# The Intergenerational Effects of Widowhood*

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**Abstract**

This paper studies the impact of widowhood on surviving spouses and their children in the late nineteenth century. Exposure to death is identified using mortality records linked to the population census. Recent spousal death raised the labor force participation of widows by 10 percentage points, with no corresponding effect for widowers. Exposure to parental death reduced children's schooling, with boys shifting toward market work following the death of the father and girls shifting toward housework following the death of the mother. These results suggest that the long-run decline in adult mortality enabled greater human capital accumulation across generations.

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## 1 Introduction

Mortality risk and longevity have been linked to individual investment in human capital, both theoretically and empirically (Ben-Porath 1967; Soares 2005; Jayachandran and Lleras-Muney 2009).[1] Less is known about this association across generations: How does declining mortality in one generation affect human capital investment in the next? One consequence of declining mortality is that fewer children are exposed to parental death while young, yet this channel's contribution to rising human capital investment remains underexplored.

This paper examines the intergenerational consequences of death in the United States in the late nineteenth century, at the onset of the historical mortality transition. In 1870, U.S. white male life expectancy was 42 years and would not begin rising until the turn of the twentieth century (Hacker 2010; Costa 2015). As a consequence, the rate of widowhood among women aged 35–44 was 10 percent in 1880 (Figure 1). Death in this period was frequently unanticipated: Infectious disease was the primary driver of mortality and deaths from occupational hazards were common (Fishback and Kantor 2000; Haines 2001; Cutler et al. 2006). Furthermore, federal aid for widowed households was minimal (Eli and Salisbury 2016; Salisbury 2017).

Censuses of mortality from 1870 and 1880 capture deaths from the prior year and are linked to households in the population census (Hacker et al. 2025). The empirical analysis compares newly widowed households to married households with similar pre-widowhood characteristics. Cause of death in the mortality records is used to identify a subset of plausibly random deaths, addressing the concern that exposure to death was correlated with unobserved household characteristics. The analysis considers how spousal deaths affected widows and widowers, as well as how parental death affected children in the household.

Recent spousal death increased the labor market participation of widows by over 10 percentage points. Baseline labor force participation of married women was 2 percent, making new widows more than 5 times more likely to work. Half of the increase in work was entry into the deceased husband's occupation, consistent with women taking over family farms and businesses (Goldin 1986). Results are similar in a subset of accidental deaths, which suggests the effects on widows

[1] Several papers focus on disease and mortality risk as determinants of investment in human capital (Bleakley 2007, 2010; Fortson 2011; Oster et al. 2013). A related literature cites human capital as a factor that mediates the relationship between longevity and long-run growth (Ehrlich and Lui 1991; Kalemli-Ozcan et al. 2000; Kalemli-Ozcan 2002; Weil 2007; Lorentzen et al. 2008).

were not dependent on the manner in which spousal death occurred. By contrast, widowers were 0.3–1 percentage points less likely to work following spousal death, a statistically insignificant effect.

Following the recent death of a parent, full-time school enrollment fell by 3 to 6 percentage points (4 to 11 percent) among school-aged children. The recent death of the father increased full-time work by 3 percentage points, an effect concentrated among older sons. The recent death of the mother did not increase paid employment, but rather increased children coded as participating in housework, an effect concentrated among older daughters. Back-of-the-envelope calculations show that the decline in adult mortality between 1880 and 1920 can explain approximately 1–2 percent of the overall growth in school enrollment during this period.

This paper contributes to research on the consequences of spousal death. Much of the modern-day literature focuses on living arrangements, health, and financial well-being of elderly widows and widowers in representative surveys.[2] Sample sizes in these surveys are typically too small to investigate the loss of a working-age spouse. Several studies use administrative data to examine household health shocks within a modern social safety net (Fadlon and Nielsen 2019, 2021; Coyne et al. 2024; Arteaga et al. 2025; Fadlon et al. 2026). This paper adds evidence on the historical effects of widowhood when the social safety net was limited (Eli and Salisbury 2016; Salisbury 2017).

This paper studies a representative set of peacetime deaths, adding to the literature on death in historical contexts (Goldstein 2025). Braun and Stuhler (2024) study West German widows after World War II and find short-run increases in widow labor supply and reduced educational attainment for sons. Dupraz and Ferrara (2025) find that sons of men who died in the U.S. Civil War had lower occupational standing in adulthood, except those from upper-income families. The post-wartime context limits generalizability due to shifts in production and pensions (Goldin 1991; Salisbury 2017; Shatnawi and Fishback 2018; Costa et al. 2020; Garin and Rothbaum 2025). Because this paper studies deaths from infectious disease, chronic illness, and occupational hazards, effects are unlikely to be confounded by post-war economic conditions.

A rich literature has studied children affected by parental death and orphanhood.[3] Most closely related to this paper is research on heterogeneity in response to death by gender (Adda

[2] See, for example, Hurd and Wise (1989), Smith et al. (1991), Sevak et al. (2004), Moon et al. (2014), Liu et al. (2020), and Rodin et al. (2024).

[3] For papers on parental death, see Ainsworth et al. (2005), Chen et al. (2009), Cas et al. (2014), Liu et al. (2022), Dribe et al. (2022), and Daly et al. (2026). For papers on orphans, see Case et al. (2004), Beegle, De Weerdt, et al. (2006), Evans and Miguel (2007), and Garcia-Brazales (2023).

et al. 2011; Chen 2012; Gimenez et al. 2013; Kalil et al. 2015). Guerrero (2025) uses modern survey data from India to show that household resources and preferences drive gender differences following parental death. This paper estimates heterogeneity in the effects of death in the United States in the late nineteenth century, the onset of the historical mortality transition. Results complement the literature studying how the eventual introduction of government support affected the outcomes of widows and children (Aizer et al. 2016).

Finally, this paper contributes to research on child labor and household production. Child labor was historically common, especially among orphans and children in single-parent households (Goldin 1979; Parsons and Goldin 1989; Humphries 2003; Moehling 2004; Manacorda 2006). In the historical United States, child labor laws had little effect on the incidence of child labor (Moehling 1999; Anderson et al. 2023). This paper quantifies how mortality decline led to fewer children being pulled into market work following parental death. The analysis has modern relevance: Households in developing countries today face tradeoffs in sending their children to school or to work (Basu and Van 1998; Edmonds and Pavcnik 2005; Bau et al. 2025). In these settings, parental death remains a key determinant of child labor (Beegle, Dehejia, et al. 2006). This paper reports historical estimates of the effect of parental death on children's outcomes, which inform settings today with high mortality and limited child labor regulation.

The remainder of the paper is organized as follows. Section 2 provides historical context on death and widowhood in nineteenth-century America. Section 3 describes the data sources and sample construction. Section 4 presents the effects of widowhood on surviving spouses. Section 5 presents the effects of parental death on children. Section 6 discusses implications of mortality decline for rising human capital investment and concludes.

## 2 Historical Background

In the late nineteenth century, mortality in the United States was high and predominantly driven by acute infectious diseases and their complications (Cutler et al. 2006). Infant mortality made up the largest share of overall mortality, but adult mortality was also comparably high, particularly in urban areas (Haines 2001). Mortality is reflected in estimated life expectancy: In 1870, white male life expectancy was roughly 42 years. Men were at higher risk of dying than women at all ages, except in early adulthood due to the mortality risk of childbirth (Hacker 2010). In the mortality

censuses, roughly one third of married adults died from infectious disease, not including deaths from subsequent complications.

A direct consequence of high adult mortality was high rates of spousal and parental death. In 1880, 16 percent of women were listed in the population census as currently widowed (Figure 1, panel (a)).[4] Widowhood risk rose with age, yet the share of women widowed was high even at younger ages: Among women ages 30–34, 6 percent were widowed. In the U.S. today, widowhood among women at this age is rare. The share of men currently widowed was lower (Figure 1, panel (b)), partially due to lower mortality risk among women. In 1880, the rate of widowhood among men ages 30–34 was 3 percent, compared to 6 percent of men overall. We can further examine the prevalence of widowhood among parents. In 1880, 10 percent of women with children in the household were widows (4 percent of women with children under 5), a share that had fallen to 5 percent by 1950 (Figure B.1).

Predictors of widowhood are shown in Table B.1. The estimation sample consists of individuals linked between the 1870 and 1880 censuses and aged 25–55 in 1880. I restrict to married couples in 1870 to obtain spouse characteristics and estimate the likelihood of becoming widowed in 1880. Black women and men are more likely to become widowed, but the coefficient for women is lower once spouse and household controls are included. Age and spouse's age are both predictive of widowhood, more strongly among women. Other characteristics that are positively correlated with widowhood are foreign-born status and urbanicity (for women), whereas literacy, number of children, and household wealth are negatively correlated. Coefficients for spouse's occupational skill level are shown relative to no occupation. A woman's likelihood of becoming widowed was highest when her husband did not work, which may be correlated with underlying health. Broadly, these patterns align with the literature on mortality differences across groups (Ferrie 2003; Leonard et al. 2015; Feigenbaum et al. 2022; Antoine-Jones et al. 2023; Ager et al. 2024).

Economic outcomes for widows in the late nineteenth century were often dire and a subject of social concern. Widows with no adult children to support them frequently ended up in almshouses or homes for the destitute (Kleinberg 2006). It was not uncommon for women who were unable to support their children to give them up to orphanages (Moehling 2002). Though the state recognized the poor outcomes of widowed households, its support of widows in this era was limited

[4] Before 1880, the population census did not ask about marital status.

to war-related deaths. Beginning in 1862, the widows of Union Army soldiers received pensions as long as they remained unmarried (Eli and Salisbury 2016; Salisbury 2017). Though limited, these pension programs set the stage for larger movements to support women and children, such as the Mothers' Pensions in the early twentieth century (Aizer et al. 2016).

One of the most common ways that widows and widowers survived was through the support of family and charitable organizations. A large share of households in 1880 were multi-generational, and widows were more likely to live with their children than married women were (Ruggles 2003). Remarriage was common, particularly among widowers (Van Poppel 1995). Though remarriage rates are challenging to estimate in U.S. census data, Salisbury (2017) estimates that 55 percent of women remarried following their husband's death in the Civil War. Charitable organizations that served widows varied substantially across cities in scope and mission. Kleinberg (2006) examines the case of Fall River, Massachusetts, where ample paid opportunities for women and children meant the city was less willing to provide cash assistance to widowed households.

Widows who entered the labor force often worked in the occupation of their deceased husband or the service sector. Since married women during the late nineteenth century rarely participated in formal market work, their time was spent in household production: food preparation, childcare, and farm work that did not register as "gainful employment" in census records (Goldin 1990; Horrell and Humphries 1995). When their husband died, widows could take on the work of their husband in some cases (Goldin 1986). For instance, Table B.2 shows that bakers had the highest share of widows entering, followed by building managers and farmers. However, many occupations, such as bricklayer, had no widows enter. Among widowers, nearly all held an occupation prior to their wife's death.

## 3 Data Sources and Sample Construction

### 3.1 Censuses of mortality

The primary data sources are the decennial population and mortality censuses collected by the U.S. Census Bureau in 1870 and 1880.[5] The mortality census was a novel data collection effort from 1850 to 1880, a period when many states did not track deaths. Though some states like Massachusetts began vital registration in the mid-nineteenth century, most states did not begin registering births

[5] For additional details, see Appendix A.

and deaths until well into the twentieth century (Preston and Haines 1991). The mortality censuses are therefore the only surviving national registers of nineteenth-century deaths.

The mortality census was enumerated alongside the population census. Households were asked by census enumerators to report all deaths in the past year. The enumerator recorded the details of each death, including name, age, marital status, month of death, and cause of death. Since the 1850–1880 population censuses were enumerated beginning in June, the mortality census captures deaths in the 12 months preceding June 1. The mortality census does not contain deaths that occurred outside of the previous 12 months, deaths that went unreported by the household, or deaths with no surviving household members. For these reasons, it is difficult to use the mortality censuses to estimate overall population mortality rates (Condran and Crimmins 1979; Haines 1979; Ferrie 1996). Furthermore, not all microdata from all states have survived to the present day. Hacker et al. (2025) estimate that the share of surviving records is 85 percent for 1870 and 96 percent for 1880.

The mortality census records from 1870 and 1880 have been digitized and linked to the population census (Ruggles, Flood, et al. 2025; Hacker et al. 2025). Links are based on state, county, enumeration district, family number, and surname similarity. The linkage rates for 1870 and 1880 are 50 and 34 percent, respectively, resulting in samples of roughly 209,000 and 250,000 linked deaths. There are many reasons why linkage rates are not 100 percent, including missing, incomplete, or illegible fields (Hacker et al. 2025). Families with deaths linked to the population census may not be representative of all families experiencing a death. For instance, linked male deaths are more likely to be native-born men from rural households. Following Bailey et al. (2020), I construct inverse propensity score weights to improve representativeness of the linked mortality sample in Section A.1.

Descriptive statistics for the full and linked mortality records are reported in Table A.1. The average age at death in the full mortality census was 25 years (column 1). However, a large number of recorded deaths are young children, consistent with high infant mortality rates (Preston and Haines 1991). Among deceased married men over the age of 16, the average age at death was 52 years (column 4). The records include cause of death, which I group into several broad categories.[6] Causes of death during this period are markedly different from those of the 21$^{st}$ century. Even

[6] See Section A.1. Cause of death is initially grouped by Hacker et al. (2025) according to the International List of Causes of Death, revision 2 (ILCD-2 1909). As those authors note, scientific understanding of diseases in 1870 was rudimentary, making it difficult to apply a more modern death classification to these data.

among adult men, 33 percent of deaths were from common infectious diseases like influenza and tuberculosis. Many deaths were likely due to complications from disease or poor living conditions. A non-trivial share of deaths, 6.5 percent, were due to violent or external causes. Note that among married women over the age of 16, 9 percent of deaths were related to pregnancy or childbirth. Comparing the mortality censuses of 1870 and 1880, deceased individuals in 1880 were slightly older, but had similar causes of death.

#### *3.1.1 Identifying widows and widowers*

I use the linked mortality records to identify widows and widowers in the population census. This linkage is necessary because information in the population census is limited. In 1870, the census did not record interrelationships within families or marital status. As a substitute, relationships can be imputed based on the ordering of names in the household (*e.g.*, the male household head listed first, the spouse listed second). However, without information on marital status, it is unclear if a household head in 1870 is widowed.[7] The 1880 census asked about family interrelationships and marital status, making it more straightforward to identify self-reported widows and widowers. However, detailed information on when the spouse died or the circumstances of spousal death must be obtained from outside records.

In the 1870 and 1880 censuses, widows are identified as follows. Within households linked to the death of a married man aged 16 or older, I identify all women aged 16 or older. This identifies a unique woman in roughly 30 percent of cases. When more than one woman fits this description (for instance, a woman and her teenage daughter), I select the woman closest in age to the deceased with less than a 15-year age difference. This is the focal individual: the deceased husband's surviving widow. The approach to identify widowers using the linked deaths of married women is analogous.

### 3.2 Sample construction

To measure the impact of widowhood, I implement a matching framework.[8] Each widow is matched to married "control" women according to a set of baseline characteristics from the prior census. To

[7] The 1870 census asked whether an individual was married within the past year. Since a "no" response could include widows whose husbands died over a year ago, and a "yes" response could include widows whose husbands died recently, this variable is difficult to use.

[8] I describe the construction of the matched widows and widowers samples here. For the matched child sample used to measure the impact of parental death, see Section 5.1.

accomplish this, I link women across censuses using the IPUMS Multigenerational Longitudinal Panel (MLP) links for 1860–1870 and 1870–1880 (Ruggles, Ozder, et al. 2025). The MLP links for women are based on identifying information, as well as the Social Security Administration Numident file, which contains maiden names.

Starting with the full set of 1860–1870 and 1870–1880 links, I impose several sample restrictions. First, I restrict the sample to women who were married at baseline to remove selection into marriage as a confounding factor. Second, I limit the sample to white women aged 25 to 55 at the time widowhood is measured. Since I limit the sample to women married at baseline, the lower age restriction removes the few cases where women show up as married at ages 15 or younger. The upper age restriction limits the analysis to women of prime working age. Very few widows in the linked sample are black, and I study these women separately in Section 4.2.3. Third, I require that *control* women remain married. This restriction drops women in the comparison group who were widowed or otherwise separated from their husbands over one year ago. The final sample consists of women in the 1860–1870 (1870–1880) linked sample who were married in 1860 (1870) and either married or newly widowed in 1870 (1880). See Figure A.3.

Using this sample, I construct exact matches based on the following characteristics: census year, foreign-born status, age, husband's age, husband's occupation, county of residence, urbanicity, and an indicator for any children.[9] Women are also matched on a propensity score for widowhood, calculated based on the following variables: age (continuous), spouse's age (continuous), employment, number of children, farm status, and household wealth quartile. Table 1 reports balance statistics in the matched widows sample. The full samples of widowed and married women in the linked censuses are presented for comparison. New widows (column 1) are slightly older than married women (column 2), are more likely to be foreign-born, and more likely to have children. Their families look slightly different, with new widows having older spouses and larger families. In column 3, 84 percent of widows are matched to control women. The matched married women in column 4 closely resemble the widowed women, even for variables not directly targeted in the matching process.

[9] I allow for a fuzzy match on age by matching on five-year age bin for the woman and ten-year age bin for her husband. The specific matching algorithm is implemented in Stata using the `kmatch` command, which implements nearest-neighbor propensity score matching (Jann 2017).

