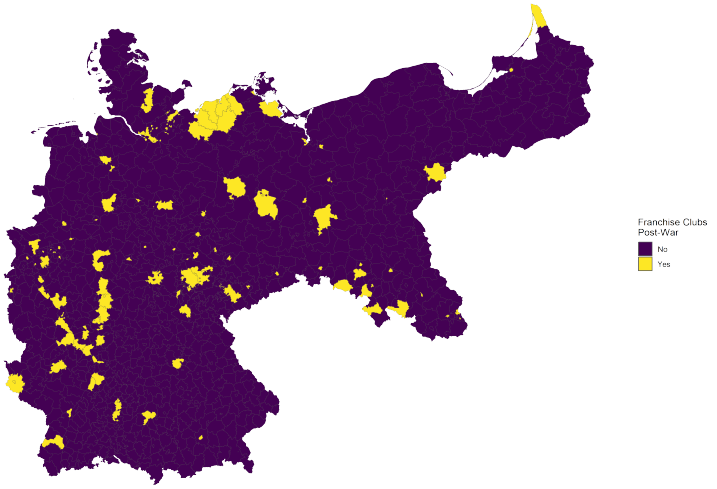
(b) During WWI

Notes: The map shows the average number of suffragette clubs before the war (1912–1913) and during the war (1914–1918) in German counties in the borders of 1907, counting clubs on all organizational levels as separate clubs. *Source:* Own illustration based on Bund Deutscher Frauenvereine, 1912–1918.

Figure 4: Map of the presence of suffragette clubs



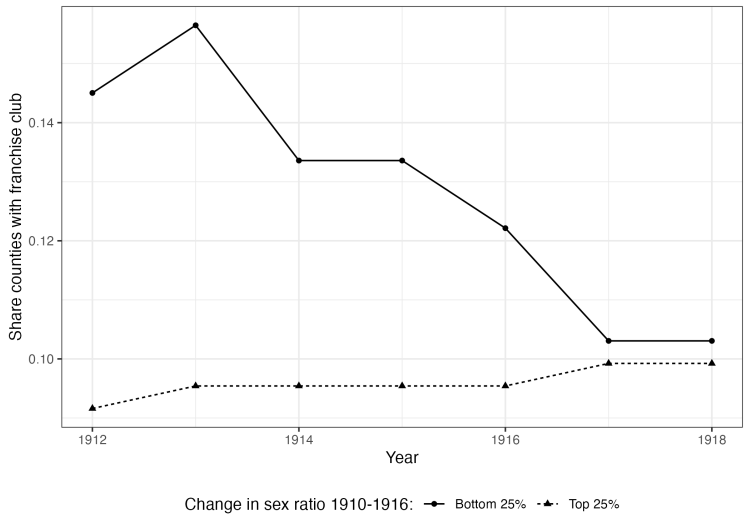
(a) Before WWI



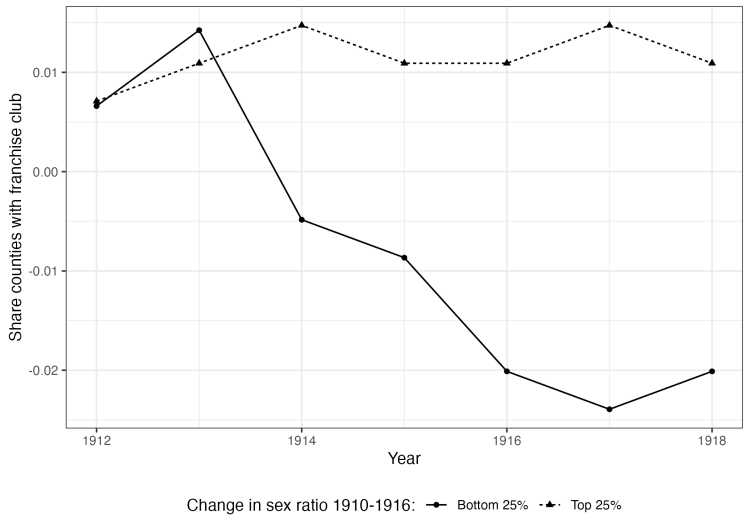
(b) During WWI

Notes: The map shows whether a German county had any suffragette club before the war (1912–1913) and during the war (1914–1918) in the borders of 1907. *Source:* Own illustration based on Bund Deutscher Frauenvereine, 1912–1918.

