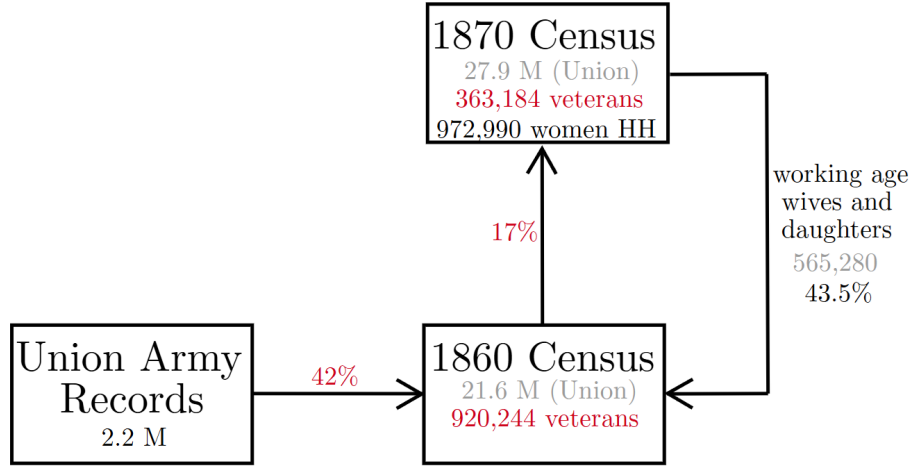


“The U.S. Civil War’s Impact on Women’s Work and Political Participation” Paige Montrose, University of Pittsburgh (with *Andreas Ferrara, University of Pittsburgh and Madison Arnsbarger, Weber State University*)

The latter half of the nineteenth century witnessed a steep rise in women’s political activism. In particular, the temperance movement provided women with their first large-scale political experience in U.S. history, which laid the groundwork for later important political successes. The temperance movement emerged in response to high rates of domestic violence due to alcohol abuse at a time when the country continued to struggle with the fallout from the Civil War (Bordin, 1981; Tyrrell, 1982; Masson, 1997). Of 2.2 million Union Army soldiers, almost 300,000 returned home with wounds or disabilities. Recent work provides evidence that alcoholism due to the lack of medication for effective pain management was as strong contributor to the rise in domestic violence (Jones, 2020; Carroll, 2016). Wounded and disabled veterans also found it exceedingly difficult to maintain gainful employment at a time when more and more women began to enter the labor market outside of their farms and family businesses (Goldin, 2006). This raises the question as to whether there is a causal link between the Civil War and the rise in women’s labor force and political participation. In this project, we answer this question and shed light on the importance of labor force participation and its role in gaining political rights for underrepresented groups more broadly.

This project is composed of three parts. First, we explore the effect of living with a disabled or wounded veteran on their wives’ and daughters’ labor force participation in 1870. Second, we show that counties with a higher share of disabled veterans were more likely to participate in the Woman’s Crusades of 1873-74 (also known as the Woman’s Temperance Crusades or just Temperance Crusades), and that this is mainly explained by the increase in women’s LFP. Lastly, we provide evidence that women’s increased LFP and political participation led to meaningful policy changes, such as passage of the 18th Amendment which banned the production, sale, and transportation of alcohol in the United States.

We begin with Union Army military records. The records contain individual-level information including soldiers’ full name, age, regiment, company, reason for exit (died, disabled, wounded, etc.), and the soldiers’ terms of enlistment (Dupraz and Ferrara, 2024). These data represent about 2.2 million individuals – nearly the entire population of Union Army soldiers. In order to observe labor force participation status of veterans’ wives and children, we first link the Union Army military records to the 1860 U.S. Census using soldiers’ full name, age, and residence following Abramitzky et al. (2014). Next, we link all men in the 1860 Census ahead to the 1870 Census following Abramitzky et al. (2021). This allows us to observe veterans together with their wives and daughters in the same household, each family member’s employment status, as well as important pre-war characteristics of the veteran, such as literacy, wealth, or occupation, among others. Our sample includes almost 270,000 women living with a veteran husband or father in 1870. Because we are linking on men’s names across Census years, this final sample hypothetically captures the most stable marriages. This source of selection in our data would attenuate the estimated effect of Civil War-induced disability on women’s LFP. The following figure outlines the process and linking rates.