From Table 1, Panel A, the average woman in the matched sample is 44 years old with 3 to 4 children. Twenty percent of women lived in urban areas and half lived on a farm. Among accidental deaths only (Panel B), the widowed and matched women are slightly younger and more urban. The characteristics of deceased husbands are reported in Table B.3. Deceased husbands in the matched sample (column 3) skew younger due to the age range of matched widows. Over 10 percent of deceased men in the mortality sample were black; however, in the matched sample of white widows, deceased husbands were almost entirely white. The distribution of cause of death categories is similar between the full and matched samples, with one-third of deaths categorized under infectious disease and 5 percent classified as accidental.

The construction of the sample of widowers and matched non-widowed men is analogous to the matched widows sample, with one modification. Since most wives in the sample did not work, matching on wife's occupation is less effective for obtaining a balanced sample. I instead match on the husband's own occupation prior to spousal death, which captures information about class and income contained in occupation codes. Descriptive statistics for the matched sample are reported in Table C.1. Widowed men are aged 45 on average and are more likely to be farmers. The matched sample of married men is highly similar to widowed men in terms of baseline characteristics. Statistics of deceased wives are reported in Table C.2. The deceased wives in the matched sample skew younger, with about 8 percent dying from causes related to childbirth.

## 4 Effects of Widowhood on the Surviving Spouse

### 4.1 Estimation approach

I estimate the following model using the matched widows sample:

$$Y_i = \beta_0 + \beta_1 Widowed_i + \Gamma \mathbf{X}_i + \varepsilon_i, \tag{1}$$

where $Y_i$ is an outcome for woman $i$, $Widowed_i$ is a binary variable indicating spousal death within the past year, $\mathbf{X}_i$ is a vector of control variables, and $\varepsilon_i$ is an error term. The vector $\mathbf{X}_i$ contains the variables used in the matching process.[10] Standard errors are clustered at the county level.

[10] Indicators for census year, age, foreign-born status, county of residence, urbanicity, farm status, employment, number of children, spouse's age, spouse's occupation, and household wealth quartile.

To obtain unbiased estimates of $\beta_1$, the identifying assumption is that the set of matched married women is an appropriate counterfactual for newly widowed women. The context of the late nineteenth century lends some support to this assumption. The majority of deaths were from acute infections and subsequent complications, rather than chronic conditions correlated with socioeconomic standing (Shaw-Taylor 2020).[11] I match women based on broad predictors of mortality, such as location (Feigenbaum et al. 2019) and nativity (Ager et al. 2024). However, the coefficient $\beta_1$ may still be biased if, for instance, spousal death is correlated with socioeconomic status in a way that cannot be fully accounted for with matching. I isolate a subgroup of women for whom widowhood was plausibly random using cause of death in the mortality records, such as a husband dying in a machinery accident.[12] The results for all deaths and accidental deaths are presented side-by-side for comparison.

A related concern is that the matching uses baseline characteristics from a decade prior to the widowhood event. It is possible that widowed women were on a different trajectory in the years leading up to spousal death, biasing the estimated effects. I construct a sample of women observed in 1860, 1870, and 1880. Within this group, I match widowed and married women in 1880 using baseline characteristics measured in 1860. If widowed women were on different trends, outcomes may diverge by 1870 (before spousal death). Results for this exercise are shown in Table B.4. Estimates are small and statistically insignificant, showing no evidence of differential trends.

### 4.2 Results: Widows

I first examine how recent spousal death impacted the employment outcomes of widows. The primary outcome of interest is employment in the formal labor market. The 1870 and 1880 censuses do not contain information on labor force status or hours worked; therefore, employment is defined as whether an individual held a "gainful occupation". For women, this often meant working for wages outside of the household, and did not include housework.[13] I classify occupations into mutually exclusive categories to examine which occupations widows were likely to enter following

[11] While there existed a relationship between socioeconomic status and child mortality in this era (Preston and Haines 1991; Hacker et al. 2023), the relationship for adults is less clear (Ferrie 2003; Leonard et al. 2015).

[12] See Section A.1 for the complete set of mortality codes used to identify accidental deaths. Note that for women, deaths related to childbirth are coded as accidental.

[13] Specifically, employment is defined as having a non-missing occupation code, *i.e.*, $OCC1950 \leq 970$. For more discussion of how women were coded in the historical census, see Goldin (1990) and Chiswick and Robinson (2021). The definition of gainful employment using occupation codes is commonly used in related literature (Feigenbaum and Gross 2024; Arnsbarger et al. 2026).

their husband's death. The primary grouping uses 1950 occupation codes and identifies high-skilled, semi-skilled, low-skilled, and farming occupations (Long and Ferrie 2013; Dupraz and Ferrara 2025). Note that industry was not separately recorded in the 1870 or 1880 censuses, which limits this analysis to occupation only.

Table 2 presents the results. In column 1, I estimate equation (1) using the full sample of widowed and married women in the linked censuses. In column 2, I add controls and matching weights, which restricts the sample to women in the matched widows sample defined in Section 3.2.[14] In column 3, I limit the sample to accidental deaths only, which are more likely to be exogenous to economic background and other determinants of mortality. Panel A reports coefficients for overall employment and Panels B–E report coefficients for high-skilled, semi-skilled, low-skilled, and farming occupations. In Panel F, I construct an indicator for whether the widow worked in the same occupation as her deceased husband, measured in the census prior to death.[15]

Starting with column 1, recently widowed women were 11 percentage points more likely to be employed within a year of their husband's death. This represents a large increase relative to married women, whose employment rate was only 2 percent. The estimates are similar upon restricting the sample to matched women only (column 2) and accidental deaths only (column 3). The estimated effects of widowhood on high-skilled, semi-skilled, and low-skilled employment (Panels B–D) range from 1 to 2 percentage points. Much of the increase in widows' employment was driven by farming occupations (Panel E). In Panel F, the coefficient on employment in the same occupation as the deceased husband is half the size of the overall employment effect. Among accidental deaths, the coefficient on husband's occupation is only 2.8 percentage points, which suggests that fewer of these widows entered their husband's occupation.

The husband's occupation was an important determinant of the labor market outcomes of widows, who often took on their late husband's work (Goldin 1986). I explore how the skill level of the husband's occupation affected widows' employment in Table B.5. Column 1 reports the coefficient on widowhood interacted with the husband's occupational skill group, where high-skilled

[14] Matching weights for women not in the matched sample are set to zero. Note that 91 percent of matches are one-to-one, so most weights are equal to one.

[15] This measure excludes non-occupation codes. I use occupation listed in the prior census because occupation in the digitized mortality censuses is largely missing (Hacker et al. 2025). The share of married men aged 16 and up with non-missing occupation is 18 percent in 1870 and 22 percent in 1880. In Table 2, Panel F, using the deceased husband's occupation if non-missing, the estimated coefficients increase slightly to 0.057, 0.064, and 0.035 in columns 1–3.

is the reference category. The overall employment effect was slightly stronger for widowed women whose husbands worked in farming occupations. Entry of women into high-skilled occupations was higher among women whose husband also worked in a high-skilled occupation (column 2). This result holds for semi-skilled, low-skilled, and farming occupations. As shown in column 6, these patterns are at least partly driven by women entering their deceased husband's specific occupation. Women were relatively less likely to enter their husband's occupation if it was semi-skilled or low-skilled.

To better understand this pattern, I report the most commonly held occupations in Table B.2. Widows entered a small set of occupations held by their husbands, including baker (high-skilled), operative (semi-skilled), service worker (low-skilled), and farmer. The share of widows entering their husband's occupation is notably lower for common semi-skilled and low-skilled jobs. For example, among deceased men who worked as managers, 9.6 percent of their widows reported a manager occupation. However, among men who worked as miners, no widows reported a mining occupation. This pattern explains why the coefficient on husband's occupation in Table 2 is smaller for accidental deaths, which were more concentrated in heavy industries.

#### *4.2.1 Robustness*

The robustness of the results in Table 2 is tested in several ways. First, results are presented using different weighting schemes in Table B.6. Dropping the matching weights in column 2 has little impact on the coefficients since most matches are one-to-one. In column 3, I add inverse propensity score weights for the linkage between the mortality and population censuses (this applies to widows only; see Appendix A). In column 4, I add inverse propensity score weights for the cross-census MLP links.[16] Estimates are similar.

Next, I limit the analytical sample to households that ever experienced widowhood, so effects are identified off of the timing of spousal death in the linked census samples. If the data were monthly, this would take the form of a dynamic difference-in-differences, which has been used in related literature (Fadlon and Nielsen 2019, 2021; Bhuller et al. 2024; Guerrero 2025; Fadlon et al. 2026). However, the population and mortality censuses are only enumerated every ten years. This

[16] This approach reweights the linked samples to be more representative of the full population census (Bailey et al. 2020). A probit is estimated that predicts linkage using the following characteristics: age bin, race, foreign-born, census region, urban, farm, literacy, occupation group, marital status, head of household, has children, length of first and last name, log count of first and last name in the population, and two-way interactions.

restricts the model to a simple difference-in-differences:

$$Y_{it} = \alpha_i + \gamma Post_t + \delta Widowed_i \times Post_t + \nu_{it}, \tag{2}$$

where $Y_{it}$ is the outcome for widow $i$ in year $t \in \{1860, 1870\}$, $\alpha_i$ is a vector of individual fixed effects, $Post_t$ is an indicator for $t = 1870$, $Widowed_i$ is an indicator for becoming widowed in 1870, and $\nu_{it}$ is an error term. The coefficient of interest is $\delta$, the effect of widowhood on outcomes for new widows in 1870. Control women are not-yet-treated, that is, they are not widowed in 1870, but will become widowed in 1880. I estimate this model with standard errors clustered at the county level. Table B.7 reports the results. Column 1 reports estimates of equation (2) with no additional controls. Relative to not-yet-widowed women, new widows' employment increased by 9.3 percentage points in 1870. Coefficients on employment and occupation subgroups are largely in line with the main results in Table 2. Columns 2 and 3 add interactions of $Post_t$ with age and a vector of baseline controls, respectively, allowing outcomes of control women to change flexibly between 1860 and 1870. Estimates are similar.

#### *4.2.2 Additional sources of heterogeneity*

Additional sources of heterogeneity are shown in Figure B.2. Several patterns are notable. Foreign-born women were more likely to be employed following spousal death, driven by high-skilled occupations. Urbanicity does not mediate overall employment, but it does determine occupational composition. Rural women drove entrance into farming occupations, and this explains much of the effect on entrance into husband's occupation. Conversely, urban women drove entrance into high-skilled occupations common in cities. I divide the sample into ten-year age bins and examine how employment varied with age. The largest employment effects are for women aged 25–34. The age gradient is strongest in low-skilled occupations and weakest in farming occupations. Regional heterogeneity is driven by industry composition, with the largest effect on employment being in the South, where farming dominated. When I split the sample by household wealth measured in the prior census, the employment effect is weakest among widows from households in the top wealth quartile. The bottom fifty percent of the wealth distribution entered semi-skilled and low-skilled occupations at relatively high rates. Interestingly, the top fifty percent were most likely to enter the

deceased husband's occupation, a pattern likely due to farming and property wealth. I do not find evidence of heterogeneity by time since the husband's death.

#### *4.2.3 Additional results: Black widows*

Black women not only faced heightened mortality risk during this period (Feigenbaum et al. 2022; Antoine-Jones et al. 2023), but also different labor markets from those of white women (Boustan and Collins 2014). Black women were overrepresented among widowed households, one factor that drove high labor market participation (Goldin 1977). Results for black households are therefore reported separately. The construction of the analysis sample is identical to the process described in Section 3.2. Black widowed and married women in the linked censuses are matched using exact and propensity score matching, resulting in a sample of 620 black women.

The impact of widowhood on black women's employment outcomes is reported in Table B.8. Column 1 reports results in the full sample of black women in the linked censuses. Column 2 reports results in the matched sample. Employment among married black women was about 20 percent, higher than that of married white women (2 percent). Even with higher baseline employment, spousal death resulted in a roughly 30 percentage point increase in employment, concentrated in low-skilled and farming occupations. Note that the subsample of accidental deaths is too small to obtain reliable estimates ($N = 24$).

### 4.3 Additional results: Widowers

I investigate the impact of spousal death on widowers in Appendix C. Causes of death for married women in 1870 and 1880 were primarily from infectious disease; however, an estimated 9 percent of the deaths were related to childbirth (Table A.1). Married women were less likely to die from violent or external factors than men. Since married women did not typically earn formal wages during this period, the wife's death would have had a smaller average effect on household income. I expect *ex ante* that the average widower will be affected by the emotional toll of the loss and changes in household production, rather than the loss of wage income.

Table C.3 reports results. In Panel A, widowers show no meaningful change in employment following the wife's death. Men did not enter the occupations of deceased wives; however, this is consistent with rare formal employment among married women and high baseline employment among

men. In the matched widowers sample, only 2 percent of men had spouses with an occupation in the prior census. In Figure C.1, I explore sources of heterogeneity for the effects of widowhood. Most point estimates are statistically insignificant. These results suggest that the margin of adjustment for widowers was not in their own labor supply; however, the historical census does not capture the intensive margin of hours worked.

## 5 Effects of Parental Death on Children

### 5.1 Sample construction

To identify the effects of parental death, children are matched using the same set of characteristics as in Section 3.2. I additionally impose an exact match on child gender and age. Table 3 reports balance statistics for children with deceased fathers and matched children with living fathers. I do not require that all matched children have a mother in the matched widows sample in Table 1. In Panel A (all deaths), the average age of children with deceased fathers (column 1) is 12 years old, and their parents are slightly older than those of children with living fathers (column 2). Relative to the full sample, the matched sample in column 3 is more likely to live on farms, but otherwise their characteristics look similar. In Panel B (accidental deaths), the share of children on farms in the matched sample more closely aligns with the full population. The matched children with living fathers closely resemble children with deceased fathers, even for variables not targeted in the matching process. Table B.9 reports balance statistics for children with deceased and living mothers. Relative to the samples in Table 3, these children are from slightly younger families, but overall selection patterns are similar.

### 5.2 Results: Parental death

The estimation approach for children experiencing parental death is nearly identical to that in Section 4.1. I estimate the following model:

$$Y_i = \delta_0 + \delta_1 ParentDied_i + \Phi \mathbf{X}_i + \nu_i, \tag{3}$$

where $ParentDied_i$ is an indicator for whether the child's father or mother died within the prior year. Controls are the full set of matching variables, including indicators for child gender and age. I

estimate equation (3) separately for children with deceased fathers and mothers. Standard errors are clustered at the household level to account for within-household correlation in outcomes.

Table 4 presents the results for children whose father died in the last year (columns 1–3) or whose mother died in the last year (columns 4–6). I focus this analysis on children of schooling age (6 to 18). In columns 1 and 4, I estimate equation (3) using the full sample of children in the linked censuses. In columns 2 and 5, I add controls and propensity score matching weights, which restricts the sample to children in the matched samples defined in Section 5.1. In columns 3 and 6, I limit the sample to accidental deaths only. In Panel A, I examine school enrollment. In 1870 and 1880, census enumerators were instructed to ask whether a child attended school within the year (the past 12 months, excluding Sunday and evening school). It is unclear how strongly enumerators adhered to this definition. For instance, if the father's death resulted in a child dropping out of school within the past 12 months, the census enumerator may or may not have coded the child as attending school. I report results for full-time school (in school, no occupation listed) in Panel A. Panel B examines whether the recent death of the parent affected the propensity of children to work. In 1870 and 1880, census enumerators were instructed to code children with an occupation so long as they were working regularly. I construct an indicator for working while in school and report results in Panel C. In Panel D, I construct an indicator for housework, a non-occupation code used by census enumerators.[17] This indicator is mutually exclusive with the indicator for work.

In Table 4, Panel A, the coefficient on full-time schooling ranges from −2.9 to −6.3 percentage points for children who lost their father, and −2.6 to −4.1 percentage points for children who lost their mother. In Panel B, children who recently lost their father were 3 percentage points more likely to have full-time employment (relative to a control mean of 9.4 percent). Upon limiting the sample to accidental deaths, the point estimate rises to 4 percentage points. By contrast, children who recently lost their mothers were not more likely to work. In Panel C, coefficients on "work and school" are largely positive but statistically insignificant. This suggests that few children shifted toward part-time work following parental death. Finally, in Panel D, children were substantially more likely to have "housework" listed under occupation following the death of the mother. The census likely undercounted the number of children participating in household chores, but it offers

[17] Specifically, housework is an indicator for *OCC1950* codes 980 and 982.

insight into shifting time use. Interestingly, housework does not increase following the death of the father.

The estimates in Table 4 mask substantial heterogeneity by child gender and age. Figure 2 shows coefficients from a specification with death of the father interacted with indicators for child age, estimated on boys and girls in the matched child sample. The effects of death of the father on employment and schooling are concentrated among older boys. Coefficients on employment and schooling for girls are generally smaller (Tables B.10 and B.11). In Figure 3, death of the mother resulted in increases to employment and decreases to schooling for boys; however, effects are smaller in magnitude. This suggests that the widower continued to provide household income and there was less benefit to the older boys entering the workforce. However, for older girls, the substitution away from both work and schooling suggests their time shifted toward household production. Following the mother's death, housework among older girls increased by 28 percentage points (Tables B.12 and B.13).