Figure 5: The evolution of suffragette clubs over time: Averages



(a) Averages



(b) Demeaned averages

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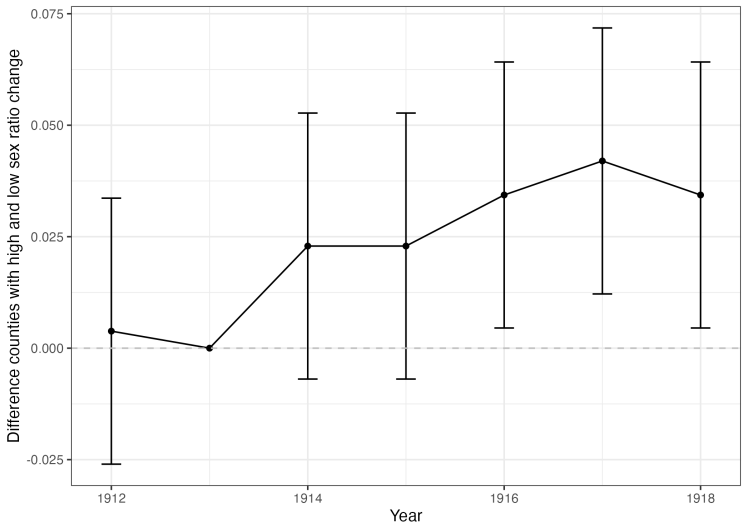
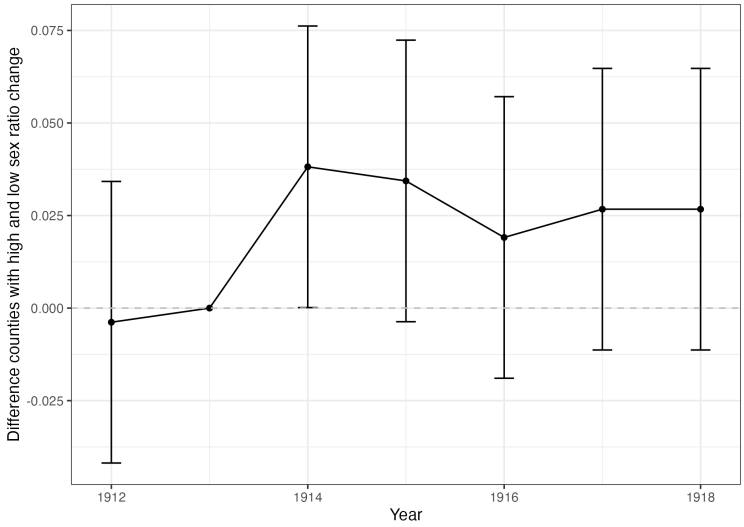
Source: TEXT.

