Persistent Social Networks: Veterans Who Fought Together Co-Locate in Later Life

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Abstract

At the end of the U.S Civil War, veterans had to choose whether to return to their pre-war communities or move to new areas. The late 19th Century was a time of sharp urban growth as workers sought out the economic opportunities offered by cities. By estimating discrete choice migration models, we quantify the tradeoffs that veterans faced. Veterans were less likely to move far from their origin and avoided urban immigrant areas and high mortality risk areas. They also avoided areas that opposed the Civil War. Veterans were more likely to move to a neighborhood or a county where men from their same war company lived. This co-location evidence highlights the existence of persistent social networks. Such social networks had long-term consequences: veterans living close to war time friends enjoyed a longer life.

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More than 2 million white men served in the Union Army in the US Civil War out of a total of more than 5 million men of military age in 1861-1865 (Fogel 1993).[1] After the war, the large Armies of the Potomac and of the West were quickly disbanded and the men either returned home or migrated to different cities or to the West. The veterans who survived to the century's end experienced a rapidly changing world. The US was urbanizing – the number of cities with populations of over 50,000 grew from 16 in 1860 to 78 in 1900, and the new immigrants pouring into the cities came from Eastern and Southern Europe rather than from Northwestern Europe.[2] Manufacturing was becoming the nation's source of wealth and of new fortunes.

The War, though, had created "the closest tie which is possible between men."[3] During the War, these ties mattered to men's willingness to risk death (Costa and Kahn 2003) and to their ability to survive POW camps (Costa and Kahn 2007). Did these social networks persist as men pursued economic opportunities in different locations? Scholars variously have emphasized that the strength of ties is determined by expected geographic mobility and physical distance (Glaeser, Laibson, and Sacerdote 2002), ties' emotional intensity and intimacy and the amount of time spent together (Granovetter 1973) and the proportion of direct ties (Burt 2000).

We investigate the persistence of wartime social networks among men forty years after the war. Each surviving veteran faced the decision whether to move back home and

[1]The range for military age was much greater in the Civil War than in later conflicts. More than 80% of 18 year olds in 1861 served in the Union Army (Fogel 1993).

[2]See Table Aa684-698 in Carter et al. (2006): 1-102. Ninety-eight percent of 1860 immigrant arrivals were Northwestern Europe and Germany and 76% of 1900 immigrant arrivals were from Southern, Eastern, and Central Europe, excluding Germany. (Calculated from Table Ad106-120 in Carter et al. (2006): 1-560.)

[3]Oliver Wendell Holmes, 1884 Memorial Day Speech, http://www.people.virginia.edu/ mmd5f/memorial.htm .

reconnect with family and friends or to move to a new county or city. In the late 19th century, cities and urbanized counties offered increasingly attractive economic opportunities. Soldiers faced a menu of locational choices, which differed by proximity to a soldier's origin location, climate, industrial structure, immigrant demographics, and quality of life. Using unique data, we reconstruct for each soldier his origin, destination, and how many veterans from his company and regiment lived in each area. This veteran specific attribute represents an idiosyncratic feature of geographic locations which will not be valued by non-veterans. We estimate discrete choice models of migration and document the trade-offs that veterans faced. We find that veterans preferred to remain close to their origin and avoided urban immigrant areas and high mortality risk areas. They also chose to avoid areas that opposed the Civil War.

Veterans preferred to move to a neighborhood or a county inhabited by men from their same war company. This co-location evidence highlights the existence of persistent social networks. In our study, the social network already exists but an individual veteran seeks out economic opportunities. A co-ordination game arises and by co-locating in cities, veterans can achieve the mutually beneficial gains from cities while still preserving their network.

We argue that material support provides the most likely explantion for veteran co-location. Prior network papers have emphasize the role of networks as a source of information (e.g., Conley and Udry 2010) and of chain migration (e.g., Munshi 2003). Veterans may seek out their former comrades for material support such as job information or referrals (Laschever 2013) or for social support from those who would understand the wartime experience and the need to pay homage to lost comrades (Hunt and Robbins 2010).

We also find beneficial spillover effects on health from being in a persistent network. Economic and epidemiological research has linked social networks to health (e.g., Aizer and Currie 2004; Christakis and Fowler 2007; Gresenz, Rogowski, and Escarce 2007; Miguel and Kremer 2007; Rao, Möbius, and Rosenblat 2007; Cohen et al. 1992; Thomas, Goodwin, and Goodwin 1985; Seeman 1996; Cole et al. 2007; Costa and Kahn 2010, 2007b). We argue that health spillovers were probably not from material assistance, thus raising the possibility that they resulted from biological processes such as improved cellular immune responses and neuroendocrine functioning.

1 Hypotheses

We test whether veterans were more likely to choose a geographic location if the area was home to Civil War veterans and to veterans from the same war company as the decision maker. Civil War companies contained roughly 100 men and were generally not replenished with new men when disease, military casualties, and desertions whittled down its numbers. Although recruitment was local, companies were diverse.[4] At the beginning of the war, men would enlist with one or several friends but rarely with fifty and once companies were full, they would take no more men. Later in the war, men might enlist in a distant town to receive a large bounty. The need to travel to recruiting stations, particularly for farmers' sons, increased geographic diversity as well (Costa and Kahn 2008: 59-60). Because mortality rates were lower among deserters and because the stronger social networks which were prevalent in less diverse companies led to fewer desertions (Costa and

[4]Roughly 95% of all Union Army soldiers were volunteers, with the remainder divided between draftees and substitutes.

Kahn 2003), we are likely to underestimate the lasting impact of wartime social networks.

As measures of the strength of these networks, we use the number of veterans in the same company, the number of veterans in the entire sample, the number of veterans from the same birth city, and the number of veterans from the same pre-war town. If veterans had closer ties to men from the same company than to other veterans, they would be more likely to co-locate with veterans from the same company than with other veterans. We cannot determine if the company network was the strongest because of ties formed or strengthened during the war or because men from the same companies had the strongest pre-war ties.[5] An alternative hypothesis for veteran co-location is shared tastes for unobserved amenities. Assuming veterans from the same pre-war town or birth city have similar tastes for unobserved amenities, our measures of weaker veteran networks will serve as controls.