### 5.3 Implications of mortality decline

How much of the rise in school enrollment from 1880 to 1920 can be attributed to the decline in parental deaths? Among white children ages 6 to 18, the share enrolled in full-time school rose from 51.4 percent in 1880 to 73.7 percent in 1920. Exposure to parental death declined during this period: Figure B.1 shows that the share of mothers ages 25–55 who were currently widowed fell from 10.4 percent in 1880 to 7.9 percent in 1920. I use this decline and the estimated effects from Section 5.2 to calculate the implied change in full-time schooling.[18]

The decline in child exposure to parental death is estimated using historical life tables for the U.S. white population (Hacker et al. 2026). I use life tables rather than the share of children living with a widowed parent (Figure B.1) because that share also reflects remarriage. Under 1880 mortality, 10.9 percent of children ages 6–18 had lost their father and 9.8 percent had lost their mother. Under 1920 mortality, these shares were 7.8 and 6.7 percent, a decline of about 3 percentage points for each parent. Let $\hat{\beta}_p$ and $\hat{\beta}_m$ denote the effects of paternal and maternal death on full-time schooling, and let $\Delta C_p$ and $\Delta C_m$ denote the decline in exposure. The implied change in full-time

[18] Much of the growth in school enrollment can be accounted for by proximity to common schools and high schools (Goldin and Katz 2011; Doxey et al. 2026).

schooling is:

$$\Delta S = \hat{\beta}_p \, \Delta C_p + \hat{\beta}_m \, \Delta C_m, \tag{4}$$

where equation (4) assumes that the effects estimated in the 1870 and 1880 censuses applied in 1920, and that a child who lost both parents experienced the sum of the two effects.

Table B.14 reports the results. Using the matched estimates from Table 4 ($\hat{\beta}_p = -0.029$, $\hat{\beta}_m = -0.026$), the decline in parental death raised full-time schooling among children ages 6–18 by 0.17 percentage points in the persistent scenario, or 0.8 percent of the observed increase. Using the estimates for accidental deaths, the implied increase is 0.33 percentage points, or 1.5 percent of the observed increase. The effects of parental death were concentrated among children ages 12 and older (Tables B.10–B.13), when full-time work was common and the opportunity cost of schooling was high. Among children ages 12–18, full-time schooling rose from 40.5 to 61.5 percent, and the share who had lost a father fell from 14.1 to 10.2 percent under 1880 and 1920 mortality. Using the matched estimates for this age group, the decline in parental death raised full-time schooling by 0.34 percentage points, or 1.6 percent of the observed increase, and 3.0 percent using the estimates for accidental deaths. The contribution is similar for boys and girls (1.3 and 1.9 percent). For boys, more than half of the implied increase reflects the decline in paternal death, whereas for girls, more than half reflects the decline in maternal death.

## 6 Conclusion

This paper examines how death affected surviving household members in the United States in the late nineteenth century. Becoming widowed within the last year increased the rate of formal employment among widows by over 10 percentage points. I show that widows entered certain occupations, with entry largely driven by the former occupation of the deceased husband. Effects are similar in a sample of unanticipated, plausibly random deaths. I examine corresponding effects of spousal death on widowers, finding little impact on formal employment. Given that households in 1870 and 1880 were highly specialized with men as the primary earners, the death of the wife forced other margins of adjustment. In the absence of a social safety net, much of the cost of adult mortality in the historical U.S. fell on children. I find a 3–6 percentage point decline in school enrollment immediately following parental death, with heterogeneous effects on work activities by

gender. The death of the father resulted in children shifting toward market work, particularly older boys, whereas the death of the mother increased housework, primarily for girls. This pattern of results aligns with past research on the division of labor following the loss of a parent (Case et al. 2004; Ainsworth et al. 2005; Guerrero 2025).

The results from this paper imply that efforts to lower adult mortality benefit the next generation's human capital. I use the observed decline in adult mortality to show that 1–2 percent of the observed rise in school enrollment from 1880 to 1920 can be explained by falling child exposure to parental death. There exist important parallels between the historical United States and modern developing countries. In many regions, child labor laws lack strong enforcement, resulting in children who work out of necessity. The share of children ages 6 to 18 working full-time in 1870 and 1880 was nearly 10 percent, comparable to India today (Bau et al. 2025). Simultaneously, while mortality has fallen worldwide over the past 100 years, rates of widowhood are still relatively high in countries like India, Egypt, Nigeria, and Russia (UN DESA 2019). Recent estimates place the number of widowed women at 250 million, many of them due to war and displacement (Chatterjee and Sisodia 2024). When policymakers evaluate present-day investments to lower adult mortality, they should recognize that a portion of the returns will be realized by the next generation.

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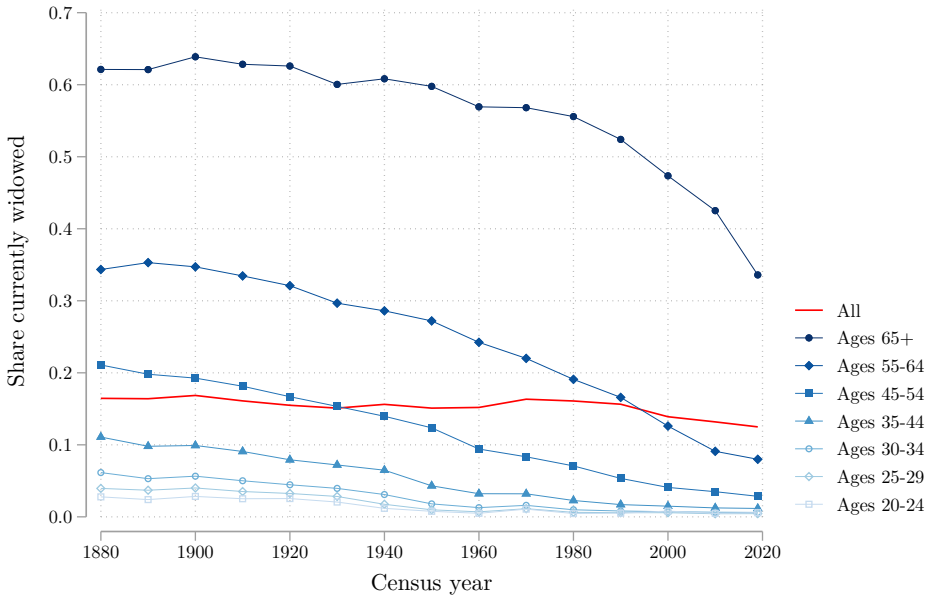
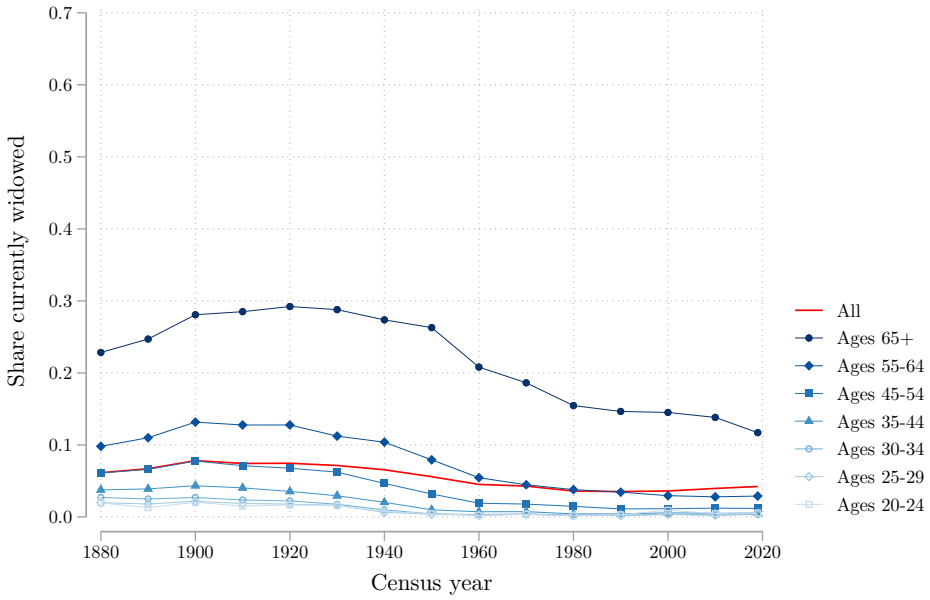
## 7 Figures

Figure 1: Rates of widowhood in the United States

(a) Women



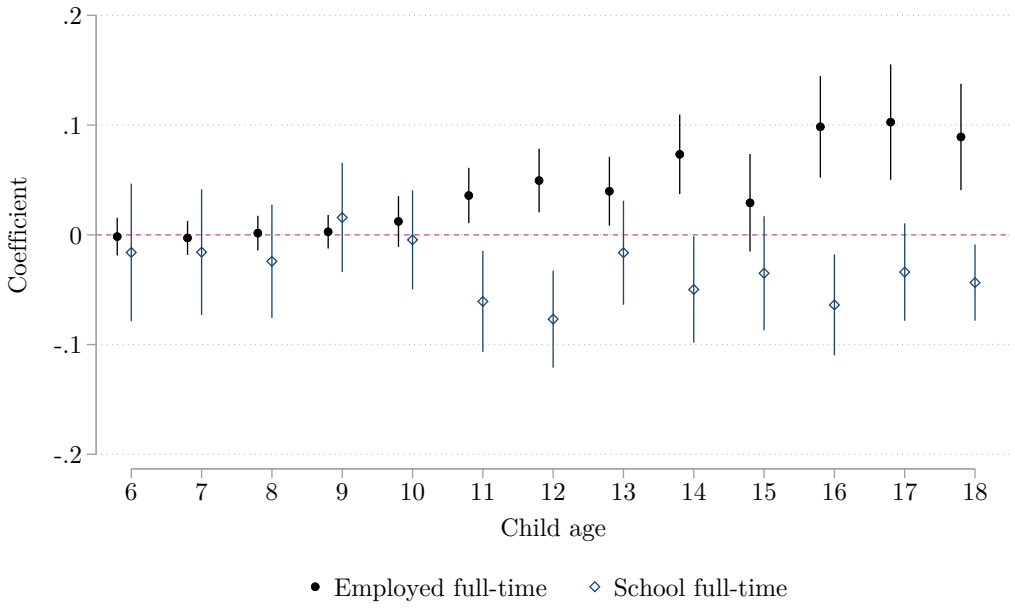

(b) Men



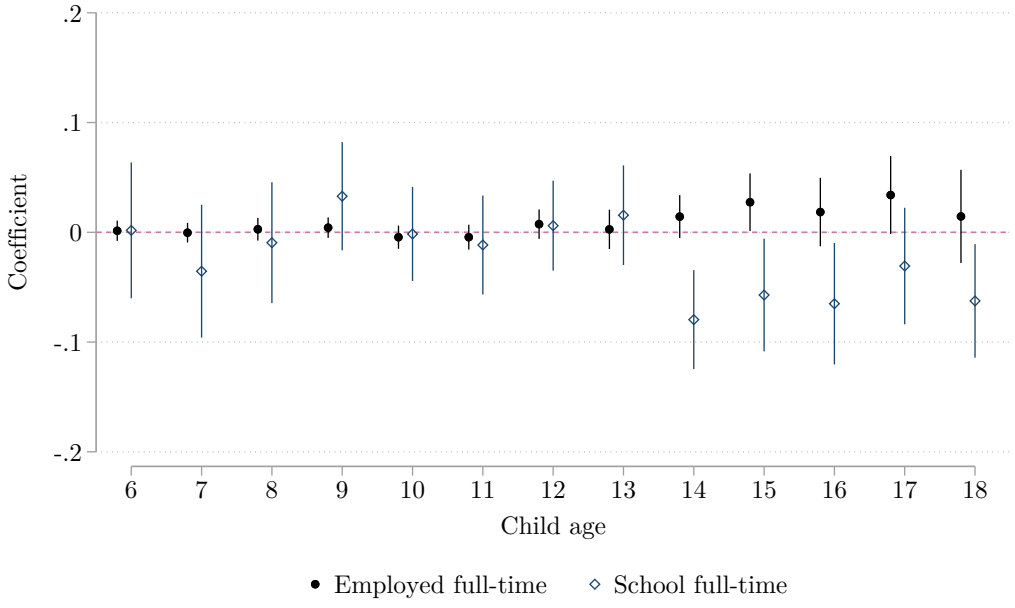

*Notes*: Figure shows rates of widowhood among ever-married (a) women and (b) men from 1880 to 2019. Values for 1880 and 1900–2000 are calculated using IPUMS 1% Census samples. Values for 1890 are calculated using *Historical Statistics of the United States, Millennial Edition* (Carter et al. 2006), Table Aa614–683, "Population, by marital status, sex, and race: 1880–1990." Values for 2010 and 2019 are calculated using the American Community Survey (Ruggles, Flood, et al. 2025).

Figure 2: Effects of paternal death by child gender and age

(a) Boys



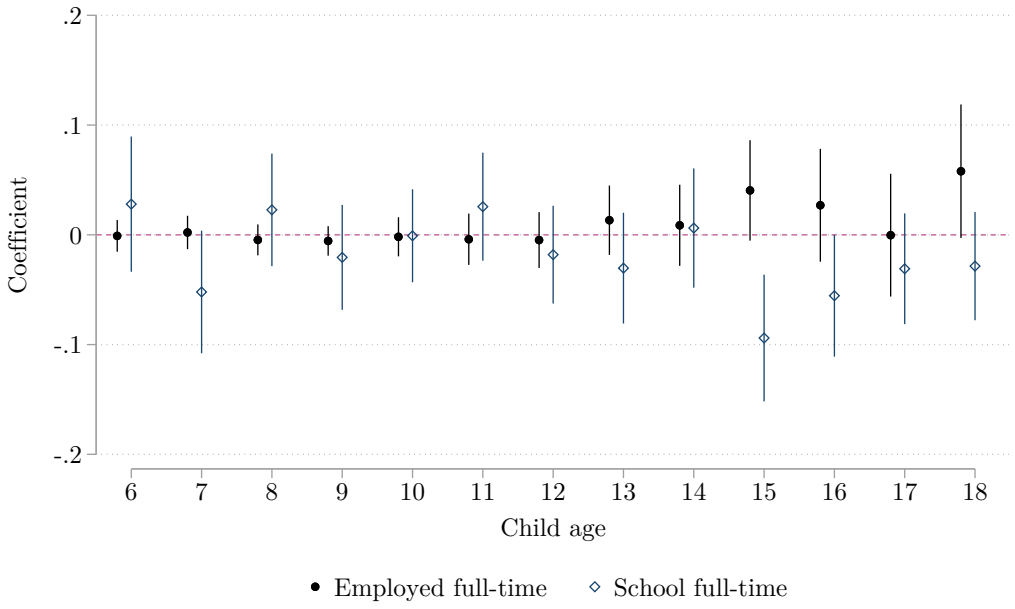

(b) Girls



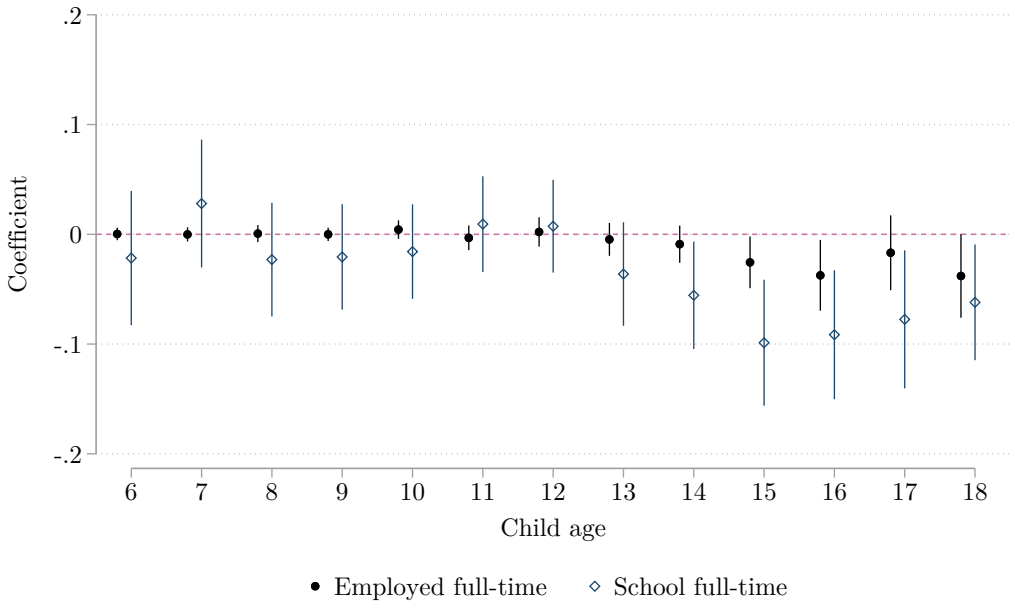

*Notes*: Figure shows coefficients for the impact of paternal death on (a) boys and (b) girls, estimated using the matched sample described in Section 5.1. Coefficients are on an indicator for death of the father interacted with indicators for each age. Outcomes are employment, defined as any gainful occupation and not in school, and full-time schooling, defined as in school with no occupation listed. All regressions use controls and matching weights, with standard errors clustered at the household level. 95 percent confidence intervals are displayed.

Figure 3: Effects of maternal death by child gender and age

(a) Boys




(b) Girls




*Notes*: Figure shows coefficients for the impact of maternal death on (a) boys and (b) girls, estimated using the matched sample described in Section 5.1. Coefficients are on an indicator for death of the mother interacted with indicators for each age. Outcomes are employment, defined as any gainful occupation and not in school, and full-time schooling, defined as in school with no occupation listed. All regressions use controls and matching weights, with standard errors clustered at the household level. 95 percent confidence intervals are displayed.