To estimate the effect of veteran disability on wives' labor force participation, we compare wives and daughters of disabled veterans to those of veterans who left the Union Army without a disability, we drop unmarried veterans from the data. We exclude women in non-veteran households to limit issues relating to selection into the military as the Union Army was almost entirely comprised of volunteers (McPherson, 1988). We restrict the sample to women of working age, meaning those ages 16-65. Using the remaining data, we begin by estimating the following linear probability model,

$$Works_{i,1870} = \beta \mathbf{1HH\ head\ disabled} + \gamma X_{i(h)} + \delta_c + \epsilon_{ihc} \quad (1)$$

where $Works_{i,1870}$ is an indicator equal to one if wife or daughter i of the veteran heading household h is in the labor force in 1870. $\mathbf{1HH\ head\ disabled}_h$ equals one if the veteran heading household h was disabled or wounded in the Civil War. The vector $X_{i(h)}$ controls for a broad set of demographic, socioeconomic, and military characteristics of the wife, veteran, and household. County-level unobservables are captured by δ_c , and remaining variation is captured by the error term, ϵ_{ihc} . Standard errors are clustered at the household level in most specifications.

Our baseline regression results show that women living in a household with a wounded or disabled veteran were 0.4 to 0.7 percentage points more likely to be formally employed compared to the wives and daughters of veterans who returned without any physical injuries. Relative to the 17 percent unconditional probability of women working, this is an increase of 2.5 to 4 percent.

Even with our broad array of baseline controls, a remaining concern is that the correlation between a veteran's disability status and his wife or daughters' 1870 labor force participation may be spuriously driven by unobservable characteristics. To give an example, Protestant denominations in the North preached against slavery as a sin (see Miller et al., 1998),¹ mobilizing soldiers for a divine cause without the Census recording information on respondents' faith. If more religious soldiers were more likely to join fighting units,² thus having a higher probability of sustaining wartime wounds and disabilities, while also having more conservative views on women's labor force participation, then our regression results would be biased downwards.

To address such endogeneity concerns, we rely on an instrumental variables strategy where we in-

¹This rift led to early breaks, including the split of the Southern Methodists (1844) and Southern Baptists (1845) from their Northern counterparts.

²Of the roughly 3,000 Union Army regiments, 300 regiments carried the majority of the battles (Fox, 1889).

strument veterans' disability status with leave-one-out disability rate in regiment r of soldier s , excluding s and his company k such that:

$$Z_{srk} = \frac{\sum_r \text{disab. soldiers}_{s,k \notin r}}{\sum_r \text{soldiers}_{s,k \notin r}} \quad (2)$$

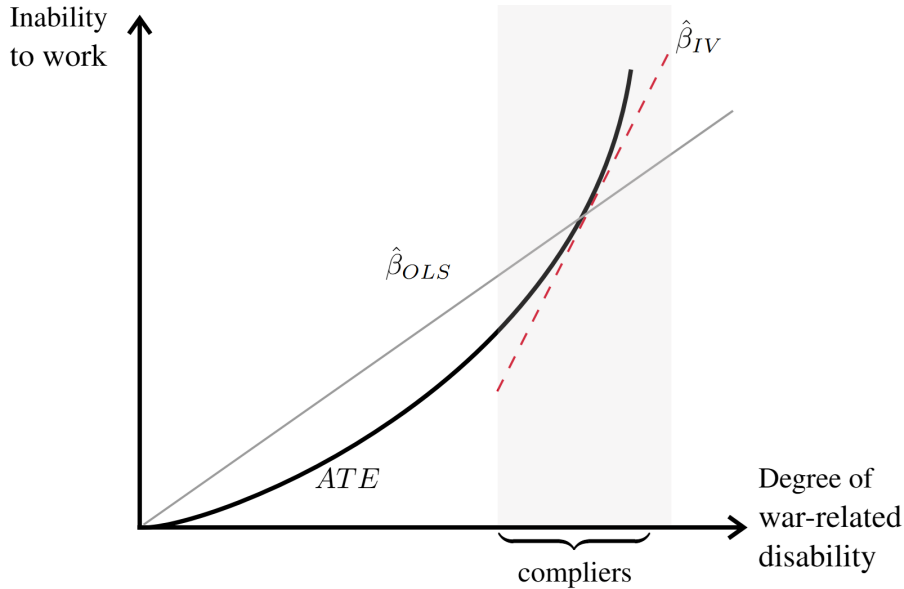
We attach the instrument to the wife/daughters (i) of the veteran in household h in county c , and run the first stage:

$$\text{HH head disabled}_{ihc} = \pi Z_{ihc} + X'_{ihc} \gamma + \nu_{ihc} \quad (3)$$

A probit model would be better than the linear probability due to its lack of efficiency. However, we cannot directly use $\widehat{\text{HH head disabled}}_{ihc}$ in the second stage (*forbidden regression*). Instead, we use the probit regression of HH head disabled $_{ihc}$ on Z to obtain $\text{Pr}(\widehat{T})$ and regress:³

$$\text{HH head disabled}_{ihc} = \pi \text{Pr}(\widehat{T})_{ihc} + X' \gamma + \nu_{ihc} \quad (4)$$

The instrumental variables regression results show that wives and daughters of wounded and disabled veterans were .8 to .9 percentage points more likely to work. This is slightly larger than the size of the OLS magnitudes. We use information from *The Medical and Surgical History of the War of the Rebellion* on soldiers' amputations to provide evidence that the large-scale battles of the war were more likely to produce more serious disabilities relative to smaller battles. Since we only observe disability as a binary variable, heterogeneity in disability status is masked leading to a local average treatment effect (LATE) based explanation, thus differentiating the OLS and IV estimates in addition to the endogeneity concerns mentioned previously. The following figure illustrates the LATE explanation.



We furthermore rule out contamination of the control group due to mental scarring. If physically unharmed soldiers experienced postwar PTSD and alcoholism as well, our estimates would be understated. To test this, we consider the sample of soldiers who left the army without wounds or disabilities. Regressing their wives', daughters', and own labor force participation on the number of major battles in

³See Wooldridge (2011), Angrist & Pischke (2009) for more details.

which these veterans fought produces insignificant coefficients that are very close to zero.⁴

Next, we explore the relationship between the return of disabled Civil War veterans and women’s temperance activism. Despite a lack of formal political power, women of the nineteenth century found alternative means to advocate for their collective interests. On Christmas Eve of 1873, what would become known as The Woman’s Crusades began in Hillsboro, Ohio as women traveled around to their local saloons praying for their closure (Dannenbaum, 1981). Over 32,000 Ohioan women participated in these demonstrations over the next four months (Dannenbaum, 1981). This widespread Woman’s Crusade culminated in the creation of the Women’s Christian Temperance Union (WCTU) in 1874 in Cleveland, Ohio, which grew to become the largest women’s organization of the nineteenth century (Snodgrass, 2015).

Our findings speak to a literature on the unforeseen political and ideological consequences of war (Eli et al., 2018; Bazzi et al., 2023). Within economics more broadly, the temperance movement has been connected to increased rates of homicidal violence (Bodenhorn, 2016; Jacks, 2020) and has been used to study the role of railroads and telegraph networks in the diffusion of political information (García-Jimeno et al., 2022). We empirically connect women’s early political mobilization for temperance to Civil War-induced disability rates, which historians connect to heightened rates of alcohol-induced domestic violence in the late nineteenth century (Carroll, 2016; Jones, 2020).