We test whether veterans sought their former comrades for material or social support by examining whether those residing in the same county or city of enlistment 40 years after the war were as likely to live near their comrades. If material support, such as job referrals or information, was the primary motivation for living near comrades, then veterans who had not left their county or city of enlistment would be less likely to need such assistance and therefore would be less likely to live near their former comrades than migrants. We also compare migrants and non-migrants in examining the health spillover effects of living near veterans.

We expect veterans to live in areas where they share commonalities with the residents.

[5]We have too few men to examine differences between those from the same company and the same pre-war city and those from the same company and different pre-war cities.

One commonality is ideology. Veterans should thus avoid the South and counties where McClellan, the "peace without victory" candidate in the 1864 election won a greater share of the vote.[6] Another commonality is ethnicity. Veterans would share little in common with the new immigrants arriving from southern and eastern Europe. In addition, if they were not Irish, we would expect that they would not want to live with the Irish, a group dominated by poor laborers. Whites (and the Irish and new immigrants were not yet regarded as white) have a distaste for living with minorities (Cutler, Glaeser, and Vigdor 2008 and Shertzer and Walsh 2016).

We also expect veterans to seek out economic opportunities, such as those provided by more populous areas, particularly if the veteran was in a skilled occupation and to seek out amenities such as warmer winter temperatures and lower disease risk, but also, because of the costs of migration, to remain close to home, as predicted by the classic gravity model of migration. We do not have any predictions as to whether a veteran would prefer to live close or further from the central business district. Although rents were presumably lower and commuting costs higher further from the central business district, the rise of the streetcar enabled workers (and most veterans were still in the labor force) to live far (in distance) from the central business district but still obtain quick access to it (Gin and Sonstelie 1992; LeRoy and Sonstelie 1983). After World War II, rising household income explains much of post-war suburbanization (Margo 1992).

We investigate how pension income affected veterans' choices. Controlling for health, a Union Army pension was an arguably exogenous income transfer (Costa 1995). We expect that richer veterans would be less likely to live with minorities. Unfortunately,

[6]Lincoln won 76% of the soldier's vote compared to 55% of the popular vote (Burnham 1955: 260-83).

we cannot examine how much more they were willing to pay in rent to avoid minority areas. One of the drawbacks of examining this time period is that information on rents is unavailable. We therefore also cannot estimate willingness to pay for a wartime comrade in the same area.

2 Methodology

We test whether war-time social networks reconstituted in a residential area decades later. Following the discrete locational choice literature, we model locations as bundles of tied attributes. Although we do not know if a veteran moved to where his friends were or if veterans moved together, for simplicity, we will assume that a veteran, i, from company f and originally from location m chooses location j

$$\text{prob(soldier i chooses j)} = \frac{\exp(\beta_2 V_{fji} + \beta_1 Z_j + \beta_3 D_{jmi})}{\sum_{j=1}^{M} \exp(\beta_2 V_{fji} + \beta_1 Z_j + \beta_3 D_{jmi})} \tag{1}$$

where V_{fji} is the number of veterans from the same company, the same town, or any veterans, and is a veteran-specific attribute of the location, Z_j is a set of location specific attributes such as death risk and immigrant composition, and D_{jmi} is distance from origin, also veteran-specific to each location. Throughout our study we assume that the veterans are price-takers, taking rents and locational attributes as given. We also interact individual attributes such as enlisting in the same county or city or pension income with location specific attributes to test for heterogeneous effects in locational choice.

We examine both county choices and ward choices within a city using a smaller, urban

sample. A ward was a political unit used to elect city councilmen and also a unit for city neighborhood statistics. The observable characteristics of wards and counties differ across samples. For example, we observe ward mortality rates but not county mortality rates. We observe county ideology but not ward ideology.

We investigate the mortality benefits of living near fellow veterans from the same company using our urban sample. Although friends were not randomly assigned, a mortality benefit suggests that veterans chose to participate in the wartime network and also provides a test of theories of the benefits of social networks. We estimate a Gompertz hazard model of the form

$$h(t) = h_0(t) \exp(\beta_x X) \tag{2}$$

where $h_0(t)$ is the baseline hazard and where X is a vector of characteristics specific to each veteran, including a time-varying covariate of living near a fellow veteran, a time-varying covariate of having a living spouse, and various control variables.

3 Data

Our data are from three samples collected by the NIA funded Early Indicators project (Costa, PI; Fogel, Original PI) and available at uadata.org. The first sample consists of roughly 39,000 Union Army soldiers in 331 companies, where the companies (of roughly 100 men each) were randomly selected. The sample is representative of the US male population of military age in 1860 (Fogel 1993). The second sample consists of over

9,000 Union Army soldiers who enlisted in the largest Northern cities in the US in 1860 (Baltimore, Boston, Brooklyn, Chicago, New York City, and Philadelphia).[7] The companies were drawn in proportion to city size in 1860. All men were linked to their pension records, including detailed surgeons exams. The first sample (original Union Army) was linked to the 1850, 1860, 1900, and 1910 manuscript census schedules and the second sample (urban) was linked to all 1850-1940 manuscript census schedules with the exception of 1890 which was destroyed in a fire. The third sample consists of city maps, with wards, and ward-level characteristics for Baltimore, Boston, Brooklyn, Chicago, Cincinnati, New York City, and Philadelphia from 1850 to 1930.[8]

We used these three samples to create two different data sets. Our first data set consists of all veterans for whom we know county of enlistment and county of residence in 1900 and for which we have information on county characteristics in 1900, i.e., 7,600 men who could choose among 2752 US counties.[9] Figure 1 shows the number of veterans in each county at enlistment and in 1900.