# 8 Tables

Table 1: Balance table – Widowed and married women

| | Linked census | | Matched sample | |
|---|---|---|---|---|
| | Widowed (1) | Married (2) | Widowed (3) | Married (4) |
| *Panel A: All deaths* | | | | |
| *Targeted in matching* | | | | |
| Age | 44.338 | 41.279 | 44.360 | 44.338 |
| Foreign-born | 0.232 | 0.216 | 0.217 | 0.217 |
| Employed | 0.028 | 0.026 | 0.024 | 0.022 |
| Urban | 0.212 | 0.225 | 0.192 | 0.192 |
| Farm | 0.462 | 0.444 | 0.535 | 0.536 |
| Has children | 0.960 | 0.893 | 0.972 | 0.972 |
| Number of children | 3.748 | 2.978 | 3.832 | 3.751 |
| Husband employed | 0.930 | 0.925 | 0.936 | 0.936 |
| Husband age | 49.661 | 46.433 | 49.606 | 49.494 |
| Household wealth quartile | 2.842 | 2.729 | 2.869 | 2.873 |
| *Not targeted in matching* | | | | |
| Literate | 0.870 | 0.887 | 0.865 | 0.865 |
| Husband foreign-born | 0.254 | 0.240 | 0.242 | 0.234 |
| Husband literate | 0.904 | 0.914 | 0.898 | 0.898 |
| Observations | 10,389 | 3,801,457 | 8,698 | 9,069 |
| *Panel B: Accidental deaths* | | | | |
| *Targeted in matching* | | | | |
| Age | 43.164 | 41.279 | 43.135 | 43.167 |
| Foreign-born | 0.317 | 0.216 | 0.309 | 0.309 |
| Employed | 0.028 | 0.026 | 0.023 | 0.021 |
| Urban | 0.236 | 0.225 | 0.225 | 0.225 |
| Farm | 0.398 | 0.444 | 0.452 | 0.459 |
| Has children | 0.956 | 0.893 | 0.974 | 0.974 |
| Number of children | 3.606 | 2.978 | 3.691 | 3.603 |
| Husband employed | 0.927 | 0.925 | 0.940 | 0.940 |
| Husband age | 47.681 | 46.433 | 47.705 | 47.731 |
| Household wealth quartile | 2.675 | 2.729 | 2.687 | 2.643 |
| *Not targeted in matching* | | | | |
| Literate | 0.845 | 0.887 | 0.823 | 0.848 |
| Husband foreign-born | 0.339 | 0.240 | 0.327 | 0.285 |
| Husband literate | 0.907 | 0.914 | 0.891 | 0.892 |
| Observations | 505 | 3,801,457 | 431 | 460 |

*Notes*: Means for widowed and married women are reported. Columns 1 and 2 report means in the linked censuses (1860–1870 and 1870–1880). Columns 3 and 4 restrict to the matched sample described in Section 3.2. Panel A includes widows experiencing spousal death from all causes. Panel B includes widows experiencing spousal death from accidental causes only. Targeted variables are used in the construction of the matched sample. All variables are measured in the census prior to widowhood except age, which is measured at the time of widowhood.

Table 2: Effects of recent spousal death on widows' employment

| | Outcome: Employed | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| *Panel A: All occupations* | | | |
| Widowed in the last year | 0.110*** | 0.111*** | 0.095*** |
| | (0.004) | (0.004) | (0.019) |
| Control mean | 0.020 | 0.018 | 0.024 |
| *Panel B: High-skilled* | | | |
| Widowed in the last year | 0.021*** | 0.019*** | 0.015* |
| | (0.002) | (0.002) | (0.008) |
| Control mean | 0.003 | 0.002 | 0.002 |
| *Panel C: Semi-skilled* | | | |
| Widowed in the last year | 0.013*** | 0.012*** | 0.021** |
| | (0.001) | (0.002) | (0.009) |
| Control mean | 0.004 | 0.004 | 0.007 |
| *Panel D: Low-skilled* | | | |
| Widowed in the last year | 0.016*** | 0.015*** | 0.012 |
| | (0.002) | (0.002) | (0.009) |
| Control mean | 0.012 | 0.012 | 0.013 |
| *Panel E: Farmers* | | | |
| Widowed in the last year | 0.060*** | 0.065*** | 0.047*** |
| | (0.003) | (0.004) | (0.011) |
| Control mean | 0.001 | 0.001 | 0.002 |
| *Panel F: Husband's occupation* | | | |
| Widowed in the last year | 0.054*** | 0.062*** | 0.028*** |
| | (0.003) | (0.003) | (0.009) |
| Control mean | 0.002 | 0.001 | 0.004 |
| Observations | 3,811,846 | 17,767 | 891 |
| Controls | N | Y | Y |
| Matching weights | N | Y | Y |
| Accidental deaths only | N | N | Y |

*Notes*: Table reports estimates of equation (1). The outcome is any employment, defined as any gainful occupation. Column 1 reports results using the full linked censuses. Column 2 adds controls and matching weights, restricting the sample to the matched widows sample described in Section 3.2. Column 3 restricts the matched sample to accidental deaths only. Panel A reports the effect of widowhood on employment in all occupations. Panels B–E report the effect of widowhood on employment in high-skilled, semi-skilled, low-skilled, and farming occupations. Panel F reports the effect of widowhood on employment in the same occupation as the deceased husband. Standard errors clustered at the county level in parentheses. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table 3: Balance table – Children with deceased and living fathers

| | Linked census | | Matched sample | |
|---|---|---|---|---|
| | Father deceased (1) | Father alive (2) | Father deceased (3) | Father alive (4) |
| *Panel A: All deaths* | | | | |
| *Targeted in matching* | | | | |
| Female | 0.486 | 0.489 | 0.481 | 0.481 |
| Age | 12.299 | 11.749 | 12.345 | 12.345 |
| Mother age | 43.041 | 40.611 | 42.973 | 42.931 |
| Mother foreign-born | 0.267 | 0.239 | 0.227 | 0.227 |
| Mother employed | 0.028 | 0.025 | 0.026 | 0.023 |
| Urban | 0.197 | 0.199 | 0.142 | 0.142 |
| Farm | 0.483 | 0.478 | 0.675 | 0.675 |
| Number of siblings | 3.319 | 2.660 | 3.426 | 3.365 |
| Father employed | 0.933 | 0.927 | 0.950 | 0.950 |
| Father age | 48.390 | 45.862 | 48.112 | 48.034 |
| Household wealth quartile | 2.775 | 2.704 | 2.866 | 2.874 |
| *Not targeted in matching* | | | | |
| Mother literate | 0.848 | 0.868 | 0.838 | 0.837 |
| Father foreign-born | 0.293 | 0.267 | 0.253 | 0.250 |
| Father literate | 0.889 | 0.901 | 0.880 | 0.880 |
| Observations | 25,925 | 9,370,638 | 15,754 | 15,843 |
| *Panel B: Accidental deaths* | | | | |
| *Targeted in matching* | | | | |
| Female | 0.507 | 0.489 | 0.491 | 0.491 |
| Age | 11.997 | 11.749 | 11.954 | 11.954 |
| Mother age | 42.491 | 40.611 | 42.207 | 42.059 |
| Mother foreign-born | 0.357 | 0.239 | 0.317 | 0.317 |
| Mother employed | 0.030 | 0.025 | 0.031 | 0.022 |
| Urban | 0.214 | 0.199 | 0.203 | 0.203 |
| Farm | 0.427 | 0.478 | 0.567 | 0.572 |
| Number of siblings | 3.170 | 2.660 | 3.204 | 3.169 |
| Father employed | 0.928 | 0.927 | 0.965 | 0.965 |
| Father age | 47.115 | 45.862 | 47.056 | 46.769 |
| Household wealth quartile | 2.591 | 2.704 | 2.651 | 2.664 |
| *Not targeted in matching* | | | | |
| Mother literate | 0.811 | 0.868 | 0.785 | 0.800 |
| Father foreign-born | 0.381 | 0.267 | 0.357 | 0.336 |
| Father literate | 0.893 | 0.901 | 0.865 | 0.885 |
| Observations | 1,334 | 9,370,638 | 846 | 852 |

*Notes*: Means for children with deceased and living fathers are reported. Columns 1 and 2 report means in the linked censuses (1860–1870 and 1870–1880). Columns 3 and 4 restrict to the matched sample described in Section 5.1. Panel A includes children experiencing paternal death from all causes. Panel B includes children experiencing paternal death from accidental causes only. Targeted variables are used in the construction of the matched sample. All variables are measured in the census prior to paternal death except gender and age, which are measured at the time of paternal death.

Table 4: Effects of parental death on children

| | Father died | | | Mother died | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *Panel A: School full-time* | | | | | | |
| Parent died in the last year | −0.054*** | −0.029*** | −0.063*** | −0.038*** | −0.026*** | −0.041** |
| | (0.004) | (0.006) | (0.021) | (0.005) | (0.006) | (0.016) |
| Control mean | 0.592 | 0.564 | 0.589 | 0.598 | 0.591 | 0.616 |
| *Panel B: Work full-time* | | | | | | |
| Parent died in the last year | 0.040*** | 0.028*** | 0.043*** | −0.001 | −0.000 | 0.010 |
| | (0.002) | (0.003) | (0.014) | (0.002) | (0.003) | (0.007) |
| Control mean | 0.084 | 0.094 | 0.094 | 0.080 | 0.075 | 0.054 |
| *Panel C: Work and school* | | | | | | |
| Parent died in the last year | 0.013*** | −0.000 | 0.008 | 0.011*** | 0.001 | 0.001 |
| | (0.002) | (0.003) | (0.013) | (0.002) | (0.003) | (0.009) |
| Control mean | 0.058 | 0.084 | 0.085 | 0.056 | 0.076 | 0.072 |
| *Panel D: Housework* | | | | | | |
| Parent died in the last year | −0.001 | −0.002 | 0.004 | 0.077*** | 0.079*** | 0.082*** |
| | (0.001) | (0.001) | (0.004) | (0.002) | (0.002) | (0.005) |
| Control mean | 0.010 | 0.012 | 0.007 | 0.010 | 0.009 | 0.006 |
| Observations | 9,396,563 | 31,597 | 1,698 | 8,729,675 | 29,010 | 3,416 |
| Controls | N | Y | Y | N | Y | Y |
| Matching weights | N | Y | Y | N | Y | Y |
| Accidental deaths only | N | N | Y | N | N | Y |

*Notes*: Table reports estimates of equation (3). Parent died is an indicator for whether the father (columns 1–3) or mother (columns 4–6) died within the past year. Columns 1 and 4 report results in the linked censuses (1860–1870 and 1870–1880). Columns 2 and 5 add controls and matching weights, restricting the sample to the matched child samples described in Section 5.1. Columns 3 and 6 restrict the matched sample to accidental deaths only. Panel A reports results for full-time schooling, defined as in school with no occupation listed. Panel B reports results for full-time work, defined as any gainful occupation and not in school. Panel C reports results for an indicator that the child is both at work and in school. Panel D reports results for whether a child's occupation code falls under housework. Standard errors clustered at the household level in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

# A Data Appendix

## A.1 Censuses of mortality

The censuses of mortality have been digitized and are freely available to researchers via IPUMS. The records contain sex, race, age, nativity, marital status, birthplace, cause of death, month of death, county, and occupation (though this field is mostly missing). Cause of death strings are categorized according to the International List of Causes of Death, revision 2 (ILCD-2 1909). I group these codes into broad categories:

- *Infectious disease* (ILCD-2 codes 1–35), e.g., tuberculosis, typhoid fever, measles, influenza
- *Nervous system* (ILCD-2 codes 60–76), e.g., meningitis, encephalitis, epilepsy, apoplexy
- *Circulatory system* (ILCD-2 codes 77–86), e.g., pericarditis, endocarditis, myocarditis, angina
- *Respiratory system* (ILCD-2 codes 87–98), e.g., pneumonia, bronchitis, pleurisy, asthma
- *Digestive system* (ILCD-2 codes 99–118), e.g., diarrhea, gastroenteritis, cirrhosis, ulcer
- *Other general* (ILCD-2 codes 36–59, 119–133, 142–154), e.g., cancer, diabetes, alcoholism
- *Maternal/childbirth* (ILCD-2 codes 134–141), e.g., hemorrhage, premature birth
- *Violent/external* (ILCD-2 codes 155–186), e.g., accidents, suicide, homicide
- *Unclassified/unknown* (ILCD-2 codes 187–199, 999)

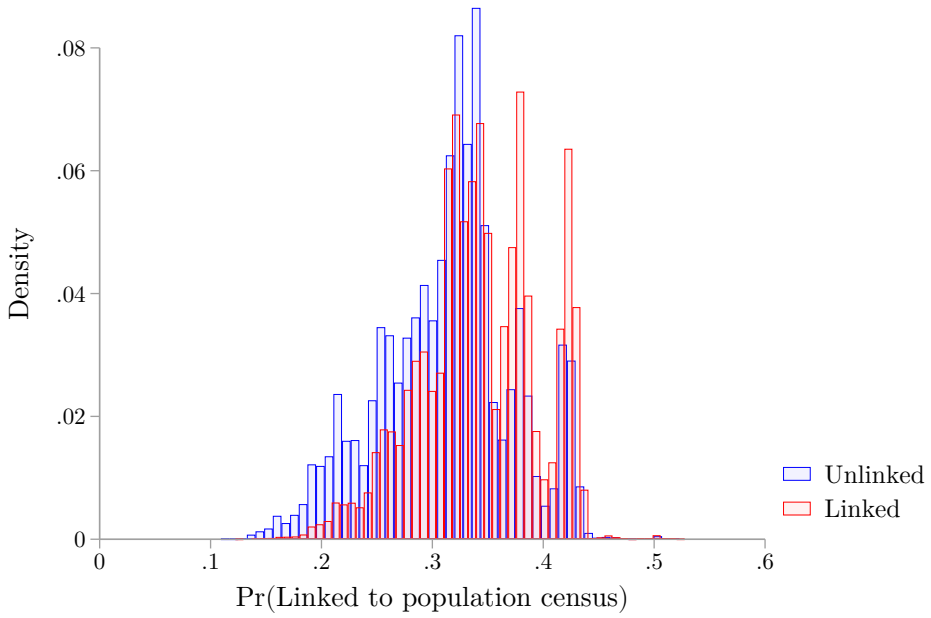
I also identify plausibly accidental deaths (ILCD-2 codes in parentheses): poisoning (164–165), burns (167), asphyxiation (168), drowning (169), firearms (170), fall (172), occupational injury (173–175), injury from animals (176), hypothermia (178), heat stroke (179), lightning/electricity (180–181), fractures (185), and other acts of violence excluding suicides (186). Deaths related to childbirth are coded as accidental.

The task of linking the mortality census to the population census, undertaken by Hacker et al. (2025), was met with several challenges. For instance, many families with the same surname living in close proximity make it difficult to pinpoint the family that the deceased belonged to. However, the presence of family numbers starting in 1870 makes the linking task feasible for 1870 and 1880. See Hacker et al. (2025) for a complete description of the linking process. Statistics for the full and linked mortality records are reported in Table A.1. I report statistics for the full mortality census (column 1) and the linked sample (column 2). The linked individuals are more likely to be native-born and rural. Causes of death look similar in the full and linked populations. I additionally report statistics for two subgroups: married men aged 16+ (columns 4–6) and married women aged 16+ (columns 7–9). The sample in column 5, married men over age 16 who are linked to a household in the population census, forms the basis for identification of widows. Similarly, the sample in column 8 forms the basis for the identification of widowers.

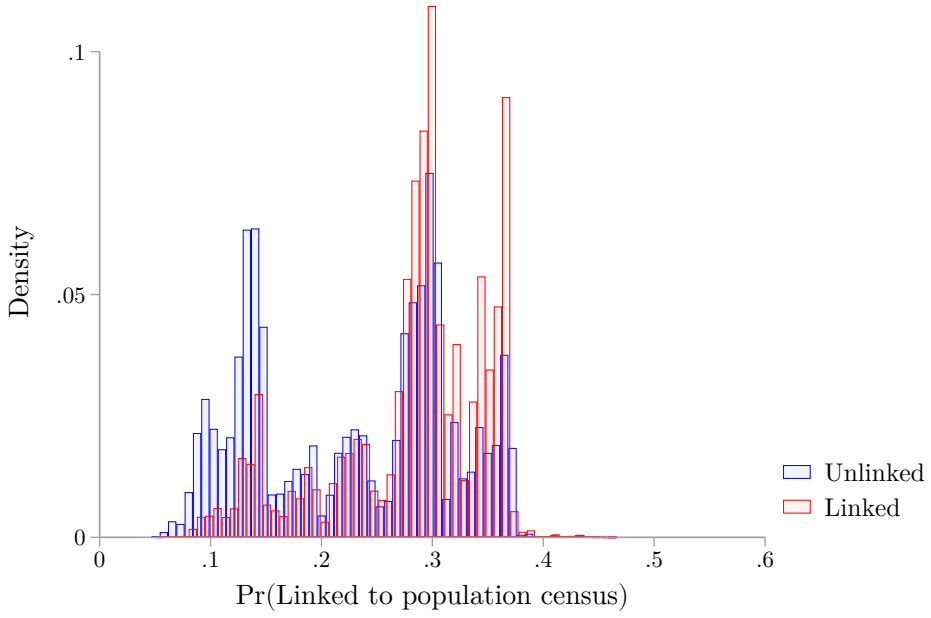
The link from the mortality census to the population census is not complete, resulting in linkage rates of 50 percent and 34 percent in 1870 and 1880, respectively. One approach to improve representativeness of the linked sample is to construct inverse propensity score weights based on observable characteristics, effectively reweighting the linked sample to look like the full population (Bailey et al. 2020). To construct the weights, I estimate a probit that predicts linkage to the population census using gender, race, nativity, marital status, age, region, urbanicity, cause of death, and the interaction of race with gender, age, and region. I report the distribution of propensity scores in Figure A.1. The propensity score distributions for the 1870 and 1880 censuses show strong overlap between the linked and unlinked populations. In Table A.1, I report the inverse propensity score weighted sample means in columns 3, 6, and 9, where propensity scores are estimated separately for each subgroup. Characteristics of the linked sample look highly similar to those of the full population after reweighting.