Figure 6: Event study: The effect of missing men during WWI



(a) Any suffragette club



(b) Number of suffragette clubs

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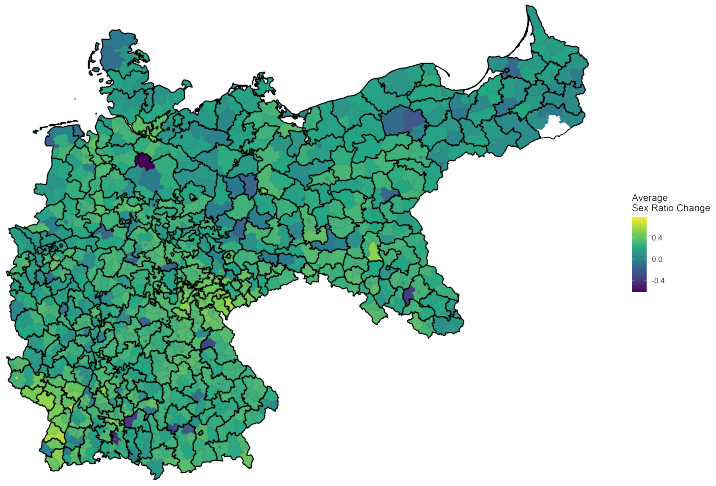
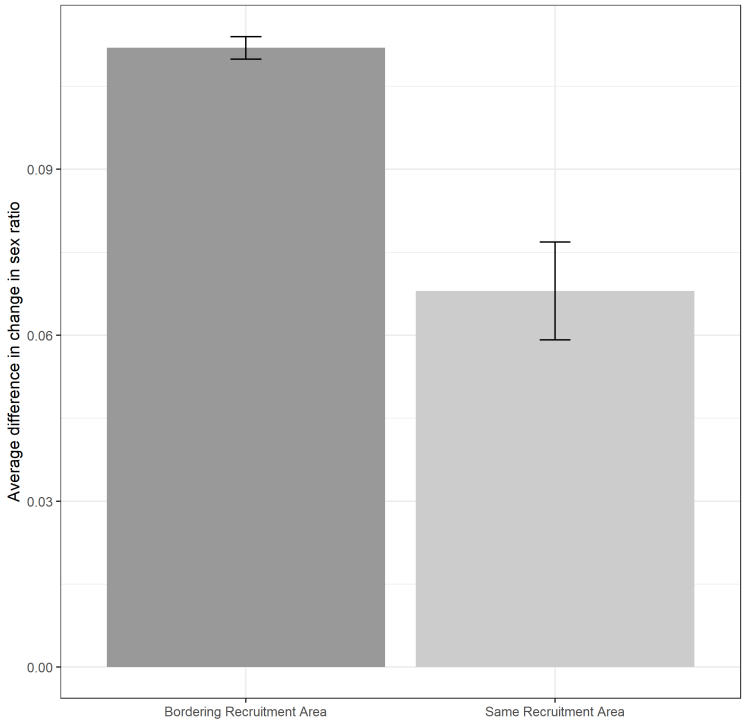
Source: TEXT.

Figure 7: Map of the missing men and recruitment areas



Notes: The map shows the average change of the female-to-male ratio from before the war (1910) to during the war (1916 and 1917) in German counties in the borders of 1907. The bold black borders are the borders of recruitment areas (*Landwehrbezirke*). *Source:* Own illustration based on Kaiserliches Statistisches Amt, 1915; Kriegsernährungsamt, 1916; Kriegsernährungsamt, 1918; Reichsamt des Innern, 1914-b.

Figure 8: The average difference of change in sex ratios



Notes: The figure shows the average difference of the average change in sex ratios before the war (1910) and during the war (1916 and 1917) between neighboring county pairs that share a border of at least two kilometer, restricting the sample to the neighboring county pair with the longest border. The dark gray bar shows the average difference for county pairs laying on opposite sides of a recruitment area border, and the light gray bar shows the average difference for county pairs laying within the same recruitment area. *Source:* Own illustration based on Kaiserliches Statistisches Amt, 1915; Kriegsernährungsamt, 1916; Kriegsernährungsamt, 1918; Reichsamt des Innern, 1914-b..