When we examine county of choice for the original Union Army sample, our primary variables of interest are, in the county, the number of veterans from the same company, the number of veterans in the sample, the number of veterans from the same 1860 town, and the number of veterans from the same enlistment town. The highest correlation (0.3) among these network measures was between the number of men in the county from the same company and the number of men from the same pre-war town in the county. Addi-

[7] City of enlistment does not necessarily equal city of residence in 1860. Many men were from outlying areas.

[8] This collection complements the urban sample. Cincinnati is not in the urban sample because the majority of its enlistees were from outside the city.

[9] US territories are excluded.

tional county characteristics we constructed were county population, the fraction of workers in manufacturing, the fraction of "new" immigrants, distance from origin county to destination county (measured using county centroid), dummy variables indicating southern and coastal counties, mean February temperature, and voting in the 1864 and 1900 presidential elections. See the Data Appendix for details.

The second data set consists of everyone we could place in a ward in 1900 in Baltimore, Boston, Chicago, Cincinnati, New York City (all boroughs, including Brooklyn), and Philadelphia and for whom we knew city of enlistment. These six cities were among the top 10 cities by population size in the United States in 1900 and contained 44% of the population of the top 100 cities.[10] This sample contains 1,387 men who could choose from 222 wards. The smallest ward contained 1,488 people and the largest 476,602 (the median was 24,048). Of the men in the sample, 853 are from the urban sample and 534 are from the original Union Army sample.[11] Among the men, 13% are from Baltimore, 7% from Boston, 18% from Chicago, 4% from Cincinnati, 30% from NYC (including all boroughs), and 27% from Philadelphia. Figure 2 shows the number of veterans by ward in each city. The median size of a ward was 1,870,661 square meters, implying that within a median size ward a veteran was no more than 24 minutes by foot from another person.[12]

Our primary variables of interest are the number of veterans from the same company in the ward, the number of veterans in the sample in the ward, the number of veterans in the ward from the same 1860 town, and the number of veterans from the same birth city

[10]Calculated from https://www.census.gov/population/www/documentation/twps0027/tab13.txt .

[11]There is no difference in the magnitude of our main results if we restrict the sample to either the urban sample or the original Union Army sample.

[12]We assume 80 meters for 1 minute of walking time and a square ward.

in the ward. In our city sample, the highest correlation is between the last two measures (0.5) and the other correlations are 0.3 or less. The stronger network should be the one with men from the same company. Tastes for other ward characteristics may be similar among veterans and veterans from the same birth city.

We constructed several variables describing ward characterisics: an adjusted death rate, distance to the city center, population density, and the fraction of "new" immigrants (immigrants born in Eastern or Southern Europe), blacks, Irish, and Germans. We also constructed city-level variables: a dummy variable equal to one if the current city of residence was the same as the city of enlistment, the distance from the city of enlistment to the current city, and city population in 1900. Details are provided in the Data Appendix.

We also created individual level variables which we used for interaction terms: a dummy equal to one if the veteran was a professional, proprietor, or artisan at enlistment, dummies equal to one if the veteran was born in Ireland or Germany, pension amount collected in 1900 (an exogenous income transfer), a dummy variable indicating poor health in 1900, and a dummy equal to one if health status was unknown. Details are given in the Data Appendix.

4 Results

4.1 Locational Choice: Counties

Twenty-six percent of all veterans in 1900 were living in their county of enlistment. Controlling for county characteristics, a veteran was 16 times as likely to live in a county if he

had enlisted in it (see the first specificaiton in Table 1 which presents the odds ratios from a conditional logit model of county choice). His probability of living in a county that was in the south was 95% lower compared to his probability of living in a non-southern county controlling for distance from enlistment.

Veteran Networks

Veterans were more likely to pick a county where there were other men from their company (see Table 1). An extra man from their war-time company increased their probability of living in the county by 21%. An extra veteran who was not from the same company increased the probability of living in the county only by 1%. An extra veteran from the same pre-war town increased this probability by 7% and an extra veteran from the same birth city increased this probability by 2% (see the first specification). The odds ratio on the number of men from the same company was statistically significantly different from each of the odds ratios on the other network measures at the 0.001% level. We find evidence that fellow company members were mainly valuable to men who had not enlisted in the county. The impact of a fellow company member increased the probability of staying in the county by 50% for men who were not from the county but decreased the probability for men who were from the county (see the second specification). We found no evidence that war-time company cohesion, arguably a measure of network strength, mattered (results not shown). When we interacted the number of men from the same company with pension amount, we found a statistically significant increase in the odds of living with men from the same company but the magnitude of the effect was negligible.

County Characteristics

Veterans were less likely to live in a county where a greater percentage of the electorate

had voted for McClellan, the Democratic "peace without victory" candidate in the 1864 election. This is not an indicator of current party of affiliation – they were less likely to live in a county where McKinley, the Republican presidential candidate and supporter of the high tariffs which financed Union Army pensions, had a larger percentage of the vote in 1900. Veterans also avoided the South and counties with a high fraction of the population working in manufacturing.

Veterans were more likely to live in a county with a larger population, particularly if they were professionals, proprietors, or artisans at enlistment. They also were more likely to live in a county with a warmer February temperature and one that was close to county of enlistment, controlling for their propensity to stay in their county of enlistment.

Veterans also were more likely to avoid counties with a high fraction of "new" immigrants. Those who received a higher pension, an exogenous income transfer, were more likely to avoid counties with "new" immigrants (see the third specification).

4.2 Locational Choice: City Wards

Veteran Networks

Veterans were more likely to choose a ward popular with other veterans from the same company (see Table 2 which presents the odds ratios from a conditional logit model of ward choice). In our first specification, an extra man from a veteran's war-time company increased the probability of choosing that ward by 32%. Veterans also were more likely to choose a ward popular with all veterans and with veterans from the same city. An additional veteran increased the probability of choosing a ward by 6% and an additional

veteran from the same city increased the probability of choosing a ward by 12%. The odds ratio on the number of veterans from the same company in the same ward was statistically significantly different from the odds ratios on the number of veterans in the ward and the number of veterans from the same birth city in the ward at the 1 and 10% level, respectively. We interpret the larger effect of an extra man from the same company as indicative of the strength of the network, not as indicative of shared tastes, which would likely be shared by veterans from the same city.