Figure A.1: Censuses of mortality – Propensity to link to the population census

(a) 1870 mortality census




(b) 1880 mortality census




*Notes*: Figure shows the distribution of estimated propensity scores in 1870 (a) and 1880 (b). Propensity scores represent the probability that an observation in the mortality census appears in the sample linked to the population census, estimated using observable characteristics: gender, race, nativity, marital status, age, region, urbanicity, cause of death, and the interaction of race with gender, age, and region. Unlinked (linked) observations are shown in blue (red).

Table A.1: Censuses of mortality – Descriptive statistics

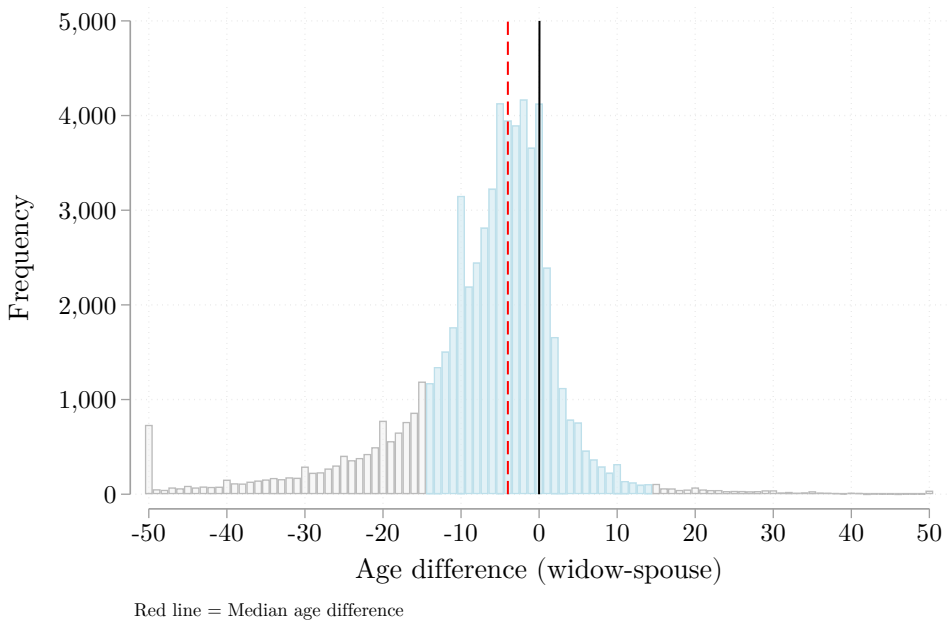
| | | | | Married men aged 16+ | | | Married women aged 16+ | | |
|---|---|---|---|---|---|---|---|---|---|
| | Full | Linked | Linked weighted | Full | Linked | Linked weighted | Full | Linked | Linked weighted |
| *Year: 1870* | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Age | 24.808 | 22.736 | 24.740 | 51.576 | 52.175 | 51.649 | 42.398 | 42.909 | 42.465 |
| Urban | 0.360 | 0.298 | 0.356 | 0.317 | 0.284 | 0.318 | 0.273 | 0.222 | 0.272 |
| Black | 0.145 | 0.130 | 0.146 | 0.106 | 0.091 | 0.106 | 0.122 | 0.108 | 0.123 |
| Foreign-born | 0.136 | 0.104 | 0.132 | 0.275 | 0.254 | 0.274 | 0.224 | 0.199 | 0.222 |
| Female | 0.468 | 0.467 | 0.469 | - | - | - | - | - | - |
| Married | 0.261 | 0.282 | 0.265 | - | - | - | - | - | - |
| Widowed | 0.082 | 0.061 | 0.083 | - | - | - | - | - | - |
| *Cause of death* | | | | | | | | | |
| Infectious disease | 0.356 | 0.373 | 0.357 | 0.332 | 0.338 | 0.333 | 0.378 | 0.384 | 0.379 |
| Nervous system | 0.117 | 0.119 | 0.117 | 0.093 | 0.094 | 0.093 | 0.072 | 0.072 | 0.072 |
| Circulatory system | 0.031 | 0.031 | 0.031 | 0.059 | 0.064 | 0.059 | 0.053 | 0.057 | 0.053 |
| Respiratory system | 0.104 | 0.099 | 0.104 | 0.134 | 0.130 | 0.134 | 0.104 | 0.099 | 0.104 |
| Digestive system | 0.106 | 0.111 | 0.106 | 0.064 | 0.066 | 0.064 | 0.062 | 0.062 | 0.061 |
| Other general | 0.083 | 0.068 | 0.082 | 0.097 | 0.091 | 0.097 | 0.086 | 0.080 | 0.086 |
| Maternal/childbirth | 0.014 | 0.015 | 0.014 | 0.001 | 0.001 | 0.001 | 0.087 | 0.091 | 0.088 |
| Violent/external | 0.042 | 0.037 | 0.042 | 0.065 | 0.061 | 0.065 | 0.014 | 0.011 | 0.014 |
| Unclassified/unknown | 0.147 | 0.146 | 0.147 | 0.154 | 0.155 | 0.154 | 0.143 | 0.144 | 0.143 |
| Linkage rate | 0.499 | | | 0.549 | | | 0.530 | | |
| Observations | 418,444 | 208,858 | 208,858 | 58,581 | 32,132 | 32,132 | 49,314 | 26,139 | 26,139 |
| *Year: 1880* | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Age | 26.056 | 23.975 | 25.958 | 53.037 | 54.535 | 53.104 | 43.200 | 43.236 | 43.205 |
| Urban | 0.313 | 0.144 | 0.304 | 0.291 | 0.155 | 0.287 | 0.261 | 0.120 | 0.254 |
| Black | 0.154 | 0.160 | 0.155 | 0.117 | 0.114 | 0.119 | 0.135 | 0.138 | 0.137 |
| Foreign-born | 0.116 | 0.081 | 0.108 | 0.260 | 0.217 | 0.251 | 0.198 | 0.157 | 0.185 |
| Female | 0.480 | 0.477 | 0.479 | - | - | - | - | - | - |
| Married | 0.286 | 0.302 | 0.293 | - | - | - | - | - | - |
| Widowed | 0.086 | 0.064 | 0.086 | - | - | - | - | - | - |
| *Cause of death* | | | | | | | | | |
| Infectious disease | 0.339 | 0.364 | 0.346 | 0.278 | 0.278 | 0.280 | 0.344 | 0.349 | 0.345 |
| Nervous system | 0.115 | 0.116 | 0.116 | 0.106 | 0.107 | 0.106 | 0.080 | 0.081 | 0.080 |
| Circulatory system | 0.037 | 0.035 | 0.037 | 0.072 | 0.073 | 0.071 | 0.062 | 0.063 | 0.062 |
| Respiratory system | 0.114 | 0.111 | 0.113 | 0.155 | 0.159 | 0.154 | 0.117 | 0.116 | 0.117 |
| Digestive system | 0.094 | 0.090 | 0.092 | 0.068 | 0.066 | 0.067 | 0.062 | 0.057 | 0.061 |
| Other general | 0.128 | 0.109 | 0.122 | 0.133 | 0.128 | 0.130 | 0.116 | 0.102 | 0.112 |
| Maternal/childbirth | 0.017 | 0.018 | 0.018 | 0.001 | 0.001 | 0.001 | 0.089 | 0.097 | 0.092 |
| Violent/external | 0.040 | 0.035 | 0.039 | 0.060 | 0.056 | 0.061 | 0.014 | 0.011 | 0.014 |
| Unclassified/unknown | 0.116 | 0.122 | 0.117 | 0.128 | 0.132 | 0.130 | 0.117 | 0.123 | 0.118 |
| Linkage rate | 0.344 | | | 0.370 | | | 0.359 | | |
| Observations | 725,699 | 249,680 | 249,680 | 106,808 | 39,570 | 39,570 | 98,388 | 35,312 | 35,312 |

*Notes*: Table reports statistics calculated using the 1870 and 1880 mortality censuses. Column 1 reports the mean of each variable in the full census. Column 2 reports means in the unweighted linked sample. Column 3 reports means in the linked sample, reweighted to match the full census. Columns 4–6 restrict the sample to married men aged 16+. Columns 7–9 restrict the sample to married women aged 16+.

## A.2 Identifying widows

The process for identifying widows begins with the sample of married men aged 16 or older linked to a household in the population census (column 5 in Appendix Table A.1). I start by identifying all women aged 16 or older. This identifies a unique woman in 30 percent of cases. When more than one woman fits this description, I use the woman closest in age to the deceased. In the case of a tie, the lowest person number is chosen. Finally, the age distribution of widows is presented in Figure A.2. I limit the final sample of widows to women within 15 years of the deceased's age (colored in blue). Widowers are identified using the same approach with deceased married women in the mortality censuses.

Figure A.2: Age differences of widows and deceased husbands




*Notes*: Figure shows the distribution of age differences for widows and their deceased husbands, calculated using the 1870 and 1880 mortality censuses. Colored in blue are the women within 15 years of their husband's age.

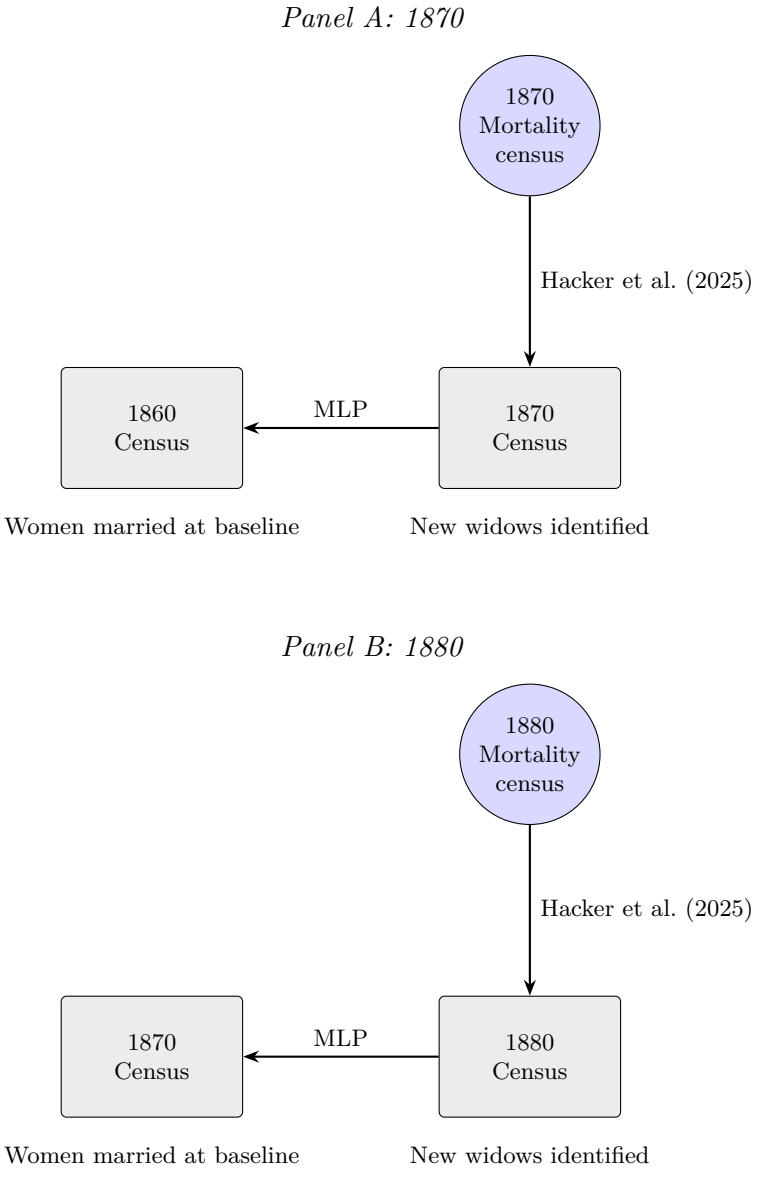
## A.3 Sample construction

I use the combined mortality and population censuses to construct a matched sample of widowed and married women. To do this, it is necessary to observe characteristics of all women prior to the widowhood event. Several linking projects facilitate this process. For the main analysis sample, I use the IPUMS Multigenerational Longitudinal Panel (MLP) links for 1860–1870 and 1870–1880 (Ruggles, Ozder, et al. 2025). All women, including new widows in 1870, are linked backward to 1860, when they were still married. Similarly, women in 1880 are linked backward to 1870. See Figure A.3 for an illustration.

Before implementing the matching procedure, I restrict the linked MLP sample in several ways. I restrict the sample to women who were married in the baseline (pre-widowhood) census. Although the MLP links have information on maiden names, restricting to married women improves the likelihood that women do not change names between census years. This restriction removes selection into marriage as a confounding factor for the effects of widowhood. While useful, this restriction drops recently married, relatively younger women. The effects of widowhood estimated

here can be interpreted as effects for women who have been married for at least 10 years. I restrict the sample to white women ages 25 to 55 at the time widowhood is measured. The lower age restriction of 25 is not binding in most cases due to the restriction on marriage at baseline. In order for this to be binding, a woman widowed in 1870 would have to show up as married in 1860 at age 15 or younger, which was unlikely. The upper age restriction of 55 limits the analysis to women of prime working age. Black women made up 9 percent of widowed women and are studied as a separate group. Finally, I require that all women in the comparison group be married at the time widowhood is measured. Women widowed, separated, or divorced since the last census are excluded from the comparison group.

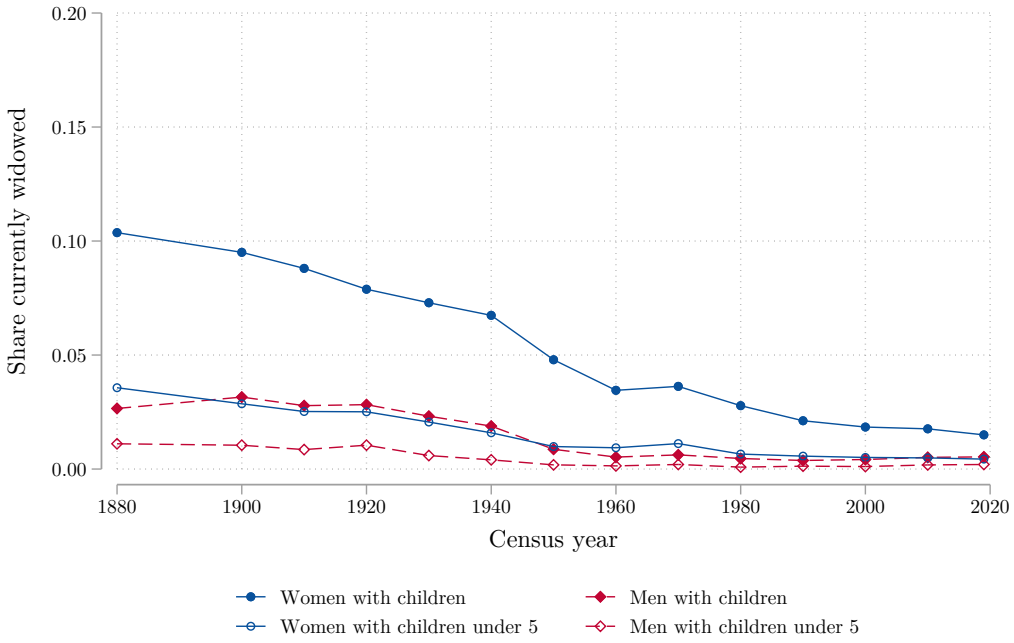
Figure A.3: Census linking procedure




*Notes*: See Hacker et al. (2025) for details on the linkage from the mortality census to the population census. See Ruggles, Ozder, et al. (2025) for details on the MLP linkage across census years.

# B Appendix Figures and Tables

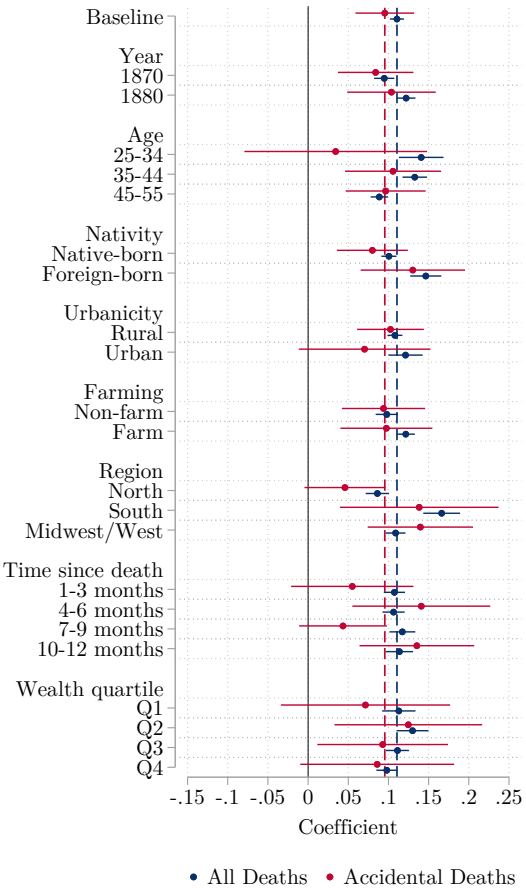
Figure B.1: Share of parents aged 25–55 and currently widowed




*Notes*: Figure shows the share of parents ages 25–55 currently widowed. Shares are displayed for women and men with any children and with any children under age 5. Values for 1880 and 1900–2000 are calculated using IPUMS 1% Census samples. Values for 2010 and 2019 are calculated using the American Community Survey (Ruggles, Flood, et al. 2025).