Figure 9: Map of the share of women among candidates across constituencies 1919

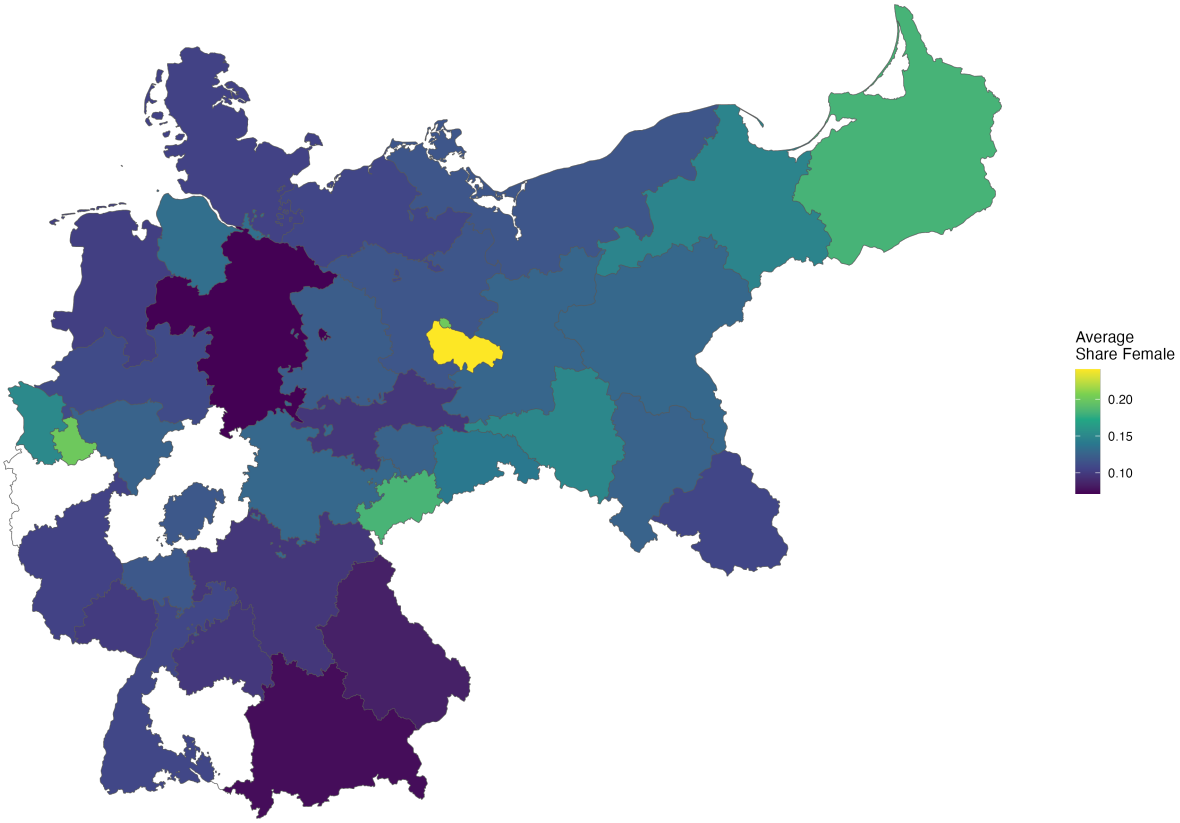


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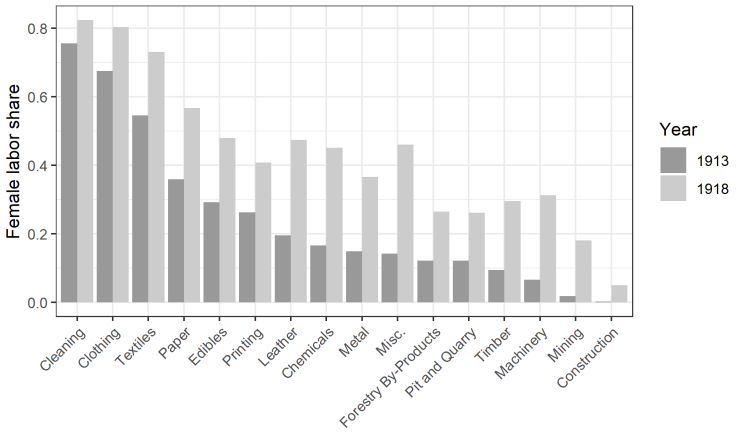
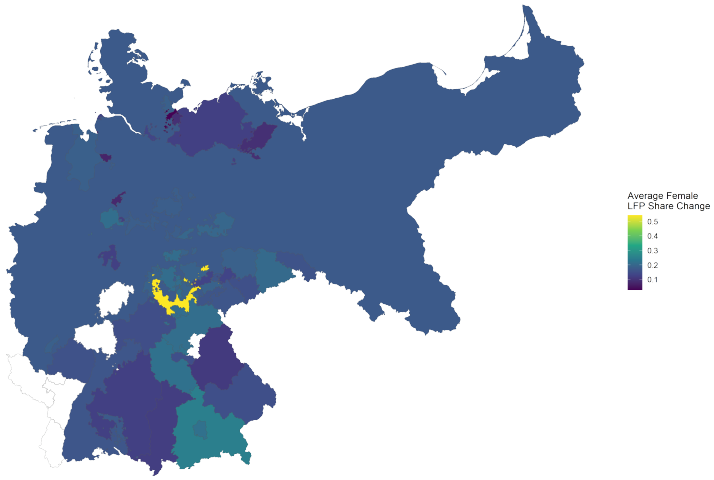
Figure 10: The female labor force participation across sectors before and during WWI