We find that having a veteran in the same ward was less important to men who remained in their city of enlistment, suggesting that fellow veterans were a source of information or direct assistance for the non-native. Our second specification shows that among those who were from a different city having a fellow veteran in the same ward increased men's probability of choosing that ward by 78% but a fellow veteran in the same ward increased the probability of a native choosing that ward by only 5%. We also found that married veterans were more likely to live in a ward with fellow veterans suggesting that existing relationships did not weaken ties with veterans (results not shown).

We examined interactions between the number of veterans in a ward and measures of the strength of the war-time network. We found no evidence that a more cohesive war-time company made veterans more likely to move to a ward with veterans (results not shown).[13] We did not find that a higher company death rate, whether overall or from wounds, arguably a measure of the emotional intensity of wartime ties led veterans to move to wards with veterans. We also interacted the number of veterans in a ward with a veteran's occupa-

[13]We measured cohesion by creating an index based on company heterogeneity in occupation, birth place, and age, where the weights on each variable were determined by the coefficients on a regression of each factor on the probability of desertion.

tional score at enlistment but the interaction term was statistically insignificant suggesting that information or assistance from fellow veterans was not more important for men in lower or higher occupational classes. We did not find that a higher pension increased the probability of living in a ward with more men from the same company implying that income and fellow company members were neither substitutes nor complements (results not shown).

Ward Characteristics

A veteran's probability of choosing a ward was lower if it was a high mortality ward, if the fraction of "new" immigrants was higher, if the ward was further from the center city, and if the city was closer to the city of enlistment. We found no differential effect of distance from the center city by veterans' retirement status. When we interacted whether a veteran was Irish with the fraction of the ward born in Ireland we found that the non-Irish avoid areas with a high fraction of Irish but that the Irish were more likely to be in areas with a high fraction of Irish. We found similar effects for the German-born and the fraction of the ward that was German (see the third specification).

Veterans who received a larger pension were less likely to live in "new" immigrant areas (see the fourth and fifth specifications). The fifth specification also shows that veterans who received a larger pension also were less likely to live in areas with a high fraction of Irish. (There was no statistically significant effect of pension on the probability of living in a German ward.) We found no evidence that pensions affected the probability of living in a higher mortality ward. We also found no evidence that pensions affected the probability of living further from the city center (results not shown).

4.3 Benefits of Social Networks

What benefits did a veteran derive from having a war-time company member living nearby? Table 3 shows that having a man from the same war-time company in the same ward in 1900 decreased a veteran's probability of dying by 5%. The impact was roughly the same as having a living wife, although having a living wife was not a statistically significant predictor of mortality. An additional man in the same company could not compensate for poor health (measured as having a Body Mass Index outside the normal range) which increased the probability of dying by 21% and for having been wounded in the war which increased the odds of dying by 11%.

We find no evidence that living near a fellow veteran was beneficial because of the information and assistance he could provide. As the last regression shows, the impact of a having a former comrade nearby was statistically indistinguishable between migrants and non-migrants. We also find no evidence that the strength and intensity of the tie was an important determinant of survival – the interaction term between number of fellow veterans living nearby and proxies for the strength and intensity of the tie such as company cohesion and the fraction of the company dying was statistically insignificant (results not shown).

5 Conclusion

According to Oliver Wendell Holmes, "the generation that carried on the war has been set apart by its experience."[14] At least locationally, veterans were set apart. They se-

[14] 1895 Memorial Day Speech, http://www.people.virginia.edu/ mmd5f/holmesfa.htm .

lected to be with fellow veterans, preferably with veterans from the same company, with whom they would have had stronger ties. These locational preferences were strongest for migrants, suggesting that veteran networks were a souce of material support such as job information. Veterans avoided the South and areas populated by the new immigrants who arrived after the Civil War and an income transfer made them even more likely to avoid immigrant areas. Veterans who lived near former comrades from the same company faced a slightly lower mortality risk regardless of migrant status, implying that any mortality effects operated through direct biological channels, not material support.

Were there other effects of veterans' locational choices? Union Army veterans intentionally avoided the anti-War areas and the South, thus leading to their agglomeration in specific areas. This spatial clustering provided Union Army veterans with voting power (which favored the Republican party) and with the members for organizations that could campaign for keeping the Civil War in public memory (Logue 2007; McConnell 2007). Thus both selection (of the types of people who moved to different areas) and treatment effects (the social interactions that take place among people who live in a given place) meant that the Tiebourt sorting of veterans re-inforced a pro-Union narrative of the Civil War.

Data Appendix

5.1 County Choice Regressions

The data set is the original Union Army sample, available at uadata.org . Our explanatory variables are

1. **The number of veterans from the same company, the number of veterans in the sample not from the same company, the number of veterans from the same 1860 town, and the number of veterans from the same enlistment town.** These variables are specific to the veteran who is excluded from the calculation of the variables. The variables were generated from our primary sample. The number of veterans and the number of veterans from the same birth city in the ward are thus underestimated.

2. **Logarithm of county population, the fraction of workers in manufacturing, and the fraction of "new" immigrants**. These variables were generated from Haines (2010). "New" immigrants are those from Eastern and Southern Europe.

3. **Distance from the origin county to the destination county**. Measured in miles, from county centroids.

4. **Dummy variables indicating southern and coastal counties**.

5. **Mean February temperature**. Obtained from https://www.ncdc.noaa.gov/cdo-web/.

6. **The percentage voting for McClellan in 1864, the percentage voting for McKinley in 1900, and dummy variables for each year indicating that no data were available**. Obtained from Clubb, Flanigan, and Zingale (2006).

7. **The interactions between pension amount in 1900 and the fraction of "new" immigrants**. Pension amount (in dollars per month) was arguably an exogenous income transfer which depended upon health status and whether the veteran could claim his disability was related to the war. Veterans who could argue that their rheumatism was caused by being out in the damp during a march received more money than veterans whose rheumatism could not be related to the war according to the medical theories of the time.