Figure B.2: Effects of spousal death on widows – Heterogeneity

(a) Employed




(b) High-skilled occupation

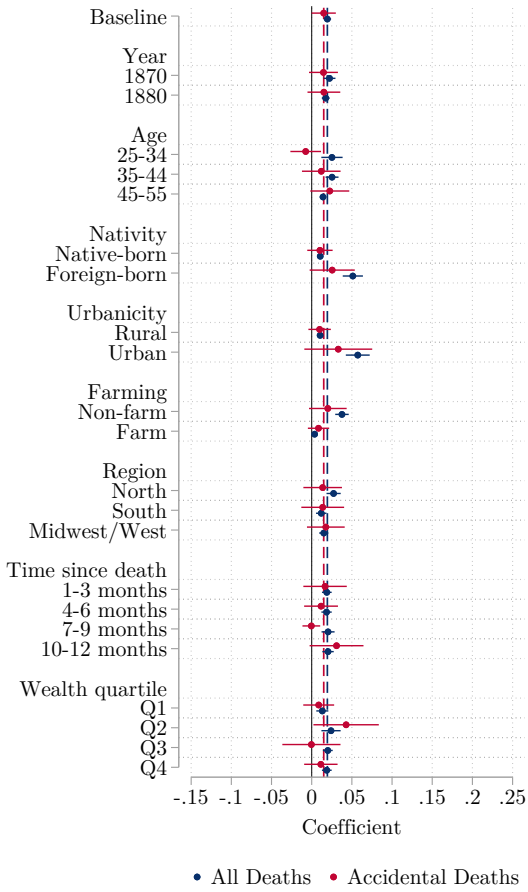
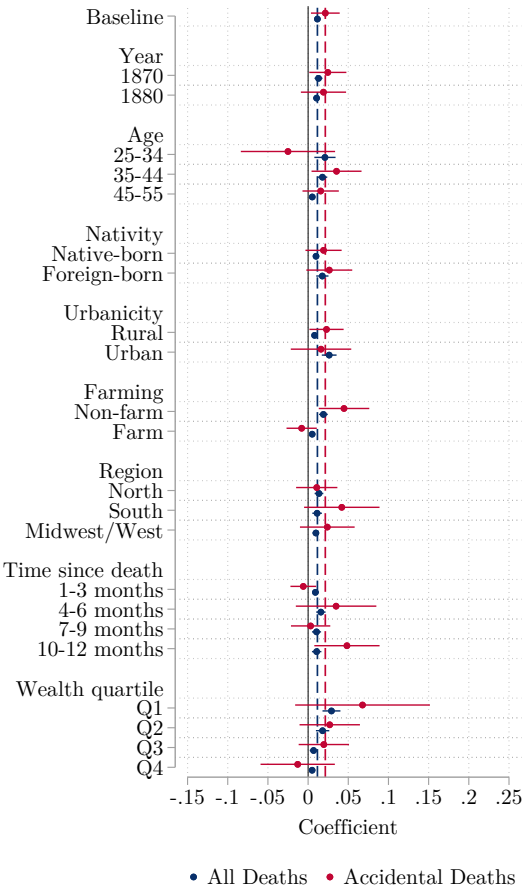


Figure B.2 (continued)

(c) Semi-skilled occupation




(d) Low-skilled occupation

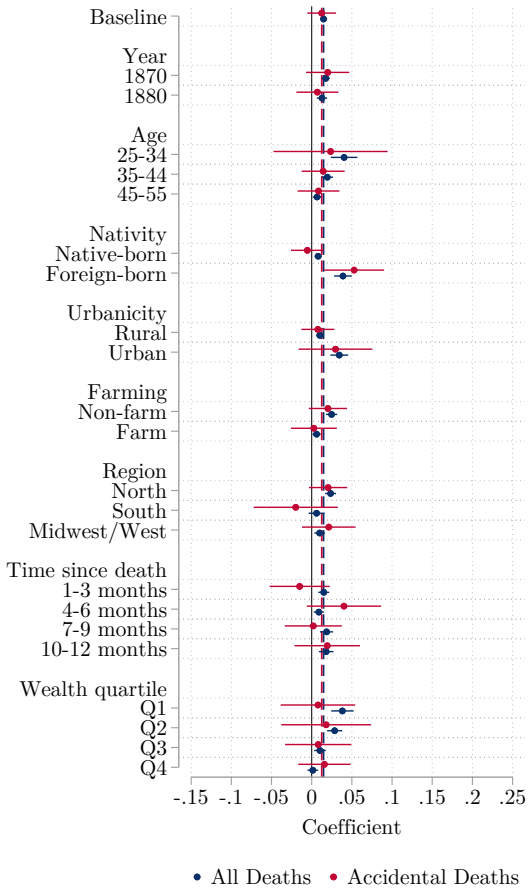
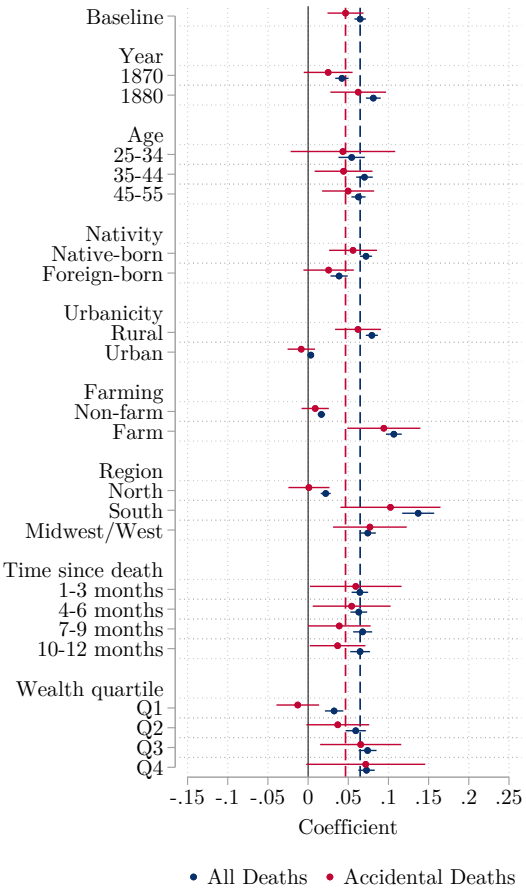
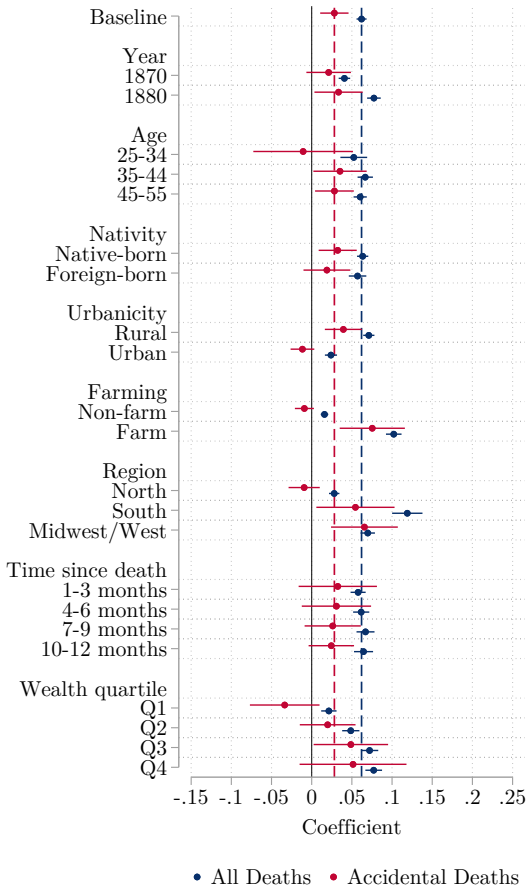


Figure B.2 (continued)

(e) Farming occupation




(f) Husband's occupation




*Notes*: Figures show coefficients for the impact of widowhood on outcomes for widows, estimated using the matched sample described in Section 3.2. Coefficients are from separate regressions using an indicator for widowed interacted with each characteristic. All regressions use controls and matching weights, with standard errors clustered at the county level. 95 percent confidence intervals are shown. Navy markers show estimates from the full matched sample; red markers show estimates from the sample matched on accidental deaths. Dashed lines indicate the corresponding baseline estimates in Table 2.

Table B.1: Predictors of widowhood in 1880

| | Women | | Men | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Characteristics, 1880* | | | | |
| Black | 0.010*** | 0.001 | 0.008*** | 0.007*** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Age/10 | 0.037*** | 0.003*** | 0.012*** | 0.012*** |
| | (0.001) | (0.001) | (0.000) | (0.000) |
| Foreign-born | 0.002** | 0.001 | 0.001** | 0.000 |
| | (0.001) | (0.001) | (0.000) | (0.000) |
| Literate | −0.019*** | −0.016*** | −0.001*** | −0.000 |
| | (0.001) | (0.001) | (0.000) | (0.000) |
| Urban | 0.027*** | 0.027*** | −0.001 | −0.001* |
| | (0.002) | (0.001) | (0.001) | (0.000) |
| Number of children | −0.004*** | −0.004*** | −0.003*** | −0.003*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| *Spouse characteristics, 1870* | | | | |
| Age/10 | | 0.037*** | | 0.000 |
| | | (0.000) | | (0.000) |
| Foreign-born | | 0.001 | | 0.001 |
| | | (0.001) | | (0.000) |
| Literate | | −0.004*** | | −0.003*** |
| | | (0.001) | | (0.000) |
| *Spouse occ. skill level, 1870* | | | | |
| High-skilled | | −0.006*** | | 0.001 |
| | | (0.001) | | (0.002) |
| Semi-skilled | | −0.006*** | | −0.003** |
| | | (0.001) | | (0.002) |
| Low-skilled | | −0.006*** | | −0.004*** |
| | | (0.001) | | (0.001) |
| Farming | | −0.005*** | | −0.004 |
| | | (0.001) | | (0.003) |
| *Household wealth, 1870* | | | | |
| Second quartile | | −0.002*** | | 0.000 |
| | | (0.001) | | (0.000) |
| Third quartile | | −0.007*** | | −0.001*** |
| | | (0.001) | | (0.000) |
| Top quartile | | −0.009*** | | −0.002*** |
| | | (0.001) | | (0.000) |
| Mean Y | 0.06 | 0.06 | 0.03 | 0.03 |
| Observations | 2,623,483 | 2,623,483 | 2,252,742 | 2,252,742 |

*Notes*: Table reports predictors of widowhood among women (columns 1 and 2) and men (columns 3 and 4) in the 1880 population census. Columns 1 and 3 report estimates from a linear probability model with individual characteristics. Columns 2 and 4 report estimates adding spouse and household characteristics. Sample is restricted to individuals linked from 1870 to 1880, aged 25–55 in 1880, and married in 1870. Widowhood is measured using self-reported marital status in 1880. Reference categories for spouse's occupation skill level and household wealth are no occupation and bottom quartile. Mean Y reports the share widowed. Standard errors clustered at the county level in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Table B.2: Entrance of widows into their husband's occupation

| | Share of skill group (1) | Share of widows entering (2) |
|---|---|---|
| *Panel A: Occupations of deceased husbands* | | |
| *High-skilled* | | |
| Bakers | 0.010 | 0.231 |
| Managers | 0.257 | 0.096 |
| Tailors and related workers | 0.079 | 0.043 |
| Blacksmiths and machinists | 0.098 | 0.004 |
| Bricklayers, carpenters, and related construction workers | 0.202 | 0.000 |
| *Semi-skilled* | | |
| Butchers | 0.050 | 0.020 |
| Operatives and kindred workers, n.e.c. | 0.443 | 0.016 |
| Miners and related workers | 0.134 | 0.000 |
| Sales workers and shop assistants | 0.123 | 0.000 |
| Truck drivers | 0.074 | 0.000 |
| *Low-skilled* | | |
| Building managers and proprietors | 0.005 | 0.167 |
| Service workers, n.e.c. | 0.008 | 0.100 |
| Hairdressers | 0.008 | 0.100 |
| Operatives and kindred workers, n.e.c. | 0.581 | 0.018 |
| Farm laborers | 0.302 | 0.003 |
| *Farming* | | |
| Farmers and farm managers | 1.000 | 0.108 |
| *Panel B: Accidental deaths only* | | |
| *High-skilled* | | |
| Bricklayers, carpenters, and related construction workers | 0.393 | 0.000 |
| Managers | 0.179 | 0.000 |
| Blacksmiths and machinists | 0.120 | 0.000 |
| Tailors and related workers | 0.051 | 0.000 |
| Craftsmen and kindred workers, n.e.c. | 0.043 | 0.000 |
| *Semi-skilled* | | |
| Operatives and kindred workers, n.e.c. | 0.391 | 0.000 |
| Miners and related workers | 0.375 | 0.000 |
| Truck drivers | 0.078 | 0.000 |
| Sawyers and lumber inspectors | 0.047 | 0.000 |
| Mass transportation operators | 0.031 | 0.000 |
| *Low-skilled* | | |
| Operatives and kindred workers, n.e.c. | 0.724 | 0.032 |
| Farm laborers | 0.172 | 0.000 |
| Fishermen | 0.046 | 0.000 |
| Forestry workers | 0.034 | 0.000 |
| Gardeners | 0.011 | 0.000 |
| *Farming* | | |
| Farmers and farm managers | 1.000 | 0.110 |

*Notes*: Table reports the occupations of deceased husbands in the matched sample of widows described in Section 3.2. Occupations are categorized into micro-occupational groups following Song et al. (2020). Column 1 reports the occupation's share of the corresponding skill group. Column 2 reports the share of widows entering the deceased husband's occupation. Only the top five occupation groups are reported, sorted first by column 2 and then by column 1. Panel A reports shares for all deaths in the matched sample. Panel B reports shares for accidental deaths only.

Table B.3: Descriptive statistics of deceased husbands

| | Linked deaths (1) | Linked to widow (2) | Matched sample (3) |
|---|---|---|---|
| *Demographics* | | | |
| Black | 0.104 | 0.090 | 0.002 |
| Foreign-born | 0.233 | 0.240 | 0.238 |
| Age at death | 53.475 | 51.608 | 49.207 |
| *Cause of death* | | | |
| Infectious disease | 0.305 | 0.316 | 0.340 |
| Nervous system | 0.101 | 0.099 | 0.092 |
| Circulatory system | 0.069 | 0.068 | 0.057 |
| Respiratory system | 0.146 | 0.142 | 0.149 |
| Digestive system | 0.066 | 0.068 | 0.078 |
| Other general | 0.112 | 0.104 | 0.088 |
| Maternal/childbirth | 0.001 | 0.001 | 0.000 |
| Violent/external | 0.058 | 0.061 | 0.066 |
| Unclassified/unknown | 0.142 | 0.140 | 0.130 |
| Observations | 71,702 | 52,423 | 8,698 |

*Notes*: Table reports descriptive statistics of deceased husbands. Column 1 reports means for deaths of married men aged 16 and up in the linked mortality census. Column 2 reports deaths linked to an identifiable widow between the ages of 16 and 55. Column 3 reports deaths in the matched widows sample in Section 3.2.