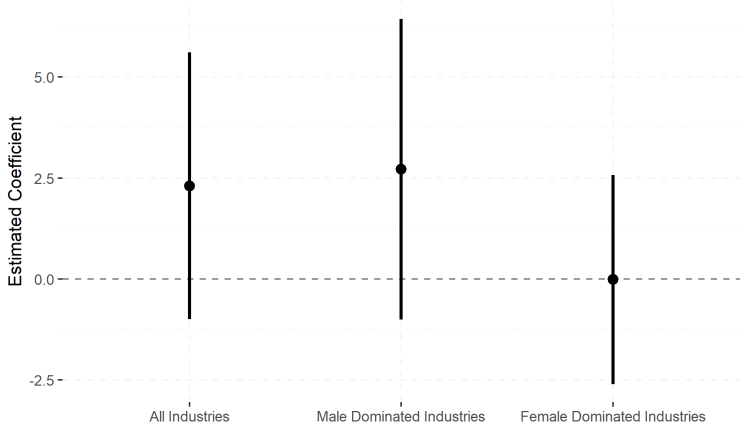
Notes: The figure shows the share of female workers employed in the total number of employed persons in firms with at least 10 employees in 16 different sectors in 1913 and 1918. *Source:* Own illustration based on Reichsamt des Innern, 1914-a; Reichsamt des Innern, 1919-a.

Figure 11: Map of the change in female labor force participation



Notes: The map shows the change in the share of female workers employed in the total number of employed persons in firms with at least 10 employees from 1913 to 1918 in German regions. *Source:* Own illustration based on Reichsamt des Innern, 1914-a; Reichsamt des Innern, 1919-a.

Figure 12: The effect of missing men on female labor force participation



Notes: The figure shows the coefficient of regressing the share of female workers employed in 1918 on the change in the sex ratio for German regions, controlling for the share of female workers employed in 1913 and our baseline controls (share of men employed in the industry sector in 1907, share of men employed in the military in 1907, share of men aged 12–18 in 1910). Male-dominated industries are defined as being in the bottom 25 percentile of industries with respect to the female employment share in 1913, and female-dominated industries are defined as being in the top 25 percentile of industries with respect to the female employment share in 1913. *Source:* Own illustration.

Tables

Table 1: Descriptive Statistics

Variable	Min	Mean	Std. Dev.	Max
Sample: County				
Change in female-to-male ratio	-0.615	0.227	0.135	0.783
Any franchise clubs during the war	0.000	0.100	0.300	1.000
Any franchise clubs pre-war	0.000	0.103	0.304	1.000
Sample: Constituency				
Change in female-to-male ratio	0.084	0.222	0.087	0.477
Share of female candidates	0.000	0.127	0.072	0.333
Sample: Region				
Change in female-to-male ratio	0.125	0.283	0.103	0.519
Female labor force particpation during the war	0.202	0.396	0.100	0.578
Change in female labor force particpation	0.028	0.171	0.080	0.543
Any franchise clubs pre-war	0.000	0.525	0.506	1.000
Any franchise clubs during the war	0.000	0.525	0.506	1.000

Note: The table presents XXXXX. *Source:* XXX.

Table 2: The effect of missing men on suffragette clubs

	Pre-war clubs	Industry share	Industry and military share	Age structure	Male age structure
Change in female-to-male ratio	0.098**	0.087**	0.124***	0.110**	0.115**
	(0.040)	(0.040)	(0.045)	(0.045)	(0.045)
Any franchise clubs pre-war	0.813***	0.807***	0.800***	0.791***	0.793***
	(0.017)	(0.018)	(0.018)	(0.019)	(0.018)
Pre-war male share in industry		0.057*	0.061*	0.058*	0.054
		(0.033)	(0.033)	(0.033)	(0.033)
Pre-war male share in military			0.182*	0.102	0.100
			(0.100)	(0.108)	(0.110)
Pre-war share below 18				−0.283*	
				(0.149)	
Pre-war male share below 18					−0.242*
					(0.139)
State FE	Yes	Yes	Yes	Yes	Yes
R^2	0.714	0.715	0.715	0.716	0.716
Num. obs.	1049	1049	1048	1048	1048

Note: The table presents XXXXX. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Source:* XXX.