8. **The interaction between poor health status and the fraction of "new" immigrants**. Health status is a dummy variable indicating that a veteran's Body Mass Index (BMI, weight in kilograms divided by height in meters squared) was either too low (below 18.5) or too high (greater than or equal to 25).

9. **The interaction between a dummy equal to one if health status was unknown and the fraction of "new" immigrants**.

5.2 Ward Choice Regressions

The data set consists of every veteran in either the original Union Army data or the urban sample over-sample whom we could place in a ward in 1900 in Baltimore, Boston, Chicago, Cincinnati, New York City (all boroughs), and Philadelphia and for whom we knew city of enlistment. To this sample we merged ward-level characteristics obtained from uadata.org and known as Historical Urban Ecological (HUE) data.

Our explanatory variables are

1. **Number of veterans in the company, number of veterans, number of veterans from the same birth city**. These variables are specific to the veteran and exclude him. The variables were generated from our primary sample. The number of veterans and the number of veterans from the same birth city in the ward are thus underestimated.

2. **Adjusted death rate**. The ward death rate divided by the mean city death rate, all multiplied by 100.

3. **Logarithm of distance to the city center**. Calculated from the ward centroid to City Hall (in meters).

4. **Population density**. Ward square footage divided by ward population where ward population was obtained from the published 1900 census.

5. **Fraction of "new" immigrants, blacks, Irish, and Germans**. Calculated from the complete count census indices available from the Minnesota Population Center and Ancestry (2013). "New" immigrants are immigrants born in Eastern or Southern Europe. We thank Carlos Villarreal for providing us with a mapping of ward numbers to enumeration districts for New York City where the census manuscript schedules do not provide ward numbers.

6. **Dummy equal to one if current city of residence was the same as the city of enlistment**.

7. **The distance from the city of enlistment to the current city**. In kilometers and estimated from the city center.

8. **City population in 1900** from the 1900 published census. See http://www.census.gov/prod/www/decenn

9. **The interaction term between a dummy equal to one if the veteran was a professional, proprietor, or artisan at enlistment and city size**.

10. **Interaction terms between dummies equal to one if the veteran was born in Ireland or Germany and the fraction of Irish or Germans in the ward**.

11. **The interactions between pension amount in 1900 and the fraction of "new" immigrants, the fraction Irish, and the fraction German**. Pension amount (in dollars per month) was arguably an exogenous income transfer which depended upon health status and whether the veteran could claim his disability was related to the war. Veterans who could argue that their rheumatism was caused by being out in the damp during a march received more money than veterans whose rheumatism could not be related to the war according to the medical theories of the time.

12. **The interaction between poor health status and the fraction of "new" immigrants, the fraction Irish, and the fraction German**. Health status is a dummy variable indicating that a veteran's Body Mass Index (BMI, weight in kilograms divided by height in meters squared) was either too low (below 18.5) or too high (greater than or equal to 25).

13. **The interaction between a dummy equal to one if health status was unknown and the fraction of "new" immigrants, the fraction Irish, and the fraction German**.

5.3 Mortality Regressions

The data set consists of every veteran in either the original Union Army data or the urban sample over-sample whom we could place in a ward in 1900 in Baltimore, Boston, Chicago, Cincinnati, New York City (all boroughs), and Philadelphia and for whom we knew city of enlistment. To this sample we merged ward-level characteristics obtained from uadata.org and known as Historical Urban Ecological (HUE) data.

The explanatory variables are

1. **The number of veterans from the same wartime company in the ward**. A time-varying covariate affected by deaths. Unfortunately, we cannot observe yearly moves so the variable may either over- or under-estiamte the number of men in the same ward.

2. **A dummy variable indicating if the wife is alive**. A time-varying covariate, affected by deaths and remarriage.

3. **Age in 1900**.

4. **Logarithm of the ward death rate**.

5. **Poor health status**. Health status is a dummy variable indicating that a veteran's Body Mass Index (BMI, weight in kilograms divided by height in meters squared) was either too low (below 18.5) or too high (greater than or equal to 25).

6. **Health status unknown**. A dummy variable indicating that BMI is unknown.

7. **Wounded**. A dummy variable if the veteran was ever wounded in the war.