To measure the relationship between Civil War veteran disability and women’s temperance activism, we begin by aggregating Union Army military records up to the county level. We then divide this number by the total population of men in county c , as reported in the 1860 Census. Multiplying by 100 gives our final county-level treatment,

$$\%Disabled_c = \frac{CountDisabledSoldiers_{c, \text{Union Army records}}}{CountMale_{c, \text{1860 Census}}} \times 100 \quad (5)$$

We state this equation explicitly to emphasize that this is not the percent of soldiers who became disabled, rather it is the percent of a county’s entire male population that became disabled. In this way, we regard homecomings of disabled Civil War veterans as a county-level shock to families’ personal circumstances. We model the relationship between Civil War-related disabilities and temperance mobilization in the following linear probability model,

$$Temp_c = \alpha + \beta \%Disabled_c + \gamma X_c + \delta_{s(c)} + \varepsilon_c \quad (6)$$

where $Temp_c$ is a binary indicator equal to 1 if county c had a Woman’s Crusade event, including meetings, petitions, and marches. X_c is a vector of county-level controls including demographic (population, share Black, sex ratio, share urban, share foreign-born, share of women below age 15, age 15-29, and 30-49), economic (rail access, farms per capita, share manufacturing labor, 1860 female labor force participation), and religious or political (share Republican in Lincoln’s 1860 election, Baptist churches per capita, Methodist churches per capita, and Catholic churches per capita) (Haines and ICPSR, 2010; Civic Impulse, 2004). Finally, $\delta_{s(c)}$ is a state fixed-effect.

We find that counties with a 1pp increase in $\%Disabled_c$ were 10.8 pp more likely to have a Woman’s Crusade event. However, this interpretation requires that $\%Disabled_c$ be exogenously as-

⁴This is not to say that PTSD and PTSD-related alcoholism were a non-issue. The results suggest that the main driver of women’s labor force participation was disabled and wounded veterans’ exit from the labor force.

signed but because $\%Disabled_c$ is not as good as random, results from this regression may suffer from two potential sources of bias. First, there is scope for selection into disability. Certain socioeconomic factors such as education level and occupation affect soldiers' military rank, and therefore affect soldiers' risk of disability. Second, soldiers may fight more aggressively in battle if their home counties have higher stakes in the war's outcome, and therefore be at higher risk of injury. To address these and any other potential sources of bias, we aggregate our individual instrument to the county level. The IV estimate indicates that counties with a 1pp increase in $\%Disabled_c$ may have been 22 pp more likely to have a Woman's Crusade event, especially a crusade march.

Finally, we consider whether women's mobilization for temperance resulted in meaningful policy change. Given the causal relationship between Civil War-related disabilities and women's mobilization for temperance we have established, we proxy for women's temperance activism using the percent of soldiers wounded or disabled. We crosswalk county and congressional district boundary changes over time in order to aggregate the Union Army military records up to the congressional district level, as well as all of our controls. We then use the same baseline specification and instrumental variable approach in our county-level analysis at the congressional district level to test the relationship between the percent of men in a congressional district who were wounded or disabled to predict and the likelihood a congressman voted in favor of the 18th Amendment during the failed vote in 1914 and successful vote in 1917. The 18th Amendment prohibited the manufacture, sale, and transportation of alcoholic beverages federally. Despite it being repealed in 1933, when it was passed the 18th Amendment was the culmination of decades of political activism by women in the temperance movement (Webb, 1999). We find that a 1 pp increase in the percent wounded or disabled increased the likelihood a congressman voted in favor of the 18th Amendment by 8.2 pp in our baseline model and by 46.8 when we instrument for the percent of men wounded and disabled.

In conclusion, this paper adds to a growing literature on the economic, political, and public health consequences of war. This study delves into the transformative impact of the U.S. Civil War on women's labor force participation and political activism during the latter half of the nineteenth century. The analysis, rooted in the experiences of Union Army veterans and their families, uncovers a causal link between war-induced disabilities and the heightened engagement of women in the temperance movement. The self-medicating of physical and mental injuries of war with alcohol led to increases in unnecessary expenditures, domestic violence, and male unemployment in affected households, thus prompting the increased need for women in households to work and many women's desire to eradicate alcohol consumption.

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