Table 3: Robustness to specification choice

	Baseline	Urban share	Large urban share	Lutheran share	Excluding Berlin
Change in female-to-male ratio	0.115**	0.114**	0.092**	0.111**	0.114**
	(0.045)	(0.046)	(0.045)	(0.046)	(0.045)
Share urban population in 1900		0.059**			
		(0.027)			
Share in large cities in 1900			0.133***		
			(0.023)		
Share Lutherans in 1900				−0.008	
				(0.016)	
Main controls	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes
R^2	0.716	0.715	0.723	0.714	0.714
Num. obs.	1048	1021	1023	1021	1047

Note: The table presents XXXXX. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Source:* XXX.

Table 4: Robustness to choice of outcomes

	Baseline	Only local chapters	Number clubs	Number local chapters
Change in female-to-male ratio	0.115**	0.094**	0.124**	0.108**
	(0.045)	(0.045)	(0.050)	(0.043)
Main controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
R^2	0.716	0.705	0.784	0.766
Num. obs.	1048	1048	1048	1048

Note: The table presents XXXXX. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Source:* XXX.

Table 5: The effect of missing men on suffragette clubs: Border Design

	Border Sample	Placebo
Change in female-to-male ratio	0.102***	0.042
	(0.039)	(0.045)
Any franchise clubs pre-war	0.823***	0.826***
	(0.037)	(0.033)
Pre-war male share working in industry	0.058**	0.144**
	(0.025)	(0.062)
Pre-war male share working in military	0.170*	0.219*
	(0.094)	(0.117)
Pre-war male population share below 18	−0.126	−0.048
	(0.153)	(0.258)
State FE	Yes	Yes
Border county-pair FE	Yes	Yes
Recruitment area FE	No	Yes
R^2	0.841	0.934
Num. obs.	1000	1000

Note: The table presents XXXXX. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Source:* XXX.

Table 6: Missing men and the share of female candidates for the 1919 National Assembly election

	Orientation	Industry share	Insustry and military share	Age structure	Male age structure
Change in female-to-male ratio	0.261***	0.287***	0.289***	0.262**	0.273***
	(0.069)	(0.077)	(0.077)	(0.111)	(0.104)
Liberal party	0.041***	0.043***	0.043***	0.043***	0.043***
	(0.010)	(0.011)	(0.011)	(0.011)	(0.011)
Social-democratic party	−0.009	−0.009	−0.009	−0.009	−0.009
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Pre-war male share in industry		−0.038	0.011	0.009	0.008
		(0.051)	(0.062)	(0.062)	(0.064)
Pre-war male share in military			0.596	0.516	0.542
			(0.429)	(0.491)	(0.495)
Pre-war share below 18				−0.071	
				(0.212)	
Pre-war male share below 18					−0.044
					(0.200)
State FE	Yes	Yes	Yes	Yes	Yes
R^2	0.202	0.204	0.212	0.213	0.213
N	200	200	200	200	200

Note: The table presents XXXXX. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Source:* XXX.

Table 7: Missing men and female candidates 1919 – various outcomes

	Candidate lists				Elected candidates	
	Any woman	Share women	Top candidate woman	Share women in top 3	Number women	Share women
Change in female-to-male ratio	0.840*	0.273***	0.142	0.302	−0.056	0.118
	(0.469)	(0.104)	(0.241)	(0.222)	(0.565)	(0.235)
Mean of dep. var.	0.880	0.127	0.025	0.108	0.160	0.057
Main controls	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.216	0.213	0.106	0.236	0.106	0.106
N	200	200	200	200	200	144

Note: The table presents XXXXX. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Source:* XXX.

Table 8: The effect of missing men and female labor force participation on suffragette clubs

	Baseline	Horse Race
Change in female-to-male ratio	0.082	0.127
	(0.635)	(0.901)
Change in female employment share		0.459
		(0.892)
Any franchise clubs pre-war	0.556***	0.540***
	(0.136)	(0.151)
Pre-war male share working in industry	1.671***	1.693**
	(0.595)	(0.655)
Pre-war male share working in military	3.342	7.295
	(2.306)	(6.787)
Pre-war male population share below 18	−2.054	−0.715
	(12.146)	(13.459)
State FE	No	No
R^2	0.525	0.498
Num. obs.	40	36

Note: The table presents XXXXX. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Source:* XXX.

Appendix A. Placeholder