8. **City fixed effects**

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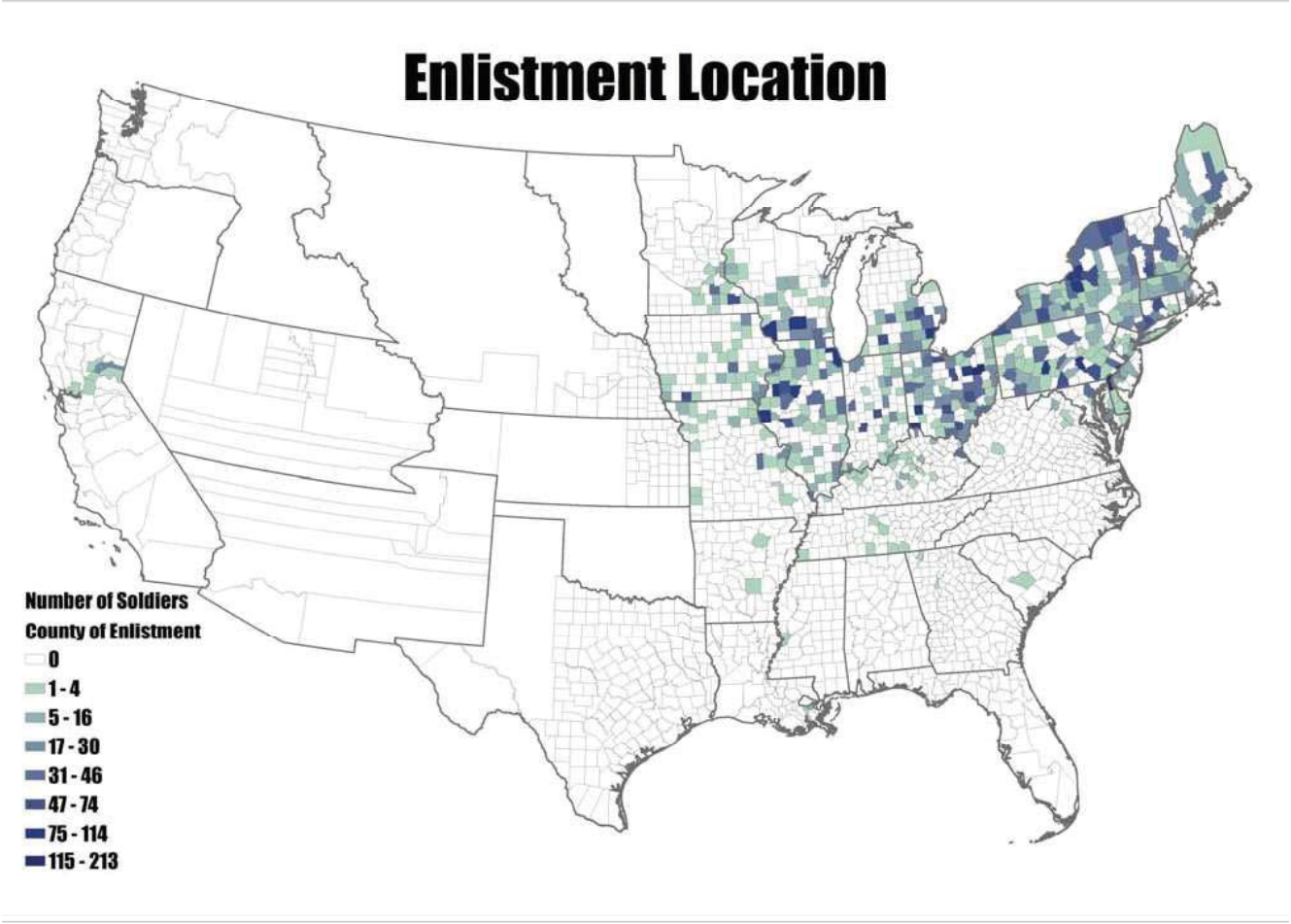
Figure 1: County Location of Veterans at Enlistment and in 1900