Table B.4: Placebo estimates – Widows

| | Outcome in 1870 | | | | | |
|---|---|---|---|---|---|---|
| | Employed | High-skill | Semi-skill | Low-skill | Farming | Husband occ. |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Widowed in 1880 | −0.001 | −0.001 | −0.000 | −0.001 | 0.001 | 0.002 |
| | (0.003) | (0.001) | (0.001) | (0.003) | (0.001) | (0.001) |
| Control mean | 0.012 | 0.002 | 0.002 | 0.006 | 0.002 | 0.002 |
| Observations | 4,862 | 4,862 | 4,862 | 4,862 | 4,862 | 4,862 |

*Notes*: Table reports placebo estimates for the effect of widowhood in 1880 on outcomes in 1870. Each widow is matched to married women using baseline characteristics from 1860 and the matching procedure described in Section 3.2. Column 1 reports results for any employment, defined as any gainful occupation. Columns 2–5 report results for employment in high-skilled, semi-skilled, low-skilled, and farming occupations. Column 6 reports results for employment in the same occupation as the deceased husband. All regressions use controls and matching weights. Standard errors clustered at the county level in parentheses. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table B.5: Effects of spousal death on widows – Heterogeneity by husband's occupation

| | Employed (1) | High-skill (2) | Semi-skill (3) | Low-skill (4) | Farming (5) | Husband occ. (6) |
|---|---|---|---|---|---|---|
| Widowed in the last year | 0.102*** | 0.009*** | 0.010*** | 0.011*** | 0.017*** | 0.033*** |
| | (0.010) | (0.002) | (0.001) | (0.002) | (0.002) | (0.005) |
| × Husband high-skill | | 0.050*** | | | | |
| | | (0.006) | | | | |
| × Husband semi-skill | −0.010 | | 0.021*** | | | −0.027*** |
| | (0.015) | | (0.008) | | | (0.006) |
| × Husband low-skill | −0.006 | | | 0.027*** | | −0.029*** |
| | (0.014) | | | (0.009) | | (0.005) |
| × Husband farming | 0.020* | | | | 0.090*** | 0.071*** |
| | (0.011) | | | | (0.005) | (0.007) |
| Controls | Y | Y | Y | Y | Y | Y |
| Matching weights | Y | Y | Y | Y | Y | Y |
| Accidental deaths only | N | N | N | N | N | N |
| Control mean | 0.018 | 0.002 | 0.004 | 0.012 | 0.001 | 0.001 |
| Observations | 17,767 | 17,767 | 17,767 | 17,767 | 17,767 | 17,767 |

*Notes*: Table reports estimates of equation (1) using the matched widows sample described in Section 3.2. Widowed is interacted with the skill grouping of the deceased husband's occupation. Column 1 reports results for any employment. Columns 2–5 report results for employment in high-skilled, semi-skilled, low-skilled, and farming occupations. Column 6 reports results for employment in the same occupation as the deceased husband. All regressions use matching weights and controls. Standard errors clustered at the county level in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Table B.6: Effects of spousal death on widows – Robustness to weighting

| | Outcome: Employed | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *Panel A: All occupations* | | | | |
| Widowed in the last year | 0.111*** | 0.110*** | 0.113*** | 0.117*** |
| | (0.004) | (0.004) | (0.005) | (0.005) |
| Control mean | 0.018 | 0.018 | 0.018 | 0.018 |
| *Panel B: High-skilled* | | | | |
| Widowed in the last year | 0.019*** | 0.019*** | 0.022*** | 0.024*** |
| | (0.002) | (0.002) | (0.003) | (0.003) |
| Control mean | 0.002 | 0.002 | 0.002 | 0.002 |
| *Panel C: Semi-skilled* | | | | |
| Widowed in the last year | 0.012*** | 0.011*** | 0.013*** | 0.013*** |
| | (0.002) | (0.002) | (0.002) | (0.002) |
| Control mean | 0.004 | 0.004 | 0.004 | 0.004 |
| *Panel D: Low-skilled* | | | | |
| Widowed in the last year | 0.015*** | 0.015*** | 0.017*** | 0.018*** |
| | (0.002) | (0.002) | (0.002) | (0.003) |
| Control mean | 0.012 | 0.012 | 0.012 | 0.012 |
| *Panel E: Farmers* | | | | |
| Widowed in the last year | 0.065*** | 0.065*** | 0.061*** | 0.063*** |
| | (0.004) | (0.004) | (0.004) | (0.004) |
| Control mean | 0.001 | 0.001 | 0.001 | 0.001 |
| *Panel F: Husband's occupation* | | | | |
| Widowed in the last year | 0.062*** | 0.062*** | 0.060*** | 0.062*** |
| | (0.003) | (0.003) | (0.003) | (0.003) |
| Control mean | 0.001 | 0.001 | 0.001 | 0.001 |
| Observations | 17,767 | 17,767 | 17,767 | 17,767 |
| Controls | Y | Y | Y | Y |
| Matching weights | Y | N | Y | Y |
| Mortality linking weights | N | N | Y | N |
| Census linking weights | N | N | N | Y |

*Notes*: Table reports estimates of equation (1) using the matched widows sample described in Section 3.2. The outcome is any employment, defined as any gainful occupation. Column 1 reproduces the baseline estimates in column 2 of Table 2. Column 2 drops the matching weights. Column 3 multiplies the matching weights by inverse propensity score weights for linkage of the mortality census to the population census, described in Section A.1. Column 4 multiplies the matching weights by inverse propensity score weights for linkage of women across censuses in the IPUMS MLP. Panel A reports the effect of widowhood on employment in all occupations. Panels B–E report the effect of widowhood on employment in high-skilled, semi-skilled, low-skilled, and farming occupations. Panel F reports the effect of widowhood on employment in the same occupation as the deceased husband. All regressions include controls. Standard errors clustered at the county level in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Table B.7: Effects of spousal death on widows – Difference-in-differences estimates

| | Outcome: Employed | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| *Panel A: All occupations* | | | |
| Widowed × Post | 0.093*** | 0.107*** | 0.104*** |
| | (0.009) | (0.011) | (0.010) |
| Control mean | 0.011 | 0.011 | 0.011 |
| *Panel B: High-skilled* | | | |
| Widowed × Post | 0.019*** | 0.025*** | 0.021*** |
| | (0.004) | (0.005) | (0.004) |
| Control mean | 0.002 | 0.002 | 0.002 |
| *Panel C: Semi-skilled* | | | |
| Widowed × Post | 0.015*** | 0.021*** | 0.019*** |
| | (0.003) | (0.004) | (0.003) |
| Control mean | 0.001 | 0.001 | 0.001 |
| *Panel D: Low-skilled* | | | |
| Widowed × Post | 0.021*** | 0.025*** | 0.020*** |
| | (0.006) | (0.007) | (0.007) |
| Control mean | 0.006 | 0.006 | 0.006 |
| *Panel E: Farmers* | | | |
| Widowed × Post | 0.037*** | 0.036*** | 0.044*** |
| | (0.004) | (0.004) | (0.005) |
| Control mean | 0.002 | 0.002 | 0.002 |
| *Panel F: Husband's occupation* | | | |
| Widowed × Post | 0.033*** | 0.033*** | 0.039*** |
| | (0.003) | (0.004) | (0.004) |
| Control mean | 0.003 | 0.003 | 0.003 |
| Observations | 14,356 | 14,356 | 14,356 |
| Unique individuals | 7,178 | 7,178 | 7,178 |
| Age × Post | N | Y | Y |
| Baseline controls × Post | N | N | Y |

*Notes*: Table reports estimates of equation (2). Widowed × Post is the interaction of widowhood with an indicator for 1870. The sample includes current widows (widowed in 1870) and future widows (not widowed in 1870, widowed in 1880). The outcome is any employment, defined as any gainful occupation. Column 1 reports baseline difference-in-differences estimates. Column 2 adds baseline age interacted with an indicator for 1870. Column 3 adds baseline controls (age, age squared, state, urban, farm, and wealth quartile) interacted with an indicator for 1870. Panel A reports the effect of widowhood on employment in all occupations. Panels B–E report the effect of widowhood on employment in high-skilled, semi-skilled, low-skilled, and farming occupations. Panel F reports the effect of widowhood on employment in the same occupation as the deceased husband in 1860. Standard errors clustered at the county level in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Table B.8: Effects of spousal death on black widows' employment

| | Outcome: Employed | |
|---|---|---|
| | (1) | (2) |
| *Panel A: All occupations* | | |
| Widowed in the last year | 0.274*** | 0.307*** |
| | (0.023) | (0.034) |
| Control mean | 0.214 | 0.212 |
| *Panel B: High-skilled* | | |
| Widowed in the last year | 0.001 | −0.004 |
| | (0.002) | (0.004) |
| Control mean | 0.001 | 0.003 |
| *Panel C: Semi-skilled* | | |
| Widowed in the last year | 0.004 | −0.003 |
| | (0.004) | (0.003) |
| Control mean | 0.005 | 0.003 |
| *Panel D: Low-skilled* | | |
| Widowed in the last year | 0.117*** | 0.131*** |
| | (0.021) | (0.037) |
| Control mean | 0.203 | 0.203 |
| *Panel E: Farmers* | | |
| Widowed in the last year | 0.152*** | 0.184*** |
| | (0.018) | (0.025) |
| Control mean | 0.005 | 0.003 |
| *Panel F: Husband's occupation* | | |
| Widowed in the last year | 0.060*** | 0.106*** |
| | (0.016) | (0.027) |
| Control mean | 0.083 | 0.082 |
| Observations | 181,761 | 620 |
| Controls | N | Y |
| Matching weights | N | Y |
| Accidental deaths only | N | N |

*Notes*: Table reports estimates of equation (1) for black women. The outcome is any employment, defined as any gainful occupation. Column 1 reports results using the full linked censuses. Column 2 adds controls and matching weights, restricting to the matched black widows sample in Section 4.2.3. Panel A reports the effect of widowhood on employment in all occupations. Panels B–E report the effect of widowhood on employment in high-skilled, semi-skilled, low-skilled, and farming occupations. Panel F reports the effect of widowhood on employment in the same occupation as the deceased husband. Standard errors clustered at the county level in parentheses. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table B.9: Balance – Children with deceased and living mothers

| | Linked census | | Matched sample | |
|---|---|---|---|---|
| | Mother deceased (1) | Mother alive (2) | Mother deceased (3) | Mother alive (4) |
| *Panel A: All deaths* | | | | |
| *Targeted in matching* | | | | |
| Female | 0.498 | 0.489 | 0.491 | 0.491 |
| Age | 11.969 | 11.597 | 11.974 | 11.974 |
| Father age | 44.863 | 44.104 | 44.972 | 44.988 |
| Father foreign-born | 0.224 | 0.268 | 0.193 | 0.193 |
| Father employed | 0.934 | 0.927 | 0.953 | 0.953 |
| Urban | 0.151 | 0.203 | 0.103 | 0.103 |
| Farm | 0.539 | 0.469 | 0.709 | 0.709 |
| Number of siblings | 2.838 | 2.446 | 2.960 | 2.862 |
| Mother employed | 0.023 | 0.026 | 0.019 | 0.019 |
| Mother age | 40.902 | 39.491 | 40.893 | 40.543 |
| Household wealth quartile | 2.775 | 2.665 | 2.872 | 2.865 |
| *Not targeted in matching* | | | | |
| Father literate | 0.902 | 0.903 | 0.902 | 0.890 |
| Mother foreign-born | 0.203 | 0.240 | 0.181 | 0.183 |
| Mother literate | 0.858 | 0.870 | 0.855 | 0.849 |
| Observations | 21,377 | 8,708,298 | 14,453 | 14,557 |
| *Panel B: Accidental deaths* | | | | |
| *Targeted in matching* | | | | |
| Female | 0.497 | 0.489 | 0.487 | 0.487 |
| Age | 11.337 | 11.597 | 11.329 | 11.329 |
| Father age | 42.894 | 44.104 | 43.035 | 43.036 |
| Father foreign-born | 0.312 | 0.268 | 0.272 | 0.272 |
| Father employed | 0.927 | 0.927 | 0.947 | 0.947 |
| Urban | 0.153 | 0.203 | 0.091 | 0.091 |
| Farm | 0.543 | 0.469 | 0.681 | 0.683 |
| Number of siblings | 2.455 | 2.446 | 2.541 | 2.467 |
| Mother employed | 0.022 | 0.026 | 0.017 | 0.016 |
| Mother age | 38.173 | 39.491 | 38.267 | 38.248 |
| Household wealth quartile | 2.618 | 2.665 | 2.703 | 2.713 |
| *Not targeted in matching* | | | | |
| Father literate | 0.857 | 0.903 | 0.854 | 0.880 |
| Mother foreign-born | 0.280 | 0.240 | 0.249 | 0.245 |
| Mother literate | 0.810 | 0.870 | 0.814 | 0.829 |
| Observations | 2,450 | 8,708,298 | 1,701 | 1,715 |

*Notes*: Means for children with deceased and living mothers are reported. Columns 1 and 2 report means in the full linked censuses. Columns 3 and 4 restrict to the matched sample described in Section 5.1. Panel A includes children experiencing maternal death from all causes and Panel B includes children experiencing maternal death from accidental causes only. Targeted variables are used in the construction of the matched sample. All variables are measured in the census prior to maternal death except gender and age, which are measured at the time of maternal death.

Table B.10: Effects of paternal death on boys

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| *Panel A: School full-time* | | | | | | |
| Father died in the last year | −0.072*** | −0.018** | −0.035*** | −0.018* | −0.060* | −0.096** |
| | (0.005) | (0.007) | (0.007) | (0.011) | (0.031) | (0.045) |
| × Aged 12–18 | | −0.049*** | | −0.028** | | 0.062 |
| | | (0.008) | | (0.014) | | (0.059) |
| Control mean | 0.552 | 0.552 | 0.503 | 0.503 | 0.500 | 0.500 |
| *Panel B: Work full-time* | | | | | | |
| Father died in the last year | 0.066*** | 0.006*** | 0.044*** | 0.010** | 0.058** | 0.028 |
| | (0.004) | (0.002) | (0.005) | (0.004) | (0.024) | (0.024) |
| × Aged 12–18 | | 0.062*** | | 0.059*** | | 0.052 |
| | | (0.006) | | (0.009) | | (0.047) |
| Control mean | 0.126 | 0.126 | 0.147 | 0.147 | 0.147 | 0.147 |
| *Panel C: Work and school* | | | | | | |
| Father died in the last year | 0.022*** | 0.003 | −0.002 | 0.003 | −0.008 | 0.005 |
| | (0.003) | (0.002) | (0.005) | (0.005) | (0.023) | (0.026) |
| × Aged 12–18 | | 0.009* | | −0.008 | | −0.021 |
| | | (0.005) | | (0.010) | | (0.045) |
| Control mean | 0.103 | 0.103 | 0.148 | 0.148 | 0.159 | 0.159 |
| *Panel D: Housework* | | | | | | |
| Father died in the last year | −0.001** | −0.001*** | −0.000 | 0.000 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.001) | (0.001) | (.) | (.) |
| × Aged 12–18 | | 0.000 | | −0.001 | | 0.000 |
| | | (0.001) | | (0.001) | | (.) |
| Control mean | 0.003 | 0.003 | 0.003 | 0.003 | 0.000 | 0.000 |
| Observations | 4,797,478 | 4,797,478 | 16,399 | 16,399 | 865 | 865 |
| Controls | N | N | Y | Y | Y | Y |
| Matching weights | N | N | Y | Y | Y | Y |
| Accidental deaths only | N | N | N | N | Y | Y |

*Notes*: Table reports estimates of equation (3) for sons of widows. Columns 1 and 2 report results in the linked censuses (1860–1870 and 1870–1880). Column 2 adds an interaction for child ages 12–18. Columns 3 and 4 add controls and matching weights, restricting the sample to the matched child samples described in Section 5.1. Columns 5 and 6 restrict the matched sample to accidental deaths only. Panel A reports results for full-time schooling, defined as in school with no occupation listed. Panel B reports results for full-time work, defined as any gainful occupation and not in school. Panel C reports results for an indicator that the child is both at work and in school. Panel D reports results for whether a child's occupation code falls under housework. Standard errors clustered at the household level in parentheses. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table B.11: Effects of paternal death on girls

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| *Panel A: School full-time* | | | | | | |
| Father died in the last year | −0.035*** | −0.012 | −0.023*** | −0.003 | −0.067** | 0.036 |
| | (0.005) | (0.007) | (0.008) | (0.011) | (0.031) | (0.043) |
| × Aged 12–18 | | −0.020** | | −0.034** | | −0.196*** |
| | | (0.009) | | (0.015) | | (0.060) |
| Control mean | 0.633 | 0.633 | 0.630 | 0.630 | 0.682 | 0.682 |
| *Panel B: Work full-time* | | | | | | |
| Father died in the last year | 0.011*** | 0.000 | 0.009*** | −0.001 | 0.025* | −0.005 |
| | (0.002) | (0.001) | (0.003) | (0.002) | (0.015) | (0.015) |
| × Aged 12–18 | | 0.007* | | 0.017*** | | 0.057* |
| | | (0.004) | | (0.006) | | (0.031) |
| Control mean | 0.041 | 0.041 | 0.038 | 0.038 | 0.038 | 0.038 |
| *Panel C: Work and school* | | | | | | |
| Father died in the last year | 0.002* | 0.000 | 0.001 | 0.003 | 0.013 | −0.005 |
| | (0.001) | (0.001) | (0.002) | (0.002) | (0.010) | (0.013) |
| × Aged 12–18 | | 0.001 | | −0.003 | | 0.036 |
| | | (0.002) | | (0.004) | | (0.024) |
| Control mean | 0.012 | 0.012 | 0.014 | 0.014 | 0.007 | 0.007 |
| *Panel D: Housework* | | | | | | |
| Father died in the last year | −0.001 | −0.001 | −0.003 | −0.001 | 0.007 | 0.000 |
| | (0.001) | (0.001) | (0.002) | (0.002) | (0.009) | (0.008) |
| × Aged 12–18 | | −0.004* | | −0.003 | | 0.013 |
| | | (0.002) | | (0.004) | | (0.018) |
| Control mean | 0.018 | 0.018 | 0.022 | 0.022 | 0.014 | 0.014 |
| Observations | 4,599,085 | 4,599,085 | 15,198 | 15,198 | 833 | 833 |
| Controls | N | N | Y | Y | Y | Y |
| Matching weights | N | N | Y | Y | Y | Y |
| Accidental deaths only | N | N | N | N | Y | Y |

*Notes*: Table reports estimates of equation (3) for daughters of widows. Columns 1 and 2 report results in the linked censuses (1860–1870 and 1870–1880). Column 2 adds an interaction for child ages 12–18. Columns 3 and 4 add controls and matching weights, restricting the sample to the matched child samples described in Section 5.1. Columns 5 and 6 restrict the matched sample to accidental deaths only. Panel A reports results for full-time schooling, defined as in school with no occupation listed. Panel B reports results for full-time work, defined as any gainful occupation and not in school. Panel C reports results for an indicator that the child is both at work and in school. Panel D reports results for whether a child's occupation code falls under housework. Standard errors clustered at the household level in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Table B.12: Effects of maternal death on boys