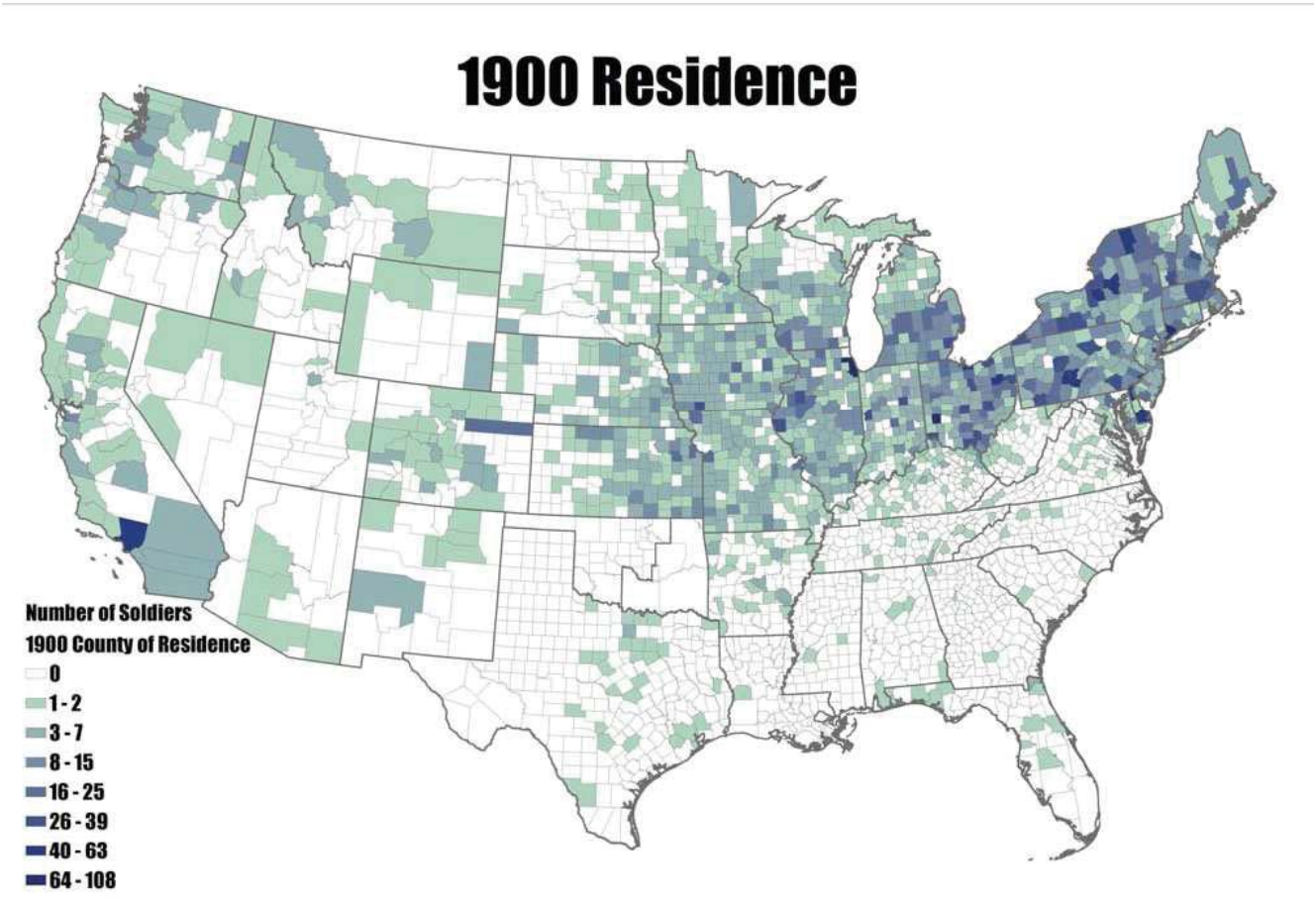


Figure 2: Location Within City Wards of Veterans in 1900

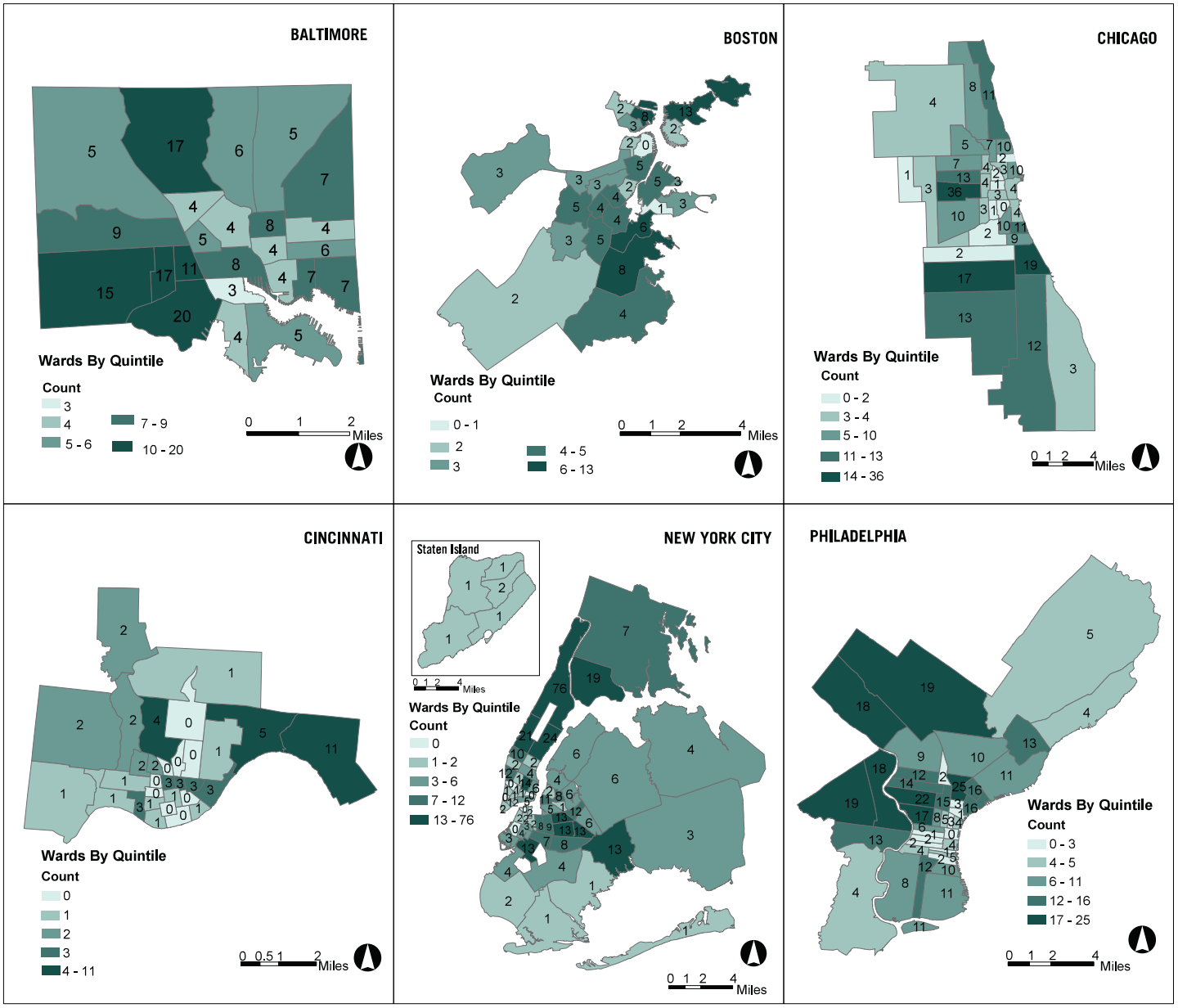


Table 1: County Locational Choice Regression

	(1)		(2)		(3)	
	e^{β}	Std. Err	e^{β}	Std. Err	e^{β}	Std. Err
Dummy=1 if same as county of enlistment	15.807‡	2.536	103.233‡	9.259	103.567‡	9.336
Number of veterans from the same company	1.211‡	0.024	1.503‡	0.045	1.503‡	0.045
Number of other veterans	1.009‡	0.002	1.012‡	0.001	1.012‡	0.001
Number of veterans from the same 1860 town	1.066†	0.032	1.458‡	0.176	1.456‡	0.179
Number of veterans from the same birth city	1.024	0.017	1.057‡	0.017	1.058‡	0.018
Dummy=1 if same as county of enlistment ×						
Number of veterans from the same company			0.714‡	0.022	0.714‡	0.022
Number of other veterans			0.974‡	0.003	0.973‡	0.003
Number of veterans from the same 1860 town			0.722‡	0.003	0.723‡	0.089
Number of veterans from the same birth city			0.973	0.017	0.973‡	0.017
Percentage voting for McClellan in 1864	0.993‡	0.001	0.992‡	0.001	0.992‡	0.001
Percentage voting for McKinley in 1900	0.996	0.003	0.997*	0.002	0.997	0.002
Logarithm of county population	1.681‡	0.066	1.603‡	0.051	1.611‡	0.052
Professional, proprietor, or artisan at enlistment ×						
Logarithm of county population	1.144‡	0.029	1.170‡	0.028	1.166‡	0.028
Mean February temperature (Fahrenheit)	1.010*	0.006	1.013‡	0.028	1.013†	0.005
Dummy=1 if coastal county	1.062	0.115	0.963	0.081	0.961	0.081
Distance from enlistment county in miles	0.997‡	0.000	0.998‡	0.000	0.998‡	0.000
Dummy=1 if former Confederacy	0.051‡	0.006	0.050‡	0.006	0.050‡	0.006
Fraction of wage earners in manufacturing	0.144‡	0.104	0.200‡	0.118	0.207‡	0.122
Fraction of "new" immigrants	0.001‡	0.002	0.007‡	0.007	0.133	0.195
Fraction of "new" immigrants ×						
Monthly pension					0.632‡	0.074
Poor health					13.373†	15.447

20,915,200 observations where each observation is each person's choice of a county. The coefficients are exponents from a conditional logit model. The symbols ∗,†, and ‡ indicate statistical significance at the 10, 5, and 1 percent level. Robust standard errors, clustered on the company level. Additional controls include dummies for missing voting information in the 1864 and 1900 elections (the fractions voting for McClellan and McKinley were set equal to 0 if this information was missing) and a dummy indicating missing health information (poor health was set equal to 0 if this information was missing) interacted with the fraction of "new" immigrants.

Table 2: City Ward Locational Choice Regression

	(1)		(2)		(3)		(4)		(5)	
	e^{β}	Std. Err.	e^{β}	Std. Err.	e^{β}	Std. Err.	e^{β}	Std. Err.	e^{β}	Std. Err.
Number of veterans in ward from same company	1.315‡	0.044	1.781‡	0.162	1.760‡	0.163	1.759‡	0.007	1.748‡	0.162
Number of veterans in ward	1.059‡	0.005	1.058‡	0.006	1.061‡	0.007	1.061‡	0.007	1.061‡	0.007
Number of veterans in ward from same birth city	1.115‡	0.022	1.058‡	0.007	1.230‡	0.028	1.229‡	0.028	1.227‡	0.028
Same city as city of enlistment	8.924‡	1.673	10.508‡	2.024	10.282‡	1.984	10.332‡	1.994	10.399‡	2.012
Same city as city of enlistment ×										
Number of veterans in ward from same company			0.727‡	0.067	0.728‡	0.067	0.728‡	0.067	0.733‡	0.068
Number of veterans in ward			1.002	0.008	1.001	0.008	1.001	0.008	1.062‡	0.007
Number of veterans in ward from same birth city			0.847‡	0.025	0.848‡	0.028	0.849‡	0.025	0.849‡	0.025
Distance of city from city of enlistment	0.997‡	0.000	0.997‡	0.000	0.997‡	0.000	0.997‡	0.000	0.997‡	0.000
City population	0.917	0.066	0.925	0.067	0.940	0.068	0.941	0.068	0.941	0.000
City population ×										
Professional, proprietor, or artisan at enlistment	1.116	0.084	1.116	0.083	1.125	0.085	1.124	0.085	1.126	0.084
Adjusted ward death rate	0.996‡	0.002	0.996‡	0.002	0.996‡	0.002	0.996‡	0.002	0.996‡	0.002
Ward population density	5230.775‡	10732.20	5725.864‡	11808.80	5293.559‡	10945.74	5069.638‡	10404.61	5391.181‡	11082.09
Logarithm of distance from ward to city center	1.242‡	0.071	1.234‡	0.070	1.222‡	0.069	1.222‡	0.069	1.222‡	0.069
Fraction of blacks in ward	0.558	0.352	0.532	0.330	0.461	0.277	0.461	0.277	0.448	0.271
Fraction of "new" immigrants in ward	0.028‡	0.019	0.025‡	0.017	0.024‡	0.016	0.113†	0.109	0.115†	0.109
Fraction of Irish-born in ward	0.923	0.978	0.757	0.794	0.090†	0.101	0.091†	0.103	0.223	0.381
Fraction of German-born in ward	1.305	1.169	1.179	1.062	0.057‡	0.051	0.058‡	0.052	0.007‡	0.105
Fraction of Irish-born in ward ×										
Irish-born					112052.80‡	214643.10	112457.60‡	215658.00	127330.10‡	232586.20
Monthly pension amount									0.753†	0.094
Fraction of German-born in ward ×										
German-born					24207.76‡	25855.30	24021.15‡	25691.06	22509.55‡	24118.33
Monthly pension amount									1.058	0.094
Fraction of "new" immigrants in ward ×										
Monthly pension amount							0.872*	0.068	0.854†	0.064
Pseudo-R^2	0.224		0.227		0.235		0.235		0.236	

307,914 observations where each observation is each veteran's choice of a ward. The coefficients are exponents from a conditional logit model. The symbols ∗,†, and ‡ indicate statistical significance at the 10, 5, and 1 percent level. Robust standard errors, clustered on the company level. Additional controls in regressions 4-5 are interactions of dummies for poor health and for missing health information with the fraction of new immigrants. Additional controls in regression 5 include interactinos of dummies for poor health and for missing health information interacted with the fraction Irish and the fraction German.

Table 3: Mortality Regressions

	e^{β}	Std. Err	e^{β}	Std. Err	e^{β}	Std. Err
Number of friends in 1900 ward (time-varying)	0.964	0.025	0.953*	0.027	0.934	0.040
Dummy=1 if living wife (time-varying)	0.938	0.057	0.934	0.056	0.934	0.055
Logarithm of ward death rate in 1900	1.200*	0.126	1.111	0.137	1.113	0.138
Dummy=1 if poor health in 1900	1.196‡	0.068	1.208‡	0.089	1.208‡	0.089
Dummy=1 if wounded in the war	1.108*	0.068	1.110*	0.066	1.108*	0.067
Age in 1900	1.089‡	0.008	1.090‡	0.008	1.090	0.008
Dummy=1 if living in same city of enlistment					0.995	0.062
Dummy=1 if living in same city of enlistment $\times$ number of friends					1.026	0.056
City fixed effects	N		Y		Y	
γ	0.007‡	0.000	0.007‡	0.000		

1,103 veterans. The coefficients are hazard ratios from a gompertz parametric survival model of months lived with both time-varying (by the month) and time-invariant covariates. The symbols $*$,†, and ‡ indicate statistical significance at the 10, 5, and 1 percent level. Robust standard errors, clustered on the company level. The regressions include a constant and a dummy equal to 1 if information on poor health was missing (poor health was set equal to 0 if this information was missing).