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| *Panel A: School full-time* | | | | | | |
| Mother died in the last year | −0.028*** | −0.003 | −0.018** | 0.001 | −0.035 | −0.030 |
| | (0.006) | (0.008) | (0.008) | (0.011) | (0.023) | (0.030) |
| × Aged 12–18 | | −0.029*** | | −0.035** | | −0.011 |
| | | (0.009) | | (0.015) | | (0.045) |
| Control mean | 0.560 | 0.560 | 0.548 | 0.548 | 0.572 | 0.572 |
| *Panel B: Work full-time* | | | | | | |
| Mother died in the last year | 0.011*** | −0.002 | 0.008* | −0.003 | 0.019 | 0.006 |
| | (0.004) | (0.002) | (0.005) | (0.004) | (0.012) | (0.011) |
| × Aged 12–18 | | 0.006 | | 0.020** | | 0.029 |
| | | (0.006) | | (0.009) | | (0.029) |
| Control mean | 0.120 | 0.120 | 0.116 | 0.116 | 0.085 | 0.085 |
| *Panel C: Work and school* | | | | | | |
| Mother died in the last year | 0.026*** | 0.005** | 0.006 | −0.002 | 0.011 | −0.000 |
| | (0.004) | (0.002) | (0.006) | (0.005) | (0.016) | (0.015) |
| × Aged 12–18 | | 0.026*** | | 0.015 | | 0.025 |
| | | (0.006) | | (0.011) | | (0.035) |
| Control mean | 0.099 | 0.099 | 0.136 | 0.136 | 0.123 | 0.123 |
| *Panel D: Housework* | | | | | | |
| Mother died in the last year | −0.001 | −0.001*** | 0.000 | −0.000 | −0.003 | −0.001 |
| | (0.001) | (0.000) | (0.001) | (0.001) | (0.003) | (0.001) |
| × Aged 12–18 | | 0.001 | | 0.001 | | −0.004 |
| | | (0.001) | | (0.002) | | (0.005) |
| Control mean | 0.003 | 0.003 | 0.002 | 0.002 | 0.003 | 0.003 |
| Observations | 4,463,203 | 4,463,203 | 14,776 | 14,776 | 1,755 | 1,755 |
| Controls | N | N | Y | Y | Y | Y |
| Matching weights | N | N | Y | Y | Y | Y |
| Accidental deaths only | N | N | N | N | Y | Y |

*Notes*: Table reports estimates of equation (3) for sons of widowers. Columns 1 and 2 report results in the linked censuses (1860–1870 and 1870–1880). Column 2 adds an interaction for child ages 12–18. Columns 3 and 4 add controls and matching weights, restricting the sample to the matched child samples described in Section 5.1. Columns 5 and 6 restrict the matched sample to accidental deaths only. Panel A reports results for full-time schooling, defined as in school with no occupation listed. Panel B reports results for full-time work, defined as any gainful occupation and not in school. Panel C reports results for an indicator that the child is both at work and in school. Panel D reports results for whether a child's occupation code falls under housework. Standard errors clustered at the household level in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Table B.13: Effects of maternal death on girls

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| *Panel A: School full-time* | | | | | | |
| Mother died in the last year | −0.049*** | −0.009 | −0.034*** | −0.008 | −0.051** | −0.022 |
| | (0.006) | (0.008) | (0.008) | (0.011) | (0.023) | (0.031) |
| × Aged 12–18 | | −0.053*** | | −0.048*** | | −0.063 |
| | | (0.009) | | (0.015) | | (0.045) |
| Control mean | 0.638 | 0.638 | 0.636 | 0.636 | 0.662 | 0.662 |
| *Panel B: Work full-time* | | | | | | |
| Mother died in the last year | −0.013*** | −0.001 | −0.009*** | 0.000 | 0.000 | 0.002 |
| | (0.002) | (0.001) | (0.003) | (0.002) | (0.006) | (0.005) |
| × Aged 12–18 | | −0.034*** | | −0.017*** | | −0.004 |
| | | (0.003) | | (0.005) | | (0.014) |
| Control mean | 0.039 | 0.039 | 0.033 | 0.033 | 0.020 | 0.020 |
| *Panel C: Work and school* | | | | | | |
| Mother died in the last year | −0.002** | −0.001 | −0.006*** | −0.000 | −0.010* | −0.003 |
| | (0.001) | (0.001) | (0.002) | (0.002) | (0.006) | (0.005) |
| × Aged 12–18 | | −0.005*** | | −0.009*** | | −0.017 |
| | | (0.002) | | (0.004) | | (0.012) |
| Control mean | 0.011 | 0.011 | 0.015 | 0.015 | 0.017 | 0.017 |
| *Panel D: Housework* | | | | | | |
| Mother died in the last year | 0.156*** | 0.009*** | 0.161*** | 0.012*** | 0.170*** | 0.023** |
| | (0.003) | (0.002) | (0.004) | (0.003) | (0.011) | (0.010) |
| × Aged 12–18 | | 0.261*** | | 0.271*** | | 0.315*** |
| | | (0.006) | | (0.008) | | (0.026) |
| Control mean | 0.018 | 0.018 | 0.017 | 0.017 | 0.008 | 0.008 |
| Observations | 4,266,472 | 4,266,472 | 14,234 | 14,234 | 1,661 | 1,661 |
| Controls | N | N | Y | Y | Y | Y |
| Matching weights | N | N | Y | Y | Y | Y |
| Accidental deaths only | N | N | N | N | Y | Y |

*Notes*: Table reports estimates of equation (3) for daughters of widowers. Columns 1 and 2 report results in the linked censuses (1860–1870 and 1870–1880). Column 2 adds an interaction for child ages 12–18. Columns 3 and 4 add controls and matching weights, restricting the sample to the matched child samples described in Section 5.1. Columns 5 and 6 restrict the matched sample to accidental deaths only. Panel A reports results for full-time schooling, defined as in school with no occupation listed. Panel B reports results for full-time work, defined as any gainful occupation and not in school. Panel C reports results for an indicator that the child is both at work and in school. Panel D reports results for whether a child's occupation code falls under housework. Standard errors clustered at the household level in parentheses. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

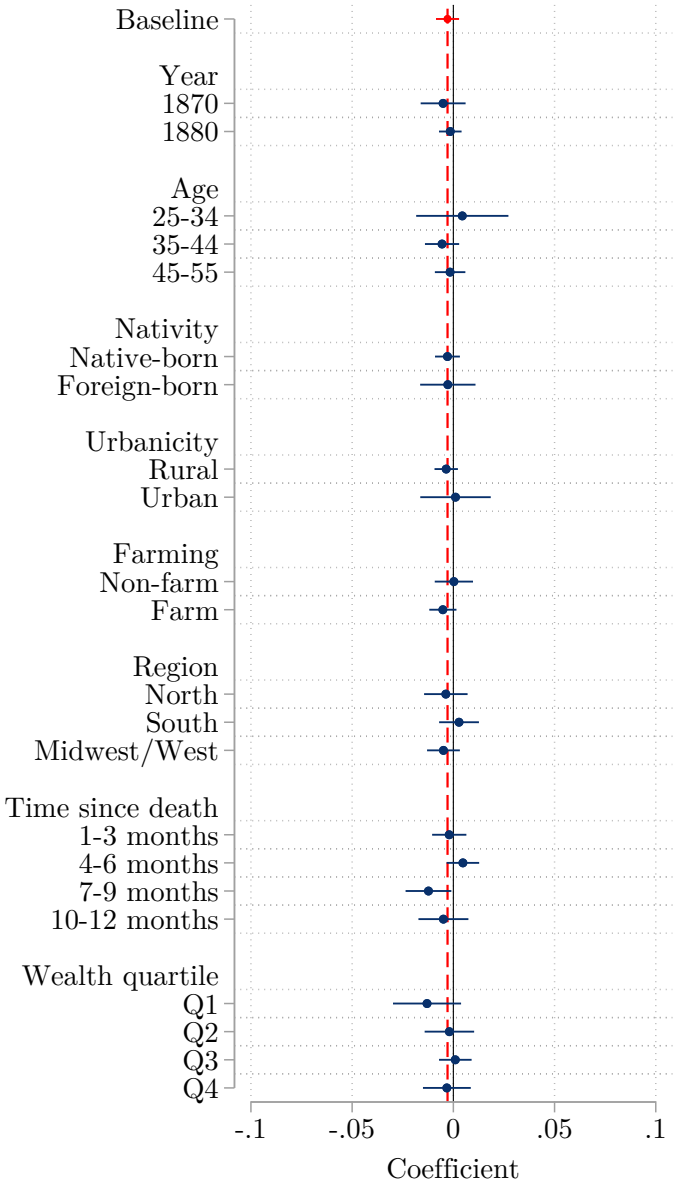
Table B.14: Estimated contribution of mortality decline to school enrollment growth, 1880–1920

| | Implied change (pp) | | | | |
|---|---|---|---|---|---|
| | Father $\hat{\beta}_p \Delta C_p$ (1) | Mother $\hat{\beta}_m \Delta C_m$ (2) | Total $\Delta S$ (3) | Observed rise (pp) (4) | Share (%) (5) |
| *Panel A: Children ages 6–18* | | | | | |
| All | | | | | |
| Matched sample | 0.093 | 0.081 | 0.173 | 22.3 | 0.78 |
| Accidental deaths | 0.199 | 0.130 | 0.329 | 22.3 | 1.48 |
| Boys | | | | | |
| Matched sample | 0.110 | 0.056 | 0.166 | 23.8 | 0.70 |
| Accidental deaths | 0.190 | 0.109 | 0.299 | 23.8 | 1.26 |
| Girls | | | | | |
| Matched sample | 0.072 | 0.106 | 0.178 | 20.8 | 0.85 |
| Accidental deaths | 0.211 | 0.159 | 0.370 | 20.8 | 1.78 |
| *Panel B: Children ages 12–18* | | | | | |
| All | | | | | |
| Matched sample | 0.162 | 0.173 | 0.335 | 21.0 | 1.60 |
| Accidental deaths | 0.377 | 0.243 | 0.620 | 21.0 | 2.95 |
| Boys | | | | | |
| Matched sample | 0.181 | 0.131 | 0.312 | 23.5 | 1.33 |
| Accidental deaths | 0.132 | 0.158 | 0.290 | 23.5 | 1.23 |
| Girls | | | | | |
| Matched sample | 0.144 | 0.215 | 0.358 | 18.5 | 1.94 |
| Accidental deaths | 0.622 | 0.329 | 0.951 | 18.5 | 5.14 |

*Notes*: Table reports back-of-the-envelope estimates for the contribution of mortality decline to school enrollment growth from 1880 to 1920.

## C Additional Results: Widowers

Figure C.1: Effects of spousal death on widowers – Heterogeneity




*Notes*: Figure shows coefficients for the impact of widowhood on employment of widowers, estimated using the matched sample described in Section 3.2. Coefficients are from separate regressions using an indicator for widowed interacted with each characteristic. All regressions use controls and matching weights, with standard errors clustered at the county level. 95 percent confidence intervals are shown. Red dashed line indicates the baseline estimate in Table C.3, column 2.

Table C.1: Balance – Widowed and married men

| | Linked census | | Matched sample | |
|---|---|---|---|---|
| | Widowed (1) | Married (2) | Widowed (3) | Married (4) |
| *Panel A: All deaths* | | | | |
| *Targeted in matching* | | | | |
| Age | 45.067 | 44.057 | 45.196 | 45.243 |
| Foreign-born | 0.201 | 0.244 | 0.189 | 0.189 |
| Employed | 0.933 | 0.924 | 0.938 | 0.938 |
| Urban | 0.161 | 0.228 | 0.143 | 0.143 |
| Farm | 0.514 | 0.434 | 0.578 | 0.576 |
| Has children | 0.936 | 0.881 | 0.951 | 0.951 |
| Number of children | 3.248 | 2.757 | 3.330 | 3.256 |
| Wife employed | 0.023 | 0.027 | 0.021 | 0.019 |
| Wife age | 41.638 | 39.739 | 41.659 | 41.057 |
| Household wealth quartile | 2.804 | 2.673 | 2.832 | 2.833 |
| *Not targeted in matching* | | | | |
| Literate | 0.910 | 0.914 | 0.907 | 0.907 |
| Wife foreign-born | 0.181 | 0.219 | 0.174 | 0.178 |
| Wife literate | 0.874 | 0.889 | 0.872 | 0.877 |
| Observations | 7,998 | 3,439,421 | 6,879 | 7,302 |
| *Panel B: Accidental deaths* | | | | |
| *Targeted in matching* | | | | |
| Age | 42.139 | 44.057 | 42.342 | 42.366 |
| Foreign-born | 0.273 | 0.244 | 0.261 | 0.261 |
| Employed | 0.920 | 0.924 | 0.930 | 0.930 |
| Urban | 0.151 | 0.228 | 0.126 | 0.126 |
| Farm | 0.520 | 0.434 | 0.584 | 0.576 |
| Has children | 0.933 | 0.881 | 0.960 | 0.960 |
| Number of children | 2.920 | 2.757 | 3.043 | 2.982 |
| Wife employed | 0.025 | 0.027 | 0.024 | 0.013 |
| Wife age | 37.687 | 39.739 | 37.802 | 37.844 |
| Household wealth quartile | 2.605 | 2.673 | 2.618 | 2.610 |
| *Not targeted in matching* | | | | |
| Literate | 0.871 | 0.914 | 0.864 | 0.878 |
| Wife foreign-born | 0.246 | 0.219 | 0.238 | 0.225 |
| Wife literate | 0.835 | 0.889 | 0.830 | 0.850 |
| Observations | 729 | 3,439,421 | 625 | 656 |

*Notes*: Means for widowed and married men are reported. Columns 1 and 2 report means in the full linked censuses. Columns 3 and 4 restrict to the matched sample described in Section 3.2. Panel A includes widowers experiencing spousal death from all causes and Panel B includes widowers experiencing spousal death from accidental causes only. Targeted variables are used in the construction of the matched sample. All variables are measured in the census prior to widowhood except age, which is measured at the time of widowhood.

Table C.2: Descriptive statistics of deceased wives

| | Linked deaths (1) | Linked to widower (2) | Matched sample (3) |
|---|---|---|---|
| *Demographics* | | | |
| Black | 0.126 | 0.105 | 0.003 |
| Foreign-born | 0.175 | 0.178 | 0.170 |
| Age at death | 43.096 | 42.661 | 41.425 |
| *Cause of death* | | | |
| Infectious disease | 0.364 | 0.364 | 0.388 |
| Nervous system | 0.077 | 0.078 | 0.066 |
| Circulatory system | 0.060 | 0.061 | 0.058 |
| Respiratory system | 0.109 | 0.109 | 0.109 |
| Digestive system | 0.059 | 0.060 | 0.067 |
| Other general | 0.093 | 0.092 | 0.098 |
| Maternal/childbirth | 0.094 | 0.097 | 0.083 |
| Violent/external | 0.011 | 0.011 | 0.011 |
| Unclassified/unknown | 0.132 | 0.129 | 0.120 |
| Observations | 61,451 | 45,017 | 6,879 |

*Notes*: Table reports descriptive statistics of deceased wives. Column 1 reports means for deaths of married women aged 16 and up in the linked mortality census. Column 2 reports deaths linked to an identifiable widower between the ages of 16 and 55. Column 3 reports deaths in the matched widowers sample in Section 3.2.

Table C.3: Effects of recent spousal death on widowers' employment

| | Outcome: Employed | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| *Panel A: All occupations* | | | |
| Widowed in the last year | −0.003 | −0.003 | −0.012 |
| | (0.003) | (0.003) | (0.008) |
| Control mean | 0.965 | 0.968 | 0.986 |
| *Panel B: High-skilled* | | | |
| Widowed in the last year | −0.029*** | 0.003 | 0.012 |
| | (0.006) | (0.005) | (0.019) |
| Control mean | 0.263 | 0.195 | 0.159 |
| *Panel C: Semi-skilled* | | | |
| Widowed in the last year | −0.025*** | −0.006 | −0.025* |
| | (0.005) | (0.004) | (0.014) |
| Control mean | 0.118 | 0.088 | 0.111 |
| *Panel D: Low-skilled* | | | |
| Widowed in the last year | −0.006 | 0.009** | 0.015 |
| | (0.004) | (0.005) | (0.017) |
| Control mean | 0.113 | 0.101 | 0.104 |
| *Panel E: Farmers* | | | |
| Widowed in the last year | 0.056*** | −0.009 | −0.013 |
| | (0.010) | (0.006) | (0.021) |
| Control mean | 0.471 | 0.584 | 0.613 |
| *Panel F: Wife's occupation* | | | |
| Widowed in the last year | 0.000 | −0.000 | −0.001 |
| | (0.001) | (0.001) | (0.003) |
| Control mean | 0.002 | 0.002 | 0.002 |
| Observations | 3,447,419 | 14,181 | 1,281 |
| Controls | N | Y | Y |
| Matching weights | N | Y | Y |
| Accidental deaths only | N | N | Y |

*Notes*: Table reports estimates of equation (1). The outcome is any employment, defined as any gainful occupation. Column 1 reports results using the full linked censuses. Column 2 adds controls and matching weights, restricting the sample to the matched widowers sample described in Section 3.2. Column 3 restricts the matched sample to accidental deaths only. Panel A reports the effect of widowhood on employment in all occupations. Panels B–E report the effect of widowhood on employment in high-skilled, semi-skilled, low-skilled, and farming occupations. Panel F reports the effect of widowhood on employment in the same occupation as the deceased wife. Standard errors clustered at the county level in parentheses. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.